ENGINE SECTION 3

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

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

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

FUEL INJECTION (FUEL SYSTEMS)	FU(H6DO)
EMISSION CONTROL (AUX. EMISSION CONTROL DEVICES)	EC(H6DO)
INTAKE (INDUCTION)	IN(H6DO)
MECHANICAL	ME(H6DO)
EXHAUST	EX(H6DO)
COOLING	CO(H6DO)
LUBRICATION	LU(H6DO)
SPEED CONTROL SYSTEMS	SP(H6DO)
IGNITION	IG(H6DO)
STARTING/CHARGING SYSTEMS	SC(H6DO)
ENGINE (DIAGNOSTICS)	EN(H6DO)(diag)

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

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ENGINE (DIAGNOSTICS) EN(H6DO)(diag)

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18.Diagnostic Procedure with Diagnostic Trouble Code (DTC)

A: DTC P0011 "A" CAMSHAFT POSITION - TIMING OVER-ADVANCED OR SYS-TEM PERFORMANCE (BANK 1)

DTC DETECTING CONDITION: Two consecutive driving cycles with fault **TROUBLE SYMPTOM:**

- Engine stalls.
- Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, Inspection Mode.>.

	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the rele- vant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(H6DO)(diag)- 66, List of Diag- nostic Trouble Code (DTC).></ref.>	Go to step 2.
2		Is the AVCS system operating angle approx. 0 deg., and oil flow control solenoid valve duty output approx. 10%?	Check the follow- ing and repair or replace if neces- sary. • Oil pipe (clog) • Oil flow con- trol solenoid valve (clog or dirt of oil rout- ing, setting of spring, clog of valve) • Intake cam- shaft (dirt, dam- age of camshaft) • Timing chain (matching of timing mark)	A temporary mal- function. Perform the follow- ing, and clean the oil routing. Replace the engine oil and idle the engine for 5 minutes, and then replace the oil filter and engine oil.

B: DTC P0021 "A" CAMSHAFT POSITION - TIMING OVER-ADVANCED OR SYS-TEM PERFORMANCE (BANK 2)

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Engine stalls.
- Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, Inspection Mode.>.

Step		Check	Yes	No
1 CHECK ANY OTHER DTC ON DIS	PLAY.	Is any other DTC displayed?	Inspect the rele- vant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(H6DO)(diag)- 66, List of Diag- nostic Trouble Code (DTC).></ref.>	Go to step 2.
 2 CHECK CURRENT DATA. Start the engine and let it idle. Measure the AVCS system opera and oil flow control solenoid valve du using Subaru Select Monitor or OBD scan tool. NOTE: Subaru Select Monitor For detailed operation procedures, r	ating angle uty output -II general efer to the DN DIS- Monitor.> efer to the	Is the AVCS system operating angle approx. 0 deg., and oil flow control solenoid valve duty output approx. 10%?	Check the follow- ing and repair or replace if neces- sary. • Engine oil (amount, dirt) • Oil pipe (clog) • Oil flow con- trol solenoid valve (clog or dirt of oil rout- ing, setting of spring, clog of valve) • Intake cam- shaft (dirt, dam- age of camshaft) • Timing chain (matching of timing mark)	A temporary mal- function. Perform the follow- ing, and clean the oil routing. Replace the engine oil and idle the engine for 5 minutes, and 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

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>. WIRING DIAGRAM:

MAIN RELAY BATTERY SBF-6 ο 0 6 4 Ð Θ -0 o 5 3 8 لكلكم B22 E3 2 1 FRONT FRONT (В47 OXYGEN (A/F) OXYGEN (A/F) SENSOR LH SENSOR RH (E24) (E47) E3 B22 뒫 A25 A2 A3 **426** A34 A27 A: (B134) B: (B135) ECM A4 A5 A6 A7 B21 E2 E47 E24 (B47) A: (B134) B: (B135) (B21) 1 2 3 4 2 1 3 4 5 6 7 3 4 5 6 7 1 2 1 2 3 4 5 6 7 8 9 10 11 3 4 5 6 10 11 12 13 14 15 16 17 8 9 10 11 12 13 14 15 16 17 18 19 8 9 5 16 17 18 1

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24 2

32 33

EN(H6DO)(diag)-74

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18 19 20 21 22 23 24 25 26 27

33 34

28 29 30 31 32

(B22)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

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2 33

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

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	Step	Check	Yes	No
1	 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNEC- TOR. 1) Start the engine, and warm-up the engine. 2) Turn the ignition switch to OFF. 3) Disconnect the connectors from ECM and front oxygen (A/F) sensor. 4) Measure the resistance of harness between ECM and front oxygen (A/F) sensor connector. Connector & terminal (B134) No. 2 — (E47) No. 1: (B134) No. 3 — (E47) No. 1: 	Is the resistance less than 1 Ω ?	Go to step 2.	Repair the open circuit in harness between ECM and front oxygen (A/F) sensor connector.
2	CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNEC- TOR. Measure the resistance of harness between ECM and front oxygen (A/F) sensor connector. Connector & terminal (B134) No. 26 — (E47) No. 4: (B134) No. 33 — (E47) No. 3:	Is the resistance less than 1 Ω ?	Go to step 3.	Repair the open circuit in harness between ECM and front oxygen (A/F) sensor connector.
3	CHECK HARNESS BETWEEN MAIN RELAY AND FRONT OXYGEN (A/F) SENSOR CON- NECTOR. Measure the resistance of harness between main relay and front oxygen (A/F) sensor con- nector. Connector & terminal (B47) No. 3 — (E47) No. 2:	Is the resistance less than 1 Ω ?	Go to step 4 .	Repair the open circuit in harness between main relay and front oxygen (A/F) sen- sor connector.
4	CHECK FRONT OXYGEN (A/F) SENSOR. Measure the resistance between front oxygen (A/F) sensor connector terminals. Terminals No. 2 — No. 1:	Is the resistance less than 5 Ω ?	Go to step 5.	Replace the front oxygen (A/F) sen- sor. <ref. to<br="">FU(H6DO)-30, Front Oxygen (A/ F) Sensor.></ref.>
5	CHECK POOR CONTACT. Check poor contact in ECM and front oxygen (A/F) sensor connector.	Is there poor contact in ECM or front oxygen (A/F) sensor con- nector?	Repair the poor contact in ECM or front oxygen (A/F) sensor connector.	Replace the front oxygen (A/F) sen- sor. <ref. to<br="">FU(H6DO)-30, Front Oxygen (A/ F) Sensor.></ref.>

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

Immediately at fault recognition

3 4 5 6

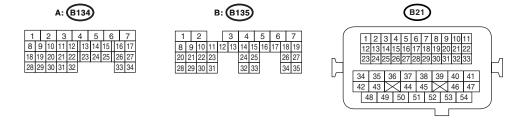
(B22)

1234 5 6 7 8 9 10 11 12 13 14 15 16

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>. WIRING DIAGRAM:

MAIN RELAY BATTERY SBF-6 ο 0 6 4 Ð Θ -0 o 5 3 8 لكلكم B22 E3 2 1 FRONT FRONT (В47 OXYGEN (A/F) OXYGEN (A/F) SENSOR LH SENSOR RH (E24) (E47) E3 B22 뒫 A25 A2 A3 **426** A34 A27 A: (B134) B: (B135) ECM A4 A5 A6 A7 B21 E2 E47 E24 (B47) A: (B134) B: (B135) (B21) 1 2 3 4 2 1



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	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 (E47) 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 GROUND CIRCUIT FOR ECM. Measure the resistance of harness between ECM connector and chassis ground. <i>Connector & terminal</i> (B134) No. 4 — Chassis ground: (B134) No. 5 — Chassis ground: (B134) No. 6 — Chassis ground: (B134) No. 7 — Chassis ground:	Is the resistance less than 5 Ω ?	Go to step 3.	Repair the har- ness and connec- tor. NOTE: In this case repair the following: • Open circuit in harness between ECM and engine ground terminal • Poor contact in ECM connector • Poor contact in coupling connector
3	 CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of front oxygen (A/F) sensor heater current using Subaru Select Monitor or the OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedures, refer to the "READ CURRENT DATA SHOWN ON DIS-PLAY FOR ENGINE". <ref. li="" to<=""> EN(H6DO)(diag)-25, Subaru Select Monitor.> OBD-II general scan tool </ref.> For detailed operation procedures, refer to the OBD-II general scan tool 	Is the current more than 0.2 A?	Repair the poor contact in connec- tor. NOTE: In this case repair the following: • Poor contact in front oxygen (A/F) sensor connector • Poor contact in coupling connector • Poor contact in ECM connector	Go to step 4.
4	 CHECK OUTPUT SIGNAL FROM ECM. 1) Start and idle the engine. 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B134) No. 2 (+) — Chassis ground (-): (B134) No. 3 (+) — Chassis ground (-): 	Is the voltage less than 1 V?	Go to step 6.	Go to step 5.
5	CHECK OUTPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B134) No. 2 (+) — Chassis ground (–): (B134) No. 3 (+) — Chassis ground (–):	Does the voltage change by shaking the ECM harness and connector while monitoring the value of voltage meter?	Repair the poor contact in ECM connector.	Go to step 6 .

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

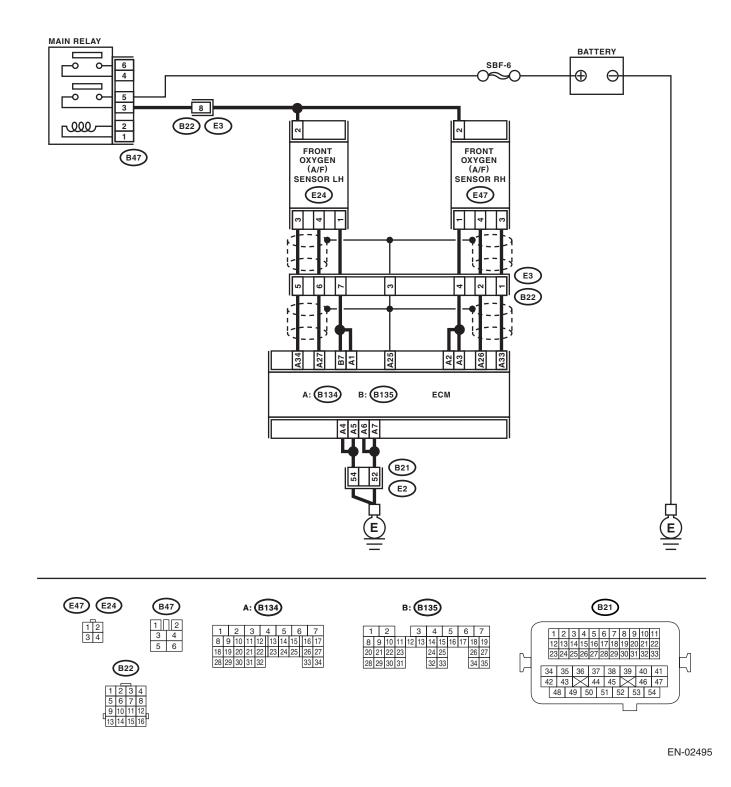
Step	Check	Yes	No
 6 CHECK FRONT OXYGEN (A/F) SENSOR. 1) Turn the ignition switch to OFF. 2) Measure the resistance between front oxygen (A/F) sensor connector terminals. Terminals No. 2 — No. 1: 	Is the resistance less than 10 Ω ?	Repair the har- ness and connec- tor. NOTE: In this case repair the following: • Open or ground short circuit in har- ness between front oxygen (A/F) sen- sor and ECM con- nector • Poor contact in front oxygen (A/F) sensor connector • Poor contact in ECM connector • Poor contact in coupling connector	F) Sensor.>

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

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>. WIRING DIAGRAM:



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

	Step	Check	Yes	No
1	 CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B134) No. 2 (+) — Chassis ground (-): (B134) No. 3 (+) — Chassis ground (-): 	Is the voltage more than 8 V?	Go to step 2.	Go to step 3.
2	 CHECK FRONT OXYGEN (A/F) SENSOR HEATER CURRENT. 1) Turn the ignition switch to OFF. 2) Repair the battery short circuit in harness between ECM and front oxygen (A/F) sensor connector. 3) Turn the ignition switch to ON. 4) Read the data of front oxygen (A/F) sensor heater current using Subaru Select Monitor. 	Is the current more than 2.3 A?	Replace the ECM. <ref. to<br="">FU(H6DO)-34, Engine Control Module (ECM).></ref.>	END.
	NOTE: For detailed operation procedures, refer to the "READ CURRENT DATA SHOWN ON DIS- PLAY FOR ENGINE". <ref. en(h6do)(di-<br="" to="">ag)-25, Subaru Select Monitor.></ref.>			
3	CHECK OUTPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B134) No. 2 (+) — Chassis ground (-): (B134) No. 3 (+) — Chassis ground (-):	Does the voltage change by shaking the ECM harness and connector?	Repair the battery short circuit in har- ness between ECM and front oxygen (A/F) sen- sor connector.	END.

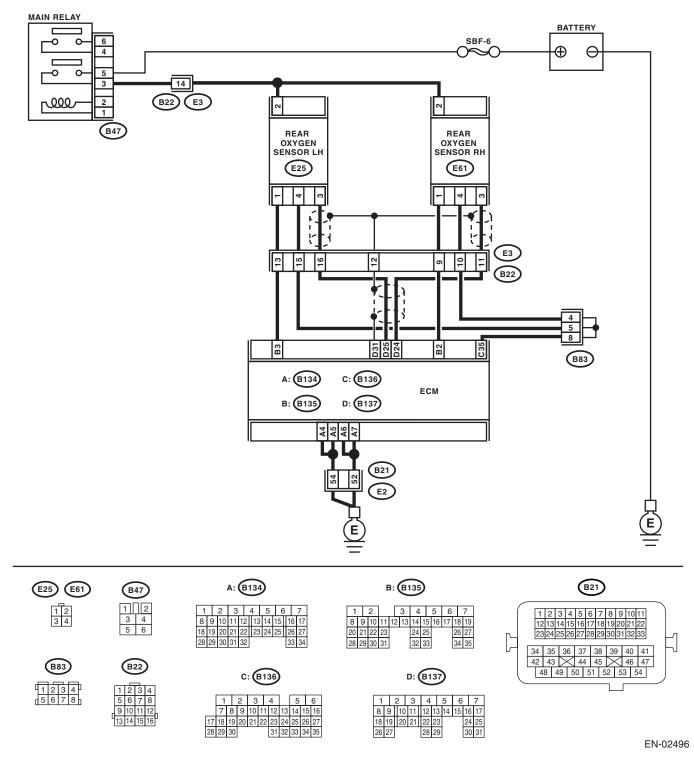
F: DTC P0037 HO2S HEATER CONTROL CIRCUIT LOW (BANK 1 SENSOR 2) DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

	Step	Check	Yes	No
1	CHECK POWER SUPPLY TO REAR OXY-	Is the voltage more than 10 V?		Repair the power
	GEN SENSOR.			supply line.
	1) Turn the ignition switch to OFF.			NOTE:
	2) Disconnect the connector from rear oxygen			In this case repair
	sensor. 3) Turn the ignition switch to ON.			the following:Open circuit in
	4) Measure the voltage between rear oxygen			harness between
	sensor connector and chassis ground.			main relay and
	Connector & terminal			rear oxygen sen-
	(E61) No. 2 (+) — Chassis ground (–):			sor connector
				 Poor contact in rear oxygen sen-
				sor connector
				 Poor contact in
				main relay connec-
			-	tor
2	CHECK GROUND CIRCUIT FOR ECM.	Is the resistance less than 5	Go to step 3.	Repair the har-
	 Turn the ignition switch to OFF. Disconnect the connector from ECM. 	Ω?		ness and connec- tor.
	3) Measure the resistance of harness			NOTE:
	between ECM connector and chassis ground.			In this case repair
	Connector & terminal			the following:
	(B134) No. 4 — Chassis ground: (B134) No. 5 — Chassis ground:			Open circuit in
	(B134) No. 5 — Chassis ground: (B134) No. 6 — Chassis ground:			harness between ECM and engine
	(B134) No. 7 — Chassis ground:			ground terminal
				 Poor contact in
				ECM connector
				 Poor contact in
3	CHECK CURRENT DATA.	Is the current more than 0.2 A?	Papair the ear	coupling connector Go to step 4.
3	1) Start the engine.	is the current more than 0.2 A?	nector.	Go lo slep 4.
	2) Read the data of rear oxygen sensor heater		NOTE:	
	current using Subaru Select Monitor or the		In this case repair	
	OBD-II general scan tool.		the following:	
	NOTE: • Subaru Select Monitor		Poor contact in	
	For detailed operation procedures, refer to the		rear oxygen sen- sor connector	
	"READ CURRENT DATA SHOWN ON DIS-		 Poor contact in 	
	PLAY FOR ENGINE". < Ref. to		coupling connector	
	EN(H6DO)(diag)-25, Subaru Select Monitor.>		Poor contact in	
	 OBD-II general scan tool For detailed operation procedures, refer to the 		ECM connector	
	OBD-II General Scan Tool Operation Manual.			
4	CHECK OUTPUT SIGNAL FROM ECM.	Is the voltage less than 1 V?	Go to step 7.	Go to step 5.
	1) Start and idle the engine.			
	2) Measure the voltage between ECM con-			
	nector and chassis ground.			
	Connector & terminal (B135) No. 2 (+) — Chassis ground (–):			
5	CHECK OUTPUT SIGNAL FROM ECM.	Does the voltage change by	Repair the poor	Go to step 6.
ľ	Measure the voltage between ECM connector	shaking the ECM harness and	contact in ECM	
	and chassis ground.	connector while monitoring the	connector.	
	Connector & terminal	value of voltage meter?		
	(B135) No. 2 (+) — Chassis ground (–):			

	Step	Check	Yes	No
6	 CHECK OUTPUT SIGNAL FROM ECM. 1) Disconnect the connector from rear oxygen sensor. 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 2 (+) — Chassis ground (-): 	Is the voltage less than 1 V?	Replace the ECM. <ref. to<br="">FU(H6DO)-34, Engine Control Module (ECM).></ref.>	Repair the battery short circuit in har- ness between ECM and rear oxy- gen sensor con- nector. After repair, replace the ECM. <ref. to<br="">FU(H6DO)-34, Engine Control Module (ECM).></ref.>
7	 CHECK REAR OXYGEN SENSOR. 1) Turn the ignition switch to OFF. 2) Measure the resistance between rear oxygen sensor connector terminals. <i>Terminals</i> <i>No. 1 — No. 2:</i> 	Is the resistance less than 30 Ω?	Repair the har- ness and connec- tor. NOTE: In this case repair the following: • Open circuit in harness between rear oxygen sen- sor and ECM con- nector • Poor contact in rear oxygen sen- sor connector • Poor contact in ECM connector • Poor contact in coupling connector	Replace the rear oxygen sensor. <ref. to<br="">FU(H6DO)-32, Rear Oxygen Sen- sor.></ref.>

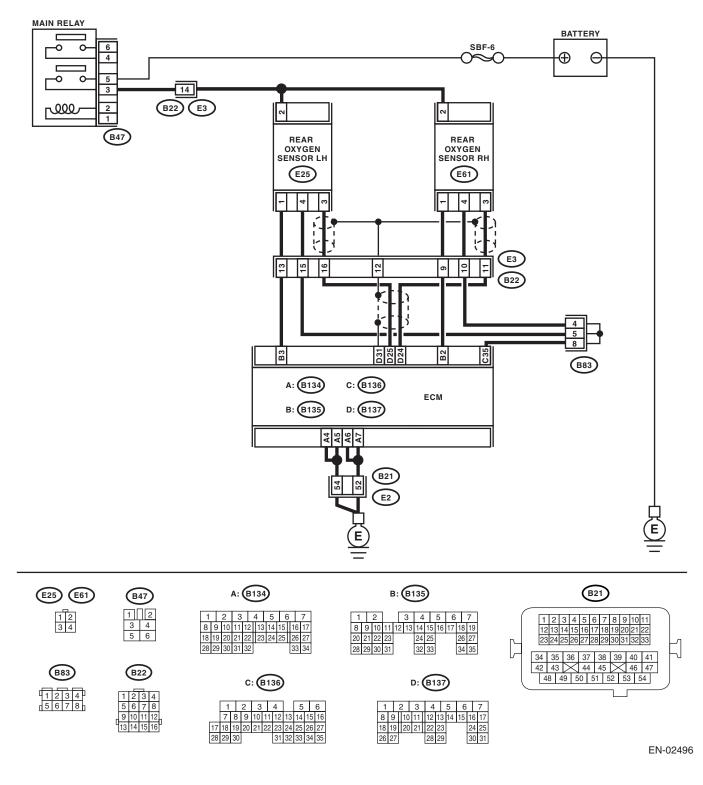
G: DTC P0038 HO2S HEATER CONTROL CIRCUIT HIGH (BANK 1 SENSOR 2) DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 2 (+) — Chassis ground (-):	Is the voltage more than 8 V?	Go to step 2.	Go to step 3.
2	 CHECK CURRENT DATA. 1) Turn the ignition switch to OFF. 2) Repair the battery short circuit in harness between ECM and rear oxygen sensor connector. 3) Turn the ignition switch to ON. 4) Read the data of rear oxygen sensor heater current using Subaru Select Monitor or the OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedures, refer to the "READ CURRENT DATA SHOWN ON DIS-PLAY FOR ENGINE". <ref. li="" to<=""> EN(H6DO)(diag)-25, Subaru Select Monitor.> OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool </ref.>	Is the current more than 7 A?	Replace the ECM. <ref. to<br="">FU(H6DO)-34, Engine Control Module (ECM).></ref.>	END.
3	CHECK POOR CONTACT. Check poor contact in ECM connector.	Is the poor contact in ECM connector?	Repair the poor contact in ECM connector.	END.

H: DTC P0050 HO2S HEATER CONTROL CIRCUIT (BANK 2 SENSOR 1) DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>. WIRING DIAGRAM:

MAIN RELAY BATTERY SBF-6 ο 0 6 4 Ð Θ -0 o 5 3 8 لكلكم B22 E3 2 1 FRONT FRONT (В47 OXYGEN OXYGEN (A/F) (A/F) SENSOR LH SENSOR RH (E24) (E47) E3 B22 뒫 A25 A2 A3 **426** A34 A27 A: (B134) B: (B135) ECM A4 A5 A6 A7 B21 E2

E47 E24 (B47) A: (B134) B: (B135) (B21) 1 2 3 4 2 1 3 4 5 6 7 3 4 5 6 7 1 2 1 2 3 4 5 6 7 8 9 10 11 3 4 5 6 10 11 12 13 14 15 16 17 8 9 10 11 12 13 14 15 16 17 18 19 8 9 5 16 17 18 1 18 19 20 21 22 23 24 25 26 27 26 27 34 35 24 2 2 33 23 24 25 26 27 28 29 30 31 32 33 34 32 33 28 29 30 31 (B22) 34 35 36 37 38 39 40 41
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Diagnostic Procedure with Diagnostic Trouble Code (DTC)

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	Step	Check	Yes	No
1	 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNEC- TOR. 1) Start the engine, and warm-up the engine. 2) Turn the ignition switch to OFF. 3) Disconnect the connector 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. 1 – (E24) No. 1: (B135) No. 7 – (E24) No. 1: 	Is the resistance less than 1 Ω?	Go to step 2.	Repair the open circuit in harness between ECM and front oxygen (A/F) sensor connector.
2	CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNEC- TOR. Measure the resistance of harness between ECM and front oxygen (A/F) sensor connector. Connector & terminal (B134) No. 27 — (E24) No. 4: (B134) No. 34 — (E24) No. 3:	Is the resistance less than 1 Ω ?	Go to step 3.	Repair the open circuit in harness between ECM and front oxygen (A/F) sensor connector.
3	CHECK HARNESS BETWEEN MAIN RELAY AND FRONT OXYGEN (A/F) SENSOR CON- NECTOR. Measure the resistance of harness between main relay and front oxygen (A/F) sensor con- nector. Connector & terminal (B47) No. 3 — (E24) No. 2:	Is the resistance less than 1 Ω ?	Go to step 4 .	Repair the open circuit in harness between main relay and front oxygen (A/F) sen- sor connector.
4	CHECK FRONT OXYGEN (A/F) SENSOR. Measure the resistance between front oxygen (A/F) sensor connector terminals. Terminals No. 2 — No. 1:	Is the resistance less than 5 Ω ?	Go to step 5.	Replace the front oxygen (A/F) sen- sor. <ref. to<br="">FU(H6DO)-30, Front Oxygen (A/ F) Sensor.></ref.>
5	CHECK POOR CONTACT. Check poor contact in ECM and front oxygen (A/F) sensor connector.	Is there poor contact in ECM or front oxygen (A/F) sensor con- nector?	Repair the poor contact in ECM or front oxygen (A/F) sensor connector.	Replace the front oxygen (A/F) sen- sor. <ref. to<br="">FU(H6DO)-30, Front Oxygen (A/ F) Sensor.></ref.>

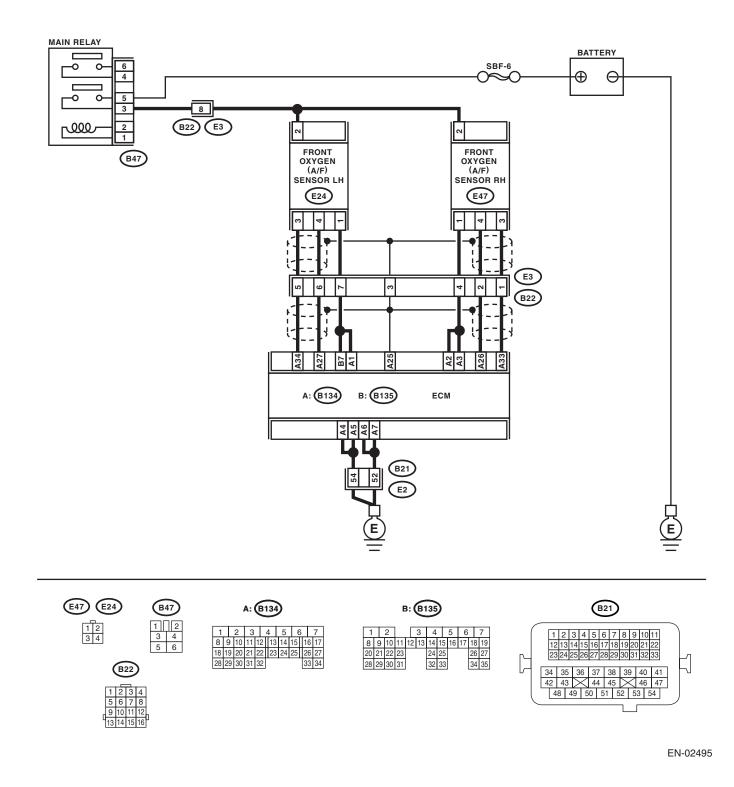
I: DTC P0051 HO2S HEATER CONTROL CIRCUIT LOW (BANK 2 SENSOR 1) DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:



	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 (E24) 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 GROUND CIRCUIT FOR ECM. Measure the resistance of harness between ECM connector and chassis ground. Connector & terminal (B134) No. 4 — Chassis ground: (B134) No. 5 — Chassis ground: (B134) No. 6 — Chassis ground: (B134) No. 7 — Chassis ground:	Is the resistance less than 5 Ω?	Go to step 3.	Repair the har- ness and connec- tor. NOTE: In this case repair the following: • Open circuit in harness between ECM and engine ground terminal • Poor contact in ECM connector • Poor contact in coupling connector
3	 CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of front oxygen (A/F) sensor heater current using Subaru Select Monitor or the OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedures, refer to the "READ CURRENT DATA SHOWN ON DIS-PLAY FOR ENGINE". <ref. en(h6do)(diag)-25,="" monitor.="" select="" subaru="" to=""></ref.> OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool 	Is the current more than 0.2 A?	Repair the poor contact connector. NOTE: In this case repair the following: • Poor contact in front oxygen (A/F) sensor connector • Poor contact in coupling connector • Poor contact in ECM connector	Go to step 4.
4	 CHECK OUTPUT SIGNAL FROM ECM. 1) Start and idle the engine. 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B134) No. 1 (+) — Chassis ground (-): (B135) No. 7 (+) — Chassis ground (-): 	Is the voltage less than 1 V?	Go to step 6.	Go to step 5.
5	CHECK OUTPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B134) No. 1 (+) — Chassis ground (–): (B135) No. 7 (+) — Chassis ground (–):	Does the voltage change by shaking the ECM harness and connector while monitoring the value of voltage meter?	Repair the poor contact in ECM connector.	Go to step 6 .

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

Step	Check	Yes	No
 6 CHECK FRONT OXYGEN (A/F) SENSOR. 1) Turn the ignition switch to OFF. 2) Measure the resistance between front oxygen (A/F) sensor connector terminals. Terminals No. 2 — No. 1: 	Is the resistance less than 10 Ω ?	Repair the har- ness and connec- tor. NOTE: In this case repair the following: • Open or ground short circuit in har- ness between front oxygen (A/F) sen- sor and ECM con- nector • Poor contact in front oxygen (A/F) sensor connector • Poor contact in ECM connector • Poor contact in coupling connector	F) Sensor.>

J: DTC P0052 HO2S HEATER CONTROL CIRCUIT HIGH (BANK 2 SENSOR 1)

DTC DETECTING CONDITION: Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>. WIRING DIAGRAM:

MAIN RELAY BATTERY SBF-6 ο 0 6 4 Ð Θ -0 o 5 3 8 لكلكم B22 E3 2 1 FRONT FRONT (В47 OXYGEN OXYGEN (A/F) (A/F) SENSOR LH SENSOR RH (E24) (E47) E3 B22 뒫 A25 A2 A3 **426** A34 A27 A: (B134) B: (B135) ECM A4 A5 A6 A7 B21 E2

E47 E24 (B47) A: (B134) B: (B135) (B21) 1 2 3 4 2 1 3 4 5 6 7 3 4 5 6 7 1 2 1 2 3 4 5 6 7 8 9 10 11 3 4 5 6 10 11 12 13 14 15 16 17 10 11 12 13 14 15 16 17 18 19 8 9 5 16 17 18 1 18 19 20 21 22 23 24 25 26 27 26 27 34 35 24 25 23 24 25 26 27 2 2 33 28 29 30 31 32 33 34 32 33 28 29 30 31 (B22) 34 35 36 37 38 39 40 41
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EN-02495

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

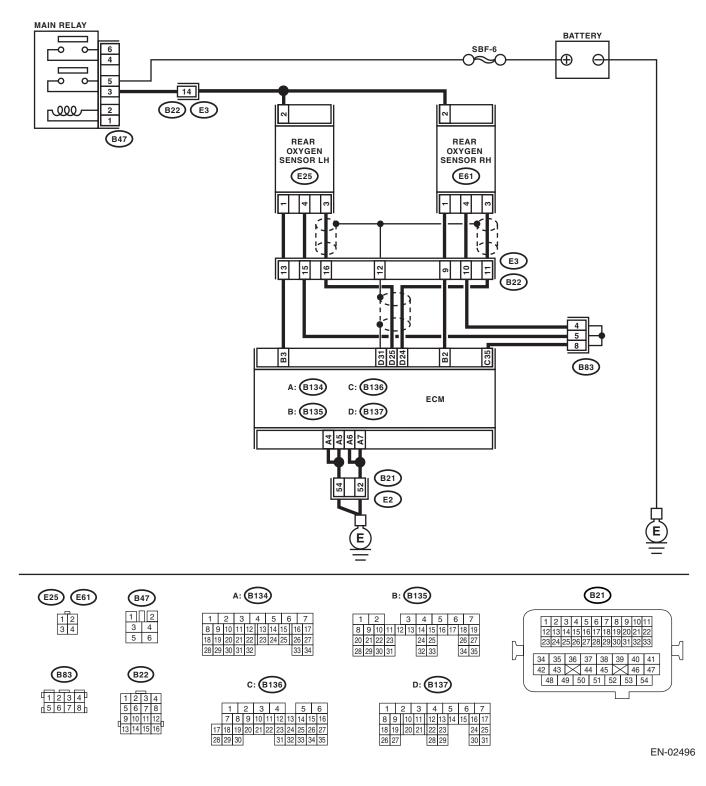
	Step	Check	Yes	No
1	 CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B134) No. 1 (+) — Chassis ground (-): (B135) No. 7 (+) — Chassis ground (-): 	Is the voltage more than 8 V?	Go to step 2 .	Go to step 3.
2	 CHECK FRONT OXYGEN (A/F) SENSOR HEATER CURRENT. 1) Turn the ignition switch to OFF. 2) Repair the battery short circuit in harness between ECM and front oxygen (A/F) sensor connector. 3) Turn the ignition switch to ON. 4) Read the data of front oxygen (A/F) sensor heater current using Subaru Select Monitor. 	Is the current more than 2.3 A?	Replace the ECM. <ref. to<br="">FU(H6DO)-34, Engine Control Module (ECM).></ref.>	END.
	NOTE: For detailed operation procedures, refer to the "READ CURRENT DATA SHOWN ON DIS- PLAY FOR ENGINE". <ref. en(h6do)(di-<br="" to="">ag)-25, Subaru Select Monitor.></ref.>			
3	CHECK OUTPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B134) No. 1 (+) — Chassis ground (-): (B135) No. 7 (+) — Chassis ground (-):	Does the voltage change by shaking the ECM harness and connector?	Repair the battery short circuit in har- ness between ECM and front oxygen (A/F) sen- sor connector.	END.

K: DTC P0057 HO2S HEATER CONTROL CIRCUIT LOW (BANK 2 SENSOR 2) DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>. WIRING DIAGRAM:



	Sten	Check	Yes	No
1	Step CHECK POWER SUPPLY TO REAR OXY-	Is the voltage more than 10 V?		NO Repair the power
l'	GEN SENSOR.	is the voltage more than 10 v?	60 to step 2 .	supply line.
	1) Turn the ignition switch to OFF.			NOTE:
	2) Disconnect the connector from rear oxygen			In this case repair
	sensor.			the following:
	3) Turn the ignition switch to ON.4) Measure the voltage between rear oxygen			 Open circuit in harness between
	sensor connector and chassis ground.			main relay and
	Connector & terminal			rear oxygen sen-
	(E25) No. 2 (+) — Chassis ground (–):			sor connector
				 Poor contact in
				rear oxygen sen-
				sor connectorPoor contact in
				coupling connector
2	CHECK GROUND CIRCUIT FOR ECM.	Is the resistance less than 5	Go to step 3.	Repair the har-
	1) Turn the ignition switch to OFF.	Ω?	•	ness and connec-
	Disconnect the connector from ECM.			tor.
	3) Measure the resistance of harness			NOTE:
	between ECM connector and chassis ground. Connector & terminal			In this case repair the following:
	(B134) No. 4 — Chassis ground:			 Open circuit in
	(B134) No. 5 — Chassis ground:			harness between
	(B134) No. 6 — Chassis ground:			ECM and engine
	(B134) No. 7 — Chassis ground:			ground terminal
				 Poor contact in ECM connector
				 Poor contact in
				coupling connector
3	CHECK CURRENT DATA.	Is the current more than 0.2 A?	Repair the con-	Go to step 4.
	1) Start the engine.		nector.	
	2) Read the data of rear oxygen sensor heater		NOTE:	
	current using Subaru Select Monitor or the OBD-II general scan tool.		In this case repair the following:	
	NOTE:		 Poor contact in 	
	Subaru Select Monitor		rear oxygen sen-	
	For detailed operation procedures, refer to the		sor connector	
	"READ CURRENT DATA SHOWN ON DIS-		Poor contact in	
	PLAY FOR ENGINE". <ref. to<br="">EN(H6DO)(diag)-25, Subaru Select Monitor.></ref.>		coupling connectorPoor contact in	
	OBD-II general scan tool		ECM connector	
	For detailed operation procedures, refer to the			
	OBD-II General Scan Tool Operation Manual.			
4	CHECK OUTPUT SIGNAL FROM ECM.	Is the voltage less than 1 V?	Go to step 7.	Go to step 5.
	 Start and idle the engine. Massure the voltage between ECM con 			
	2) Measure the voltage between ECM con- nector and chassis ground.			
	Connector & terminal			
	(B135) No. 3 (+) — Chassis ground (–):			
5	CHECK OUTPUT SIGNAL FROM ECM.	Does the voltage change by	Repair the poor	Go to step 6.
	Measure the voltage between ECM connector	shaking the ECM harness and	contact in ECM	
	and chassis ground. Connector & terminal	connector while monitoring the value of voltage meter?	connector.	
	(B135) No. 3 (+) — Chassis ground (–):	value of voltage meter :		
		1		

	Step	Check	Yes	No
6	 CHECK OUTPUT SIGNAL FROM ECM. 1) Disconnect the connector from rear oxygen sensor. 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 3 (+) — Chassis ground (-): 	Is the voltage less than 1 V?	<ref. th="" to<=""><th>Repair the battery short circuit in har- ness between ECM and rear oxy- gen sensor con- nector. After repair, replace the ECM. <ref. to<br="">FU(H6DO)-34, Engine Control Module (ECM).></ref.></th></ref.>	Repair the battery short circuit in har- ness between ECM and rear oxy- gen sensor con- nector. After repair, replace the ECM. <ref. to<br="">FU(H6DO)-34, Engine Control Module (ECM).></ref.>
7	 CHECK REAR OXYGEN SENSOR. 1) Turn the ignition switch to OFF. 2) Measure the resistance between rear oxygen sensor connector terminals. Terminals No. 1 — No. 2: 	Is the resistance less than 30 Ω?	Repair the har- ness and connec- tor. NOTE: In this case repair the following: • Open circuit in harness between rear oxygen sen- sor and ECM con- nector • Poor contact in rear oxygen sen- sor connector • Poor contact in ECM connector • Poor contact in coupling connector	Replace the rear oxygen sensor. <ref. to<br="">FU(H6DO)-32, Rear Oxygen Sen- sor.></ref.>

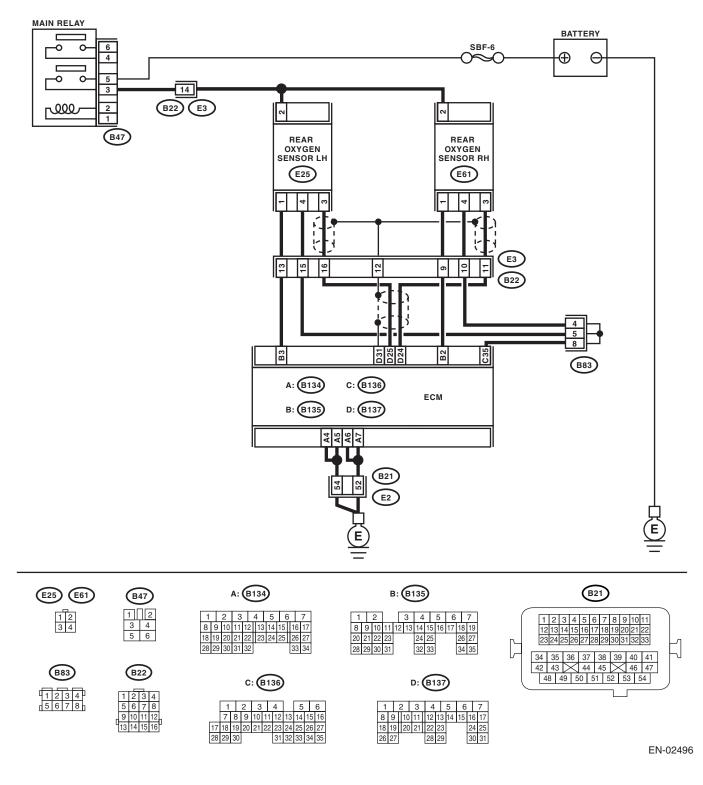
L: DTC P0058 HO2S HEATER CONTROL CIRCUIT HIGH (BANK 2 SENSOR 2) DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 3 (+) — Chassis ground (–):	Is the voltage more than 8 V?	Go to step 2.	Go to step 3.
2	 CHECK CURRENT DATA. 1) Turn the ignition switch to OFF. 2) Repair the battery short circuit in harness between ECM and rear oxygen sensor connector. 3) Turn the ignition switch to ON. 4) Read the data of rear oxygen sensor heater current using Subaru Select Monitor or the OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedures, refer to the "READ CURRENT DATA SHOWN ON DIS-PLAY FOR ENGINE". <ref. li="" to<=""> EN(H6DO)(diag)-25, Subaru Select Monitor.> OBD-II general scan tool </ref.> 	Is the current more than 7 A?	Replace the ECM. <ref. to<br="">FU(H6DO)-34, Engine Control Module (ECM).></ref.>	END.
3	CHECK POOR CONTACT. Check poor contact in ECM connector.	Is the poor contact in ECM connector?	Repair the poor contact in ECM connector.	END.

M: DTC P0076 INTAKE VALVE CONTROL SOLENOID CIRCUIT LOW (BANK 1) DTC DETECTING CONDITION: Immediately at fault recognition

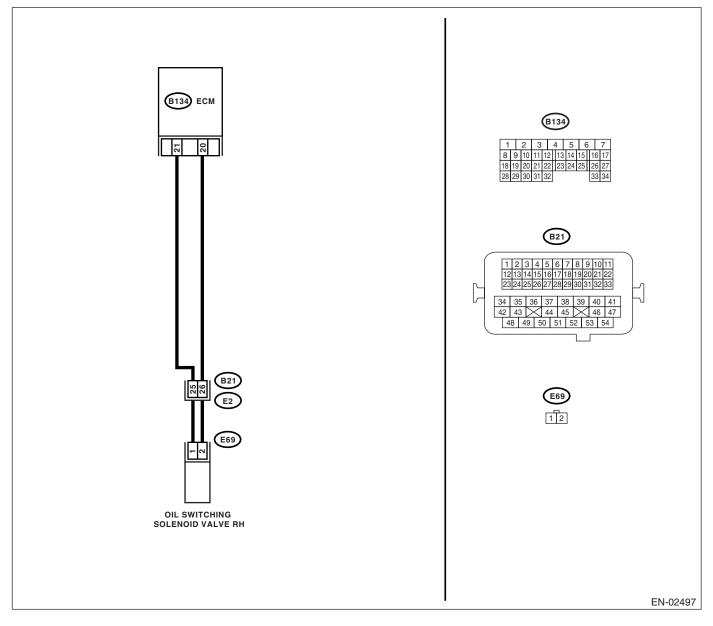
TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	CHECK HARNESS BETWEEN ECM AND OIL SWITCHING SOLENOID VALVE. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and oil switching solenoid valve. 3) Measure the resistance between ECM and oil switching solenoid valve. Connector & terminal (B134) No. 21 — (E69) No. 1: (B134) No. 20 — (E69) No. 2:	Is the resistance less than 1 Ω?	Go to step 2.	Repair the open circuit in harness between ECM and oil switching sole- noid valve connec- tor. NOTE: In this case repair the following: • Open circuit in harness between ECM and oil switching solenoid valve connector • Poor contact in coupling connector
2	 CHECK OIL SWITCHING SOLENOID VALVE. 1) Remove the oil switching solenoid valve connector. 2) Measure the resistance between oil switching solenoid valve terminals. <i>Terminals</i> <i>No. 1 — No. 2:</i> 	Is the resistance 6 — 12 Ω?	Repair the poor contact in ECM and oil switching solenoid valve.	Replace the oil switching solenoid valve. <ref. to<br="">ME(H6DO)-78, Oil Flow Control Sole- noid Valve.></ref.>

N: DTC P0077 INTAKE VALVE CONTROL SOLENOID CIRCUIT HIGH (BANK 1) DTC DETECTING CONDITION:

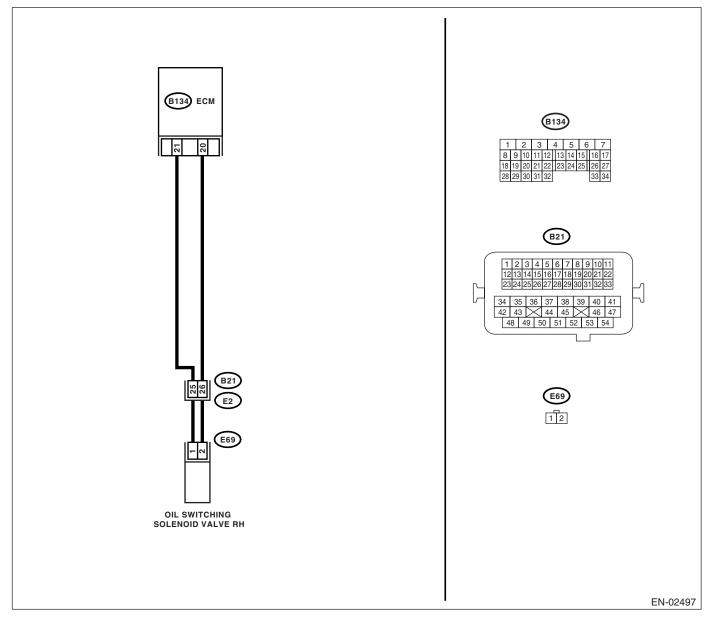
Immediately at fault recognition **TROUBLE SYMPTOM:**

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	 CHECK HARNESS BETWEEN ECM AND OIL SWITCHING SOLENOID VALVE. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and oil switching solenoid valve. 3) Measure the resistance between oil switching solenoid valve and engine ground. Connector & terminal (E69) No. 1 — Engine ground: (E69) No. 2 — Engine ground: 	Is the resistance more than 1 M Ω ?	Go to step 2.	Repair the short circuit between ECM and oil switching solenoid valve connector.
2	 CHECK OIL SWITCHING SOLENOID VALVE. 1) Remove the oil switching solenoid valve connector. 2) Measure the resistance between oil switching solenoid valve terminals. Terminals No. 1 — No. 2: 	Is the resistance 6 — 12 Ω ?	Repair the poor contact in ECM and oil switching solenoid valve.	Replace the oil switching solenoid valve. <ref. to<br="">ME(H6DO)-78, Oil Flow Control Sole- noid Valve.></ref.>

O: DTC P0082 INTAKE VALVE CONTROL SOLENOID CIRCUIT LOW (BANK 2) DTC DETECTING CONDITION:

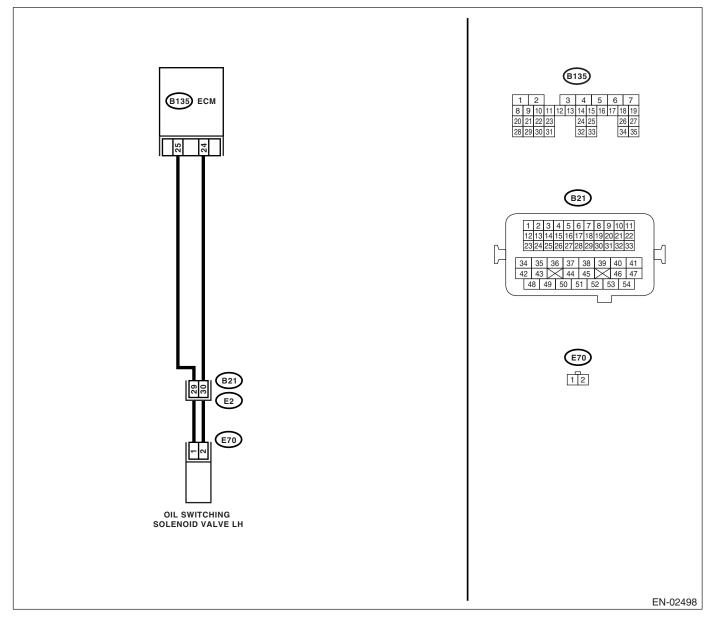
Immediately at fault recognition **TROUBLE SYMPTOM:**

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	 CHECK HARNESS BETWEEN ECM AND OIL SWITCHING SOLENOID VALVE. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and oil switching solenoid valve. 3) Measure the resistance between ECM and oil switching solenoid valve. Connector & terminal (B135) No. 25 — (E70) No. 1: (B135) No. 24 — (E70) No. 2: 	Is the resistance less than 1 Ω?	Go to step 2.	Repair the open circuit in harness between ECM and oil switching sole- noid valve connec- tor. NOTE: In this case repair the following: • Open circuit in harness between ECM and oil switching solenoid valve connector • Poor contact in coupling connector
2	 CHECK OIL SWITCHING SOLENOID VALVE. 1) Remove the oil switching solenoid valve connector. 2) Measure the resistance between oil switching solenoid valve terminals. <i>Terminals</i> <i>No. 1 — No. 2:</i> 	Is the resistance 6 — 12 Ω ?	Repair the poor contact in ECM and oil switching solenoid valve.	Replace the oil switching solenoid valve. <ref. to<br="">ME(H6DO)-78, Oil Flow Control Sole- noid Valve.></ref.>

P: DTC P0083 INTAKE VALVE CONTROL SOLENOID CIRCUIT HIGH (BANK 2) DTC DETECTING CONDITION:

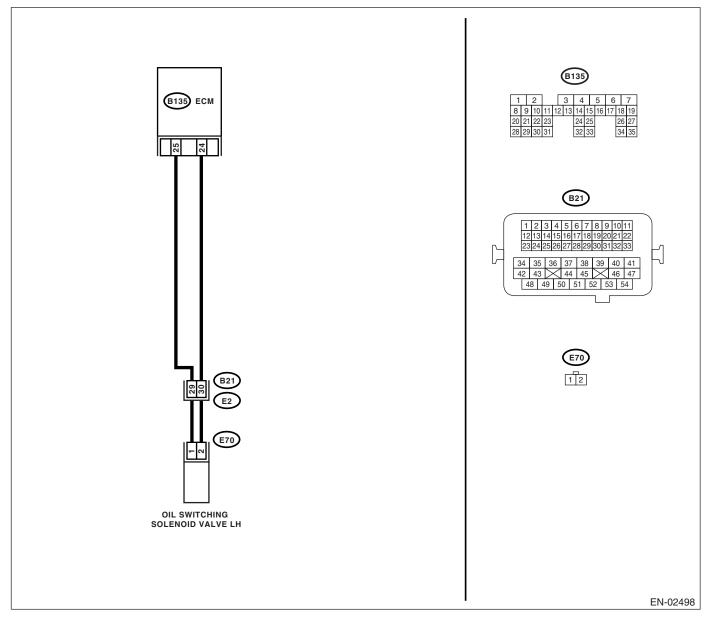
Immediately at fault recognition **TROUBLE SYMPTOM:**

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	 CHECK HARNESS BETWEEN ECM AND OIL SWITCHING SOLENOID VALVE. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and oil switching solenoid valve. 3) Measure the resistance between oil switch- ing solenoid valve and engine ground. Connector & terminal (E70) No. 1 — Engine ground: (E70) No. 2 — Engine ground: 	Is the resistance more than 1 M Ω ?	Go to step 2.	Repair the short circuit between ECM and oil switching solenoid valve connector.
2	 CHECK OIL SWITCHING SOLENOID VALVE. 1) Remove the oil switching solenoid valve connector. 2) Measure the resistance between oil switching solenoid valve terminals. Terminals No. 1 — No. 2: 	Is the resistance 6 — 12 Ω ?	Repair the poor contact in ECM and oil switching solenoid valve.	Replace the oil switching solenoid valve. <ref. to<br="">ME(H6DO)-78, Oil Flow Control Sole- noid Valve.></ref.>

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

DTC DETECTING CONDITION:

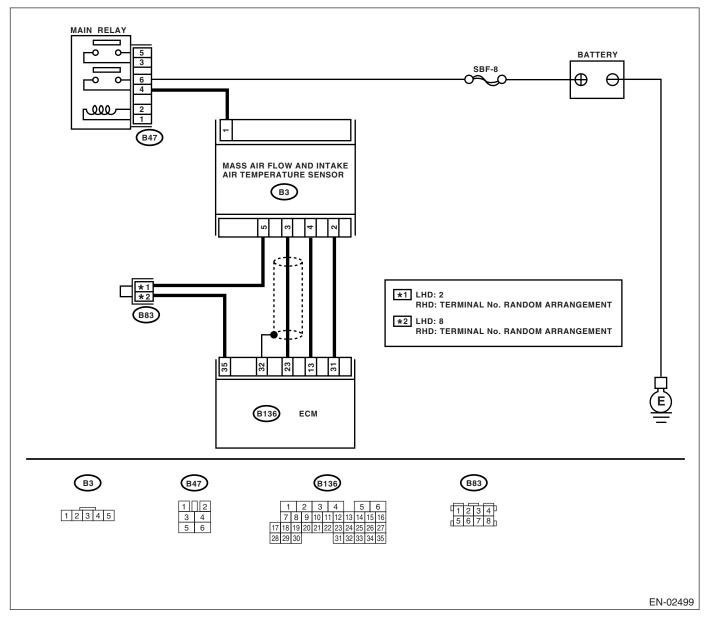
Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the rele- vant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(H6DO)(diag)- 66, List of Diag- nostic Trouble Code (DTC).></ref.>	Replace the mass air flow and intake air temperature sensor. <ref. to<br="">FU(H6DO)-24, Mass Air Flow and Intake Air Temper- ature Sensor.></ref.>
			NOTE: In this case, it is not necessary to inspect DTC P0101.	

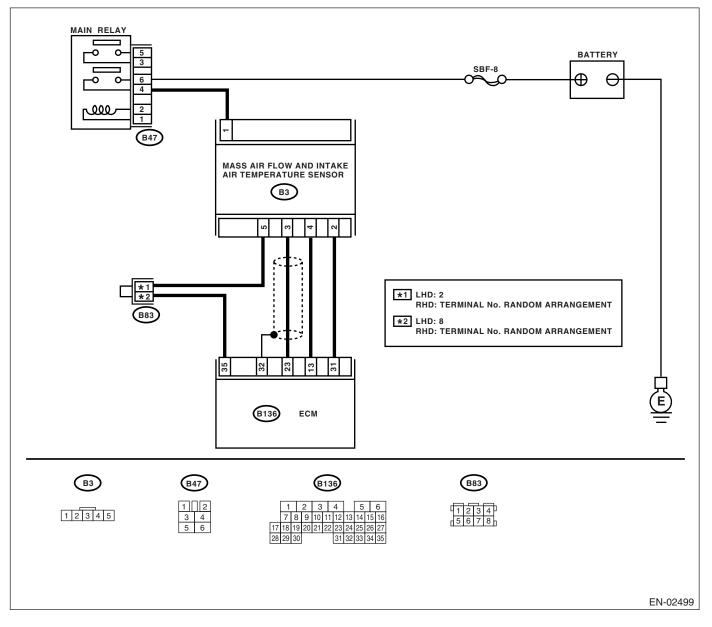
R: DTC P0102 MASS OR VOLUME AIR FLOW CIRCUIT LOW INPUT DTC DETECTING CONDITION:

Immediately at fault recognition **TROUBLE SYMPTOM**:

- Erroneous idling
- Engine stalls.
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.



	-/
ENGINE	(DIAGNOSTICS)

	Step	Check	Yes	No
1	 READ THE DATA CONNECTING SUBARU SELECT MONITOR. 1) Turn the ignition switch to OFF. 2) Connect the Subaru Select Monitor to data 	Is the voltage 0.2 — 4.7 V?	Even if the mal- function indicator light illuminates, the circuit has	Go to step 2.
	 link connector. 3) Turn the ignition switch to ON, and the Subaru Select Monitor switch to ON. 4) Start the engine. 5) Read the voltage of mass air flow sensor using Subaru Select Monitor. NOTE: For detailed operation procedures, refer to the "READ CURRENT DATA SHOWN ON DIS-PLAY FOR ENGINE". <ref. en(h6do)(di-<="" li="" to=""> </ref.>		returned to a nor- mal condition at this time. A tempo- rary poor contact in the connector or harness may be the cause. Repair harness or con- nector in the mass air flow sensor.	
	ag)-25, Subaru Select Monitor.>		NOTE: In this case repair the following: • Open or ground short circuit in har- ness between mass air flow sen- sor and ECM con- nector • Poor contact in mass air flow sen- sor or ECM con- nector	
2	CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground while engine is idling. Connector & terminal (B136) No. 23 (+) — Chassis ground (-):	Is the voltage more than 0.2 V?	Go to step 4.	Go to step 3.
3	CHECK INPUT SIGNAL FOR ECM (USING SUBARU SELECT MONITOR). Measure the voltage between ECM connector and chassis ground while engine is idling.	Does the voltage change by shaking the harness and con- nector of ECM while monitor- ing the value with Subaru Select Monitor?	Repair the poor contact in ECM connector.	Replace the ECM. <ref. to<br="">FU(H6DO)-34, Engine Control Module (ECM).></ref.>
4	 CHECK POWER SUPPLY TO MASS AIR FLOW SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from mass air flow sensor. 3) Turn the ignition switch to ON. 4) Measure voltage between mass air flow sensor connector and chassis ground. Connector & terminal (B3) No. 1 (+) — Chassis ground (-): 	Is the voltage more than 5 V?	Go to step 5 .	Repair the open circuit between mass air flow sen- sor and main relay
5	 CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM and mass air flow sensor connector. Connector & terminal (B136) No. 23 — (B3) No. 3: (B136) No. 31 — (B3) No. 2: (B136) No. 35 — (B3) No. 5: 	Is the resistance less than 1 Ω?	Go to step 6 .	Repair the open circuit between ECM and mass air flow sensor con- nector.

	Step	Check	Yes	No
6	CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW SENSOR CONNECTOR. Measure the resistance of harness between ECM and chassis ground. Connector & terminal (B136) No. 23 — Chassis ground: (B136) No. 31 — Chassis ground: (B136) No. 35 — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 7 .	Repair 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 con- nector.	Replace the mass air flow and intake air temperature sensor. <ref. to<br="">FU(H6DO)-24, Mass Air Flow and Intake Air Temper- ature Sensor.></ref.>

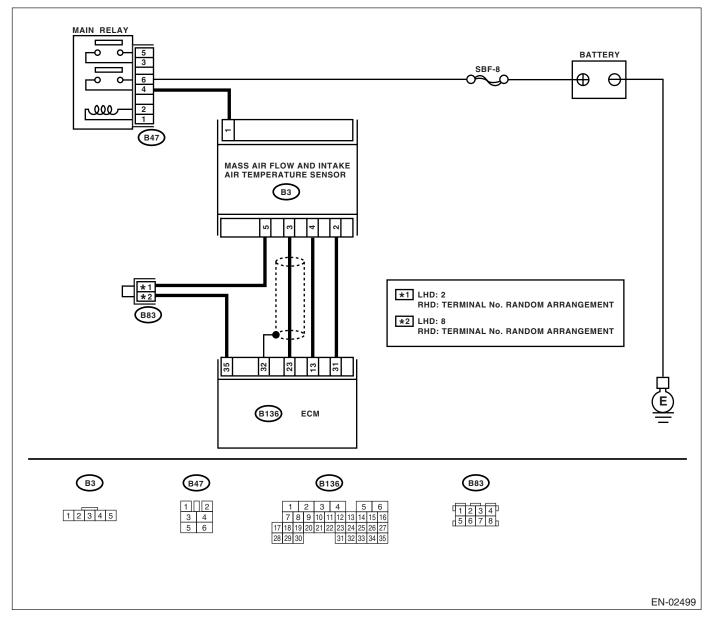
S: DTC P0103 MASS OR VOLUME AIR FLOW CIRCUIT HIGH INPUT

DTC DETECTING CONDITION: Immediately at fault recognition TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.



Check Yes No Step READ THE DATA CONNECTING SUBARU Is the voltage 0.2 - 4.7 V? Even if the mal-Go to step 2. 1 SELECT MONITOR. function indicator 1) Turn the ignition switch to OFF. light illuminates, 2) Connect the Subaru Select Monitor to data the circuit has link connector. returned to a nor-3) Turn the ignition switch to ON, and the Submal condition at aru Select Monitor switch to ON. this time. 4) Start the engine. 5) Read the voltage of mass air flow sensor using Subaru Select Monitor. NOTE: For detailed operation procedures, refer to the "READ CURRENT DATA SHOWN ON DIS-PLAY FOR ENGINE". < Ref. to EN(H6DO)(diag)-25, Subaru Select Monitor.> CHECK HARNESS BETWEEN ECM AND 2 Is the voltage more than 5 V? Repair the battery Go to step 3. MASS AIR FLOW SENSOR CONNECTOR. short circuit in har-1) Turn the ignition switch to OFF. ness between mass air flow sen-2) Disconnect the connector from mass airflow sensor. sor connector and ECM connector. 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 (-): 3 CHECK HARNESS BETWEEN ECM AND Is the resistance less than 1 Replace the mass Repair the open MASS AIR FLOW SENSOR CONNECTOR. $\Omega?$ air flow sensor. circuit in harness <Ref. to 1) Turn the ignition switch to OFF. between mass air FU(H6DO)-24, 2) Disconnect the connector from ECM. flow sensor con-Mass Air Flow and 3) Measure the resistance of harness nector and ECM between ECM connector and mass air flow Intake Air Temperconnector. sensor connector. ature Sensor.> Connector & terminal (B3) No. 2 - (B136) No. 31:

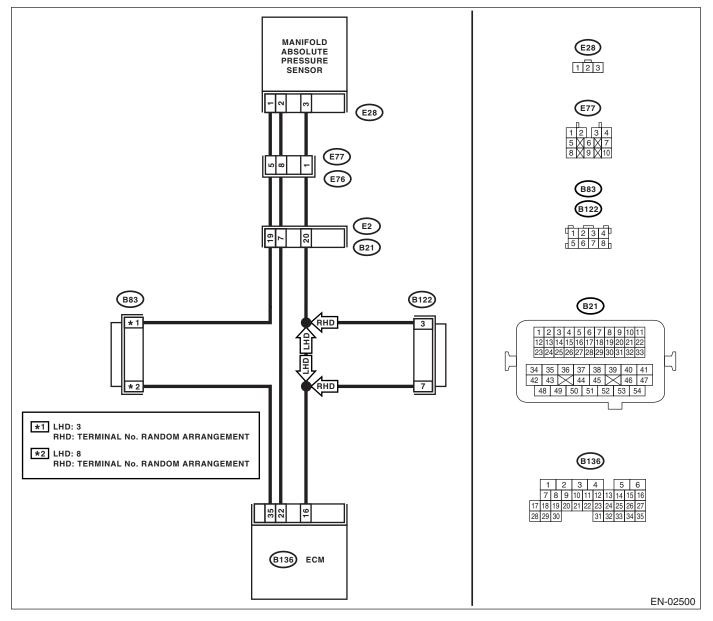
T: DTC P0107 MANIFOLD ABSOLUTE PRESSURE/BAROMETRIC PRESSURE CIRCUIT LOW INPUT

DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	 CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of intake manifold absolute pressure signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: 	Is the measured value less than 13.3 kPa (100 mmHg, 3.94 inHg)?	Go to step 3.	Go to step 2.
	 Subaru Select Monitor For detailed operation procedures, refer to the "READ CURRENT DATA SHOWN ON DIS- PLAY FOR ENGINE". <ref. li="" to<=""> EN(H6DO)(diag)-25, Subaru Select Monitor.> OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual. </ref.>			
2	CHECK POOR CONTACT. Check poor contact in ECM and manifold pres- sure sensor connector.	manifold pressure sensor con- nector?	Repair the poor contact in ECM or manifold pressure sensor connector.	Even if the mal- function indicator light illuminates, the circuit has returned to a nor- mal condition at this time.
3	CHECK OUTPUT SIGNAL FROM ECM. 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 5 .	Go to step 4.
4	CHECK OUTPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B136) No. 16 (+) — Chassis ground (-):	Does the voltage change by shaking the ECM harness and connector?	Repair the poor contact in ECM connector.	Replace the ECM. <ref. to<br="">FU(H6DO)-34, Engine Control Module (ECM).></ref.>
5	CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM and chas- sis ground. Connector & terminal (B136) No. 22 (+) — Chassis ground (-):	Is the voltage less than 0.2 V?	Go to step 7.	Go to step 6 .
6	CHECK INPUT SIGNAL FOR ECM (USING SUBARU SELECT MONITOR). Read the data of atmospheric absolute pres- sure signal using Subaru Select Monitor. NOTE: For detailed operation procedures, refer to the "READ CURRENT DATA SHOWN ON DIS- PLAY FOR ENGINE". <ref. en(h6do)(di-<br="" to="">ag)-25, Subaru Select Monitor.></ref.>	Is the value more than 13.3 kPa (100 mmHg, 3.94 inHg) when shaking the ECM har- ness and connector?	Repair the poor contact in ECM connector.	Go to step 7.
7	CHECK HARNESS BETWEEN ECM AND MANIFOLD ABSOLUTE PRESSURE SEN- SOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the manifold absolute pressure sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between manifold absolute pressure sensor connector and engine ground. Connector & terminal (E28) No. 3 (+) — Engine ground (-):	Is the voltage more than 4.5 V?	Go to step 8 .	Repair the open circuit in harness between ECM and manifold absolute pressure sensor connector.

	Step	Check	Yes	No
8	 CHECK HARNESS BETWEEN ECM AND MANIFOLD ABSOLUTE PRESSURE SEN- SOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM and manifold absolute pressure sensor connector. Connector & terminal (B136) No. 35 — (E28) No. 1: 	Is the resistance less than 1 Ω?	Go to step 9 .	Repair the open circuit in harness between ECM and manifold absolute pressure sensor connector.
9	CHECK POOR CONTACT. Check poor contact in manifold absolute pres- sure sensor connector.	Is there poor contact in mani- fold absolute pressure sensor connector?	Repair the poor contact in mani- fold absolute pres- sure sensor connector.	Replace the mani- fold absolute pres- sure sensor. <ref. to FU(H6DO)-23, Manifold Absolute Pressure Sensor.></ref.

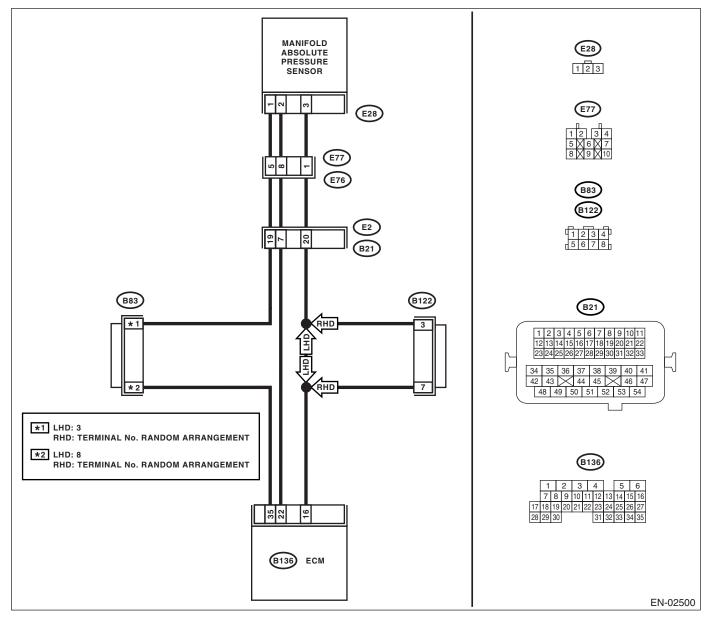
U: DTC P0108 MANIFOLD ABSOLUTE PRESSURE/BAROMETRIC PRESSURE CIRCUIT HIGH INPUT

DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	 CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of intake manifold absolute pressure signal using Subaru Select Monitor or OBD-II general scan tool. 	Is the value more than 119.5 kPa (896.5 mmHg, 35.29 inHg)?	Go to step 10 .	Go to step 2.
2	NOTE: • Subaru Select Monitor For detailed operation procedures, refer to the "READ CURRENT DATA SHOWN ON DIS- PLAY FOR ENGINE". <ref. to<br="">EN(H6DO)(diag)-25, Subaru Select Monitor.> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual. CHECK OUTPUT SIGNAL FROM ECM.</ref.>	Is the voltage more than 4.5 V?	Go to step 4 .	Go to step 3 .
	Measure the voltage between ECM connector and chassis ground. Connector & terminal (B136) No. 16 (+) — Chassis ground (-):			
3	CHECK OUTPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B136) No. 16 (+) — Chassis ground (-):	Does the voltage change by shaking the ECM harness and connector?	Repair the poor contact in ECM connector.	Replace the ECM. <ref. to<br="">FU(H6DO)-34, Engine Control Module (ECM).></ref.>
4	CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B136) No. 22 (+) — Chassis ground (-):	Is the voltage less than 0.2 V?	Go to step 6 .	Go to step 5 .
5	CHECK INPUT SIGNAL FOR ECM (USING SUBARU SELECT MONITOR). Read the data of atmospheric absolute pres- sure signal using Subaru Select Monitor. NOTE: For detailed operation procedures, refer to the "READ CURRENT DATA SHOWN ON DIS- PLAY FOR ENGINE". <ref. en(h6do)(di-<br="" to="">ag)-25, Subaru Select Monitor.></ref.>	Is the value more than 13.3 kPa (100 mmHg, 3.94 inHg) when shaking the ECM har- ness and connector?	Repair the poor contact in ECM connector.	Go to step 6 .
6	CHECK HARNESS BETWEEN ECM AND MANIFOLD ABSOLUTE PRESSURE SEN- SOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the manifold absolute pressure sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between manifold absolute pressure sensor connector and engine ground. Connector & terminal (E28) No. 3 (+) — Engine ground (-):	Is the voltage more than 4.5 V?	Go to step 7.	Repair the open circuit in harness between ECM and manifold absolute pressure sensor connector.
7	CHECK HARNESS BETWEEN ECM AND MANIFOLD ABSOLUTE PRESSURE SEN- SOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM and manifold absolute pressure sensor connector. Connector & terminal (B136) No. 22 — (E28) No. 2:	Is the resistance less than 1 Ω ?	Go to step 8 .	Repair the open circuit in harness between ECM and manifold absolute pressure sensor connector.

	Step	Check	Yes	No
8	CHECK HARNESS BETWEEN ECM AND MANIFOLD ABSOLUTE PRESSURE SEN- SOR CONNECTOR. Measure the resistance of harness between ECM and manifold absolute pressure sensor connector. Connector & terminal (B136) No. 35 — (E28) No. 1:	Is the resistance less than 1 Ω?	Go to step 9 .	Repair the open circuit in harness between ECM and manifold absolute pressure sensor connector.
9	CHECK POOR CONTACT. Check poor contact in manifold absolute pres- sure sensor connector.	Is there poor contact in mani- fold absolute pressure sensor connector?	Repair the poor contact in mani- fold absolute pres- sure sensor connector.	Replace the mani- fold absolute pres- sure sensor. <ref. to FU(H6DO)-23, Manifold Absolute Pressure Sensor.></ref.
10	 CHECK HARNESS BETWEEN ECM AND MANIFOLD ABSOLUTE PRESSURE SEN- SOR CONNECTOR. 1) Turn the ignition switch to OFF, and the Subaru Select Monitor switch to OFF. 2) Disconnect the connector from the manifold absolute pressure sensor. 3) Turn the ignition switch to ON, and the Sub- aru Select Monitor switch to ON. 4) Read the data of intake manifold absolute pressure signal using Subaru Select Monitor. NOTE: For detailed operation procedures, refer to the "READ CURRENT DATA SHOWN ON DIS- PLAY FOR ENGINE". <ref. en(h6do)(di-<br="" to="">ag)-25, Subaru Select Monitor.></ref.> 	Is the value more than 119.5 kPa (896.5 mmHg, 35.29 inHg)?	Repair battery short in harness between ECM and manifold pressure sensor connector.	Replace the mani- fold absolute pres- sure sensor. <ref. to FU(H6DO)-23, Manifold Absolute Pressure Sensor.></ref.

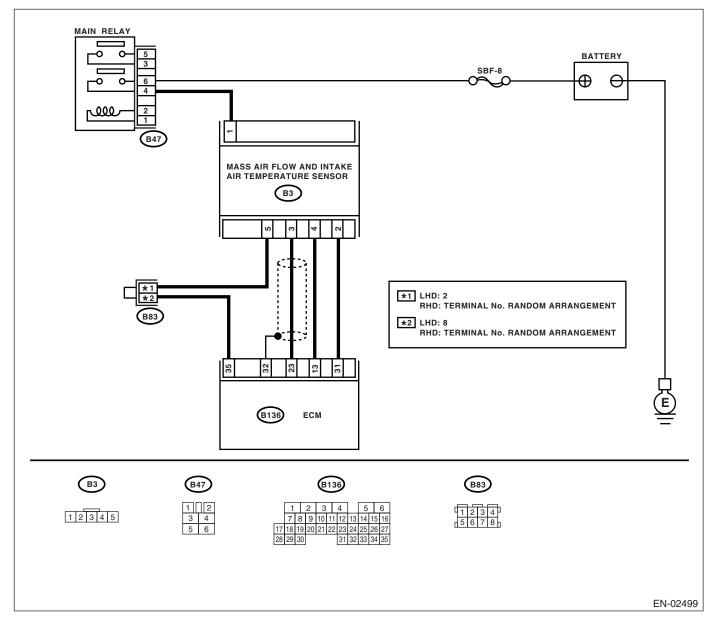
V: DTC P0112 INTAKE AIR TEMPERATURE CIRCUIT LOW INPUT

DTC DETECTING CONDITION: Immediately at fault recognition TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK CURRENT DATA. 1) Start the engine.	Is the intake air temperature more than 120°C (248°F)?	Go to step 2.	Repair the poor contact.
	 Read the data of mass air flow and intake air temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool. 			NOTE: In this case repair the following:
	NOTE: • Subaru Select Monitor			 Poor contact in mass air flow and
	For detailed operation procedures, refer to the "READ CURRENT DATA SHOWN ON DIS- PLAY FOR ENGINE". <ref. td="" to<=""><td></td><td></td><td>intake air tempera- ture sensor • Poor contact in</td></ref.>			intake air tempera- ture sensor • Poor contact in
	EN(H6DO)(diag)-25, Subaru Select Monitor.> • OBD-II general scan tool			 Foor contact in Poor contact in
	For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.			coupling connector 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 mass air flow and intake air temperature sensor. 3) Turn the ignition switch to ON. 4) Read the data of mass air flow and intake air temperature sensor signal using Subaru Select Monitor. 	Is the intake air temperature less than -40°C (-40°F)?	Replace the mass air flow and intake air temperature sensor. <ref. to<br="">FU(H6DO)-24, Mass Air Flow and Intake Air Temper- ature Sensor.></ref.>	Repair the ground short circuit in har- ness between mass air flow and intake air tempera- ture sensor and ECM connector.
	NOTE: For detailed operation procedures, refer to the "READ CURRENT DATA SHOWN ON DIS- PLAY FOR ENGINE". <ref. en(h6do)(di-<br="" to="">ag)-25, Subaru Select Monitor.></ref.>			

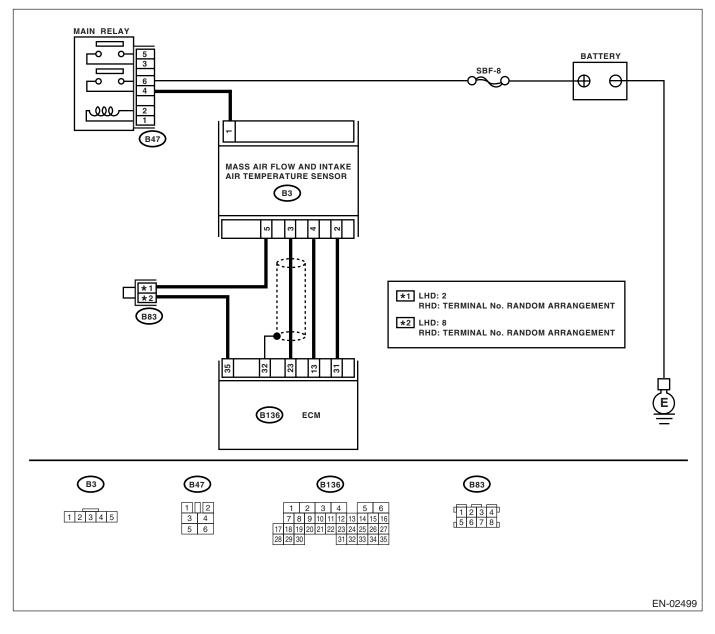
W: DTC P0113 INTAKE AIR TEMPERATURE CIRCUIT HIGH INPUT

DTC DETECTING CONDITION: Immediately at fault recognition TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	 CHECK CURRENT DATA. 1) Start the engine. 2) 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 procedures, refer to the "READ CURRENT DATA SHOWN ON DIS-PLAY FOR ENGINE". <ref. en(h6do)(diag)-25,="" monitor.="" select="" subaru="" to=""></ref.> OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool 	Is the intake air temperature less than -40°C (-40°F)?	Go to step 2 .	Repair the poor contact. NOTE: In this case repair the following: • Poor contact in mass air flow and intake air tempera- ture sensor • Poor contact in ECM • Poor contact in coupling connector • 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 mass air flow and intake air temperature sensor. 3) Measure the voltage between mass air flow and intake air temperature sensor connector and engine ground. Connector & terminal (B3) No. 4 (+) — Engine ground (-): 	Is the voltage more than 10 V?	Repair the battery short circuit in har- ness between mass air flow and intake air tempera- ture sensor and ECM connector.	Go to step 3.
3	CHECK HARNESS BETWEEN MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to ON. 2) Measure the voltage between mass air flow and intake air temperature sensor connector and engine ground. Connector & terminal (B3) No. 4 (+) — Engine ground (-):	Is the voltage more than 10 V?	Repair the battery short circuit in har- ness between mass air flow and intake air tempera- ture sensor and ECM connector.	Go to step 4.
4	CHECK HARNESS BETWEEN MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR. Measure the voltage between mass air flow and intake air temperature sensor connector and engine ground. Connector & terminal (B3) No. 4 (+) — Engine ground (–):	Is the voltage more than 3 V?	Go to step 5 .	Repair the har- ness and connec- tor. NOTE: In this case repair the following: • Open circuit in harness 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 coupling connector • Poor contact in joint connector

Step	Check	Yes	No
 5 CHECK HARNESS BETWEEN MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Measure the resistance of harness between mass air flow and intake air tempera- ture sensor connector and engine ground. <i>Connector & terminal</i> (B3) No. 5 — Engine ground: 	Is the resistance less than 5 Ω?		Repair the har- ness and connec- tor. NOTE: In this case repair the following: • Open circuit in harness between mass air flow and intake air tempera- ture sensor and ECM connector • Poor contact in mass air flow and intake air tempera- ture sensor • Poor contact in ECM • Poor contact in ECM

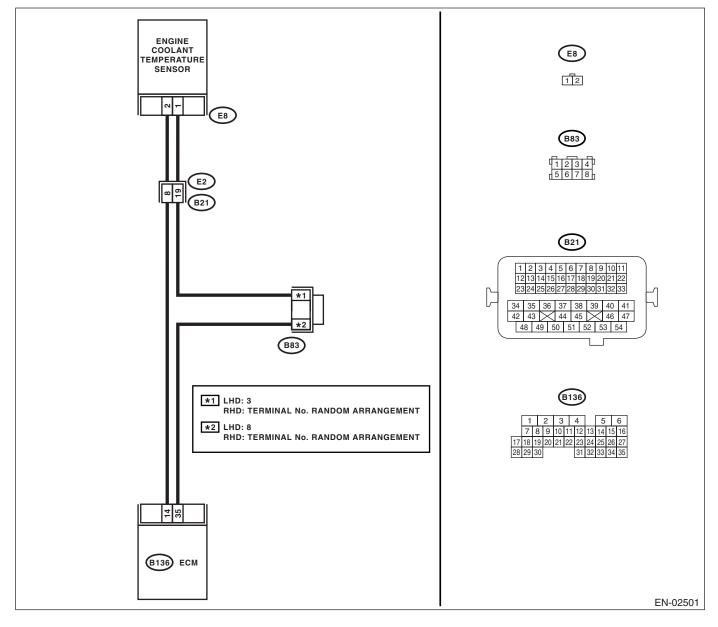
X: DTC P0117 ENGINE COOLANT TEMPERATURE CIRCUIT LOW INPUT DTC DETECTING CONDITION:

Immediately at fault recognition **TROUBLE SYMPTOM:**

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

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	 CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of engine coolant temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedures, refer to the "READ CURRENT DATA SHOWN ON DIS-PLAY FOR ENGINE". <ref. li="" to<=""> EN(H6DO)(diag)-25, Subaru Select Monitor.> OBD-II general scan tool </ref.> For detailed operation procedures, refer to the EN(H6DO)(diag)-25, Subaru Select Monitor.> 	Is engine coolant temperature more than 150°C (302°F)?	Go to step 2.	Repair the poor contact. NOTE: In this case repair the following: • Poor contact in engine coolant temperature sen- sor • Poor contact in ECM • Poor contact in coupling connector
	OBD-II General Scan Tool Operation Manual.			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. 	Is engine coolant temperature less than -40°C (-40°F)?	Replace the engine coolant temperature sen- sor. <ref. to<br="">FU(H6DO)-18, Engine Coolant Temperature Sen- sor.></ref.>	Repair the ground short circuit in har- ness between engine coolant temperature sen- sor and ECM con- nector.
	NOTE: For detailed operation procedures, refer to the "READ CURRENT DATA SHOWN ON DIS- PLAY FOR ENGINE". <ref. en(h6do)(di-<br="" to="">ag)-25, Subaru Select Monitor.></ref.>			

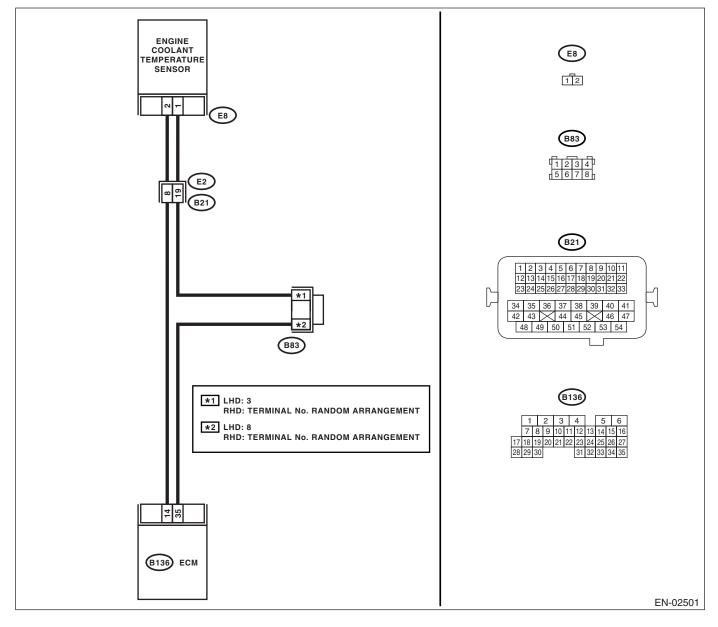
Y: DTC P0118 ENGINE COOLANT TEMPERATURE CIRCUIT HIGH INPUT DTC DETECTING CONDITION:

Immediately at fault recognition **TROUBLE SYMPTOM:**

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

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	 CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of engine coolant temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedures, refer to the "READ CURRENT DATA SHOWN ON DIS-PLAY FOR ENGINE". <ref. en(h6do)(diag)-25,="" monitor.="" select="" subaru="" to=""></ref.> OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool 	Is engine coolant temperature less than -40°C (-40°F)?	Go to step 2 .	Repair the poor contact. NOTE: In this case repair the following: • Poor contact in engine coolant temperature sen- sor • Poor contact in ECM • Poor contact in coupling connector • Poor contact in joint connector
2	CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from the engine coolant temperature sensor. 3) Measure the voltage between engine cool- ant temperature sensor connector and engine ground. Connector & terminal (E8) No. 2 (+) — Engine ground (-):	Is the voltage more than 10 V?	Repair the battery short circuit in har- ness between ECM and engine coolant tempera- ture sensor con- nector.	Go to step 3.
3	CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to ON. 2) Measure the voltage between engine cool- ant temperature sensor connector and engine ground. Connector & terminal (E8) No. 2 (+) — Engine ground (-):	Is the voltage more than 10 V?	Repair the battery short circuit in har- ness between ECM and engine coolant tempera- ture sensor con- nector.	Go to step 4.
4	CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR. Measure the voltage between engine coolant temperature sensor connector and engine ground. Connector & terminal (E8) No. 2 (+) — Engine ground (–):	Is the voltage more than 4 V?	Go to step 5.	Repair the har- ness and connec- tor. NOTE: In this case repair the following: • Open circuit in harness between ECM and engine coolant tempera- ture sensor con- nector • Poor contact in engine coolant temperature sen- sor connector • Poor contact in ECM connector • Poor contact in coupling connector • Poor contact in joint connector

Step	Check	Yes	No
 5 CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Measure the resistance of harness between engine coolant temperature sensor connector and engine ground. Connector & terminal (E8) No. 1 — Engine ground: 	Is the resistance less than 5 Ω?	Replace the engine coolant temperature sen- sor. <ref. to<br="">FU(H6DO)-18, Engine Coolant Temperature Sen- sor.></ref.>	Repair the har- ness and connec- tor. NOTE: In this case repair the following: • Open circuit in harness between ECM and engine coolant tempera- ture sensor con- nector • Poor contact in engine coolant temperature sen- sor connector • Poor contact in ECM connector • Poor contact in coupling connector • Poor contact in coupling connector

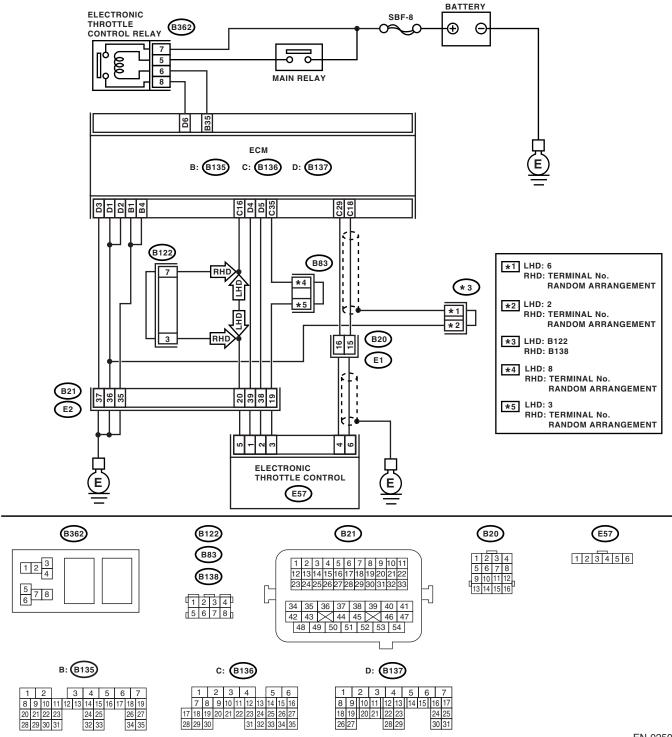
Z: DTC P0122 THROTTLE/PEDAL POSITION SENSOR/SWITCH "A" CIRCUIT LOW INPUT

DTC DETECTING CONDITION: Immediately at fault recognition TROUBLE SYMPTOM:

• Erroneous idling

- Engine stalls.
- Poor driving performance

WIRING DIAGRAM:



EN-02502

EN(H6DO)(diag)-129

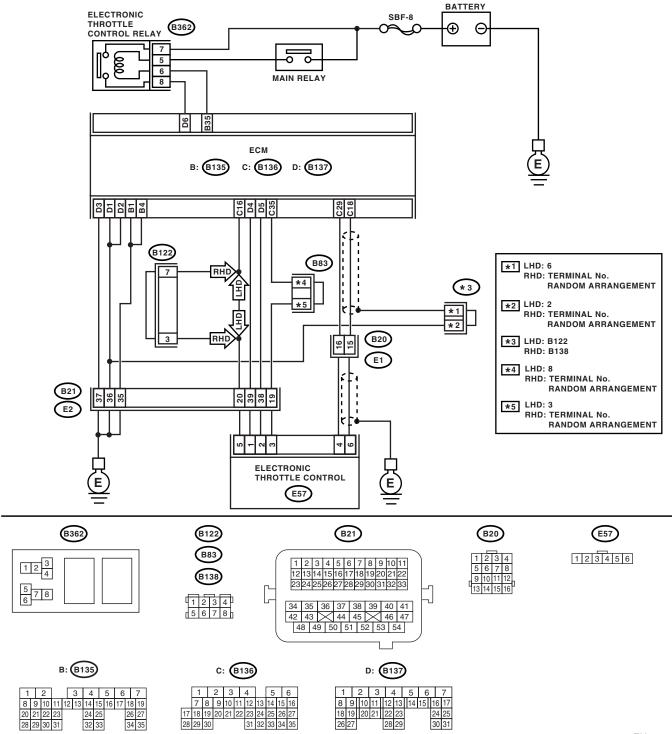
	Step	Check	Yes	No
1	 CHECK SENSOR OUTPUT. 1) Turn the ignition switch to ON. 2) Read the data of main throttle sensor signal using Subaru Select Monitor. 	Is the voltage more than 0.4 V?	Go to step 2.	Go to step 3.
2	CHECK POOR CONTACT. Check the poor contact in connector between ECM and electronic throttle 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 connector from the electronic throttle control. 4) Measure the resistance between ECM connector and electronic throttle control connector. Connector & terminal (E136) No. 18 — (E57) No. 6: (E136) No. 16 — (E57) No. 5: 	Is the resistance less than 1 Ω?	Go to step 4.	Repair the open circuit of harness connector.
4	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. Measure the resistance between ECM connec- tor and chassis ground. Connector & terminal (B136) No. 18 — Chassis ground: (B136) No. 16 — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 5 .	Repair the chas- sis 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. to FU(H6DO)-34, Engine Control Module (ECM).></ref.
6	 CHECK SHORT CIRCUIT IN ECM. 1) Turn the ignition switch to OFF. 2) Measure the resistance between electronic throttle control connector and engine ground. <i>Connector & terminal</i> (E57) No. 6 — Engine ground: 	Is the resistance more than 10 Ω ?	Repair the poor contact in elec- tronic throttle con- trol connector. Replace the accel- erator position sensor if defective.	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. to FU(H6DO)-34, Engine Control Module (ECM).></ref.

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

DTC DETECTING CONDITION: Immediately at fault recognition TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

WIRING DIAGRAM:



EN(H6DO)(diag)-131

	Step	Check	Yes	No
1	 CHECK SENSOR OUTPUT. 1) Turn the ignition switch to ON. 2) Read the data of main throttle sensor signal using Subaru Select Monitor. 	Is the voltage less than 4.63 V?	Go to step 2.	Go to step 3.
2	CHECK POOR CONTACT. Check 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 connector from the electronic throttle control. 4) Measure the resistance between ECM connector and electronic throttle control connector. Connector & terminal (B136) No. 18 — (E57) No. 6: (B136) No. 35 — (E57) No. 3: 	Is the resistance less than 1 Ω?	Go to step 4.	Repair the open circuit of harness connector.
4	 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Connect the ECM connector. 2) Measure the resistance between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 3 — Engine ground: 	Is the resistance less than 1 Ω?	Go to step 5.	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. to FU(H6DO)-34, Engine Control Module (ECM).></ref.
5	CHECK SENSOR OUTPUT POWER SUP- PLY. Measure the voltage between electronic throt- tle control connector and engine ground. Connector & terminal (E57) No. 6 (+) — Engine ground (–):	Is the voltage less than 10 V?	Go to step 6 .	Repair the battery short circuit in har- ness between ECM connector and electronic throttle control connector.
6	 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connectors. Connector & terminal (B136) No. 18 — (B136) No. 16: 	Is the resistance more than 1 $M\Omega$?	Repair the poor contact in harness. Repair the elec- tronic throttle con- trol.	Repair the short circuit to sensor power supply.

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

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

Engine would not return to idling.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.

	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the rele- vant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(H6DO)(diag)- 66, List of Diag- nostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0125.</ref.>	
2	CHECK TIRE SIZE.	Is the tire same size as speci- fied tire and one same size as other three wheels?	Go to step 3.	Replace the tire.
3	 CHECK ENGINE COOLANT. Check the following items: Amount of engine coolant Coolant freeze Contamination of engine coolant 	Is the engine coolant normal?	Go to step 4.	Fill or replace the engine coolant. <ref. to<br="">CO(H6DO)-9, INSPECTION, Engine Coolant.></ref.>
4	CHECK THERMOSTAT.	Does the thermostat remain opened?	Replace the ther- mostat. <ref. to<br="">CO(H6DO)-12, Thermostat.></ref.>	Replace the engine coolant temperature sen- sor. <ref. to<br="">FU(H6DO)-18, Engine Coolant Temperature Sen- sor.></ref.>

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

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>. WIRING DIAGRAM:

MAIN RELAY BATTERY SBF-6 ο 0 6 4 Ð Θ -0 o 5 3 8 لكلكم B22 E3 2 1 FRONT FRONT (B47 OXYGEN OXYGEN (A/F) (A/F) SENSOR LH SENSOR RH (E24) (E47) E3 B22 뒫 A25 A2 A3 **426** A34 A27 A: (B134) B: (B135) ECM A4 A5 A6 A7 B21 E2 E47 E24 (B47) A: (B134) B: (B135) (B21) 1 2 3 4 2 1 3 4 5 6 7 3 4 5 6 7 1 2 1 2 3 4 5 6 7 8 9 10 11 3 4 5 6 10 11 12 13 14 15 16 17 8 9 10 11 12 13 14 15 16 17 18 19 8 9 5 16 17 18 1

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EN(H6DO)(diag)-134

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(B22)

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	Step	Check	Yes	No
1	 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNEC- TOR. 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 chassis ground. Connector & terminal (B134) No. 26 — Chassis ground: (B134) No. 33 — Chassis ground: 	Is the resistance more than 1 M Ω ?	Replace the front oxygen (A/F) sen- sor. <ref. to<br="">FU(H6DO)-30, Front Oxygen (A/ F) Sensor.></ref.>	Repair the ground short circuit in har- ness between ECM and front oxygen (A/F) sen- sor connector.

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

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>. WIRING DIAGRAM:

MAIN RELAY BATTERY SBF-6 ο 0 6 4 Ð Θ -0 o 5 3 8 لكلكم B22 E3 2 1 FRONT FRONT (В47 OXYGEN OXYGEN (A/F) (A/F) SENSOR LH SENSOR RH (E24) (E47) E3 B22 뒫 A25 A2 A3 **426** A34 A27 A: (B134) B: (B135) ECM A4 A5 A6 A7 B21 E2 E47 E24 (B47) A: (B134) B: (B135) (B21) 1 2 3 4 2 1 3 4 5 6 7 3 4 5 6 7 1 2 1 2 3 4 5 6 7 8 9 10 11 3 4 5 6 10 11 12 13 14 15 16 17 8 9 10 11 12 13 14 15 16 17 18 19 8 9 5 16 17 18 1

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EN(H6DO)(diag)-136

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18 19 20 21 22 23 24 25 26 27

33 34

28 29 30 31 32

(B22)

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	Step	Check	Yes	No
1	 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNEC- TOR. 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(H6DO)-30, Front Oxygen (A/ F) Sensor.></ref.>	Repair the battery short circuit in har- ness between ECM and front oxygen (A/F) sen- sor connector.

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

Two consecutive driving cycles with fault

(B22)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>. WIRING DIAGRAM:

MAIN RELAY BATTERY SBF-6 ο 0 6 4 Ð Θ -0 o 5 3 8 لكلكم B22 E3 2 1 FRONT FRONT (В47 OXYGEN OXYGEN (A/F) (A/F) SENSOR LH SENSOR RH (E24) (E47) E3 B22 뒫 A25 A2 A3 **426** A34 A27 A: (B134) B: (B135) ECM A4 A5 A6 A7 B21 E2 E47 E24 (B47) A: (B134) B: (B135) (B21) 1 2 3 4 1

2 3 4 5 6 7 3 4 5 6 7 1 2 1 2 3 4 5 6 7 8 9 10 11 3 4 5 6 10 11 12 13 14 15 16 17 8 9 14 15 16 17 18 19 8 9 10 11 12 13 5 16 17 18 1 18 19 20 21 22 23 24 25 26 27 26 27 34 35 24 2 2 33 23 24 25 26 27 28 29 30 31 32 33 34 32 33 28 29 30 31 34 35 36 37 38 39 40 41
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EN-02495

EN(H6DO)(diag)-138

	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the DTC using "List of Diag- nostic Trouble Code (DTC)". <ref. to<br="">EN(H6DO)(diag)- 66, List of Diag- nostic Trouble Code (DTC).> 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 exhaust system.	Replace the front oxygen (A/F) sen- sor. <ref. to<br="">FU(H6DO)-30, Front Oxygen (A/ F) Sensor.></ref.>

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

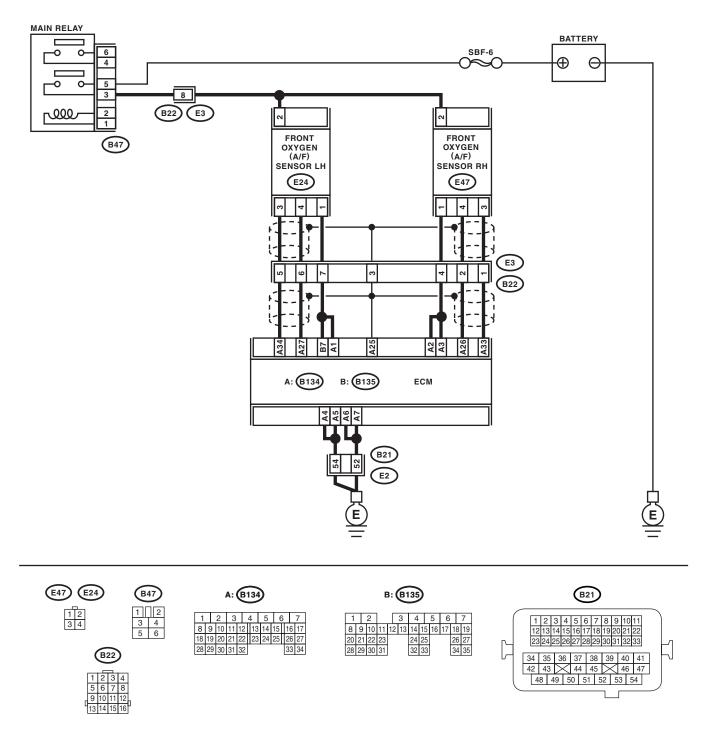
DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:



EN-02495

	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 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 — (E47) No. 4: (B134) No. 33 — (E47) No. 3: 	Is the resistance less than 1 Ω?	Go to step 2.	Repair the har- ness and connec- tor. NOTE: In this case repair the following: • Open circuit in harness between ECM and front oxygen (A/F) sen- sor connector • Poor contact in front oxygen (A/F) sensor connector • Poor contact in ECM connector
2	CHECK POOR CONTACT. Check poor contact in front oxygen (A/F) sen- sor connector.	Is there poor contact in front oxygen (A/F) sensor connec- tor?	Repair the poor contact in front oxygen (A/F) sen- sor connector.	Replace the front oxygen (A/F) sen- sor. <ref. to<br="">FU(H6DO)-30, Front Oxygen (A/ F) Sensor.></ref.>

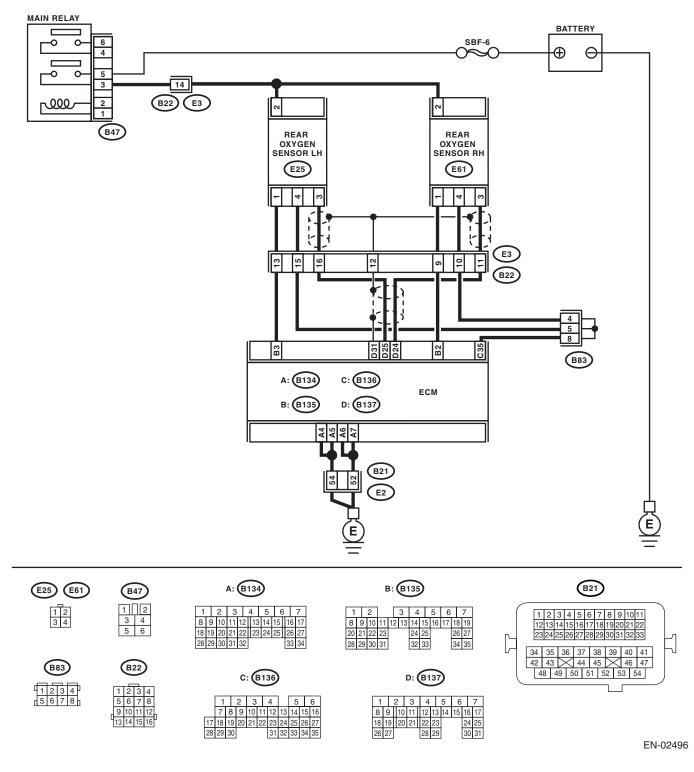
AG:DTC P0137 O2 SENSOR CIRCUIT LOW VOLTAGE (BANK 1 SENSOR 2) DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the DTC	Go to step 2.
		using "List of Diag- nostic Trouble Code (DTC)". <ref. to<br="">EN(H6DO)(diag)- 66, List of Diag- nostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0137.</ref.>	GO 10 316p 2.
 2 CHECK REAR OXYGEN SENSOR DATA. Warm-up the engine until engine coolant temperature is above 70°C (158°F), and keep the engine speed at 5,000 rpm. Read the data of rear oxygen sensor signal using Subaru Select Monitor. NOTE: For detailed operation procedures, refer to the "READ CURRENT DATA SHOWN ON DIS-PLAY FOR ENGINE". <ref. en(h6do)(diag)-25,="" monitor.="" select="" subaru="" to=""></ref.> 		Go to step 5.	Go to step 3.
 3 CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR. Turn the ignition switch to OFF. Disconnect the connector from ECM and rear oxygen sensor. Measure the resistance in harness between ECM and rear oxygen sensor con- nector. Connector & terminal (B137) No. 24 — (E61) No. 3: (B136) No. 35 — (E61) No. 4: 	Is the resistance more than 3 Ω ?	Repair the open circuit in harness between ECM and rear oxygen sen- sor connector.	Go to step 4.
 4 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. <i>Connector & terminal</i> (E61) No. 3 (+) — Chassis ground (-): 	Is the voltage 0.2 — 0.5 V?	Replace the rear oxygen sensor. <ref. to<br="">FU(H6DO)-32, Rear Oxygen Sen- sor.></ref.>	Repair the har- ness and connec- tor. NOTE: In this case repair the following: • Open circuit in harness between rear oxygen sen- sor and ECM con- nector • Poor contact in rear oxygen sen- sor connector • Poor contact in ECM connector

	Step	Check	Yes	No
5	CHECK EXHAUST SYSTEM. Check exhaust system parts.	Is there any fault in exhaust system?	Repair or replace the faulty part.	Replace the rear oxygen sensor.
	 NOTE: Check the following items: Loose part of exhaust system and incomplete installation Damage (crack, hole etc.) of parts Looseness and ill fitting of parts between front oxygen (A/F) sensor and rear oxygen sensor 			<ref. to<br="">FU(H6DO)-32, Rear Oxygen Sen- sor.></ref.>

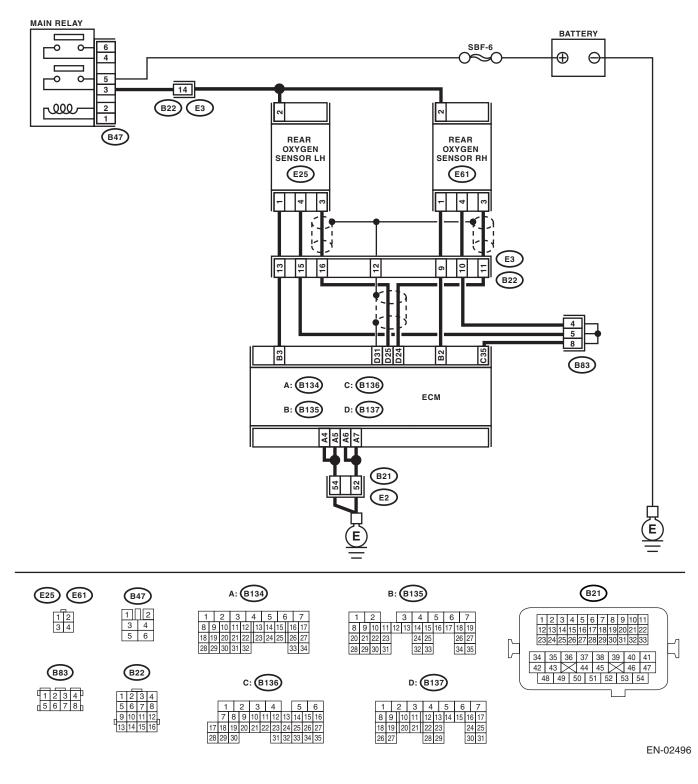
AH:DTC P0138 O2 SENSOR CIRCUIT HIGH VOLTAGE (BANK 1 SENSOR 2) DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:



Step	Check	Yes	No
CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the DTC using "List of Diag- nostic Trouble Code (DTC)". <ref. to<br="">EN(H6DO)(diag)- 66, List of Diag- nostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0138.</ref.>	Go to step 2.
CHECK REAR OXYGEN SENSOR DATA. 1) Warm-up the engine until engine coolant temperature is above 70°C (158°F), and lower the engine speed rapidly from 5,000 rpm. 2) Read the data of rear oxygen sensor signal using Subaru Select Monitor. NOTE: For detailed operation procedures, refer to the "READ CURRENT DATA SHOWN ON DIS- PLAY FOR ENGINE". <ref. en(h6do)(di-<br="" to="">ag)-25, Subaru Select Monitor.></ref.>		Go to step 5 .	Go to step 3.
 CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and rear oxygen sensor. 3) Measure the resistance in harness between ECM and rear oxygen sensor con- nector. Connector & terminal (B137) No. 24 — (E61) No. 3: (B136) No. 35 — (E61) No. 4: 	Is the resistance more than 3 Ω ?	Repair the open circuit in harness between ECM and rear oxygen sen- sor connector.	Go to step 4.
 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 (E61) No. 3 (+) — Chassis ground (-): 	Is the voltage 0.2 — 0.5 V?	Replace the rear oxygen sensor. <ref. to<br="">FU(H6DO)-32, Rear Oxygen Sen- sor.></ref.>	Repair the har- ness and connec- tor. NOTE: In this case repair the following: • Open circuit in harness between rear oxygen sen- sor and ECM con- nector • Poor contact in rear oxygen sen- sor connector • Poor contact in ECM connector

	Step	Check	Yes	No
5	CHECK EXHAUST SYSTEM. Check exhaust system parts.	Is there any fault in exhaust system?	Repair or replace the faulty part.	Replace the rear oxygen sensor.
	 NOTE: Check the following items: Loose part of exhaust system and incomplete installation Damage (crack, hole etc.) of parts Looseness and ill fitting of parts between front oxygen (A/F) sensor and rear oxygen sensor 			<ref. to<br="">FU(H6DO)-32, Rear Oxygen Sen- sor.></ref.>

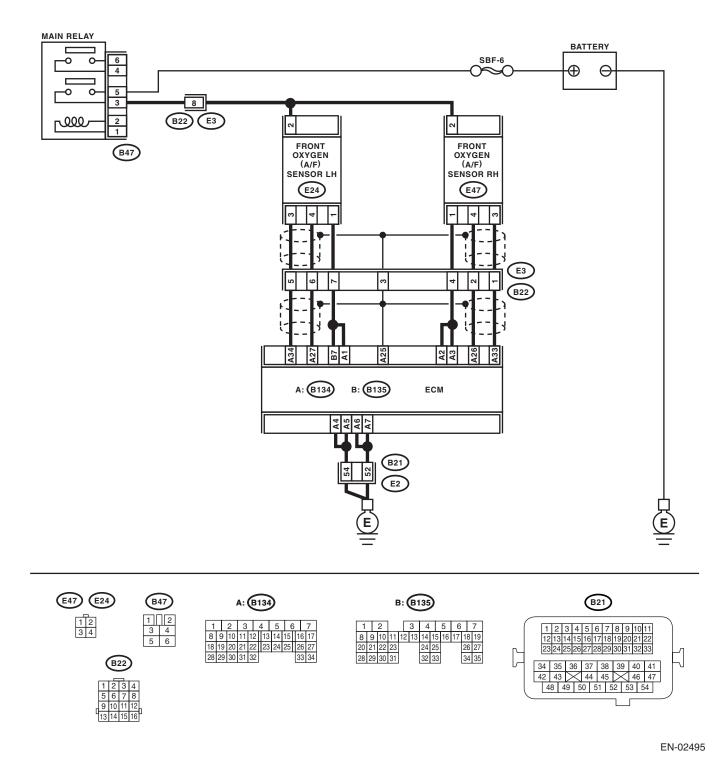
AI: DTC P0151 O2 SENSOR CIRCUIT LOW VOLTAGE (BANK 2 SENSOR 1)

DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>. WIRING DIAGRAM:



	Step	Check	Yes	No
1	 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNEC- TOR. 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 chassis ground. Connector & terminal (B134) No. 27 — Chassis ground: (B134) No. 34 — Chassis ground: 	Is the resistance more than 1 MΩ?	Replace the front oxygen (A/F) sen- sor. <ref. to<br="">FU(H6DO)-30, Front Oxygen (A/ F) Sensor.></ref.>	Repair the ground short circuit in har- ness between ECM and front oxygen (A/F) sen- sor connector.

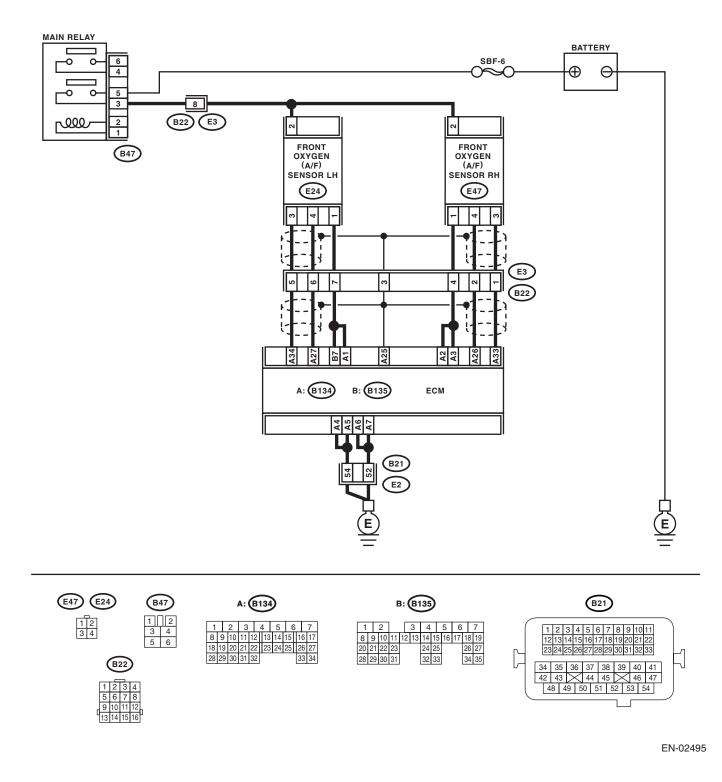
AJ:DTC P0152 O2 SENSOR CIRCUIT HIGH VOLTAGE (BANK 2 SENSOR 1)

DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>. WIRING DIAGRAM:



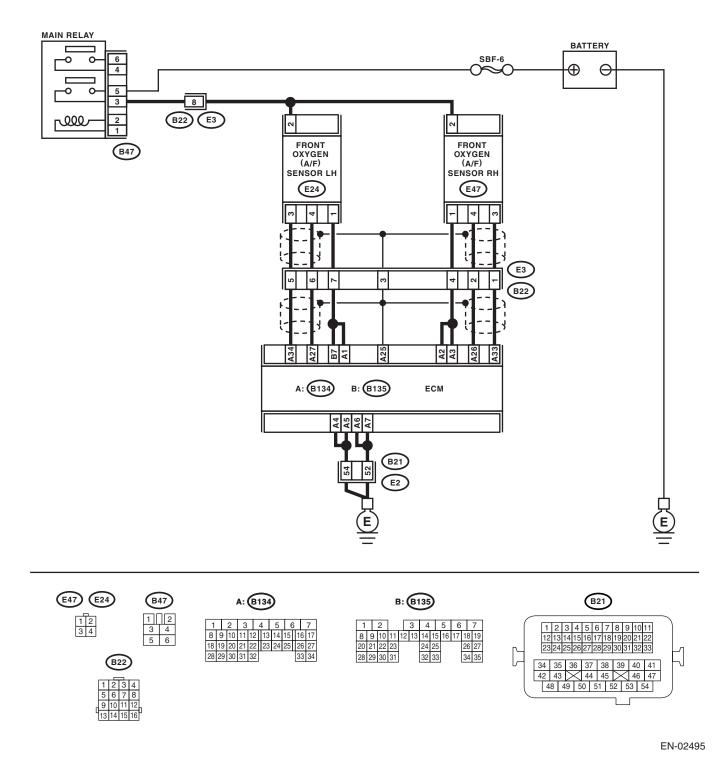
Step	Check	Yes	No
 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNEC- TOR. 1) Turn the ignition switch to ON. 2) Disconnect the connector from front oxygen (A/F) sensor. 3) Measure the voltage of harness between ECM connector and chassis ground. Connector & terminal (B134) No. 27 (+) — Chassis ground (-): (B134) No. 34 (+) — Chassis ground (-): 	Is the voltage more than 8 V?	oxygen (A/F) sen- sor. <ref. th="" to<=""><th>Repair the battery short circuit in har- ness between ECM and front oxygen (A/F) sen- sor connector.</th></ref.>	Repair the battery short circuit in har- ness between ECM and front oxygen (A/F) sen- sor connector.

AK:DTC P0153 O2 SENSOR CIRCUIT SLOW RESPONSE (BANK 2 SENSOR 1) DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>. WIRING DIAGRAM:



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the DTC using "List of Diag- nostic Trouble Code (DTC)". <ref. to<br="">EN(H6DO)(diag)- 66, List of Diag- nostic Trouble Code (DTC).> 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 exhaust system.	Replace the front oxygen (A/F) sen- sor. <ref. to<br="">FU(H6DO)-30, Front Oxygen (A/ F) Sensor.></ref.>

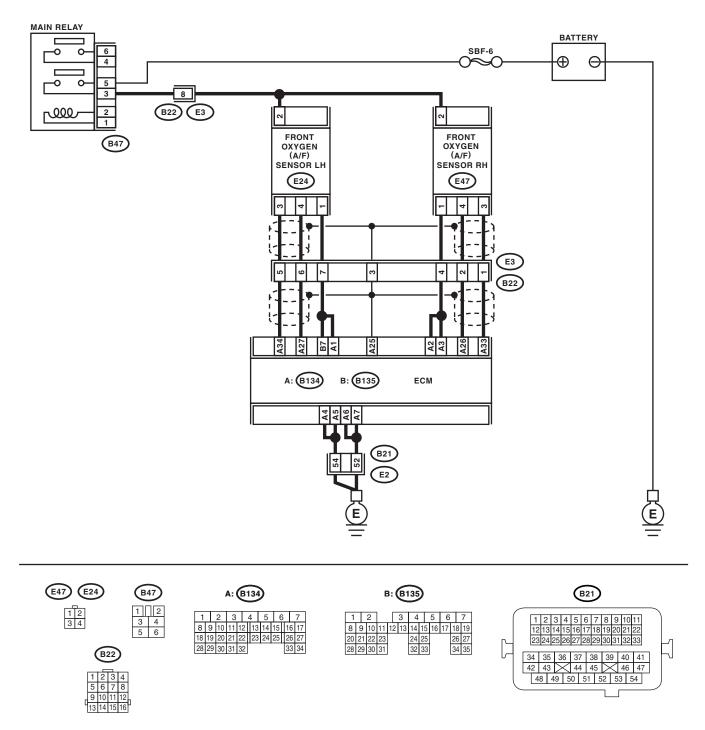
AL:DTC P0154 O2 SENSOR CIRCUIT NO ACTIVITY DETECTED (BANK 2 SEN-SOR 1)

DTC DETECTING CONDITION: Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:



EN-02495

	Step	Check	Yes	No
1	 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNEC- TOR. 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. 27 — (E24) No. 4: (B134) No. 34 — (E24) No. 3: 	Is the resistance less than 1 Ω?	Go to step 2.	Repair the har- ness and connec- tor. NOTE: In this case repair the following: • Open circuit in harness between ECM and front oxygen (A/F) sen- sor connector • Poor contact in front oxygen (A/F) sensor connector • Poor contact in ECM connector
2	CHECK POOR CONTACT. Check poor contact in front oxygen (A/F) sen- sor connector.	Is there poor contact in front oxygen (A/F) sensor connec- tor?	Repair the poor contact in front oxygen (A/F) sen- sor connector.	Replace the front oxygen (A/F) sen- sor. <ref. to<br="">FU(H6DO)-30, Front Oxygen (A/ F) Sensor.></ref.>

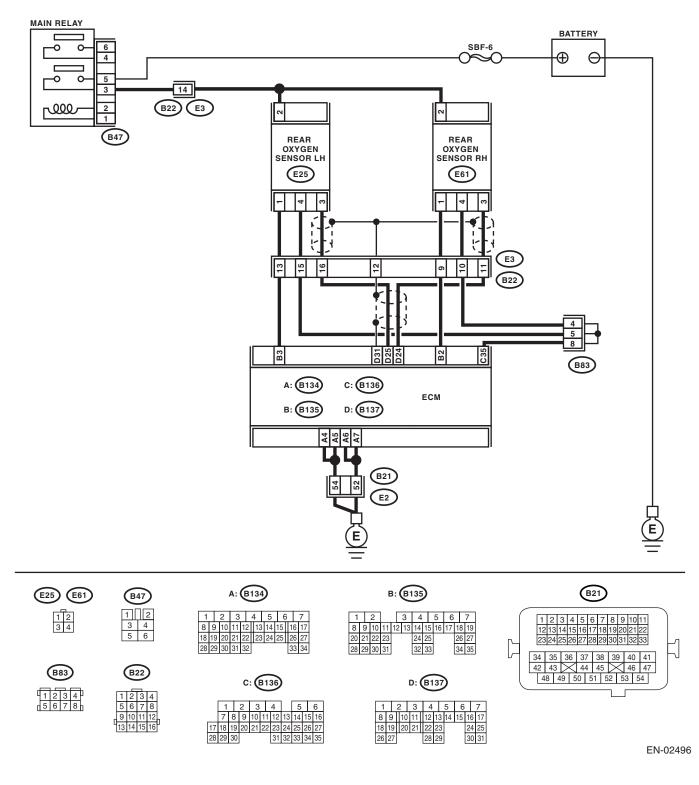
AM:DTC P0157 O2 SENSOR CIRCUIT LOW VOLTAGE (BANK 2 SENSOR 2) DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:



Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the DTC using "List of Diag- nostic Trouble Code (DTC)". <ref. to<br="">EN(H6DO)(diag)- 66, List of Diag- nostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0137.</ref.>	Go to step 2.
 2 CHECK REAR OXYGEN SENSOR DATA. Warm-up the engine until engine coolant temperature is above 70°C (158°F), and kee the engine speed at 5,000 rpm. Read the data of rear oxygen sensor sign using Subaru Select Monitor. NOTE: For detailed operation procedures, refer to t "READ CURRENT DATA SHOWN ON DI PLAY FOR ENGINE". <ref. en(h6do)(ag)-25,="" monitor.="" select="" subaru="" to=""></ref.> 	al he S-	Go to step 5 .	Go to step 3.
 3 CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and rear oxygen sensor. 3) Measure the resistance in harness between ECM and rear oxygen sensor con- nector. Connector & terminal (B137) No. 25 — (E25) No. 3: (B136) No. 35 — (E25) No. 4: 	Is the resistance more than 3 Ω?	Repair the open circuit in harness between ECM and rear oxygen sen- sor connector.	Go to step 4.
 CHECK HARNESS BETWEEN REAR OXY GEN SENSOR AND ECM CONNECTOR. Turn the ignition switch to OFF. Disconnect the connector from rear oxyge sensor. Turn the ignition switch to ON. Measure the voltage between rear oxyge sensor harness connector and chassis grour Connector & terminal (E25) No. 3 (+) — Chassis ground (-): 	n	Replace the rear oxygen sensor. <ref. to<br="">FU(H6DO)-32, Rear Oxygen Sen- sor.></ref.>	Repair the har- ness and connec- tor. NOTE: In this case repair the following: • Open circuit in harness between rear oxygen sen- sor and ECM con- nector • Poor contact in rear oxygen sen- sor connector • Poor contact in ECM connector

	Step	Check	Yes	No
5	CHECK EXHAUST SYSTEM. Check exhaust system parts.	Is there any fault in exhaust system?	Repair or replace the faulty part.	Replace the rear oxygen sensor.
	 NOTE: Check the following items: Loose part of exhaust system and incomplete installation Damage (crack, hole etc.) of parts Looseness and ill fitting of parts between front oxygen (A/F) sensor and rear oxygen sensor 			<ref. to<br="">FU(H6DO)-32, Rear Oxygen Sen- sor.></ref.>

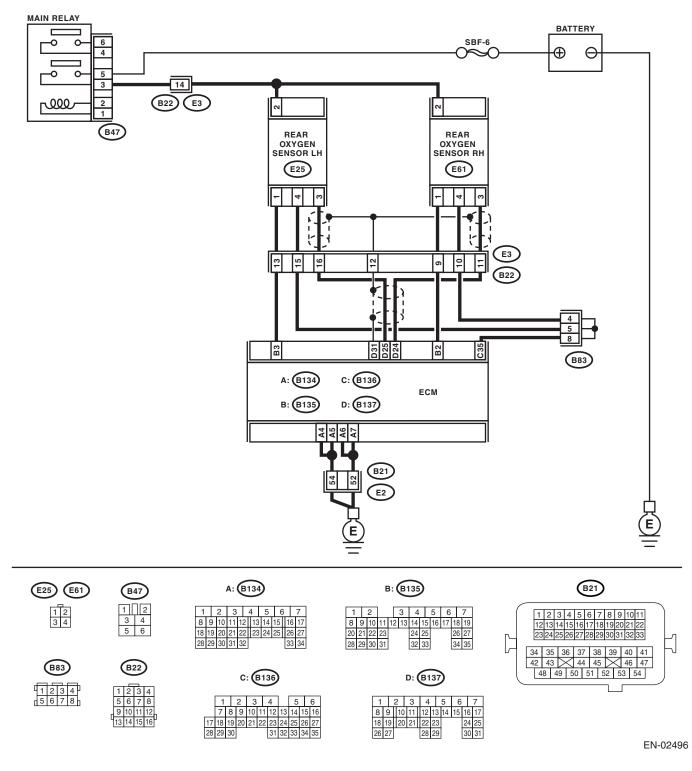
AN:DTC P0158 O2 SENSOR CIRCUIT HIGH VOLTAGE (BANK 2 SENSOR 2) DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the DTC	Go to step 2.
		using "List of Diag- nostic Trouble Code (DTC)". <ref. to<br="">EN(H6DO)(diag)- 66, List of Diag- nostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0138.</ref.>	
 2 CHECK REAR OXYGEN SENSOR DATA. Warm-up the engine until engine coolant temperature is above 70°C (158°F), and lower the engine speed rapidly from 5,000 rpm. Read the data of rear oxygen sensor signal using Subaru Select Monitor. NOTE: For detailed operation procedures, refer to the "READ CURRENT DATA SHOWN ON DIS-PLAY FOR ENGINE". <ref. en(h6do)(diag)-25,="" monitor.="" select="" subaru="" to=""></ref.> 		Go to step 5 .	Go to step 3 .
 3 CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and rear oxygen sensor. 3) Measure the resistance in harness between ECM and rear oxygen sensor con- nector. Connector & terminal (B137) No. 25 — (E25) No. 3: (B136) No. 35 — (E25) No. 4: 	Is the resistance more than 3 Ω?	Repair the open circuit in harness between ECM and rear oxygen sen- sor connector.	Go to step 4 .
 4 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. <i>Connector & terminal</i> (E25) No. 3 (+) — Chassis ground (-): 	Is the voltage 0.2 — 0.5 V?	Replace the rear oxygen sensor. <ref. to<br="">FU(H6DO)-32, Rear Oxygen Sen- sor.></ref.>	Repair the har- ness and connec- tor. NOTE: In this case repair the following: • Open circuit in harness between rear oxygen sen- sor and ECM con- nector • Poor contact in rear oxygen sen- sor connector • Poor contact in ECM connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

	Step	Check	Yes	No
5	CHECK EXHAUST SYSTEM. Check exhaust system parts.	Is there any fault in exhaust system?	Repair or replace the faulty part.	Replace the rear oxygen sensor.
	 NOTE: Check the following items: Loose part of exhaust system and incomplete installation Damage (crack, hole etc.) of parts Looseness and ill fitting of parts between front oxygen (A/F) sensor and rear oxygen sensor 			<ref. to<br="">FU(H6DO)-32, Rear Oxygen Sen sor.></ref.>

AO:DTC P0171 SYSTEM TOO LEAN (BANK 1)

Refer to DTC P0175 for diagnostic procedure. <Ref. to EN(H6DO)(diag)-164, DTC P0175 SYSTEM TOO RICH (BANK 2), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

AP:DTC P0172 SYSTEM TOO RICH (BANK 1)

Refer to DTC P0175 for diagnostic procedure. <Ref. to EN(H6DO)(diag)-164, DTC P0175 SYSTEM TOO RICH (BANK 2), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

AQ:DTC P0174 SYSTEM TOO LEAN (BANK 2)

Refer to DTC P0175 for diagnostic procedure. <Ref. to EN(H6DO)(diag)-164, DTC P0175 SYSTEM TOO RICH (BANK 2), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

AR:DTC P0175 SYSTEM TOO RICH (BANK 2)

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, 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 hose on air intake system?	Repair air intake system.	Go to step 3.
3	EGR VALVE CHECK.	Is the EGR valve stuck?	Replace the EGR valve.	Go to step 4.
4	CHECK PURGE CONTROL SOLENOID VALVE.	Is the purge control solenoid valve stuck?	Replace the purge control solenoid valve.	Go to step 5.
5	PCV VALVE CHECK.	Is the PCV valve stuck?	Replace the PCV valve.	Go to step 6.
6	 CHECK FUEL PRESSURE. Warning: Place "NO FIRE" signs near the working area. Be careful not to spill fuel. 1) Release the fuel pressure. (1) Disconnect the connector from fuel pump relay. (2) Start the engine and run it until it stalls. (3) After the engine stalls, crank it for five more seconds. (4) Turn the ignition switch to OFF. 2) Connect the connector to fuel pump relay. 3) Disconnect the fuel delivery hose, and connect the fuel pressure gauge. 4) Install the fuel filler cap. 5) Start the engine and idle while gear position is neutral. 6) Measure the fuel pressure while disconnecting pressure regulator vacuum hose from intake manifold. Warning: Release fuel pressure before removing the fuel pressure gauge. NOTE: If fuel pressure does not increase, squeeze fuel return hose 2 to 3 times, then measure fuel pressure gaugn. 		Go to step 7.	Repair the follow- ing 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
7	 CHECK FUEL PRESSURE. After connecting the pressure regulator vacuum hose, measure fuel pressure. Warning: Release fuel pressure before removing the fuel pressure gauge. NOTE: If fuel pressure does not increase, squeeze fuel return hose 2 to 3 times, then measure fuel pressure again. If out of specification as measured at this step, check or replace pressure regulator and pressure regulator vacuum hose. 	Is fuel pressure 279 — 309 kPa (2.85 — 3.15 kg/cm ² , 40 — 45 psi)?	Go to step 8.	Repair the follow- ing items. Fuel pressure is too high: • Faulty pres- sure regulator • Clogged fuel return line or bent hose Fuel pressure is too low: • Faulty pres- sure regulator • Improper fuel pump discharge • Clogged fuel supply line
8	CHECK ENGINE COOLANT TEMPERATURE SENSOR. 1) Start the engine and warm-up completely. 2) Read the data of engine coolant tempera- ture sensor signal using Subaru Select Moni- tor. NOTE: For detailed operation procedures, refer to the "READ CURRENT DATA SHOWN ON DIS- PLAY FOR ENGINE". <ref. en(h6do)(di-<br="" to="">ag)-25, Subaru Select Monitor.></ref.>	Is the engine coolant tempera- ture 70 — 100°C (158 — 212°F)?	Go to step 9 .	Replace the engine coolant temperature sen- sor. <ref. to<br="">FU(H6DO)-18, Engine Coolant Temperature Sen- sor.></ref.>
9	 CHECK MANIFOLD PRESSURE SENSOR SIGNAL. 1) Start and warm-up the engine until engine coolant temperature is greater than 60°C (140°F). 2) Shift the select lever to "N" or "P" range. 3) Turn the A/C switch to OFF. 4) Turn all accessory switches to OFF. 5) Read the data of manifold pressure sensor signal using Subaru Select Monitor. NOTE: For detailed operation procedures, refer to the "READ CURRENT DATA SHOWN ON DIS- PLAY FOR ENGINE". <ref. en(h6do)(di-<br="" to="">ag)-25, Subaru Select Monitor.></ref.> 	Is the measurement value at idling: 24.0 — 41.3 kPa (180 — 310 mmHg, 7.09 — 12.20 inHg), when ignition ON: 73.3 — 106.6 kPa (550 — 800 mmHg, 21.65 — 31.50 inHg)?	Replace the ECM. <ref. to<br="">FU(H6DO)-34, Engine Control Module (ECM).></ref.>	Replace the mani- fold absolute pres- sure sensor. <ref. to FU(H6DO)-23, Manifold Absolute Pressure Sensor.></ref.

AS:DTC P0197 ENGINE OIL TEMPERATURE SENSOR CIRCUIT LOW

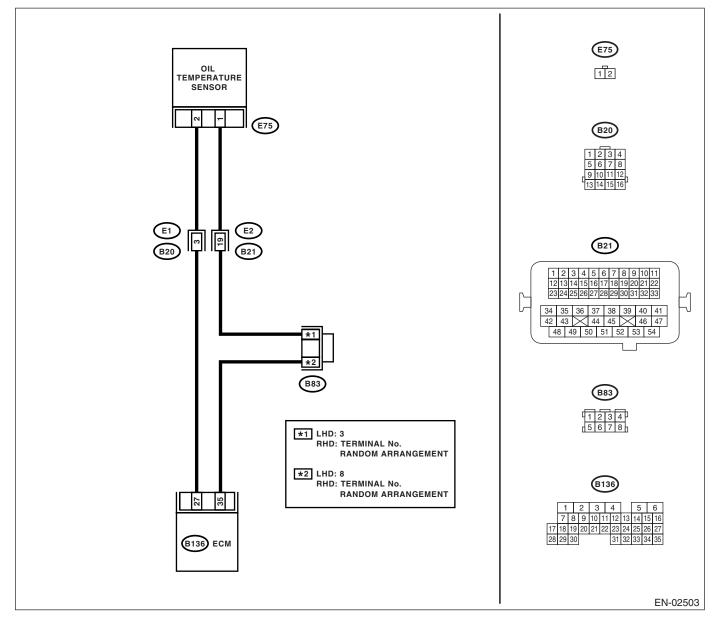
DTC DETECTING CONDITION: Immediately at fault recognition **TROUBLE SYMPTOM:**

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

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	 CHECK HARNESS BETWEEN OIL TEMPER- ATURE SENSOR AND ECM CONNECTOR. 1) Disconnect the ECM connector and oil temperature sensor connector. 2) Measure the resistance of harness between oil temperature sensor connector and engine ground. Connector & terminal (B136) No. 27 — Engine ground: (B136) No. 35 — Engine ground: 	ΜΩ?	Go to step 2.	Repair the ground short circuit between ECM and oil temperature sensor connector.
2	CHECK POOR CONTACT. Check poor contact in oil temperature sensor connector.	Is there poor contact in oil tem- perature sensor connector?	Repair the poor contact.	Replace the oil temperature sen- sor. <ref. to<br="">FU(H6DO)-29, Oil Temperature Sen- sor.></ref.>

AT:DTC P0198 ENGINE OIL TEMPERATURE SENSOR CIRCUIT HIGH DTC DETECTING CONDITION:

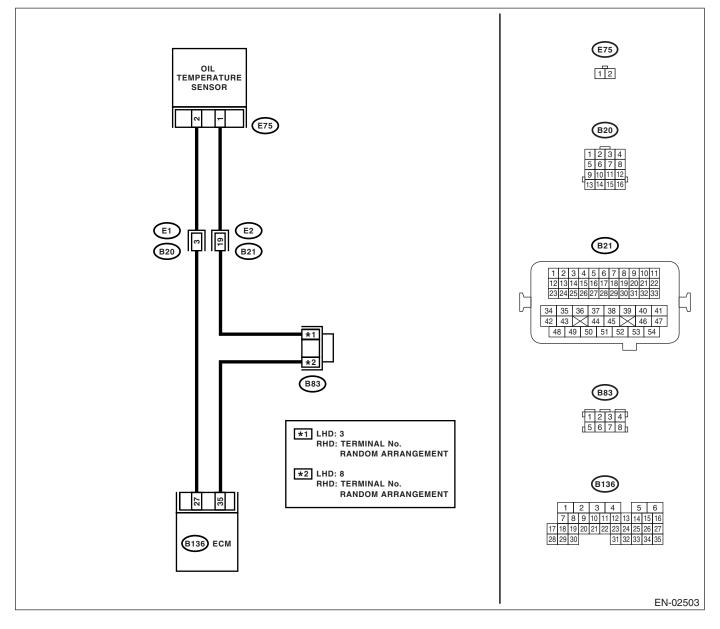
Immediately at fault recognition **TROUBLE SYMPTOM:**

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

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:



	Step	Check	Yes	No
	ESS BETWEEN OIL TEMPER-		Repair the battery	Go to step 2.
ATURE SENSO 1) Turn the igni 2) Disconnect ti perature sensor 3) Measure the ture sensor con <i>Connector &</i>	DR AND ECM CONNECTOR. ition switch to OFF. the connector from the oil tem- r. e voltage between oil tempera- unector and engine ground.		short circuit in har- ness between ECM and oil tem- perature sensor connector.	Go to step 2.
ATURE SENSO 1) Turn the igni 2) Measure the ture sensor con <i>Connector</i> &	ESS BETWEEN OIL TEMPER- DR AND ECM CONNECTOR. ition switch to ON. e voltage between oil tempera- inector and engine ground. <i>terminal</i> (+) — Engine ground (–):	Is the voltage more than 10 V?	Repair the battery short circuit in har- ness between ECM and oil tem- perature sensor connector.	Go to step 3.
ATURE SENSO Measure the vo sensor connector Connector &	ESS BETWEEN OIL TEMPER- DR AND ECM CONNECTOR. Itage between oil temperature or and engine ground. <i>terminal</i> (+) — Engine ground (-):	Is the voltage more than 4 V?	Go to step 4.	Repair the har- ness and connec- tor. NOTE: In this case repair the following: • Open circuit in harness between ECM and oil tem- perature sensor connector • Poor contact in oil temperature sensor connector • Poor contact in ECM connector • Poor contact in ECM connector
ATURE SENSO 1) Turn the igni 2) Measure the between oil tem engine ground. <i>Connector &</i>	ESS BETWEEN OIL TEMPER- DR AND ECM CONNECTOR. ition switch to OFF. e resistance of harness aperature sensor connector and terminal — Engine ground:	Is the resistance less than 5 Ω ?	Replace the oil temperature sen- sor. <ref. to<br="">FU(H6DO)-29, Oil Temperature Sen- sor.></ref.>	Repair the har- ness and connec- tor.

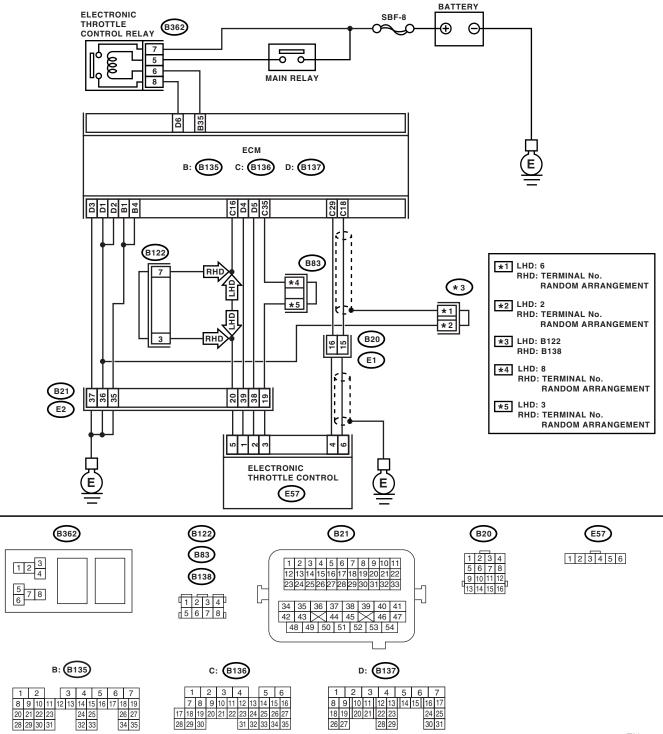
AU:DTC P0222 THROTTLE/PEDAL POSITION SENSOR/SWITCH "B" CIRCUIT LOW INPUT

DTC DETECTING CONDITION: Immediately at fault recognition TROUBLE SYMPTOM:

Erroneous idling

- Poor driving performance
- Engine stalls.

WIRING DIAGRAM:



EN-02502

	Step	Check	Yes	No
1	 CHECK SENSOR OUTPUT. 1) Turn the ignition switch to ON. 2) Read the data of sub throttle sensor signal using Subaru Select Monitor. 	Is the voltage more than 0.8 V?	Go to step 2.	Go to step 3.
2	CHECK POOR CONTACT. Check 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 connector from the electronic throttle control. 4) Measure the resistance between ECM connector and electronic throttle control connector. Connector & terminal (B136) No. 29 — (E57) No. 4: (B136) No. 16 — (E57) No. 5: 	Is the resistance less than 1 Ω?	Go to step 4.	Repair the open circuit of harness connector.
4	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. Measure the resistance between ECM connec- tor and chassis ground. Connector & terminal (B136) No. 29 — Chassis ground: (B136) No. 16 — Chassis ground:	Is the resistance more than 1 $M\Omega$?	Go to step 5.	Repair the chas- sis 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 contactrepair the poor contact in ECM connector. Replace the ECM if defective. <ref. to FU(H6DO)-34, Engine Control Module (ECM).></ref.
6	 CHECK SHORT CIRCUIT IN ECM. 1) Turn the ignition switch to OFF. 2) Measure the resistance between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 4 — Engine ground: 	Is the resistance more than 10 Ω ?	Repair the poor contact in elec- tronic throttle con- trol connector. Replace the elec- tronic throttle con- trol if defective.	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. to FU(H6DO)-34, Engine Control Module (ECM).></ref.

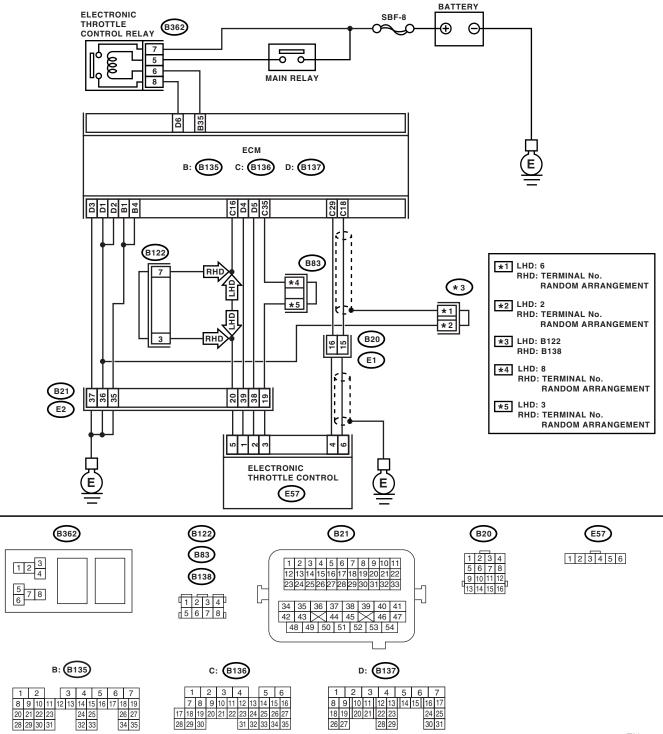
AV:DTC P0223 THROTTLE/PEDAL POSITION SENSOR/SWITCH "B" CIRCUIT HIGH INPUT

DTC DETECTING CONDITION: Immediately at fault recognition TROUBLE SYMPTOM:

Erroneous idling

- Poor driving performance
- Engine stalls.

WIRING DIAGRAM:



EN-02502

	Step	Check	Yes	No
1	 CHECK SENSOR OUTPUT. 1) Turn the ignition switch to ON. 2) Read the data of sub throttle sensor signal using Subaru Select Monitor. 	Is the voltage less than 4.73 V?	Go to step 2.	Go to step 3.
2	CHECK POOR CONTACT. Check 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 connector from the electronic throttle 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 Ω?	Go to step 4.	Repair the open circuit of harness connector.
4	 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Connect the ECM connector. 2) Measure the resistance between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 3 — Engine ground: 	Is the resistance less than 5 Ω ?	Go to step 5.	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. to FU(H6DO)-34, Engine Control Module (ECM).></ref.
5	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. Measure the voltage between electronic throt- tle control connector and engine ground. Connector & terminal (E57) No. 4 (+) — Engine ground (–):	Is the voltage less than 10 V?	Go to step 6 .	Repair the battery short circuit in har- ness between ECM connector and electronic throttle control connector.
6	 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between connector terminals. Connector & terminal (B136) No. 29 — (B136) No. 16: 	Is the resistance more than 1 M Ω ?	Repair the poor contact. Repair the electronic throttle control.	Sensor power sup- ply circuit may be shorted.

AW:DTC P0230 FUEL PUMP PRIMARY CIRCUIT

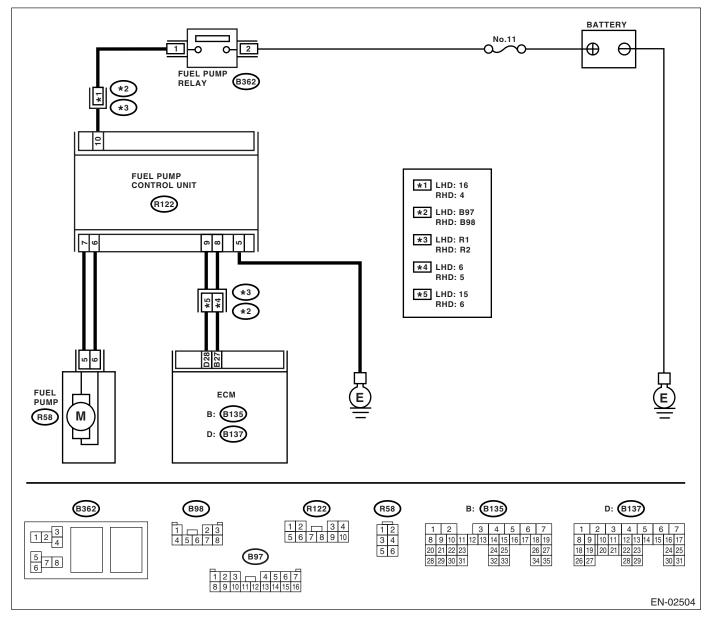
DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode. <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>

WIRING DIAGRAM:



	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 (-):			Repair the power supply circuit. NOTE: In this case repair the following: • Open or ground short circuit in har- ness between fuel pump relay and fuel pump control unit. • Poor contact in fuel pump control unit connector. • Poor contact in fuel pump relay connector.
2	CHECK GROUND CIRCUIT OF FUEL PUMP CONTROL UNIT. 1) Turn the ignition switch to OFF. 2) Measure the resistance of harness between fuel pump control unit and chassis ground. Connector & terminal (R122) No. 5 — Chassis ground:	Is the resistance less than 5 Ω ?	Go to step 3.	Repair the har- ness and connec- tor. 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 CONNEC- TOR. 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 Ω?	Go to step 4.	Repair the open circuit between fuel pump control unit and fuel pump.
4	CHECK HARNESS BETWEEN FUEL PUMP CONTROL UNIT AND FUEL PUMP CONNEC- TOR. Measure the resistance of harness between fuel pump control unit and chassis ground. <i>Connector & terminal</i> (R122) No. 7 — Chassis ground: (R122) No. 6 — Chassis ground:	Is the resistance more than 1 $M\Omega$?	Go to step 5 .	Repair the ground short circuit between fuel pump control unit and fuel pump.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

	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 Ω?	Go to step 6.	Repair the har- ness and connec- tor. 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 con- nector
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 M Ω ?	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 con- nector?	Repair the poor contactrepair the poor contact in ECM and fuel pump control unit connector.	Go to step 8.
8	CHECK EXPERIENCE OF RUNNING OUT OF FUEL.	Did the vehicle experience run- ning out of fuel?	sis. NOTE: DTC record may	Fuel Pump Control Unit.>

AX:DTC P0301 CYLINDER 1 MISFIRE DETECTED

NOTE:

For the diagnostic procedure, refer to DTC P0306. <Ref. to EN(H6DO)(diag)-178, DTC P0306 CYLINDER 6 MISFIRE DETECTED, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

AY:DTC P0302 CYLINDER 2 MISFIRE DETECTED

NOTE:

For the diagnostic procedure, refer to DTC P0306. <Ref. to EN(H6DO)(diag)-178, DTC P0306 CYLINDER 6 MISFIRE DETECTED, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

AZ:DTC P0303 CYLINDER 3 MISFIRE DETECTED

NOTE:

For the diagnostic procedure, refer to DTC P0306. <Ref. to EN(H6DO)(diag)-178, DTC P0306 CYLINDER 6 MISFIRE DETECTED, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BA:DTC P0304 CYLINDER 4 MISFIRE DETECTED

NOTE:

For the diagnostic procedure, refer to DTC P0306. <Ref. to EN(H6DO)(diag)-178, DTC P0306 CYLINDER 6 MISFIRE DETECTED, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BB:DTC P0305 CYLINDER 5 MISFIRE DETECTED

NOTE:

For the diagnostic procedure, refer to DTC P0306. <Ref. to EN(H6DO)(diag)-178, DTC P0306 CYLINDER 6 MISFIRE DETECTED, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BC:DTC P0306 CYLINDER 6 MISFIRE DETECTED

DTC DETECTING CONDITION:

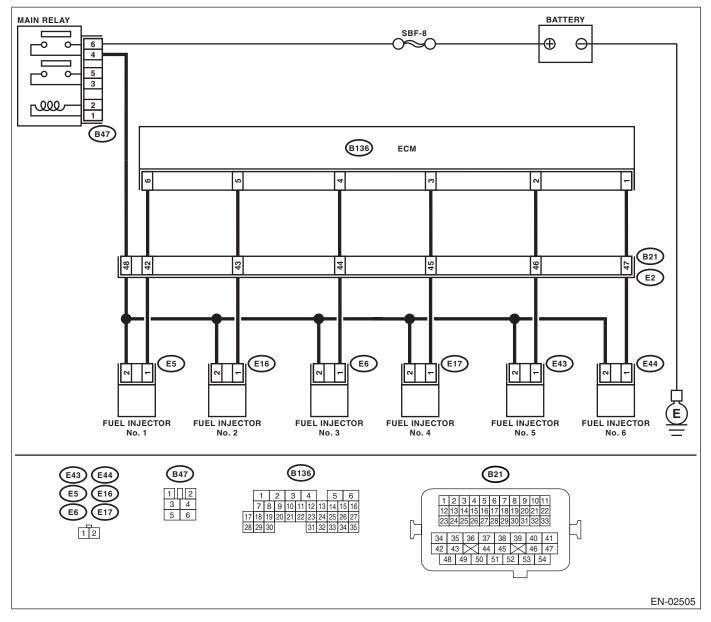
- Two consecutive driving cycles with fault
- Immediately at fault recognition (A misfire which could damage catalyst occurs.)

TROUBLE SYMPTOM:

- Engine stalls.
- Erroneous idling
- Rough driving

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.



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

	Ctore .	Check	Vec	No
4		Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the DTC using "List of Diag- nostic Trouble Code (DTC)". <ref. to<br="">EN(H6DO)(diag)- 66, List of Diag- nostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0301, P0302,</ref.>	Go to step 2.
			P0304, P0305 and	
			P0306.	
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 (-): #5 (B136) No. 2 (+) — Chassis ground (-): #6 (B136) No. 1 (+) — Chassis ground (-): 		Go to step 7.	Go to step 3.
3	 CHECK HARNESS BETWEEN FUEL INJEC- TOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from fuel injector on faulty cylinder. 3) Measure the resistance between ECM con- nector 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: #5 (E43) No. 1 — Engine ground: #6 (E44) No. 1 — Engine ground: 	Is the resistance more than 1 MΩ?	Go to step 4.	Repair the ground short circuit in har- ness between fuel injector and ECM connector.
4	CHECK HARNESS BETWEEN FUEL INJEC- TOR 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: #5 (B136) No. 2 — (E43) No. 1: #6 (B136) No. 1 — (E44) No. 2:	Is the resistance less than 1 Ω?	Go to step 5 .	Repair the har- ness and connec- tor. 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. <i>Terminals</i> <i>No. 1 — No. 2:</i>	Is the resistance 5 — 20 Ω ?	Go to step 6 .	Replace the faulty fuel injector. <ref. to FU(H6DO)-26, Fuel Injector.></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 (-): #5 (E43) No. 2 (+) — Engine ground (-): #6 (E44) No. 2 (+) — Engine ground (-): 	Is the voltage more than 10 V?	Repair the poor contact in all con- nectors in fuel injector circuit.	Repair the har- ness and connec- tor. NOTE: In this case repair the following: • Open circuit in harness between main relay and fuel injector on faulty cylinders • Poor contact in coupling connector • Poor contact in main relay connec- tor • Poor contact in fuel injector con- nector on faulty cylinders
7	 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. 2 (+) — Chassis ground (-): #5 (B136) No. 1 (+) — Chassis ground (-): 		Repair the battery short circuit in har- ness between ECM and fuel injector. After repair, replace the ECM. <ref. to<br="">FU(H6DO)-34, Engine Control Module (ECM).></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: CHECK INSTALLATION OF CAMSHAFT PO-SITION SENSOR/CRANKSHAFT POSITION	Is the resistance less than 1 Ω? Is the camshaft position sensor or crankshaft position sensor	Replace the faulty fuel injector and ECM. <ref. to<br="">FU(H6DO)-26, Fuel Injector.> <ref. to<br="">FU(H6DO)-34, Engine Control Module (ECM).> Tighten camshaft position sensor or</ref.></ref.>	Go to step 9 . Go to step 10 .
10	CHECK CRANK PLATE.	Is the crank sprocket rusted or the teeth of crank plate bro- ken?	crankshaft posi- tion sensor. Replace the crank plate. <ref. to<br="">ME(H6DO)-63,</ref.>	Go to step 11.
11	CHECK INSTALLATION CONDITION OF TIMING CHAIN. Turn the crankshaft using ST, and align align- ment mark on crank sprocket with alignment mark on cylinder block. ST 18252AA000 CRANKSHAFT SOCKET	Is the timing chain dislocated from its proper position?	Cylinder Block.> Repair installation condition of timing chain. <ref. to<br="">ME(H6DO)-45, Timing Chain Assembly.></ref.>	Go to step 12.

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

	Step	Check	Yes	No
12	CHECK FUEL LEVEL.	Is the fuel meter indication lower than the "Lower" level?	Replenish fuel so fuel meter indica- tion is higher than the "Lower" level. After replenishing fuel, Go to step 13.	Go to step 13.
13	 CHECK STATUS OF MALFUNCTION INDI- CATOR LIGHT. 1) Clear the memory using Subaru Select Monitor. <ref. clear="" en(h6do)(diag)-40,="" memory<br="" to="">Mode.></ref.> 2) Start the engine, and drive the vehicle more than 10 minutes. 	Does the malfunction indicator light illuminate or blink?	Go to step 15 .	Go to step 14.
14	CHECK CAUSE OF MISFIRE DIAGNOSED.	Was the cause of misfire detected when the engine is running?	Finish diagnostics operation, if the engine has no abnormality.	Repair the poor contact. NOTE: In this case repair the following: • Poor contact in ignition coil con- nector • Poor contact in fuel injector con- nector on faulty cylinders • Poor contact in ECM connector • Poor contact in coupling connector
15	CHECK AIR INTAKE SYSTEM.	Is there any fault in air intake system?	Repair air intake system. NOTE: Check the follow- ing items: • Are there air leaks or air suction caused by loose or dislocated nuts and bolts? • Are there cracks or any disconnec- tion of hoses?	Go to step 16 .

	Step	Check	Yes	No
16	 CHECK MISFIRE SYMPTOM. 1) Turn the ignition switch to ON. 2) READ DTC. <ref. (dtc).="" code="" diagnostic="" en(h6do)(diag)-32,="" read="" to="" trouble=""></ref.> 	Does the Subaru Select Moni- tor or OBD-II general scan tool indicate a DTC?	Go to step 22.	Go to step 17.
17	CHECK ANY OTHER DTC ON DISPLAY.	Is DTC P0301 and P0302 dis- played?	Go to step 23.	Go to step 18.
18	CHECK DTC ON DISPLAY.	Is DTC P0303 and P0304 dis- played?	Go to step 24.	Go to step 19.
19	CHECK DTC ON DISPLAY.	Is DTC P0305 and P0306 dis- played?	Go to step 25.	Go to step 20.
20	CHECK DTC ON DISPLAY.	ls DTC P0301, P0303 and P0305 displayed?	Go to step 26.	Go to step 21.
21	CHECK DTC ON DISPLAY.	Is DTC P0302, P0304 and P0306 displayed?	Go to step 27.	Go to step 28.
22	ONLY ONE CYLINDER.	Is there any fault in that cylin- der?	Repair or replace the faulty part. NOTE: Check the follow- ing items: • Spark plug • Fuel injector • Compression ratio	Inspect the DTC P0171, P0172, P0174 or P0175 using "List of Diag- nostic Trouble Code (DTC)". <ref. to<br="">EN(H6DO)(diag)- 66, List of Diag- nostic Trouble Code (DTC).></ref.>
23	GROUP OF #1 AND #2 CYLINDERS.	Is there any fault in #1 and #2 cylinders?	Repair or replace the faulty part. NOTE: • Check the fol- lowing items: • Spark plug • Fuel injector • Ignition coil • Compres- sion ratio • If no abnormal is discovered, check for "IGNITION CONTROL SYS- TEM" of #1 and #2 cylinders side. <ref. to<br="">EN(H6DO)(diag)- 59, IGNITION CONTROL SYS- TEM, Diagnostics for Engine Start- ing Failure.></ref.>	Inspect the DTC P0171, P0172, P0174 or P0175 using "List of Diag- nostic Trouble Code (DTC)". <ref. to<br="">EN(H6DO)(diag)- 66, List of Diag- nostic Trouble Code (DTC).></ref.>

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

	Step	Check	Yes	No
24	GROUP OF #3 AND #4 CYLINDERS.	Is there any fault in #3 and #4 cylinders?	Repair or replace the faulty part. NOTE: • Check the fol- lowing items: • Spark plug • Fuel injector • Ignition coil • If no abnormal is discovered, check for "IGNITION CONTROL SYS- TEM" of #3 and #4 cylinders side. <ref. to<br="">EN(H6DO)(diag)- 59, IGNITION CONTROL SYS- TEM, Diagnostics for Engine Start- ing Failure.></ref.>	Inspect the DTC P0171, P0172, P0174 or P0175 using "List of Diag- nostic Trouble Code (DTC)". <ref. to<br="">EN(H6DO)(diag)- 66, List of Diag- nostic Trouble Code (DTC).></ref.>
25	GROUP OF #5 AND #6 CYLINDERS.	Is there any fault in #5 and #6 cylinder?	Repair or replace the faulty part. NOTE: • Check the fol- lowing items: • Spark plug • Fuel injector • Ignition coil • Compres- sion ratio • If no abnormal is discovered, check for "IGNITION CONTROL SYS- TEM" of #5 and #6 cylinders side. <ref. to<br="">EN(H6DO)(diag)- 59, IGNITION CONTROL SYS- TEM, Diagnostics for Engine Start- ing Failure.></ref.>	Inspect the DTC P0171, P0172, P0174 or P0175 using "List of Diag- nostic Trouble Code (DTC)". <ref. to<br="">EN(H6DO)(diag)- 66, List of Diag- nostic Trouble Code (DTC).></ref.>
26	GROUP OF #1, #3 AND #5 CYLINDERS.	Is there any fault in #1, #3 and #5 cylinders?	Repair or replace the faulty part. NOTE: Check the follow- ing items: • Spark plug • Fuel injector • Skipping timing chain teeth	Inspect the DTC P0171, P0172, P0174 or P0175 using "List of Diag- nostic Trouble Code (DTC)". <ref. to<br="">EN(H6DO)(diag)- 66, List of Diag- nostic Trouble Code (DTC).></ref.>

	Step	Check	Yes	No
27	GROUP OF #2, #4 AND #6 CYLINDERS.	Is there any fault in #2, #4 and #6 cylinders?	Repair or replace the faulty part. NOTE: Check the follow- ing items: • Spark plug • Fuel injector • Compression ratio • Skipping timing chain teeth	Inspect the DTC P0171, P0172, P0174 or P0175 using "List of Diag- nostic Trouble Code (DTC)". <ref. to<br="">EN(H6DO)(diag)- 66, List of Diag- nostic Trouble Code (DTC).></ref.>
28	CYLINDER AT RANDOM.	Is the engine idle rough?	Inspect the DTC P0171, P0172, P0174 or P0175 using "List of Diag- nostic Trouble Code (DTC)". <ref. to<br="">EN(H6DO)(diag)- 66, List of Diag- nostic Trouble Code (DTC).></ref.>	Repair or replace the faulty part. NOTE: Check the follow- ing items: • Spark plug • Fuel injector • Compression ratio

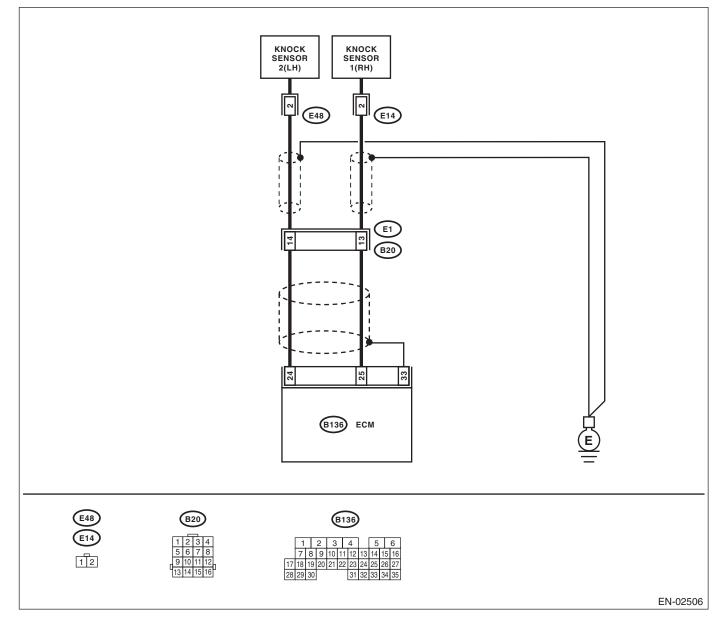
BD:DTC P0327 KNOCK SENSOR 1 CIRCUIT LOW INPUT (BANK 1 OR SINGLE SENSOR)

DTC DETECTING CONDITION: Immediately at fault recognition TROUBLE SYMPTOM:

- Poor driving performance
- Knocking occurs.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, 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 kΩ?	Go to step 2.	Repair the har- ness and connec- tor. NOTE: In this case repair the following: • Open circuit in harness between knock sensor and ECM connector • Poor contact in knock sensor con- nector • Poor contact in coupling connector
2	 CHECK KNOCK SENSOR. 1) Disconnect the connector from knock sensor. 2) Measure the resistance between knock sensor connector terminal and engine ground. <i>Terminals</i> <i>No. 2 — Engine ground:</i> 	Is the resistance more than 700 kΩ?	Go to step 3 .	Repair the har- ness and connec- tor. NOTE: In this case repair the following: • Poor contact in knock sensor con- nector
3	CHECK CONDITION OF KNOCK SENSOR INSTALLATION.	Is the knock sensor installation bolt tightened securely?	Replace the knock sensor. <ref. to<br="">FU(H6DO)-21, Knock Sensor.></ref.>	Tighten knock sen- sor installation bolt securely.

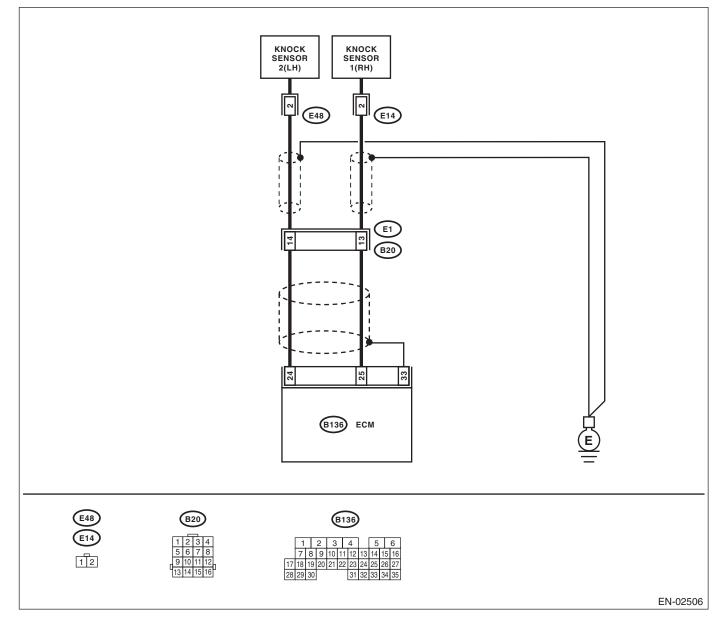
BE:DTC P0328 KNOCK SENSOR 1 CIRCUIT HIGH INPUT (BANK 1 OR SINGLE SENSOR)

DTC DETECTING CONDITION: Immediately at fault recognition TROUBLE SYMPTOM:

- Poor driving performance
- Knocking occurs.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, 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 kΩ?	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. <i>Terminals</i> <i>No. 2 — Engine ground:</i> 	Is the resistance less than 400 kΩ?	Replace the knock sensor. <ref. to<br="">FU(H6DO)-21, Knock Sensor.></ref.>	Repair the ground short circuit in har- ness between knock sensor con- nector and ECM connector. NOTE: The harness be- tween both con- nectors 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	Repair the poor contact in ECM connector.

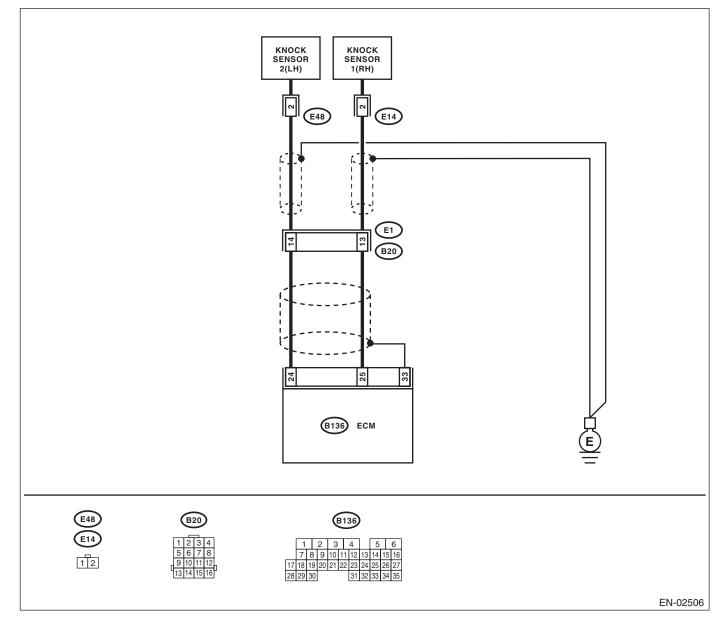
BF:DTC P0332 KNOCK SENSOR 2 CIRCUIT LOW INPUT (BANK 2)

DTC DETECTING CONDITION: Immediately at fault recognition TROUBLE SYMPTOM:

- Driving performance problem
- Knocking is occurred.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, 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. 24 — Chassis ground: 	Is the resistance more than 700 kΩ?	Go to step 2.	Repair the har- ness and connec- tor. NOTE: In this case repair the following: • Open circuit in harness between knock sensor and ECM connector • Poor contact in knock sensor con- nector • Poor contact in coupling connector
2	 CHECK KNOCK SENSOR. 1) Disconnect the connector from knock sensor. 2) Measure the resistance between knock sensor connector terminal and engine ground. <i>Terminals</i> <i>No. 2 — Engine ground:</i> 	Is the resistance more than 700 kΩ?	Go to step 3 .	Repair the har- ness and connec- tor. NOTE: In this case repair the following: • Poor contact in knock sensor con- nector
3	CHECK CONDITION OF KNOCK SENSOR INSTALLATION.	Is the knock sensor installation bolt tightened securely?	Replace the knock sensor. <ref. to<br="">FU(H6DO)-21, Knock Sensor.></ref.>	Tighten knock sen- sor installation bolt securely.

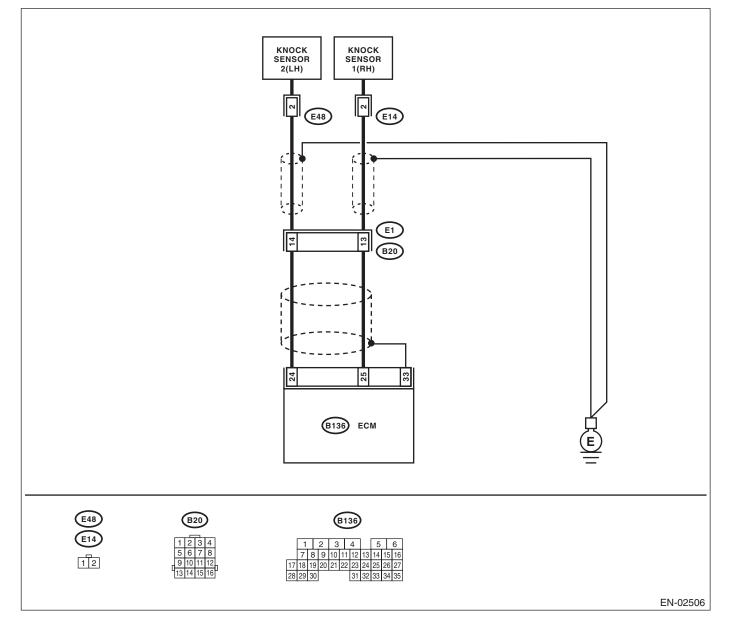
BG:DTC P0333 KNOCK SENSOR 2 CIRCUIT HIGH INPUT (BANK 2)

DTC DETECTING CONDITION: Immediately at fault recognition TROUBLE SYMPTOM:

- Driving performance problem
- Knocking occurs.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, 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. 24 — Chassis ground:	Is the resistance less than 400 kΩ?	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. <i>Terminals</i> <i>No. 2 — Engine ground:</i> 	Is the resistance less than 400 kΩ?	Replace the knock sensor. <ref. to<br="">FU(H6DO)-21, Knock Sensor.></ref.>	Repair the ground short circuit in har- ness between knock sensor con- nector and ECM connector. NOTE: The harness be- tween both con- nectors 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. 24 (+) — 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	Repair the poor contact in ECM connector.

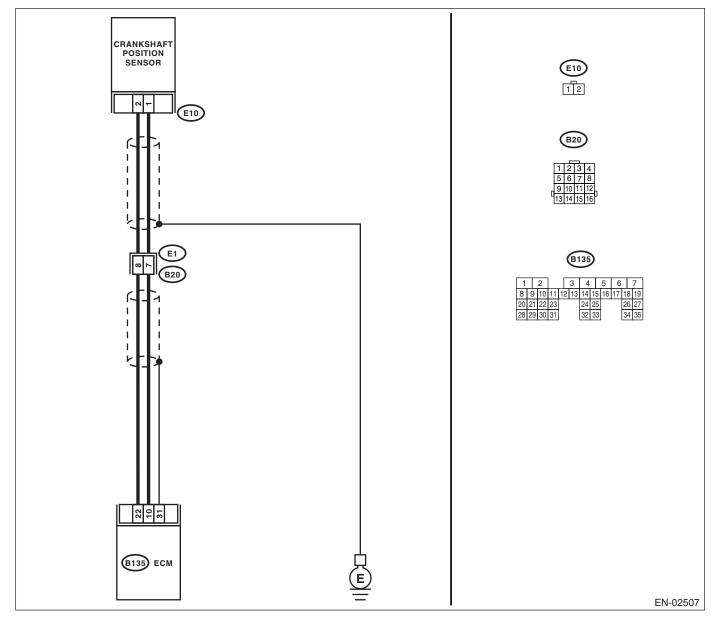
BH:DTC P0335 CRANKSHAFT POSITION SENSOR "A" CIRCUIT

DTC DETECTING CONDITION: Immediately at fault recognition TROUBLE SYMPTOM:

- Engine stalls.
- Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
SI NI 1) 2) sh 3) be ar	Step HECK HARNESS BETWEEN CRANK- HAFT POSITION SENSOR AND ECM CON- ECTOR. Turn the ignition switch to OFF. Disconnect the connector from the crank- naft position sensor. Measure the resistance of harness etween crankshaft position sensor connector and engine ground. Connector & terminal (E10) No. 1 — Engine ground:	Check Is the resistance more than 100 kΩ?	Yes Repair the har- ness and connec- tor. NOTE: In this case repair the following: • Open circuit in harness between crankshaft posi- tion sensor and ECM connector • Poor contact in ECM connector • Poor contact in	No Go to step 2.
SI NI M cri er	HECK HARNESS BETWEEN CRANK- HAFT POSITION SENSOR AND ECM CON- ECTOR. easure the resistance of harness between ankshaft position sensor connector and ngine ground. Connector & terminal (E10) No. 1 — Engine ground:	Is the resistance less than 10 Ω?	coupling connector Repair the ground short circuit in har- ness between crankshaft posi- tion sensor and ECM connector. NOTE: The harness be- tween both con- nectors are shielded. Repair the ground short circuit in harness together with shield.	Go to step 3.
SI NI M cri er	HECK HARNESS BETWEEN CRANK- HAFT POSITION SENSOR AND ECM CON- ECTOR. easure the resistance of harness between ankshaft position sensor connector and ngine ground. Connector & terminal (E10) No. 2 — Engine ground:	Is the resistance less than 5 Ω?	Go to step 4.	Repair the har- ness and connec- tor. NOTE: In this case repair the following: • Open circuit in harness between crankshaft posi- tion sensor and ECM connector • Poor contact in ECM connector • Poor contact in coupling connector
	HECK CONDITION OF CRANKSHAFT PO- TION SENSOR.	Is the crankshaft position sen- sor installation bolt tightened securely?	Go to step 5.	Tighten the crank- shaft position sen- sor installation bolt securely.
1) 2) te	HECK CRANKSHAFT POSITION SENSOR. Remove the crankshaft position sensor. Measure the resistance between connector rminals of crankshaft position sensor. Terminals No. 1 — No. 2:	Is the resistance $1 - 4 k\Omega$?	Repair the poor contact in crank- shaft position sen- sor connector.	Replace the crank- shaft position sen- sor. <ref. to<br="">FU(H6DO)-19, Crankshaft Posi- tion Sensor.></ref.>

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

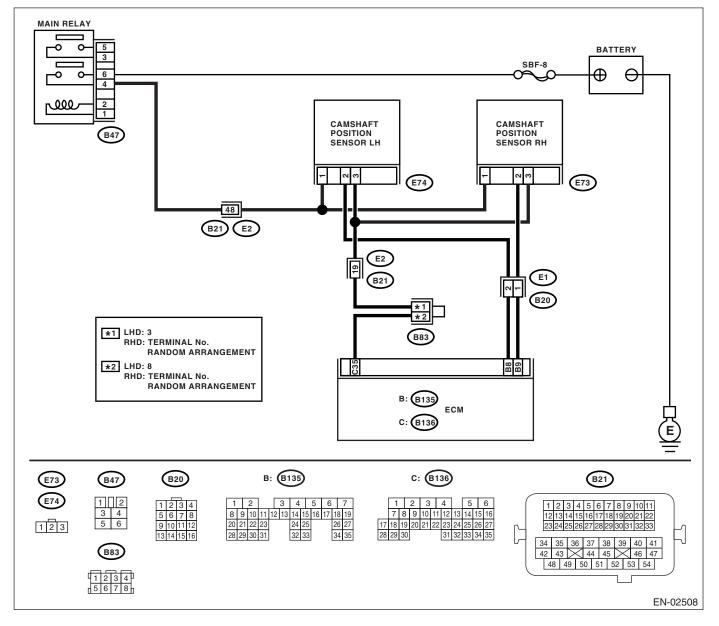
DTC DETECTING CONDITION: Immediately at fault recognition

TROUBLE SYMPTOM:

- Engine stalls.
- Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode. <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>



	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the DTC	Go to step 2.
			using "List of Diag- nostic Trouble Code (DTC)". <ref. to<br="">EN(H6DO)(diag)- 66, List of Diag- nostic Trouble Code (DTC).></ref.>	
2	CHECK POWER SUPPLY OF CAMSHAFT	Is the voltage more than 10 V?	Repair the battery	Go to step 3.
	 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 (E73) No. 1 (+) — Engine ground (-): 		short circuit between main relay connector and camshaft position sensor connector.	
3	CHECK POWER SUPPLY OF CAMSHAFT	Is the voltage more than 10 V?	Go to step 4.	Repair open or
	 POSITION SENSOR. 1) Turn the ignition switch to ON. 2) Measure the voltage between camshaft position sensor connector and engine ground. Connector & terminal (E73) No. 1 (+) — Engine ground (-): 			battery short cir- cuit 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 (E73) No. 2 — (B135) No. 9: (E73) No. 3 — (B136) No. 35: 	Is the resistance less than 1 Ω?	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 (E73) No. 2 — Engine ground:	Is the resistance more than 1 M Ω ?	Go to step 6 .	Repair the ground short circuit between camshaft position sensor and ECM.
6	CHECK CONDITION OF CAMSHAFT POSI- TION 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. control<br="" en(h6do)(diag)-17,="" engine="" to="">Module (ECM) I/O Signal.></ref.>	Is there any abnormality in waveform?	Replace the cam- shaft position sen- sor. <ref. to<br="">FU(H6DO)-19, Crankshaft Posi- tion Sensor.></ref.>	Go to step 8.
8	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(H6DO)-34, Engine Control Module (ECM).></ref.>

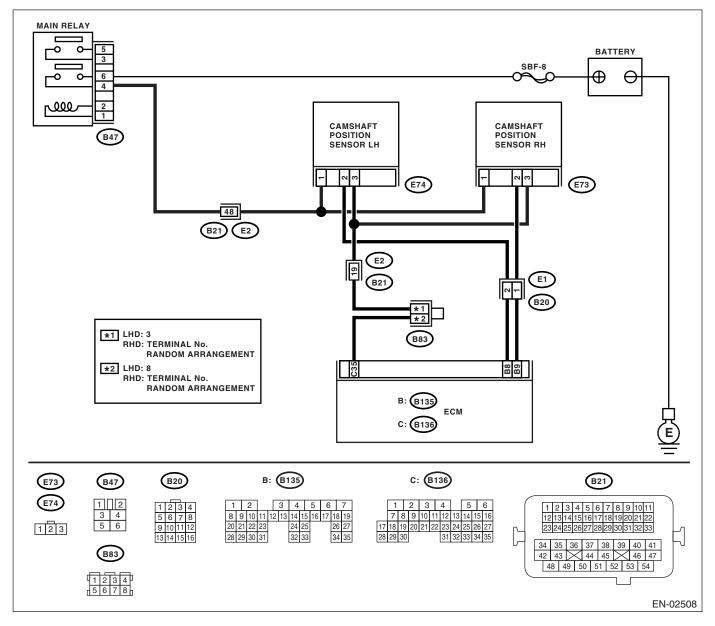
BJ:DTC P0345 CAMSHAFT POSITION SENSOR "A" CIRCUIT (BANK 2)

DTC DETECTING CONDITION: Immediately at fault recognition TROUBLE SYMPTOM:

- Engine stalls.
- Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode. <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>



	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the DTC	Go to step 2.
			using "List of Diag- nostic Trouble Code (DTC)". <ref. to<br="">EN(H6DO)(diag)- 66, List of Diag- nostic Trouble Code (DTC).></ref.>	
2	CHECK POWER SUPPLY OF CAMSHAFT	Is the voltage more than 10 V?	Repair the battery	Go to step 3.
	 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 (E74) No. 1 (+) — Engine ground (-): 		short circuit between main relay connector and camshaft position sensor connector.	
3	CHECK POWER SUPPLY OF CAMSHAFT	Is the voltage more than 10 V?	Go to step 4.	Repair open or
	 POSITION SENSOR. 1) Turn the ignition switch to ON. 2) Measure the voltage between camshaft position sensor connector and engine ground. Connector & terminal (E74) No. 1 (+) — Engine ground (-): 			battery short cir- cuit 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 (E74) No. 2 — (B135) No. 8: (E74) No. 3 — (B136) No. 35: 	Is the resistance less than 1 Ω?	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 (E74) No. 2 — Engine ground:	Is the resistance more than 1 $M\Omega$?	Go to step 6.	Repair the ground short circuit between camshaft position sensor and ECM.
6	CHECK CONDITION OF CAMSHAFT POSI- TION 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. control<br="" en(h6do)(diag)-17,="" engine="" to="">Module (ECM) I/O Signal.></ref.>	Is there any abnormality in waveform?	Replace the cam- shaft position sen- sor. <ref. to<br="">FU(H6DO)-20, Camshaft Position Sensor.></ref.>	Go to step 8 .
8	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(H6DO)-34, Engine Control Module (ECM).></ref.>

EN(H6DO)(diag)-198

BK:DTC P0400 EXHAUST GAS RECIRCULATION FLOW

DTC DETECTING CONDITION:

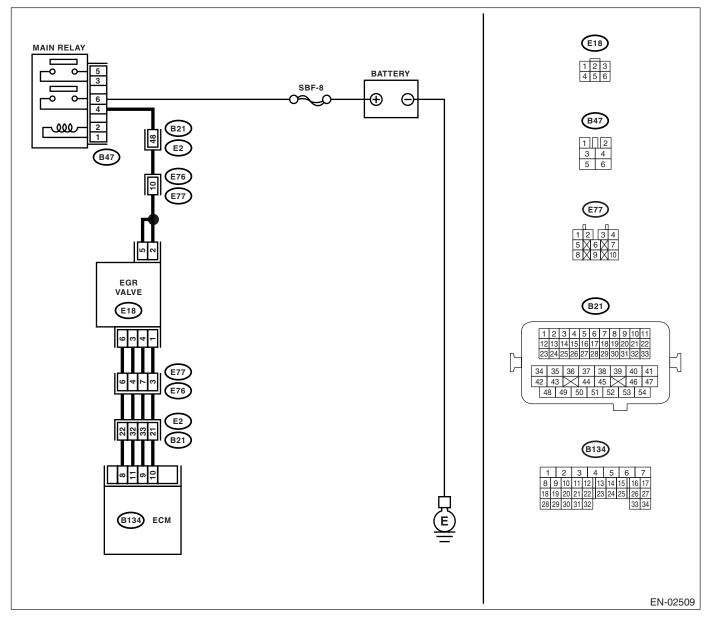
Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- · Movement performance problem when engine low speed
- Erroneous idling
- Movement performance problem

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the DTC using "List of Diag- nostic Trouble Code (DTC)". <ref. to<br="">EN(H6DO)(diag)- 66, List of Diag- nostic Trouble Code (DTC).></ref.>	Go to step 2.
2	 CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of intake manifold absolute pressure signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedures, refer to the "READ CURRENT DATA SHOWN ON DIS-PLAY FOR ENGINE". <ref. en(h6do)(diag)-25,="" monitor.="" select="" subaru="" to=""></ref.> OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool 	Is the value more than 53.3 kPa (400 mmHg, 15.75 inHg)?	Make sure that the EGR valve, mani- fold pressure sen- sor and throttle body are tight- ened firmly.	Go to step 3.
3	 CHECK THE POWER SUPPLY OF EGR SO- LENOID VALVE. 1) Detach the connector from EGR solenoid valve. 2) Turn the ignition switch to ON. 3) Measure the voltage between EGR sole- noid valve and engine ground. Connector & terminal (E18) No. 2 — Engine ground: (E18) No. 5 — Engine ground: 	Is the voltage more than 10 V?	Go to step 4.	Repair the open circuit in harness between main relay and EGR solenoid valve connector.
4	CHECK EGR SOLENOID VALVE. Measure the resistance between EGR sole- noid valve terminals. NOTE: Make sure there is no foreign material between EGR solenoid valve and valve seat. <i>Terminals</i> No. 1 — No. 2: No. 3 — No. 2: No. 4 — No. 5: No. 6 — No. 5:	Is the resistance between 20 — 30 Ω?	Go to step 5.	Replace the EGR solenoid valve. <ref. to<br="">FU(H6DO)-25, EGR Valve.></ref.>
5	 OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to OFF. 2) Connect the connector to ECM and EGR solenoid valve. 3) Turn the ignition switch to ON. 4) Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 8 (+) — Chassis ground (-): (B134) No. 10 (+) — Chassis ground (-): (B134) No. 11 (+) — Chassis ground (-): 	Is the voltage 0 — 10 V?	Repair the poor contact in ECM connector.	Go to step 6 .

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

	Step	Check	Yes	No
6	 CHECK HARNESS BETWEEN EGR SOLE- NOID VALVE AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Detach the connector from EGR solenoid valve and ECM. 3) Measure the resistance of harness between EGR solenoid valve and ECM con- nector. Connector & terminal (B134) No. 8 — (E18) No. 6: (B134) No. 9 — (E18) No. 1: (B134) No. 9 — (E18) No. 3: 	Is the resistance less than 1 Ω?	Go to step 7.	Repair the open circuit in harness between ECM and EGR solenoid valve connector.
7	CHECK HARNESS BETWEEN EGR SOLE- NOID VALVE AND ECM CONNECTOR. Measure the resistance of harness between EGR solenoid valve and chassis ground. <i>Connector & terminal</i> (B134) No. 8 — Chassis ground: (B134) No. 9 — Chassis ground: (B134) No. 10 — Chassis ground: (B134) No. 11 — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 8.	Repair the short circuit in harness between main relay and EGR solenoid valve connector.
8	CHECK POOR CONTACT. Check the poor contact in ECM and EGR sole- noid valve connector.	Is there poor contact in ECM or EGR solenoid valve connec- tor?	Repair the poor contactrepair the poor contact in ECM and EGR solenoid valve connector.	Even if the mal- function indicator light illuminates, the circuit has returned to a nor- mal condition at this time.

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

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

• Engine stalls.

• Idle mixture is out of specifications.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.

	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the rele- vant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(H6DO)(diag)- 66, List of Diag- nostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0420.</ref.>	Go to step 2.
2	 CHECK EXHAUST SYSTEM. Check for gas leaks or air suction caused by loose or dislocated nuts and bolts, and open hole at exhaust pipes. NOTE: Check the following positions. Between cylinder head and front exhaust pipe Between front exhaust pipe and front catalytic converter Between front catalytic converter and rear catalytic converter 	Is there any fault in exhaust system?	Repair or replace the exhaust sys- tem.	Go to step 3.
3	CHECK REAR CATALYTIC CONVERTER. Separate the rear catalytic converter from rear exhaust pipe.	Is there damage at rear face of rear catalyst?	Front catalytic con- verter <ref. to<br="">EC(H6DO)-3, Front Catalytic Converter.> and rear catalytic con- verter<ref. to<br="">EC(H6DO)-4, Rear Catalytic Converter.></ref.></ref.>	Go to step 4.
4	CHECK FRONT CATALYTIC CONVERTER. Separate the front catalytic converter.	Is there damage at rear face or front face of front catalyst?	Front Catalytic Converter <ref. to<br="">EC(H6DO)-3, Front Catalytic Converter.></ref.>	Contact the SUB- ARU dealer. NOTE: Inspection by DTM is required for fear of deterioration of some parts.

EN(H6DO)(diag)-202

BM:DTC P0458 EVAPORATIVE EMISSION CONTROL SYSTEM PURGE CON-TROL VALVE CIRCUIT LOW

DTC DETECTING CONDITION:

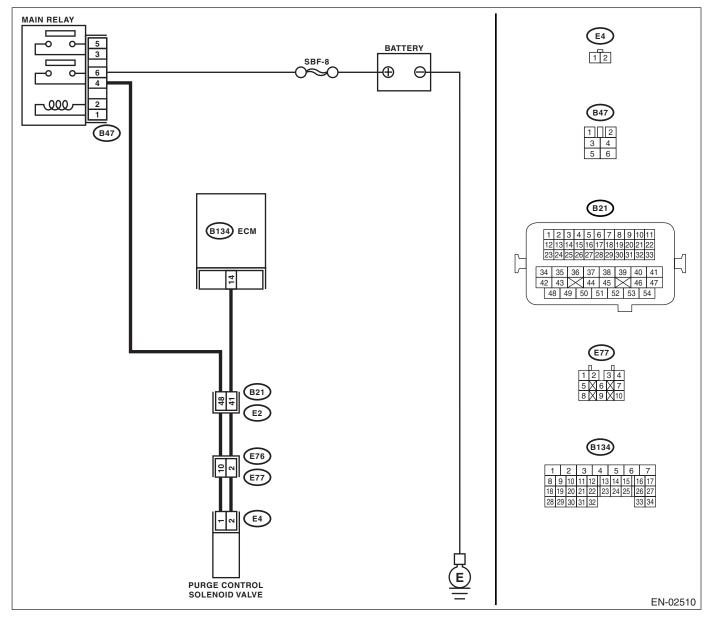
Two consecutive driving cycles with fault **TROUBLE SYMPTOM**:

Erroneous idling

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, 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-	Is the resistance more than 1	Go to step 3.	Repair the ground
	TROL SOLENOID VALVE AND ECM CON-	ΜΩ?		short circuit in har-
	NECTOR.			ness between
	1) Turn the ignition switch to OFF.			ECM and purge
	2) Disconnect the connectors from purge con-			control solenoid
	trol solenoid valve and ECM.			valve connector.
	3) Measure the resistance of harness			
	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 registered less than 1	Co to stop 4	Repair the open
3	TROL SOLENOID VALVE AND ECM CON-	Ω ?	Go to step 4.	circuit in harness
	NECTOR.	22:		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.			tor.
	Connector & terminal			NOTE:
	(B134) No. 14 — (E4) No. 2:			In this case repair
				the following:
				Open circuit in
				harness between
				ECM and purge
				control solenoid
				valve connector
				 Poor contact in
				coupling connector
4	CHECK PURGE CONTROL SOLENOID	Is the resistance $10 - 100 \Omega$?	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			EC(H6DO)-7,
	control solenoid valve terminals.			Purge Control
	Terminals			Solenoid Valve.>
	No. 1 — No. 2:			
5	CHECK POWER SUPPLY TO PURGE CON-	Is the voltage more than 10 V?	Go to step 6.	Repair the open
	TROL SOLENOID VALVE.			circuit in harness
	1) Turn the ignition switch to ON.			between main
	2) Measure the voltage between purge control			relay and purge
	solenoid valve and engine ground. Connector & terminal			control solenoid
	(E4) No. 1 (+) — Engine ground (–):			valve connector.
6	CHECK POOR CONTACT.	Is there poor contact in purge	Repair the poor	Replace the ECM.
ľ	Check poor contact in purge control solenoid	control solenoid valve connec-	contact in purge	<ref. td="" to<=""></ref.>
	valve connector.	tor?	control solenoid	FU(H6DO)-34,
			valve connector.	Engine Control
				Module (ECM).>
		1		

BN:DTC P0459 EVAPORATIVE EMISSION CONTROL SYSTEM PURGE CON-TROL VALVE CIRCUIT HIGH

DTC DETECTING CONDITION:

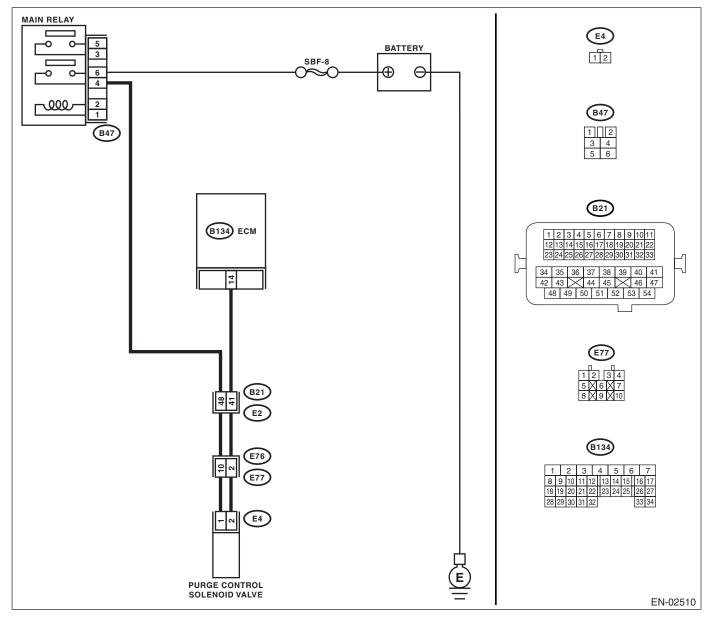
Two consecutive driving cycles with fault **TROUBLE SYMPTOM**:

Erropoous idling

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, 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. 4) While operating the purge control solenoid valve, measure voltage between ECM and chassis ground. NOTE: Purge control solenoid valve operation can be executed using Subaru Select Monitor. Refer to "Compulsory Valve Operation Check Mode" for procedures. <ref. check="" compulsory="" en(h6do)(diag)-41,="" mode.="" operation="" to="" valve=""> Connector & terminal (B134) No. 14 (+) — Chassis ground (-):</ref.>	Is the voltage 0 — 10 V?	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 OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 14 (+) — Chassis ground (-): 	Is the voltage more than 10 V?	Go to step 4.	Go to step 3.
3	CHECK POOR CONTACT. Check poor contact in ECM connector.	Is the poor contact in ECM connector?	Repair the poor contact in ECM connector.	Replace the ECM. <ref. to<br="">FU(H6DO)-34, Engine Control Module (ECM).></ref.>
4	 CHECK HARNESS BETWEEN PURGE CONTROL SOLENOID VALVE AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from purge control solenoid valve. 3) Turn the ignition switch to ON. 4) Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 14 (+) — Chassis ground (-): 	Is the voltage more than 10 V?	Repair the battery short circuit in har- ness between ECM and purge control solenoid valve connector. After repair, replace the ECM. <ref. to<br="">FU(H6DO)-34, Engine Control Module (ECM).></ref.>	Go to step 5 .
5	 CHECK PURGE CONTROL SOLENOID VALVE. 1) Turn the ignition switch to OFF. 2) Measure the resistance between purge control solenoid valve terminals. Terminals No. 1 — No. 2: 	Is the resistance less than 1 Ω ?	Replace the purge control solenoid valve. <ref. to<br="">EC(H6DO)-7, Purge Control Solenoid Valve.> and ECM <ref. to<br="">FU(H6DO)-34, Engine Control Module (ECM).></ref.></ref.>	Go to step 6.
6	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(H6DO)-34, Engine Control Module (ECM).></ref.>

BO:DTC P0462 FUEL LEVEL SENSOR CIRCUIT LOW INPUT

NOTE:

For the diagnostic procedure, refer to DTC P0463. <Ref. to EN(H6DO)(diag)-207, DTC P0463 FUEL LEVEL SENSOR CIRCUIT HIGH INPUT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BP:DTC P0463 FUEL LEVEL SENSOR CIRCUIT HIGH INPUT

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
	played on the Subaru Select Monitor?		Temporary poor contact occurs.

BQ:DTC P0500 VEHICLE SPEED SENSOR

DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.

	Step	Check	Yes	No
1	CHECK DTC OF ABS. Check DTC of ABS.	Is DTC of ABS displayed?	Perform the diag- nosis according to DTC. <ref. to<br="">ABS(diag)-39, List of Diagnostic Trou- ble Code (DTC).></ref.>	

BR:DTC P0512 STARTER REQUEST CIRCUIT

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

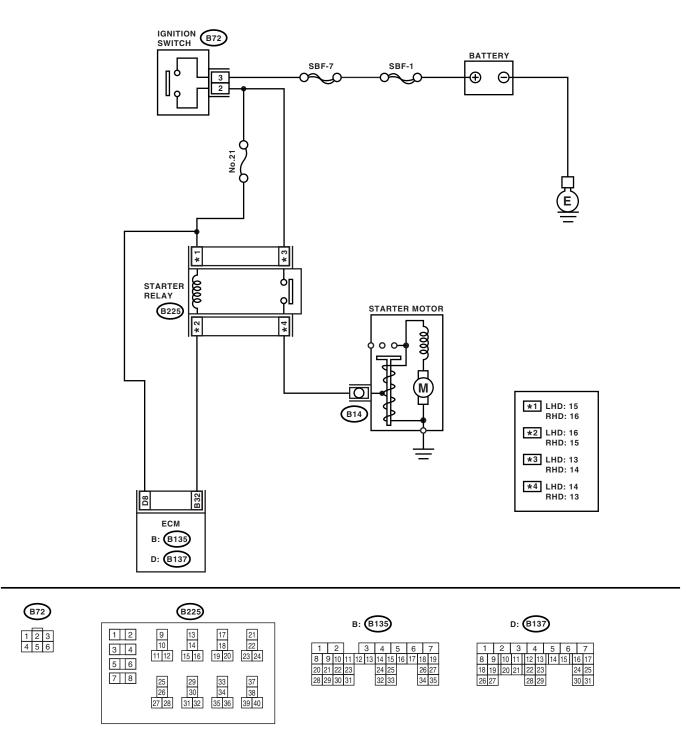
TROUBLE SYMPTOM:

Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:



EN-02492

	Step	Check	Yes	No
1	CHECK OPERATION OF STARTER MOTOR. Turn the ignition switch to ON. NOTE: Place the inhibitor switch in each position.	Does the starter motor oper- ate?	Repair the battery short circuit in starter motor cir- cuit.	Check starter motor circuit. <ref. to<br="">EN(H6DO)(diag)- 53, STARTER MOTOR CIR- CUIT, Diagnostics for Engine Start- ing Failure.></ref.>

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

DTC DETECTING CONDITION:

Immediately at fault recognition

TROUBLE SYMPTOM:

Engine keeps running at higher revolution than specified idling revolution.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.

	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the DTC using "List of Diag- nostic Trouble Code (DTC)". <ref. to<br="">EN(H6DO)(diag)- 66, List of Diag- nostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0519.</ref.>	
2	 CHECK AIR INTAKE SYSTEM. 1) Turn the ignition switch to ON. 2) Start and idle the engine. 3) Check the following items: Loose installation of intake manifold and throttle body Cracks of intake manifold gasket and throttle body gasket Disconnections of vacuum hoses 	Is there any fault in air intake system?	Repair air suction and leaks.	Go to step 3.
3	 CHECK ELECTRONIC THROTTLE CONTROL. 1) Turn the ignition switch to OFF. 2) 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 diag- nosis of DTC P2101.

BT:DTC P0558 ALTERNATOR CIRCUIT LOW

NOTE:

For diagnostic procedure, refer to DTC P0559. <Ref. to EN(H6DO)(diag)-212, DTC P0559 ALTERNATOR CIRCUIT HIGH, DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC).>

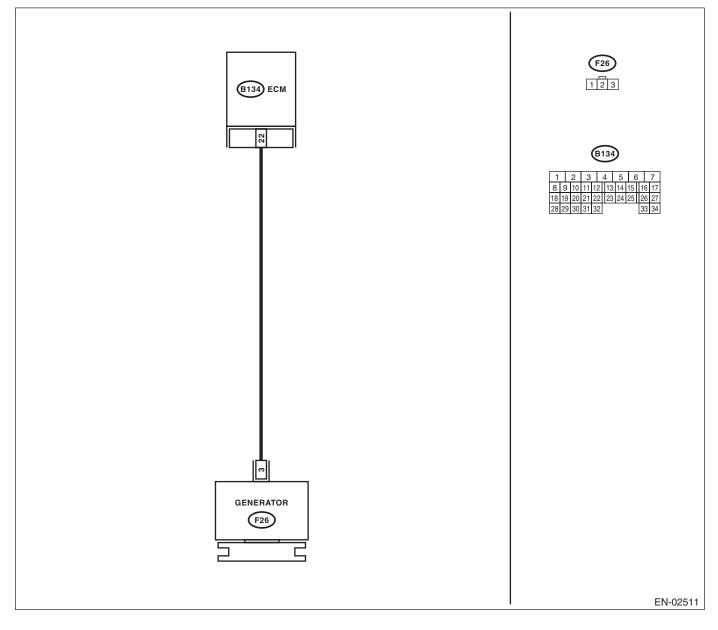
BU:DTC P0559 ALTERNATOR CIRCUIT HIGH

DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.



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

	Step	Check	Yes	No
1	 CHECK HARNESS BETWEEN GENERATOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from generator and ECM. 3) Measure the resistance of harness between generator connector and engine ground. Connector & terminal (F26) No. 3 — Engine ground: 	Is the resistance more than 1 $M\Omega$?	Go to step 2.	Repair the ground short circuit in har- ness between ECM and genera- tor connector.
2	CHECK HARNESS BETWEEN GENERATOR AND ECM CONNECTOR. Measure the resistance of harness between ECM and generator. Connector & terminal (B136) No. 22 — (F26) No. 3:	Is the resistance less than 1 Ω?	Repair the poor contact connector.	Repair the open circuit in harness between ECM and generator connec- tor. NOTE: In this case repair the following: • Open circuit in harness between ECM and genera- tor connector • Poor contact in coupling connector

BV:DTC P0600 SERIAL COMMUNICATION LINK

NOTE:

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

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

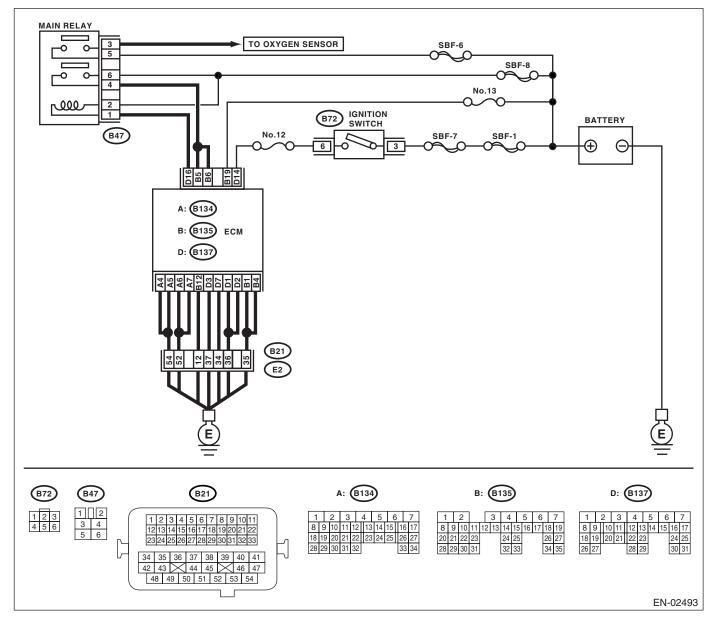
DTC DETECTING CONDITION: Immediately at fault recognition TROUBLE SYMPTOM:

IROUBLE STMPTOM

- Engine does not start.
- Engine stalls.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.



ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the rele- vant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(H6DO)(diag)- 66, List of Diag- nostic Trouble Code (DTC).></ref.>	Temporary poor contact occurs.

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

NOTE:

For the diagnostic procedure, refer to DTC P0607. <Ref. to EN(H6DO)(diag)-216, DTC P0607 CONTROL MODULE PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BY:DTC P0607 CONTROL MODULE PERFORMANCE

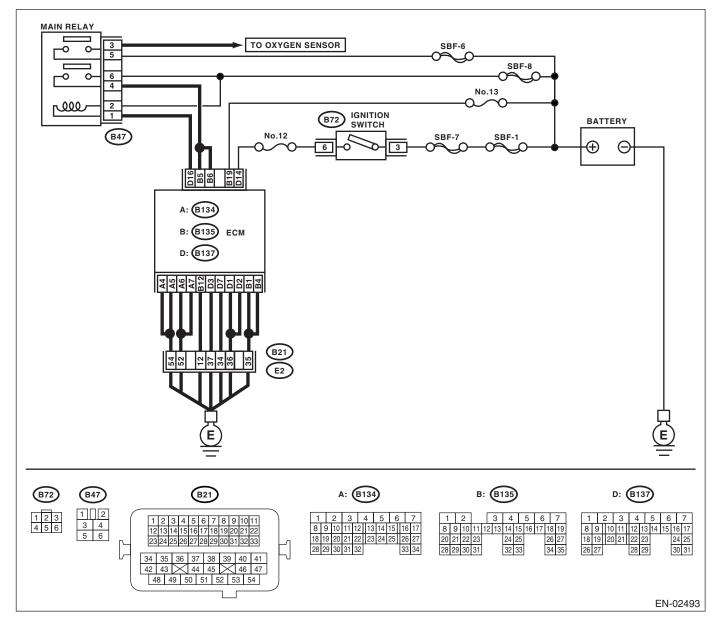
DTC DETECTING CONDITION: Immediately at fault recognition

• Erroneous idling

Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.



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. <i>Connector & terminal</i> (B137) No. 1 (+) — Chassis ground (–): (B137) No. 2 (+) — Chassis ground (–): (B137) No. 3 (+) — Chassis ground (–):	Is the voltage less than 1 V?	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. to FU(H6DO)-34, Engine Control Module (ECM).></ref. 	Further tighten the engine ground ter- minal.

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

NOTE:

For diagnostic procedure, refer to DTC P2101. <Ref. to EN(H6DO)(diag)-241, DTC P2101 THROTTLE AC-TUATOR CONTROL MOTOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

CA:DTC P0691 COOLING FAN 1 CONTROL CIRCUIT LOW

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

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

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.		Check radiator fan system. <ref. to<br="">CO(H6DO)-6, Radiator Fan Sys- tem.></ref.>	Temporary poor contact occurs.

CB:DTC P0692 COOLING FAN 1 CONTROL CIRCUIT HIGH

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

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

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.		Check radiator fan system. <ref. to<br="">CO(H6DO)-6, Radiator Fan Sys- tem.></ref.>	Temporary poor contact occurs.

CC:DTC P0700 TRANSMISSION CONTROL SYSTEM (MIL REQUEST)

NOTE:

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

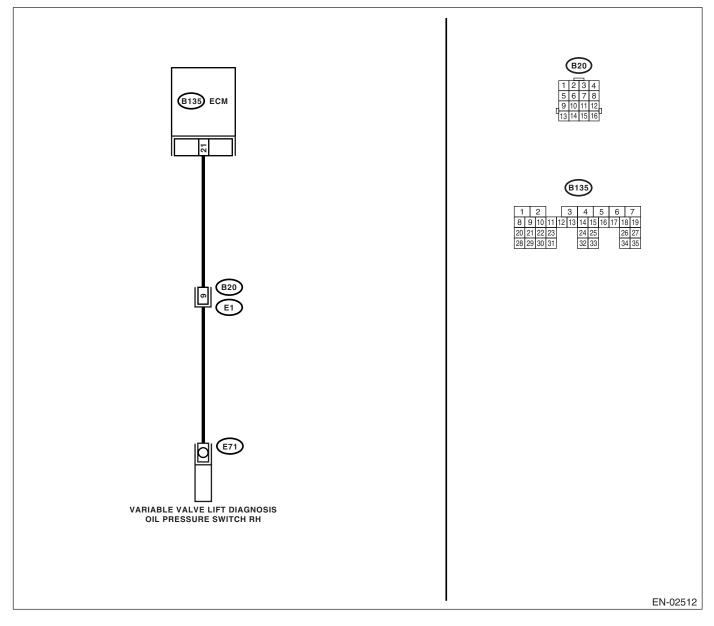
CD:DTC P1026 VVL SYSTEM 1 PERFORMANCE

DTC DETECTING CONDITION: Immediately at fault recognition TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the DTC using "List of Diag- nostic Trouble Code (DTC)". <ref. to<br="">EN(H6DO)(diag)- 66, List of Diag- nostic Trouble Code (DTC).></ref.>	Go to step 2.
2	 CHECK HARNESS BETWEEN ECM AND VARIABLE VALVE LIFT DIAGNOSIS OIL PRESSURE SWITCH CONNECTOR. 1) Idle the engine. 2) Turn the ignition switch to OFF. 3) Disconnect the connectors from ECM and variable valve lift diagnosis oil pressure switch connector. 4) Measure the resistance of harness between variable valve lift diagnosis oil pres- sure switch connector and engine ground. Connector & terminal (E71) No. 1 — Engine ground: 	Is the resistance more than 1 MΩ?	Go to step 3.	Repair the ground short circuit in har- ness between ECM and variable valve lift diagnosis oil pressure switch connector.
3	CHECK HARNESS BETWEEN ECM AND VARIABLE VALVE LIFT DIAGNOSIS OIL PRESSURE SWITCH CONNECTOR. Measure the resistance in harness between ECM and variable valve lift diagnosis oil pres- sure switch connector. Connector & terminal (B135) No. 21 — (E71) No. 1:	Is the resistance less than 1 Ω ?	Replace the vari- able valve lift oil pressure switch. <ref. to<br="">FU(H6DO)-28, Variable Valve Lift Diagnosis Oil Pressure Switch.> Go to step 4.</ref.>	Repair the open circuit in harness between ECM and variable valve lift diagnosis oil pres- sure switch con- nector.
4	CHECK DTC. 1) Erase the memory. <ref. to<br="">EN(H6DO)(diag)-40, Clear Memory Mode.> 2) Check the DTC after idle the engine.</ref.>	Is DTC displayed?	Replace the oil flow control sole- noid valve. <ref. to ME(H6DO)-78, Oil Flow Control Solenoid Valve.> Go to step 5.</ref. 	Temporary poor contact occurs.
5	CHECK DTC. 1) Erase the memory. <ref. to<br="">EN(H6DO)(diag)-40, Clear Memory Mode.> 2) Check the DTC after idle the engine.</ref.>	Is DTC displayed?	Check for oil rout- ing. Contact the SUB- ARU dealer.	Temporary poor contact occurs.

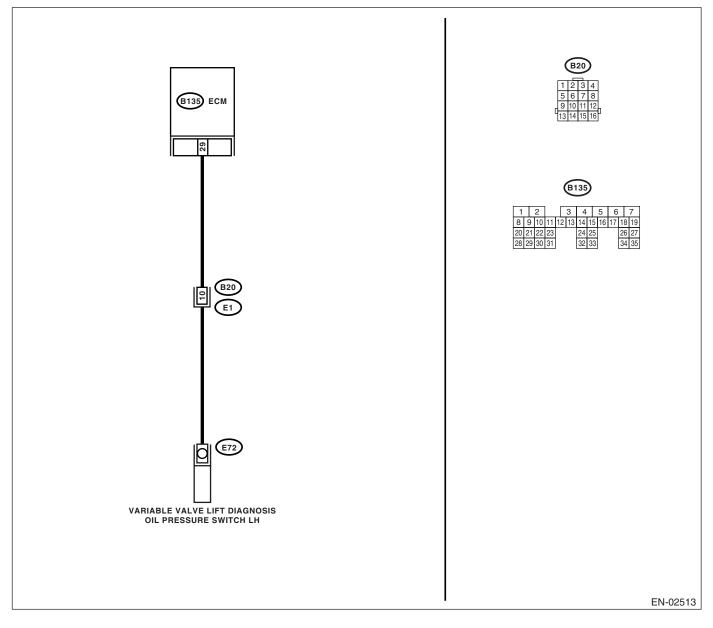
CE:DTC P1028 VVL SYSTEM 2 PERFORMANCE

DTC DETECTING CONDITION: Immediately at fault recognition TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode. <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>



	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the DTC using "List of Diag- nostic Trouble Code (DTC)". <ref. to<br="">EN(H6DO)(diag)- 66, List of Diag- nostic Trouble Code (DTC).></ref.>	Go to step 2.
2	 CHECK HARNESS BETWEEN ECM AND VARIABLE VALVE LIFT DIAGNOSIS OIL PRESSURE SWITCH CONNECTOR. 1) Idle the engine. 2) Turn the ignition switch to OFF. 3) Disconnect the connectors from ECM and variable valve lift diagnosis oil pressure switch connector. 4) Measure the resistance of harness between variable valve lift diagnosis oil pres- sure switch connector and engine ground. Connector & terminal (E72) No. 1 — Engine ground: 	Is the resistance more than 1 MΩ?	Go to step 3.	Repair the ground short circuit in har- ness between ECM and variable valve lift diagnosis oil pressure switch connector.
3	CHECK HARNESS BETWEEN ECM AND VARIABLE VALVE LIFT DIAGNOSIS OIL PRESSURE SWITCH CONNECTOR. Measure the resistance in harness between ECM and variable valve lift diagnosis oil pres- sure switch connector. Connector & terminal (B135) No. 29 — (E72) No. 1:	Is the resistance less than 1 Ω ?	Replace the vari- able valve lift oil pressure switch. <ref. to<br="">FU(H6DO)-28, Variable Valve Lift Diagnosis Oil Pressure Switch.> Go to step 4.</ref.>	Repair the open circuit in harness between ECM and variable valve lift diagnosis oil pres- sure switch con- nector.
4	CHECK DTC. 1) Erase the memory. <ref. to<br="">EN(H6DO)(diag)-40, Clear Memory Mode.> 2) Check the DTC after idle the engine.</ref.>	Is DTC displayed?	Replace the oil flow control sole- noid valve. <ref. to ME(H6DO)-78, Oil Flow Control Solenoid Valve.> Go to step 5.</ref. 	Temporary poor contact occurs.
5	CHECK DTC. 1) Erase the memory. <ref. to<br="">EN(H6DO)(diag)-40, Clear Memory Mode.> 2) Check the DTC after idle the engine.</ref.>	Is DTC displayed?	Check for oil rout- ing. Contact the SUB- ARU dealer.	Temporary poor contact occurs.

CF:DTC P1160 RETURN SPRING FAILURE

NOTE:

For diagnostic procedure, refer to DTC P2101. <Ref. to EN(H6DO)(diag)-241, DTC P2101 THROTTLE AC-TUATOR CONTROL MOTOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

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

NOTE:

For the diagnostic procedure, refer to DTC P1498. <Ref. to EN(H6DO)(diag)-224, DTC P1498 EGR SOLE-NOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (LOW INPUT), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

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

NOTE:

For the diagnostic procedure, refer to DTC P1499. <Ref. to EN(H6DO)(diag)-226, DTC P1499 EGR SOLE-NOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (HIGH INPUT), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

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

NOTE:

For the diagnostic procedure, refer to DTC P1498. <Ref. to EN(H6DO)(diag)-224, DTC P1498 EGR SOLE-NOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (LOW INPUT), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

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

NOTE:

For the diagnostic procedure, refer to DTC P1499. <Ref. to EN(H6DO)(diag)-226, DTC P1499 EGR SOLE-NOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (HIGH INPUT), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

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

NOTE:

For the diagnostic procedure, refer to DTC P1498. <Ref. to EN(H6DO)(diag)-224, DTC P1498 EGR SOLE-NOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (LOW INPUT), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

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

NOTE:

For the diagnostic procedure, refer to DTC P1499. <Ref. to EN(H6DO)(diag)-226, DTC P1499 EGR SOLE-NOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (HIGH INPUT), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

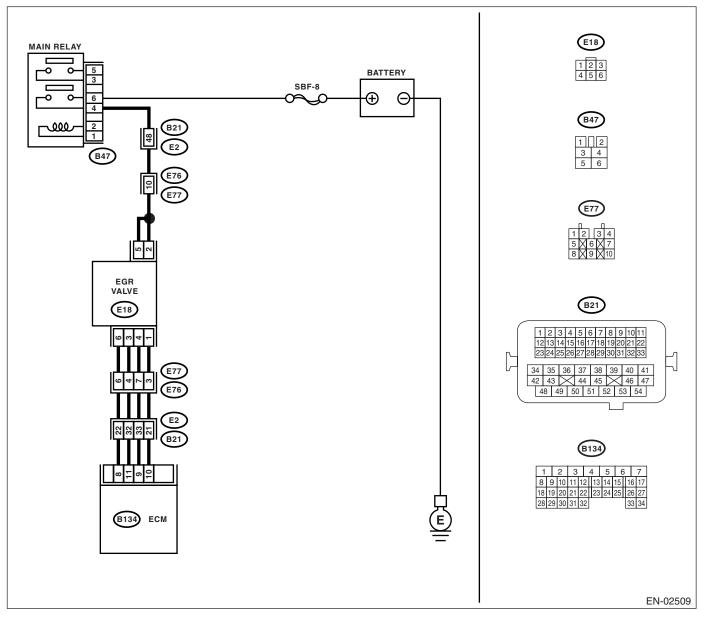
CM:DTC P1498 EGR SOLENOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (LOW INPUT)

DTC DETECTING CONDITION: Immediately at fault recognition TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance
- Engine breathing

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	 CHECK POWER SUPPLY TO EGR SOLE- NOID VALVE. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from EGR sole- noid valve. 3) Turn the ignition switch to ON. 4) Measure the voltage between EGR sole- noid valve connector and engine ground. Connector & terminal (E18) No. 2 (+) — Engine ground (-): (E18) No. 5 (+) — Engine ground (-): 	Is the voltage more than 10 V?		Repair the har- ness and connec- tor. NOTE: In this case repair the following: • Open circuit in harness between EGR solenoid valve and main relay connector • Poor contact in coupling connector
2	 CHECK HARNESS BETWEEN ECM AND EGR SOLENOID VALVE CONNECTOR. 1) Turn the ignition switch to OFF. 2) Measure the voltage between ECM and EGR solenoid valve connector. Connector & terminal DTC P1492; (B134) No. 11 – (E18) No. 3: DTC P1494; (B134) No. 10 – (E18) No. 1: DTC P1496; (B134) No. 9 – (E18) No. 4: DTC P1498; (B134) No. 8 – (E18) No. 6: 	Is the resistance less than 1 Ω?	Go to step 3.	Repair the har- ness and connec- tor. NOTE: In this case repair the following: • Open circuit in harness between ECM and EGR solenoid valve connector. • Poor contact in coupling connector
3	CHECK HARNESS BETWEEN ECM AND EGR SOLENOID VALVE CONNECTOR. 1) Disconnect the connector from ECM. 2) Measure the resistance between ECM con- nector and chassis ground. Connector & terminal DTC P1492; (B134) No. 11 — Chassis ground: DTC P1494; (B134) No. 10 — Chassis ground: DTC P1496; (B134) No. 9 — Chassis ground: DTC P1498; (B134) No. 8 — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 4.	Repair ground short in harness between ECM and EGR solenoid valve connector.
4	CHECK POOR CONTACT. Check poor contact in ECM connector and EGR solenoid valve connector.	Is there poor contact in ECM connector or EGR solenoid valve connector?	Repair the poor contact in ECM connector or EGR solenoid valve connector.	Replace the EGR solenoid valve. <ref. to<br="">FU(H6DO)-25, EGR Valve.></ref.>

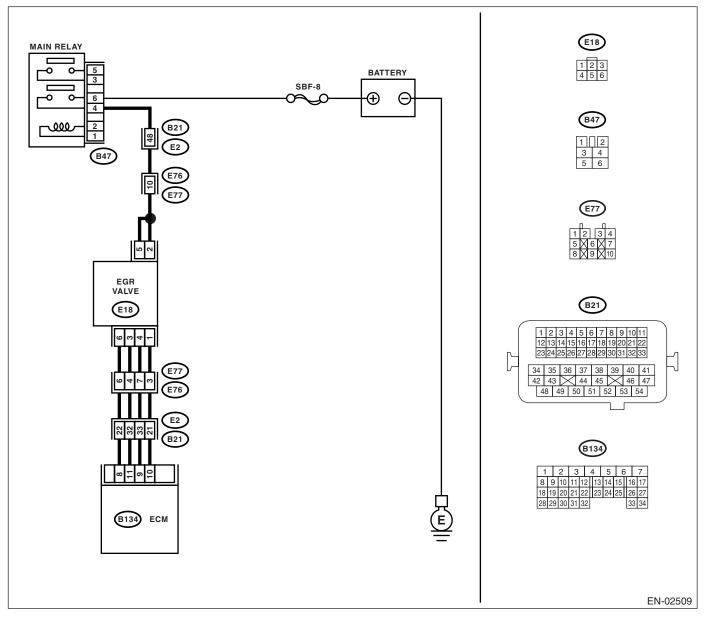
CN:DTC P1499 EGR SOLENOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (HIGH INPUT)

DTC DETECTING CONDITION: Immediately at fault recognition TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance
- Engine breathing

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the DTC using "List of Diag- nostic Trouble Code (DTC)". <ref. to<br="">EN(H6DO)(diag)- 66, List of Diag- nostic Trouble Code (DTC).></ref.>	Go to step 2.
2	CHECK HARNESS BETWEEN ECM AND EGR SOLENOID VALVE CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from EGR sole- noid valve. 3) Turn the ignition switch to ON. 4) Measure the voltage between ECM con- nector and chassis ground. Connector & terminal DTC P1493; (B134) No. 11 (+) — Chassis ground (-): DTC P1495; (B134) No. 10 (+) — Chassis ground (-): DTC P1497; (B134) No. 9 (+) — Chassis ground (-): DTC P1499; (B134) No. 8 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Repair battery short in harness between ECM and EGR solenoid valve connector. After repair, replace the ECM. <ref. to<br="">FU(H6DO)-34, Engine Control Module (ECM).></ref.>	Replace the ECM. <ref. to<br="">FU(H6DO)-34, Engine Control Module (ECM).></ref.>

CO:DTC P1518 STARTER SWITCH CIRCUIT LOW INPUT

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

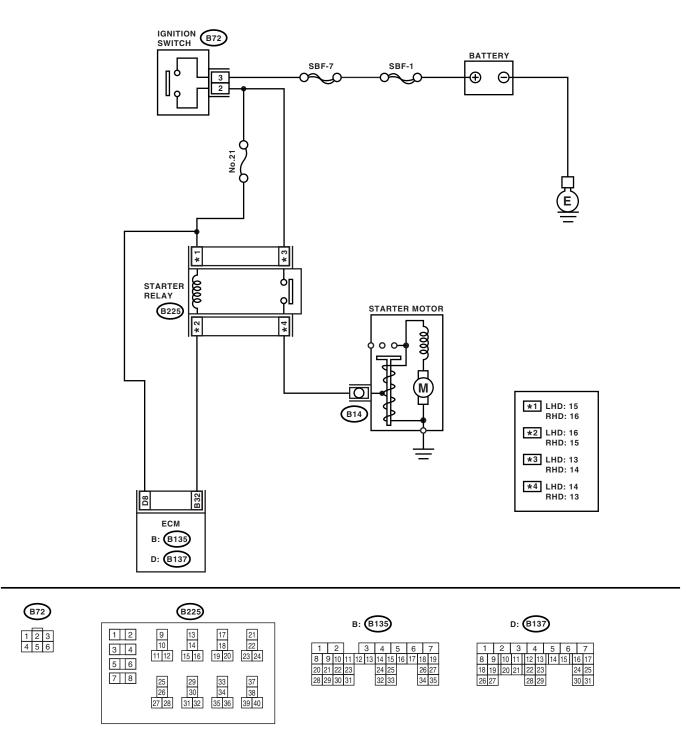
TROUBLE SYMPTOM:

Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:



EN-02492

	Step	Check	Yes	No
1		Does the starter motor operate when ignition switch to START?	Open or ground short circuit in har-	MOTOR CIR- CUIT, Diagnostics

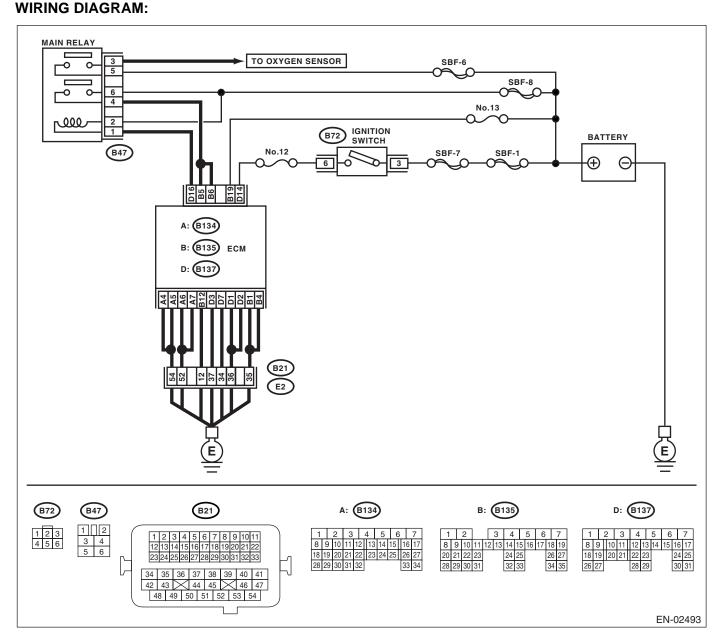
CP:DTC P1560 BACK-UP VOLTAGE CIRCUIT MALFUNCTION

DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>.



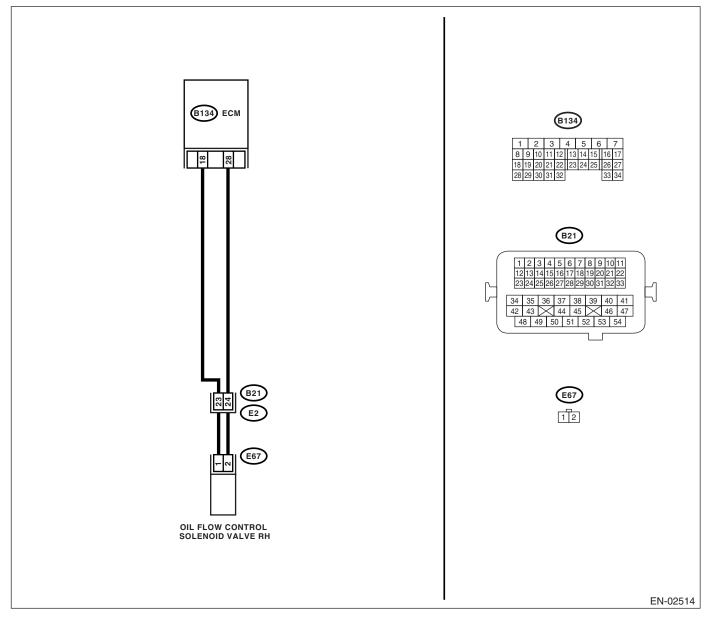
	Step	Check	Yes	No
1	 CHECK INPUT SIGNAL FROM ECM. 1) Turn the ignition switch to OFF. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B135) No. 19 (+) — Chassis ground (-): 	Is the voltage more than 10 V?	Repair the poor contact in ECM connector.	Go to step 2.
2	 CHECK HARNESS BETWEEN ECM AND MAIN FUSE BOX CONNECTOR. 1) Disconnect the connector from ECM. 2) Measure the resistance of harness between ECM and chassis ground. Connector & terminal (B135) No. 19 — Chassis ground: 	Is the resistance less than 10 Ω ?	Repair the ground short circuit in har- ness between ECM connector and battery termi- nal.	Go to step 3.
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: • Open circuit in harness between ECM and battery • Poor contact in ECM connector • Poor contact in battery terminal

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

DTC DETECTING CONDITION: Immediately at fault recognition **TROUBLE SYMPTOM:** Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode. <Ref. to EN(H6DO)(diag)-33, PROCEDURE, Inspection Mode.>



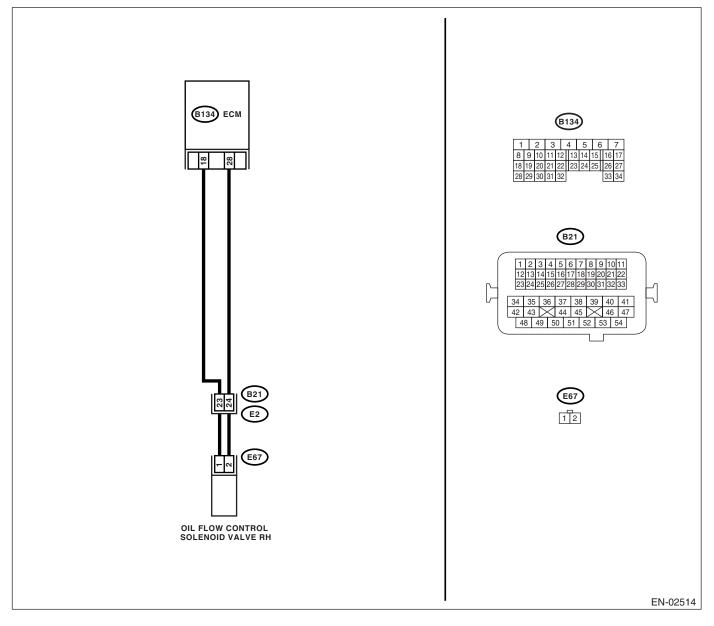
	Step	Check	Yes	No
1	 CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and oil flow control solenoid valve. 3) Measure the resistance between ECM and oil flow control solenoid valve. Connector & terminal (B134) No. 18 — (E67) No. 1: (B134) No. 28 — (E67) No. 2: 	Is the resistance less than 1 Ω?	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) Remove the oil flow control solenoid valve connector. 2) Measure the resistance between oil flow control solenoid valve terminals. Terminals No. 1 — No. 2: 	Is the resistance 6 — 12 Ω ?	Repair the poor contact in ECM and oil flow con- trol solenoid valve.	Replace the oil flow control sole- noid valve. <ref. to ME(H6DO)-78, Oil Flow Control Solenoid Valve.></ref.

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

Immediately at fault recognition TROUBLE SYMPTOM: Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode. <Ref. to EN(H6DO)(diag)-33, 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 connectors from ECM and oil flow control solenoid valve. 3) Measure the resistance between oil flow control solenoid valve and engine ground. Connector & terminal (E67) No. 1 — Engine ground: (E67) No. 2 — Engine ground: 	Is the resistance more than 1 MΩ?	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) Remove the oil flow control solenoid valve connector. 2) Measure the resistance between oil flow control solenoid valve terminals. <i>Terminals</i> No. 1 — No. 2: 	Is the resistance 6 — 12 Ω ?	Repair the poor contact in ECM and oil flow con- trol solenoid valve.	Replace the oil flow control sole- noid valve. <ref. to ME(H6DO)-78, Oil Flow Control Solenoid Valve.></ref.

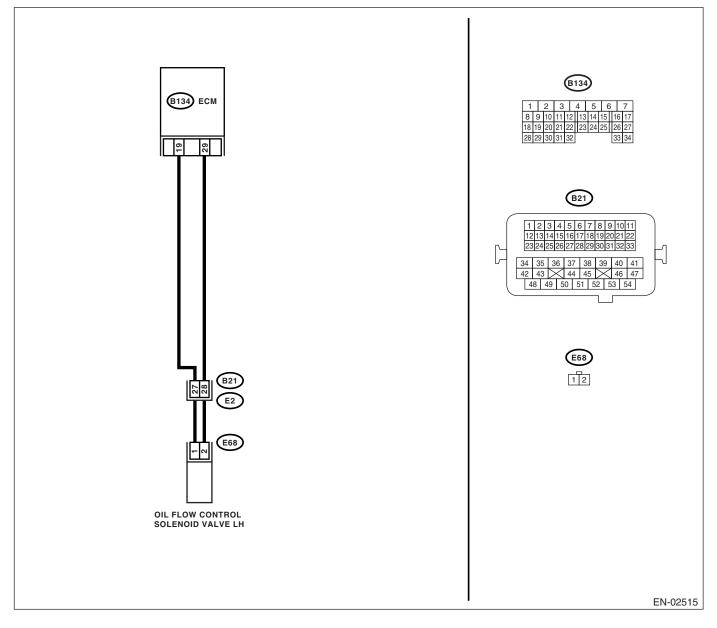
CS:DTC P2092 OCV SOLENOID VALVE SIGNAL A CIRCUIT OPEN (BANK 2)

DTC DETECTING CONDITION: Immediately at fault recognition TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode. <Ref. to EN(H6DO)(diag)-33, 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 connectors 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 — (E68) No. 1: (B134) No. 29 — (E68) No. 2: 	Is the resistance less than 1 Ω?	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) Remove the oil flow control solenoid valve connector. 2) Measure the resistance between oil flow control solenoid valve terminals. Terminals No. 1 — No. 2: 	Is the resistance 6 — 12 Ω ?	Repair the poor contact in ECM and oil flow con- trol solenoid valve.	Replace the oil flow control sole- noid valve. <ref. to ME(H6DO)-78, Oil Flow Control Solenoid Valve.></ref.

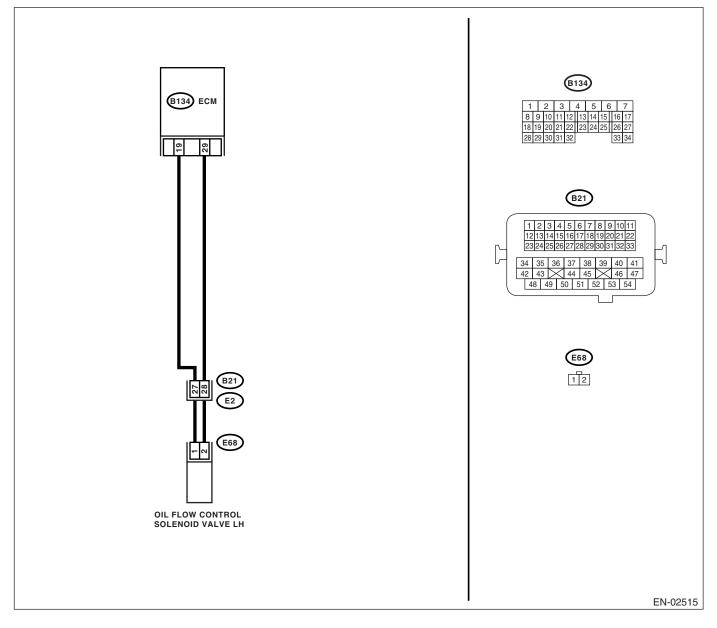
CT:DTC P2093 OCV SOLENOID VALVE SIGNAL A CIRCUIT SHORT (BANK 2) DTC DETECTING CONDITION:

Immediately at fault recognition TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H6DO)(diag)-40, OPERATION, Clear Memory Mode.> and Inspection Mode. <Ref. to EN(H6DO)(diag)-33, 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 connectors from ECM and oil flow control solenoid valve. 3) Measure the resistance between oil flow control solenoid valve and engine ground. Connector & terminal (E68) No. 1 — Engine ground: (E68) No. 2 — Engine ground: 	Is the resistance more than 1 MΩ?	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) Remove the oil flow control solenoid valve connector. 2) Measure the resistance between oil flow control solenoid valve terminals. <i>Terminals</i> No. 1 — No. 2: 	Is the resistance 6 — 12 Ω ?	Repair the poor contact in ECM and oil flow con- trol solenoid valve.	Replace the oil flow control sole- noid valve. <ref. to ME(H6DO)-78, Oil Flow Control Solenoid Valve.></ref.

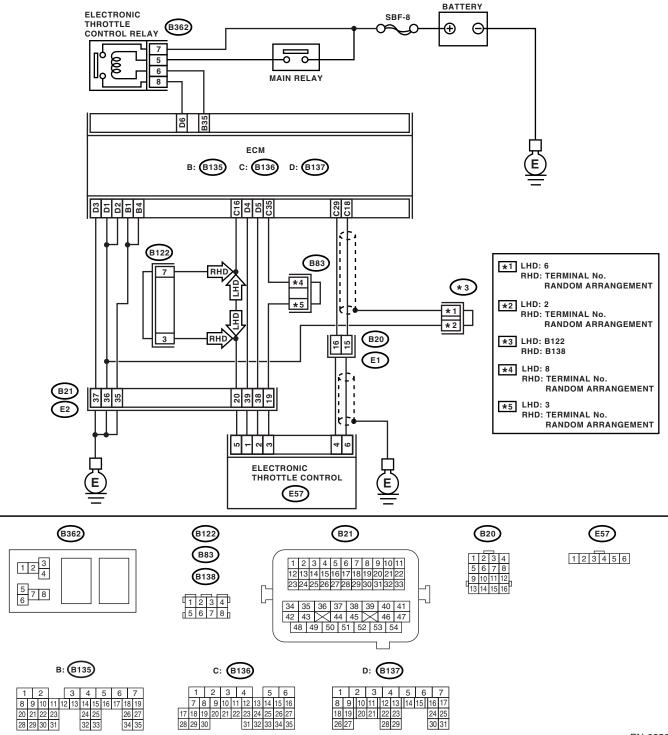
CU:DTC P2101 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT RANGE/ PERFORMANCE

DTC DETECTING CONDITION: Immediately at fault recognition TROUBLE SYMPTOM:

Erroneous idling

- Poor driving performance
- Engine stalls.

WIRING DIAGRAM:



EN-02502

	21	<u></u>		I
	Step	Check	Yes	No
1	 CHECK ELECTRONIC THROTTLE CONTROL RELAY. 1) Turn the ignition switch to OFF. 2) Remove the electronic throttle control relay. 3) Connect the battery to electronic throttle 	Is the resistance less than 1 Ω ?	Go to step 2.	Replace the elec- tronic throttle con- trol relay.
	 control relay terminals No. 5 and No. 6. 4) Measure the resistance between electronic throttle control relay terminals. <i>Terminals</i> No. 7 — No. 8: 			
2	CHECK POWER SUPPLY OF ELECTRONIC THROTTLE CONTROL RELAY. Measure the voltage between electronic throt- tle control relay connector and chassis ground. <i>Connector & terminal</i> (B362) No. 7 (+) — Chassis ground (–): (B362) No. 5 (+) — Chassis ground (–):	Is the voltage more than 5 V?	Go to step 3.	Repair the open or ground short cir- cuit of power sup- ply circuit.
3	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL RE- LAY. 1) Disconnect the connector from ECM. 2) Turn the ignition switch to ON. 3) Measure the voltage between electronic throttle control relay connector and chassis ground. Connector & terminal (B362) No. 6 (+) — Chassis ground (-):	Is the voltage less than 5 V?	Go to step 4.	Repair power sup- ply short circuit in harness between ECM and elec- tronic throttle con- trol.
4	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL RE- LAY. 1) Turn the ignition switch to OFF. 2) Measure the resistance between electronic throttle control relay connector and chassis ground. Connector & terminal (B362) No. 6 — Chassis ground: (B362) No. 8 — Chassis ground:	Is the resistance more than 1 $M\Omega$?	Go to step 5.	Repair the ground short circuit in har- ness between ECM and elec- tronic throttle con- trol relay.
5	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL RE- LAY. Measure the resistance between ECM connec- tor and electronic throttle control relay connec- tor. Connector & terminal (B135) No. 35 — (B362) No. 6: (B137) No. 6 — (B362) No. 8:	Is the resistance less than 1 Ω ?	Go to step 6 .	Repair the open circuit in harness between ECM and electronic throttle control relay.
6	 CHECK SENSOR OUTPUT. Connect all the connectors. Turn the ignition switch to ON. Read the data of main throttle sensor signal using Subaru Select Monitor. 	Is the voltage more than 0.4 V?	Go to step 7.	Go to step 9.
7	CHECK SENSOR OUTPUT. Read the data of sub throttle sensor signal using Subaru Select Monitor.	Is the voltage more than 0.8 V?		Go to step 9.
8	CHECK POOR CONTACT. Check the poor contact in connector between ECM and electronic throttle control.	Is there poor contact?	Repair the poor contact.	Go to step 13.

	Step	Check	Yes	No
9	 Turn the ignition switch to OFF. Disconnect the connector from ECM. Disconnect the connector from the electronic throttle control. Measure the resistance between ECM con- 	Is the resistance less than 1 Ω ?	Go to step 10.	Repair the open circuit of harness connector.
	nector and electronic throttle control connector. Connector & terminal (B136) No. 18 — (E57) No. 6: (B136) No. 29 — (E57) No. 4: (B136) No. 16 — (E57) No. 5:			
10	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. Measure the resistance between ECM connec- tor and chassis ground. Connector & terminal (B136) No. 16 — Chassis ground: (B136) No. 18 — Chassis ground: (B136) No. 29 — Chassis ground:	Is the resistance more than 1 $M\Omega$?	Go to step 11.	Repair the ground short circuit of har- ness.
11	 CHECK SENSOR POWER SUPPLY. 1) Connect the ECM connector. 2) Turn the ignition switch to ON. 3) Measure the voltage between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 5 (+) — Engine ground (-): 	Is the voltage 4.5 — 5.5 V?	Go to step 12.	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. to FU(H6DO)-34, Engine Control Module (ECM).></ref.
12	 CHECK SHORT CIRCUIT IN ECM. 1) Turn the ignition switch to OFF. 2) Measure the resistance between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 6 — Engine ground: (E57) No. 4 — Engine ground: 	Is the resistance more than 10 Ω?	Go to step 13.	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. to FU(H6DO)-34, Engine Control Module (ECM).></ref.
13	 CHECK SENSOR OUTPUT. 1) Connect all the connectors. 2) Turn the ignition switch to ON. 3) Read the data of main throttle sensor signal using Subaru Select Monitor. 	Is the voltage 4.63 V?	Go to step 14.	Go to step 16.
14	CHECK SENSOR OUTPUT. Read the data of sub throttle sensor signal using Subaru Select Monitor.	Is the voltage 4.73 V?	Go to step 15.	Go to step 16.
15	CHECK POOR CONTACT. Check the poor contact in connector between ECM and electronic throttle control.	Is there poor contact?	Repair the poor contact.	Go to step 21.
16	CHECK HARNESS BETWEEN ECM AND	Is the resistance less than 1 Ω ?	Go to step 17.	Repair the open circuit of harness connector.

	Step	Check	Yes	No
17	 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Connect the ECM connector. 2) Measure the resistance between electronic throttle control connector and engine ground. <i>Connector & terminal</i> (E57) No. 3 — Engine ground: 	Is the resistance less than 5 Ω ?	Go to step 18.	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. to FU(H6DO)-34, Engine Control Module (ECM).></ref.
18	 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Turn the ignition switch to ON. 2) Measure the voltage between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 5 (+) — Engine ground (-): 	Is the voltage less than 10 V?	Go to step 19 .	Repair the battery short circuit in har- ness between ECM connector and electronic throttle control connector.
19	CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. Measure the voltage between electronic throt- tle control connector and engine ground. <i>Connector & terminal</i> (E57) No. 6 (+) — Engine ground (–): (E57) No. 4 (+) — Engine ground (–):	Is the voltage less than 10 V?	Go to step 20.	Repair the short circuit in harness between ECM connector and electronic throttle control connector.
20	 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL. 1) Turn the ignition switch to OFF. 2) Remove the ECM. 3) Measure the resistance between ECM connectors. Connector & terminal (B136) No. 18 — (B136) No. 16: (B136) No. 29 — (B136) No. 16: 	Is the resistance more than 1 M Ω ?	Go to step 21.	Repair the short circuit to sensor power supply.
21	 CHECK SENSOR OUTPUT. 1) Turn the ignition switch to OFF. 2) Connect the connectors except of the electric throttle control relay. 3) Turn the ignition switch to ON. 4) Read the data of main throttle sensor signal using Subaru Select Monitor. 	Is the voltage 0.81 — 0.87 V?	Go to step 22.	Repair the poor contact in elec- tronic throttle con- trol connector. Replace the elec- tronic throttle con- trol if defective.
22	CHECK SENSOR OUTPUT. Read the data of sub throttle sensor signal using Subaru Select Monitor.	Is the voltage 1.64 — 1.70 V?	Go to step 23.	Repair the poor contact in ECM connector. Replace the elec- tronic throttle con- trol if defective.
23	 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL MO- TOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connector from the elec- tronic throttle control. 4) Measure the resistance between ECM con- nector 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 Ω ?	Go to step 24 .	Repair the open circuit of harness connector.

	Step	Check	Yes	No
24	 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL MO- TOR. 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. <i>Connector & terminal</i> (E57) No. 2 (+) — Engine ground (-): (E57) No. 1 (+) — Engine ground (-): 	Is the voltage less than 5 V?	Go to step 25.	Repair power sup- ply short circuit in harness between ECM and elec- tronic throttle con- trol.
25	 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL MO- TOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 2 — Engine ground: (E57) No. 1 — Engine ground: 	Is the resistance more than 1 M Ω ?	Go to step 26 .	Repair the short circuit of harness.
26	CHECK ELECTRONIC THROTTLE CON- TROL 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 $M\Omega$?	Go to step 27.	Repair the short circuit of harness.
27	CHECK ELECTRONIC THROTTLE CON- TROL GROUND CIRCUIT. Measure the resistance between ECM connec- tor and chassis ground. Connector & terminal (B137) No. 3 — Chassis ground:	Is the resistance less than 10 Ω ?	Go to step 28.	Repair the open circuit of harness.
28	CHECK ELECTRONIC THROTTLE CON- TROL. Measure the resistance between electronic throttle control terminals. <i>Terminals</i> <i>No. 1 — No. 2:</i>	Is the resistance less than 5 Ω ?	Go to step 29 .	Repair the elec- tronic throttle con- trol.
29	CHECK ELECTRONIC THROTTLE CON- TROL. Move the throttle valve to the fully open and fully closed positions with fingers Check the valve returns to the specified posi- tion when releasing fingers.	Does the valve return to the specified position? Standard value: 3 mm (0.12 in) from fully closed position	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. to FU(H6DO)-34, Engine Control Module (ECM).></ref. 	Repair the elec- tronic throttle con- trol.

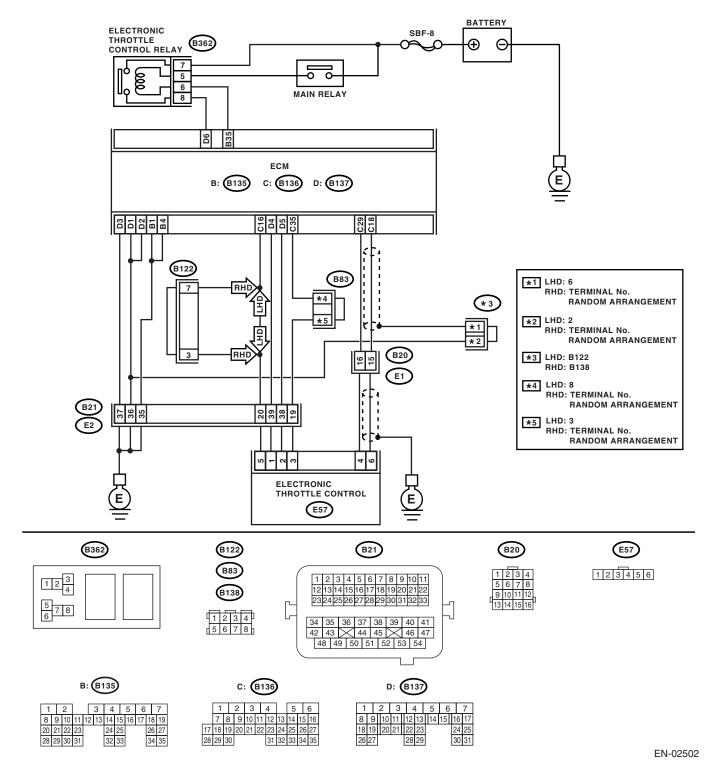
CV:DTC P2102 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT LOW DTC DETECTING CONDITION:

Immediately at fault recognition **TROUBLE SYMPTOM:**

· Erroneous idling

- Poor driving performance
- Engine stalls.

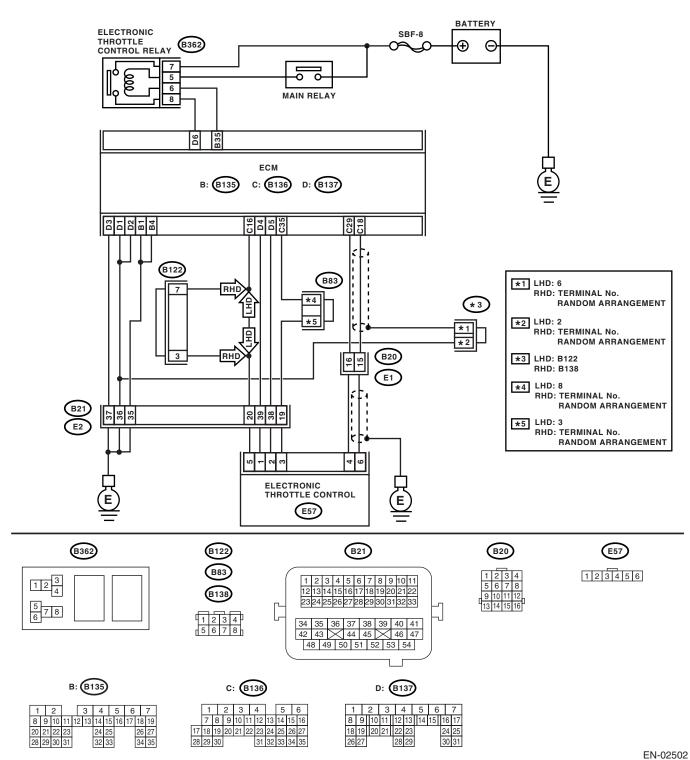
WIRING DIAGRAM:



	Ston	Check	Yes	No
4				-
1	CHECK ELECTRONIC THROTTLE CON- TROL RELAY.	Is the resistance less than 1 Ω ?	Go to step 2.	Replace the elec-
	-	\$27		tronic throttle con-
	1) Turn the ignition switch to OFF.			trol relay.
	2) Remove the electronic throttle control relay.			
	3) Connect the battery to electronic throttle			
	control relay terminals No. 5 and No. 6.			
	4) Measure the resistance between electronic			
	throttle control relay terminals.			
	Terminals			
	No. 7 — No. 8:		-	_
2		Is the voltage more than 5 V?	Go to step 3.	Repair the open or
	THROTTLE CONTROL RELAY.			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. 5 (+) — 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
	 Disconnect the connector from ECM. 			ECM and elec-
	Turn the ignition switch to ON.			tronic throttle con-
	3) Measure the voltage between electronic			trol relay.
	throttle control relay connector and chassis			
	ground.			
	Connector & terminal			
	(B362) No. 6 (+) — 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
	1) Turn the ignition switch to OFF.			ECM and elec-
	2) Measure the resistance between electronic			tronic throttle con-
	throttle control relay connector and chassis			trol relay.
	ground.			
	Connector & terminal			
	(B362) No. 6 — 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
l		Ω ?	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.< td=""><td>control relay.</td></ref.<>	control relay.
	tor.		to FU(H6DO)-34,	control rolay.
	Connector & terminal		Engine Control	
	(B135) No. 35 — (B362) No. 6:		Module (ECM).>	
	(B135) No. 6 — (B362) No. 8:			
	ט . טאו (121 מ) - ט . טאו (121 מ).			

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

Immediately at fault recognition **WIRING DIAGRAM**:



ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	 CHECK ELECTRONIC THROTTLE CONTROL RELAY. 1) Turn the ignition switch to OFF. 2) Remove the electronic throttle control relay. 3) Measure the resistance between electronic throttle control relay terminals. Terminals No. 7 — No. 8: 	Is the resistance more than 1 M Ω ?	Go to step 2.	Replace the elec- tronic throttle con- trol 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 RE- LAY. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM con- nector and chassis ground. Connector & terminal (B135) No. 35 — Chassis ground: 	Is the resistance more than 1 M Ω ?	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. to FU(H6DO)-34, Engine Control Module (ECM).></ref. 	Repair the ground short circuit in har- ness between ECM and elec- tronic throttle con- trol relay.

CX:DTC P2109 THROTTLE ANGLE SENSOR CLOSED POSITION ERROR

NOTE:

For diagnostic procedure, refer to DTC P2101. <Ref. to EN(H6DO)(diag)-241, DTC P2101 THROTTLE AC-TUATOR CONTROL MOTOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

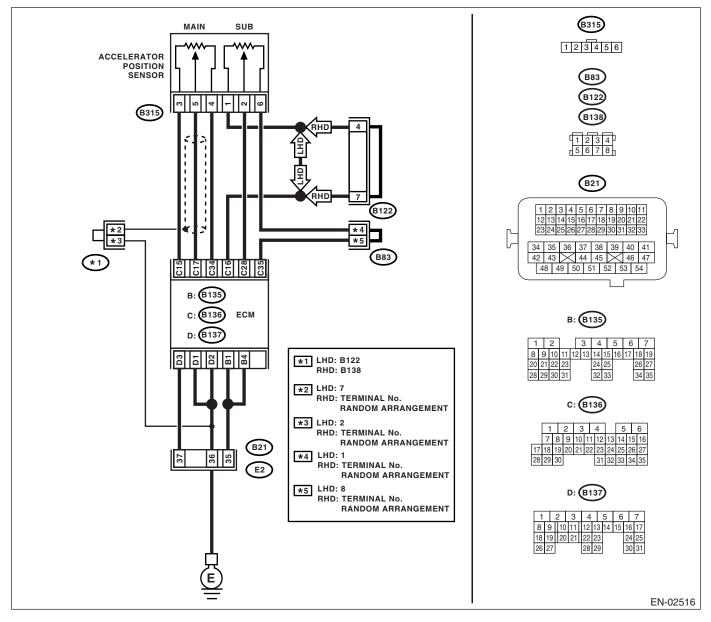
CY:DTC P2122 THROTTLE/PEDAL POSITION SENSOR/SWITCH "D" CIRCUIT LOW INPUT

DTC DETECTING CONDITION: Immediately at fault recognition TROUBLE SYMPTOM:

• Erroneous idling

• Poor driving performance

WIRING DIAGRAM:



	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.	_	-	
	 Turn the ignition switch to ON. 			
	2) Read the data of main accelerator position			
	sensor signal using Subaru Select Monitor.			

	Step	Check	Yes	No
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 AC- CELERATOR 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 AC- CELERATOR POSITION SENSOR. Measure the resistance between ECM connec- tor and chassis ground. Connector & terminal (B136) No. 17 — Chassis ground: (B136) No. 15 — Chassis ground:	ΜΩ?	Go to step 5 .	Repair the chas- sis short circuit of harness.
5	 CHECK POWER SUPPLY OF ACCELERA- TOR POSITION SENSOR. 1) Connect the ECM connector. 2) Turn the ignition switch to ON. 3) Measure the voltage between accelerator position sensor connector and engine ground. Connector & terminal (B315) No. 3 (+) — Engine ground (-): 	Is the voltage 4.5 — 5.5 V?	Go to step 6 .	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. to FU(H6DO)-34, Engine Control Module (ECM).></ref.
6	CHECK ACCELERATOR POSITION SEN- SOR. Measure the resistance of accelerator position sensor. Terminals No. 3 — No. 4:	Is the resistance $1.2 - 4.8$ k Ω ?	Go to step 7.	Replace the accel- erator position sensor.
7	CHECK ACCELERATOR POSITION SEN- SOR. Measure the resistance of accelerator position sensor. <i>Terminals</i> <i>No. 5 — No. 4:</i> Check the measured value is within the specifi- cation without depressing the accelerator pedal.	Is the resistance 0.2 — 1.0 kΩ?	Go to step 8.	Replace the accelerator position sensor.
8	CHECK ACCELERATOR POSITION SEN- SOR. Measure the resistance of accelerator position sensor. <i>Terminals</i> <i>No. 5 — No. 4:</i> Check the measured value is within the specifi- cation with the accelerator pedal depressed.	Is the resistance $0.5 - 2.5$ k Ω ?	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. to FU(H6DO)-34, Engine Control Module (ECM).></ref. 	Replace the accel- erator position sensor.

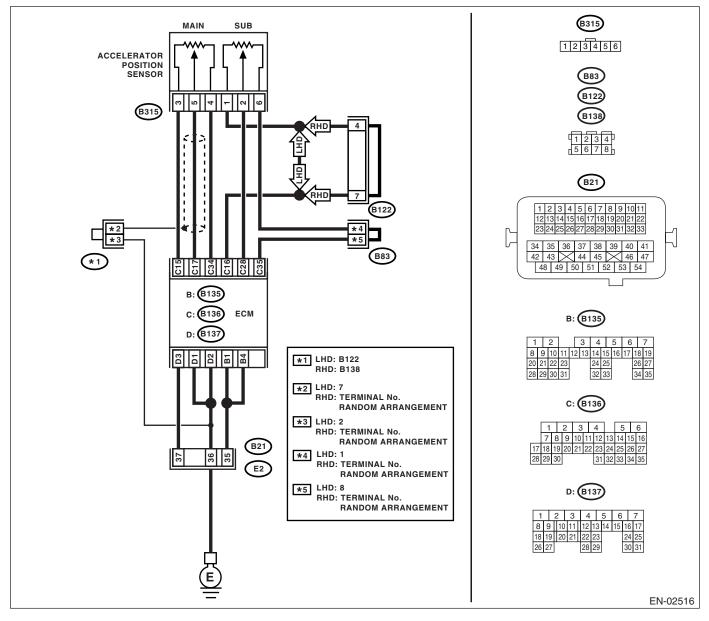
CZ:DTC P2123 THROTTLE/PEDAL POSITION SENSOR/SWITCH "D" CIRCUIT HIGH INPUT

DTC DETECTING CONDITION: Immediately at fault recognition TROUBLE SYMPTOM:

• Erroneous idling

• Poor driving performance

WIRING DIAGRAM:



Step	Check	Yes	No
1 CHECK ACCELERATOR POSITION SEI SOR OUTPUT.	N- 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 main accelerator possensor signal using Subaru Select Monito 			

	Step	Check	Yes	No
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 AC- CELERATOR POSITION SENSOR. 1) Turn the ignition switch to OFF. 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. 34 — (B315) No. 4: 	Ω?	Go to step 4.	Repair the open circuit of harness connector.
4	 CHECK HARNESS BETWEEN ECM AND AC- CELERATOR POSITION SENSOR. 1) Connect the ECM connector. 2) Measure the resistance between accelera- tor position sensor connector and engine ground. Connector & terminal (B315) No. 4 — Engine ground: 	Is the resistance less than 5 Ω ?	Go to step 5 .	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. to FU(H6DO)-34, Engine Control Module (ECM).></ref.
5	 CHECK HARNESS BETWEEN ECM AND AC- CELERATOR POSITION SENSOR. 1) Connect the ECM connector. 2) Turn the ignition switch to ON. 3) Measure the voltage between accelerator position sensor connector and engine ground. Connector & terminal (B315) No. 5 (+) — Engine ground (-): 	Is the voltage less than 6 V?	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 AC- CELERATOR POSITION SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connectors. Connector & terminal (B136) No. 17 — (B136) No. 15: (B136) No. 17 — (B136) No. 16: 	Is the resistance more than 1 MΩ?	Repair the poor contact in acceler- ator position sen- sor connector. Replace the accel- erator position sensor if defective.	Repair the short circuit to sensor power supply.

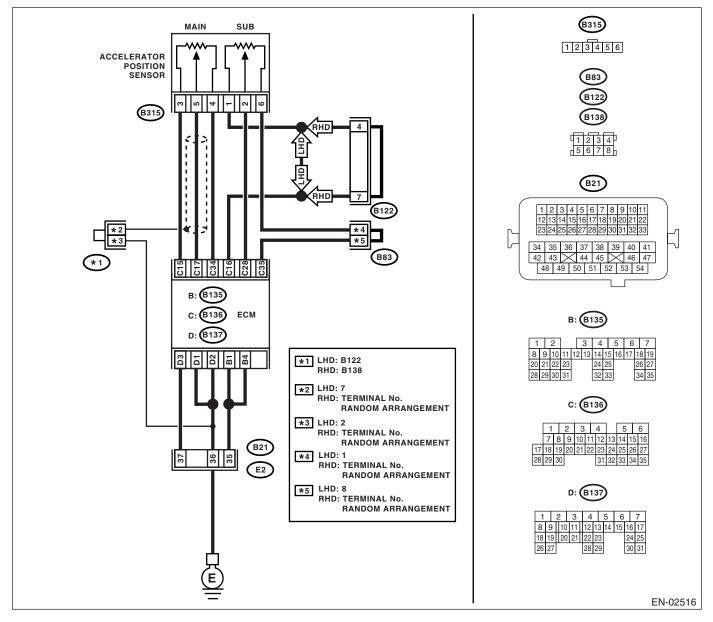
DA:DTC P2127 THROTTLE/PEDAL POSITION SENSOR/SWITCH "E" CIRCUIT LOW INPUT

DTC DETECTING CONDITION: Immediately at fault recognition TROUBLE SYMPTOM:

• Erroneous idling

• Poor driving performance

WIRING DIAGRAM:



	Step	Check	Yes	No
1	CHECK ACCELERATOR POSITION SEN- SOR OUTPUT. 1) Turn the ignition switch to ON.	Is the voltage more than 0.4 V?	Go to step 2.	Go to step 3.
	 Prevention of the second second			

	Step	Check	Yes	No
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
3	CHECK HARNESS BETWEEN ECM AND AC-	Is the resistance less than 1	Go to step 4.	present. Repair the open
	 CELERATOR 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: 	Ω?		circuit of harness connector.
4	CHECK HARNESS BETWEEN ECM AND AC- CELERATOR POSITION SENSOR. Measure the resistance between ECM connec- tor and chassis ground. Connector & terminal (B136) No. 28 — Chassis ground: (B136) No. 16 — Chassis ground:	ΜΩ?	Go to step 5 .	Repair the chas- sis short circuit of harness.
5	 CHECK POWER SUPPLY OF ACCELERA- TOR POSITION SENSOR. 1) Connect the ECM connector. 2) Turn the ignition switch to ON. 3) Measure the voltage between accelerator position sensor connector and engine ground. Connector & terminal (B315) No. 1 (+) — Engine ground (-): 	Is the voltage 4.5 — 5.5 V?	Go to step 6.	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. to FU(H6DO)-34, Engine Control Module (ECM).></ref.
6	CHECK ACCELERATOR POSITION SEN- SOR. 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 kΩ?	Go to step 8 .	Replace the accel- erator position sensor.
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. to FU(H6DO)-34, Engine Control Module (ECM).></ref. 	Replace the accel- erator position sensor.

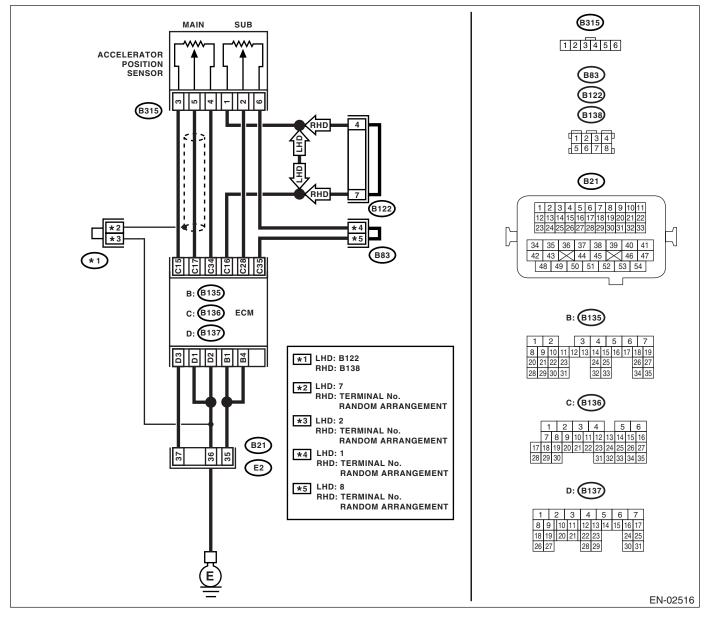
DB:DTC P2128 THROTTLE/PEDAL POSITION SENSOR/SWITCH "E" CIRCUIT HIGH INPUT

DTC DETECTING CONDITION: Immediately at fault recognition TROUBLE SYMPTOM:

• Erroneous idling

• Poor driving performance

WIRING DIAGRAM:



	Step	Check	Yes	No
1	CHECK ACCELERATOR POSITION SEN- SOR 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. 			

	Step	Check	Yes	No
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 AC- CELERATOR POSITION SENSOR. 1) Turn the ignition switch to OFF. 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. 35 — (B315) No. 6: 	Ω?	Go to step 4 .	Repair the open circuit of harness connector.
4	 CHECK HARNESS BETWEEN ECM AND AC- CELERATOR POSITION SENSOR. 1) Connect the ECM connector. 2) Measure the resistance between accelera- tor position sensor connector and engine ground. Connector & terminal (B315) No. 6 — Engine ground: 	Is the resistance less than 5 Ω ?	Go to step 5.	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. to FU(H6DO)-34, Engine Control Module (ECM).></ref.
5	 CHECK HARNESS BETWEEN ECM AND AC- CELERATOR POSITION SENSOR. 1) Connect the ECM connector. 2) Turn the ignition switch to ON. 3) Measure the voltage between accelerator position sensor connector and engine ground. Connector & terminal (B315) No. 2 (+) — Engine ground (-): 	Is the voltage less than 6 V?	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 AC- CELERATOR POSITION SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connectors. Connector & terminal (B136) No. 28 — (B136) No. 15: (B136) No. 28 — (B136) No. 16: 	Is the resistance more than 1 M Ω ?	Repair the poor contact in acceler- ator position sen- sor connector. Replace the accel- erator position sensor if defective.	Repair the short circuit to sensor power supply.

DC:DTC P2135 THROTTLE/PEDAL POSITION SENSOR/SWITCH "A" / "B" VOLTAGE RATIONALITY

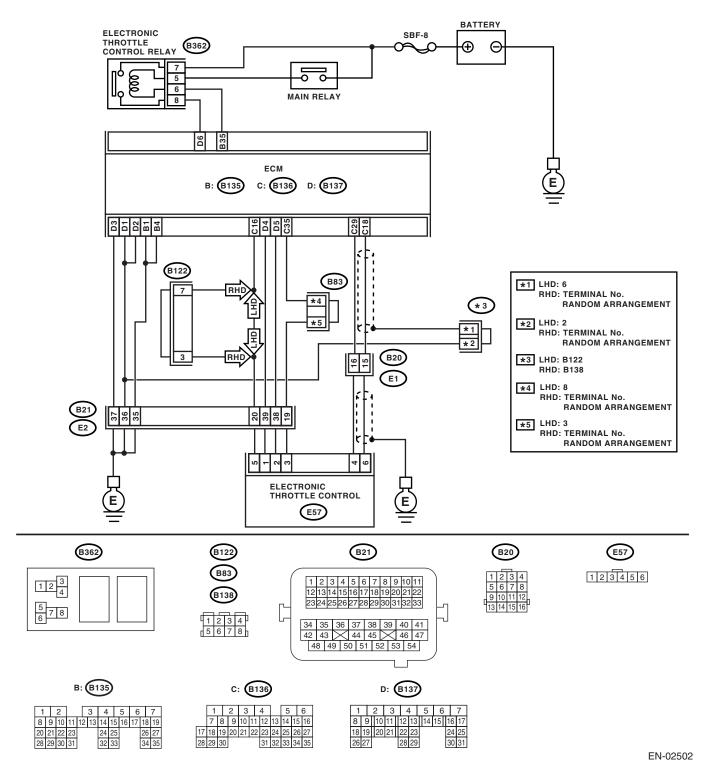
DTC DETECTING CONDITION: Immediately at fault recognition

TROUBLE SYMPTOM:

Erroneous idling

Poor driving performance

WIRING DIAGRAM:



1	CHECK SENSOR OUTPUT.		A	
		Is the voltage more than 0.4 V?	Go to step 2.	Go to step 4.
	 Turn the ignition switch to ON. 			
	2) Read the data of main throttle sensor signal			
	using Subaru Select Monitor.			
2	CHECK SENSOR OUTPUT.	Is the voltage more than 0.8 V?	Go to step 3.	Go to step 4.
	Read the data of sub throttle sensor signal			
	using Subaru Select Monitor.			
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.	Ω?		circuit of harness
	 Turn the ignition switch to OFF. 			connector.
	Disconnect the connector from ECM.			
	Disconnect the connector from the elec-			
	tronic throttle control.			
	4) Measure the resistance between ECM con-			
	nector and electronic throttle control connector.			
	Connector & terminal			
	(B136) No. 18 — (E57) No. 6:			
	(B136) No. 29 — (E57) No. 4:			
	(B136) No. 16 — (E57) No. 5:			
5	CHECK HARNESS BETWEEN ECM AND	Is the resistance more than 1	Go to step 6.	Repair the ground
		ΜΩ?		short circuit of har-
	Measure the resistance between ECM connec-			ness.
	tor and chassis ground.			
	Connector & terminal			
	(B136) No. 18 — Chassis ground:			
	(B136) No. 29 — Chassis ground: (B136) No. 16 — Chassis ground:			
<u> </u>	CHECK SENSOR POWER SUPPLY.		Cata star 7	Densis the near
6	 CHECK SENSOR POWER SUPPLY. Connect the ECM connector. 	Is the voltage 4.5 — 5.5 V?	Go to step 7.	Repair the poor contact in ECM
	 Connect the ECM connector. 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(H6DO)-34,
	(E57) No. 5 (+) — Engine ground (–):			Engine Control
				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.	Ω ?		contact in ECM
	2) Measure the resistance between electronic			connector.
	throttle control connector and engine ground.			Replace the ECM
	Connector & terminal			if defective. <ref.< td=""></ref.<>
	(E57) No. 6 — Engine ground:			to FU(H6DO)-34,
	(E57) No. 4 — Engine ground:			Engine Control
				Module (ECM).>
8	CHECK SENSOR OUTPUT.	Is the voltage less than 4.63	Go to step 9.	Go to step 11.
	1) Connect all the connectors.	V?		
	2) Turn the ignition switch to ON.			
	3) Read the data of main throttle sensor signal			
	using Subaru Select Monitor.			
9	CHECK SENSOR OUTPUT.	Is the voltage less than 4.73	Go to step 10.	Go to step 11.
	Read the data of sub throttle sensor signal	V?		
	using Subaru Select Monitor.			
10	CHECK POOR CONTACT.	Is there poor contact?	Repair the poor	Temporary poor
	Check the poor contact in connector between		contact.	contact occurred,
	-			
	ECM and electronic throttle control.			but it is normal at

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

	Step	Check	Yes	No
11	CHECK HARNESS BETWEEN ECM AND	Is the resistance less than 1	Go to step 12.	Repair the open
	ELECTRONIC THROTTLE CONTROL.	Ω?		circuit of harness
	 Turn the ignition switch to OFF. 			connector.
	Disconnect the connector from ECM.			
	Disconnect the connector from the elec-			
	tronic throttle control.			
	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:			
12	CHECK HARNESS BETWEEN ECM AND	Is the resistance less than 5	Go to step 13.	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 ground.			if defective. <ref.< td=""></ref.<>
	Connector & terminal			to FU(H6DO)-34,
	(E57) No. 3 — Engine ground:			Engine Control
				Module (ECM).>
13	CHECK HARNESS BETWEEN ECM AND	Is the voltage less than 10 V?	Go to step 14.	Repair the battery
	ELECTRONIC THROTTLE CONTROL.	-		short circuit in har-
	 Connect the ECM connector. 			ness between
	2) Turn the ignition switch to ON.			ECM connector
	3) Measure the voltage between electronic			and electronic
	throttle control connector and engine ground.			throttle control
	Connector & terminal			connector.
	(E57) No. 5 (+) — Engine ground (–):			
14	CHECK HARNESS BETWEEN ECM AND	Is the voltage less than 10 V?	Go to step 15.	Repair the short
	ELECTRONIC THROTTLE CONTROL.	-		circuit in harness
	Measure the voltage between electronic throt-			between ECM
	tle control connector and engine ground.			connector and
	Connector & terminal			electronic throttle
	(E57) No. 6 (+) — Engine ground (–):			control connector.
	(E57) No. 4 (+) — Engine ground (–):			
15	CHECK HARNESS BETWEEN ECM AND	Is the resistance more than 1	Go to step 16.	Repair the short
	ELECTRONIC THROTTLE CONTROL.	ΜΩ?		circuit to sensor
	1) Turn the ignition switch to OFF.			power supply.
	2) Disconnect the connector from ECM.			
	3) Measure the resistance between ECM con-			
	nectors.			
	Connector & terminal			
	(B136) No. 18 — (B136) No. 16:			
	(B136) No. 29 — (B136) No. 16:			
16	CHECK ELECTRONIC THROTTLE CON-	Is the resistance more than 1	Repair the poor	Repair the short
	TROL HARNESS.	ΜΩ?	contact in ECM	circuit of harness.
	1) Disconnect the connector from ECM.		connector.	
	 Disconnect the connector from the elec- 		Replace the ECM	
	tronic throttle control.		if defective. <ref.< td=""><td></td></ref.<>	
	3) Measure the resistance between electronic		to FU(H6DO)-34,	
	throttle control connector terminals.		Engine Control	
	Connector & terminal		Module (ECM).>	
	(E57) No. 6 — (E57) No. 4:			
	(L37) NO. $3 - (L37)$ NO. 4.	l		

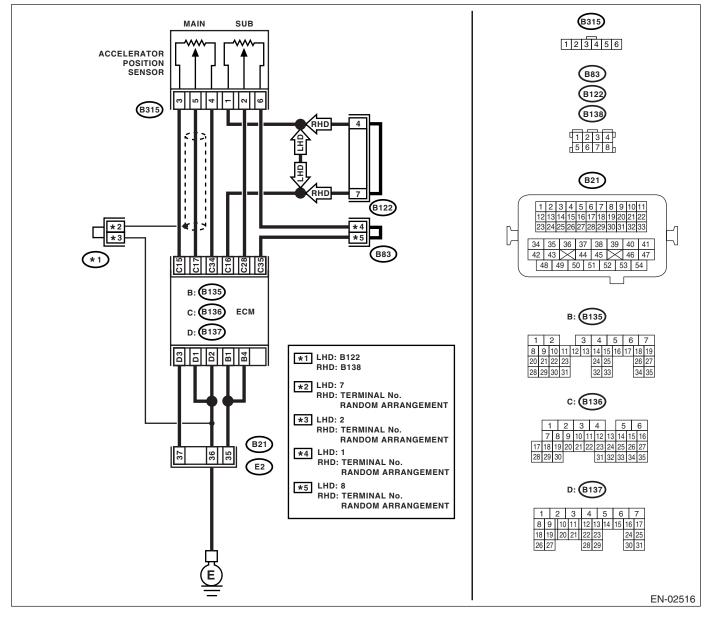
DD:DTC P2138 THROTTLE/PEDAL POSITION SENSOR/SWITCH "D" / "E" VOLTAGE RATIONALITY

DTC DETECTING CONDITION: Immediately at fault recognition TROUBLE SYMPTOM:

Erroneous idling

• Poor driving performance

WIRING DIAGRAM:



	Step	Check	Yes	No
1	CHECK ACCELERATOR POSITION SEN- SOR OUTPUT.	Is the voltage more than 0.4 V?	Go to step 2.	Go to step 3.
	 Turn the ignition switch to ON. Read the data of main accelerator position sensor signal and sub accelerator position sensor signal using Subaru Select Monitor. 			

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

	Step	Check	Yes	No
2	CHECK POOR CONTACT. Check poor contact in connector between ECM and accelerator position sensor.	Is there poor contact?	Repair the poor contact.	Go to step 12.
3	 CHECK HARNESS BETWEEN ECM AND AC- CELERATOR POSITION SENSOR. 1) Turn the ignition switch to OFF. 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. 28 — (B315) No. 2: (B136) No. 16 — (B315) No. 1: 	Ω?	Go to step 4.	Repair the open circuit of harness connector.
4	CHECK HARNESS BETWEEN ECM AND AC- CELERATOR POSITION SENSOR. Measure the resistance between ECM connec- 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:	ΜΩ?	Go to step 5 .	Repair the ground short circuit of har- ness.
5	 CHECK POWER SUPPLY OF ACCELERA- TOR POSITION SENSOR. 1) Connect the ECM connector. 2) Turn the ignition switch to ON. 3) Measure the voltage between accelerator position sensor connector and engine ground. Connector & terminal (B315) No. 3 (+) — Engine ground (-): (B315) No. 1 (+) — Engine ground (-): 	Is the voltage 4.5 — 5.5 V?	Go to step 6 .	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. to FU(H6DO)-34, Engine Control Module (ECM).></ref.
6	CHECK ACCELERATOR POSITION SEN- SOR. Measure the resistance of accelerator position sensor. <i>Terminals</i> <i>No. 3 — No. 4:</i>	Is the resistance 1.2 — 4.8 kΩ?	Go to step 7.	Replace the accel- erator position sensor.
7	CHECK ACCELERATOR POSITION SEN- SOR. Measure the resistance of accelerator position sensor. <i>Terminals</i> <i>No. 1 — No. 6:</i>	Is the resistance 0.75 — 3.15 kΩ?	Go to step 8.	Replace the accel- erator position sensor.
8	CHECK ACCELERATOR POSITION SEN- SOR. Measure the resistance of accelerator position sensor without depressing the accelerator pedal. <i>Terminals</i> <i>No. 5 — No. 4:</i>	Is the resistance 0.2 — 0.8 kΩ?	Go to step 9 .	Replace the accel- erator position sensor.

Step	Check	Yes	No
CHECK ACCELERATOR POSITION SEN- SOR.	Is the resistance 0.15 — 0.63 $k\Omega$?	Go to step 10.	Replace the accel- erator position
sensor without depressing the accelerator			sensor.
Terminals			
	ls the resistance 0.5 - 2.5	Go to step 11	Replace the accel-
SOR. Measure the resistance of accelerator position sensor with the accelerator pedal depressed. <i>Terminals</i>	$k\Omega$?		erator position sensor.
	la the registeres 0.29 1.69	Co to stop 12	Baplace the secol
SOR.	Is the resistance 0.28 — 1.68 $k\Omega$?	Go to step 12.	Replace the accelerator position sensor.
sensor with the accelerator pedal depressed. <i>Terminals</i>			
		-	-
 SOR 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 	Is the voltage less than 4.8 V?	Go to step 13.	Go to step 14.
-	Is there poor contact?	Repair the poor	Go to step 18.
Check poor contact in connector between ECM and accelerator position sensor.		contact.	
 CHECK HARNESS BETWEEN ECM AND AC- CELERATOR POSITION SENSOR. 1) Turn the ignition switch to OFF. 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 	Is the resistance less than 1 Ω?	Go to step 15.	Repair the open circuit of harness connector.
(B136) No. 34 — (B315) No. 4:			
CHECK HARNESS BETWEEN ECM AND AC-	Is the resistance less than 5	Go to step 16.	Repair the poor
 CELERATOR POSITION SENSOR. 1) Connect the ECM connector. 2) Measure the resistance between accelerator position sensor connector and engine ground. Connector & terminal (B315) No. 4 — Engine ground: (B315) No. 6 — Engine ground: 	Ω?		contact in ECM connector. Replace the ECM if defective. <ref. to FU(H6DO)-34, Engine Control Module (ECM).></ref.
	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.
	 SOR. Measure the resistance of accelerator position sensor without depressing the accelerator pedal. Terminals No. 2 — No. 6: CHECK ACCELERATOR POSITION SENSOR. Measure the resistance of accelerator position sensor with the accelerator pedal depressed. Terminals No. 5 — No. 4: CHECK ACCELERATOR POSITION SENSOR. Measure the resistance of accelerator position sensor with the accelerator pedal depressed. Terminals No. 2 — No. 6: 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. CHECK POOR CONTACT. 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. 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. 4: (B136) No. 35 — (B315) No. 6: CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR. 1) Connect the ECM connector. 2) Measure the resistance between accelerator position sensor connector and engine ground: (B315) No. 4 — Engine ground: (B315) No. 4 — Engine ground: (B135) No. 6 — Engine ground: CHECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR. 1) Connect the ECM connector. 2) Turn the ignition switch to ON.<td>SOR. KΩ? Measure the resistance of accelerator position sensor without depressing the accelerator pedal. Is the resistance 0.5 - 2.5 kΩ? CHECK ACCELERATOR POSITION SEN- SOR. Is the resistance 0.5 - 2.5 kΩ? Measure the resistance of accelerator position sensor with the accelerator position sensor SOR OUTPUT. Is the resistance 0.28 - 1.68 kΩ? 1 Turn the ignition switch to OFF. Check ACCELERATOR POSITION SEN- SOR outPUT. Is the voltage less than 4.8 V? 2 Check POOR CONTACT. Is there solve accelerator position sensor signal using Subaru Select Monitor. Is there poor contact? CHECK HARNESS BETWEEN ECM AND AC- CELERATOR POSITION SENSOR. Is the resistance less than 1 Ω? 3 Disconnect the connector from ECM. Is the resistance less than 1 Ω? 1 Turn the ignition switch to OFF. Is the resistance less than 1 Ω? 2 Disconnect the connector. Is the resistance less than 1 Ω? 3 Disconnect the connector from ECM. Is the resistance less than 5 Ω? CHECK HARNESS BETWEEN ECM AND AC- CELERATOR POSITION SENSOR. Is the resistance less than 5 Ω? <</td><td>SOR. Kt27 Measure the resistance of accelerator position sensor without depressing the accelerator position sensor with the accelerator position sensor signal and sub accelerator position sensor signal and sub accelerator position sensor. Is the voltage less than 4.8 V? Go to step 12. CHECK ACCELERATOR POSITION SENSOR. Is the voltage less than 4.8 V? Go to step 13. Yorn the ignition switch to OFF. Connect all the connectors. Is there poor contact? Repair the poor contact? CHECK HARNESS BETWEEN ECM AND ACCELECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR. Is the resistance less than 5 Go to step 16. (1) Turn the ignition sensor connector. Connector & terminal (B136) No. 3 – (B315) No. 6: Is the resistance less than 5 Go to step 17. (2) Measure the resistance between accelerator</td>	SOR. KΩ? Measure the resistance of accelerator position sensor without depressing the accelerator pedal. Is the resistance 0.5 - 2.5 kΩ? CHECK ACCELERATOR POSITION SEN- SOR. 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Kt27 Measure the resistance of accelerator position sensor without depressing the accelerator position sensor with the accelerator position sensor signal and sub accelerator position sensor signal and sub accelerator position sensor. Is the voltage less than 4.8 V? Go to step 12. CHECK ACCELERATOR POSITION SENSOR. Is the voltage less than 4.8 V? Go to step 13. Yorn the ignition switch to OFF. Connect all the connectors. Is there poor contact? Repair the poor contact? CHECK HARNESS BETWEEN ECM AND ACCELECK HARNESS BETWEEN ECM AND ACCELERATOR POSITION SENSOR. Is the resistance less than 5 Go to step 16. (1) Turn the ignition sensor connector. Connector & terminal (B136) No. 3 – (B315) No. 6: Is the resistance less than 5 Go to step 17. (2) Measure the resistance between accelerator

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

	Step	Check	Yes	No
17	 CHECK HARNESS BETWEEN ECM AND AC- CELERATOR POSITION SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connectors. 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: 	ΜΩ?	Go to step 18.	Repair the short circuit to sensor power supply.
18	 CHECK HARNESS BETWEEN ECM AND AC- CELERATOR POSITION SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connector from the acceler- ator position sensor. 4) Measure the resistance between connector terminals of accelerator position sensor. Connector & terminal (B315) No. 5 — (B315) No. 2: 	ΜΩ?	Repair the poor contact in ECM connector. Replace the ECM if defective. <ref. to FU(H6DO)-34, Engine Control Module (ECM).></ref. 	Repair the short circuit in harness between ECM connector and accelerator posi- tion sensor con- nector.

19.General Diagnostic Table A: INSPECTION

1. ENGINE

NOTE:

Malfunction of parts other than those listed is also possible. <Ref. to ME(H6DO)-81, Engine Trouble in General.>

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

General Diagnostic Table

ENGINE (DIAGNOSTICS)

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

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

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

*3: Ensure the secure installation.

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

*5: Inspect air leak in air intake system.