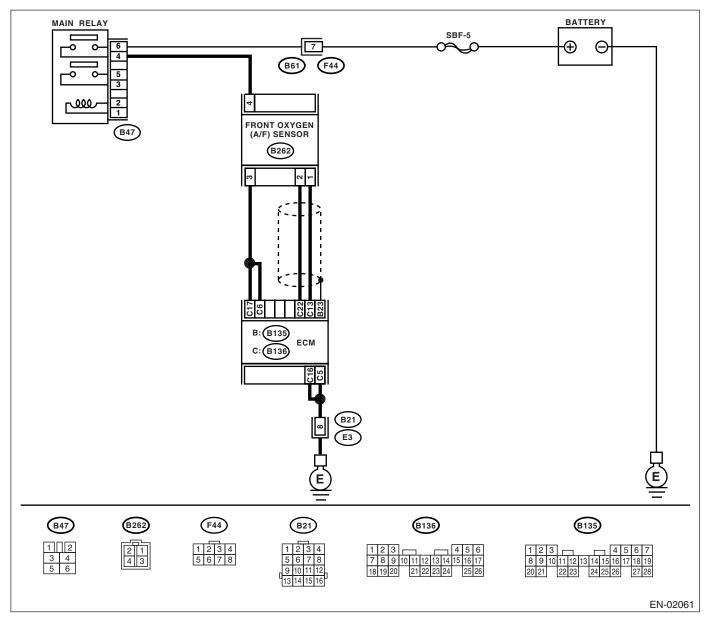
19.Diagnostic Procedure with Diagnostic Trouble Code (DTC) A: DTC P0030 — HO2S HEATER CONTROL CIRCUIT (BANK 1 SENSOR 1) — DTC DETECTING CONDITION:

• Two consecutive driving cycles with fault

• GENERAL DESCRIPTION <Ref. to GD(H4SO)-9, DTC P0030 — HO2S HEATER CONTROL CIRCUIT (BANK 1 SENSOR 1) —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, Inspection Mode.>. WIRING DIAGRAM:



	Step	Check	Yes	No
1	 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNEC- TOR. 1) Start the engine and warm-up engine. 2) Turn the ignition switch to OFF. 3) Disconnect the connectors from ECM and front oxygen (A/F) sensor. 4) Measure the resistance of harness between ECM and front oxygen (A/F) sensor connector. Connector & terminal (B136) No. 6 — (B262) No. 3: (B136) No. 17 — (B262) 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. <i>Connector & terminal</i> (B136) No. 13 — (B262) No. 1: (B136) No. 22 — (B262) No. 2:	Is the resistance less than 1 Ω ?	Go to step 3 .	Repair the open circuit in harness between main relay and front oxygen (A/F) sen- sor 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. 4 — (B262) No. 4:	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 (AF) SENSOR. Measure the resistance between front oxygen (A/F) sensor connector terminals. <i>Terminals</i> (B262) No. 2 — (B262) No. 1: (B262) No. 3 — (B262) No. 4:	Is the resistance less than 5 Ω ?	Go to step 5.	Replace the front oxygen (A/F) sen- sor. <ref. to<br="">FU(H4SO)-42, Front Oxygen (A/ F) Sensor.></ref.>
5	CHECK POOR CONTACT. Check the poor contact in ECM and front oxy- gen (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(H4SO)-42, Front Oxygen (A/ F) Sensor.></ref.>

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

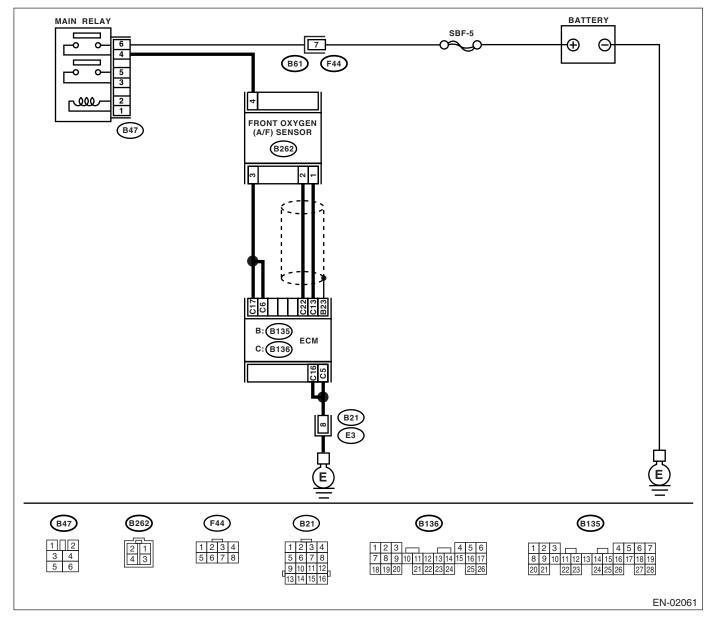
DTC DETECTING CONDITION:

Immediately at fault recognition

GENERAL DESCRIPTION < Ref. to GD(H4SO)-11, DTC P0031 — HO2S HEATER CONTROL CIRCUIT • LOW (BANK 1 SENSOR 1) -, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Moni- tor or OBD-II general scan tool display DTC P0031 and P0037 at the same time?	Go to step 2.	Go to step 5.
2	 CHECK POWER SUPPLY TO FRONT OXY-GEN (A/F) SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from front oxygen (A/F) sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between front oxygen (A/F) sensor connector and engine ground. Connector & terminal (B262) No. 4 (+) — Engine ground (-): 	Is the voltage more than 10 V?	Go to step 3.	Repair power sup- ply line. NOTE: In this case, repair the following: • Open circuit in harness between main relay and front oxygen (A/F) sensor connector • Poor contact in front oxygen (A/F) sensor connector • Poor contact in main relay connec- tor
3	CHECK GROUND CIRCUIT OF ECM. Measure the resistance of harness between ECM connector and chassis ground. <i>Connector & terminal</i> (B136) No. 5 — Chassis ground: (B136) No. 16 — Chassis ground:	Is the resistance less than 5 Ω?	Go to step 4.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between ECM and engine ground terminal • Poor contact in ECM connector Poor contact in coupling connector
4	 CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of front oxygen (A/F) sensor heater current using Subaru Select Monitor or OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4so)-32,="" monitor.="" select="" subaru="" to=""></ref.> OBD-II scan tool For detailed operation procedures, refer to the OBD-II scan Tool Instruction Manual. 	Is the current more than 0.2 A?	Repair poor con- tact in connector. NOTE: In this case, repair the following: • Poor contact in front oxygen (A/F) sensor connector • Poor contact in ECM connector	Go to step 5.
5	 CHECK INPUT SIGNAL FROM ECM. 1) Start and idle the engine. 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B136) No. 6 (+) — Chassis ground (-): (B136) No. 17 (+) — Chassis ground (-): 	Is the voltage less than 1 V?	Go to step 7.	Go to step 6 .
6	CHECK OUTPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B136) No. 6 (+) — Chassis ground (-): (B136) No. 17 (+) — Chassis ground (-):	Is the voltage more than 1 V by shaking the ECM harness and connector?		Go to step 7.

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	Step	Check	Yes	No
7	CHECK FRONT OXYGEN (A/F) SENSOR.	Is the resistance less than 10	Repair harness	Replace the front
	 Turn the ignition switch to OFF. 	Ω?	and connector.	oxygen (A/F) sen-
	2) Measure the resistance between front oxy- gen (A/F) sensor connector terminals.		NOTE: In this case, repair	sor. <ref. to<br="">FU(H4SO)-49,</ref.>
	Terminals		the following:	Fuel.>
	(B262) No. 3 — (B262) No. 4:		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	

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

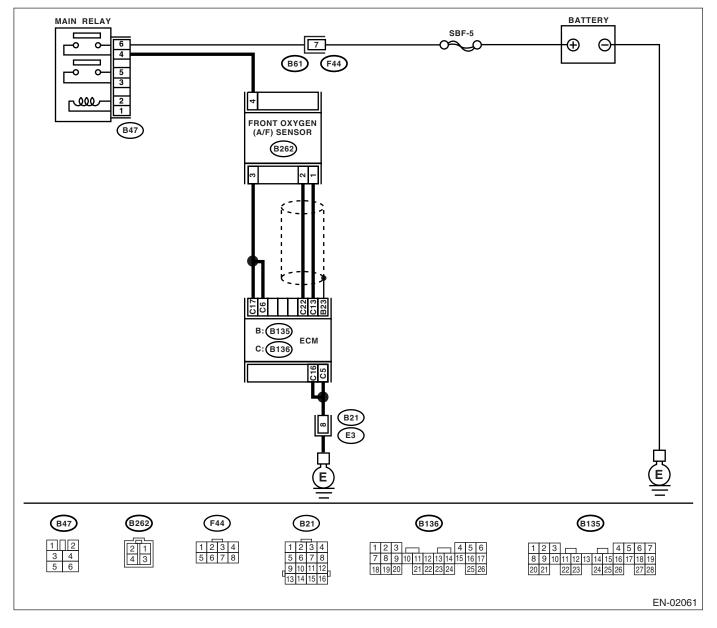
DTC DETECTING CONDITION:

• Immediately at fault recognition

• GENERAL DESCRIPTION < Ref. to GD(H4SO)-13, DTC P0032 — HO2S HEATER CONTROL CIRCUIT HIGH (BANK 1 SENSOR 1) —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



Step Check Yes No CHECK OUTPUT SIGNAL FROM ECM. Go to step 2. 1 Is the voltage more than 8 V? Go to step 3. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM connector and chassis ground. **Connector & terminal** (B136) No. 6 (+) — Chassis ground (–): (B136) No. 17 (+) — Chassis ground (-): 2 CHECK FRONT OXYGEN (A/F) SENSOR Is the current more than 2.3 A? Replace the ECM. END **HEATER CURRENT.** <Ref. to 1) Turn the ignition switch to OFF. FU(H4SO)-46, 2) Repair the battery short circuit in harness **Engine Control** between ECM and front oxygen (A/F) sensor Module (ECM).> connector. 3) Turn the ignition switch to ON. 4) Read the data of front oxygen (A/F) sensor heater current using Subaru Select Monitor or the OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". < Ref. to EN(H4SO)-32, Subaru Select Monitor.> OBD-II general scan tool For detailed operation procedure, refer to the OBD-II General Scan Tool Instruction Manual. CHECK OUTPUT SIGNAL FROM ECM. 3 Is the voltage more than 8 V by Repair battery END Measure the voltage between ECM connector shaking the ECM harness and short circuit in harand chassis ground. connector? ness between **Connector & terminal** ECM and front (B136) No. 6 (+) — Chassis ground (–): oxygen (A/F) sen-(B136) No. 17 (+) — Chassis ground (-): sor connector.

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

DTC DETECTING CONDITION:

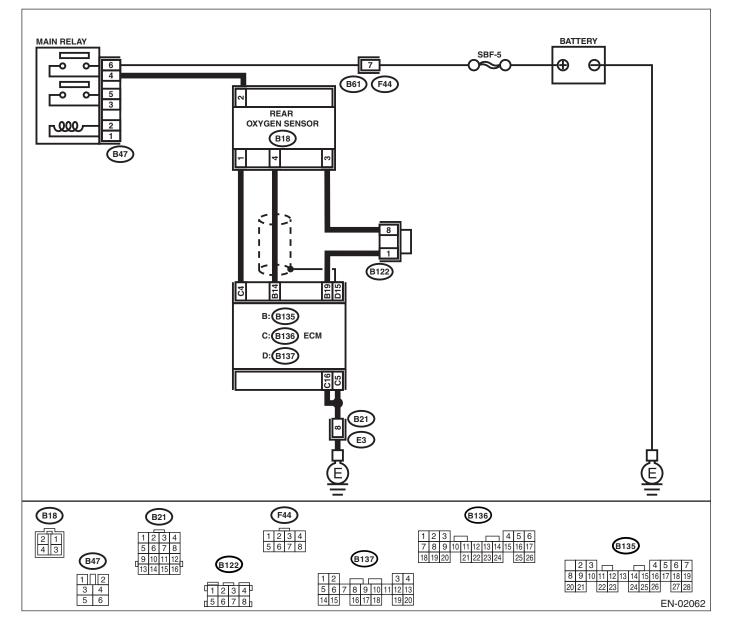
· Two consecutive driving cycles with fault

• GENERAL DESCRIPTION < Ref. to GD(H4SO)-15, DTC P0037 — HO2S HEATER CONTROL CIRCUIT

LOW (BANK 1 SENSOR 2) -----, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	 CHECK GROUND CIRCUIT OF ECM. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM connector and chassis ground. <i>Connector & terminal</i> (B136) No. 5 — Chassis ground: (B136) No. 16 — Chassis ground: 	Is the resistance less than 5 Ω?	Go to step 2.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between ECM and engine ground terminal • Poor contact in ECM connector • Poor contact in coupling connector
2	 CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of rear oxygen sensor heater current using Subaru Select Monitor or OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4so)-32,="" monitor.="" select="" subaru="" to=""></ref.> OBD-II scan tool For detailed operation procedures, refer to the OBD-II scan tool Instruction Manual. 	Is the current more than 0.2 A?	Repair the con- nector. NOTE: In this case, repair the following: • Poor contact in rear oxygen sen- sor connector • Poor contact in rear oxygen sen- sor connecting harness connector • Poor contact in ECM connector	Go to step 3.
3	 CHECK OUTPUT SIGNAL FROM ECM. 1) Start and idle the engine. 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B136) No. 4 (+) — Chassis ground (-): 	Is the voltage less than 1 V?	Go to step 6.	Go to step 4.
4	CHECK OUTPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B136) No. 4 (+) — Chassis ground (-):	Does the voltage change by shaking the ECM harness and connector?	Repair poor con- tact in ECM con- nector.	Go to step 5 .
5	 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 (B136) No. 4 (+) — Chassis ground (-): 	Is the voltage less than 1 V?	Replace the ECM. <ref. to<br="">FU(H4SO)-46, Engine Control Module (ECM).></ref.>	Repair battery short circuit in har- ness between ECM and rear oxy- gen sensor con- nector. After repair, replace the ECM. <ref. to<br="">FU(H4SO)-46, Engine Control Module (ECM).></ref.>

	Step	Check	Yes	No
6	CHECK POWER SUPPLY TO REAR OXY- GEN SENSOR.	Is the voltage more than 10 V?	Go to step 7.	Repair power sup- ply line.
	 Turn the ignition switch to OFF. Disconnect the connector from rear oxygen sensor. Turn the ignition switch to ON. Measure the voltage between rear oxygen sensor connector and engine ground or chassis ground. <i>Connector & terminal</i> (B18) No. 2 (+) — Chassis ground (-): 			NOTE: In this case, repair the following: • Open circuit in harness between main relay and rear oxygen sen- sor connector • Poor contact in rear oxygen sen- sor connector • Poor contact in coupling connector
7	 CHECK REAR OXYGEN SENSOR. 1) Turn the ignition switch to OFF. 2) Measure the resistance between rear oxygen sensor connector terminals. Terminals (B18) No. 1 — (B18) No. 2: 	Is the resistance less than 30 Ω ?	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between rear oxygen sen- sor and ECM con- nector • Poor contact in rear oxygen sen- sor connector • Poor contact in ECM connector • Poor contact in coupling connector	Replace the rear oxygen sensor. <ref. to<br="">FU(H4SO)-44, Rear Oxygen Sen- sor.></ref.>

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

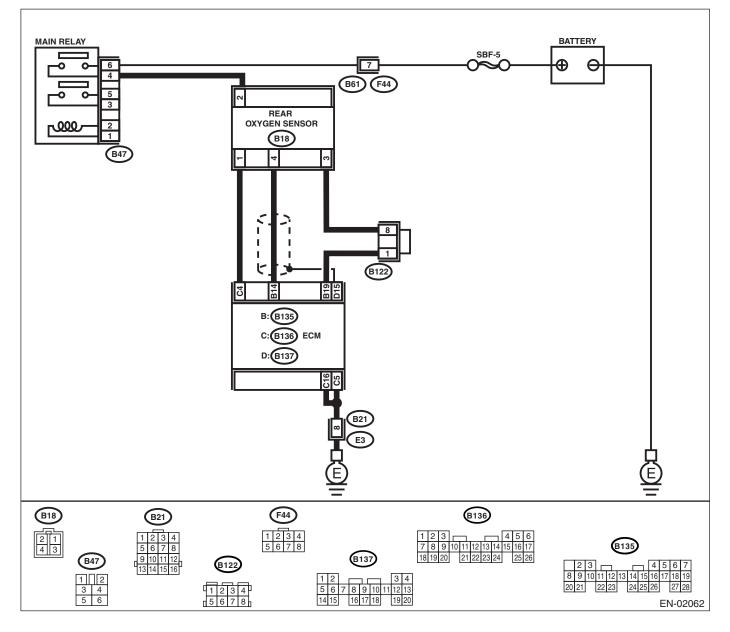
DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

• GENERAL DESCRIPTION < Ref. to GD(H4SO)-17, DTC P0038 — HO2S HEATER CONTROL CIRCUIT HIGH (BANK 1 SENSOR 2) —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
	CHECK INPUT SIGNAL FOR ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B136) No. 4 (+) — 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 procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4so)-32,="" monitor.="" select="" subaru="" to=""></ref.> OBD-II general scan tool For detailed operation procedure, refer to the OBD-II general scan tool 	Is the current more than 7 A?	Replace the ECM. <ref. to<br="">FU(H4SO)-46, Engine Control Module (ECM).></ref.>	END
3	CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair poor con- tact in ECM con- nector.	END

F: DTC P0065 — AIR ASSISTED INJECTOR CONTROL RANGE/PERFOR-MANCE —

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

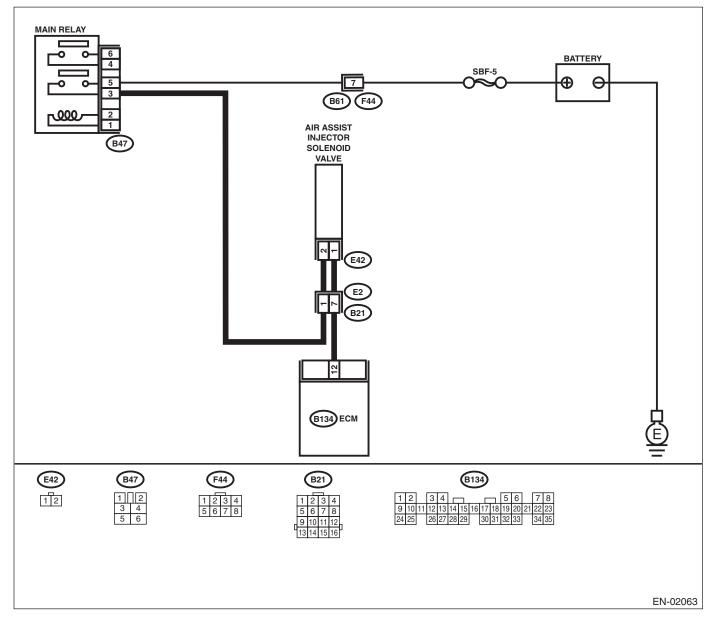
• GENERAL DESCRIPTION <Ref. to GD(H4SO)-19, DTC P0065 — AIR ASSISTED INJECTOR CON-TROL RANGE/PERFORMANCE —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.

CAUTION:

After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to EN(H4SO)-49, OPERATION, Clear Memory Mode.> and INSPECTION MODE <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK FOR OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect DTC using "List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(H4SO)-77, List of Diagnostic Trou- ble Code (DTC).></ref.>	Go to step 2.
2	 CHECK AIR ASSISTED INJECTOR SOLE- NOID VALVE OPERATION. 1) Turn ignition switch to OFF. 2) Connect the test mode connector at the lower portion of instrument panel (on the driver's side). 3) Turn ignition switch to ON. 4) Operate the air assisted injector solenoid valve. NOTE: Air assisted injector solenoid valve operation can also be executed using Subaru Select Monitor. For the procedure, refer to "Compulso- ry Valve Operation Check Mode". <ref. to<br="">EN(H4SO)-77, List of Diagnostic Trouble Code (DTC).></ref.> 		Go to step 3.	Replace the air assisted injector solenoid valve. <ref. to<br="">FU(H4SO)-35, Air Assist Injector Solenoid Valve.></ref.>
3	CHECK AIR BYPASS HOSES. Use your mouth to blow through the air bypass hose to make sure that there is a smooth air flow (no clogging).	Is there damage or clog at air bypass hose?	Repair or replace the air bypass hoses.	Go to step 4 .
4	 CHECK FUEL INJECTOR. 1) Turn ignition switch to OFF. 2) Remove the fuel injector. <ref. to<br="">FU(H4SO)-36, REMOVAL, Fuel Injector.></ref.> 3) Check for clogged fuel injectors. 	Is the fuel injector clogged?	Replace the fuel injector. <ref. to<br="">FU(H4SO)-39, INSTALLATION, Fuel Injector.></ref.>	Replace the air assisted injector solenoid valve. <ref. to<br="">FU(H4SO)-35, Air Assist Injector Solenoid Valve.></ref.>

G: DTC P0066 — AIR ASSISTED INJECTOR CONTROL CIRCUIT OR CIRCUIT LOW —

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

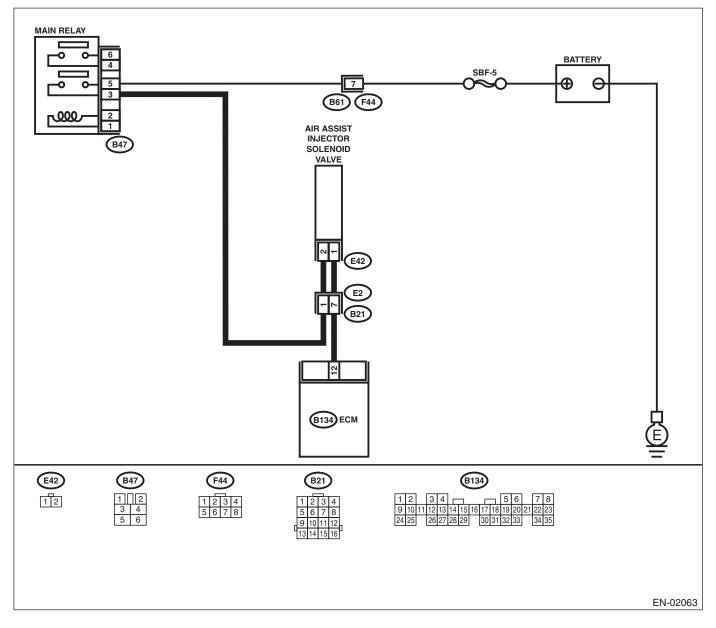
• GENERAL DESCRIPTION <Ref. to GD(H4SO)-22, DTC P0066 — AIR ASSISTED INJECTOR CON-TROL CIRCUIT OR CIRCUIT LOW —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	 CHECK OUTPUT SIGNAL FROM ECM. 1) Turn ignition switch to ON. 2) Measure voltage between ECM and chassis ground. Connector & terminal (B134) No. 12 (+) — Chassis ground (-): 	Is the voltage more than 10 V?	tact in ÉCM con- nector.	Go to step 2.
2	 CHECK POWER SUPPLY TO AIR ASSIST INJECTOR SOLENOID VALVE. 1) Turn ignition switch to OFF. 2) Disconnect connector from air assist injector solenoid valve. 3) Turn ignition switch to ON. 4) Measure voltage between air assist injector solenoid valve and engine ground. Connector & terminal (E42) No. 2 (+) — Engine ground (-): 			Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between air assist injector solenoid valve and main relay connec- tor • Poor contact in coupling connector
3	 CHECK HARNESS BETWEEN ECM AND AIR ASSIST INJECTOR SOLENOID VALVE CON- NECTOR. 1) Turn ignition switch to OFF. 2) Disconnect connector from ECM. 3) Measure resistance of harness between ECM and air assist injector solenoid valve con- nector. Connector & terminal (B134) No. 12— (E42) No. 1: 	Ω?	Go to step 4.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between ECM and air assist injector solenoid valve connector • Poor contact in coupling connector
4	CHECK HARNESS BETWEEN ECM AND AIR ASSIST INJECTOR SOLENOID VALVE CON- NECTOR. Measure resistance of harness between ECM and chassis ground. Connector & terminal (B134) No. 12— Chassis ground:		Go to step 5.	Repair ground short circuit in har- ness between ECM and air assist injector solenoid valve connector.
5	CHECK POOR CONTACT. Check poor contact in ECM and air assist injector solenoid valve connectors.	Is there poor contact in ECM and air assist injector solenoid valve connectors?	Repair poor con- tact in ECM and air assist injector solenoid valve connectors.	Replace air assist injector solenoid valve. <ref. to<br="">FU(H4SO)-35, Air Assist Injector Solenoid Valve.></ref.>

H: DTC P0067 — AIR ASSISTED INJECTOR CONTROL CIRCUIT HIGH — DTC DETECTING CONDITION:

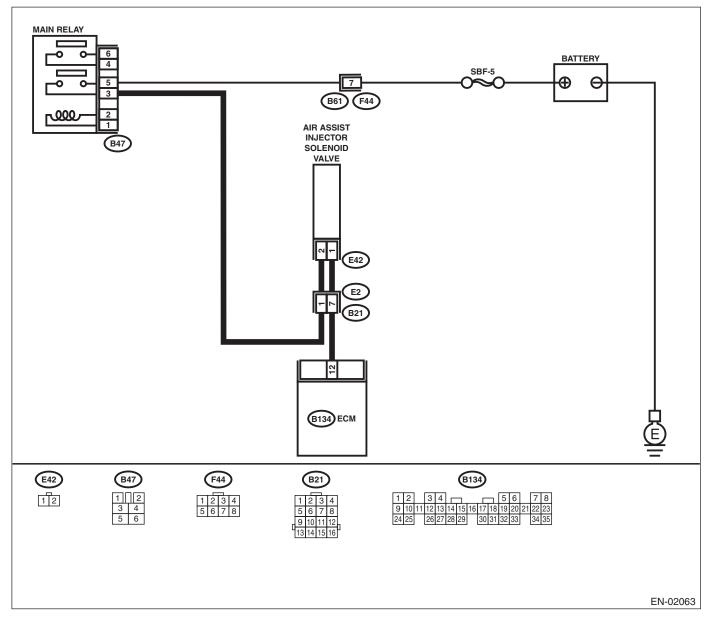
- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4SO)-24, DTC P0067 AIR ASSISTED INJECTOR CON-TROL CIRCUIT HIGH —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



				1
	Step	Check	Yes	No
1	 CHECK OUTPUT SIGNAL FROM ECM. 1) Turn ignition switch to ON. 2) Measure voltage between ECM and chassis ground. Connector & terminal (B134) No. 12 (+) — Chassis ground (-): 	Is the voltage more than 10 V?	Go to step 2.	Go to step 3.
2	 CHECK OUTPUT SIGNAL FROM ECM. 1) Turn ignition switch to OFF. 2) Disconnect connector from air assist injector solenoid valve. 3) Turn ignition switch to ON. 4) Measure voltage between ECM and chassis ground. Connector & terminal (B134) No. 12 (+) — Chassis ground (-): 	Is the voltage more than 10 V?	Repair battery short circuit in har- ness between ECM and air assist injector solenoid valve connector. After repair, replace ECM. <ref. to<br="">FU(H4SO)-46, Engine Control Module (ECM).></ref.>	Replace air assist injector solenoid valve <ref. to<br="">FU(H4SO)-35, Air Assist Injector Solenoid Valve.> and ECM <ref. to<br="">FU(H4SO)-46, Engine Control Module (ECM).></ref.></ref.>
3	CHECK OUTPUT SIGNAL FROM ECM. Measure voltage between ECM and chassis ground. Connector & terminal (B134) No. 12 (+) — Chassis ground (-):	Is the voltage more than 10 V by shaking the ECM harness and connector?	Repair battery short circuit in har- ness between ECM and air assist injector solenoid valve connector. After repair, replace ECM. <ref. to<br="">FU(H4SO)-46, Engine Control Module (ECM).></ref.>	Contact SOA Ser- vice Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.

I: DTC P0068 — MANIFOLD ABSOLUTE PRESSURE/BAROMETRIC PRES-SURE CIRCUIT RANGE/PERFORMANCE PROBLEM —

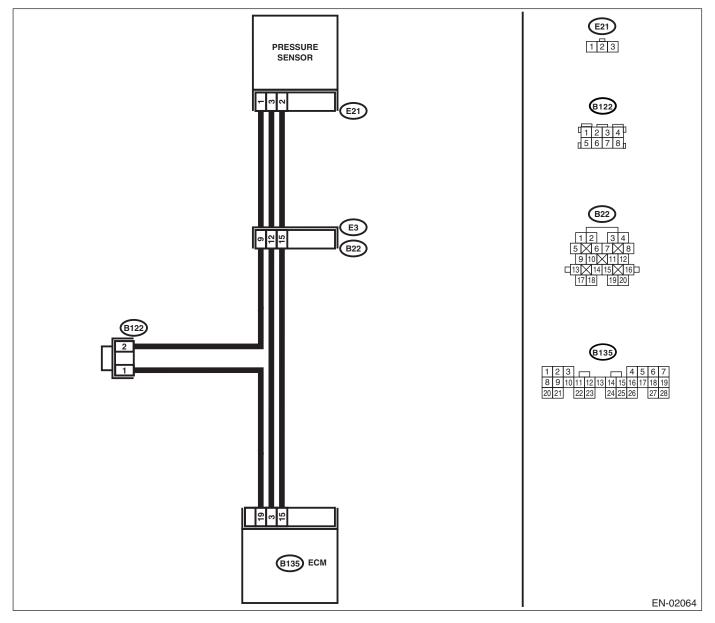
DTC DETECTING CONDITION:

• Two consecutive driving cycles with fault

• GENERAL DESCRIPTION <Ref. to GD(H4SO)-26, DTC P0068 — MANIFOLD PRESSURE SENSOR RANGE/PERFORMANCE —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to EN(H4SO)-49, OPERATION, Clear Memory Mode.> and INSPECTION MODE <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK FOR OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect DTC using "List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(H4SO)-77, List of Diagnostic Trou- ble Code (DTC).></ref.>	Go to step 2.
2	CHECK AIR INTAKE SYSTEM.	Are there holes, loose bolts or disconnection of hose on air intake system?	Repair air intake system.	Go to step 3 .
3	 CHECK PRESSURE SENSOR. 1) Start the engine and warm-up engine until coolant temperature is greater than 60°C (140°F). 2) Place the selector lever or shift lever in "P" or "N" position. 3) Turn the A/C switch to OFF. 4) All accessory switches OFF. 5) Read the data of intake manifold pressure sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <ref. en(h4so)-32,="" monitor.="" select="" subaru="" to=""></ref.> OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual. 	Ignition ON: Is the measured value 73.3 — 106.6 kPa (550 — 800 mmHg, 21.65 — 31.50 inHg)? Idling: Is the measured value 20.0 — 46.7 kPa (150 — 350 mmHg, 5.91 — 13.78 inHg)?	Go to step 4.	Replace the mani- fold absolute pres- sure sensor. <ref. to FU(H4SO)-31, Manifold Absolute Pressure Sensor.></ref.
4	 CHECK THROTTLE POSITION. Read the data of throttle position signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <ref. to EN(H4SO)-32, Subaru Select Monitor.></ref. OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual. 	Is the measured value less than 5% when throttle is fully closed?	Go to step 5 .	Adjust or replace the throttle posi- tion sensor. <ref. to FU(H4SO)-29, Throttle Position Sensor.></ref.
5	CHECK THROTTLE POSITION.	Is the measured value more than 85% when throttle is wide open?	Replace the mani- fold absolute pres- sure sensor. <ref. to FU(H4SO)-31, Manifold Absolute Pressure Sensor.></ref. 	Replace the throt- tle position sen- sor. <ref. to<br="">FU(H4SO)-29, Throttle Position Sensor.></ref.>

J: DTC P0107 — MANIFOLD ABSOLUTE PRESSURE/BAROMETRIC PRES-SURE CIRCUIT LOW INPUT —

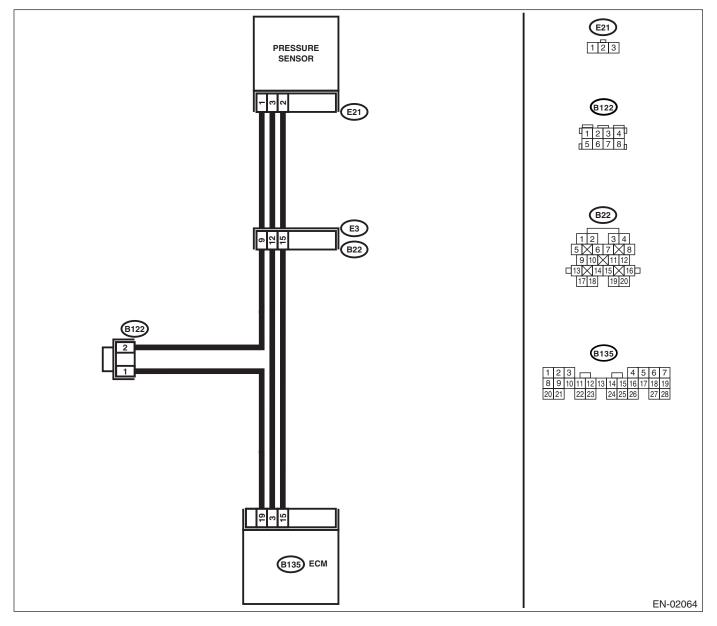
DTC DETECTING CONDITION:

• Immediately at fault recognition

• GENERAL DESCRIPTION < Ref. to GD(H4SO)-28, DTC P0107 — MANIFOLD ABSOLUTE PRESSURE/ BAROMETRIC PRESSURE CIRCUIT LOW INPUT —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, 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: Subaru Select Monitor For detailed operation procedure, refer to the 	Is the measured value less than 13.3 kPa (100 mmHg, 3.94 inHg)?	Go to step 3.	Go to step 2.
	 "READ CURRENT DATA FOR ENGINE". <ref. to EN(H4SO)-32, Subaru Select Monitor.></ref. OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual. 			
2	CHECK POOR CONTACT. Check poor contact in ECM and manifold absolute pressure sensor connector.	Is there poor contact in ECM or manifold absolute pressure sensor connector?	Repair poor con- tact in ECM or manifold absolute pressure sensor connector.	Even if malfunction indicator light lights up, the cir- cuit has returned to a normal condi- tion at this time.
3	CHECK OUTPUT SIGNAL FOR ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 3 (+) — Chassis ground (-):	Is the voltage more than 4.5 V?		Go to step 4.
4	CHECK OUTPUT SIGNAL FOR ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 3 (+) — Chassis ground (-):	Is the voltage more than 4.5 V by shaking the ECM harness and connector?	Repair poor con- tact in ECM con- nector.	Contact SOA Ser- vice Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.
5	CHECK INPUT SIGNAL FOR ECM. Measure the voltage between ECM and chas- sis ground. Connector & terminal (B135) No. 15 (+) — 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: • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. to EN(H4SO)-32, Subaru Select Monitor.></ref. 	Is the measured value more than 13.3 kPa (100 mmHg, 3.94 inHg) by shaking the har- ness and connector of ECM?	Repair poor con- tact in ECM con- nector.	Go to step 7.
7	CHECK HARNESS BETWEEN MANIFOLD ABSOLUTE PRESSURE SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from manifold absolute pressure sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between manifold absolute pressure sensor connector and engine ground. Connector & terminal (E21) No. 3 (+) — Engine ground (-):	Is the voltage more than 4.5 V?	Go to step 8 .	Repair open circuit in harness between ECM and manifold absolute pressure sensor connector.

Step Check Yes No CHECK HARNESS BETWEEN MANIFOLD Is the resistance less than 1 Go to step 9. 8 Repair open circuit ABSOLUTE PRESSURE SENSOR AND ECM Ω ? in harness CONNECTOR. between ECM and 1) Turn the ignition switch to OFF. manifold absolute 2) Disconnect the connector from ECM. pressure sensor 3) Measure the resistance of harness connector. between ECM and manifold absolute pressure sensor connector. **Connector & terminal** (B135) No. 19 — (E20) No. 1: 9 CHECK POOR CONTACT. Is there poor contact in mani-Repair poor con-Replace the mani-Check poor contact in manifold absolute presfold absolute pressure sensor tact in manifold fold absolute pressure sensor connector. connector? absolute pressure sure sensor. <Ref. sensor connector. to FU(H4SO)-31, Manifold Absolute Pressure Sensor.>

K: DTC P0108 — MANIFOLD ABSOLUTE PRESSURE/BAROMETRIC PRES-SURE CIRCUIT HIGH INPUT —

DTC DETECTING CONDITION:

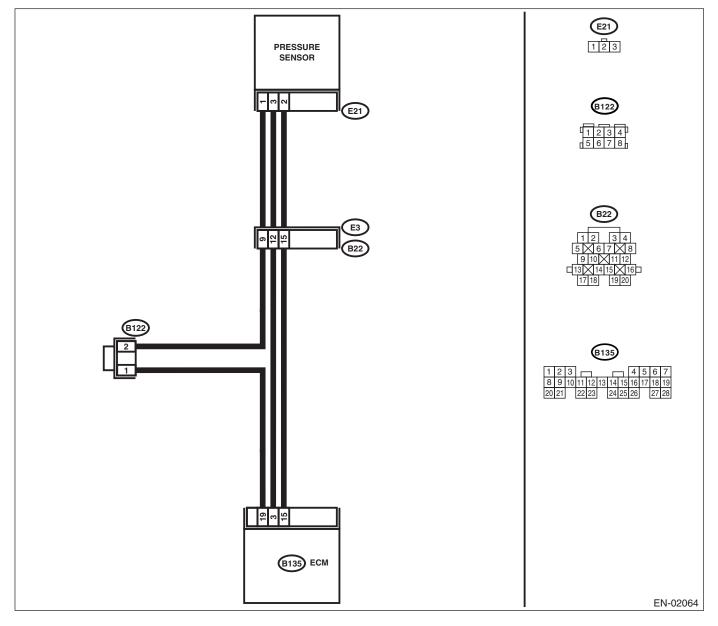
Immediately at fault recognition

GENERAL DESCRIPTION < Ref. to GD(H4SO)-30, DTC P0108 — MANIFOLD ABSOLUTE PRESSURE/

BAROMETRIC PRESSURE CIRCUIT HIGH INPUT -, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



Step Check Yes No CHECK CURRENT DATA. Is the measured value more Go to step 10. Go to step 2. 1 1) Start the engine. than 119.5 kPa (896.5 mmHg, 2) Read the data of intake manifold absolute 35.29 inHg)? pressure signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". < Ref. to EN(H4SO)-32, Subaru Select Monitor.> OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual. 2 CHECK OUTPUT SIGNAL FOR ECM. 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** (B135) No. 3 (+) — Chassis ground (–): CHECK OUTPUT SIGNAL FOR ECM. 3 Is the voltage more than 4.5 V Repair poor con-Contact SOA Ser-Measure the voltage between ECM connector by shaking the ECM harness tact in ECM convice Center. and chassis ground. and connector? nector. NOTE: Connector & terminal Inspection by DTM (B135) No. 3 (+) — Chassis ground (–): is required, beprobable cause cause is deterioration of multiple parts. 4 CHECK INPUT SIGNAL FOR ECM. Is the voltage less than 0.2 V? Go to step 6. Go to step 5. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 15 (+) — Chassis ground (–): CHECK INPUT SIGNAL FOR ECM. (USING 5 Is the measured value more Repair poor con-Go to step 6. SUBARU SELECT MONITOR) than 13.3 kPa (100 mmHg, tact in ECM con-3.94 inHg) by shaking the har-Read the data of atmospheric absolute presnector. sure signal using Subaru Select Monitor. ness and connector of ECM? NOTE: Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". < Ref. to EN(H4SO)-32, Subaru Select Monitor.> 6 CHECK HARNESS BETWEEN MANIFOLD Is the voltage more than 4.5 V? Go to step 7. Repair open circuit ABSOLUTE PRESSURE SENSOR AND ECM in harness CONNECTOR. between ECM and 1) Turn the ignition switch to OFF. manifold absolute pressure sensor 2) Disconnect the connector from manifold absolute pressure sensor. connector. 3) Turn the ignition switch to ON. 4) Measure the voltage between manifold absolute pressure sensor connector and engine ground. **Connector & terminal** (E20) No. 3 (+) — Engine ground (-):

	Step	Check	Yes	No
7	 CHECK HARNESS BETWEEN MANIFOLD ABSOLUTE PRESSURE SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM and manifold absolute pressure sensor connector. Connector & terminal (B135) No. 15 — (E20) No. 2: 		Go to step 8.	Repair open circuit in harness between ECM and manifold absolute pressure sensor connector.
8	CHECK HARNESS BETWEEN MANIFOLD ABSOLUTE PRESSURE SENSOR AND ECM CONNECTOR. Measure the resistance of harness between ECM and manifold absolute pressure sensor connector. Connector & terminal (B135) No. 19 — (E20) No. 1:	Is the resistance less than 1 Ω?	Go to step 9 .	Repair 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 poor con- tact in manifold absolute pressure sensor connector.	Replace the mani- fold absolute pres- sure sensor. <ref. to FU(H4SO)-31, Manifold Absolute Pressure Sensor.></ref.
10	 CHECK HARNESS BETWEEN MANIFOLD ABSOLUTE PRESSURE SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF and Subaru Select Monitor or the OBD-II general scan tool switch to OFF. 2) Disconnect the connector from manifold absolute pressure sensor. 3) Turn the ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON. 4) 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 procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. to EN(H4SO)-32, Subaru Select Monitor.></ref. OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool 	Is the measured value more than 119.5 kPa (896.5 mmHg, 35.29 inHg)?	Repair battery short circuit in har- ness between ECM and mani- fold absolute pres- sure sensor connector.	Replace the mani- fold absolute pres- sure sensor. <ref. to FU(H4SO)-31, Manifold Absolute Pressure Sensor.></ref.

L: DTC P0111 — INTAKE AIR TEMPERATURE CIRCUIT RANGE/PERFOR-MANCE —

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

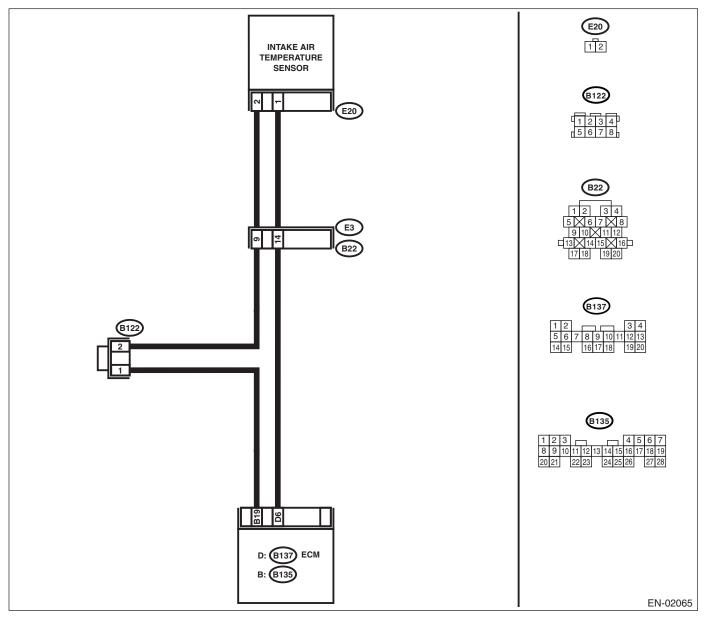
• GENERAL DESCRIPTION <Ref. to GD(H4SO)-32, DTC P0111 — INTAKE AIR TEMPERATURE CIR-CUIT RANGE/PERFORMANCE —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect DTC using "List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(H4SO)-77, List of Diagnostic Trou- ble Code (DTC).></ref.>	Go to step 2.
			NOTE: In this case, it is not necessary to inspect DTC P0111.	
2	CHECK ENGINE COOLANT TEMPERA- TURE. 1)Start the engine and warm it up completely. 2)Measure the engine coolant temperature using Subaru Select Monitor or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. to EN(H4SO)-32, Subaru Select Monitor.> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general Scan Tool Instruction Manual.</ref. 	Is the measured value within 75°C (167°F) — 95°C (203°F)	Replace the intake air temperature sensor. <ref. to<br="">FU(H4SO)-32, Intake Air Temper- ature Sensor.></ref.>	Inspect DTC P0125 using "List of Diagnostic Trou- ble Code (DTC)". <ref. to<br="">EN(H4SO)-77, List of Diagnostic Trou- ble Code (DTC).></ref.>

M: DTC P0112 INTAKE AIR TEMPERATURE CIRCUIT LOW INPUT

DTC DETECTING CONDITION:

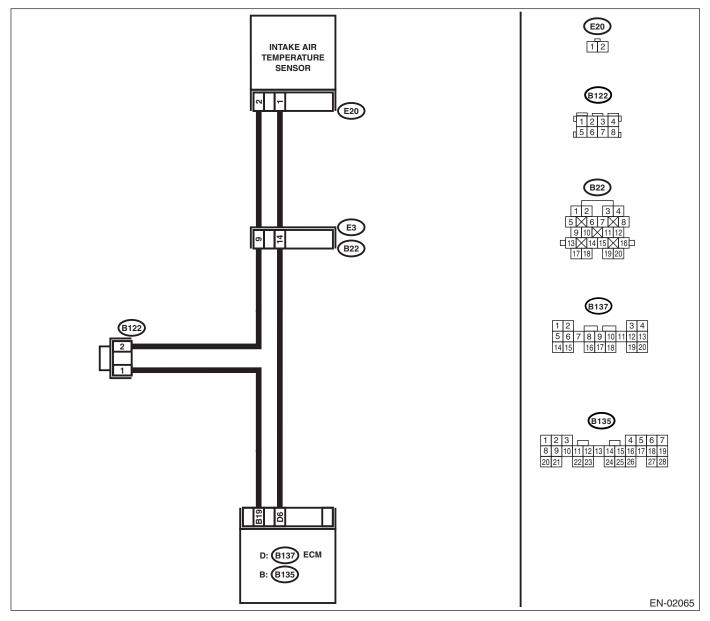
- Immediately at fault recognition
 GENERAL DESCRIPTION Ref. to GD(H)
- GENERAL DESCRIPTION <Ref. to GD(H4SO)-34, DTC P0112 INTAKE AIR TEMPERATURE CIR-CUIT LOW INPUT —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	 CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of intake air temperature sensor signal using Subaru Select Monitor or the OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4so)-32,="" monitor.="" select="" subaru="" to=""></ref.> OBD-II general scan tool For detailed operation procedure, refer to the OBD-II general scan tool 	Is the intake air temperature more than 120°C (248°F)?	Go to step 2.	Repair poor con- tact. NOTE: In this case, repair the following: • Poor contact in intake air tempera- ture sensor • Poor contact in ECM • Poor contact in coupling connector • Poor contact in joint connector
2	 CHECK HARNESS BETWEEN INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from intake air temperature sensor. 3) Turn the ignition switch to ON. 4) Read the data of intake air temperature sensor signal using Subaru Select Monitor or the OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4so)-32,="" monitor.="" select="" subaru="" to=""></ref.> OBD-II general scan tool For detailed operation procedure, refer to the OBD-II general scan tool 	Is the intake air temperature less than -40°C (-40°F)?	Replace the intake air temperature sensor. <ref. to<br="">FU(H4SO)-32, Intake Air Temper- ature Sensor.></ref.>	Repair ground short circuit in har- ness between intake air tempera- ture sensor and ECM connector.

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

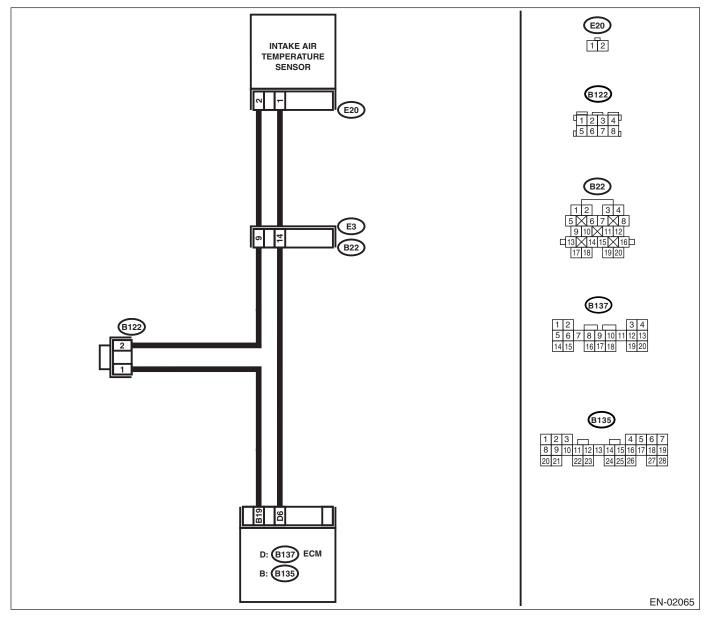
- DIC DETECTING CONDITION:
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4SO)-36, DTC P0113 INTAKE AIR TEMPERATURE CIR-CUIT HIGH INPUT —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	 CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of intake air temperature sensor signal using Subaru Select Monitor or the OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4so)-32,="" monitor.="" select="" subaru="" to=""></ref.> OBD-II general scan tool For detailed operation procedure, refer to the OBD-II general scan tool 	Is the intake air temperature less than -40°C (-40°F)?	Go to step 2.	Repair poor con- tact. NOTE: In this case, repair the following: • Poor contact in intake air tempera- ture sensor • Poor contact in ECM • Poor contact in coupling connector • Poor contact in joint connector
2	 CHECK HARNESS BETWEEN INTAKE AIR TEMPERATURE SENSOR AND ECM CON- NECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from intake air temperature sensor. 3) Measure the voltage between intake air temperature and manifold absolute pressure sensor connector and engine ground. Connector & terminal (E20) No. 1 (+) — Engine ground (-): 	Is the voltage more than 10 V?	Repair battery short circuit in har- ness between intake air tempera- ture sensor and ECM connector.	Go to step 3 .
3	 CHECK HARNESS BETWEEN INTAKE AIR TEMPERATURE SENSOR AND ECM CON- NECTOR. 1) Turn the ignition switch to ON. 2) Measure the voltage between intake air temperature sensor connector and engine ground. Connector & terminal (E20) No. 1 (+) — Engine ground (-): 	Is the voltage more than 10 V?	Repair battery short circuit in har- ness between intake air tempera- ture sensor and ECM connector.	Go to step 4.
4	CHECK HARNESS BETWEEN INTAKE AIR TEMPERATURE SENSOR AND ECM CON- NECTOR. Measure the voltage between intake air tem- perature sensor connector and engine ground. <i>Connector & terminal</i> (E20) No. 1 (+) — Engine ground (–):	Is the voltage more than 3 V?	Go to step 5 .	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between intake air tempera- ture sensor and ECM connector • Poor contact in intake air tempera- ture sensor • Poor contact in ECM • Poor contact in coupling connector • Poor contact in joint connector

Step Check Yes No CHECK HARNESS BETWEEN INTAKE AIR Is the resistance less than 5 Replace the intake Repair harness 5 **TEMPERATURE SENSOR AND ECM CON-** $\Omega?$ air temperature and connector. NECTOR. sensor. <Ref. to NOTE: 1) Turn the ignition switch to OFF. FU(H4SO)-32, In this case, repair 2) Measure the resistance of harness Intake Air Temperthe following: between intake air temperature sensor conature Sensor.> • Open circuit in nector and engine ground. harness between **Connector & terminal** intake air tempera-(E20) No. 2 — Engine ground: ture sensor and ECM connector Poor contact in intake air temperature sensor Poor contact in ECM Poor contact in coupling connector Poor contact in joint connector

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

Immediately at fault recognition

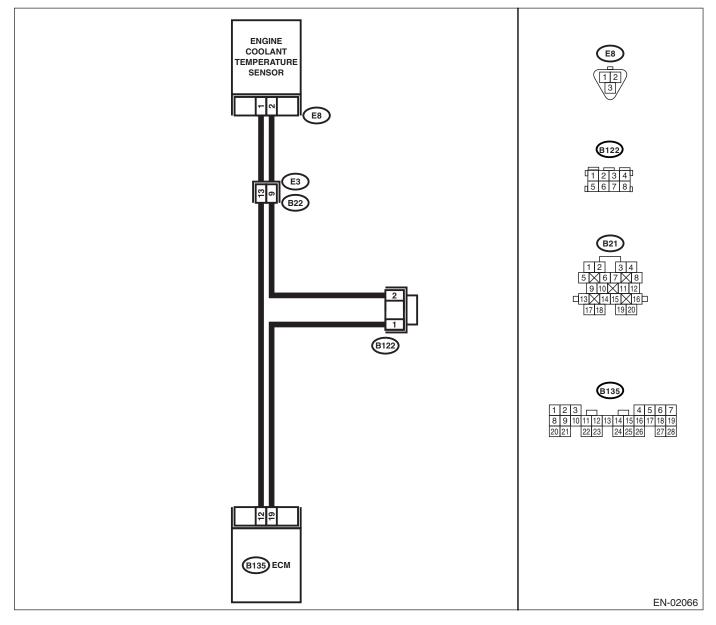
• GENERAL DESCRIPTION < Ref. to GD(H4SO)-38, DTC P0117 — ENGINE COOLANT TEMPERATURE CIRCUIT LOW INPUT —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Hard to start
- Erroneous idling
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	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 procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4so)-32,="" monitor.="" select="" subaru="" to=""></ref.> OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool 	Is the engine coolant tempera- ture more than 150°C (302°F)?	Go to step 2.	Repair poor con- tact. NOTE: In this case, repair the following: • Poor contact in engine coolant temperature sen- sor • Poor contact in ECM • Poor contact in coupling connector • Poor contact in joint connector
2	 CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from engine cool- ant temperature sensor. 3) Turn the ignition switch to ON. 4) Read the data of engine coolant tempera- ture sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. to EN(H4SO)-32, Subaru Select Monitor.></ref. OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool 	Is the engine coolant tempera- ture less than -40°C (-40°F)?	Replace the engine coolant temperature sen- sor. <ref. to<br="">FU(H4SO)-25, Engine Coolant Temperature Sen- sor.></ref.>	Repair ground short circuit in har- ness between engine coolant temperature sen- sor and ECM con- nector.

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

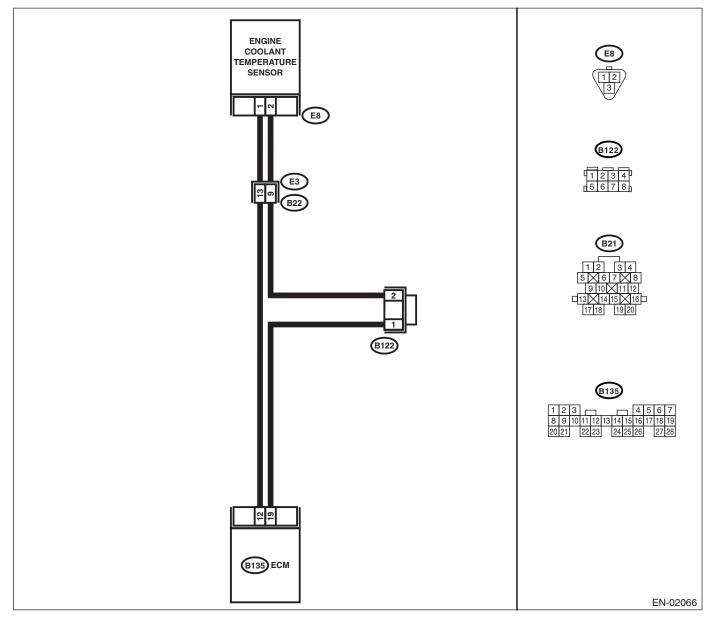
- Immediately at fault recognition
- GENERAL DESCRIPTION < Ref. to GD(H4SO)-40, DTC P0118 ENGINE COOLANT TEMPERATURE CIRCUIT HIGH INPUT —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

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

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
 CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of engine coolant tempera- 	Is the engine coolant tempera- ture less than -40°C (-40°F)?	Go to step 2.	Repair poor con- tact. NOTE:
ture sensor signal using Subaru Select Monitor or OBD-II general scan tool.			In this case, repair the following:
NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the			 Poor contact in engine coolant temperature sen-
"READ CURRENT DATA FOR ENGINE". <ref. to EN(H4SO)-32, Subaru Select Monitor.></ref. 			sor • Poor contact in
 OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual. 			ECMPoor contact in coupling connector
			 Poor contact in joint connector
 2 CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR. Turn the ignition switch to OFF. Disconnect the connector from engine cool- ant temperature sensor. 	Is the voltage more than 10 V?	Repair battery short circuit in har- ness between ECM and engine coolant tempera- ture sensor con-	Go to step 3.
 3) Measure the voltage between engine coolant temperature sensor connector and engine ground. Connector & terminal (E8) No. 1 (+) — Engine ground (-): 		nector.	
3 CHECK HARNESS BETWEEN ENGINE	Is the voltage more than 10 V?	Repair battery	Go to step 4.
 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. 		short circuit in har- ness between ECM and engine coolant tempera- ture sensor con- nector.	
Connector & terminal (E8) No. 1 (+) — Engine ground (–):			
 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. 1 (+) — Engine ground (-): 	Is the voltage more than 4 V?	Go to step 5.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between ECM and engine coolant tempera- ture sensor con- nector • Poor contact in engine coolant temperature sen- sor connector • Poor contact in ECM connector • Poor contact in coupling connector
			 Poor contact in joint connector

Step	Check	Yes	No
 5 CHECK HARNESS BETWEEN ENGINE 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. 2 — Engine ground: 	Is the resistance less than 5 Ω?	Replace the engine coolant temperature sen- sor. <ref. to<br="">FU(H4SO)-25, Engine Coolant Temperature Sen- sor.></ref.>	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between ECM and engine coolant tempera- ture sensor con- nector • Poor contact in engine coolant temperature sen- sor connector • Poor contact in ECM connector • Poor contact in ECM connector • Poor contact in coupling connector • Poor contact in coupling connector

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

DTC DETECTING CONDITION:

• Two consecutive driving cycles with fault

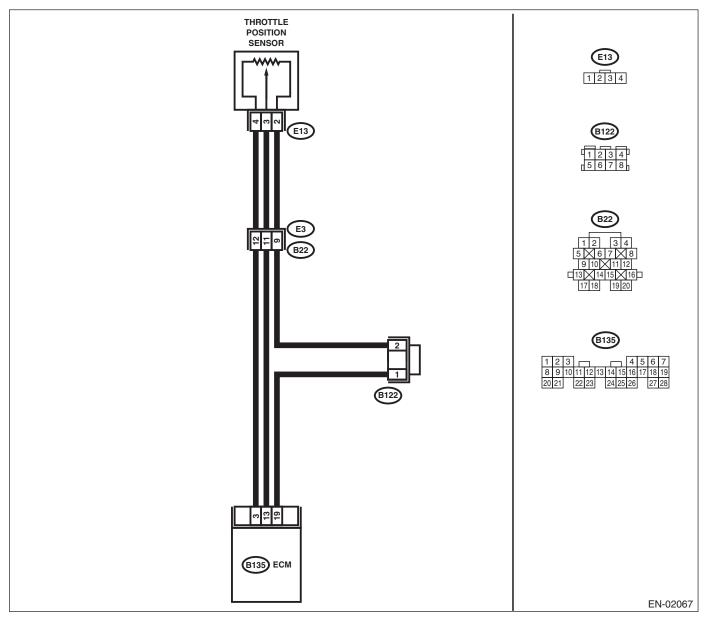
• GENERAL DESCRIPTION <Ref. to GD(H4SO)-42, DTC P0121 — THROTTLE/PEDAL POSITION SEN-SOR/SWITCH "A" CIRCUIT RANGE/PERFORMANCE —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect DTC using "List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(H4SO)-77, List of Diagnostic Trou- ble Code (DTC).></ref.>	tle position sen- sor. <ref. to<br="">FU(H4SO)-29, Throttle Position</ref.>
			NOTE: In this case, it is not necessary to inspect DTC P0121.	

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

DTC DETECTING CONDITION:

Immediately at fault recognition

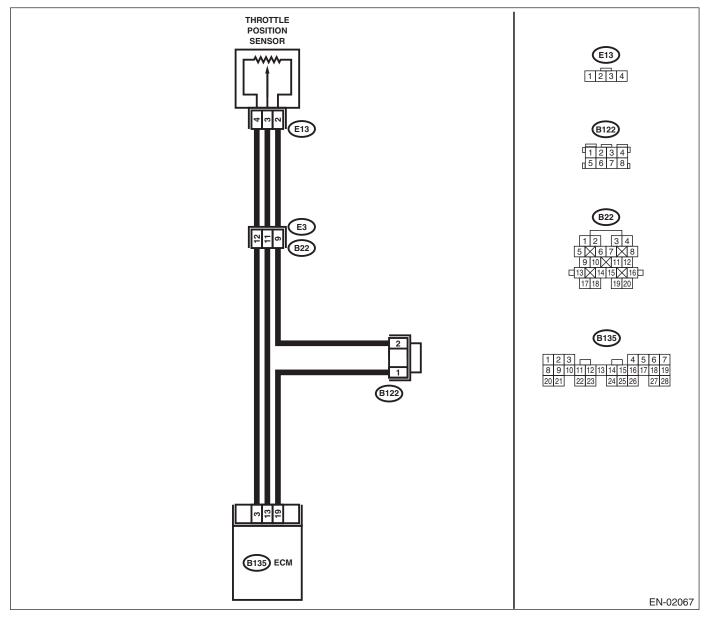
• GENERAL DESCRIPTION <Ref. to GD(H4SO)-44, DTC P0122 — THROTTLE/PEDAL POSITION SEN-SOR/SWITCH "A" CIRCUIT LOW INPUT —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	 CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of throttle position sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4so)-32,="" monitor.="" select="" subaru="" to=""></ref.> OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general Scan Tool Instruction Manual. 	Is the voltage less than 0.1 V?	Go to step 2.	Even if malfunction indicator light lights up, the cir- cuit has returned to a normal condi- tion at this time. A temporary poor contact of the con- nector may be the cause. NOTE: In this case, repair the following: • Poor contact in throttle position sensor connector • Poor contact in ECM connector • Poor contact in coupling connector
2	CHECK OUTPUT SIGNAL FOR ECM. Measure the voltage between ECM connector and chassis ground while throttle valve is fully closed. Connector & terminal (B135) No. 3 (+) — Chassis ground (-):	Is the voltage more than 4.5 V?	Go to step 4.	Go to step 3.
3	CHECK OUTPUT SIGNAL FOR ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 3 (+) — Chassis ground (–):	Is the voltage more than 4.5 V by shaking the ECM harness and connector?	Repair poor con- tact in ECM con- nector.	Contact SOA Ser- vice Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.
4	CHECK INPUT SIGNAL FOR ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 13 (+) — Chassis ground (–):	Is the voltage more than 0.1 V?	Go to step 6 .	Go to step 5.
5	CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR.) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 13 (+) — Chassis ground (–):	Is the voltage more than 0.1 V by shaking the ECM harness and connector?	Repair poor con- tact in ECM con- nector.	Go to step 6.

	Step	Check	Yes	No
6	 CHECK HARNESS BETWEEN ECM AND THROTTLE POSITION SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from throttle position sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between throttle position sensor connector and engine ground. <i>Connector & terminal</i> (E13) No. 4 (+) — Engine ground (-): 	Is the voltage more than 4.5 V?	Go to step 7.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between throttle position sensor and ECM connector • Poor contact in throttle position sensor connector • Poor contact in ECM connector • Poor contact in coupling connector • Poor contact in coupling connector
7	CHECK HARNESS BETWEEN ECM AND THROTTLE POSITION SENSOR CONNEC- TOR. 1) Turn the ignition switch to OFF. 2) Measure the resistance of harness between ECM connector and throttle position sensor connector. Connector & terminal (B135) No. 13 — (E13) No. 3:	Is the resistance less than 1 Ω?	Go to step 8.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between throttle position sensor and ECM connector • Poor contact in ECM connector • Poor contact in throttle position sensor connector • Poor contact in coupling connector
8	CHECK HARNESS BETWEEN ECM AND THROTTLE POSITION SENSOR CONNEC- TOR. Measure the resistance of harness between throttle position sensor connector and engine ground. Connector & terminal (E13) No. 3 — Engine ground:	Is the resistance more than 1 MΩ?	Go to step 9 .	Repair ground short circuit in har- ness between throttle position sensor and ECM connector.
9	CHECK POOR CONTACT. Check poor contact in throttle position sensor connector.	Is there poor contact in throttle position sensor connector?	Repair poor con- tact in throttle posi- tion sensor connector.	Replace the throt- tle position sen- sor. <ref. to<br="">FU(H4SO)-29, Throttle Position Sensor.></ref.>

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

DTC DETECTING CONDITION:

Immediately at fault recognition

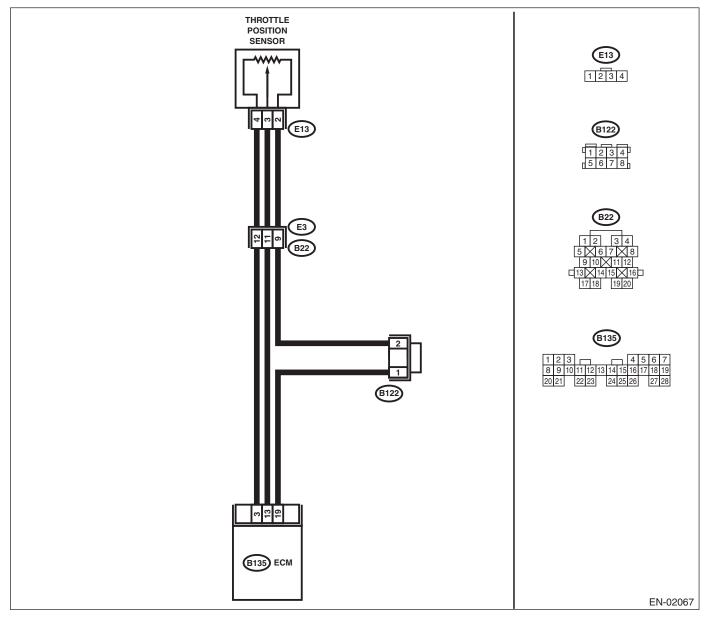
• GENERAL DESCRIPTION <Ref. to GD(H4SO)-46, DTC P0123 — THROTTLE/PEDAL POSITION SEN-SOR/SWITCH "A" CIRCUIT HIGH INPUT —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	 CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of throttle position sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4so)-32,="" monitor.="" select="" subaru="" to=""></ref.> OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan Tool Instruction Manual. 	Is the voltage more than 4.9 V?	Go to step 2.	Even if malfunction indicator light lights up, the cir- cuit has returned to a normal condi- tion at this time. A temporary poor contact of the con- nector may be the cause. NOTE: In this case, repair the following: • Poor contact in throttle position sensor connector • Poor contact in ECM connector • Poor contact in coupling connector
2	 CHECK HARNESS BETWEEN THROTTLE POSITION SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from throttle position sensor. 3) Measure the resistance of harness between throttle position sensor connector and engine ground. Connector & terminal (E13) No. 2 — Engine ground: 	Is the resistance less than 5 Ω?	Go to step 3.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between throttle position sensor and ECM connector • Poor contact in coupling connector • Poor contact in joint connector
3	CHECK HARNESS BETWEEN THROTTLE POSITION SENSOR AND ECM CONNEC- TOR. 1) Turn the ignition switch to ON. 2) Measure the voltage between throttle posi- tion sensor connector and engine ground. <i>Connector & terminal</i> <i>(E13) No. 3 (+) — Engine ground (–):</i>	Is the voltage more than 4.9 V?	Repair battery short circuit in har- ness between throttle position sensor and ECM connector. After repair, replace the ECM. <ref. to<br="">FU(H4SO)-46, Engine Control Module (ECM).></ref.>	Replace the throt- tle position sen- sor. <ref. to<br="">FU(H4SO)-29, Throttle Position Sensor.></ref.>

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

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

• GENERAL DESCRIPTION < Ref. to GD(H4SO)-48, DTC P0125 — INSUFFICIENT COOLANT TEMPER-

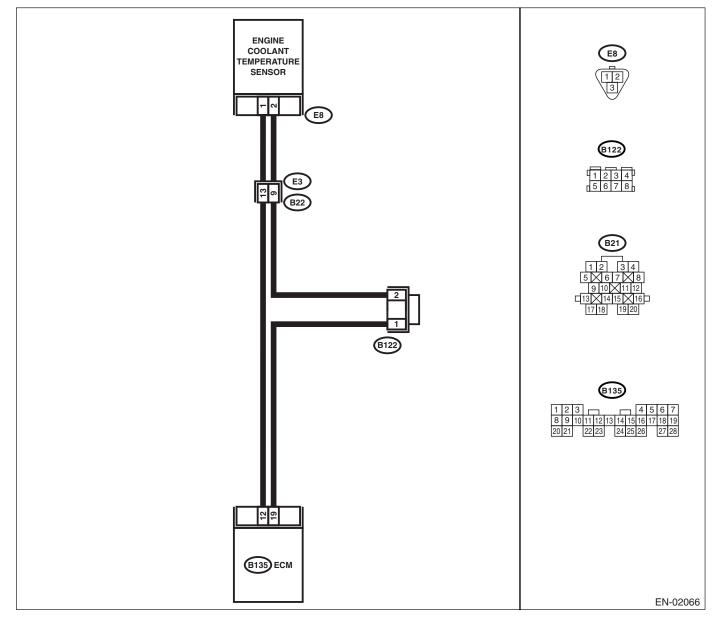
ATURE FOR CLOSED LOOP FUEL CONTROL —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Engine would not return to idling.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



Step Check Yes No CHECK ANY OTHER DTC ON DISPLAY. Is any other DTC displayed? Check DTC using Go to step 2. 1 "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4SO)-77, List of Diagnostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0125. 2 CHECK THERMOSTAT. Does the thermostat remain Replace the ther-Replace the opened? mostat. <Ref. to engine coolant CO(H4SO)-24, temperature sen-Thermostat.> sor. <Ref. to FU(H4SO)-25, Engine Coolant Temperature Sensor.>

U: DTC P0128 — COOLANT THERMOSTAT (COOLANT TEMPERATURE BE-LOW THERMOSTAT REGULATING TEMPERATURE) —

DTC DETECTING CONDITION:

• Two consecutive driving cycles with fault

• GENERAL DESCRIPTION <Ref. to GD(H4SO)-50, DTC P0128 — COOLANT THERMOSTAT (COOL-ANT TEMPERATURE BELOW THERMOSTAT REGULATING TEMPERATURE) —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Thermostat remains open.

CAUTION:

After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to EN(H4SO)-49, OPERATION, Clear Memory Mode.> and INSPECTION MODE <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.

	Step	Check	Yes	No
1	CHECK VEHICLE CONDITION.	Was the vehicle driven or idled with the engine partially sub- merged under water?	In this case, it is not necessary to inspect DTC P0128.	Go to step 2.
2	CHECK FOR OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect DTC using "List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(H4SO)-77, List of Diagnostic Trou- ble Code (DTC).></ref.>	Go to step 3.
3	CHECK ENGINE COOLANT.	Are coolant level and mixture ratio of cooling water to anti- freeze solution correct?	Go to step 4.	Replace the engine coolant. <ref. to<br="">CO(H4SO)-17, REPLACEMENT, Engine Coolant.></ref.>
4	CHECK RADIATOR FAN.1) Start the engine.2) Check radiator fan operation.	Does the radiator fan continu- ously rotate for more than 3 minutes during idling?	Repair radiator fan circuit. <ref. to<br="">CO(H4SO)-33, Radiator Main Fan and Fan Motor.> and <ref. to<br="">CO(H4SO)-39, Radiator Sub Fan and Fan Motor.>.</ref.></ref.>	Replace the ther- mostat. <ref. to<br="">CO(H4SO)-24, Thermostat.></ref.>

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

DTC DETECTING CONDITION:

• Two consecutive driving cycles with fault

• GENERAL DESCRIPTION <Ref. to GD(H4SO)-52, DTC P0129 — BAROMETRIC PRESSURE TOO LOW —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.

	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	"List of Diagnostic Trouble Code	FU(H4SO)-46, Engine Control Module (ECM).>

W: DTC P0130 - O2 SENSOR CIRCUIT (BANK 1 SENSOR 1) -

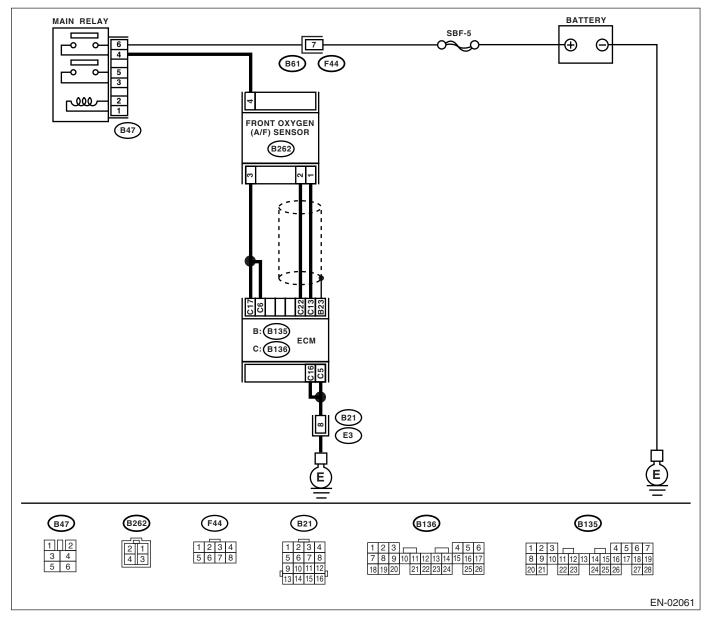
DTC DETECTING CONDITION:

Immediately at fault recognition

• GENERAL DESCRIPTION <Ref. to GD(H4SO)-53, DTC P0130 — O₂ SENSOR CIRCUIT (BANK 1 SEN-SOR 1) —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check DTC using "List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(H4SO)-77, List of Diagnostic Trou- ble Code (DTC).></ref.>	Go to step 2 .
2	 CHECK FRONT OXYGEN (A/F) SENSOR DATA. 1) Start the engine. 2) While observing the Subaru Select Monitor or OBD-II general scan tool screen, warm-up the engine until coolant temperature is above 70°C (160°F). If the engine is already warmed-up, operate at idle speed for at least 1 minute. 3) Read the data of front oxygen (A/F) sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4so)-32,="" monitor.="" select="" subaru="" to=""></ref.> OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool 	Is the voltage 0.85 — 1.15 V?	Go to step 3.	Go to step 4.
3	 CHECK FRONT OXYGEN (A/F) SENSOR DATA. 1) Race the engine at speeds from idling to 5,000 rpm for a total of 5 cycles. 2) Read the data of front oxygen (A/F) sensor signal during racing using Subaru Select Monitor or OBD-II general scan tool. NOTE: Air fuel ratio is rich at normal condition or during racing. To increase engine speed to 5,000 rpm, slowly depress accelerator pedal, taking approximately 5 seconds, and quickly release accelerator pedal to decrease engine speed. 	Is the voltage more than 1.1 V?	Go to step 6.	Go to step 4.
4	 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and front oxygen (A/F) sensor connector. 3) Measure the resistance between ECM and front oxygen (A/F) sensor. Connector & terminals (B136) No. 13 — (B262) No. 1: (B136) No. 22 — (B262) No. 2: 	Is the resistance less than 5 Ω?	Go to step 5.	Repair open circuit between ECM and front oxygen (A/F) sensor.
5	CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR. Measure the resistance between ECM and chassis ground. Connector & terminals (B136) No. 13 — Chassis ground: (B136) No. 22 — Chassis ground:	Is the resistance more than 1 $M\Omega$?	Go to step 6.	Repair ground short circuit between ECM and front oxygen (A/F) sensor.

	Step	Check	Yes	No
6	CHECK EXHAUST SYSTEM. Check exhaust system parts.	Is there a fault in exhaust system?	Repair or replace faulty parts.	Replace the front oxygen (A/F) sen-
	 NOTE: Check the following items. Loose installation of portions Damage (crack, hole etc.) of parts Looseness of front oxygen (A/F) sensor Looseness and ill fitting of parts between front oxygen (A/F) sensor and rear oxygen sensor 			sor. <ref. to<br="">FU(H4SO)-42, Front Oxygen (A/ F) Sensor.></ref.>

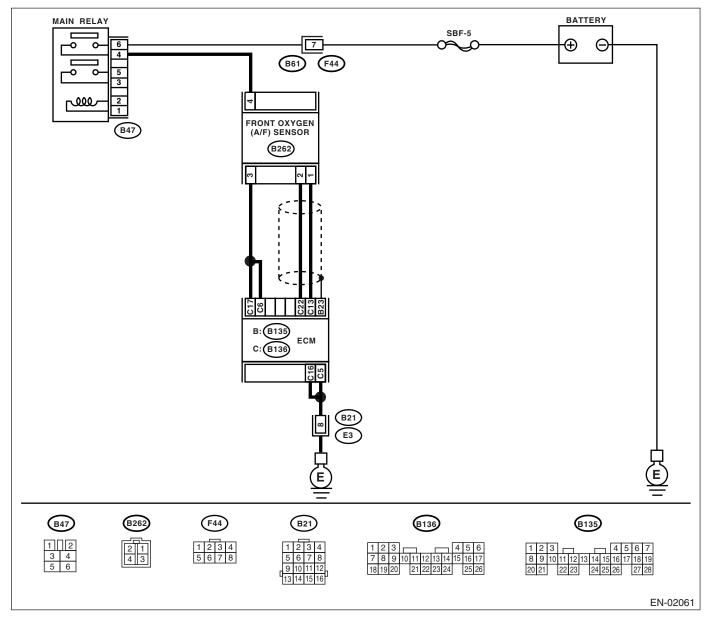
X: DTC P0131 — O₂ SENSOR CIRCUIT LOW VOLTAGE (BANK 1 SENSOR 1) — DTC DETECTING CONDITION:

• Immediately at fault recognition

• GENERAL DESCRIPTION <Ref. to GD(H4SO)-55, DTC P0131 — O₂ SENSOR CIRCUIT LOW VOLT-AGE (BANK 1 SENSOR 1) —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



Step	Check	Yes	No
 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNEC- TOR. Turn the ignition switch to OFF. Disconnect the connectors from ECM and front oxygen (A/F) sensor connector. Measure the resistance of harness between ECM and front oxygen (A/F) sensor connector. Connector & terminal (B136) No. 13 — Chassis ground: (B136) No. 22 — Chassis ground: 	Is the resistance more than 1 MΩ?	Replace the front oxygen (A/F) sen- sor. <ref. to<br="">FU(H4SO)-42, Front Oxygen (A/ F) Sensor.></ref.>	Repair ground short circuit in har- ness between ECM and front oxygen (A/F) sen- sor connector.

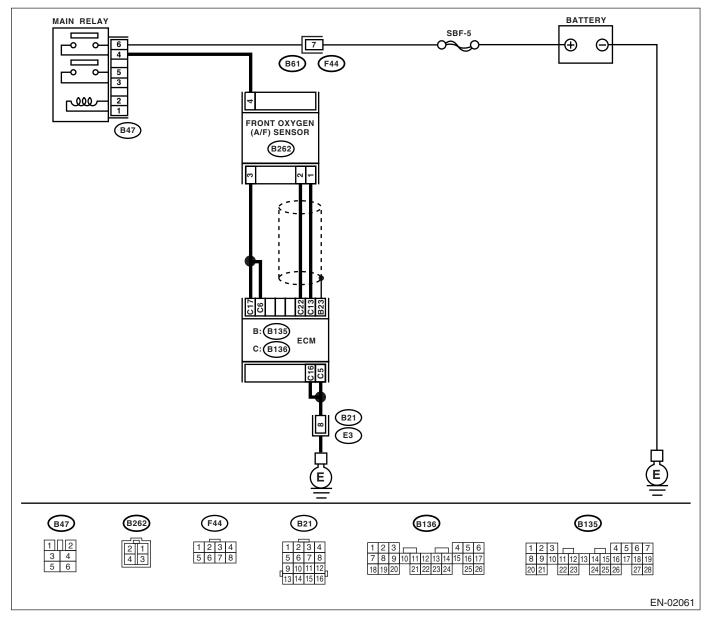
Y: DTC P0132 — O₂ SENSOR CIRCUIT HIGH VOLTAGE (BANK 1 SENSOR 1) — DTC DETECTING CONDITION:

· Immediately at fault recognition

• GENERAL DESCRIPTION <Ref. to GD(H4SO)-57, DTC P0132 — O₂ SENSOR CIRCUIT HIGH VOLT-AGE (BANK 1 SENSOR 1) —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



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 connectors from front oxy- gen (A/F) sensor. 3) Measure the voltage of harness between ECM connector and chassis ground. Connector & terminal (B136) No. 13 (+) — Chassis ground (-): (B136) No. 22 (+) — Chassis ground (-): 	Is the voltage more than 8 V?	Replace the front oxygen (A/F) sen- sor. <ref. to<br="">FU(H4SO)-42, Front Oxygen (A/ F) Sensor.></ref.>	Repair battery short circuit in har- ness between ECM and front oxygen (A/F) sen- sor connector.

Z: DTC P0133 — O_2 SENSOR CIRCUIT SLOW RESPONSE (BANK 1 SENSOR 1)

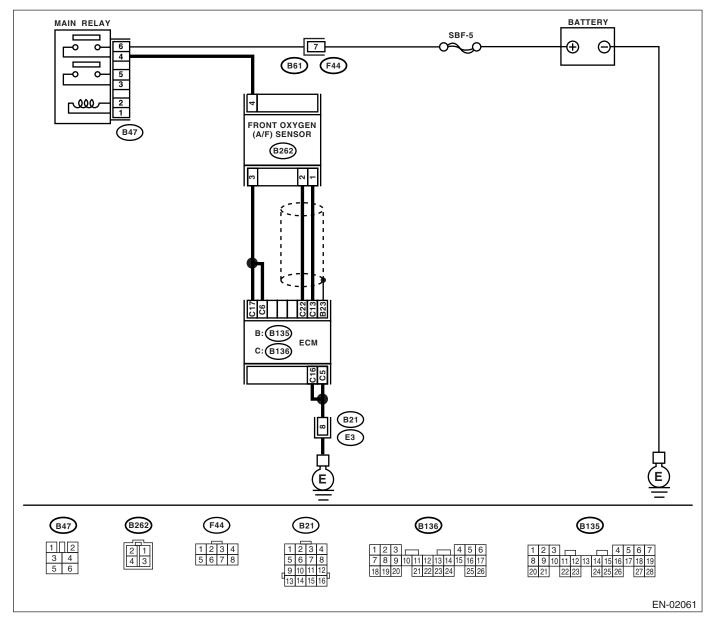
DTC DETECTING CONDITION:

· Two consecutive driving cycles with fault

• GENERAL DESCRIPTION <Ref. to GD(H4SO)-59, DTC P0133 — O₂ SENSOR CIRCUIT SLOW RE-SPONSE (BANK 1 SENSOR 1) —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check DTC using "List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(H4SO)-77, List of Diagnostic Trou- ble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0133.</ref.>	Go to step 2.
2	 CHECK EXHAUST SYSTEM. NOTE: Check the following items. Loose installation of front portion of exhaust pipe onto cylinder heads Loose connection between front exhaust pipe and front catalytic converter Damage of exhaust pipe resulting in a hole 	Is there a fault in exhaust sys- tem?	Repair exhaust system.	Replace the front oxygen (A/F) sen- sor. <ref. to<br="">FU(H4SO)-42, Front Oxygen (A/ F) Sensor.></ref.>

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

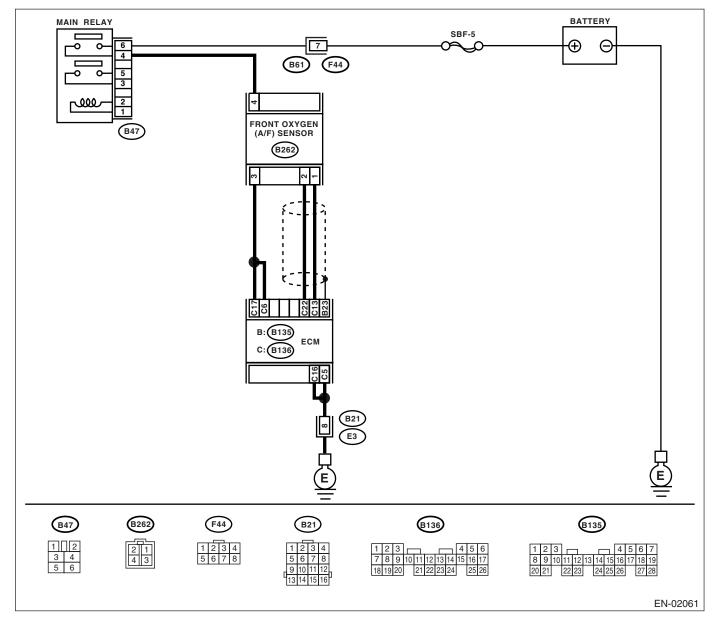
DTC DETECTING CONDITION:

Immediately at fault recognition

 GENERAL DESCRIPTION <Ref. to GD(H4SO)-63, DTC P0134 — O₂ SENSOR CIRCUIT NO ACTIVITY DETECTED (BANK 1 SENSOR 1) —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNEC-	Is the resistance less than 1 Ω ?	Go to step 2.	Repair harness and connector.
	 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 (B136) No. 13 — (B18) No. 1: (B136) No. 22 — (B18) No. 2: 			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 poor con- tact in front oxygen (A/F) sensor con- nector.	Replace the front oxygen (A/F) sen- sor. <ref. to<br="">FU(H4SO)-42, Front Oxygen (A/ F) Sensor.></ref.>

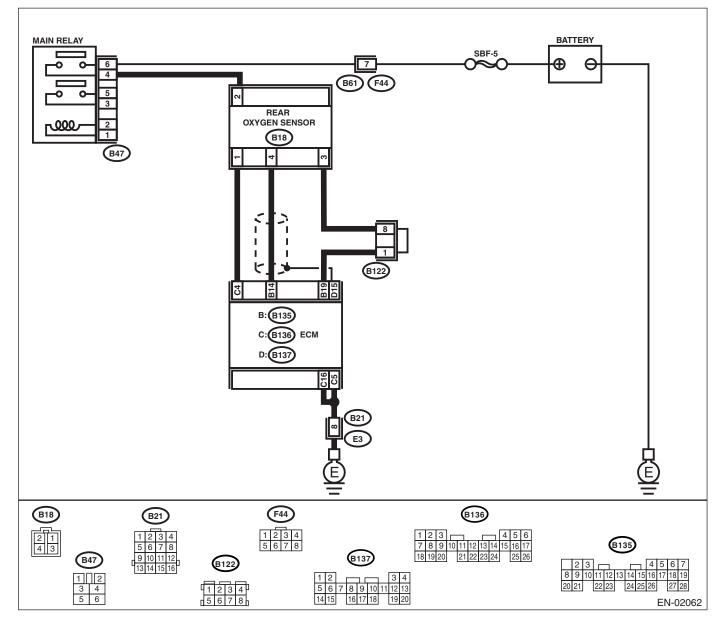
AB:DTC P0137 — O₂ SENSOR CIRCUIT LOW VOLTAGE (BANK 1 SENSOR 2) — DTC DETECTING CONDITION:

· Two consecutive driving cycles with fault

• GENERAL DESCRIPTION <Ref. to GD(H4SO)-65, DTC P0137 — O₂ SENSOR CIRCUIT LOW VOLT-AGE (BANK 1 SENSOR 2) —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check DTC using "List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(H4SO)-77, List of Diagnostic Trou- ble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0137.</ref.>	
2	 CHECK REAR OXYGEN SENSOR DATA. 1) Warm-up the engine until engine coolant temperature is above 70°C (158°F), and keep the engine speed at 5,000 rpm. 2) Read the data of rear oxygen sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DIS-PLAY FOR ENGINE". <ref. en(h4so)-32,="" monitor.="" select="" subaru="" to=""></ref.> OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool. 	Is the voltage 490 mV?	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 connectors from ECM and rear oxygen sensor. 3) Measure the resistance of harness between ECM and rear oxygen sensor con- nector. Connector & terminal (B135) No. 14 - (B18) No. 4: (B135) No. 19 - (B18) No. 3: 	Is the resistance more than 3 Ω ?	Repair 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 engine ground or chassis ground. Connector & terminal (B18) No. 4 (+) — Engine ground (-): 	Is the voltage 0.2 — 0.5 V?	Replace the rear oxygen sensor. <ref. to<br="">FU(H4SO)-42, Front Oxygen (A/ F) Sensor.></ref.>	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between rear oxygen sen- sor and ECM con- nector • Poor contact in rear oxygen sen- sor connector • Poor contact in ECM connector

Step Check Yes No 5 CHECK EXHAUST SYSTEM. Is there a fault in exhaust sys-Repair or replace Replace the rear Check exhaust system parts. tem? faulty parts. oxygen sensor. <Ref. to NOTE: FU(H4SO)-42, Check the following items. Front Oxygen (A/ · Loose installation of portions • Damage (crack, hole etc.) of parts F) Sensor.> · Looseness and ill fitting of parts between front oxygen (A/F) sensor and rear oxygen sensor

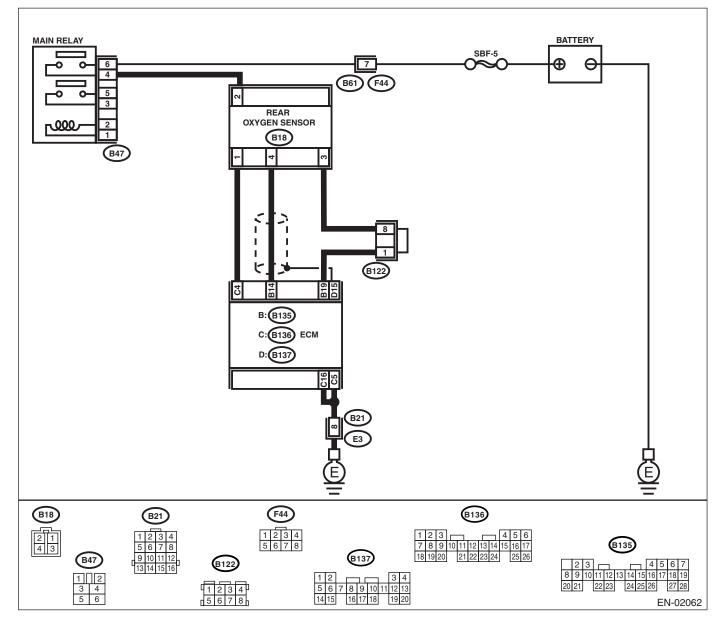
AC:DTC P0138 — O₂ SENSOR CIRCUIT HIGH VOLTAGE (BANK 1 SENSOR 2) — DTC DETECTING CONDITION:

· Two consecutive driving cycles with fault

• GENERAL DESCRIPTION <Ref. to GD(H4SO)-67, DTC P0138 — O₂ SENSOR CIRCUIT HIGH VOLT-AGE (BANK 1 SENSOR 2) —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check DTC using "List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(H4SO)-77, List of Diagnostic Trou- ble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0138.</ref.>	Go to step 2.
2	 CHECK REAR OXYGEN SENSOR DATA. 1) Warm-up the engine until engine coolant temperature is above 70°C (158°F), and immediately decrease the engine speed from 5,000 rpm. 2) Read the data of rear oxygen sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DIS-PLAY FOR ENGINE". <ref. en(h4so)-32,="" monitor.="" select="" subaru="" to=""></ref.> OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool 	Is the voltage 250 mV?	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 connectors from ECM and rear oxygen sensor. 3) Measure the resistance of harness between ECM and rear oxygen sensor con- nector. Connector & terminal (B135) No. 14 — (B18) No. 4: (B135) No. 19 — (B18) No. 3: 	Is the resistance more than 3 Ω?	Repair 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 engine ground or chassis ground. Connector & terminal (B18) No. 4 (+) — Engine ground (-): 	Is the voltage 0.2 — 0.5 V?	Replace the rear oxygen sensor. <ref. to<br="">FU(H4SO)-42, Front Oxygen (A/ F) Sensor.></ref.>	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between rear oxygen sen- sor and ECM con- nector • Poor contact in rear oxygen sen- sor connector • Poor contact in ECM connector

	Step	Check	Yes	No
5	CHECK EXHAUST SYSTEM. Check exhaust system parts.	Is there a fault in exhaust system?	Repair or replace faulty parts.	Replace the rear oxygen sensor.
	 NOTE: Check the following items. Loose installation of portions Damage (crack, hole etc.) of parts Looseness and ill fitting of parts between front oxygen (A/F) sensor and rear oxygen sensor 			<ref. to<br="">FU(H4SO)-42, Front Oxygen (A/ F) Sensor.></ref.>

AD: DTC P0139 — O_2 SENSOR CIRCUIT SLOW RESPONSE (BANK 1 SENSOR 2)

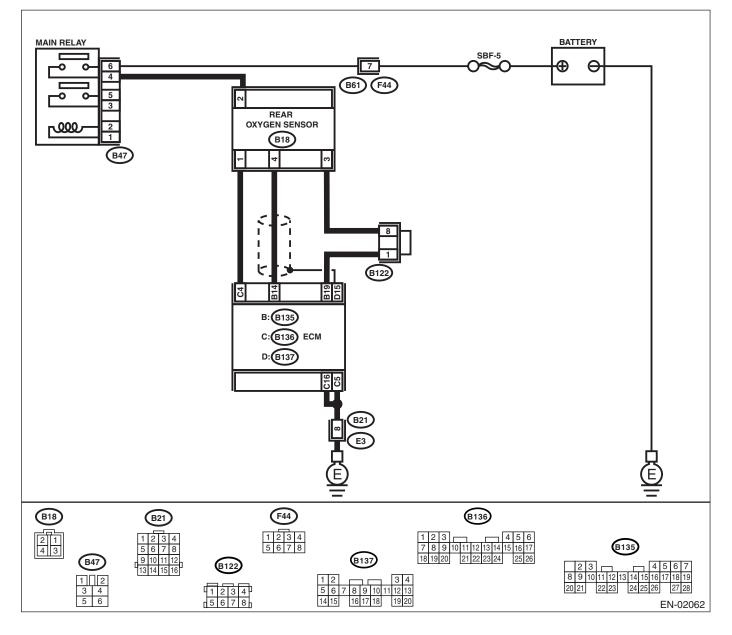
DTC DETECTING CONDITION:

· Two consecutive driving cycles with fault

• GENERAL DESCRIPTION <Ref. to GD(H4SO)-69, DTC P0139 — O₂ SENSOR CIRCUIT SLOW RE-SPONSE (BANK 1 SENSOR 2) —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check DTC using "List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(H4SO)-77, List of Diagnostic Trou- ble Code (DTC).></ref.>	<ref. to<br="">FU(H4SO)-42, Front Oxygen (A/</ref.>
			NOTE: In this case, it is not necessary to inspect DTC P0139.	

AE:DTC P0171 — SYSTEM TOO LEAN (BANK 1) — Refer to DTC P0172 for diagnostic procedure. <Ref. to EN(H4SO)-153, DTC P0172 — SYSTEM TOO RICH (BANK 1) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

ENGINE (DIÀGNOSTICS)

AF:DTC P0172 — SYSTEM TOO RICH (BANK 1) —

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION < Ref. to GD(H4SO)-77, DTC P0172 SYSTEM TOO RICH (BANK 1) —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.

	Step	Check	Yes	No
1	CHECK EXHAUST SYSTEM.	Are there holes or loose bolts on exhaust system?	Repair exhaust system.	Go to step 2.
2	CHECK AIR INTAKE SYSTEM.	Are there holes, loose bolts or disconnection of hose on air intake system?	Repair air intake system.	Go to step 3.
3	CHECK PURGE CONTROL SOLENOID VALVE OR PRESSURE CONTROL SOLE- NOID VALVE.	Is the purge control solenoid valve or pressure control sole- noid valve stuck?	Replace the purge control solenoid valve or pressure control solenoid valve.	Go to step 4.
4	 CHECK FUEL PRESSURE. Warning: Place "NO FIRE" signs near the working area. Be careful not to spill fuel on the floor. 1) Release fuel pressure. (1) Disconnect the connector from fuel pump relay. (2) Start the engine and run it until it stalls. (3) After the engine stalls, crank it for five more seconds. (4) Turn the ignition switch to OFF. 2) Connect the connector to fuel pump relay. 3) Disconnect the fuel delivery hose from fuel filter, and connect fuel pressure gauge. 4) Install the fuel filler cap. 5) Start the engine and idle while gear position is neutral. 6) Measure the fuel pressure while disconnecting pressure regulator vacuum hose from intake manifold. Warning: Before removing the fuel pressure gauge, release fuel pressure. NOTE: If fuel pressure does not increase, squeeze fuel return hose 2 to 3 times, then measure fuel pressure again.		Go to step 5.	Repair the follow- ing items. Fuel pressure too high • Clogged fuel return line or bent hose Fuel pressure too low • Improper fuel pump discharge • Clogged fuel supply line

DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
5	 CHECK FUEL PRESSURE. After connecting the pressure regulator vacuum hose, measure fuel pressure. Warning: Before removing the fuel pressure gauge, release fuel pressure. NOTE: If 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 the fuel pressure 206 — 235 kPa (2.1 — 2.4 kg/cm ² , 30 — 34 psi)?	Go to step 6 .	Repair the follow- ing items. Fuel pressure too high • Faulty pres- sure regulator • Clogged fuel return line or bent hose Fuel pressure too low • Faulty pres- sure regulator • Improper fuel pump discharge • Clogged fuel supply line
6	 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 Monitor or OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. to EN(H4SO)-32, Subaru Select Monitor.></ref. OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool 	Is the engine coolant tempera- ture 70 — 100°C (158 — 212°F)?	Go to step 7.	Replace the engine coolant temperature sen- sor. <ref. to<br="">FU(H4SO)-25, Engine Coolant Temperature Sen- sor.></ref.>
7	 CHECK PRESSURE SENSOR SIGNAL. 1) Start the engine and warm-up engine until coolant temperature is greater than 60°C (140°F). 2) Place the select lever in "N" or "P" range. 3) Turn the A/C switch to OFF. 4) Turn all accessory switches to OFF. 5) Read the data of pressure sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4so)-32,="" monitor.="" select="" subaru="" to=""></ref.> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool 	Idling: Is the measured value 24.0 — 41.3 kPa (180 — 310 mmHg, 7.09 — 12.20 inHg), Ignition ON: Is the measured value 73.3 — 106.6 kPa (550 — 800 mmHg, 21.65 — 31.50 inHg)?	vice Center. NOTE: Inspection by DTM	Pressure Sensor.>

AG:DTC P0181 — FUEL TEMPERATURE SENSOR "A" CIRCUIT RANGE/PER-FORMANCE —

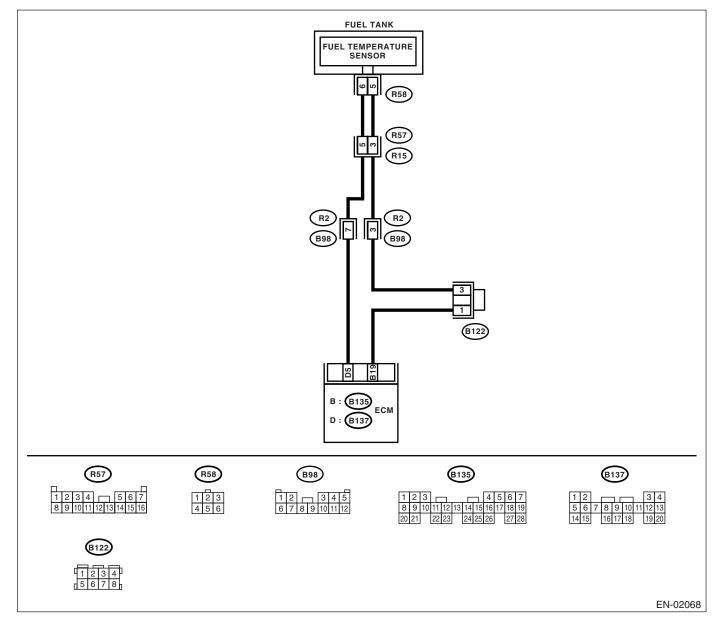
DTC DETECTING CONDITION:

• Fault occurs in two consecutive driving cycles

• GENERAL DESCRIPTION < Ref. to GD(H4SO)-80, DTC P0181 — FUEL TEMPERATURE SENSOR "A"

CAUTION:

After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to EN(H4SO)-49, OPERATION, Clear Memory Mode.> and INSPECTION MODE <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



Step Check Yes No 1 CHECK FOR OTHER DTC ON DISPLAY. Is any other DTC displayed? Inspect DTC using Replace the fuel "List of Diagnostic temperature sen-Trouble Code sor. <Ref. to (DTC)". <Ref. to EC(H4SO)-9, Fuel EN(H4SO)-77, List Temperature Senof Diagnostic Trou- sor.> ble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0181.

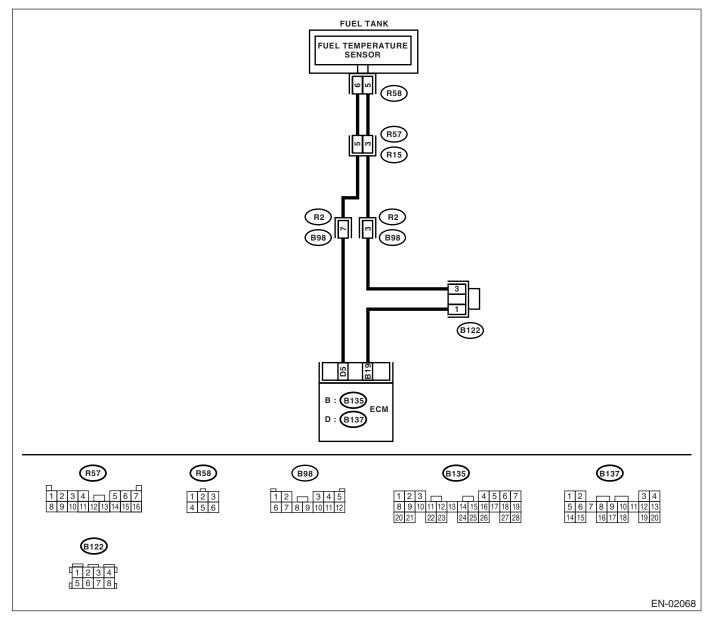
AH:DTC P0182 — FUEL TEMPERATURE SENSOR "A" CIRCUIT LOW INPUT — DTC DETECTING CONDITION:

· Immediately at fault recognition

• GENERAL DESCRIPTION < Ref. to GD(H4SO)-82, DTC P0182 — FUEL TEMPERATURE SENSOR "A" CIRCUIT LOW INPUT —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to EN(H4SO)-49, OPERATION, Clear Memory Mode.> and INSPECTION MODE <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



Step Check Yes No CHECK CURRENT DATA. Is the fuel temperature more Go to step 2. The malfunction 1 1) Start the engine. than 150°C (302°F)? indicator light may 2) Read the data of fuel temperature sensor light up, however, signal using Subaru Select Monitor or OBD-II the circuit is general scan tool. returned to the normal status at NOTE: Subaru Select Monitor the moment. For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4SO)-32, Subaru Select Monitor.> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual. 2 CHECK CURRENT DATA. Is the fuel temperature less Replace the fuel Repair short circuit 1) Turn ignition switch to OFF. than -40°C (-40°F)? temperature sento ground in har-2) Remove the access hole lid. sor. <Ref. to ness between fuel 3) Disconnect the connector from fuel pump. EC(H4SO)-9, Fuel pump and ECM 4) Turn ignition switch to ON. Temperature Senconnector. 5) Read the data of fuel temperature sensor sor.> signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". < Ref. to EN(H4SO)-32, Subaru Select Monitor.> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

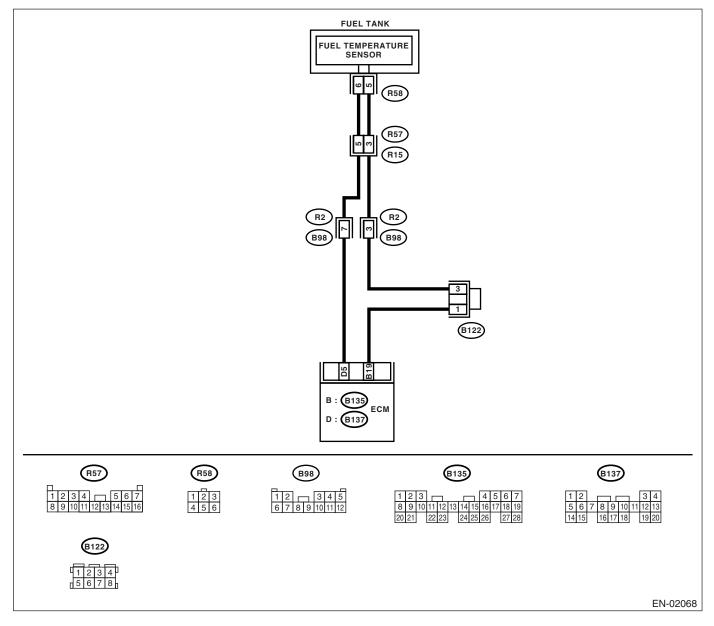
AI: DTC P0183 — FUEL TEMPERATURE SENSOR "A" CIRCUIT HIGH INPUT — DTC DETECTING CONDITION:

• Immediately at fault recognition

• GENERAL DESCRIPTION < Ref. to GD(H4SO)-84, DTC P0183 — FUEL TEMPERATURE SENSOR "A" CIRCUIT HIGH INPUT —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to EN(H4SO)-49, OPERATION, Clear Memory Mode.> and INSPECTION MODE <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



Step Check Yes No CHECK CURRENT DATA. Is the fuel temperature less Go to step 2. Repair poor con-1 than -40°C (-40°F)? 1) Start the engine. tact. 2) Read the data of fuel temperature sensor NOTE: signal using Subaru Select Monitor or OBD-II In this case, repair general scan tool. the followina: Poor contact in NOTE: Subaru Select Monitor fuel pump connec-For detailed operation procedures, refer to tor "READ CURRENT DATA FOR ENGINE". < Ref. Poor contact in to EN(H4SO)-32, Subaru Select Monitor.> ECM connector OBD-II general scan tool Poor contact in For detailed operation procedures, refer to the coupling connector OBD-II General Scan Tool Instruction Manual. Poor contact in joint connector CHECK HARNESS BETWEEN FUEL TEM-2 Is the voltage more than 10 V? Repair short circuit Go to step 3. PERATURE SENSOR AND ECM CONNECto battery in har-TOR. ness between 1) Turn ignition switch to OFF. ECM and fuel 2) Remove the access hole lid. pump connector. 3) Disconnect the connector from fuel pump. 4) Measure the voltage between fuel pump connector and chassis ground. **Connector & terminal** (R58) No. 6 (+) — Chassis ground (-): 3 CHECK HARNESS BETWEEN FUEL TEM-Is the voltage more than 10 V? Repair short circuit Go to step 4. PERATURE SENSOR AND ECM CONNECto battery in har-TOR. ness between ECM and fuel 1) Turn ignition switch to ON. 2) Measure the voltage between fuel pump pump connector. connector and chassis ground. **Connector & terminal** (R58) No. 6 (+) — Chassis ground (-): CHECK HARNESS BETWEEN FUEL TEM-4 Is the voltage more than 4 V? Go to step 5. Repair harness PERATURE SENSOR AND ECM CONNECand connector. TOR. NOTE: Measure the voltage between fuel pump con-In this case, repair nector and chassis ground. the following: **Connector & terminal** Open circuit in (R58) No. 6 (+) — Chassis ground (-): harness between ECM and fuel pump connector Poor contact in fuel pump connector Poor contact in ECM connector Poor contact in coupling connector

Step	Check	Yes	No
 5 CHECK HARNESS BETWEEN FUEL TEM- PERATURE SENSOR AND ECM CONNEC- TOR. 1) Turn ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between fuel pump connector and ECM. <i>Connector & terminal</i> (R58) No. 5 — (B134) No. 19: 	Is the resistance less than 1 Ω?		Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between ECM and fuel pump connector • Poor contact in fuel pump connec- tor • Poor contact in ECM connector • Poor contact in coupling connector • Poor contact in coupling connector

AJ:DTC P0301 — CYLINDER 1 MISFIRE DETECTED —

NOTE:

For the diagnostic procedure, refer to DTC P0304. <Ref. to EN(H4SO)-163, DTC P0304 — CYLINDER 4 MISFIRE DETECTED —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

AK:DTC P0302 — CYLINDER 2 MISFIRE DETECTED —

NOTE:

For the diagnostic procedure, refer to DTC P0304. <Ref. to EN(H4SO)-163, DTC P0304 — CYLINDER 4 MISFIRE DETECTED —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

AL:DTC P0303 — CYLINDER 3 MISFIRE DETECTED —

NOTE:

For the diagnostic procedure, refer to DTC P0304. <Ref. to EN(H4SO)-163, DTC P0304 — CYLINDER 4 MISFIRE DETECTED —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

AM:DTC P0304 — CYLINDER 4 MISFIRE DETECTED —

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- Immediately at fault recognition (A misfire which could damage catalyst occurs.)
- GENERAL DESCRIPTION < Ref. to GD(H4SO)-91, DTC P0304 CYLINDER 4 MISFIRE DETECTED , Diagnostic Trouble Code (DTC) Detecting Criteria.>

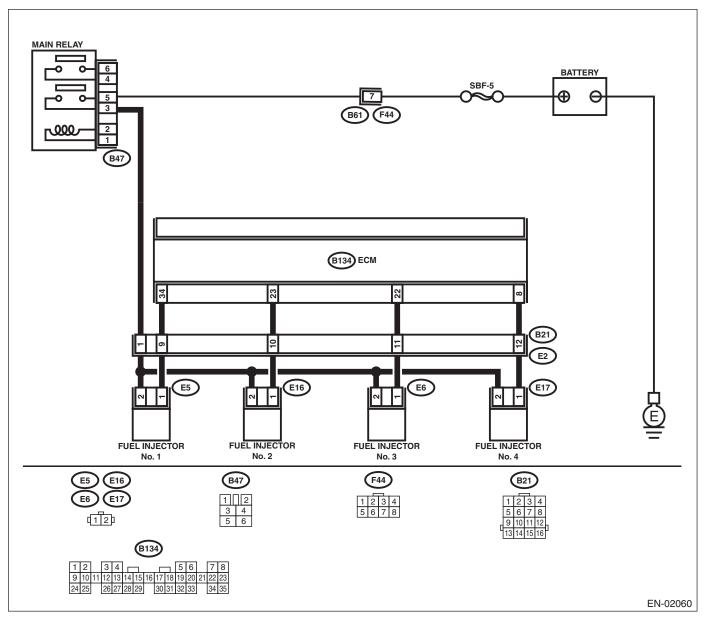
TROUBLE SYMPTOM:

- Engine stalls.
- Erroneous idling
- Rough driving

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN(H4SO)-163

DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check DTC using	Go to step 2.
			"List of Diagnostic	·
			Trouble Code	
			(DTC)". <ref. th="" to<=""><th></th></ref.>	
			EN(H4SO)-77, List	
			of Diagnostic Trou-	
			ble Code (DTC).>	
			NOTE:	
			In this case, it is not necessary to	
			inspect DTC P0301,	
			P0302, P0303 and	
			P0304.	
2	CHECK OUTPUT SIGNAL FROM ECM.	Is the voltage more than 10 V?	Go to step 7.	Go to step 3.
	 Turn the ignition switch to ON. 			
	2) Measure the voltage between ECM con-			
	nector and chassis ground on faulty cylinders.			
	Connector & terminal			
	#1 (B134) No. 34 (+) — Chassis ground (-):			
	#2 (B134) No. 23 (+) — Chassis ground (–): #3 (B134) No. 22 (+) — Chassis ground (–):			
	#4 (B134) No. 8 (+) — Chassis ground (–):			
3	CHECK HARNESS BETWEEN FUEL INJEC-	Is the resistance more than 1	Go to step 4.	Repair ground
5	TOR AND ECM CONNECTOR.	$M\Omega$?	uo io siep 4.	short circuit in har-
	1) Turn the ignition switch to OFF.	11122.		ness between fuel
	2) Disconnect the connector from fuel injector			injector and ECM
	on faulty cylinders.			connector.
	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:			
4		Is the resistance less than 1	Go to step 5.	Repair harness
	TOR AND ECM CONNECTOR.	Ω?	'	and connector.
	Measure the resistance of harness connector			NOTE:
	between ECM connector and fuel injector on			In this case, repair
	faulty cylinders.			the following:
	Connector & terminal			Open circuit in
	#1 (B134) No. 34 — (E5) No. 1:			harness between
	#2 (B134) No. 23 — (E16) No. 1: #2 (B124) No. 22 (E6) No. 1:			ECM and fuel
	#3 (B134) No. 22 — (E6) No. 1: #4 (B134) No. 8 — (E17) No. 1:			injector connectorPoor contact in
	#4 (B134) NO. 0 — (E17) NO. 1:			 Poor contact in coupling connector
5	CHECK FUEL INJECTOR.	Is the resistance 5 — 20 Ω ?	Go to step 6.	Replace the faulty
	Measure the resistance between fuel injector			fuel injector. <ref.< th=""></ref.<>
	terminals on faulty cylinder.			to FU(H4SO)-36,
	Terminals			Fuel Injector.>
	No. 1 — No. 2:			-

	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. <i>Connector & terminal</i> #1 (E5) No. 2 (+) — Engine ground (-): #2 (E16) No. 2 (+) — Engine ground (-): #3 (E6) No. 2 (+) — Engine ground (-): #4 (E17) No. 2 (+) — Engine ground (-): 	Is the voltage more than 10 V?	tact in all connec- tors in fuel injector circuit.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between main relay and fuel injector connector on faulty cylinders • Poor contact in coupling connector • Poor contact in main relay connec- tor • Poor contact in fuel injector con- nector on faulty cylinders
7	 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. <i>Connector & terminal</i> #1 (B134) No. 34 (+) — Chassis ground (-): #2 (B134) No. 23 (+) — Chassis ground (-): #3 (B134) No. 22 (+) — Chassis ground (-): #4 (B134) No. 8 (+) — Chassis ground (-): 	Is the voltage more than 10 V?	Repair battery short circuit in har- ness between ECM and fuel injector. After repair, replace the ECM. <ref. to<br="">FU(H4SO)-46, 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: 	Is the resistance less than 1 Ω ?	Replace the faulty fuel injector <ref. to FU(H4SO)-36, Fuel Injector.> and ECM <ref. to<br="">FU(H4SO)-46, Engine Control Module (ECM).></ref.></ref. 	Go to step 9.
9	CHECK INSTALLATION OF CAMSHAFT PO- SITION SENSOR/CRANKSHAFT POSITION SENSOR.	Is the camshaft position sensor or crankshaft position sensor loosely installed?	Tighten camshaft position sensor or crankshaft posi- tion sensor.	Go to step 10.
10	CHECK CRANK SPROCKET. Remove the timing belt cover.	Is the crank sprocket rusted or does it have broken teeth?	Replace the crank sprocket. <ref. to<br="">ME(H4SO)-53, Crankshaft Sprocket.></ref.>	Go to step 11.
11	CHECK INSTALLATION CONDITION OF TIMING BELT. Turn the crankshaft using ST, and align align- ment mark on crank sprocket with alignment mark on cylinder block. ST 499987500 CRANKSHAFT SOCKET	Is the timing belt dislocated from its proper position?	Repair installation condition of timing belt. <ref. to<br="">ME(H4SO)-46, Timing Belt 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 higher than the "Lower" level?	Go to step 13.	Replenish fuel so fuel meter indica- tion is higher than the "Lower" level. After replenishing fuel, Go to step 13.
13	 CHECK STATUS OF MALFUNCTION INDI- CATOR LIGHT. 1) Clear the memory using Subaru Select Monitor. <ref. clear="" en(h4so)-49,="" memory="" mode.="" to=""></ref.> 2) Start the engine, and drive the vehicle more than 10 minutes. 	Does the malfunction indicator light illuminate or blink?	Go to step 16.	Go to step 14.
14	CHECK CAUSE OF MISFIRE DIAGNOSED.	Was the cause of misfire identi- fied when the engine is running? Ex. Disconnection of spark plug cord.	Finish diagnostics operation, if the engine has no abnormality.	Go to step 15.
15	CHECK FOR POOR CONTACT.	Is there poor contact in the ignition coil, fuel injector, ECM and coupling connector?	Repair poor con- tact.	Contact your SOA Service Center after checking fol- lowings. NOTE: In this case, check the following: • Condition of fuel • Fuel additive used or not • Visually check spark plug • Visually check spark plug cord • Condition of engine oil
16	CHECK AIR INTAKE SYSTEM.	Is there a fault in air intake sys- tem?	Repair air intake system. NOTE: Check the follow- ing items: • Are there air leaks or air suction caused by loose or dislocated nuts and bolts? • Are there cracks or any disconnec- tion of hoses?	Go to step 17.
17	 CHECK MISFIRE SYMPTOM. 1) Turn the ignition switch to ON. 2) Read the DTC. NOTE: Subaru Select Monitor For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <ref. en(h4so)-32,="" monitor.="" select="" subaru="" to=""></ref.> OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual. NOTE: Perform diagnosis according to the items listed below. 	Does the Subaru Select Moni- tor or OBD-II general scan tool display only one DTC?	Go to step 22 .	Go to step 18.

T	Step	Check	Yes	No
18	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Go to step 23.	Go to step 19 .
19	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Go to step 23.	Go to step 13 .
20	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Go to step 25.	Go to step 21 .
21	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Go to step 26.	Go to step 27.
22	ONLY ONE CYLINDER	Is there a fault in that cylinder?	Repair or replace faulty parts. NOTE: Check the follow- ing items. • Spark plug • Spark plug cord • Fuel injector • Compression ratio	Go to DTC P0171. <ref. to<br="">EN(H4SO)-152, DTC P0171 — SYSTEM TOO LEAN (BANK 1) — , Diagnostic Pro- cedure with Diag- nostic Trouble Code (DTC).></ref.>
23	GROUP OF #1 AND #2 CYLINDERS	Are there faults in #1 and #2 cylinders?	Repair or replace faulty parts. NOTE: • Check the fol- lowing items. • Spark plugs • Fuel injectors • Ignition coil • Compres- sion ratio • If no abnormal is discovered, check for "IGNITION CONTROL SYS- TEM" of #1 and #2 cylinders side. <ref. to<br="">EN(H4SO)-69, IGNITION CON- TROL SYSTEM, Diagnostics for Engine Starting Failure.></ref.>	Go to DTC P0171. <ref. to<br="">EN(H4SO)-152, DTC P0171 — SYSTEM TOO LEAN (BANK 1) — , Diagnostic Pro- cedure with Diag- nostic Trouble Code (DTC).></ref.>
24	GROUP OF #3 AND #4 CYLINDERS	Are there faults in #3 and #4 cylinders?	Repair or replace faulty parts. NOTE: • Check the fol- lowing items. • Spark plugs • Fuel injectors • Ignition coil • If no abnormal is discovered, check for "IGNITION CONTROL SYS- TEM" of #3 and #4 cylinders side. <ref. to<br="">EN(H4SO)-69, IGNITION CON- TROL SYSTEM, Diagnostics for Engine Starting Failure.></ref.>	Go to DTC P0171. <ref. to<br="">EN(H4SO)-152, DTC P0171 — SYSTEM TOO LEAN (BANK 1) — , Diagnostic Pro- cedure with Diag- nostic Trouble Code (DTC).></ref.>

DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
25	GROUP OF #1 AND #3 CYLINDERS	Are there faults in #1 and #3 cylinders?	Repair or replace faulty parts. NOTE: Check the follow- ing items. • Spark plugs • Fuel injectors • Skipping timing belt teeth	Go to DTC P0171. <ref. to<br="">EN(H4SO)-152, DTC P0171 — SYSTEM TOO LEAN (BANK 1) — , Diagnostic Pro- cedure with Diag- nostic Trouble Code (DTC).></ref.>
26	GROUP OF #2 AND #4 CYLINDERS	Are there faults in #2 and #4 cylinders?	Repair or replace faulty parts. NOTE: Check the follow- ing items. • Spark plugs • Fuel injectors • Compression ratio • Skipping timing belt teeth	Go to DTC P0171. <ref. to<br="">EN(H4SO)-152, DTC P0171 — SYSTEM TOO LEAN (BANK 1) — , Diagnostic Pro- cedure with Diag- nostic Trouble Code (DTC).></ref.>
27	CYLINDER AT RANDOM	Is the engine idle rough?	Go to DTC P0171. <ref. to<br="">EN(H4SO)-152, DTC P0171 — SYSTEM TOO LEAN (BANK 1) — , Diagnostic Pro- cedure with Diag- nostic Trouble Code (DTC).></ref.>	Repair or replace faulty parts. NOTE: Check the follow- ing items. • Spark plugs • Fuel injectors • Compression ratio

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

DTC DETECTING CONDITION:

Immediately at fault recognition

• GENERAL DESCRIPTION < Ref. to GD(H4SO)-92, DTC P0327 - KNOCK SENSOR 1 CIRCUIT LOW IN-

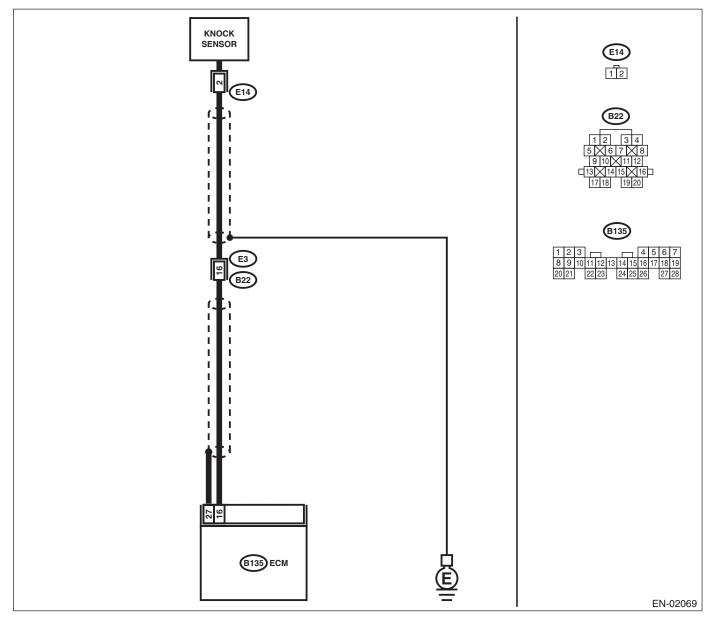
PUT (BANK 1 OR SINGLE SENSOR) -, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Poor driving performance
- Knocking occurs.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



Step Check Yes No CHECK HARNESS BETWEEN KNOCK SEN- Is the resistance more than Go to step 2. 1 Repair harness SOR AND ECM CONNECTOR. 700 kΩ? and connector. 1) Turn the ignition switch to OFF. NOTE: 2) Disconnect the connector from ECM. In this case, repair 3) Measure the resistance between ECM harthe following: ness connector and chassis ground. Open circuit in **Connector & terminal** harness between (B135) No. 16 — Chassis ground: knock sensor and ECM connector Poor contact in knock sensor connector Poor contact in coupling connector 2 CHECK KNOCK SENSOR. Is the resistance more than Go to step 3. Repair harness 1) Disconnect the connector from knock sen-700 kΩ? and connector. sor. NOTE: 2) Measure the resistance between knock In this case, repair sensor connector terminal and engine ground. the following: Connector & terminal · Poor contact in (E14) No. 2 — Engine ground: knock sensor connector CHECK CONDITION OF KNOCK SENSOR Is the knock sensor installation Replace the knock Tighten knock sen-3 INSTALLATION. bolt tightened securely? sensor. <Ref. to sor installation bolt FU(H4SO)-28, securely. Knock Sensor.>

AO:DTC P0328 — KNOCK SENSOR 1 CIRCUIT HIGH INPUT (BANK 1 OR SIN-GLE SENSOR) —

DTC DETECTING CONDITION:

Immediately at fault recognition

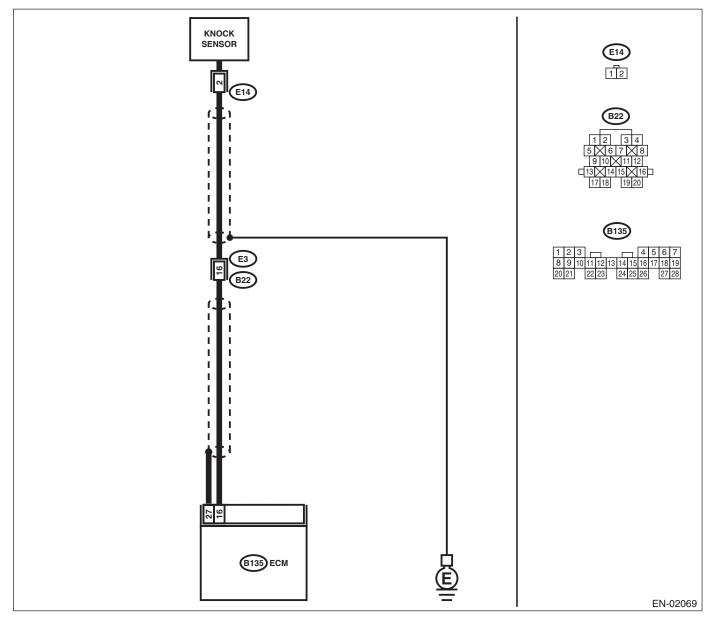
• GENERAL DESCRIPTION <Ref. to GD(H4SO)-94, DTC P0328 — KNOCK SENSOR 1 CIRCUIT HIGH INPUT (BANK 1 OR SINGLE SENSOR) —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Poor driving performance
- Knocking occurs.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, 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. <i>Connector & terminal</i> (B135) No. 16 — Chassis ground:	Is the resistance less than 400 $k\Omega$?	Go to step 2.	Go to step 3.
2	 CHECK KNOCK SENSOR. 1) Disconnect the connector from knock sensor. 2) Measure the resistance between knock sensor connector terminal and engine ground. Connector & terminal (E14) No. 2 — Engine ground: 	Is the resistance less than 400 kΩ?	Replace the knock sensor. <ref. to<br="">FU(H4SO)-28, Knock Sensor.></ref.>	Repair ground short circuit in har- ness between knock sensor con- nector and ECM connector. NOTE: The harness be- tween both con- nectors is shielded. Repair short circuit of har- ness together with shield.
3	 CHECK INPUT SIGNAL FOR ECM. 1) Connect the connectors to ECM and knock sensor. 2) Turn the ignition switch to ON. 3) Measure the voltage between ECM and chassis ground. Connector & terminal (B135) No. 16 (+) — Chassis ground (-): 	Is the voltage more than 2 V?	Even if malfunction indicator light lights up, the cir- cuit has returned to a normal condi- tion at this time. (However, the pos- sibility of poor con- tact still remains.) NOTE: In this case, repair the following: • Poor contact in knock sensor con- nector • Poor contact in ECM connector • Poor contact in coupling connector	Repair poor con- tact in ECM con- nector.

AP:DTC P0335 — CRANKSHAFT POSITION SENSOR "A" CIRCUIT —

DTC DETECTING CONDITION:

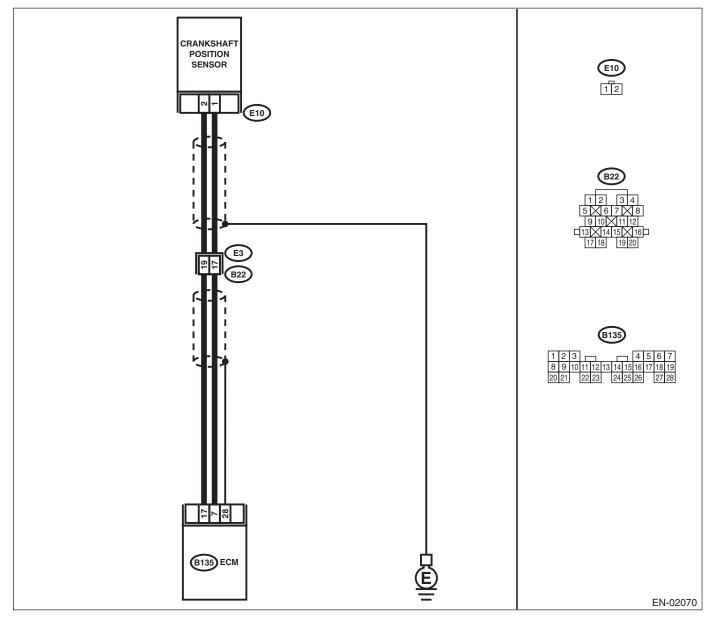
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4SO)-96, DTC P0335 CRANKSHAFT POSITION SENSOR "A" CIRCUIT —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Engine stalls.
- Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	 CHECK HARNESS BETWEEN CRANK-SHAFT POSITION SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from crankshaft position sensor. 3) Measure the resistance of harness between crankshaft position sensor connector and engine ground. Connector & terminal (E10) No. 1 — Engine ground: 	Is the resistance more than 100 kΩ?	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between crankshaft posi- tion sensor and ECM connector • Poor contact in ECM connector • Poor contact in coupling connector	Go to step 2.
2	CHECK HARNESS BETWEEN CRANK- SHAFT POSITION SENSOR AND ECM CON- NECTOR. Measure the resistance of harness between crankshaft position sensor connector and engine ground. <i>Connector & terminal</i> (E10) No. 1 — Engine ground:	Is the resistance less than 10 Ω?	Repair ground short circuit in har- ness between crankshaft posi- tion sensor and ECM connector. NOTE: The harness be- tween both con- nectors are shielded. Repair ground short circuit in harness togeth- er with shield.	Go to step 3.
3	CHECK HARNESS BETWEEN CRANK- SHAFT POSITION SENSOR AND ECM CON- NECTOR. Measure the resistance of harness between crankshaft position sensor connector and engine ground. <i>Connector & terminal</i> <i>(E10) No. 2 — Engine ground:</i>	Is the resistance less than 5 Ω?	Go to step 4.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between crankshaft posi- tion sensor and ECM connector • Poor contact in ECM connector • Poor contact in coupling connector
4	CHECK CONDITION OF CRANKSHAFT PO- SITION SENSOR.	Is the crankshaft position sen- sor installation bolt tightened securely?	Go to step 5.	Tighten crank- shaft position sen- sor installation bolt securely.
5	 CHECK CRANKSHAFT POSITION SENSOR. 1) Remove the crankshaft position sensor. 2) Measure the resistance between connector terminals of crankshaft position sensor. Terminals (E10) No. 1 — (E10) No. 2: 	Is the resistance $1 - 4 k\Omega$?	Repair poor con- tact in crankshaft position sensor connector.	Replace the crank- shaft position sen- sor. <ref. to<br="">FU(H4SO)-26, Crankshaft Posi- tion Sensor.></ref.>

AQ:DTC P0336 — CRANKSHAFT POSITION SENSOR "A" CIRCUIT RANGE/ PERFORMANCE —

DTC DETECTING CONDITION:

Immediately at fault recognition

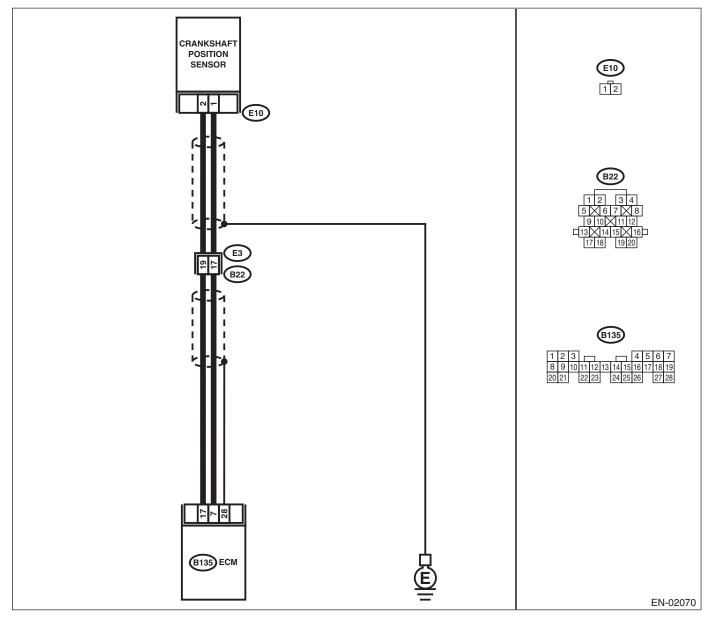
• GENERAL DESCRIPTION < Ref. to GD(H4SO)-98, DTC P0336 — CRANKSHAFT POSITION SENSOR "A" CIRCUIT RANGE/PERFORMANCE —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Engine stalls.
- · Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



Step Check Yes No CHECK ANY OTHER DTC ON DISPLAY. Is any other DTC displayed? Inspect DTC using Go to step 2. 1 "List of Diagnostic **Trouble Code** (DTC)". <Ref. to EN(H4SO)-77, List of Diagnostic Trouble Code (DTC).> 2 CHECK CONDITION OF CRANKSHAFT PO-Is the crankshaft position sen-Go to step 3. Tighten crank-SITION SENSOR. sor installation bolt tightened shaft position sen-Turn the ignition switch to OFF. securely? sor installation bolt securely. CHECK CRANK SPROCKET. Go to step 4. 3 Are crank sprocket teeth Replace the crank cracked or damaged? Remove the timing belt cover. sprocket. <Ref. to ME(H4SO)-53, Crankshaft Sprocket.> 4 CHECK INSTALLATION CONDITION OF Is the timing belt dislocated Repair installation Replace the crankcondition of timing TIMING BELT. from its proper position? shaft position sensor. <Ref. to Turn the crankshaft using ST, and align alignbelt. <Ref. to ment mark on crank sprocket with alignment ME(H4SO)-46, FU(H4SO)-26, Timing Belt mark on cylinder block. Crankshaft Posi-499987500 CRANKSHAFT SOCKET Assembly.> tion Sensor.> ST

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

DTC DETECTING CONDITION:

Immediately at fault recognition

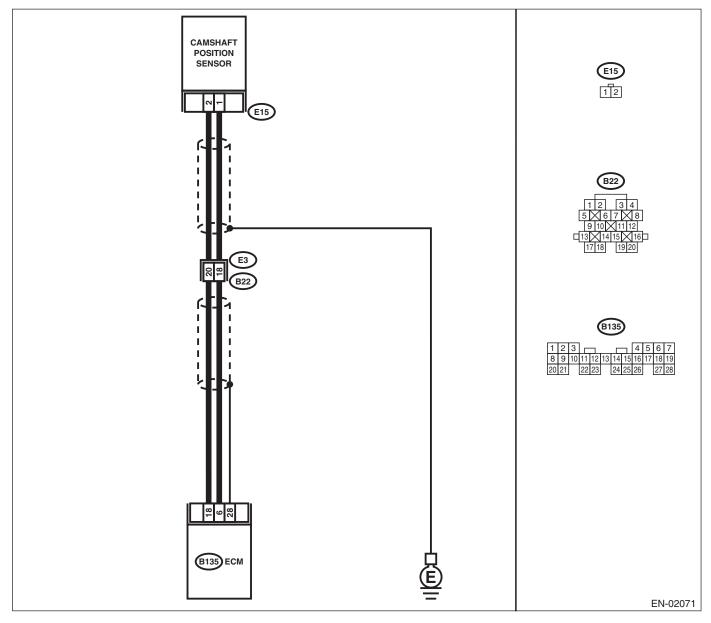
• GENERAL DESCRIPTION < Ref. to GD(H4SO)-101, DTC P0340 — CAMSHAFT POSITION SENSOR "A" CIRCUIT (BANK 1 OR SINGLE SENSOR) —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Engine stalls.
- · Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



				
	Step	Check	Yes	No
1	CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNEC- TOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from camshaft position sensor. 3) Measure the resistance of harness between camshaft position sensor connector and engine ground. Connector & terminal (E15) No. 1 — Engine ground:	Is the resistance more than 100 kΩ?	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between camshaft position sensor and ECM connector • Poor contact in ECM connector • Poor contact in	Go to step 2.
2	CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNEC- TOR. Measure the resistance of harness between camshaft position sensor connector and engine ground. <i>Connector & terminal</i> (E15) No. 1 — Engine ground:	Is the resistance less than 10 Ω?	coupling connector Repair ground short circuit in har- ness between camshaft position sensor and ECM connector. NOTE: The harness be- tween both connec- tors are shielded. Repair ground short circuit in harness to- gether with shield.	Go to step 3 .
3	CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNEC- TOR. Measure the resistance of harness between camshaft position sensor connector and engine ground. Connector & terminal (E15) No. 2 — Engine ground:	Is the resistance less than 5 Ω?	Go to step 4.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between camshaft position sensor and ECM connector • Poor contact in ECM connector • Poor contact in coupling connector
4	CHECK CONDITION OF CAMSHAFT POSI- TION SENSOR.	Is the camshaft position sensor installation bolt tightened securely?	Go to step 5.	Tighten camshaft position sensor installation bolt securely.
5	 CHECK CAMSHAFT POSITION SENSOR. 1) Remove the camshaft position sensor. 2) Measure the resistance between connector terminals of camshaft position sensor. Terminals (E15) No. 1 — (E15) No. 2: 	Is the resistance $1 - 4 k\Omega$?	Repair poor con- tact in camshaft position sensor connector.	Replace the cam- shaft position sen- sor. <ref. to<br="">FU(H4SO)-27, Camshaft Position Sensor.></ref.>

AS:DTC P0341 — CAMSHAFT POSITION SENSOR "A" CIRCUIT RANGE/PER-FORMANCE (BANK 1 OR SINGLE SENSOR) —

DTC DETECTING CONDITION:

• Immediately at fault recognition

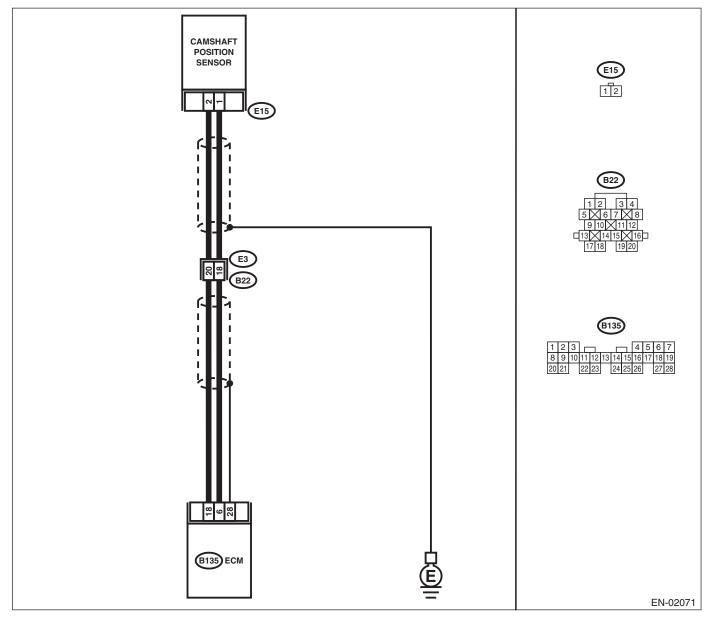
• GENERAL DESCRIPTION < Ref. to GD(H4SO)-103, DTC P0341 — CAMSHAFT POSITION SENSOR "A" CIRCUIT RANGE/PERFORMANCE (BANK 1 OR SINGLE SENSOR) —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Engine stalls.
- · Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect DTC using "List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(H4SO)-77, List of Diagnostic Trou- ble Code (DTC).></ref.>	Go to step 2.
2	 CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from camshaft position sensor. 3) Measure the resistance of harness between camshaft position sensor connector and engine ground. Connector & terminal (E15) No. 1 — Engine ground: 	Is the resistance more than 100 kΩ?	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between camshaft position sensor and ECM connector • Poor contact in ECM connector • Poor contact in coupling connector	
3	CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNEC- TOR. Measure the resistance of harness between camshaft position sensor connector and engine ground. <i>Connector & terminal</i> (E15) No. 1 — Engine ground:	Is the resistance less than 10 Ω ?	Repair ground short circuit in har- ness between camshaft position sensor and ECM connector. NOTE: The harness be- tween both connec- tors are shielded. Repair ground short circuit in harness to- gether with shield.	Go to step 4.
4	CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNEC- TOR. Measure the resistance of harness between camshaft position sensor connector and engine ground. <i>Connector & terminal</i> (E15) No. 2 — Engine ground:	Is the resistance less than 5 Ω?	Go to step 5.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between camshaft position sensor and ECM connector • Poor contact in ECM connector • Poor contact in coupling connector
5	CHECK CONDITION OF CAMSHAFT POSI- TION SENSOR.	Is the camshaft position sensor installation bolt tightened securely?	Go to step 6.	Tighten camshaft position sensor installation bolt securely.
6	 CHECK CAMSHAFT POSITION SENSOR. 1) Remove the camshaft position sensor. 2) Measure the resistance between connector terminals of camshaft position sensor. Terminals (E15) No. 1 — (E15) No. 2: 	Is the resistance 1 — 4 k Ω ?	Go to step 7.	Replace the cam- shaft position sen- sor. <ref. to<br="">FU(H4SO)-27, Camshaft Position Sensor.></ref.>

	Step	Check	Yes	No
7	CHECK CONDITION OF CAMSHAFT POSI- TION SENSOR. Turn the ignition switch to OFF.	Is the camshaft position sensor installation bolt tightened securely?	Go to step 8.	Tighten camshaft position sensor installation bolt securely.
8	CHECK CAM SPROCKET. Remove the timing belt cover. <ref. to<br="">ME(H4SO)-45, Timing Belt Cover.></ref.>	Are cam sprocket teeth cracked or damaged?	Replace the cam sprocket. <ref. to<br="">ME(H4SO)-51, Cam Sprocket.></ref.>	Go to step 9.
9	CHECK INSTALLATION CONDITION OF TIMING BELT. Turn the camshaft using ST, and align align- ment mark on cam sprocket with alignment mark on timing belt cover LH. ST 499207100 CAMSHAFT SOCKET	Is the timing belt dislocated from its proper position?	Repair installation condition of timing belt. <ref. to<br="">ME(H4SO)-46, Timing Belt Assembly.></ref.>	Replace the cam- shaft position sen- sor. <ref. to<br="">FU(H4SO)-27, Camshaft Position Sensor.></ref.>

AT:DTC P0400 — EGR SYSTEM —

DTC DETECTING CONDITION:

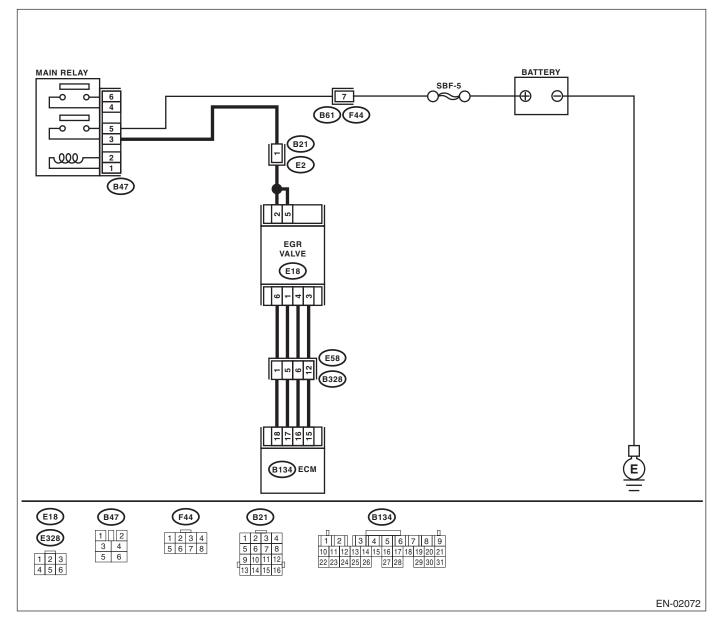
- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION < Ref. to GD(H4SO)-105, DTC P0400 EGR SYSTEM —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Poor driving performance on low engine speed.
- Erroneous idling.
- Poor driving performance.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, 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(H4SO)-77, List of Diagnostic Trou- ble Code (DTC).></ref.>	Go to step 2.
2	 CHECK CURRENT DATA. 1) Start 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 <ref. en(h4so)-32,="" monitor.="" select="" subaru="" to=""></ref.> OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual. 	Is the pressure more than 53.3 kPa (400 mmHg, 15.75 inHg)?	Check if EGR valve, intake mani- fold pressure sen- sor and throttle body are securely installed.	Go to step 3.
3	 CHECK POWER SUPPLY TO EGR SOLE- NOID VALVE. 1) Disconnect connector from EGR solenoid valve. 2) Turn ignition switch to ON. 3) Measure voltage between EGR solenoid valve and engine ground. <i>Connector & terminal</i> (E18) No. 2 (+) — Engine ground (-): (E18) No. 5 (+) — Engine ground (-): 	Is the voltage more than 10 V?	Go to step 4.	Repair open circuit in harness between main relay and EGR solenoid valve connector.
4	CHECK EGR SOLENOID VALVE. Measure resistance between EGR solenoid valve terminals. NOTE: Make sure there are no foreign objects caught between EGR solenoid valve and valve seat. <i>Terminals</i> <i>No. 1 — No. 2:</i> <i>No. 3 — No. 2:</i> <i>No. 4 — No. 5:</i> <i>No. 6 — No. 5:</i>	Is the resistance 20 — 30 Ω?	Go to step 5.	Replace EGR solenoid valve. <ref. to<br="">EC(H4SO)-5, EGR Valve.></ref.>
5	 CHECK OUTPUT SIGNAL FROM ECM. 1) Turn ignition switch to OFF. 2) Connect connectors to ECM and EGR solenoid valve. 3) Turn ignition switch to ON. 4) Measure voltage between ECM and chassis ground. Connector & terminal (B134) No. 18 (+) — Chassis ground (-): (B134) No. 16 (+) — Chassis ground (-): (B134) No. 15 (+) — Chassis ground (-): 	Is the voltage 0 — 10 V?	Repair poor con- tact in ECM con- nector.	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 ignition switch to OFF. 2) Disconnect connectors from EGR solenoid valve and ECM. 3) Measure resistance of harness between EGR solenoid valve and ECM connector. <i>Connector & terminal</i> (B134) No. 18 — (E18) No. 6: (B134) No. 17 — (E18) No. 1: (B134) No. 16 — (E18) No. 4: (B134) No. 15 — (E18) No. 3: 	Is the resistance less than 1 Ω?	Go to step 7.	Repair open circuit in harness between ECM and EGR solenoid valve connector.
7	CHECK HARNESS BETWEEN EGR SOLE- NOID VALVE AND ECM CONNECTOR. Measure resistance of harness between EGR solenoid valve and chassis ground. <i>Connector & terminal</i> (B134) No. 18 — Chassis ground: (B134) No. 17 — Chassis ground: (B134) No. 16 — Chassis ground: (B134) No. 15 — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 8.	Repair short circuit in harness between main relay and EGR solenoid valve connector.
8	CHECK POOR CONTACT. Check poor contact in ECM and EGR solenoid valve connector.	Is there poor contact in ECM and EGR solenoid valve con- nector?	Repair poor con- tact in ECM and EGR solenoid valve connector.	Even if malfunction indicator lamp lights up, the cir- cuit has returned to a normal condi- tion at this time.

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

DTC DETECTING CONDITION:

• Two consecutive driving cycles with fault

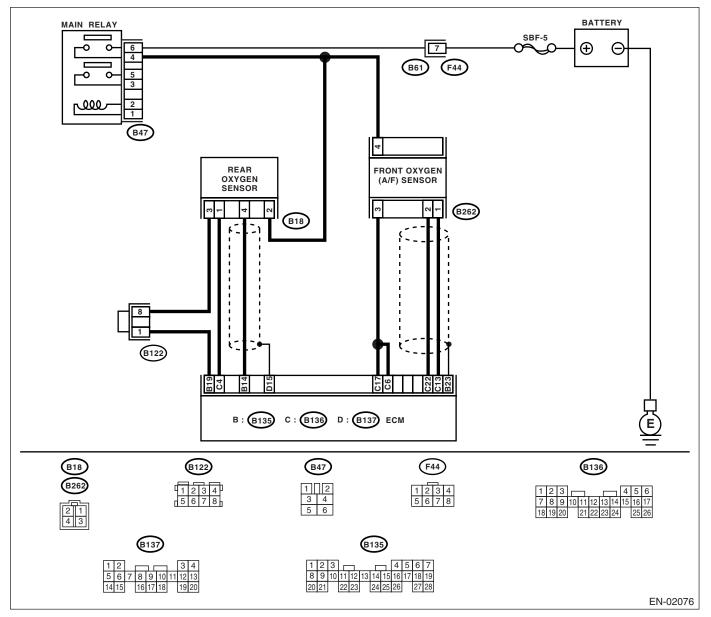
• GENERAL DESCRIPTION < Ref. to GD(H4SO)-109, DTC P0420 — CATALYST SYSTEM EFFICIENCY BELOW THRESHOLD (BANK 1) —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

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

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

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(H4SO)-77, List of Diagnostic Trou- ble Code (DTC).> NOTE:</ref.>	Go to step 2.
			In this case, it is not necessary to in- spect DTC P0420.	
2	 CHECK EXHAUST SYSTEM. Check for gas leaks or air suction caused by loose or dislocated nuts and bolts, and open hole at exhaust pipes. NOTE: Check the following positions. Between cylinder head and front exhaust pipe Between front exhaust pipe and front catalytic converter Between front catalytic converter and rear catalytic converter 	Is there a fault in exhaust sys- tem?	Repair or replace the exhaust sys- tem. <ref. to<br="">EX(H4SO)-2, Gen- eral Description.></ref.>	Go to step 3 .
3	CHECK CATALYTIC CONVERTER.	Is there damage at rear face or front face of front catalyst?	Replace the cata- lytic converter. <ref. to<br="">EC(H4SO)-3, Front Catalytic Converter.></ref.>	Go to step 4.
4	 CHECK HARNESS BETWEEEN REAR OXY- GEN SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from the rear oxygen sensor and ECM. 3) Measure the resistance of harness between rear oxygen sensor connector and ECM connector. Connector & terminal (B18) No. 3 — (B134) No. 9: 	Is the resistance less than 1Ω?	Go to step 5.	Repair open circuit in harness between ECM and rear oxygen sen- sor.
5	CHECK HARNESS BETWEEEN REAR OXY- GEN SENSOR AND ECM CONNECTOR. Measure the resistance between rear oxygen sensor connector and chassis ground. Connector & terminal (B18) No. 3 — Chassis ground:	Is the resistance more than 1Ω?	Go to step 6 .	Repair shorted cir- cuit in harness between ECM and rear oxygen sen- sor.
6	CHECK SHIELD HARNESS.	Is the rear oxygen sensor shield harness connected to (B135) No.15.	Contact SOA Ser- vice Center.	Repair the shield harness.

AV:DTC P0442 — EVAPORATIVE EMISSION CONTROL SYSTEM LEAK DE-TECTED (SMALL LEAK) —

DTC DETECTING CONDITION:

• Two consecutive driving cycles with fault

• GENERAL DESCRIPTION <Ref. to GD(H4SO)-114, DTC P0442 - EVAPORATIVE EMISSION CON-

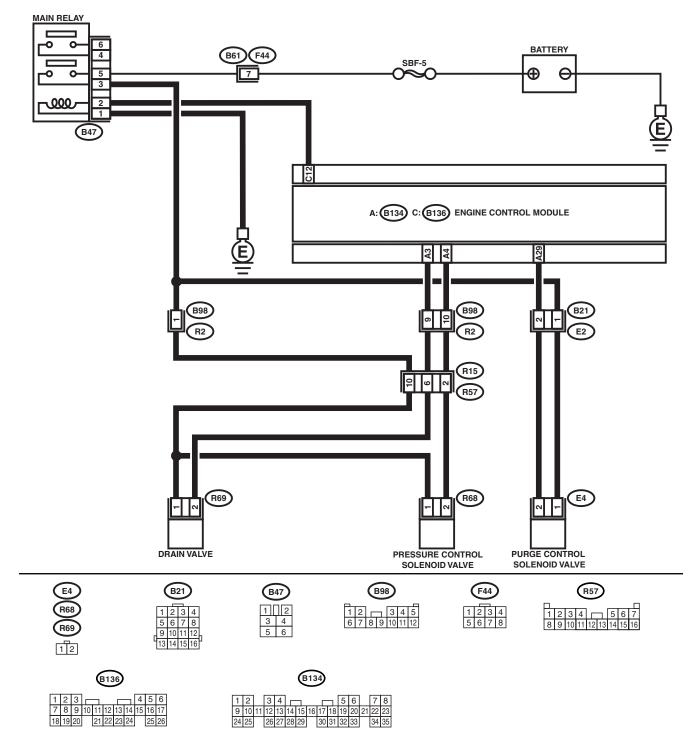
TROL SYSTEM LEAK DETECTED (SMALL LEAK) —, Diagnostic Trouble Code (DTC) Detecting Criteria.> **TROUBLE SYMPTOM:**

- Fuel odor
- There is a hole of more than 1.0 mm (0.04 in) dia. in evaporation system or fuel tank.

CAUTION:

After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to EN(H4SO)-49, OPERATION, Clear Memory Mode.> and INSPECTION MODE <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02073

	Step	Check	Yes	No
1	CHECK FOR 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(H4SO)-77, List of Diagnostic Trou- ble Code (DTC).></ref.>	
2	 CHECK FUEL FILLER CAP. 1) Turn ignition switch to OFF. 2) Check the fuel filler cap. NOTE: The DTC is stored in memory if fuel filler cap is or was loose or if the cap chain was caught while tightening. 	Is the fuel filler cap tightened securely?	Go to step 3 .	Tighten fuel filler cap securely.
3	CHECK FUEL FILLER CAP.	Is the fuel filler cap SUBARU genuine?	Go to step 4.	Replace with a SUBARU genuine fuel filler cap.
4	CHECK FUEL FILLER PIPE PACKING.	Is there any damage to the seal between fuel filler cap and fuel filler pipe?	Repair or replace the fuel filler cap and fuel filler pipe. <ref. to<br="">FU(H4SO)-53, Fuel Filler Pipe.></ref.>	Go to step 5 .
5	 CHECK DRAIN VALVE. 1) Connect the test mode connector. 2) Turn ignition switch to ON. 3) Operate the drain valve. NOTE: Drain valve operation can also be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <ref. check="" compulsory="" en(h4so)-50,="" mode.="" operation="" to="" valve=""></ref.> 		Go to step 6 .	Replace the drain valve. <ref. to<br="">EC(H4SO)-19, Drain Valve.></ref.>
6	CHECK PURGE CONTROL SOLENOID VALVE. Operate the purge control solenoid valve. NOTE: Purge control solenoid valve operation can also be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Op- eration Check Mode". <ref. en(h4so)-50,<br="" to="">Compulsory Valve Operation Check Mode.></ref.>	Does the purge control sole- noid valve operate?	Go to step 7.	Replace the purge control solenoid valve. <ref. to<br="">EC(H4SO)-7, Purge Control Solenoid Valve.></ref.>
7	CHECK PRESSURE CONTROL SOLENOID VALVE. Operate the pressure control solenoid valve. NOTE: Pressure control solenoid valve operation can also be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <ref. en(h4so)-<br="" to="">50, Compulsory Valve Operation Check Mode.></ref.>		Go to step 8 .	Replace the pres- sure control sole- noid valve. <ref. to EC(H4SO)-13, Pressure Control Solenoid Valve.></ref.

Step Check Yes No CHECK EVAPORATIVE EMISSION CON-Is there a hole of more than 1.0 Repair or replace 8 Go to step 9. TROL SYSTEM LINE. mm (0.04 in) dia. on evaporathe evaporation Turn ignition switch to OFF. tion line? line. <Ref. to FU(H4SO)-65, Fuel Delivery, Return and Evaporation Lines.> 9 CHECK CANISTER. Is the canister damaged or is Repair or replace Go to step 10. there a hole of more than 1.0 the canister. <Ref. mm (0.04 in) dia. in it? to EC(H4SO)-6, Canister.> 10 CHECK FUEL TANK. Is the fuel tank damaged or is Repair or replace Go to step 11. Remove the fuel tank. <Ref. to FU(H4SO)-50, there a hole of more than 1.0 the fuel tank. < Ref. to FU(H4SO)-50, Fuel Tank.> mm (0.04 in) dia. in it? Fuel Tank.> CHECK ANY OTHER MECHANICAL TROU-11 Are there holes of more than Repair or replace Contact SOA Ser-**BLE IN EVAPORATIVE EMISSION CON-**1.0 mm (0.04 in) dia., cracks, the hoses or pipes. vice Center. clogging, disconnections or TROL SYSTEM. NOTE: bend of hoses or pipes in evap-Inspection by DTM orative emission control sysis required, betem? cause probable cause is deterioration of multiple parts.

AW:DTC P0447 — EVAPORATIVE EMISSION CONTROL SYSTEM VENT CON-TROL CIRCUIT OPEN —

DTC DETECTING CONDITION:

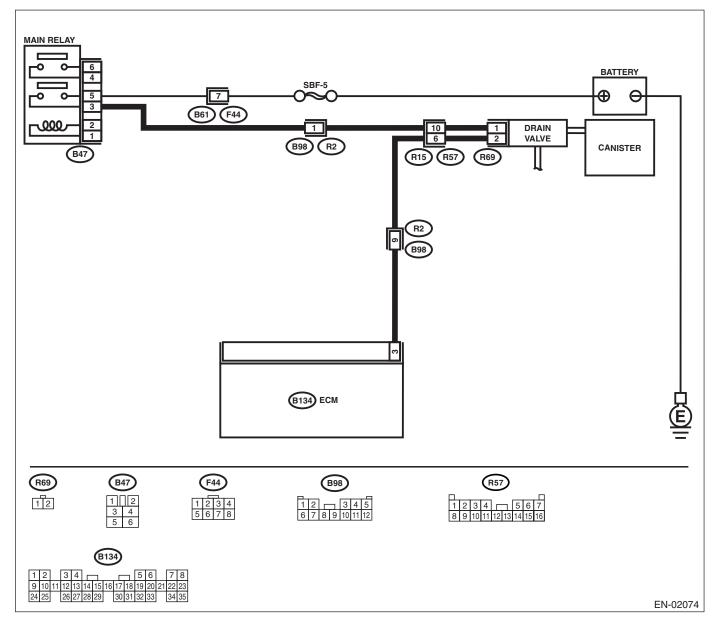
Two consecutive driving cycles with fault

• GENERAL DESCRIPTION <Ref. to GD(H4SO)-138, DTC P0447 - EVAPORATIVE EMISSION CON-

TROL SYSTEM VENT CONTROL CIRCUIT OPEN —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to EN(H4SO)-49, OPERATION, Clear Memory Mode.> and INSPECTION MODE <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	 CHECK OUTPUT SIGNAL FROM ECM. 1) Turn ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 3 (+) — Chassis ground (-): 	Is the voltage more than 10 V?		Go to step 3.
2	CHECK FOR POOR CONTACT. Check for poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair poor con- tact in ECM con- nector.	The malfunction indicator light may light up, however, the circuit is returned to the normal status at the moment. (However, the pos- sibility of poor con- tact still remains.) NOTE: In this case, repair the following: • Poor contact in drain valve con- nector • Poor contact in ECM connector • Poor contact in coupling connector
3	 CHECK HARNESS BETWEEN DRAIN VALVE AND ECM CONNECTOR. 1) Turn ignition switch to OFF. 2) Disconnect the connectors from drain valve and ECM. 3) Measure the resistance of harness between drain valve connector and chassis ground. Connector & terminal (R69) No. 2 — Chassis ground: 	Is the resistance more than 1 $M\Omega$?	Go to step 4.	Repair short circuit to ground in har- ness between ECM and drain valve connector.
4	CHECK HARNESS BETWEEN DRAIN VALVE AND ECM CONNECTOR. Measure the resistance of harness between ECM and drain valve connector. Connector & terminal (B134) No. 3 — (R69) No. 2:	Is the resistance less than 1 Ω ?	Go to step 5.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between ECM and drain valve connector • Poor contact in coupling connector
5	CHECK DRAIN VALVE. Measure the resistance between drain valve terminals. <i>Terminals</i> (R69) No. 1 — (R69) No. 2:	Is the resistance $10 - 100 \Omega$?	Go to step 6 .	Replace the drain valve. <ref. to<br="">EC(H4SO)-19, Drain Valve.></ref.>

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

AX:DTC P0448 — EVAPORATIVE EMISSION CONTROL SYSTEM VENT CON-TROL CIRCUIT SHORTED —

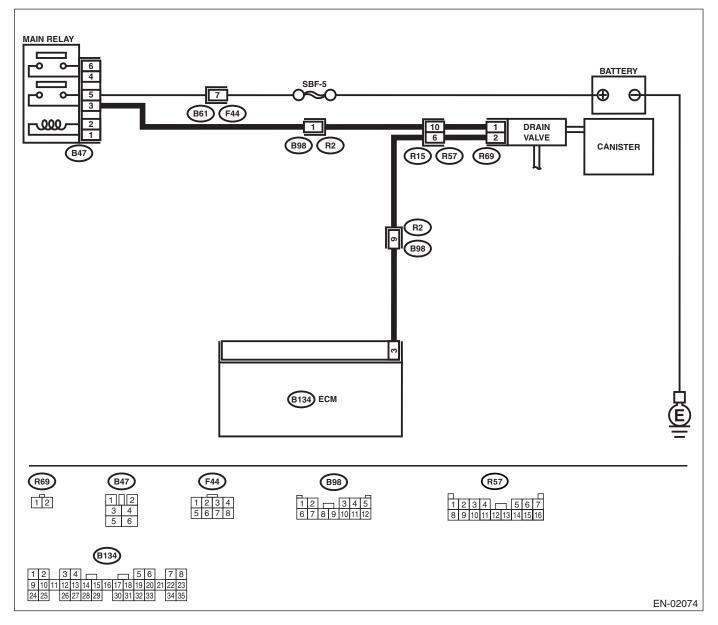
DTC DETECTING CONDITION:

· Two consecutive driving cycles with fault

• GENERAL DESCRIPTION <Ref. to GD(H4SO)-140, DTC P0448 — EVAPORATIVE EMISSION CON-TROL SYSTEM VENT CONTROL CIRCUIT SHORTED —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to EN(H4SO)-49, OPERATION, Clear Memory Mode.> and INSPECTION MODE <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	 CHECK INPUT SIGNAL FOR ECM. 1) Turn ignition switch to OFF. 2) Connect the test mode connector at the lower portion of instrument panel (on the driver's side). 3) Turn ignition switch to ON. 4) While operating the drain valve, measure voltage between ECM and chassis ground. NOTE: Drain valve operation can be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <ref. check="" compulsory="" en(h4so)-50,="" mode.="" operation="" to="" valve=""></ref.> Connector & terminal (B134) No. 3 (+) — Chassis ground (-): 		Go to step 2.	The malfunction indicator light may light up, however, the circuit is returned to the normal status at the moment. In this case, repair poor contact in ECM connector.
2	 CHECK INPUT SIGNAL FOR ECM. 1) Turn ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 3 (+) — Chassis ground (-): 	Is the voltage more than 10 V?	Go to step 4.	Go to step 3.
3	CHECK FOR POOR CONTACT. Check for poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair poor con- tact in ECM con- nector.	Replace the ECM. <ref. to<br="">FU(H4SO)-46, Engine Control Module (ECM).></ref.>
4	 CHECK HARNESS BETWEEN DRAIN VALVE AND ECM CONNECTOR. 1) Turn ignition switch to OFF. 2) Disconnect the connector from drain valve. 3) Turn ignition switch to ON. 4) Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 3 (+) — Chassis ground (-): 	Is the voltage more than 10 V?	Repair short circuit to battery in har- ness between ECM and drain valve connector. After repair, replace the ECM. <ref. to<br="">FU(H4SO)-46, Engine Control Module (ECM).></ref.>	Go to step 5.
5	 CHECK DRAIN VALVE. 1) Turn ignition switch to OFF. 2) Measure the resistance between drain valve terminals. Terminals (R69) No. 1 — (R69) No. 2: 	Is the resistance less than 1 Ω ?	Replace the drain valve <ref. to<br="">EC(H4SO)-19, Drain Valve.> and ECM <ref. to<br="">FU(H4SO)-46, Engine Control Module (ECM).>.</ref.></ref.>	Go to step 6.
6	CHECK FOR POOR CONTACT. Check for poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair poor con- tact in ECM con- nector.	Replace the ECM. <ref. to<br="">FU(H4SO)-46, Engine Control Module (ECM).></ref.>

AY:DTC P0451 — EVAPORATIVE EMISSION CONTROL SYSTEM PRESSURE SENSOR RANGE/PERFORMANCE

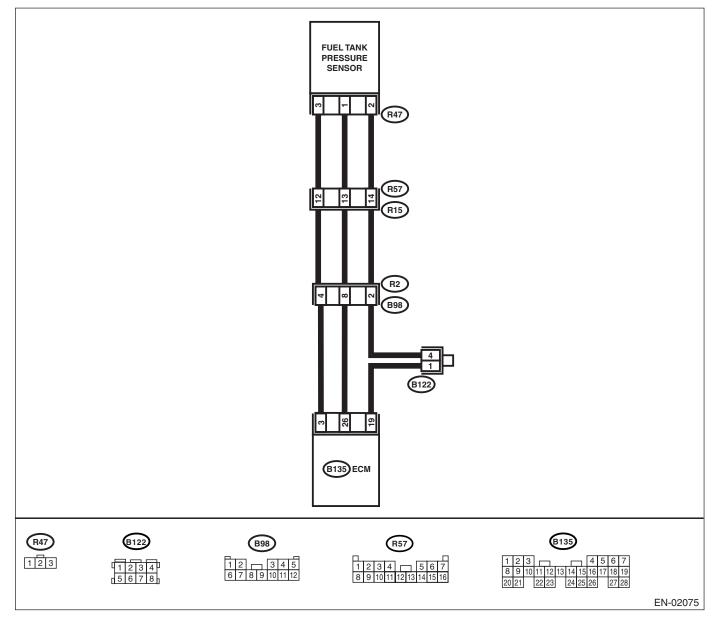
DTC DETECTING CONDITION:

• Two consecutive driving cycles with fault

• GENERAL DESCRIPTION <Ref. to GD(H4SO)-142, DTC P0451 — EVAPORATIVE EMISSION CON-TROL SYSTEM PRESSURE SENSOR RANGE/PERFORMANCE —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to EN(H4SO)-49, OPERATION, Clear Memory Mode.> and INSPECTION MODE <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK FOR 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(H4SO)-77, List of Diagnostic Trou- ble Code (DTC).></ref.>	
2	CHECK FUEL FILLER CAP.1) Turn ignition switch to OFF.2) Open the fuel flap.	Is the fuel filler cap tightened securely?	Go to step 3.	Tighten fuel filler cap securely.
3	 CHECK PRESSURE/VACUUM LINE. NOTE: Check the following items. Disconnection, leakage and clogging of the vacuum hoses and pipes between fuel tank pressure sensor and fuel tank Disconnection, leakage and clogging of air ventilation hoses and pipes between fuel filler pipe and fuel tank 	Is there a fault in pressure/vac- uum line?	Repair or replace the hoses and pipes.	Replace the fuel tank pressure sen- sor. <ref. to<br="">EC(H4SO)-11, Fuel Tank Pres- sure Sensor.></ref.>

AZ:DTC P0452 — EVAPORATIVE EMISSION CONTROL SYSTEM PRESSURE SENSOR LOW INPUT —

DTC DETECTING CONDITION:

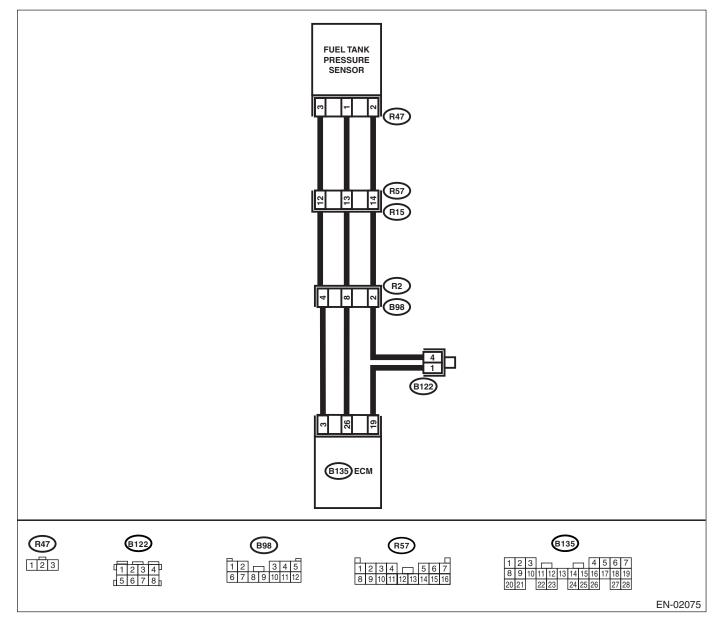
• Two consecutive driving cycles with fault

• GENERAL DESCRIPTION <Ref. to GD(H4SO)-145, DTC P0452 - EVAPORATIVE EMISSION CON-

TROL SYSTEM PRESSURE SENSOR LOW INPUT —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to EN(H4SO)-49, OPERATION, Clear Memory Mode.> and INSPECTION MODE <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	 CHECK CURRENT DATA. 1) Turn ignition switch to OFF. 2) Remove the fuel filler cap. 3) Install the fuel filler cap. 4) Turn ignition switch to ON. 5) Read the data of fuel tank pressure sensor signal using Subaru Select Monitor or the OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". OBD-II general scan tool For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool 	Is the measured value less than -2.8 kPa (-21.0 mmHg, -0.827 inHg)?	Go to step 2.	The malfunction indicator light may light up, however, the circuit is returned to the normal status at the moment.
2	CHECK POWER SUPPLY TO FUEL TANK PRESSURE SENSOR. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 3 (+) — Chassis ground (-):	Is the voltage more than 4.5 V?	Go to step 4.	Go to step 3.
3	CHECK POWER SUPPLY TO FUEL TANK PRESSURE SENSOR. Measure the voltage between ECM connector and chassis ground. <i>Connector & terminal</i> (B135) No. 3 (+) — Chassis ground (–):	Dose the voltage change by shaking the ECM harness and connector?	Repair poor con- tact in ECM con- nector.	Contact SOA Ser- vice Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.
4	CHECK INPUT SIGNAL FOR ECM. Measure the voltage between ECM and chas- sis ground. Connector & terminal (B135) No. 26 (+) — Chassis ground (-):	Is the voltage less than 0.2 V?	Go to step 6.	Go to step 5.
5	CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR.) Read the data of fuel tank pressure sensor sig- nal using Subaru Select Monitor. NOTE: • Subaru Select Monitor For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <ref. to EN(H4SO)-32, Subaru Select Monitor.></ref. 		Repair poor con- tact in ECM con- nector.	Go to step 6.
6	 CHECK HARNESS BETWEEN ECM AND COUPLING CONNECTOR IN REAR WIRING HARNESS. 1) Turn ignition switch to OFF. 2) Remove the rear seat cushion. 3) Separate rear wiring harness and fuel tank cord. 4) Turn ignition switch to ON. 5) Measure the voltage between rear wiring harness connector and chassis ground. <i>Connector & terminal</i> (<i>R15) No. 12 (+) — Chassis ground (-):</i> 	Is the voltage more than 4.5 V?	Go to step 7.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between ECM and rear wir- ing harness con- nector • Poor contact in coupling connector

	Step	Check	Yes	No
7	CHECK HARNESS BETWEEN ECM AND COUPLING CONNECTOR IN REAR WIRING HARNESS. 1) Turn ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM and rear wiring harness con- nector. Connector & terminal (B135) No. 19 — (R15) No. 14:	Is the resistance less than 1 Ω ?	Go to step 8.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between ECM and rear wir- ing harness con- nector • Poor contact in coupling connector • Poor contact in joint connector
8	CHECK HARNESS BETWEEN ECM AND COUPLING CONNECTOR IN REAR WIRING HARNESS. Measure the resistance of harness between rear wiring harness connector and chassis ground. Connector & terminal (R15) No. 14 — Chassis ground:	Is the resistance more than 500 kΩ?	Go to step 9.	Repair short circuit to ground in har- ness between ECM and rear wir- ing harness con- nector.
9	 CHECK FUEL TANK CORD. 1) Disconnect the connector from fuel tank pressure sensor. 2) Measure the resistance of fuel tank cord. Connector & terminal (R57) No. 12 — (R47) No. 3: 	Is the resistance less than 1 Ω ?	Go to step 10 .	Repair open circuit in fuel tank cord.
10	CHECK FUEL TANK CORD. Measure the resistance of fuel tank cord. Connector & terminal (R57) No. 14 — (R47) No. 2:	Is the resistance less than 1 Ω ?	Go to step 11.	Repair open circuit in fuel tank cord.
11	CHECK FUEL TANK CORD. Measure the resistance of harness between fuel tank pressure sensor connector and engine ground. Connector & terminal (R47) No. 1 — Chassis ground:	Is the resistance more than 500 kΩ?	Go to step 12 .	Repair short circuit to ground in fuel tank cord.
12	CHECK FOR POOR CONTACT. Check for poor contact in fuel tank pressure sensor connector.	Is there poor contact in fuel tank pressure sensor connec- tor?	Repair poor con- tact in fuel tank pressure sensor connector.	Replace the fuel tank pressure sen- sor. <ref. to<br="">EC(H4SO)-11, Fuel Tank Pres- sure Sensor.></ref.>

BA:DTC P0453 — EVAPORATIVE EMISSION CONTROL SYSTEM PRESSURE SENSOR HIGH INPUT —

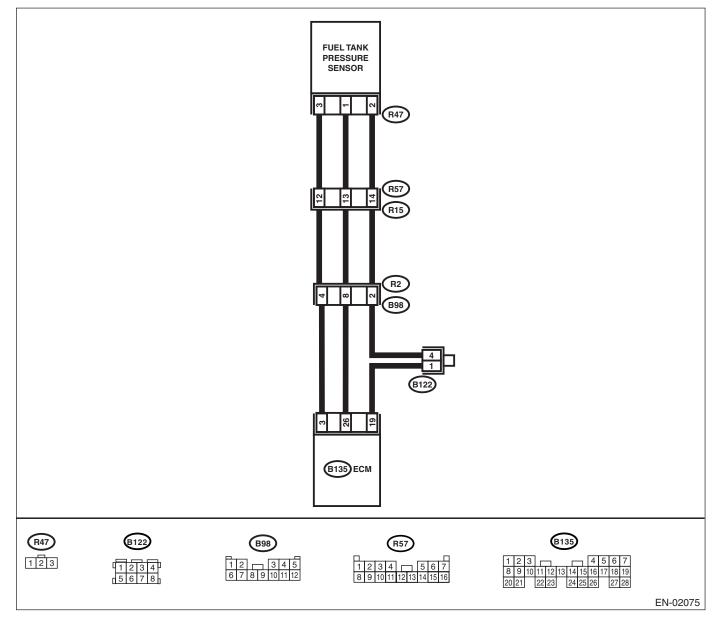
DTC DETECTING CONDITION:

• Two consecutive driving cycles with fault

• GENERAL DESCRIPTION <Ref. to GD(H4SO)-147, DTC P0453 — EVAPORATIVE EMISSION CON-TROL SYSTEM PRESSURE SENSOR HIGH INPUT —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to EN(H4SO)-49, OPERATION, Clear Memory Mode.> and INSPECTION MODE <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	 CHECK CURRENT DATA. 1) Turn ignition switch to OFF. 2) Remove the fuel filler cap. 3) Install the fuel filler cap. 4) Turn ignition switch to ON. 5) Read the data of fuel tank pressure sensor signal using Subaru Select Monitor or the OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <ref. en(h4so)-32,="" monitor.="" select="" subaru="" to=""></ref.> OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool 	Is the measured value more than 2.8 kPa (21.0 mmHg, 0.827 inHg)?	Go to step 11.	Go to step 2.
2	CHECK POWER SUPPLY TO FUEL TANK PRESSURE SENSOR. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 3 (+) — Chassis ground (-):	Is the voltage more than 4.5 V?	Go to step 4.	Go to step 3.
3	CHECK POWER SUPPLY TO FUEL TANK PRESSURE SENSOR. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 3 (+) — Chassis ground ():	Is the voltage more than 4.5 V by shaking the ECM harness and connector?	Repair poor con- tact in ECM con- nector.	Replace the ECM. <ref. to<br="">FU(H4SO)-46, Engine Control Module (ECM).></ref.>
4	CHECK INPUT SIGNAL FOR ECM. Measure the voltage between ECM and chas- sis ground. Connector & terminal (B135) No. 26 (+) — Chassis ground (-):	Is the voltage less than 0.2 V?	Go to step 6.	Go to step 5.
5	CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR.) Read the data of fuel tank pressure sensor sig- nal using Subaru Select Monitor. NOTE: • Subaru Select Monitor For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <ref. to EN(H4SO)-32, Subaru Select Monitor.></ref. 	Is the measured value more than –2.8 kPa (–21.0 mmHg, –0.827 inHg) by shaking the ECM harness and connector?	Repair poor con- tact in ECM con- nector.	Go to step 6 .
6	 CHECK HARNESS BETWEEN ECM AND COUPLING CONNECTOR IN REAR WIRING HARNESS. 1) Turn ignition switch to OFF. 2) Remove the rear seat cushion. 3) Separate rear wiring harness and fuel tank cord. 4) Turn ignition switch to ON. 5) Measure the voltage between rear wiring harness connector and chassis ground. <i>Connector & terminal</i> (R15) No. 12 (+) — Chassis ground (-): 	Is the voltage more than 4.5 V?	Go to step 7.	 Repair harness and connector. NOTE: In this case, repair the following: Open circuit in harness between ECM and rear wir- ing harness con- nector Poor contact in coupling connector

	Step	Check	Yes	No
7	 CHECK HARNESS BETWEEN ECM AND COUPLING CONNECTOR IN REAR WIRING HARNESS. 1) Turn ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM and rear wiring harness connector. Connector & terminal (B135) No. 26 — (R15) No. 13: (B135) No. 19 — (R15) No. 14: 	Is the resistance less than 1 Ω?	Go to step 8.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between ECM and rear wir- ing harness con- nector • Poor contact in coupling connector
8	 CHECK FUEL TANK CORD. 1) Disconnect the connector from fuel tank pressure sensor. 2) Measure the resistance of fuel tank cord. Connector & terminal (R57) No. 13 — (R47) No. 1: 	Is the resistance less than 1 Ω ?	Go to step 9 .	Repair open circuit in fuel tank cord.
9	CHECK FUEL TANK CORD. Measure the resistance of fuel tank cord. Connector & terminal (R57) No. 14 — (R47) No. 2:	Is the resistance less than 1 Ω ?	Go to step 10 .	Repair open circuit in fuel tank cord.
10	CHECK FOR POOR CONTACT. Check for poor contact in fuel tank pressure sensor connector.	Is there poor contact in fuel tank pressure sensor connec- tor?	Repair poor con- tact in fuel tank pressure sensor connector.	Replace the fuel tank pressure sen- sor. <ref. to<br="">EC(H4SO)-11, Fuel Tank Pres- sure Sensor.></ref.>
11	 CHECK HARNESS BETWEEN ECM AND FUEL TANK PRESSURE SENSOR CONNEC- TOR. 1) Turn ignition switch to OFF. 2) Disconnect the connector from fuel tank pressure sensor. 3) Turn ignition switch to ON. 4) Read the data of fuel tank pressure sensor signal using Subaru Select Monitor or the OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <ref. to EN(H4SO)-32, Subaru Select Monitor.></ref. OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool 	Is the measured value more than 2.8 kPa (21.0 mmHg, 0.827 inHg)?	Repair short circuit to battery in har- ness between ECM and fuel tank pressure sensor connector.	Replace the fuel tank pressure sen- sor. <ref. to<br="">EC(H4SO)-11, Fuel Tank Pres- sure Sensor.></ref.>

BB:DTC P0456 — EVAPORATIVE EMISSION CONTROL SYSTEM LEAK DE-TECTED (VERY SMALL LEAK) —

DTC DETECTING CONDITION:

• Two consecutive driving cycles with fault

• GENERAL DESCRIPTION <Ref. to GD(H4SO)-149, DTC P0456 — EVAPORATIVE EMISSION CON-TROL SYSTEM LEAK DETECTED (VERY SMALL LEAK) —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

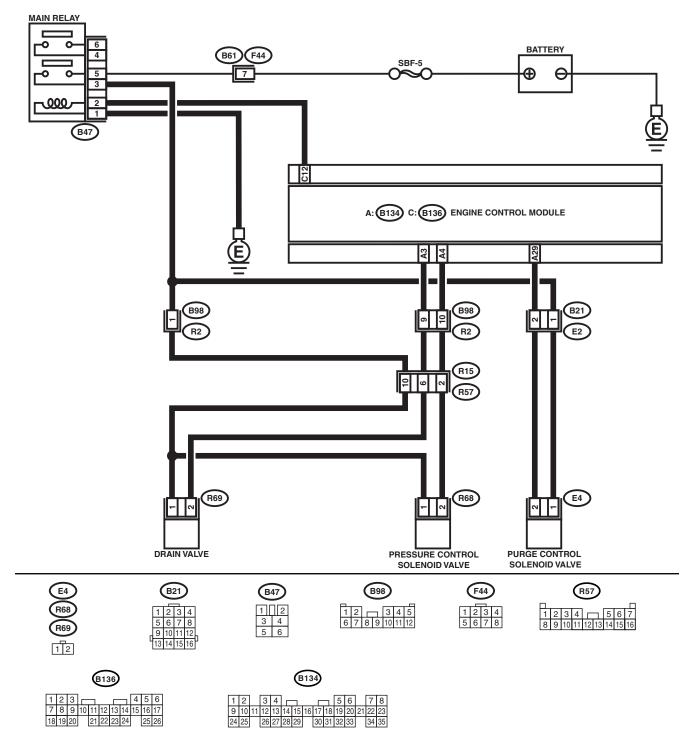
TROUBLE SYMPTOM:

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

CAUTION:

After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to EN(H4SO)-49, OPERATION, Clear Memory Mode.> and INSPECTION MODE <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02073

Step Check Yes No CHECK FOR OTHER DTC ON DISPLAY. Inspect the rele-1 Is any other DTC displayed? Go to step 2. vant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4SO)-77, List of Diagnostic Trouble Code (DTC).> Go to step 3. 2 CHECK FUEL FILLER CAP. Is the fuel filler cap tightened Tighten fuel filler 1) Turn ignition switch to OFF. securely? cap securely. 2) Check the fuel filler cap. NOTE: The DTC is stored in memory if fuel filler cap is or was loose or if the cap chain was caught while tightening. CHECK FUEL FILLER CAP. 3 Is the fuel filler cap SUBARU Go to step 4. Replace with a SUBARU genuine genuine? fuel filler cap. Is there any damage to the 4 CHECK FUEL FILLER PIPE PACKING. Go to step 5. Repair or replace seal between fuel filler cap and the fuel filler cap and fuel filler pipe. fuel filler pipe? <Ref. to FU(H4SO)-53, Fuel Filler Pipe.> CHECK DRAIN VALVE. 5 Does the drain valve operate? Go to step 6. Replace the drain 1) Connect the test mode connector. valve. <Ref. to EC(H4SO)-19, 2) Turn ignition switch to ON. Drain Valve.> 3) Operate the drain valve. NOTE: Drain valve operation can also be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <Ref. to EN(H4SO)-50, Compulsory Valve Operation Check Mode.> CHECK PURGE CONTROL SOLENOID Does the purge control sole-Replace the purge 6 Go to step 7. VALVE. noid valve operate? control solenoid valve. <Ref. to Operate the purge control solenoid valve. EC(H4SO)-7, NOTE: Purge control solenoid valve operation can also **Purge Control** be executed using Subaru Select Monitor. For Solenoid Valve.> the procedure, refer to "Compulsory Valve Operation Check Mode". <Ref. to EN(H4SO)-50, Compulsory Valve Operation Check Mode.> CHECK PRESSURE CONTROL SOLENOID Replace the pres-7 Does the pressure control Go to step 8. VALVE. solenoid valve operate? sure control sole-Operate the pressure control solenoid valve. noid valve. <Ref. to EC(H4SO)-7, NOTE: Purge Control Pressure control solenoid valve operation can Solenoid Valve.> also be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <Ref. to EN(H4SO)-50, Compulsory Valve Operation Check Mode.>

	Step	Check	Yes	No
8	CHECK EVAPORATIVE EMISSION CON- TROL SYSTEM LINE. Turn ignition switch to OFF.	Is there a hole of more than 0.5 mm (0.020 in) dia. on evapora- tion line?	Repair or replace the evaporation line. <ref. to<br="">FU(H4SO)-65, Fuel Delivery, Return and Evapo- ration Lines.></ref.>	Go to step 9 .
9	CHECK CANISTER.	Is the canister damaged or is there a hole of more than 0.5 mm (0.020 in) dia. in it?	Repair or replace the canister. <ref. to EC(H4SO)-6, Canister.></ref. 	Go to step 10.
10	CHECK FUEL TANK. Remove the fuel tank. <ref. fu(h4so)-50,<br="" to="">Fuel Tank.></ref.>	Is the fuel tank damaged or is there a hole of more than 0.5 mm (0.020 in) dia. in it?	Repair or replace the fuel tank. <ref. to FU(H4SO)-50, Fuel Tank.></ref. 	Go to step 11.
11	CHECK ANY OTHER MECHANICAL TROU- BLE IN EVAPORATIVE EMISSION CON- TROL SYSTEM.	Are there holes of more than 0.5 mm (0.020 in) dia., cracks, clogging, disconnections or bend of hoses or pipes in evap- orative emission control sys- tem?	Repair or replace the hoses or pipes.	Contact SOA Ser- vice Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.

BC:DTC P0457 — EVAPORATIVE EMISSION CONTROL SYSTEM LEAK DE-TECTED (FUEL CAP LOOSE/OFF) —

DTC DETECTING CONDITION:

• Two consecutive driving cycles with fault

• GENERAL DESCRIPTION <Ref. to GD(H4SO)-149, DTC P0457 — EVAPORATIVE EMISSION CON-TROL SYSTEM LEAK DETECTED (FUEL CAP LOOSE/OFF) —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

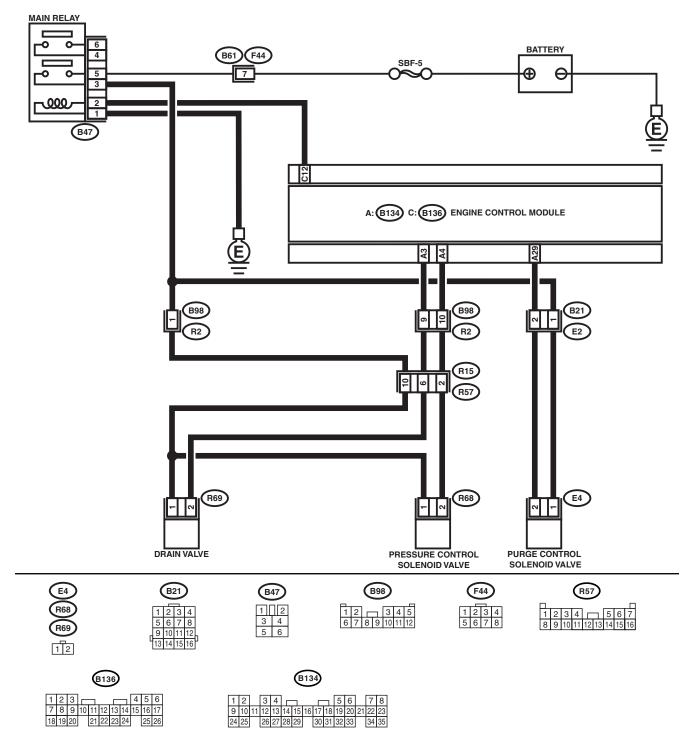
TROUBLE SYMPTOM:

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

CAUTION:

After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to EN(H4SO)-49, OPERATION, Clear Memory Mode.> and INSPECTION MODE <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02073

Step Check Yes No CHECK FOR OTHER DTC ON DISPLAY. Inspect the rele-1 Is any other DTC displayed? Go to step 2. vant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4SO)-77, List of Diagnostic Trouble Code (DTC).> Go to step 3. 2 CHECK FUEL FILLER CAP. Is the fuel filler cap tightened Tighten fuel filler 1) Turn ignition switch to OFF. securely? cap securely. 2) Check the fuel filler cap. NOTE: The DTC is stored in memory if fuel filler cap is or was loose or if the cap chain was caught while tightening. CHECK FUEL FILLER CAP. 3 Is the fuel filler cap SUBARU Go to step 4. Replace with a SUBARU genuine genuine? fuel filler cap. Is there any damage to the 4 CHECK FUEL FILLER PIPE PACKING. Go to step 5. Repair or replace seal between fuel filler cap and the fuel filler cap and fuel filler pipe. fuel filler pipe? <Ref. to FU(H4SO)-53, Fuel Filler Pipe.> CHECK DRAIN VALVE. 5 Does the drain valve operate? Go to step 6. Replace the drain 1) Connect the test mode connector. valve. <Ref. to EC(H4SO)-19, 2) Turn ignition switch to ON. Drain Valve.> 3) Operate the drain valve. NOTE: Drain valve operation can also be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <Ref. to EN(H4SO)-50, Compulsory Valve Operation Check Mode.> CHECK PURGE CONTROL SOLENOID Does the purge control sole-Replace the purge 6 Go to step 7. VALVE. noid valve operate? control solenoid valve. <Ref. to Operate the purge control solenoid valve. EC(H4SO)-7, NOTE: Purge control solenoid valve operation can also **Purge Control** be executed using Subaru Select Monitor. For Solenoid Valve.> the procedure, refer to "Compulsory Valve Operation Check Mode". <Ref. to EN(H4SO)-50, Compulsory Valve Operation Check Mode.> CHECK PRESSURE CONTROL SOLENOID Does the pressure control Replace the pres-7 Go to step 8. VALVE. solenoid valve operate? sure control sole-Operate the pressure control solenoid valve. noid valve. <Ref. to EC(H4SO)-7, NOTE: Purge Control Pressure control solenoid valve operation can Solenoid Valve.> also be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <Ref. to EN(H4SO)-50, Compulsory Valve Operation Check Mode.> CHECK CANISTER. 8 Is the canister damaged? Repair or replace Go to step 9. the canister. <Ref. to EC(H4SO)-6, Canister.>

	Step	Check	Yes	No
9	CHECK FUEL TANK. Remove the fuel tank. <ref. fu(h4so)-50,<br="" to="">Fuel Tank.></ref.>	Is the fuel tank damaged?	Repair or replace the fuel tank. <ref. to FU(H4SO)-50, Fuel Tank.></ref. 	Go to step 10.
10	CHECK ANY OTHER MECHANICAL TROU- BLE IN EVAPORATIVE EMISSION CON- TROL SYSTEM.	Are there holes of more than 0.5 mm (0.020 in) dia., cracks, clogging or disconnections of hoses or pipes in evaporative emission control system?		Contact SOA Ser- vice Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.

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

DTC DETECTING CONDITION:

• Two consecutive driving cycles with fault

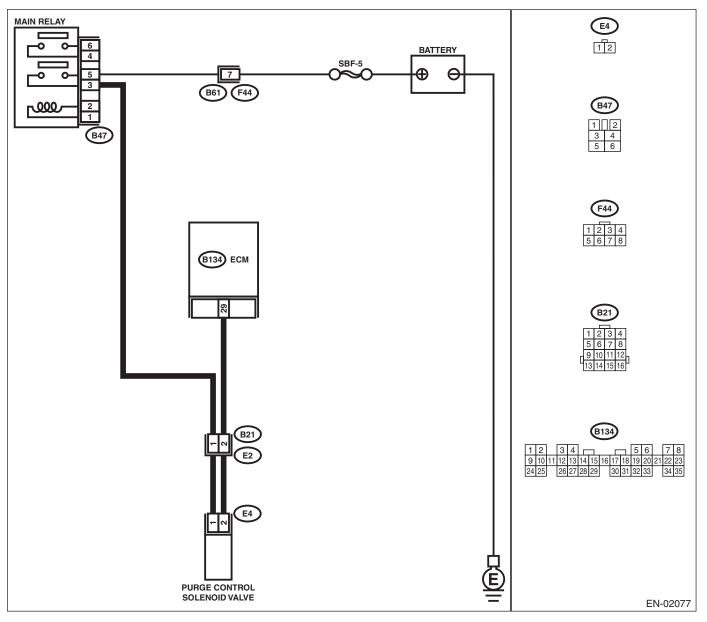
• GENERAL DESCRIPTION <Ref. to GD(H4SO)-150, DTC P0458 — EVAPORATIVE EMISSION CON-TROL SYSTEM PURGE CONTROL VALVE CIRCUIT LOW —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	 CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 29 (+) — Chassis ground (-): 	Is the voltage more than 10 V?	Even if malfunction indicator light lights up, the cir- cuit has returned to a normal condi- tion at this time. Contact SOA Ser- vice Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.	Go to step 2.
2	 CHECK HARNESS BETWEEN PURGE CONTROL SOLENOID VALVE AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from purge control solenoid valve and ECM. 3) Measure the resistance of harness between purge control solenoid valve connector and engine ground. Connector & terminal (E4) No. 2 — Engine ground: 	ΜΩ?	Go to step 3.	Repair ground short circuit in har- ness between ECM and purge control solenoid valve connector.
3	CHECK HARNESS BETWEEN PURGE CON- TROL SOLENOID VALVE AND ECM CON- NECTOR. Measure the resistance of harness between ECM and purge control solenoid valve of har- ness connector. Connector & terminal (B134) No. 29 — (E4) No. 2:	Is the resistance less than 1 Ω?	Go to step 4.	Repair open circuit in harness between ECM and purge control sole- noid valve connec- tor. NOTE: In this case, repair the following: • Open circuit in harness between ECM and purge control solenoid valve connector • Poor contact in coupling connector
4	 CHECK PURGE CONTROL SOLENOID VALVE. 1) Remove the purge control solenoid valve. 2) Measure the resistance between purge control solenoid valve terminals. Terminals (E4) No. 1 — (E4) No. 2: 	Is the resistance $10 - 100 \Omega$?	Go to step 5 .	Replace the purge control solenoid valve. <ref. to<br="">EC(H4SO)-7, Purge Control Solenoid Valve.></ref.>
5	 CHECK POWER SUPPLY TO PURGE CON- TROL SOLENOID VALVE. 1) Turn the ignition switch to ON. 2) Measure the voltage between purge control solenoid valve and engine ground. Connector & terminal (E4) No. 1 (+) — Engine ground (-): 	Is the voltage more than 10 V?	Go to step 6.	Repair open circuit in harness between main relay and purge control solenoid valve connector.

Step Check Yes No 6 CHECK POOR CONTACT. Is there poor contact in purge Repair poor con-Contact SOA Ser-Check poor contact in purge control solenoid control solenoid valve connectact in purge convice Center. valve connector. tor? trol solenoid valve NOTE: connector. Inspection by DTM is required, because probable cause is deterioration of multiple parts.

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

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

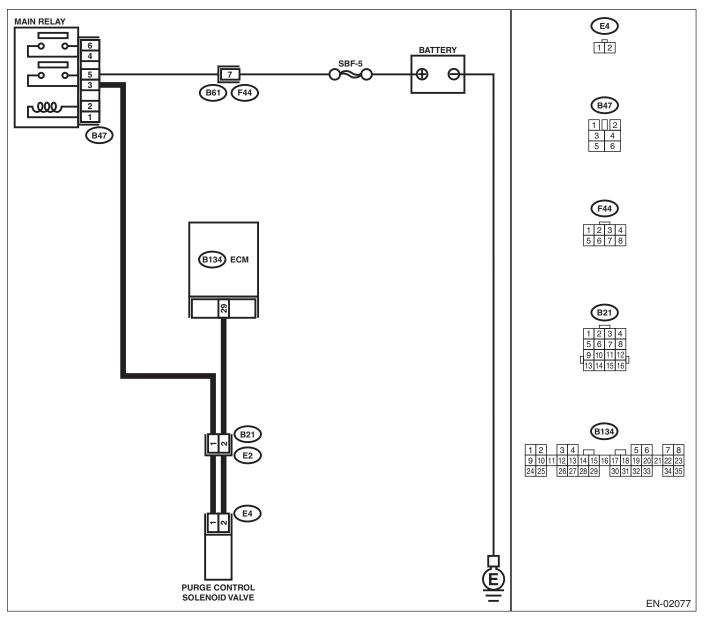
• GENERAL DESCRIPTION <Ref. to GD(H4SO)-152, DTC P0459 — EVAPORATIVE EMISSION CON-TROL SYSTEM PURGE CONTROL VALVE CIRCUIT HIGH —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



Check Yes No Step CHECK OUTPUT SIGNAL FROM ECM. Is the voltage 0 — 10 V? Even if malfunction 1 Go to step 2. 1) Turn the ignition switch to OFF. indicator light light 2) Connect the test mode connector at the up, the circuit has lower portion of instrument panel (on the returned to a nordriver's side). mal condition at 3) Turn the ignition switch to ON. this time. In this 4) While operating the purge control solenoid case, repair poor valve, measure voltage between ECM and contact in ECM chassis ground. connector. NOTE: Purge control solenoid valve operation can be executed using Subaru Select Monitor. For procedure, refer to "Compulsory Valve Operation Check Mode". < Ref. to EN(H4SO)-50, Compulsory Valve Operation Check Mode.> Connector & terminal (B134) No. 29 (+) — Chassis ground (–): 2 CHECK OUTPUT SIGNAL FROM ECM. Is the voltage more than 10 V? Go to step 4. Go to step 3. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 29 (+) — Chassis ground (–): CHECK POOR CONTACT. Replace the ECM. 3 Is there poor contact in ECM Repair poor contact in ECM con-<Ref. to Check poor contact in ECM connector. connector? nector. FU(H4SO)-46, **Engine Control** Module (ECM).> CHECK HARNESS BETWEEN PURGE CON- Is the voltage more than 10 V? 4 Repair battery Go to step 5. TROL SOLENOID VALVE AND ECM CONshort circuit in har-NECTOR. ness between 1) Turn the ignition switch to OFF. ECM and purge 2) Disconnect the connector from purge concontrol solenoid trol solenoid valve. valve connector. 3) Turn the ignition switch to ON. After repair, 4) Measure the voltage between ECM and replace the ECM. <Ref. to chassis ground. FU(H4SO)-46, Connector & terminal (B134) No. 29 (+) — Chassis ground (–): **Engine Control** Module (ECM).> CHECK PURGE CONTROL SOLENOID Replace the purge Go to step 6. 5 Is the resistance less than 1 Ω ? control solenoid VALVE. 1) Turn the ignition switch to OFF. valve <Ref. to 2) Measure the resistance between purge EC(H4SO)-7, control solenoid valve terminals. **Purge Control** Terminals Solenoid Valve.> (E4) No. 1 — (E4) No. 2: and ECM <Ref. to FU(H4SO)-46. **Engine Control** Module (ECM).> 6 CHECK POOR CONTACT. Is there poor contact in ECM Repair poor con-Replace the ECM. Check poor contact in ECM connector. connector? tact in ECM con-<Ref. to nector. FU(H4SO)-46, Engine Control Module (ECM).>

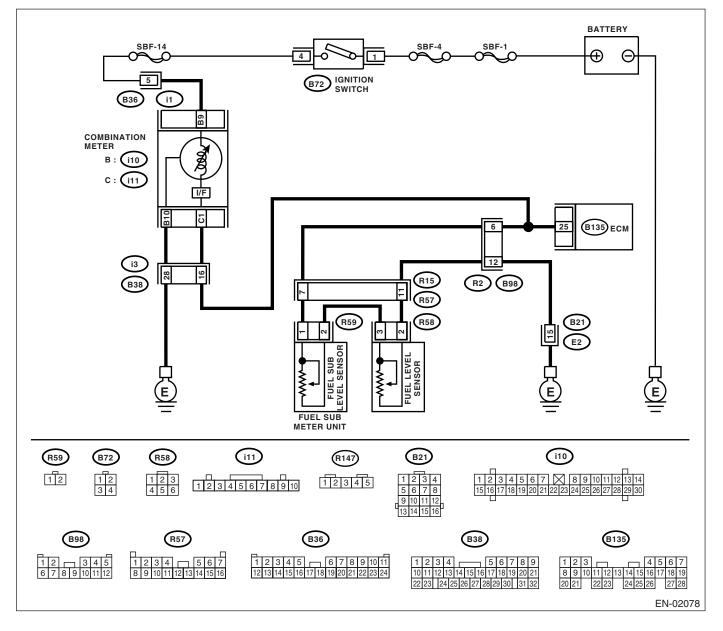
BF:DTC P0461 — FUEL LEVEL SENSOR CIRCUIT RANGE/PERFORMANCE — DTC DETECTING CONDITION:

• Two consecutive driving cycles with fault

• GENERAL DESCRIPTION <Ref. to GD(H4SO)-154, DTC P0461 — FUEL LEVEL SENSOR CIRCUIT RANGE/PERFORMANCE —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to EN(H4SO)-49, OPERATION, Clear Memory Mode.> and INSPECTION MODE <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



Step Check Yes No CHECK FOR OTHER DTC ON DISPLAY. Is any other DTC displayed? Inspect DTC using Replace the fuel 1 "List of Diagnostic level sensor <Ref. to FU(H4SO)-59, Trouble Code (DTC)". <Ref. to Fuel Level Sen-EN(H4SO)-77, List sor.> and fuel sub of Diagnostic Trou- level sensor. <Ref. ble Code (DTC).> to FU(H4SO)-59, Fuel Level Sen-NOTE: In this case, it is sor.> not necessary to inspect this trouble.

BG:DTC P0462 — FUEL LEVEL SENSOR CIRCUIT LOW INPUT —

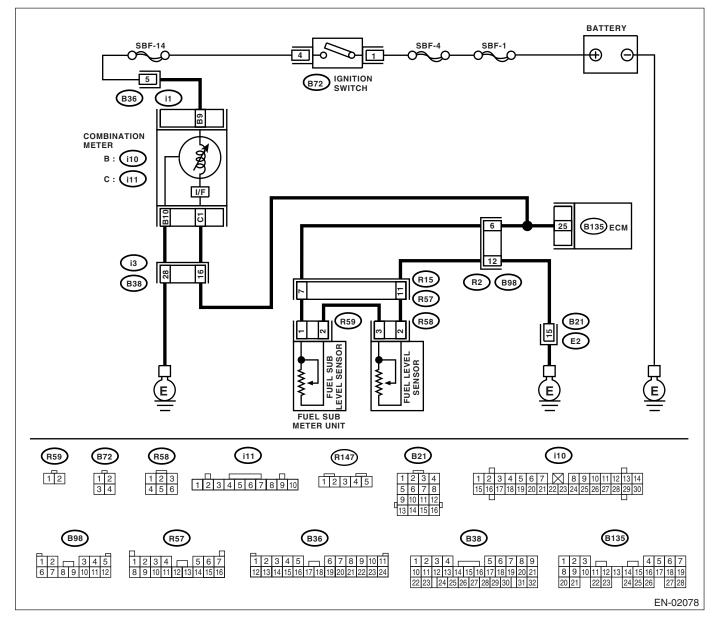
DTC DETECTING CONDITION:

• Two consecutive driving cycles with fault

• GENERAL DESCRIPTION <Ref. to GD(H4SO)-156, DTC P0462 — FUEL LEVEL SENSOR CIRCUIT LOW INPUT —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK SPEEDOMETER AND TACHOME- TER OPERATION IN COMBINATION METER.	Does the speedometer and tachometer operate normally?	Go to step 2.	Repair or replace the combination meter. <ref. idi-<br="" to="">3, Combination Meter System.></ref.>
2	 CHECK INPUT SIGNAL FOR ECM. 1) Turn the ignition switch to ON. (Engine OFF) 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 25 (+) — Chassis ground (-): 	Is the voltage less than 0.12 V?	Go to step 4.	Go to step 3.
3	CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR.) Read the data of fuel level sensor signal using Subaru Select Monitor. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. to EN(H4SO)-32, Subaru Select Monitor.></ref. 	Is the voltage less than 0.12 V by shaking the harness and connector of ECM?	Repair poor con- tact in ECM con- nector.	Even if malfunction indicator light lights up, the cir- cuit has returned to a normal condi- tion at this time. A temporary poor contact of the con- nector may be the cause. NOTE: In this case, repair the following: • Poor contact in combination meter connector • Poor contact in ECM connector • Poor contact in coupling connec- tors
4	 CHECK INPUT VOLTAGE OF ECM. 1) Turn the ignition switch to OFF. 2) Separate fuel tank cord connector (R57) and rear wiring harness connector (R15). 3) Turn the ignition switch to ON. 4) Measure the voltage of harness between ECM connector and chassis ground. <i>Connector & terminal</i> (B135) No. 25 (+) — Chassis ground (-): 	Is the voltage more than 0.12 V?	Go to step 5.	Go to step 6.
5	 CHECK HARNESS BETWEEN ECM AND COMBINATION METER. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from connector (i11) and ECM connector. 3) Measure the resistance between ECM and chassis ground. Connector & terminal (B135) No. 25 — Chassis ground: 	Is the resistance more than 1 $M\Omega$?	Go to step 7.	Repair ground short circuit in har- ness between ECM and combi- nation meter con- nector.
6	CHECK HARNESS BETWEEN ECM AND COMBINATION METER. Measure the resistance between ECM and combination meter connector. Connector & terminal (B135) No. 25 — (i11) No. 1:	Is the resistance less than 10 Ω ?	Repair or replace the combination meter. <ref. idi-<br="" to="">3, Combination Meter System.></ref.>	Repair open circuit between ECM and combination meter connector. NOTE: In this case, repair the following: Poor contact in coupling connector

	Step	Check	Yes	No
7	 CHECK FUEL TANK CORD. 1) Turn ignition switch to OFF. 2) Disconnect the connector from fuel sub level sensor. 3) Measure the resistance between fuel sub level sensor and chassis ground. Connector & terminal (R59) No. 1 — Chassis ground: 	Is the resistance more than 1 $M\Omega$?	Go to step 8.	Repair short circuit to ground in fuel tank cord.
8	 CHECK FUEL TANK CORD. 1) Disconnect the connector from fuel pump assembly. 2) Measure the resistance between fuel pump assembly and chassis ground. Connector & terminal (R59) No. 2 — Chassis ground: 	Is the resistance more than 1 $M\Omega$?	Go to step 9 .	Repair ground short circuit in fuel tank cord.
9	 CHECK FUEL LEVEL SENSOR. 1) Remove the fuel pump assembly. <ref. fu(h4so)-57,="" fuel="" pump.="" to=""></ref.> 2) Measure the resistance between fuel level sensor and terminals with its float set to the full position. Terminals (R58) No. 3 — (R58) No. 2: 	Is the resistance $0.5 - 2.5 \Omega$?	Go to step 10.	Replace the fuel level sensor.
10	 CHECK FUEL SUB LEVEL SENSOR. 1) Remove the fuel sub level sensor. <ref. fu(h4so)-60,="" fuel="" level="" sensor.="" sub="" to=""></ref.> 2) Measure the resistance between fuel sub level sensor and terminals with its float set to the full position. Terminals (R59) No. 1 — (R59) No. 2: 	Is the resistance $0.5 - 2.5 \Omega$?	Repair poor con- tact in harness between ECM and combination meter connector.	Replace the fuel sub level sensor.

BH:DTC P0463 — FUEL LEVEL SENSOR CIRCUIT HIGH INPUT —

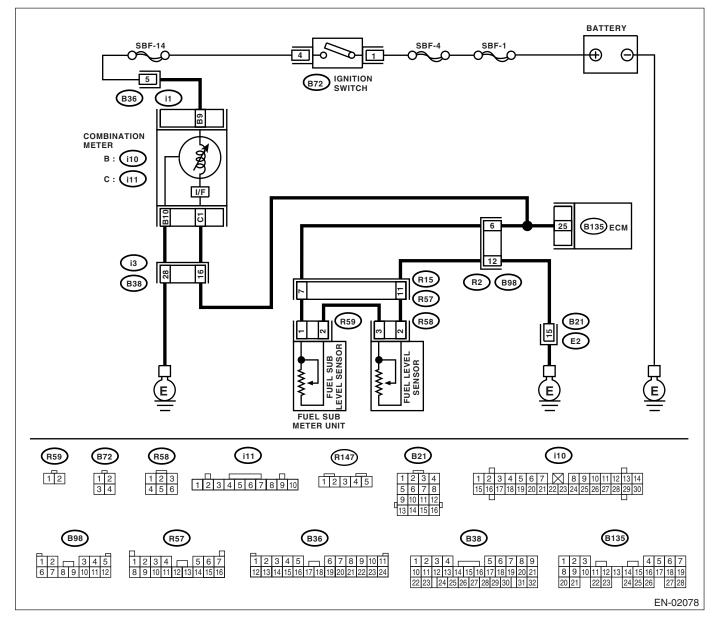
DTC DETECTING CONDITION:

• Two consecutive driving cycles with fault

• GENERAL DESCRIPTION <Ref. to GD(H4SO)-158, DTC P0463 — FUEL LEVEL SENSOR CIRCUIT HIGH INPUT —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

\ /
(DIAGNOSTICS)

	Step	Check	Yes	No
1	CHECK SPEEDOMETER AND TACHOME- TER OPERATION IN COMBINATION METER.	Does the speedometer and tachometer operate normally?	Go to step 2.	Repair or replace the combination meter. <ref. idi-<br="" to="">3, Combination Meter System.></ref.>
2	 CHECK INPUT SIGNAL FOR ECM. 1) Turn the ignition switch to ON. (Engine OFF) 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 25 (+) — Chassis ground (-): 	Is the voltage more than 4.75 V?	Go to step 3.	Even if malfunction indicator light lights up, the cir- cuit has returned to a normal condi- tion at this time. A temporary poor contact of the con- nector may be the cause. NOTE: In this case, repair the following: • Poor contact in fuel pump connec- tor • Poor contact in coupling connector
3	 CHECK INPUT VOLTAGE OF ECM. 1) Turn the ignition switch to OFF. 2) Disconnect the combination meter connector (i12) and ECM connector. 3) Turn the ignition switch to ON. 4) Measure the voltage of harness between ECM and chassis ground. Connector & terminal (B135) No. 25 (+) — Chassis ground (-): 	Is the voltage more than 4.75 V?	Go to step 4.	Repair battery short circuit between ECM and combination meter connector.
4	 CHECK HARNESS BETWEEN ECM AND FUEL TANK CORD. 1) Turn the ignition switch to OFF. 2) Separate fuel tank cord connector (R57) and rear wiring harness connector (R15). 3) Measure the resistance between ECM and fuel tank cord. Connector & terminal (B135) No. 25 — (R15) No. 7: 	Is the resistance less than 5 Ω?	Go to step 5.	Repair open circuit between ECM and fuel tank cord.
5	CHECK HARNESS BETWEEN FUEL TANK CORD AND CHASSIS GROUND. Measure the resistance between fuel tank cord and chassis ground. Connector & terminal (R15) No. 11 — Chassis ground:	Is the resistance less than 5 Ω ?	Go to step 6.	Repair open circuit between fuel tank cord and chassis ground. NOTE: In this case, repair the following: Poor contact in coupling connec- tors
6	 CHECK FUEL TANK CORD. 1) Disconnect the connector from fuel level sensor. 2) Measure the resistance between fuel level sensor and coupling connector. Connector & terminal (R57) No. 11 — (R58) No. 2: 	Is the resistance less than 10 Ω ?	Go to step 7.	Repair open circuit between coupling connector and fuel level sensor.

	Step	Check	Yes	No
7	 CHECK FUEL TANK CORD. 1) Disconnect the connector from fuel sub level sensor. 2) Measure the resistance between fuel level sensor and fuel sub level sensor. Connector & terminal (R58) No. 3 — (R59) No. 2: 	Is the resistance less than 10 Ω ?	Go to step 8.	Repair open circuit between fuel level sensor and fuel sub level sensor.
8	CHECK FUEL TANK CORD. Measure the resistance between fuel level sen- sor and coupling connector. Connector & terminal (R57) No. 7 — (R59) No. 1:	Is the resistance less than 10 Ω ?	Go to step 9 .	Repair open circuit between coupling connector and fuel level sensor.
9	 CHECK FUEL LEVEL SENSOR. 1) Remove the fuel pump assembly. <ref. fu(h4so)-57,="" fuel="" pump.="" to=""></ref.> 2) While moving the fuel level sensor float up and down, measure resistance between fuel level sensor terminals. Terminals (R58) No. 3 — (R58) No. 2:	Is the resistance more than 54.5 Ω?	Replace the fuel level sensor. <ref. to FU(H4SO)-59, Fuel Level Sen- sor.></ref. 	Go to step 10.
10	 CHECK FUEL SUB LEVEL SENSOR. 1) Remove the fuel sub level sensor. <ref. fu(h4so)-60,="" fuel="" level="" sensor.="" sub="" to=""></ref.> 2) While moving the fuel sub level sensor float up and down, measure resistance between fuel sub level sensor terminals. Terminals (R59) No. 1 — (R59) No. 2:	Is the resistance more than 41.5 Ω?	Replace the fuel sub level sensor. <ref. to<br="">FU(H4SO)-60, Fuel Sub Level Sensor.></ref.>	Replace the com- bination meter. <ref. idi-10,<br="" to="">Combination Meter Assembly.></ref.>

BI: DTC P0464 — FUEL LEVEL SENSOR CIRCUIT INTERMITTENT —

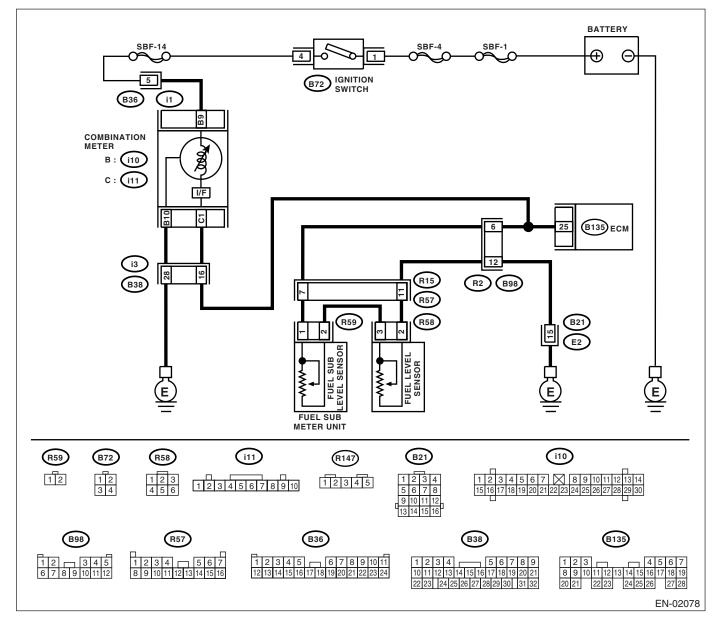
DTC DETECTING CONDITION:

• Two consecutive driving cycles with fault

• GENERAL DESCRIPTION < Ref. to GD(H4SO)-160, DTC P0464 — FUEL LEVEL SENSOR CIRCUIT IN-TERMITTENT —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to EN(H4SO)-49, OPERATION, Clear Memory Mode.> and INSPECTION MODE <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	CHECK FOR OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect DTC P0462 or P0463 using "List of Diag- nostic Trouble Code (DTC)". <ref. to<br="">EN(H4SO)-77, List of Diagnostic Trou- ble Code (DTC).></ref.>	Go to step 2.
2	 CHECK FUEL LEVEL SENSOR. 1) Remove the fuel pump assembly. <ref. fu(h4so)-57,="" fuel="" pump.="" to=""></ref.> 2) While moving the fuel level sensor float up and down, make sure that the resistance between fuel level sensor terminals changes smoothly. Terminals (R58) No. 3 — (R58) No. 2: 	Does the resistance change smoothly?	Go to step 3 .	Replace the fuel level sensor. <ref. to FU(H4SO)-59, Fuel Level Sen- sor.></ref.
3	 CHECK FUEL SUB LEVEL SENSOR. 1) Remove the fuel sub level sensor. <ref. fu(h4so)-59,="" fuel="" level="" sensor.="" to=""></ref.> 2) While moving the fuel sub level sensor float up and down, make sure that the resistance between fuel level sensor terminals changes smoothly. Terminals (R59) No. 1 — (R59) No. 2:	Does the resistance change smoothly?	Repair poor con- tact in ECM, com- bination meter and coupling connec- tors.	Replace the fuel sub level sensor. <ref. to<br="">FU(H4SO)-59, Fuel Level Sen- sor.></ref.>

BJ:DTC P0483 — COOLING FAN RATIONALITY CHECK —

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4SO)-163, DTC P0483 COOLING FAN RATIONALITY CHECK —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Occurrence of noise
- Overheating

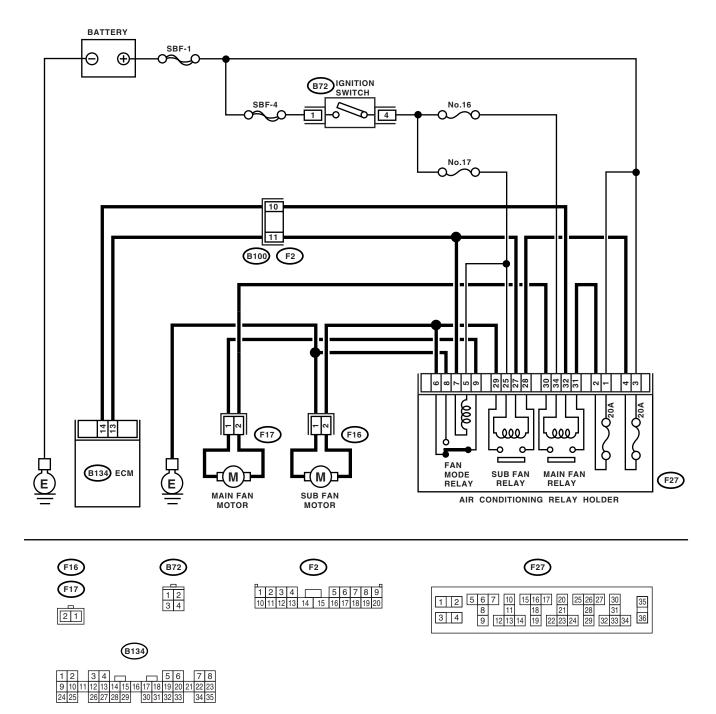
CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.

NOTE:

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

WIRING DIAGRAM:



EN-02079

	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	vant DTC using "List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(H4SO)-77, List of Diagnostic Trou- ble Code (DTC).></ref.>	

BK:DTC P0502 — VEHICLE SPEED SENSOR CIRCUIT LOW INPUT —

NOTE:

For the diagnostic procedure, refer to DTC P0503. <Ref. to EN(H4SO)-231, DTC P0503 — VEHICLE SPEED SENSOR INTERMITTENT/ERRATIC/HIGH —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

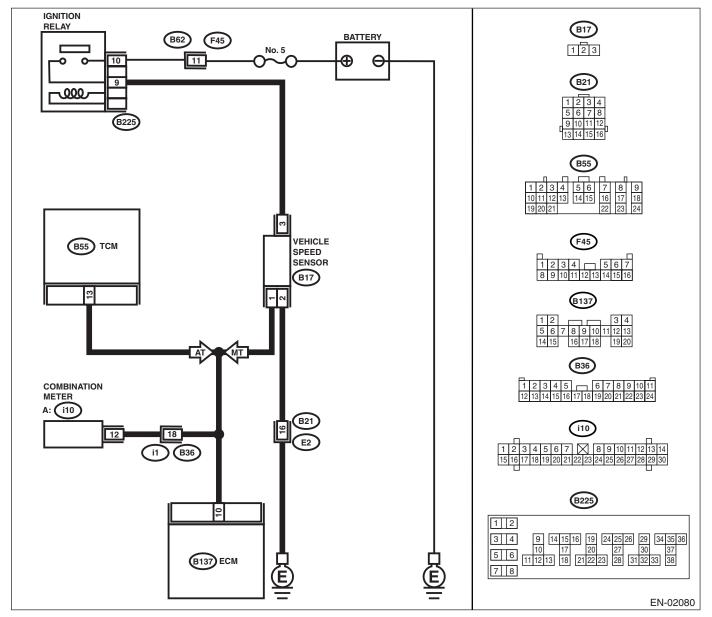
BL:DTC P0503 — VEHICLE SPEED SENSOR INTERMITTENT/ERRATIC/HIGH — DTC DETECTING CONDITION:

Immediately at fault recognition

• GENERAL DESCRIPTION < Ref. to GD(H4SO)-166, DTC P0503 — VEHICLE SPEED SENSOR INTER-MITTENT/ERRATIC/HIGH —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step		Check	Yes	No
1 CHECK TRANSMISSION TY	/PE.	Is the target AT model?	Go to step 2.	Go to step 3.
2 CHECK DTC P0720 ON DIS		Does the Subaru Select Moni- tor or OBD-II general scan tool indicate DTC P0720?	Check front vehi- cle speed sensor signal circuit. <ref. to<br="">4AT(H4SO)-42, DTC 33 FRONT VEHICLE SPEED SENSOR, Diag- nostic Procedure with Diagnostic Trouble Code (DTC).></ref.>	Go to step 3.
3 CHECK SPEEDOMETER OI COMBINATION METER.	PERATION IN	Does the speedometer operate normally?	Go to step 4.	Check speedome- ter and vehicle speed sensor. <ref. idi-12,<br="" to="">Speedometer.> and <ref. 4at-<br="" to="">53, Front Vehicle Speed Sensor.> and <ref. 4at-<br="" to="">58, Rear Vehicle Speed Sensor.> and <ref. 4at-<br="" to="">59, Torque Con- verter Turbine Speed Sensor.></ref.></ref.></ref.></ref.>
 4 CHECK HARNESS BETWEI COMBINATION METER CO Turn the ignition switch to Disconnect the connector meter. Measure the resistance b combination meter. Connector & terminal (B137) No. 10 — (i11) No 	NNECTOR. OFF. from combination etween ECM and	Is the resistance less than 10 Ω?	Repair poor con- tact in ECM con- nector.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between ECM and combi- nation meter con- nector • Poor contact in ECM connector • Poor contact in combination meter connector • Poor contact in combination meter connector

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

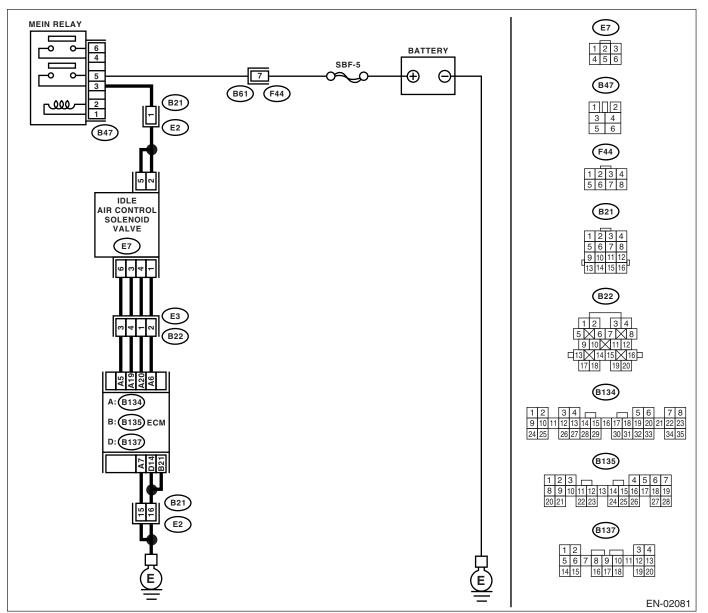
- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4SO)-167, DTC P0506 IDLE CONTROL SYSTEM RPM LOWER THAN EXPECTED —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

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

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect DTC using "List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(H4SO)-77, List of Diagnostic Trou- ble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0506.</ref.>	
2	 CHECK AIR BY-PASS LINE. 1) Turn the ignition switch to OFF. 2) Remove the idle air control solenoid valve from throttle body. <ref. air="" control="" fu(h4so)-33,="" idle="" removal,="" solenoid="" to="" valve.=""></ref.> 3) Remove the throttle body from intake manifold. <ref. body.="" fu(h4so)-13,="" removal,="" throttle="" to=""></ref.> 4) Using an air gun, force air into the idle air control solenoid valve installation area. Confirm that forced air subsequently escapes from throttle body interior. 	Does air flow out?	Replace the idle air control solenoid valve. <ref. to<br="">FU(H4SO)-33, INSTALLATION, Idle Air Control Solenoid Valve.></ref.>	Replace the throt- tle body. <ref. to<br="">FU(H4SO)-13, INSTALLATION, Throttle Body.></ref.>

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

• Two consecutive driving cycles with fault

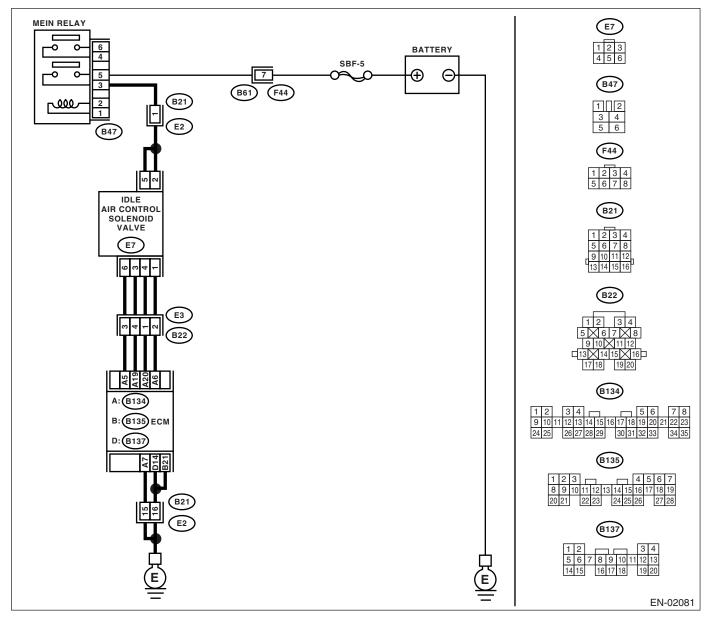
• GENERAL DESCRIPTION <Ref. to GD(H4SO)-169, DTC P0507 — IDLE CONTROL SYSTEM RPM HIGHER THAN EXPECTED —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Engine keeps running at higher revolution than specified idling revolution.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect DTC using "List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(H4SO)-77, List of Diagnostic Trou- ble Code (DTC).> NOTE: In this case, it is not necessary to in- spect DTC P0507.</ref.>	Go to step 2.
2	 CHECK AIR INTAKE SYSTEM. 1) Turn the ignition switch to ON. 2) Start the engine, and idle it. 3) Check the following items. Loose installation of intake manifold, idle air control solenoid valve and throttle body Cracks of intake manifold gasket, idle air control solenoid valve gasket and throttle body gasket Disconnections of vacuum hoses 	Is there a fault in air intake sys- tem?	Repair air suction and leaks.	Go to step 3.
3	CHECK THROTTLE CABLE.	Is throttle cable play correct?	Go to step 4.	Adjust throttle cable. <ref. to<br="">SP(H4SO)-6, INSTALLATION, Accelerator Con- trol Cable.></ref.>
4	 CHECK AIR BY-PASS LINE. 1) Turn the ignition switch to OFF. 2) Remove the idle air control solenoid valve from throttle body. <ref. air="" control="" fu(h4so)-33,="" idle="" removal,="" solenoid="" to="" valve.=""></ref.> 3) Confirm that there are no foreign particles in air by-pass line. 	Is air by-pass line clogged by foreign particles?	Remove foreign particles from air by-pass line.	Replace the idle air control solenoid valve. <ref. to<br="">FU(H4SO)-33, INSTALLATION, Idle Air Control Solenoid Valve.></ref.>

BO:DTC P0512 — STARTER REQUEST CIRCUIT —

DTC DETECTING CONDITION:

• Two consecutive driving cycles with fault

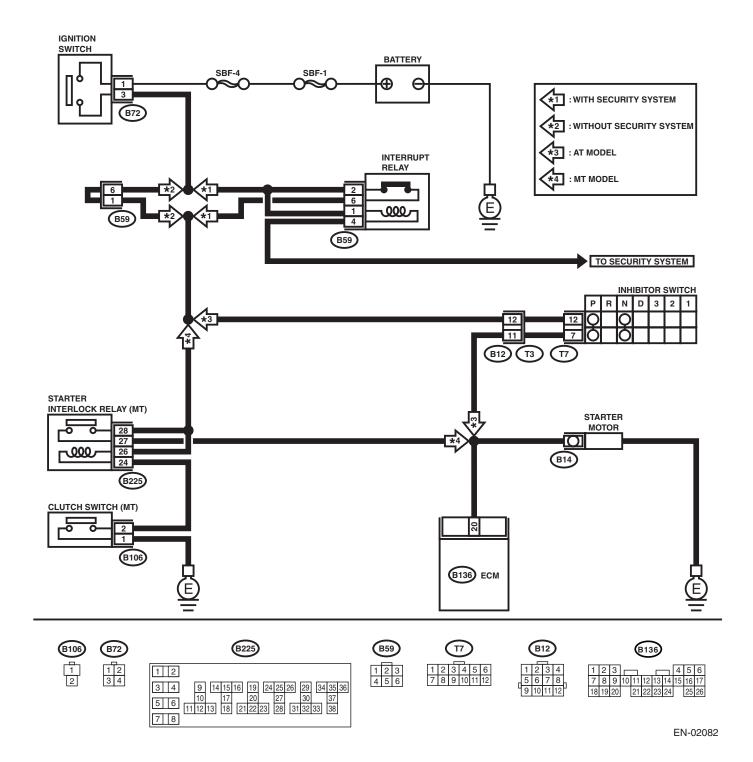
• GENERAL DESCRIPTION <Ref. to GD(H4SO)-171, DTC P0512 — STARTER REQUEST CIRCUIT —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC) Е

	Step	Check	Yes	No
1	CHECK OPERATION OF STARTER MOTOR. Turn the ignition switch to ON.	Dose the starter motor oper- ate?	Repair battery short circuit in	Check starter motor circuit. <ref.< th=""></ref.<>
	NOTE: Place the inhibitor switch in each position. (AT model) Depress or release the clutch pedal. (MT model)		starter motor cir- cuit.	to EN(H4SO)-63, STARTER MOTOR CIR- CUIT, Diagnostics for Engine Start- ing Failure.>

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

· Immediately at fault recognition

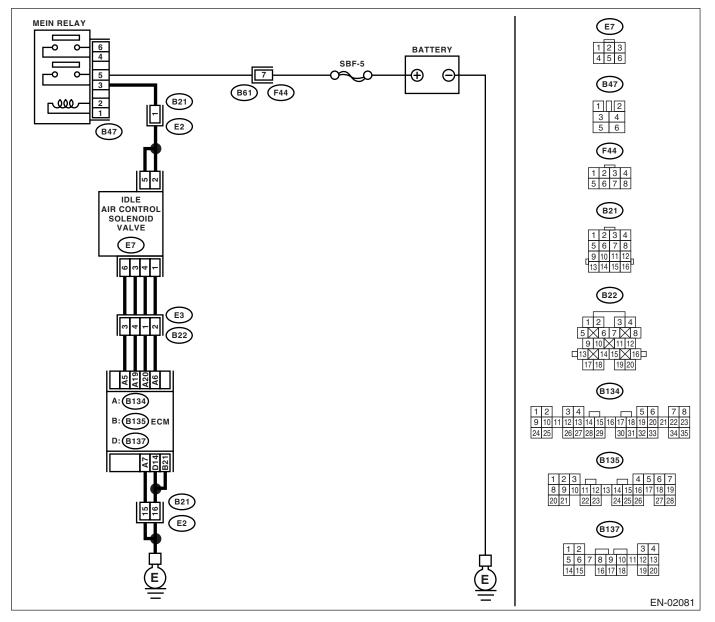
• GENERAL DESCRIPTION <Ref. to GD(H4SO)-172, DTC P0519 — IDLE CONTROL SYSTEM MAL-FUNCTION (FAIL-SAFE) —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Engine keeps running at higher revolution than specified idling revolution.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect DTC using "List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(H4SO)-77, List of Diagnostic Trou- ble 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 the engine, and idle it. 3) Check the following items. Loose installation of intake manifold, idle air control solenoid valve and throttle body Cracks of intake manifold gasket, idle air control solenoid valve gasket and throttle body gasket Disconnections of vacuum hoses 	Is there a fault in air intake sys- tem?	Repair air suction and leaks.	Go to step 3.
3	CHECK THROTTLE CABLE.	Is throttle cable play correct?	Go to step 4.	Adjust throttle cable. <ref. to<br="">SP(H4SO)-6, INSTALLATION, Accelerator Con- trol Cable.></ref.>
4	 CHECK AIR BY-PASS LINE. 1) Turn the ignition switch to OFF. 2) Remove the idle air control solenoid valve from throttle body. <ref. air="" control="" fu(h4so)-33,="" idle="" solenoid="" to="" valve.=""></ref.> 3) Confirm that there are no foreign particles in air by-pass line. 	Is air by-pass line clogged by foreign particles?	Remove foreign particles from air by-pass line.	Replace the idle air control solenoid valve. <ref. to<br="">FU(H4SO)-33, Idle Air Control Sole- noid Valve.></ref.>

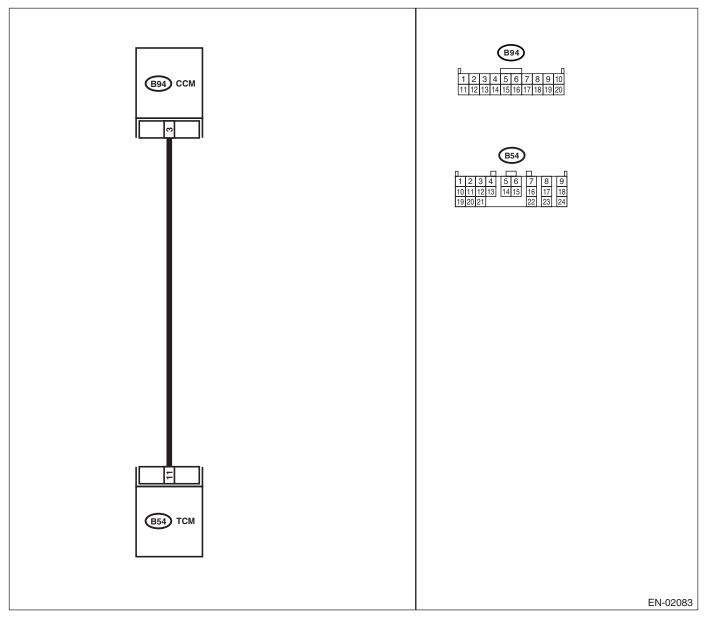
BQ:DTC P0565 — CRUISE CONTROL ON SIGNAL —

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION < Ref. to GD(H4SO)-173, DTC P0565 CRUISE CONTROL ON SIGNAL , Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	 CHECK HARNESS BETWEEN TCM AND CCM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM and CCM. 3) Measure the resistance of harness between TCM and CCM connector. Connector & terminal (B54) No. 11— (B94) No. 3: 	Is the resistance less than 1 Ω?	Go to step 2.	Repair open circuit in harness between TCM and CCM connector.
2	CHECK HARNESS BETWEEN TCM AND CCM CONNECTOR. Measure the resistance of harness between TCM and chassis ground. Connector & terminal (B54) No. 11 — Chassis ground:	Is the resistance more than 1 $M\Omega$?	Go to step 3.	Repair short circuit in harness between TCM and CCM connector.
3	 CHECK INPUT SIGNAL FOR TCM. 1) Connect the connector to TCM and CCM. 2) Lift-up the vehicle or set the vehicle on free rollers. CAUTION: On AWD models, raise all wheels off ground. 3) Start the engine. 4) Turn the cruise control main switch to ON. 5) Increase vehicle speed to 50 km/h (31 MPH). 6) Turn the cruise control command switch to ON. 7) Measure the voltage between TCM and chassis ground. <i>Connector & terminal</i> (B54) No. 11 (+) — Chassis ground (-): 	Is the voltage less than 1 V?	Go to step 4.	Check cruise con- trol command switch circuit. <ref. cc-7,<br="" to="">INSPECTION, Cruise Control Command Switch.></ref.>
4	CHECK POOR CONTACT. Check poor contact in TCM connector.	Is there poor contact in TCM connector?	Repair poor con- tact in TCM con- nector.	Replace the TCM. <ref. 4at-77,<br="" to="">Transmission Con- trol Module (TCM).></ref.>

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

DTC DETECTING CONDITION:

Immediately at fault recognition

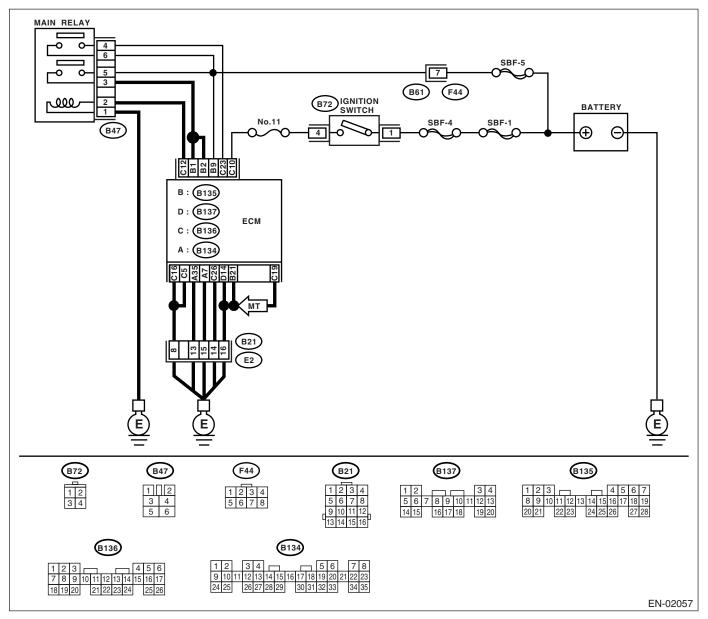
• GENERAL DESCRIPTION <Ref. to GD(H4SO)-174, DTC P0604 — INTERNAL CONTROL MODULE RANDOM ACCESS MEMORY (RAM) ERROR —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Engine does not start.
- Engine stalls.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check the rele- vant DTC using the List of Diag- nostic Trouble Code (DTC). <ref. to EN(H4SO)-77, List of Diagnostic Trouble Code (DTC).></ref. 	A temporary poor contact occurs.

BS:DTC P0691 — COOLING FAN 1 CONTROL CIRCUIT LOW —

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4SO)-175, DTC P0691 COOLING FAN 1 CONTROL CIR-CUIT LOW —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

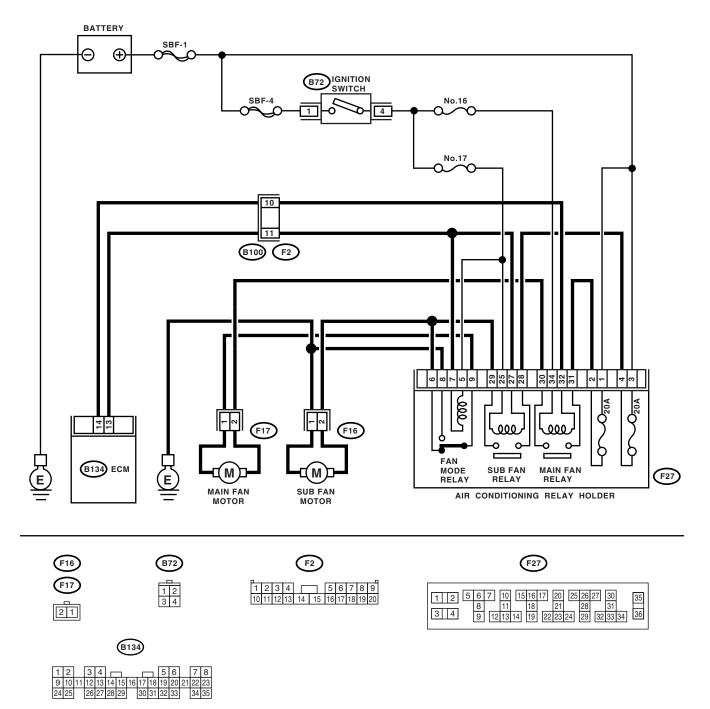
TROUBLE SYMPTOM:

- Radiator fan does not operate properly.
- Overheating

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02079

	Step	Check	Yes	No
1 CHE	ECK OUTPUT SIGNAL FROM ECM.	Is the voltage 0 — 10 V?	Repair poor con-	Go to step 2.
1) 7 2) (0 lowe drive 3) 7 4) V sure	Turn the ignition switch to OFF. Connect the test mode connector at the er portion of instrument panel (on the er's side). Turn the ignition switch to ON. While operating the radiator fan relay, mea- e voltage between ECM terminal and		tact in ECM con- nector.	
usin refe Moc Mor	TE: liator fan relay operation can be executed og Subaru Select Monitor. For procedure, r to "Compulsory Valve Operation Check de". <ref. en(h4so)-32,="" select<br="" subaru="" to="">nitor.></ref.>			
	onnector & terminal B134) No. 14 (+) — Chassis ground (–):			
ATC 1) - 2) [3) [betw Cc	ECK GROUND SHORT CIRCUIT IN RADI- DR FAN RELAY CONTROL CIRCUIT. Turn the ignition switch to OFF. Disconnect the connectors from ECM. Measure the resistance of harness ween ECM connector and chassis ground. Disconnector & terminal B134) No. 14 — Chassis ground:	Is the resistance less than 10 Ω?	Repair ground short circuit in radiator fan relay control circuit.	Go to step 3.
1) F hold 2) T 3) F relay <i>Co</i>	ECK POWER SUPPLY FOR RELAY. Remove the main fan relay from A/C relay ler. Turn the ignition switch to ON. Measure the voltage between fuse and y box (F/B) connector and chassis ground. Connector & terminal (F27) No. 34 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 4.	Repair open circuit in harness between ignition switch and fuse and relay box (F/B) connector.
1) 2) 1 relat Te	ECK MAIN FAN RELAY. Turn the ignition switch to OFF. Measure the resistance between main fan y terminals. Frminals F27) No. 32 — (F27) No. 34:	Is the resistance 87 — 107 Ω ?	Go to step 5 .	Replace the main fan relay.
LAY Mea ECN Co	ECK OPEN CIRCUIT IN MAIN FAN RE- (CONTROL CIRCUIT. asure the resistance of harness between M and radiator fan relay connector. connector & terminal (B134) No. 14 — (F27) No. 32:	Is the resistance less than 1 Ω?	Go to step 6.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between ECM and main fan relay connector • Poor contact in coupling connector
Che	ECK POOR CONTACT. eck poor contact in ECM or main fan relay nector.	Is there poor contact in ECM or main fan relay connector?	Repair poor con- tact in ECM or main fan relay con- nector.	Contact SOA Ser- vice Center.

BT:DTC P0692 — COOLING FAN 1 CONTROL CIRCUIT HIGH —

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4SO)-176, DTC P0692 COOLING FAN 1 CONTROL CIR-CUIT HIGH —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

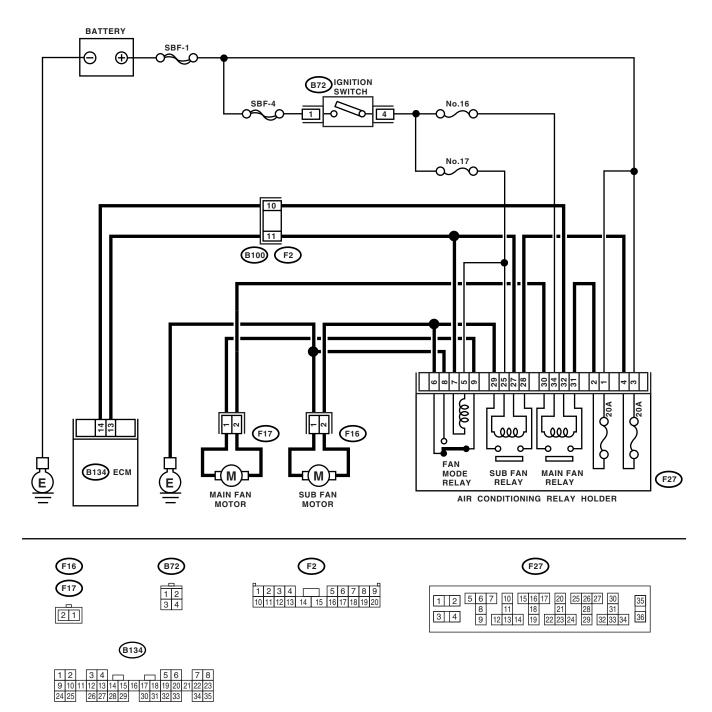
TROUBLE SYMPTOM:

- Radiator fan does not operate properly.
- Overheating

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02079

	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 drive's side). 3) Turn the ignition switch to ON. 4) While operating the radiator fan relay, measure voltage between ECM and chassis ground. NOTE: Radiator fan relay operation can be executed using Subaru Select Monitor. For procedure, refer to "Compulsory Valve Operation Check Mode". <ref. check="" compulsory="" en(h4so)-50,="" mode.="" operation="" to="" valve=""></ref.> Connector & terminal (B134) No. 14 (+) — Chassis ground (-): (B134) No. 13 (+) — Chassis ground (-): 		Even if malfunction indicator light lights up, the cir- cuit has returned to a normal condi- tion at this time. In this case, repair poor contact in ECM connector.	Go to step 2.
2	 CHECK SHORT CIRCUIT IN RADIATOR FAN RELAY CONTROL CIRCUIT. 1) Turn the ignition switch to OFF. 2) Remove the main fan relay and sub fan relay. (with A/C models) 3) Disconnect the test mode connector. 4) Turn the ignition switch to ON. 5) Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 14 (+) — Chassis ground (-): (B134) No. 13 (+) — Chassis ground (-): 	Is the voltage more than 10 V?	Repair battery short circuit in radiator fan relay control circuit. After repair, replace the ECM. <ref. to<br="">FU(H4SO)-46, Engine Control Module (ECM).></ref.>	Go to step 3.
3	 CHECK MAIN FAN RELAY. 1) Turn the ignition switch to OFF. 2) Remove the main fan relay. 3) Measure the resistance between main fan relay terminals. Terminals (F27) No. 30 — (F27) No. 31: 	Is the resistance less than 1 Ω?	Replace the main fan relay and ECM. <ref. to<br="">FU(H4SO)-46, Engine Control Module (ECM).></ref.>	Go to step 4.
4	 CHECK SUB FAN RELAY. 1) Remove the sub fan relay. 2) Measure the resistance between sub fan relay terminals. Terminals (F27) No. 28 — (F27) No. 29: 	Is the resistance less than 1 Ω ?	Replace the sub fan relay and ECM. <ref. to<br="">FU(H4SO)-46, Engine Control Module (ECM).></ref.>	Go to step 5.
5	CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair poor con- tact in ECM con- nector.	Replace the ECM. <ref. to<br="">FU(H4SO)-46, Engine Control Module (ECM).></ref.>

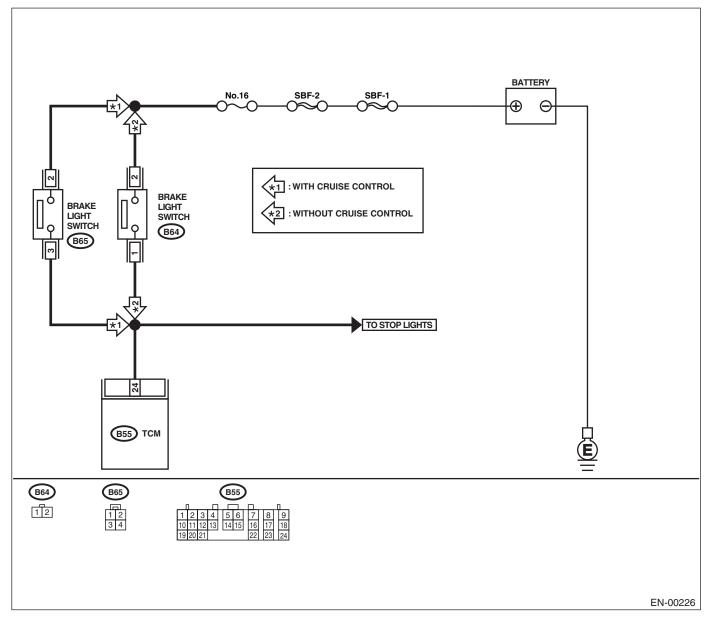
BU:DTC P0703 — TORQUE CONVERTER/BRAKE SWITCH "B" CIRCUIT — DTC DETECTING CONDITION:

• Two consecutive driving cycles with fault

• GENERAL DESCRIPTION <Ref. to GD(H4SO)-177, DTC P0703 — TORQUE CONVERTER/BRAKE SWITCH "B" CIRCUIT —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK OPERATION OF BRAKE LIGHT.	Does the brake light illuminate when depressing the brake pedal?	Go to step 2.	Repair or replace the brake light cir- cuit.
2	 CHECK HARNESS BETWEEN TCM AND BRAKE LIGHT SWITCH CONNECTOR. 1) Disconnect the connectors from TCM and brake light switch. 2) Measure the resistance of harness between TCM and brake light switch connec- tor. Connector & terminal Without cruise control (B55) No. 24 — (B64) No. 1: With cruise control (B55) No. 24 — (B65) No. 3: 	Is the resistance less than 1 Ω?	Go to step 3.	Repair or replace the harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between TCM and brake light switch con- nector • Poor contact in TCM connector • Poor contact in brake light switch connector
3	CHECK HARNESS BETWEEN TCM AND BRAKE LIGHT SWITCH CONNECTOR. Measure the resistance of harness between TCM and chassis ground. Connector & terminal (B55) No. 24 — Chassis ground:	Is the resistance more than 1 $M\Omega$?	Go to step 4.	Repair ground short circuit in har- ness between TCM and brake light switch con- nector.
4	 CHECK INPUT SIGNAL FOR TCM. 1) Connect the connectors to TCM and brake light switch. 2) Measure the voltage between TCM and chassis ground. Connector & terminal (B55) No. 24 (+) — Chassis ground (-): 	Is the voltage less than 1 V when releasing the brake pedal?	Go to step 5 .	Adjust or replace the brake light switch. <ref. li-<br="" to="">7, STOP LIGHT SWITCH, INSPECTION, Stop Light Sys- tem.></ref.>
5	CHECK INPUT SIGNAL FOR TCM. Measure the voltage between TCM and chas- sis ground. Connector & terminal (B55) No. 24 (+) — Chassis ground (–):	Is the voltage more than 10 V when depressing the brake pedal?	Go to step 6 .	Adjust or replace the brake light switch. <ref. li-<br="" to="">7, STOP LIGHT SWITCH, INSPECTION, Stop Light Sys- tem.></ref.>
6	CHECK POOR CONTACT. Check poor contact in TCM connector.	Is there poor contact in TCM connector?	Repair poor con- tact in TCM con- nector.	Replace the TCM. <ref. 4at-77,<br="" to="">Transmission Con- trol Module (TCM).></ref.>

BV:DTC P0731 — GEAR 1 INCORRECT RATIO —

NOTE:

For the diagnostic procedure, refer to DTC P0734. <Ref. to EN(H4SO)-255, DTC P0734 — GEAR 4 INCOR-RECT RATIO —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BW:DTC P0732 — GEAR 2 INCORRECT RATIO —

NOTE:

For the diagnostic procedure, refer to DTC P0734. <Ref. to EN(H4SO)-255, DTC P0734 — GEAR 4 INCOR-RECT RATIO —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BX:DTC P0733 — GEAR 3 INCORRECT RATIO —

NOTE:

For the diagnostic procedure, refer to DTC P0734. <Ref. to EN(H4SO)-255, DTC P0734 — GEAR 4 INCOR-RECT RATIO —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BY:DTC P0734 — GEAR 4 INCORRECT RATIO —

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION < Ref. to GD(H4SO)-187, DTC P0734 GEAR 4 INCORRECT RATIO —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

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

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.

	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect relevant DTC using "List of Diagnostic Trou- ble Code (DTC)". <ref. to<br="">EN(H4SO)-77, List of Diagnostic Trou- ble Code (DTC).></ref.>	Go to step 2.
2	CHECK THROTTLE POSITION SENSOR CIRCUIT. Check throttle position sensor circuit. <ref. to<br="">4AT(H4SO)-38, DTC 31 THROTTLE POSI- TION SENSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>	Is there any trouble in throttle position sensor circuit?	Repair or replace the throttle posi- tion sensor circuit.	Go to step 3.
3	CHECK FRONT VEHICLE SPEED SENSOR CIRCUIT. Check front vehicle speed sensor circuit. <ref. to 4AT(H4SO)-42, DTC 33 FRONT VEHICLE SPEED SENSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref. 	Is there any trouble in front vehicle speed sensor circuit?	Repair or replace the front vehicle speed sensor cir- cuit.	Go to step 4.
4	CHECK TORQUE CONVERTER TURBINE SPEED SENSOR CIRCUIT. Check torque converter turbine speed sensor circuit. <ref. 36<br="" 4at(h4so)-45,="" dtc="" to="">TORQUE CONVERTER TURBINE SPEED SENSOR, Diagnostic Procedure with Diagnos- tic Trouble Code (DTC).></ref.>	Is there any trouble in torque converter turbine speed sensor circuit?	Repair or replace the torque con- verter turbine speed sensor cir- cuit.	Go to step 5.
5	CHECK POOR CONTACT. Check poor contact in TCM connector.	Is there poor contact in TCM connector?	Repair poor con- tact in TCM con- nector.	Go to step 6 .
6	CHECK MECHANICAL TROUBLE. Check mechanical trouble in automatic trans- mission.	Is there any mechanical trou- ble in automatic transmission?	Repair or replace the automatic transmission. <ref. 4at-31,<br="" to="">INSPECTION, Road Test.></ref.>	Replace the TCM. <ref. 4at-77,<br="" to="">Transmission Con- trol Module (TCM).></ref.>

BZ:DTC P0741 — TORQUE CONVERTER CLUTCH CIRCUIT PERFORMANCE OR STUCK OFF —

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4SO)-188, DTC P0741 TORQUE CONVERTER CLUTCH CIRCUIT PERFORMANCE OR STUCK OFF —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

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

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, 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(H4SO)-77, List of Diagnostic Trou- ble Code (DTC).></ref.>	Go to step 2.
2	CHECK LOCK-UP DUTY SOLENOID CIR- CUIT. Check lock-up duty solenoid circuit. <ref. to<br="">4AT(H4SO)-75, DTC 77 LOCK-UP DUTY SOLENOID, Diagnostic Procedure with Diag- nostic Trouble Code (DTC).></ref.>	Is there any trouble in lock-up duty solenoid circuit?	Repair or replace the lock-up duty solenoid circuit.	Go to step 3 .
3	CHECK THROTTLE POSITION SENSOR CIRCUIT. Check throttle position sensor circuit. <ref. to<br="">4AT(H4SO)-38, DTC 31 THROTTLE POSI- TION SENSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>	Is there any trouble in throttle position sensor circuit?	Repair or replace the throttle posi- tion sensor circuit.	Go to step 4.
4	CHECK TORQUE CONVERTER TURBINE SPEED SENSOR CIRCUIT. Check torque converter turbine speed sensor circuit. <ref. 36<br="" 4at(h4so)-45,="" dtc="" to="">TORQUE CONVERTER TURBINE SPEED SENSOR, Diagnostic Procedure with Diagnos- tic Trouble Code (DTC).></ref.>	Is there any trouble in torque converter turbine speed sensor circuit?	Repair or replace the torque con- verter turbine speed sensor cir- cuit.	Go to step 5.
5	CHECK ENGINE SPEED INPUT CIRCUIT. Check engine speed input circuit. <ref. to<br="">4AT(H4SO)-33, DTC 11 ENGINE SPEED SIG- NAL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>	Is there any trouble in engine speed input circuit?	Repair or replace the engine speed input circuit.	Go to step 6.
6	CHECK INHIBITOR SWITCH CIRCUIT. Check inhibitor switch circuit. <ref. to<br="">4AT(H4SO)-91, CHECK INHIBITOR SWITCH., Diagnostic Procedure for No-diagnostic Trou- ble Code (DTC).></ref.>	Is there any trouble in inhibitor switch circuit?	Repair or replace the inhibitor switch circuit.	Go to step 7.
7	CHECK BRAKE LIGHT SWITCH CIRCUIT. Check brake light switch circuit. <ref. to<br="">4AT(H4SO)-90, CHECK BRAKE SWITCH., Diagnostic Procedure for No-diagnostic Trou- ble Code (DTC).></ref.>	Is there any trouble in brake light switch circuit?	Repair or replace the brake light switch circuit.	Go to step 8 .

	Step	Check	Yes	No
8	CHECK ATF TEMPERATURE SENSOR CIR- CUIT. Check ATF temperature sensor circuit. <ref. to<br="">4AT(H4SO)-35, DTC 27 ATF TEMPERA- TURE SENSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>	Is there any trouble in ATF tem- perature sensor circuit?	Repair or replace the ATF tempera- ture sensor circuit.	Go to step 9 .
9	CHECK POOR CONTACT. Check poor contact in TCM connector.	Is there poor contact in TCM connector?	Repair poor con- tact in TCM con- nector.	Go to step 10.
10	CHECK MECHANICAL TROUBLE. Check mechanical trouble in automatic trans- mission.	Is there any mechanical trou- ble in automatic transmission?	Repair or replace the automatic transmission. <ref. 4at-31,<br="" to="">INSPECTION, Road Test.></ref.>	Replace the TCM. <ref. 4at-77,<br="" to="">Transmission Con- trol Module (TCM).></ref.>

CA:DTC P0851 — NEUTRAL POSITION SWITCH INPUT CIRCUIT LOW — DTC DETECTING CONDITION:

• Two consecutive driving cycles with fault

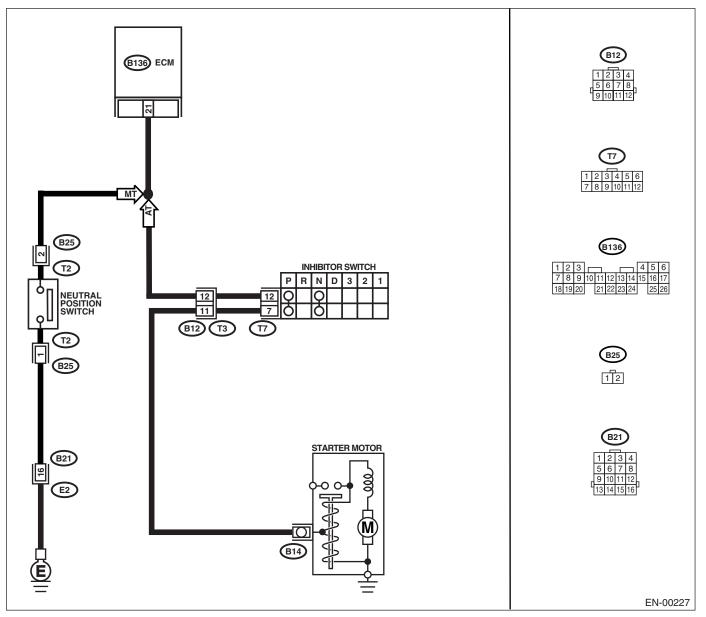
• GENERAL DESCRIPTION < Ref. to GD(H4SO)-196, DTC P0851 — NEUTRAL SWITCH INPUT CIRCUIT LOW —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK OTHER DTC ON DISPLAY.	Is DTC P0705 displayed?	Inspect DTC P0705 using "List of Diagnostic Trou- ble Code (DTC)". <ref. to<br="">EN(H4SO)-77, List of Diagnostic Trou- ble Code (DTC).></ref.>	Go to step 2.
2	 CHECK INPUT SIGNAL FOR ECM. 1) Turn the ignition switch to ON. 2) Place the select lever except for "N" and "P" ranges. 3) Measure the voltage between ECM and chassis ground. Connector & terminal (B136) No. 21 (+) — Chassis ground (-): 	Is the voltage 4.5 — 5.5 V?	Even if malfunction indicator light lights up, the cir- cuit has returned to a normal condi- tion at this time.	Go to step 3.
3	 CHECK HARNESS BETWEEN ECM AND TRANSMISSION HARNESS CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and transmission harness connector (T3). 3) Measure the resistance of harness between ECM connector and chassis ground. Connector & terminal (B136) No. 21 — Chassis ground: 	Is the resistance more than 1 MΩ?	Go to step 4.	Repair ground short circuit in har- ness between ECM and trans- mission harness connector.
4	 CHECK TRANSMISSION HARNESS CONNECTOR. 1) Disconnect the connector from inhibitor switch. 2) Measure the resistance of harness between transmission harness connector and engine ground. Connector & terminal (T3) No. 12 — Engine ground: 	Is the resistance more than 1 $M\Omega$?	Go to step 5.	Repair ground short circuit in har- ness between transmission har- ness and inhibitor switch connector.
5	CHECK INHIBITOR SWITCH. Measure the resistance between inhibitor switch connector the receptacle's terminals in select lever except for "N" and "P" range. <i>Terminals</i> (<i>T7</i>) No. 7 — (<i>T7</i>) No. 12:	Is the resistance more than 1 $M\Omega$?	Go to step 6.	Replace the inhibi- tor switch. <ref. to<br="">4AT-49, Inhibitor Switch.></ref.>
6	CHECK SELECTOR CABLE CONNECTION.	Is there any fault in selector cable connection to inhibitor switch?	Repair selector cable connection. <ref. cs-27,<br="" to="">INSPECTION, Select Cable.></ref.>	Contact SOA Ser- vice Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.

CB:DTC P0851 — NEUTRAL POSITION SWITCH INPUT CIRCUIT LOW (MT MODEL) —

DTC DETECTING CONDITION:

• Two consecutive driving cycles with fault

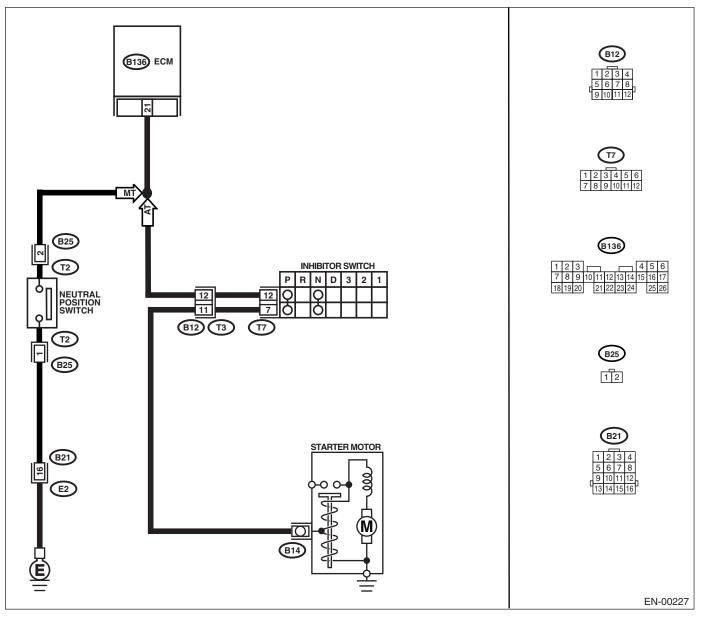
• GENERAL DESCRIPTION < Ref. to GD(H4SO)-196, DTC P0851 — NEUTRAL SWITCH INPUT CIRCUIT LOW —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK INPUT SIGNAL FOR ECM.	Is the voltage more than 10 V?	Go to step 2.	Go to step 4.
	1) Turn the ignition switch to ON.	C C		
	2) Place the shift lever in neutral.			
	Measure the voltage between ECM and			
	chassis ground.			
	Connector & terminal			
	(B136) No. 21 (+) — Chassis ground (–):			
2	CHECK INPUT SIGNAL FOR ECM.	Is the voltage less than 1 V?	Go to step 3.	Go to step 4.
	1) Place the shift lever in a position except for			
	neutral.			
	 Measure the voltage between ECM and chassis ground. 			
	Connector & terminal			
	(B136) No. 21 (+) — Chassis ground (–):			
3	CHECK POOR CONTACT.	Is there poor contact in ECM	Repair poor con-	Contact SOA Ser-
Ŭ	Check poor contact in ECM connector.	connector?	tact in ECM con-	vice Center.
			nector.	
4	CHECK NEUTRAL POSITION SWITCH.	Is the resistance more than 1	Go to step 5.	Repair short circuit
·	1) Turn the ignition switch to OFF.	$M\Omega$?		in transmission
	2) Disconnect the connector from transmis-			harness or replace
	sion harness.			neutral position
	3) Place the shift lever in neutral.			switch.
	4) Measure the resistance between transmis-			
	sion harness and connector terminals.			
	Connector & terminal			
-	(T2) No. 1 — (T2) No. 2:			Danainah tu'u ii
5	CHECK NEUTRAL POSITION SWITCH.1) Place the shift lever in a position except for	Is the resistance less than 1	Go to step 6.	Repair short circuit in transmission
	neutral.	\$2?		harness or replace
	 Measure the resistance between transmis- 			neutral position
	sion harness connector terminals.			switch.
	Connector & terminal			
	(T2) No. 1 — (T2) No. 2:			
6	CHECK HARNESS BETWEEN ECM AND	Is the resistance more than 1	Go to step 7.	Repair ground
	NEUTRAL POSITION SWITCH CONNEC-	ΜΩ?		short circuit in har-
	TOR.			ness between
	Measure the resistance between ECM and			ECM and trans-
	chassis ground.			mission harness
	Connector & terminal			connector.
7	(B136) No. 21 — Chassis ground: CHECK HARNESS BETWEEN ECM AND	Is the resistance less than 1	Go to stop 9	Popair open airevit
ľ	NEUTRAL POSITION SWITCH CONNEC-	Ω ?	Go to step 8.	Repair open circuit in harness
	TOR.	22.		between ECM and
	 Disconnect the connector from ECM. 			transmission har-
	2) Measure the resistance of harness			ness connector.
	between ECM and transmission harness con-			
	nector.			
	Connector & terminal			
L	(B136) No. 21 — (B25) No. 2:		-	-
8	CHECK HARNESS BETWEEN ECM AND	Is the resistance less than 5	Go to step 9.	Repair open circuit
	NEUTRAL POSITION SWITCH CONNEC-	Ω?		between transmis-
	TOR. Measure the resistance of harness between			sion harness con-
	transmission harness connector and engine			nector and engine ground terminal.
	ground.			ground terminal.
	Connector & terminal			
	(B25) No. 1 — Engine ground:			
l	()give givenie	1	I	

	Step	Check	Yes	No
9				Contact SOA Ser- vice Center.

CC:DTC P0852 — NEUTRAL POSITION SWITCH INPUT CIRCUIT HIGH (AT MODEL) —

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

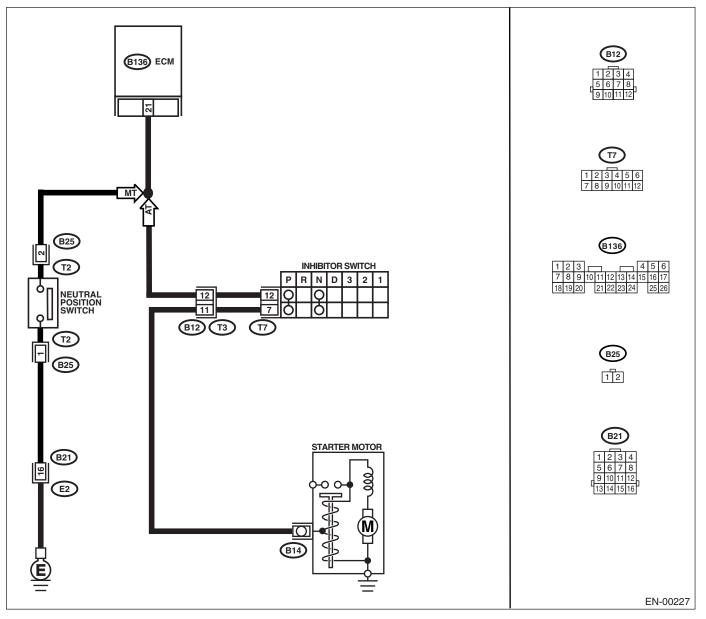
• GENERAL DESCRIPTION < Ref. to GD(H4SO)-198, DTC P0852 — NEUTRAL SWITCH INPUT CIRCUIT HIGH —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	CHECK OTHER DTC ON DISPLAY.	Is DTC P0705 displayed?	Inspect DTC using "List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(H4SO)-77, List of Diagnostic Trou- ble Code (DTC).></ref.>	Go to step 2.
2	 CHECK INPUT SIGNAL FOR ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground in select lever "N" and "P" ranges. Connector & terminal (B136) No. 21 (+) — Chassis ground (-): 	Is the voltage less than 1 V?	Go to step 3 .	Go to step 5 .
3	CHECK INPUT SIGNAL FOR ECM. Measure the voltage between ECM and chas- sis ground in select lever except for "N" and "P" ranges. Connector & terminal (B136) No. 21 (+) — Chassis ground (–):	Is the voltage 4.5 — 5.5 V?	Go to step 4.	Go to step 5.
4	CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair poor con- tact in ECM con- nector.	Contact SOA Ser- vice Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.
5	CHECK INPUT SIGNAL FOR ECM. Measure the voltage between ECM and chas- sis ground. Connector & terminal (B136) No. 21 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Repair battery short circuit in har- ness between ECM and inhibitor switch connector.	Go to step 6.
6	 CHECK HARNESS BETWEEN ECM AND IN- HIBITOR SWITCH CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and inhibitor switch. 3) Measure the resistance of harness between ECM and inhibitor switch connector. <i>Connector & terminal</i> (B136) No. 21 — (T7) No. 12: 	Is the resistance less than 1 Ω?	Go to step 7.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between ECM and inhibitor switch connector • Poor contact in coupling connector • Poor contact in inhibitor switch connector • Poor contact in ECM connector

	Step	Check	Yes	No
7	CHECK INHIBITOR SWITCH GROUND LINE. Measure the resistance of harness between inhibitor switch connector and engine ground. <i>Connector & terminal</i> (T7) No. 12 — Engine ground:	Ω?	Go to step 8.	Repair open circuit in harness between inhibitor switch connector and starter motor ground line. NOTE: In this case, repair the following: • Open circuit in harness between inhibitor switch connector and starter motor ground line • Poor contact in starter motor con- nector • Poor contact in starter motor ground • Starter motor
8	CHECK INHIBITOR SWITCH. Measure the resistance between inhibitor switch connector receptacle's terminals in select lever "N" and "P" ranges. <i>Terminals</i> (T7) No. 7 — (T7) No. 12:	Is the resistance less than 1 Ω ?	Go to step 9.	Replace the inhibi- tor switch. <ref. to<br="">4AT-49, Inhibitor Switch.></ref.>
9	CHECK SELECTOR CABLE CONNECTION.	Is there any fault in selector cable connection to inhibitor switch?	Repair selector cable connection. <ref. cs-27,<br="" to="">INSPECTION, Select Cable.></ref.>	Contact SOA Ser- vice Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.

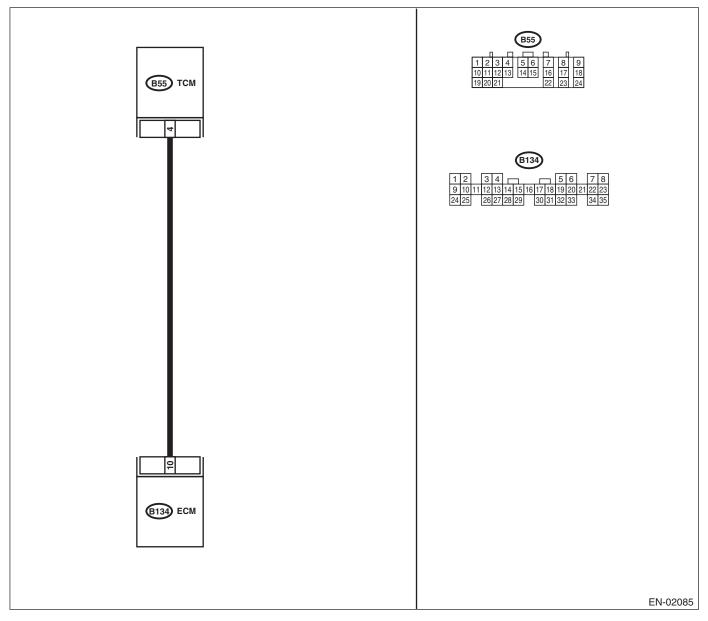
CD:DTC P0864 — TCM COMMUNICATION CIRCUIT RANGEPERFORMANCE — DTC DETECTING CONDITION:

· Two consecutive driving cycles with fault

• GENERAL DESCRIPTION <Ref. to GD(H4SO)-200, DTC P0864 — TCM COMMUNICATION CIRCUIT RANGE/PERFORMANCE —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK DRIVING CONDITION.1) Start and warm-up the engine until the radiator fan makes one complete rotation.2) Drive the vehicle.	Is the AT shift control function- ing properly?	Go to step 2.	Replace the TCM. <ref. 4at-77,<br="" to="">Transmission Con- trol Module (TCM).></ref.>
2	CHECK ACCESSORY.	Are car phone and/or CB installed on vehicle?	Repair grounding line of car phone or CB system.	Replace the TCM. <ref. 4at-77,<br="" to="">Transmission Con- trol Module (TCM).></ref.>

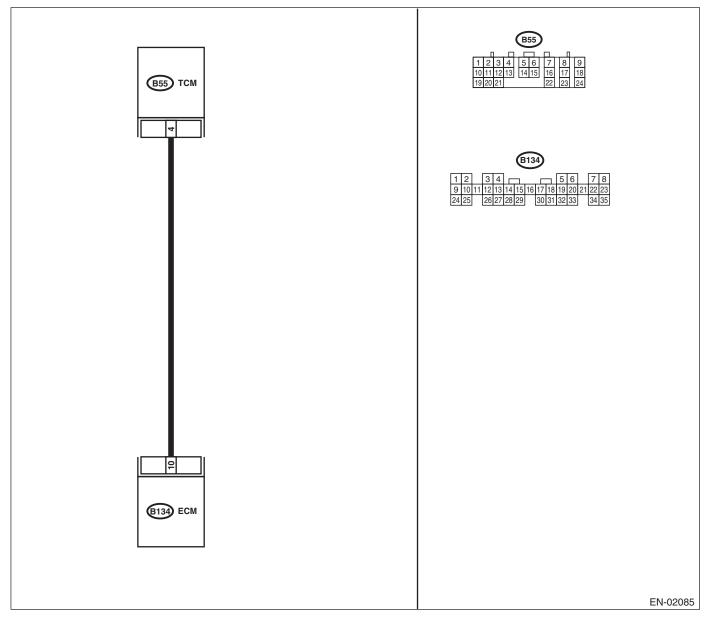
CE:DTC P0865 — TCM COMMUNICATION CIRCUIT LOW —

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- GENERAL DESCRIPTION <Ref. to GD(H4SO)-201, DTC P0865 TCM COMMUNICATION CIRCUIT LOW —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	 CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 10 (+) — Chassis ground (-): 	Is the voltage less than 1 V?	Go to step 2.	Even if malfunction indicator light lights up, the cir- cuit has returned to a normal condi- tion at this time. NOTE: In this case, repair the following: • Poor contact in ECM connector • Poor contact in TCM connector
2	 CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and TCM. 3) Measure the resistance of harness between ECM and chassis ground. Connector & terminal (B134) No. 10 — Chassis ground: 	Is the resistance more than 1 $M\Omega$?	Go to step 3.	Repair ground short circuit in har- ness between ECM and TCM connector.
3	 CHECK OUTPUT SIGNAL FOR ECM. 1) Connect the connector to ECM. 2) Turn the ignition switch to ON. 3) Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 10 (+) — Chassis ground (-): 	Is the voltage more than 5 V?	Go to step 4.	Repair poor con- tact in ECM con- nector.
4	CHECK DTC FOR AUTOMATIC TRANSMIS- SION. Read the DTC for automatic transmission. <ref. 4at(h4so)-19,="" diagnostic="" read="" to="" trou-<br="">ble Code (DTC).></ref.>	Does the DTC appear for auto- matic transmission?	Check DTC for automatic trans- mission. <ref. to<br="">4AT(H4SO)-33, Diagnostic Proce- dure with Diagnos- tic Trouble Code (DTC).></ref.>	Replace the TCM. <ref. 4at-77,<br="" to="">Transmission Con- trol Module (TCM).></ref.>

CF:DTC P0866 — TCM COMMUNICATION CIRCUIT HIGH —

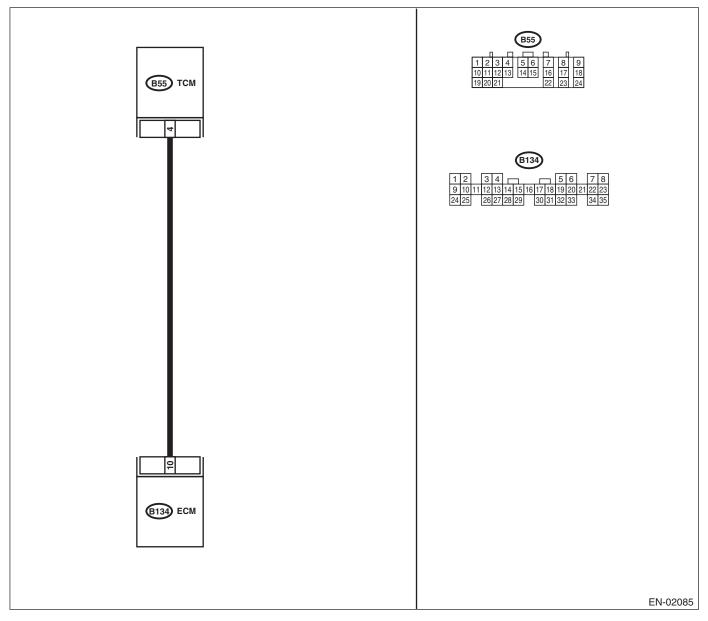
DTC DETECTING CONDITION:

• Two consecutive driving cycles with fault

• GENERAL DESCRIPTION <Ref. to GD(H4SO)-202, DTC P0866 — TCM COMMUNICATION CIRCUIT HIGH —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	 CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 10 (+) — Chassis ground (-): 	Is the voltage more than 10 V?	Repair battery short circuit in har- ness between ECM and TCM connector.	Go to step 2.
2	CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B134) No. 10 (+) — Chassis ground (–):	Is the voltage more than 4 V?	Go to step 5 .	Go to step 3.
3	CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B134) No. 10 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Repair poor con- tact in ECM con- nector.	Go to step 4.
4	CHECK OUTPUT SIGNAL FROM ECM. Measure the voltage between ECM and chas- sis ground. Connector & terminal (B134) No. 10 (+) — Chassis ground (-):	Is the voltage 1 — 4 V?	indicator light lights up, the cir- cuit has returned to a normal condi- tion at this time. NOTE: In this case, repair the following: • Poor contact in ECM connector • Poor contact in TCM connector	parts.
5	CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR. Measure the voltage between TCM and chas- sis ground. Connector & terminal (B55) No. 4 (+) — Chassis ground (-):	Is the voltage more than 4 V?	Go to step 6 .	Repair open circuit in harness between ECM and TCM connector.
6	CHECK POOR CONTACT. Check poor contact in TCM connector.	Is there poor contact in TCM connector?	Repair poor con- tact in TCM con- nector.	Check TCM power supply line and grounding line.

CG:DTC P1110 — ATMOSPHERIC PRESSURE SENSOR CIRCUIT MALFUNC-TION (LOW INPUT) —

DTC DETECTING CONDITION:

• Immediately at fault recognition

• GENERAL DESCRIPTION < Ref. to GD(H4SO)-203, DTC P1110 — ATMOSPHERIC PRESSURE SEN-SOR CIRCUIT MALFUNCTION (LOW INPUT) —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.

	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	the List of Diag- nostic Trouble Code (DTC). <ref.< th=""><th>Module (ECM).></th></ref.<>	Module (ECM).>

CH:DTC P1111 — ATMOSPHERIC PRESSURE SENSOR CIRCUIT MALFUNC-TION (HIGH INPUT) —

DTC DETECTING CONDITION:

• Immediately at fault recognition

• GENERAL DESCRIPTION < Ref. to GD(H4SO)-204, DTC P1111 — ATMOSPHERIC PRESSURE SEN-SOR CIRCUIT MALFUNCTION (HIGH INPUT) —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	the List of Diag- nostic Trouble Code (DTC). <ref.< th=""><th>Module (ECM).></th></ref.<>	Module (ECM).>

CI: DTC P1134 — A/F SENSOR MICRO-COMPUTER PROBLEM —

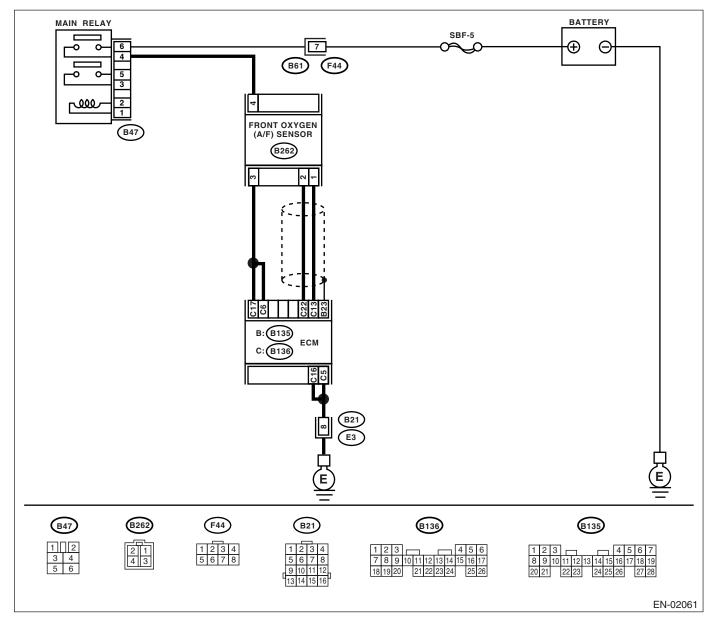
DTC DETECTING CONDITION:

Immediately at fault recognition

• GENERAL DESCRIPTION <Ref. to GD(H4SO)-205, DTC P1134 — A/F SENSOR MICRO-COMPUTER PROBLEM —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, Inspection Mode.>. WIRING DIAGRAM:



Step Check Yes No 1 CHECK ANY OTHER DTC ON DISPLAY. Is any other DTC P1134 dis-Check DTC using Replace the ECM. played? the List of Diag-<Ref. to nostic Trouble FU(H4SO)-46, Code (DTC). <Ref. Engine Control Module (ECM).> to EN(H4SO)-77, List of Diagnostic Trouble Code (DTC).> NOTE: It is not necessary to inspect DTC P1134.

CJ:DTC P1137 — O₂ SENSOR CIRCUIT (LAMDA=1) (BANK1 SENSOR1) —

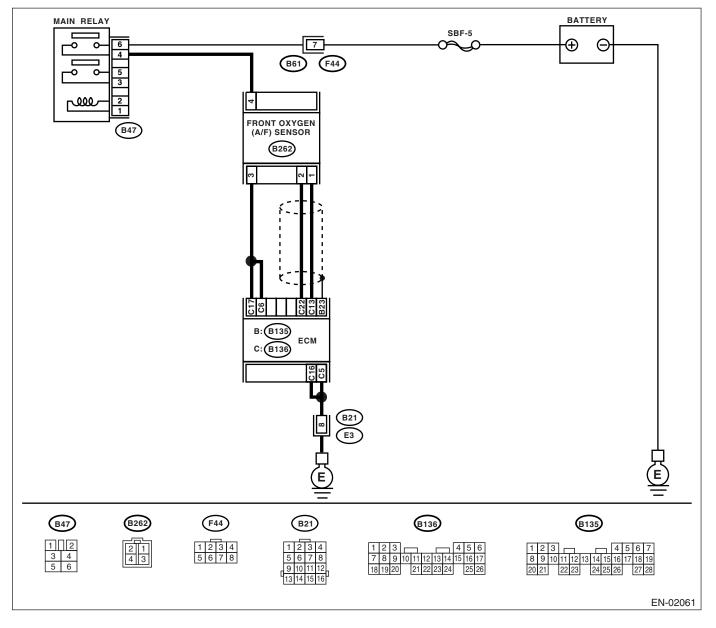
DTC DETECTING CONDITION:

Immediately at fault recognition

 GENERAL DESCRIPTION <Ref. to GD(H4SO)-207, DTC P1137 — O₂ SENSOR CIRCUIT LOW VOLT-AGE (BANK 1 SENSOR 2) —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect DTC using "List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(H4SO)-77, List of Diagnostic Trou- ble Code (DTC).></ref.>	Go to step 2.
2	 CHECK FRONT OXYGEN (A/F) SENSOR DATA. 1) Start the engine. 2) While observing the Subaru Select Monitor or OBD-II general scan tool screen, warm-up the engine until coolant temperature is above 70°C (160°F). If the engine is already warmed-up, operate at idle speed for at least 1 minute. 3) Read the data of front oxygen (A/F) sensor signal during idling using Subaru Select Monitor or OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4so)-32,="" monitor.="" select="" subaru="" to=""></ref.> OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool 		Go to step 3.	Go to step 4.
3	 CHECK FRONT OXYGEN (A/F) SENSOR DATA. Race the engine at speeds from idling to 5,000 rpm for a total of 5 cycles. NOTE: Air fuel ratio is rich at normal condition or during racing. To increase engine speed to 5,000 rpm, slowly depress accelerator pedal, taking approximately 5 seconds, and quickly release accelerator pedal to decrease engine speed. 	Is the voltage more than 1.1 V?	Go to step 6.	Go to step 4 .
4	 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and front oxygen (A/F) sensor connector. 3) Measure the resistance between ECM and front oxygen (A/F) sensor. <i>Connector & terminals</i> (B136) No. 13 — (B18) No. 1: (B136) No. 22 — (B18) No. 2: 	Is the resistance less than 5 Ω ?	Go to step 5.	Repair open circuit between ECM and front oxygen (A/F) sensor.
5	CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR. Measure the resistance between ECM and chassis ground. Connector & terminals (B136) No. 13 — Chassis ground: (B136) No. 22 — Chassis ground:	Is the resistance more than 1 $M\Omega$?	Go to step 6 .	Repair ground short circuit between ECM and front oxygen (A/F) sensor.

	Step	Check	Yes	No
6	CHECK EXHAUST SYSTEM. Check exhaust system parts.	Is there a fault in exhaust system?	Repair or replace faulty parts.	Replace the front oxygen (A/F) sen-
	 NOTE: Check the following items. Loose installation of portions Damage (crack, hole etc.) of parts Looseness of front oxygen (A/F) sensor Looseness and ill fitting of parts between front oxygen (A/F) sensor and rear oxygen sensor 			sor. <ref. to<br="">FU(H4SO)-42, Front Oxygen (A/ F) Sensor.></ref.>

CK:DTC P1400 — FUEL TANK PRESSURE CONTROL SOLENOID VALVE CIR-CUIT LOW —

DTC DETECTING CONDITION:

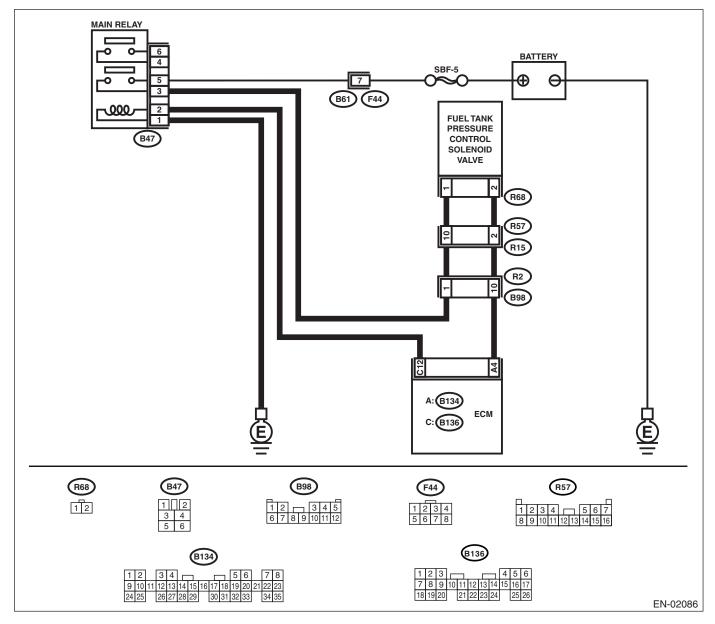
• Two consecutive driving cycles with fault

• GENERAL DESCRIPTION < Ref. to GD(H4SO)-209, DTC P1400 — FUEL TANK PRESSURE CONTROL SOLENOID VALVE CIRCUIT LOW —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to EN(H4SO)-49, OPERATION, Clear Memory Mode.> and INSPECTION MODE <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	 CHECK OUTPUT SIGNAL FROM ECM. 1) Turn ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 4 (+) — Chassis ground (-): 	Is the voltage more than 10 V?	Go to step 2 .	Go to step 3 .
2	CHECK FOR POOR CONTACT. Check for poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair poor con- tact in ECM con- nector.	Contact SOA Ser- vice Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.

EN(H4SO)-279

DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
3	 CHECK HARNESS BETWEEN FUEL TANK PRESSURE CONTROL SOLENOID VALVE AND ECM CONNECTOR. 1) Turn ignition switch to OFF. 2) Disconnect the connectors from fuel tank pressure control solenoid valve and ECM. 3) Measure the resistance of harness between fuel tank pressure control solenoid valve connector and chassis ground. Connector & terminal (R68) No. 2 — Chassis ground: 	Is the resistance less than 10 Ω?	Repair short circuit to ground in har- ness between ECM and fuel tank pressure control solenoid valve connector.	Go to step 4.
4	CHECK HARNESS BETWEEN FUEL TANK PRESSURE CONTROL SOLENOID VALVE AND ECM CONNECTOR. Measure the resistance of harness between ECM and fuel tank pressure control solenoid valve connector. Connector & terminal (B134) No. 4 — (R68) No. 2:	Is the resistance less than 1 Ω?	Go to step 5.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between ECM and fuel tank pressure control solenoid valve connector • Poor contact in coupling connector
5	CHECK FUEL TANK PRESSURE CONTROL SOLENOID VALVE. Measure the resistance between fuel tank pressure control solenoid valve terminals. <i>Terminals</i> (<i>R68</i>) No. 1 — (<i>R68</i>) No. 2:	Is the resistance 10 — 100 Ω?	Go to step 6.	Replace the fuel tank pressure con- trol solenoid valve. <ref. to<br="">EC(H4SO)-7, Purge Control Solenoid Valve.></ref.>
6	CHECK POWER SUPPLY TO FUEL TANK PRESSURE CONTROL SOLENOID VALVE. 1) Turn ignition switch to ON. 2) Measure the voltage between fuel tank pressure control solenoid valve and chassis ground. Connector & terminal (R68) No. 1 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 7.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between main relay and fuel tank pressure con- trol solenoid valve connector • Poor contact in coupling connector • Poor contact in main relay connec- tor
7	CHECK FOR POOR CONTACT. Check for poor contact in fuel tank pressure control solenoid valve connector.	Is there poor contact in fuel tank pressure control solenoid valve connector?	Repair poor con- tact in fuel tank pressure control solenoid valve connector.	Contact SOA Ser- vice Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.

CL:DTC P1420 — FUEL TANK PRESSURE CONTROL SOLENOID VALVE CIR-CUIT HIGH —

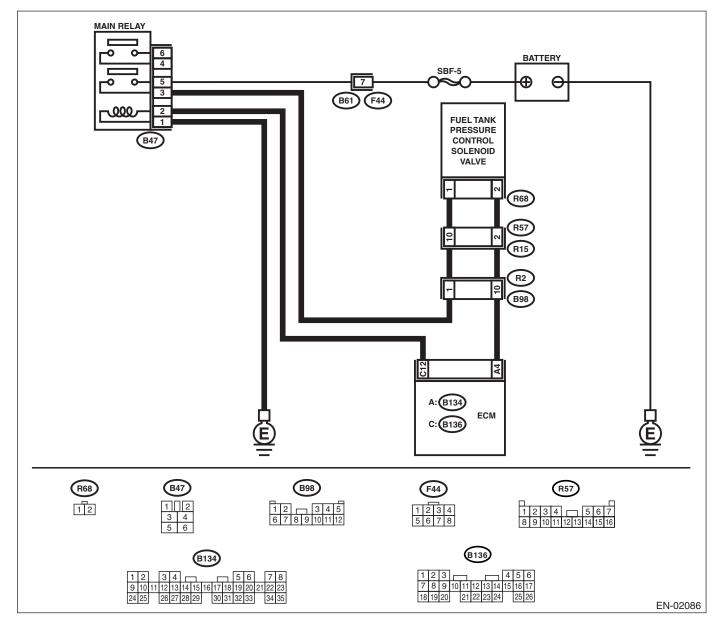
DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

• GENERAL DESCRIPTION < Ref. to GD(H4SO)-211, DTC P1420 — FUEL TANK PRESSURE CONTROL SOL. VALVE CIRCUIT HIGH —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to EN(H4SO)-49, OPERATION, Clear Memory Mode.> and INSPECTION MODE <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



Check Yes No Step CHECK INPUT SIGNAL FOR ECM. Is the voltage 0 — 10 V? The malfunction 1 Go to step 2. 1) Turn ignition switch to OFF. indicator light may 2) Connect the test mode connector at the light up, however, lower portion of instrument panel (on the the circuit is driver's side). returned to the 3) Turn ignition switch to ON. normal status at 4) While operating the fuel tank pressure conthe moment. In trol solenoid valve, measure voltage between this case, repair ECM and chassis ground. poor contact in ECM connector. NOTE: Fuel tank pressure control solenoid valve operation can be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <Ref. to EN(H4SO)-50, Compulsory Valve Operation Check Mode.> **Connector & terminal** (B134) No. 4 (+) — Chassis ground (–): CHECK INPUT SIGNAL FOR ECM. 2 Is the voltage more than 10 V? Go to step 4. Go to step 3. 1) Turn ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 4 (+) — Chassis ground (–): CHECK FOR POOR CONTACT. Replace the ECM. 3 Is there poor contact in ECM Repair poor con-Check for poor contact in ECM connector. connector? tact in ECM con-<Ref. to nector. FU(H4SO)-46, Engine Control Module (ECM).> CHECK HARNESS BETWEEN FUEL TANK Is the voltage more than 10 V? Repair short circuit Go to step 5. 4 PRESSURE CONTROL SOLENOID VALVE to battery in har-AND ECM CONNECTOR. ness between 1) Turn ignition switch to OFF. ECM and fuel tank 2) Disconnect the connector from fuel tank pressure control pressure control solenoid valve. solenoid valve 3) Turn ignition switch to ON. connector. After 4) Measure the voltage between ECM and repair, replace the chassis ground. ECM. <Ref. to Connector & terminal FU(H4SO)-46, (B134) No. 4 (+) — Chassis ground (–): **Engine Control** Module (ECM).> CHECK FUEL TANK PRESSURE CONTROL Is the resistance less than 1 Replace the fuel Go to step 6. 5 tank pressure con-SOLENOID VALVE. Ω ? 1) Turn ignition switch to OFF. trol solenoid valve 2) Measure the resistance between fuel tank <Ref. to EC(H4SO)-13, pressure control solenoid valve terminals. Terminals Pressure Control (R68) No. 1 - (R68) No. 2: Solenoid Valve.> and the ECM <Ref. to FU(H4SO)-46, Engine Control Module (ECM).>. CHECK FOR POOR CONTACT. Is there poor contact in ECM Repair poor con-Replace the ECM. 6 Check for poor contact in ECM connector. connector? tact in ECM con-<Ref. to nector. FU(H4SO)-46, Engine Control Module (ECM).>

CM:DTC P1443 — VENT CONTROL SOLENOID VALVE FUNCTION PROBLEM — DTC DETECTING CONDITION:

• Immediately at fault recognition

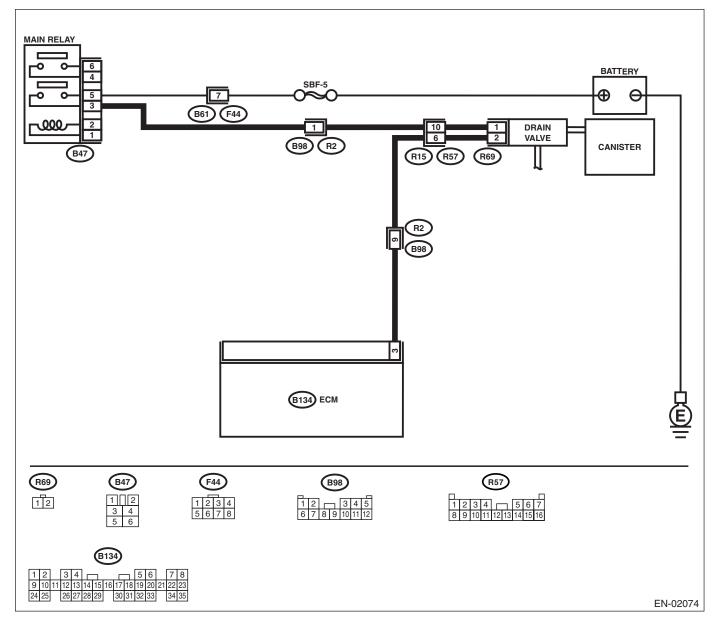
• GENERAL DESCRIPTION <Ref. to GD(H4SO)-213, DTC P1443 — VENT CONTROL SOLENOID VALVE FUNCTION PROBLEM —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Improper fuel supply

CAUTION:

After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to EN(H4SO)-49, OPERATION, Clear Memory Mode.> and INSPECTION MODE <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	CHECK FOR 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(H4SO)-77, List of Diagnostic Trou- ble Code (DTC).></ref.>	Go to step 2.
2	 CHECK VENT LINE HOSES. Check the following items. Clogging of vent hoses between canister and drain valve Clogging of vent hose between drain valve and air filter Clogging of drain filter 	Is there a fault in vent line?	Repair or replace faulty parts.	Go to step 3.
3	 CHECK DRAIN VALVE OPERATION. 1) Turn ignition switch to OFF. 2) Connect the test mode connector at the lower portion of instrument panel (on the driver's side). 3) Turn ignition switch to ON. 4) Operate the drain valve. NOTE: Drain valve operation can also be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <ref. check="" compulsory="" en(h4so)-50,="" mode.="" operation="" to="" valve=""></ref.> 		Contact SOA Ser- vice Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.	Replace the drain valve. <ref. to<br="">EC(H4SO)-19, Drain Valve.></ref.>

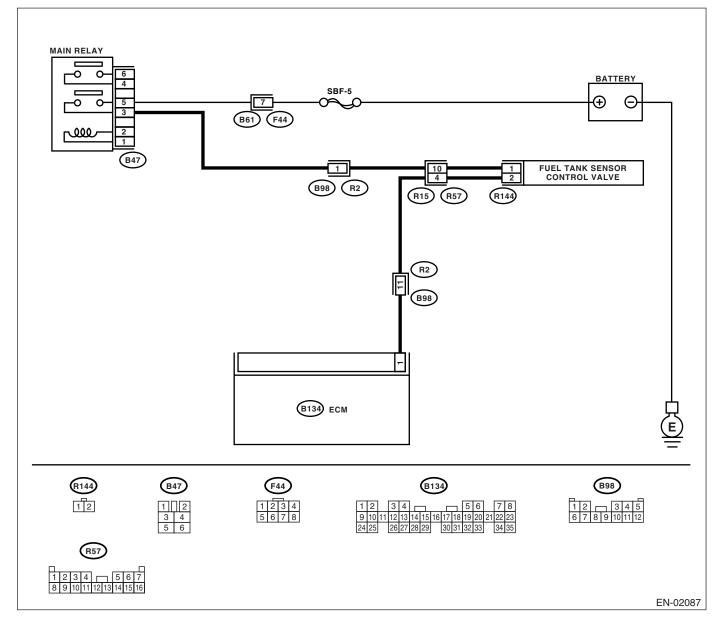
CN:DTC P1446 — FUEL TANK SENSOR CONTROL VALVE CIRCUIT LOW — DTC DETECTING CONDITION:

• Two consecutive driving cycles with fault

• GENERAL DESCRIPTION <Ref. to GD(H4SO)-214, DTC P1446 — FUEL TANK SENSOR CONTROL VALVE CIRCUIT LOW —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to EN(H4SO)-49, OPERATION, Clear Memory Mode.> and INSPECTION MODE <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



1	Step	Check	Yes	No
1	CHECK OUTPUT SIGNAL FROM ECM.	Is the voltage more than 10 V?		Go to step 3 .
	 Turn ignition switch to ON. Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 1 (+) — Chassis ground (-): 		uu u siep z.	do to step 3 .
-		le there peer contact in FCM	Densir neer een	The molfunction
2	CHECK FOR POOR CONTACT. Check for poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair poor con- tact in ECM con- nector.	The malfunction indicator light may light up, however, the circuit is returned to the normal status at the moment. (However, the pos- sibility of poor con- tact still remains.) NOTE: In this case, repair the following: • Poor contact in fuel tank sensor control valve con- nector • Poor contact in ECM connector • Poor contact in coupling connector
3	 CHECK HARNESS BETWEEN FUEL TANK SENSOR CONTROL VALVE AND ECM CON- NECTOR. 1) Turn ignition switch to OFF. 2) Disconnect the connectors from fuel tank sensor control valve and ECM. 3) Measure the resistance of harness between fuel tank sensor control valve connec- tor and chassis ground. Connector & terminal (R144) No. 2 — Chassis ground: 		Go to step 4 .	Repair short circuit to ground in har- ness between ECM and fuel tank sensor control valve connector.
4	CHECK HARNESS BETWEEN FUEL TANK SENSOR CONTROL VALVE AND ECM CON- NECTOR. Measure the resistance of harness between ECM and fuel tank sensor control valve con- nector. Connector & terminal (B134) No. 1 — (R144) No. 2:	Is the resistance less than 1 Ω ?	Go to step 5 .	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between ECM and fuel tank sensor control valve connector • Poor contact in coupling connector
5	CHECK FUEL TANK SENSOR CONTROL VALVE. Measure the resistance between fuel tank sen- sor control valve terminals. <i>Terminals</i> (R144) No. 1 — (R144) No. 2:	Is the resistance $10 - 100 \Omega$?	Go to step 6 .	Replace the fuel tank sensor con- trol valve. <ref. to<br="">EC(H4SO)-19, Drain Valve.></ref.>

	Step	Check	Yes	No
6	 CHECK POWER SUPPLY TO FUEL TANK SENSOR CONTROL VALVE. 1) Turn ignition switch to ON. 2) Measure the voltage between fuel tank sensor control valve and chassis ground. 	Is the voltage more than 10 V?	Go to step 7.	Repair harness and connector. NOTE: In this case, repair the following:
	Connector & terminal (R144) No. 1 (+) — Chassis ground (–):			 Open circuit in harness between main relay and fuel tank sensor con- trol valve Poor contact in coupling connector Poor contact in main relay connec- tor
7	CHECK FOR POOR CONTACT. Check for poor contact in fuel tank sensor con- trol valve connector.	Is there poor contact in fuel tank sensor control valve con- nector?	Repair poor con- tact in fuel tank sensor control valve connector.	Contact SOA Ser- vice Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.

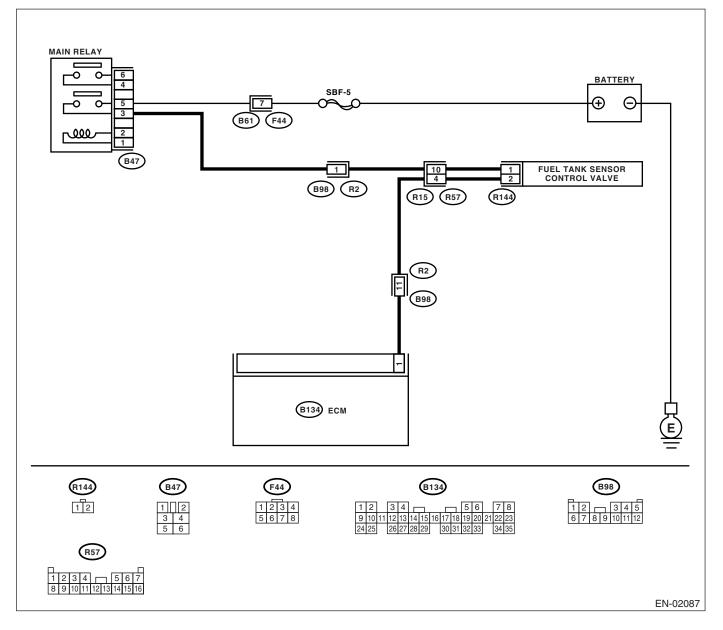
CO:DTC P1447 — FUEL TANK SENSOR CONTROL VALVE CIRCUIT HIGH — DTC DETECTING CONDITION:

· Two consecutive driving cycles with fault

• GENERAL DESCRIPTION <Ref. to GD(H4SO)-216, DTC P1447 — FUEL TANK SENSOR CONTROL VALVE CIRCUIT HIGH —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to EN(H4SO)-49, OPERATION, Clear Memory Mode.> and INSPECTION MODE <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	 CHECK OUTPUT SIGNAL FROM ECM. 1) Turn ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 1 (+) — Chassis ground (-): 	Is the voltage more than 10 V?	Go to step 3.	Go to step 2.
2	CHECK FOR POOR CONTACT. Check for poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair poor con- tact in ECM con- nector.	Replace the ECM. <ref. to<br="">FU(H4SO)-46, Engine Control Module (ECM).></ref.>
3	 CHECK HARNESS BETWEEN FUEL TANK SENSOR CONTROL VALVE AND ECM CON- NECTOR. 1) Turn ignition switch to OFF. 2) Disconnect the connector from fuel tank sensor control valve. 3) Turn ignition switch to ON. 4) Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 1 (+) — Chassis ground (-): 	Is the voltage more than 10 V?	Repair short circuit to battery in har- ness between ECM and fuel tank sensor control valve connector. After repair, replace the ECM. <ref. to<br="">FU(H4SO)-46, Engine Control Module (ECM).></ref.>	Go to step 4.
4	 CHECK FUEL TANK SENSOR CONTROL VALVE. 1) Turn ignition switch to OFF. 2) Measure the resistance between fuel tank sensor control valve terminals. <i>Terminals</i> (R144) No. 1 — (R144) No. 2: 	Is the resistance less than 1 Ω ?	Replace the fuel tank sensor con- trol valve <ref. to<br="">EC(H4SO)-19, Drain Valve.> and the ECM <ref. to<br="">FU(H4SO)-46, Engine Control Module (ECM).>.</ref.></ref.>	Go to step 5.
5	CHECK FOR POOR CONTACT. Check for poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair poor con- tact in ECM con- nector.	Replace the ECM. <ref. to<br="">FU(H4SO)-46, Engine Control Module (ECM).></ref.>

CP:DTC P1448 — FUEL TANK SENSOR CONTROL VALVE RANGE/PERFOR-MANCE PROBLEM —

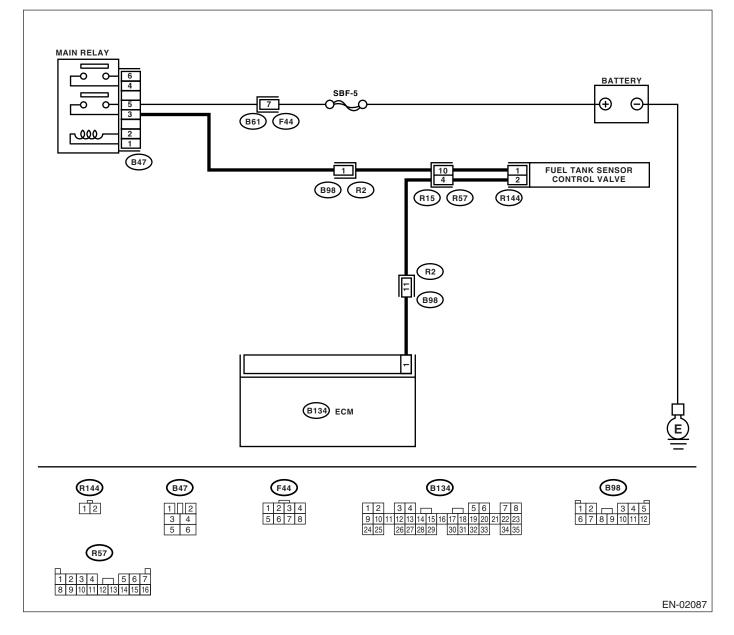
DTC DETECTING CONDITION:

· Two consecutive driving cycles with fault

• GENERAL DESCRIPTION <Ref. to GD(H4SO)-218, DTC P1448 — FUEL TANK SENSOR CONTROL

CAUTION:

After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to EN(H4SO)-49, OPERATION, Clear Memory Mode.> and INSPECTION MODE <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK FOR OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the rele- vant DTC using the "List of Diag- nostic Trouble Code (DTC)". <ref. to<br="">EN(H4SO)-77, List of Diagnostic Trou- ble Code (DTC).></ref.>	Go to step 2.
2	CHECK FUEL FILLER CAP.1) Turn ignition switch to OFF.2) Open the fuel flap.	Is the fuel filler cap tightened securely?	Go to step 3.	Tighten fuel filler cap securely.
3	 CHECK EVAPORATIVE EMISSION LINE. NOTE: Check the following items. Disconnection, leakage and clogging of hoses between fuel tank pressure sensor and fuel tank. Disconnection, leakage and clogging of hoses and pipes between fuel filler pipe and fuel tank. 	Is there any trouble in evapora- tion line?	Repair the hoses and pipes.	Replace the fuel tank pressure sen- sor.

CQ:DTC P1492 — EGR SIGNAL LINE 1 CIRCUIT (LOW) —

NOTE:

For the diagnostic procedure, refer to DTC P1498. <Ref. to EN(H4SO)-293, DTC P1498 — EGR SIGNAL LINE 4 CIRCUIT (LOW) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

CR:DTC P1493 — EGR SIGNAL LINE 1 CIRCUIT (HIGH) —

NOTE:

For the diagnostic procedure, refer to DTC P1499. <Ref. to EN(H4SO)-295, DTC P1499 — EGR SIGNAL LINE 4 CIRCUIT (HIGH), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

CS:DTC P1494 — EGR SIGNAL LINE 2 CIRCUIT (LOW) —

NOTE:

For the diagnostic procedure, refer to DTC P1498. <Ref. to EN(H4SO)-293, DTC P1498 — EGR SIGNAL LINE 4 CIRCUIT (LOW) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

CT:DTC P1495 — EGR SIGNAL LINE 2 CIRCUIT (HIGH) —

NOTE:

For the diagnostic procedure, refer to DTC P1499. <Ref. to EN(H4SO)-295, DTC P1499 — EGR SIGNAL LINE 4 CIRCUIT (HIGH), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

CU:DTC P1496 — EGR SIGNAL LINE 3 CIRCUIT (LOW) —

NOTE:

For the diagnostic procedure, refer to DTC P1498. <Ref. to EN(H4SO)-293, DTC P1498 — EGR SIGNAL LINE 4 CIRCUIT (LOW) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

CV:DTC P1497 — EGR SIGNAL LINE 3 CIRCUIT (HIGH) —

NOTE:

For the diagnostic procedure, refer to DTC P1499. <Ref. to EN(H4SO)-295, DTC P1499 — EGR SIGNAL LINE 4 CIRCUIT (HIGH), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

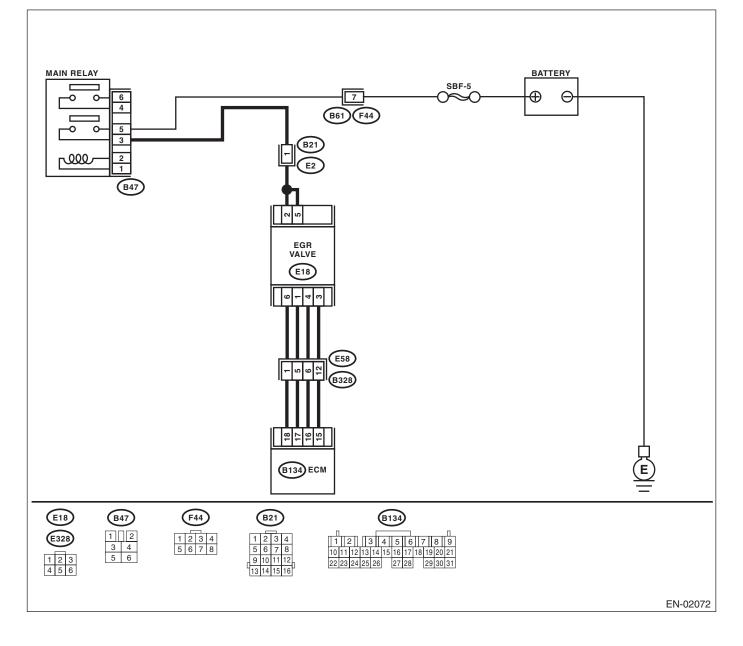
CW:DTC P1498 — EGR SIGNAL LINE 4 CIRCUIT (LOW) —

DTC DETECTING CONDITION: Immediately at fault recognition TROUBLE SYMPTOM:

- Erroneous idling
- Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	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. <i>Connector & terminal</i> (E18) No. 2 (+) — Engine ground (-): (E18) No. 5 (+) — Engine ground (-): 	Is the voltage more than 10 V?	Go to step 2.	Repair harness and connector. 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 resistance between ECM and EGR solenoid valve connector. <i>Connector & terminal</i> DTC P1492; (B134) No. 18 — (E18) No. 6: DTC P1494; (B134) No. 17 — (E18) No. 1: DTC P1496; (B134) No. 16 — (E18) No. 4: DTC P1498; (B134) No. 15 — (E18) No. 3: 	Is the resistance less than 1 Ω ?	Go to step 3.	Repair harness and connector. 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 connector and chassis ground. Connector & terminal DTC P1492; (B134) No. 18 — Chassis ground: DTC P1494; (B134) No. 17 — Chassis ground: DTC P1496; (B134) No. 16 — Chassis ground: DTC P1496; (B134) No. 15 — Chassis ground: 	Is the resistance more than 1 MΩ?	Go to step 4.	Repair ground short circuit in har- ness between ECM and EGR solenoid valve connector.
4	CHECK FOR POOR CONTACT. Check for poor contact in ECM connector and EGR solenoid valve connector.	Is there poor contact in ECM connector or EGR solenoid valve connector?	Repair poor con- tact in ECM con- nector or EGR solenoid valve connector.	Replace the EGR solenoid valve. <ref. to<br="">FU(H4SO)-33, Idle Air Control Sole- noid Valve.></ref.>

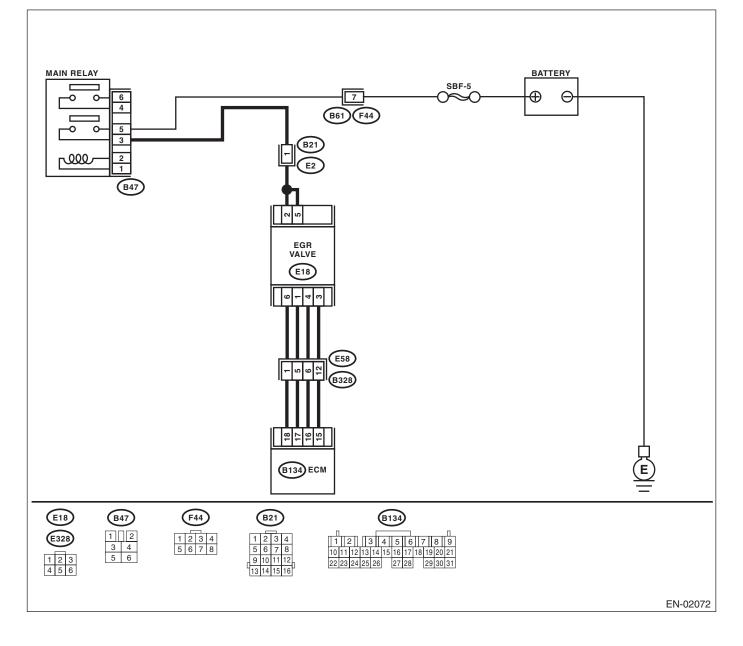
CX:DTC P1499 — EGR SIGNAL LINE 4 CIRCUIT (HIGH)

DTC DETECTING CONDITION: Immediately at fault recognition TROUBLE SYMPTOM:

- Erroneous idling
- Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Go to step 2.	Go to step 3.
2	 CHECK GROUND CIRCUIT FOR ECM. 1) Turn the ignition switch to OFF. 2) Measure the resistance between ECM connector and chassis ground. Connector & terminal (B134) No. 7 — Chassis ground: (B137) No. 14 — Chassis ground: (B135) No. 21 — Chassis ground: 	Is the resistance less than 5 Ω?	Go to step 3.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between ECM connector and engine ground terminal • Poor contact in ECM connector • Poor contact in coupling connector
3	 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. 18 (+) — Chassis ground (-): DTC P1495; (B134) No. 17 (+) — Chassis ground (-): DTC P1497; (B134) No. 16 (+) — Chassis ground (-): DTC P1499; (B134) No. 15 (+) — Chassis ground (-): 	Is the voltage more than 10 V?	Repair battery short circuit in har- ness between ECM and EGR solenoid valve connector. After repair, replace the ECM. <ref. to<br="">FU(H4SO)-46, Engine Control Module (ECM).></ref.>	Replace the ECM. <ref. to<br="">FU(H4SO)-46, Engine Control Module (ECM).></ref.>

CY:DTC P1510 — ISC SOLENOID VALVE SIGNAL #1 CIRCUIT MALFUNCTION (LOW INPUT) —

NOTE:

For the diagnostic procedure, refer to DTC P1516. <Ref. to EN(H4SO)-298, DTC P1516 — ISC SOLENOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (LOW INPUT) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

CZ:DTC P1511 — ISC SOLENOID VALVE SIGNAL #1 CIRCUIT MALFUNCTION (HIGH INPUT) —

NOTE:

For the diagnostic procedure, refer to DTC P1517. <Ref. to EN(H4SO)-300, DTC P1517 — ISC SOLENOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (HIGH INPUT) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

DA:DTC P1512 — ISC SOLENOID VALVE SIGNAL #2 CIRCUIT MALFUNCTION (LOW INPUT) —

NOTE:

For the diagnostic procedure, refer to DTC P1516. <Ref. to EN(H4SO)-298, DTC P1516 — ISC SOLENOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (LOW INPUT) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

DB:DTC P1513 — ISC SOLENOID VALVE SIGNAL #2 CIRCUIT MALFUNCTION (HIGH INPUT) —

NOTE:

For the diagnostic procedure, refer to DTC P1517. <Ref. to EN(H4SO)-300, DTC P1517 — ISC SOLENOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (HIGH INPUT) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

DC:DTC P1514 — ISC SOLENOID VALVE SIGNAL #3 CIRCUIT MALFUNCTION (LOW INPUT) —

NOTE:

For the diagnostic procedure, refer to DTC P1516. <Ref. to EN(H4SO)-298, DTC P1516 — ISC SOLENOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (LOW INPUT) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

DD:DTC P1515 — ISC SOLENOID VALVE SIGNAL #3 CIRCUIT MALFUNCTION (HIGH INPUT) —

NOTE:

For the diagnostic procedure, refer to DTC P1517. <Ref. to EN(H4SO)-300, DTC P1517 — ISC SOLENOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (HIGH INPUT) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

DE:DTC P1516 — ISC SOLENOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (LOW INPUT) —

DTC DETECTING CONDITION:

Immediately at fault recognition

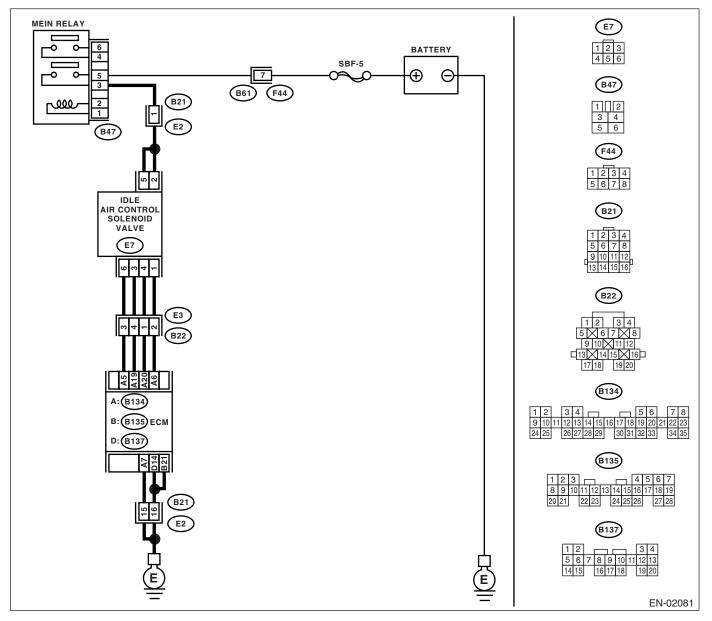
• GENERAL DESCRIPTION <Ref. to GD(H4SO)-250, DTC P1516 — ISC SOLENOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (LOW INPUT) —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Engine breathing

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



<u> </u>	Step	Check	Yes	No
1	 CHECK POWER SUPPLY TO IDLE AIR CONTROL SOLENOID VALVE. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from idle air control solenoid valve. 3) Turn the ignition switch to ON. 4) Measure the voltage between idle air control solenoid valve connector and engine ground. Connector & terminal (E7) No. 2 (+) — Engine ground (-): (E7) No. 5 (+) — Engine ground (-): 	Is the voltage more than 10 V?	Go to step 2.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between idle air control solenoid valve and main relay connec- tor • Poor contact in coupling connector
2	 CHECK HARNESS BETWEEN ECM AND IDLE AIR CONTROL SOLENOID VALVE CONNECTOR. 1) Turn the ignition switch to OFF. 2) Measure the resistance between ECM and idle air control solenoid valve connector. Connector & terminal DTC P1510; (B134) No. 20 — (E7) No. 4: DTC P1512; (B134) No. 6 — (E7) No. 1: DTC P1514; (B134) No. 5 — (E7) No. 6: DTC P1516; (B134) No. 19 — (E7) No. 3: 	Is the resistance less than 1 Ω ?	Go to step 3.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between ECM and idle air control solenoid valve connector • Poor contact in coupling connector
3	CHECK HARNESS BETWEEN ECM AND IDLE AIR CONTROL SOLENOID VALVE CONNECTOR. 1) Disconnect the connector from ECM. 2) Measure the resistance between ECM con- nector and chassis ground. Connector & terminal DTC P1510; (B134) No. 20 — Chassis ground: DTC P1512; (B134) No. 6 — Chassis ground: DTC P1514; (B134) No. 5 — Chassis ground: DTC P1516; (B134) No. 19 — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 4.	Repair ground short circuit in har- ness between ECM and idle air control solenoid valve connector.
4	CHECK POOR CONTACT. Check poor contact in ECM connector and idle air control solenoid valve connector.	Is there poor contact in ECM connector or idle air control solenoid valve connector?	Repair poor con- tact in ECM con- nector or idle air control solenoid valve connector.	Replace the idle air control solenoid valve. <ref. to<br="">FU(H4SO)-33, Idle Air Control Sole- noid Valve.></ref.>

DF:DTC P1517 — ISC SOLENOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (HIGH INPUT) —

DTC DETECTING CONDITION:

Immediately at fault recognition

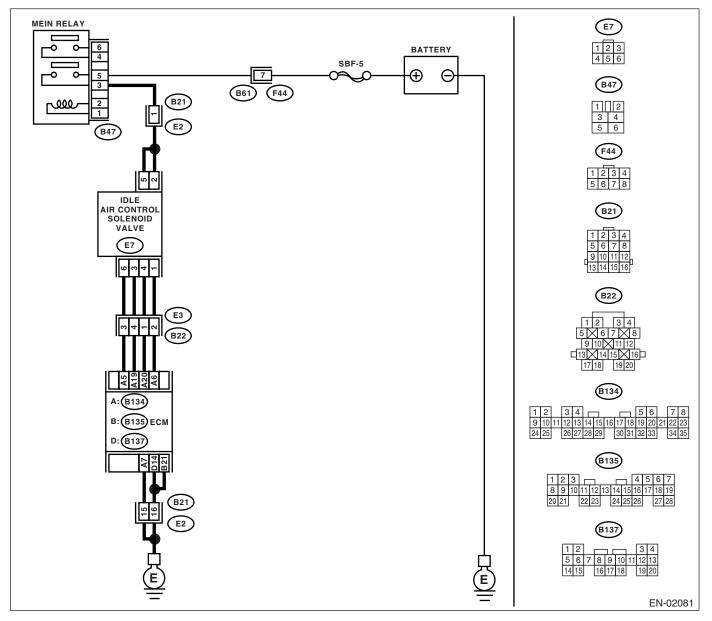
• GENERAL DESCRIPTION <Ref. to GD(H4SO)-252, DTC P1517 — ISC SOLENOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (HIGH INPUT) —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Engine breathing

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



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	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Go to step 2.	Go to step 3.
2	 CHECK GROUND CIRCUIT FOR ECM. 1) Turn the ignition switch to OFF. 2) Measure the resistance between ECM connector and chassis ground. Connector & terminal (B134) No. 7 — Chassis ground: (B137) No. 14 — Chassis ground: (B137) No. 21 — Chassis ground: 	Is the resistance less than 5 Ω?	Go to step 3.	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between ECM connector and engine ground terminal • Poor contact in ECM connector • Poor contact in coupling connector
3	CHECK HARNESS BETWEEN ECM AND IDLE AIR CONTROL SOLENOID VALVE CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from idle air con- trol solenoid valve. 3) Turn the ignition switch to ON. 4) Measure the voltage between ECM con- nector and chassis ground. Connector & terminal DTC P1511; (B134) No. 20 (+) — Chassis ground (-): DTC P1513; (B134) No. 6 (+) — Chassis ground (-): DTC P1515; (B134) No. 5 (+) — Chassis ground (-): DTC P1517; (B134) No. 19 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Repair battery short circuit in har- ness between ECM and idle air control solenoid valve connector. After repair, replace the ECM. <ref. to<br="">FU(H4SO)-46, Engine Control Module (ECM).></ref.>	Replace the ECM. <ref. to<br="">FU(H4SO)-46, Engine Control Module (ECM).></ref.>

DG:DTC P1518 — STARTER SWITCH CIRCUIT LOW INPUT —

DTC DETECTING CONDITION:

• Two consecutive driving cycles with fault

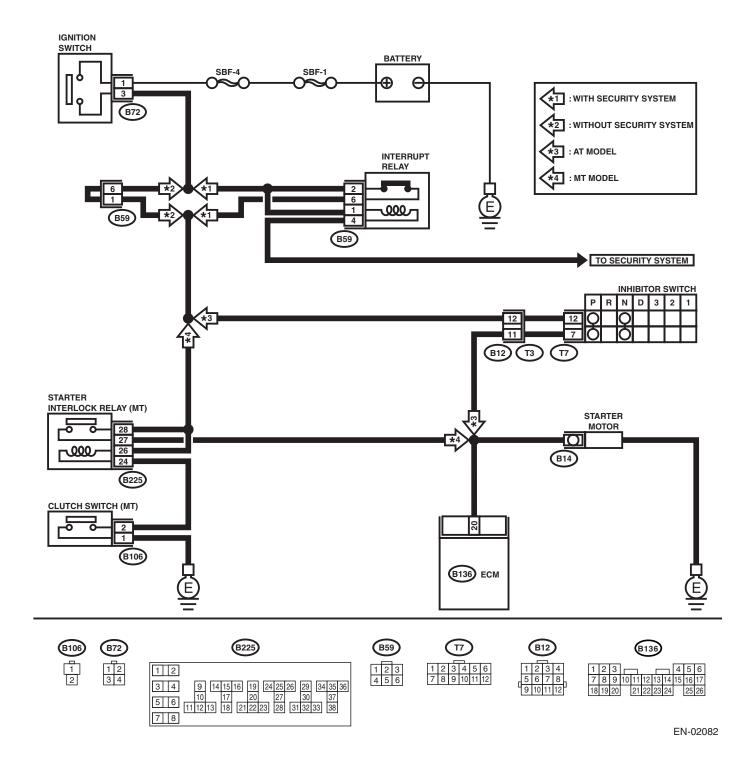
• GENERAL DESCRIPTION < Ref. to GD(H4SO)-254, DTC P1518 — STARTER SWITCH CIRCUIT LOW INPUT —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



Step	Check	Yes	No
1 CHECK OPERATION OF STARTER MOTOR. Place the inhibitor switch in the "P" or "N" range. (AT model) Depress the clutch pedal. (MT model)	when ignition switch is turned to "ST"?	and connector. NOTE: In this case, repair	MOTOR CIR- CUIT, Diagnostics

DH:DTC P1560 — BACK-UP VOLTAGE CIRCUIT MALFUNCTION —

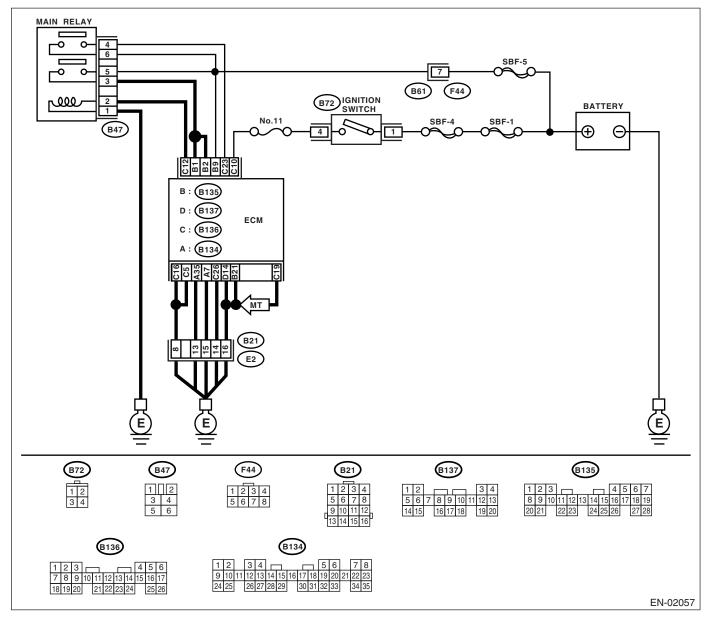
DTC DETECTING CONDITION:

Immediately at fault recognition

• GENERAL DESCRIPTION < Ref. to GD(H4SO)-255, DTC P1560 — BACK-UP VOLTAGE CIRCUIT MAL-FUNCTION —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



Step Check Yes No CHECK INPUT SIGNAL FOR ECM. Is the voltage more than 10 V? Repair poor con-Go to step 2. 1 1) Turn the ignition switch to OFF. tact in ECM con-2) Measure the voltage between ECM and nector. chassis ground. **Connector & terminal** (B135) No. 9 (+) — Chassis ground (-): CHECK HARNESS BETWEEN ECM AND 2 Is the resistance less than 10 Repair ground Go to step 3. MAIN FUSE BOX CONNECTOR. Ω? short circuit in har-1) Disconnect the connector from ECM. ness between 2) Measure the resistance of harness ECM connector between ECM and chassis ground. and battery termi-Connector & terminal nal. (B135) No. 9 — Chassis ground: CHECK FUSE SBF-5. 3 Is the fuse blown out? Replace the fuse. Repair harness and connector. NOTE: In this case, repair the following: Open circuit in harness between ECM and battery Poor contact in ECM connector Poor contact in battery terminal

DI: DTC P1698 — ENGINE TORQUE CONTROL CUT SIGNAL CIRCUIT LOW IN-PUT —

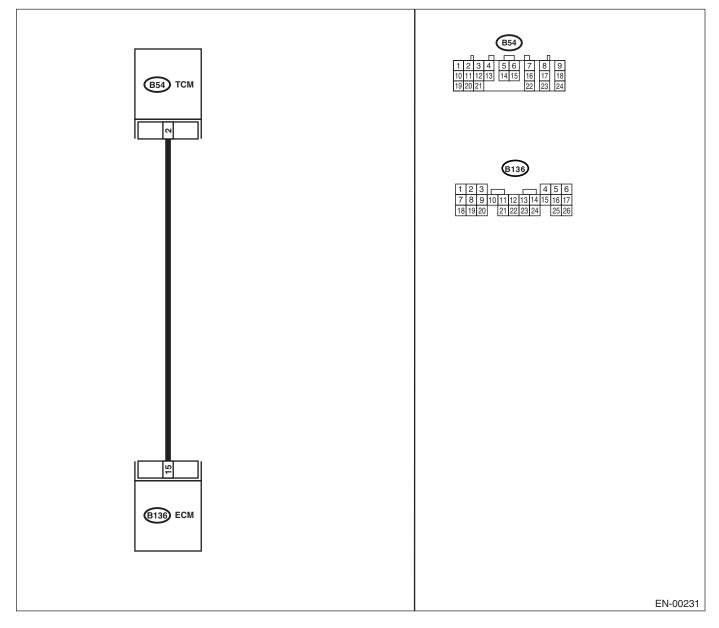
DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

• GENERAL DESCRIPTION < Ref. to GD(H4SO)-256, DTC P1698 — ENGINE TORQUE CONTROL CUT SIGNAL CIRCUIT MALFUNCTION (LOW INPUT) —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



[]	Step	Check	Yes	No
1	 CHECK OUTPUT SIGNAL FROM ECM. 1) Start the engine, and warm-up the engine. 2) Turn the ignition switch to OFF. 3) Turn the ignition switch to ON. 4) Measure the voltage between ECM and chassis ground. Connector & terminal (B136) No. 15 (+) — Chassis ground (-): 	Is the voltage more than 3 V?	Repair poor con- tact in ECM con- nector.	Go to step 2.
2	 CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and TCM. 3) Measure the resistance of harness between ECM and chassis ground. Connector & terminal (B136) No. 15 — Chassis ground: 	Is the resistance more than 1 $M\Omega$?	Go to step 3.	Repair ground short circuit in har- ness between ECM and TCM connector.
3	CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR. Measure the resistance of harness between ECM and TCM connector. Connector & terminal (B136) No. 15 — (B54) No. 2:	Is the resistance less than 1 Ω ?	Repair poor con- tact in ECM or TCM connector.	Repair open circuit in harness between ECM and TCM connector.

DJ:DTC P1699 — ENGINE TORQUE CONTROL CUT SIGNAL CIRCUIT HIGH IN-PUT —

DTC DETECTING CONDITION:

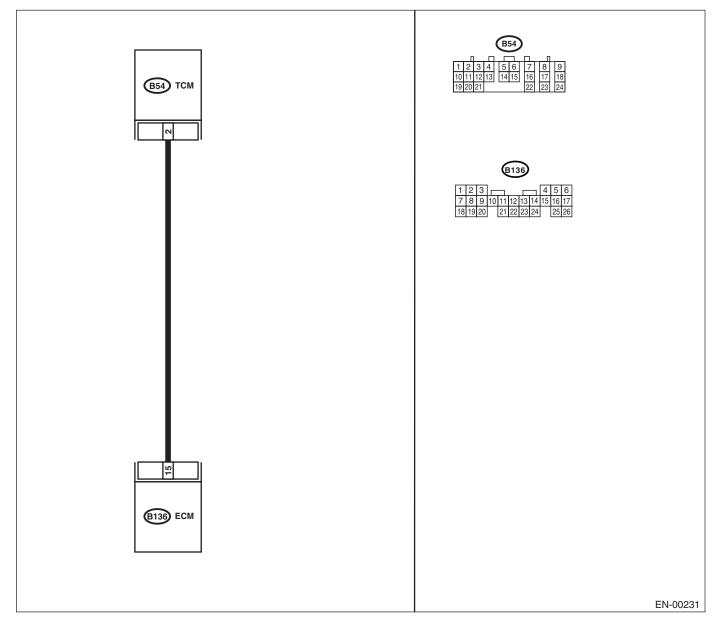
Two consecutive driving cycles with fault

GENERAL DESCRIPTION < Ref. to GD(H4SO)-257, DTC P1699 — ENGINE TORQUE CONTROL CUT

SIGNAL CIRCUIT MALFUNCTION (HIGH INPUT) -, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



Step Check Yes No CHECK OUTPUT SIGNAL FROM ECM. Is the voltage less than 3 V? Go to step 2. 1 Repair battery 1) Start the engine, and warm-up the engine. short circuit in har-2) Turn the ignition switch to OFF. ness between 3) Disconnect the connector from TCM. ECM and TCM 4) Turn the ignition switch to ON. connector. After 5) Measure the voltage between ECM and repair, replace the chassis ground. ECM. <Ref. to **Connector & terminal** FU(H4SO)-46, (B136) No. 15 (+) — Chassis ground (-): **Engine Control** Module (ECM).> 2 CHECK HARNESS BETWEEN ECM AND Is the voltage more than 10 V Repair battery Contact SOA Ser-TCM CONNECTOR. by shaking the harness and short circuit in harvice Center. 1) Turn the ignition switch to OFF. connector of ECM? ness between NOTE: 2) Measure the voltage between ECM and ECM and TCM Inspection by DTM chassis ground. connector. After is required, be-**Connector & terminal** repair, replace the cause probable (B136) No. 15 (+) — Chassis ground (-): ECM. <Ref. to cause is deteriora-FU(H4SO)-46, tion of multiple **Engine Control** parts. Module (ECM).>

DK:DTC P1711 — ENGINE TORQUE CONTROL SIGNAL 1 CIRCUIT MALFUNC-TION —

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

• GENERAL DESCRIPTION < Ref. to GD(H4SO)-260, DTC P1711 — ENGINE TORQUE CONTROL SIG-

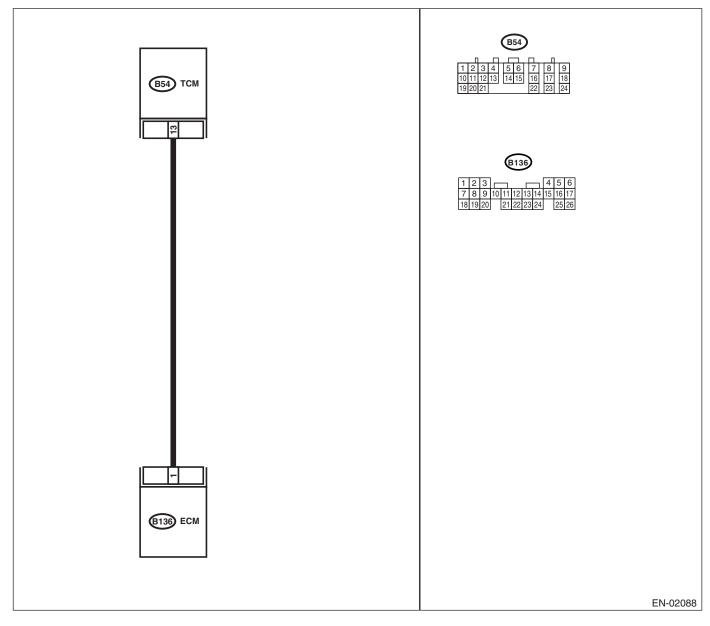
NAL #1 CIRCUIT MALFUNCTION -, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Excessive shift shock

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	 CHECK INPUT SIGNAL FOR ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B136) No. 1 (+) — Chassis ground (-): 	Is the voltage more than 4.5 V?	Go to step 2.	Go to step 4.
2	CHECK INPUT SIGNAL FOR ECM. Measure the voltage between ECM and chas- sis ground. Connector & terminal (B136) No. 1 (+) — Chassis ground (–):	Is the voltage more than 10 V?	Repair battery short circuit in har- ness between ECM and TCM connector.	Go to step 3 .
3	CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair poor con- tact in ECM con- nector.	Replace the ECM. <ref. to<br="">FU(H4SO)-46, Engine Control Module (ECM).></ref.>
4	 CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and TCM. 3) Measure the resistance of harness between ECM and TCM connector. Connector & terminal (B136) No. 1 – (B54) No. 13: 	Is the resistance less than 1 Ω?	Go to step 5 .	Repair open circuit in harness between ECM and TCM connector.
5	CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR. Measure the resistance of harness between ECM and chassis ground. Connector & terminal (B136) No. 1 — Chassis ground:	Is the resistance more than 1 $M\Omega$?	Go to step 6 .	Repair ground short circuit in har- ness between ECM and TCM connector.
6	CHECK POOR CONTACT. Check poor contact in TCM connector.	Is there poor contact in TCM connector?	Repair poor con- tact in TCM con- nector.	Replace the TCM. <ref. 4at-77,<br="" to="">Transmission Con- trol Module (TCM).></ref.>

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

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

• GENERAL DESCRIPTION < Ref. to GD(H4SO)-261, DTC P1712 - ENGINE TORQUE CONTROL SIG-

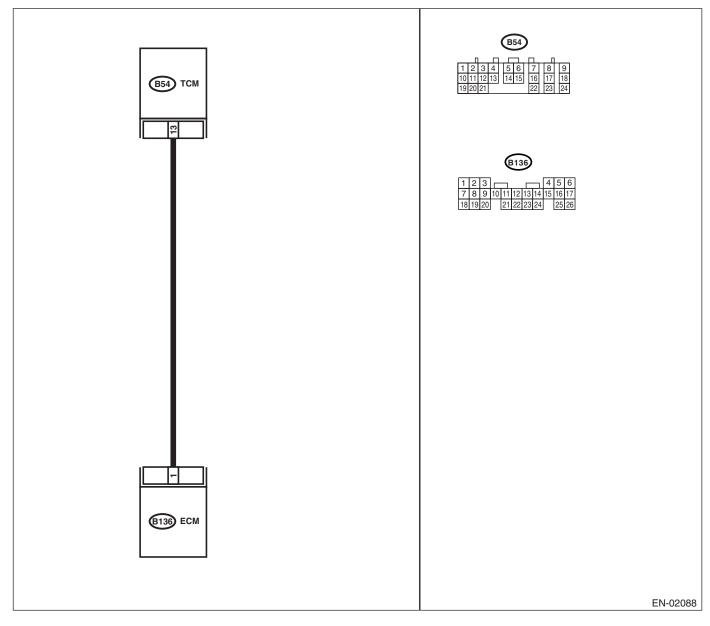
NAL #2 CIRCUIT MALFUNCTION -, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Excessive shift shock

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



Step Check Yes No CHECK INPUT SIGNAL FOR ECM. Is the voltage more than 4.5 V? Go to step 2. 1 Go to step 4. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. **Connector & terminal** (B136) No. 18 (+) — Chassis ground (-): CHECK INPUT SIGNAL FOR ECM. 2 Is the voltage more than 10 V? Repair battery Go to step 3. Measure the voltage between ECM and chasshort circuit in harsis ground. ness between **Connector & terminal** ECM and TCM (B136) No. 18 (+) — Chassis ground (-): connector. CHECK POOR CONTACT. 3 Is there poor contact in ECM Repair poor con-Replace the ECM. connector? tact in ECM con-<Ref. to Check poor contact in ECM connector. FU(H4SO)-46, nector. Engine Control Module (ECM).> 4 CHECK HARNESS BETWEEN ECM AND Repair open circuit Is the resistance less than 1 Go to step 5. TCM CONNECTOR. $\Omega?$ in harness 1) Turn the ignition switch to OFF. between ECM and TCM connector. 2) Disconnect the connectors from ECM and TCM. Measure the resistance of harness between ECM and TCM connector. Connector & terminal (B136) No. 18 — (B54) No. 21: CHECK HARNESS BETWEEN ECM AND 5 Is the resistance more than 1 Go to step 6. Repair ground TCM CONNECTOR. **M**Ω? short circuit in har-Measure the resistance of harness between ness between ECM and chassis ground. ECM and TCM **Connector & terminal** connector. (B136) No. 18 — Chassis ground: 6 CHECK POOR CONTACT. Is there poor contact in TCM Repair poor con-Replace the TCM. connector? tact in TCM con-<Ref. to 4AT-77, Check poor contact in TCM connector. nector. Transmission Control Module (TCM).>

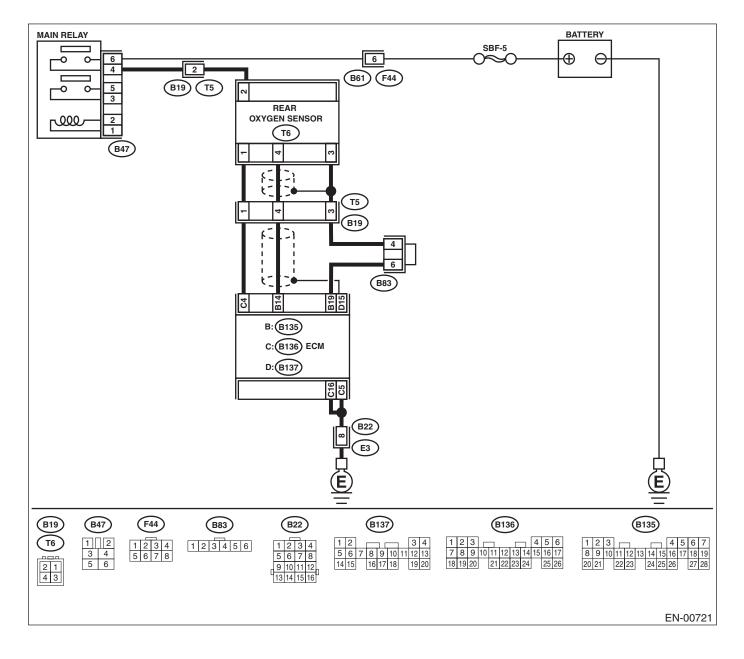
DM:DTC P2096 — POST CATALYST FUEL TRIM SYSTEM TOO LEAN BANK 1 — DTC DETECTING CONDITION:

· Two consecutive driving cycles with fault

• GENERAL DESCRIPTION < Ref. to GD(H4SO)-262, DTC P2096 — POST CATALYST FUEL TRIM SYS-TEM TOO LEAN BANK 1 —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check DTC using "List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(H4SO)-77, List of Diagnostic Trou- ble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0137.</ref.>	Go to step 2.
 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 or OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DIS- PLAY FOR ENGINE". <ref. en(h4so)-32,<br="" to="">Subaru Select Monitor.></ref.> OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool CHECK HARNESS BETWEEN ECM AND 	Is the voltage 490 mV? Is the resistance more than 3 Ω ?	Go to step 5 . Repair open circuit in harness between ECM and rear oxygen sen- sor connector.	Go to step 3 .
 (B135) No. 19 — (T6) No. 3: 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 engine ground or chassis ground. Connector & terminal (T6) No. 4 (+) — Engine ground (-): 	Is the voltage 0.2 — 0.5 V?	Replace the rear oxygen sensor. <ref. to<br="">FU(H4SO)-42, Front Oxygen (A/ F) Sensor.></ref.>	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between rear oxygen sen- sor and ECM con- nector • Poor contact in rear oxygen sen- sor connector • Poor contact in ECM connector

Step	Check	Yes	No
 5 CHECK EXHAUST SYSTEM. Check exhaust system parts. NOTE: Check the following items. Loose installation of portions Damage (crack, hole etc.) of parts Looseness and ill fitting of parts between front oxygen (A/F) sensor and rear oxygen sensor 	Is there a fault in exhaust sys- tem?	Repair or replace faulty parts.	Go to step 6 .
6 CHECK AIR INTAKE SYSTEM.	Are there holes, loose bolts or disconnection of hose on air intake system?	Repair air intake system.	Go to step 7.
7 CHECK PURGE CONTROL SOLENOID VALVE OR PRESSURE CONTROL SOLE- NOID VALVE.	Is the purge control solenoid valve or pressure control sole- noid valve stuck?	Replace the purge control solenoid valve or pressure control solenoid valve.	Go to step 8 .
 8 CHECK FUEL PRESSURE. Warning: Place "NO FIRE" signs near the working area. Be careful not to spill fuel on the floor. 1) Release fuel pressure. (1) Disconnect the connector from fuel pump relay. (2) Start the engine and run it until it stalls. (3) After the engine stalls, crank it for five more seconds. (4) Turn the ignition switch to OFF. 2) Connect the connector to fuel pump relay. 3) Disconnect the fuel delivery hose from fuel filter, and connect fuel pressure gauge. 4) Install the fuel filler cap. 5) Start the engine and idle while gear position is neutral. 6) Measure the fuel pressure while disconnecting pressure regulator vacuum hose from intake manifold. Warning: Before removing the fuel pressure gauge, release fuel pressure. NOTE: If fuel pressure does not increase, squeeze fuel return hose 2 to 3 times, then measure fuel pressure again. 		Go to step 9.	Repair the follow- ing items. Fuel pressure too high • Clogged fuel return line or bent hose Fuel pressure too low • Improper fuel pump discharge • Clogged fuel supply line

	Step	Check	Yes	No
9	 CHECK FUEL PRESSURE. After connecting the pressure regulator vacuum hose, measure fuel pressure. Warning: Before removing the fuel pressure gauge, release fuel pressure. NOTE: If 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 the fuel pressure 206 — 235 kPa (2.1 — 2.4 kg/cm ² , 30 — 34 psi)?	Go to step 10.	Repair the follow- ing items. Fuel pressure too high • Faulty pres- sure regulator • Clogged fuel return line or bent hose Fuel pressure too low • Faulty pres- sure regulator • Improper fuel pump discharge • Clogged fuel supply line
10	 CHECK ENGINE COOLANT TEMPERATURE SENSOR. Start the engine and warm-up completely. Read the data of engine coolant temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4so)-32,="" monitor.="" select="" subaru="" to=""></ref.> OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool 	Is the engine coolant tempera- ture 70 — 100°C (158 — 212°F)?	Go to step 11.	Replace the engine coolant temperature sen- sor. <ref. to<br="">FU(H4SO)-25, Engine Coolant Temperature Sen- sor.></ref.>
11	 CHECK PRESSURE SENSOR SIGNAL. 1) Start the engine and warm-up engine until coolant temperature is greater than 60°C (140°F). 2) Place the select lever in "N" or "P" range. 3) Turn the A/C switch to OFF. 4) Turn all accessory switches to OFF. 5) Read the data of pressure sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4so)-32,="" monitor.="" select="" subaru="" to=""></ref.> OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool. 	Idling: Is the measured value 24.0 — 41.3 kPa (180 — 310 mmHg, 7.09 — 12.20 inHg), Ignition ON: Is the measured value 73.3 — 106.6 kPa (550 — 800 mmHg, 21.65 — 31.50 inHg)?	vice Center. NOTE: Inspection by DTM	Replace the Pres- sure sensor. <ref. to FU(H4SO)-31, Manifold Absolute Pressure Sensor.></ref.

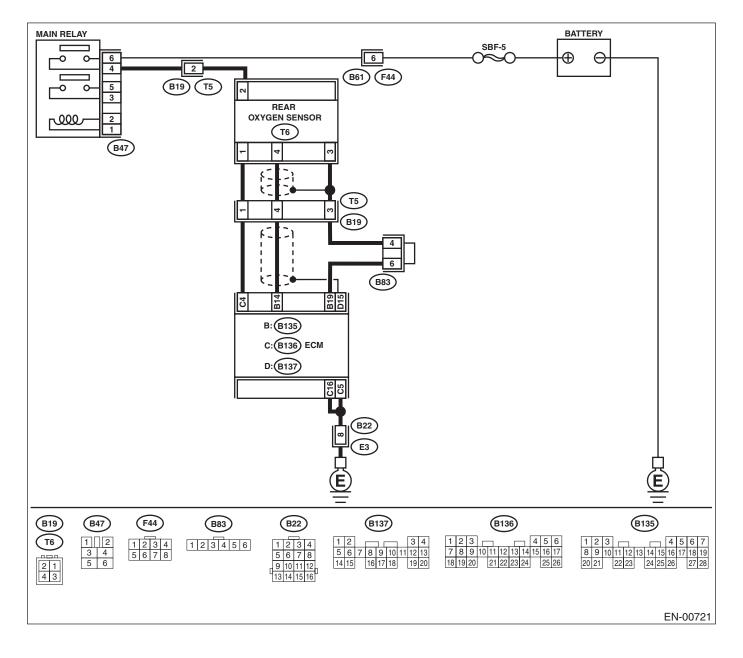
DN:DTC P2097 — POST CATALYST FUEL TRIM SYSTEM TOO RICH BANK 1 — DTC DETECTING CONDITION:

· Two consecutive driving cycles with fault

• GENERAL DESCRIPTION < Ref. to GD(H4SO)-264, DTC P2097 — POST CATALYST FUEL TRIM SYS-TEM TOO RICH BANK 1 —, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4SO)-49, OP-ERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4SO)-40, OPERATION, Inspection Mode.>.



	Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check DTC using "List of Diagnostic Trouble Code (DTC)". <ref. to<br="">EN(H4SO)-77, List of Diagnostic Trou- ble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0138.</ref.>	
2	 CHECK REAR OXYGEN SENSOR DATA. 1) Warm-up the engine until engine coolant temperature is above 70°C (158°F), and immediately decrease the engine speed from 5,000 rpm. 2) Read the data of rear oxygen sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DIS-PLAY FOR ENGINE". <ref. en(h4so)-32,="" monitor.="" select="" subaru="" to=""></ref.> OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool 	Is the voltage 250 mV?	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 connectors from ECM and rear oxygen sensor. 3) Measure the resistance of harness between ECM and rear oxygen sensor con- nector. Connector & terminal (B135) No. 14 — (T6) No. 4: (B135) No. 19 — (T6) No. 3: 	Is the resistance more than 3 Ω?	Repair 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 engine ground or chassis ground. Connector & terminal (T6) No. 4 (+) — Engine ground (-): 	Is the voltage 0.2 — 0.5 V?	Replace the rear oxygen sensor. <ref. to<br="">FU(H4SO)-42, Front Oxygen (A/ F) Sensor.></ref.>	Repair harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between rear oxygen sen- sor and ECM con- nector • Poor contact in rear oxygen sen- sor connector • Poor contact in ECM connector

Step	Check	Yes	No
 5 CHECK EXHAUST SYSTEM. Check exhaust system parts. NOTE: Check the following items. Loose installation of portions Damage (crack, hole etc.) of parts Looseness and ill fitting of parts between front oxygen (A/F) sensor and rear oxygen sensor 	Is there a fault in exhaust sys- tem?	Repair or replace faulty parts.	Go to step 6 .
6 CHECK AIR INTAKE SYSTEM. 7 CHECK PURGE CONTROL SOLENOID VALVE OR PRESSURE CONTROL SOLE- NOID VALVE.	Are there holes, loose bolts or disconnection of hose on air intake system? Is the purge control solenoid valve or pressure control sole- noid valve stuck?	Repair air intake system. Replace the purge control solenoid valve or pressure control solenoid	Go to step 7 . Go to step 8 .
 8 CHECK FUEL PRESSURE. Warning: Place "NO FIRE" signs near the working area. Be careful not to spill fuel on the floor. 1) Release fuel pressure. (1) Disconnect the connector from fuel pump relay. (2) Start the engine and run it until it stalls. (3) After the engine stalls, crank it for five more seconds. (4) Turn the ignition switch to OFF. 2) Connect the connector to fuel pump relay. 3) Disconnect the fuel delivery hose from fuel filter, and connect fuel pressure gauge. 4) Install the fuel filler cap. 5) Start the engine and idle while gear position is neutral. 6) Measure the fuel pressure while disconnecting pressure regulator vacuum hose from intake manifold. Warning: Before removing the fuel pressure gauge, release fuel pressure. NOTE: If fuel pressure does not increase, squeeze fuel return hose 2 to 3 times, then measure fuel pressure again. 		valve. Go to step 9 .	Repair the follow- ing items. Fuel pressure too high • Clogged fuel return line or bent hose Fuel pressure too low • Improper fuel pump discharge • Clogged fuel supply line

	Step	Check	Yes	No
9	 CHECK FUEL PRESSURE. After connecting the pressure regulator vacuum hose, measure fuel pressure. Warning: Before removing the fuel pressure gauge, release fuel pressure. NOTE: If 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 the fuel pressure 206 — 235 kPa (2.1 — 2.4 kg/cm ² , 30 — 34 psi)?	Go to step 10 .	Repair the follow- ing items. Fuel pressure too high • Faulty pres- sure regulator • Clogged fuel return line or bent hose Fuel pressure too low • Faulty pres- sure regulator • Improper fuel pump discharge • Clogged fuel supply line
10	 CHECK ENGINE COOLANT TEMPERATURE SENSOR. 1) Start the engine and warm-up completely. 2) Read the data of engine coolant temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4so)-32,="" monitor.="" select="" subaru="" to=""></ref.> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool 	Is the engine coolant tempera- ture 70 — 100°C (158 — 212°F)?	Go to step 11.	Replace the engine coolant temperature sen- sor. <ref. to<br="">FU(H4SO)-25, Engine Coolant Temperature Sen- sor.></ref.>
11	 CHECK PRESSURE SENSOR SIGNAL. 1) Start the engine and warm-up engine until coolant temperature is greater than 60°C (140°F). 2) Place the select lever in "N" or "P" range. 3) Turn the A/C switch to OFF. 4) Turn all accessory switches to OFF. 5) Read the data of pressure sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <ref. en(h4so)-32,="" monitor.="" select="" subaru="" to=""></ref.> OBD-II general scan tool For detailed operation procedures, refer to the OBD-II general scan tool 	Idling: Is the measured value 24.0 — 41.3 kPa (180 — 310 mmHg, 7.09 — 12.20 inHg), Ignition ON: Is the measured value 73.3 — 106.6 kPa (550 — 800 mmHg, 21.65 — 31.50 inHg)?	Contact SOA Ser- vice Center. NOTE: Inspection by DTM is required, be- cause probable cause is deteriora- tion of multiple parts.	Replace the Pres- sure sensor. <ref. to FU(H4SO)-31, Manifold Absolute Pressure Sensor.></ref.