

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

18. Diagnostic Procedure with Diagnostic Trouble Code (DTC)

A: DTC P000A A CAMSHAFT POSITION SLOW RESPONSE (BANK 1)

NOTE:

For the diagnostic procedure, refer to DTC P0011. <Ref. to EN(w/o STI)(diag)-99, DTC P0011 INTAKE CAMSHAFT POSITION - TIMING OVER-ADVANCED OR SYSTEM PERFORMANCE (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

B: DTC P000B B CAMSHAFT POSITION SLOW RESPONSE (BANK 1)

NOTE:

For the diagnostic procedure, refer to DTC P0014. <Ref. to EN(w/o STI)(diag)-102, DTC P0014 EXHAUST AVCS SYSTEM 1 (RANGE/PERFORMANCE), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

C: DTC P000C A CAMSHAFT POSITION SLOW RESPONSE (BANK 2)

NOTE:

For the diagnostic procedure, refer to DTC P0021. <Ref. to EN(w/o STI)(diag)-113, DTC P0021 INTAKE CAMSHAFT POSITION - TIMING OVER-ADVANCED OR SYSTEM PERFORMANCE (BANK 2), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

D: DTC P000D B CAMSHAFT POSITION SLOW RESPONSE (BANK 2)

NOTE:

For the diagnostic procedure, refer to DTC P0024. <Ref. to EN(w/o STI)(diag)-116, DTC P0024 EXHAUST AVCS SYSTEM 2 (RANGE/PERFORMANCE), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

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E: DTC P0010 "A" CAMSHAFT POSITION ACTUATOR CIRCUIT/OPEN (BANK 1)

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-15, DTC P0010 "A" CAMSHAFT POSITION ACTUATOR CIRCUIT/OPEN (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

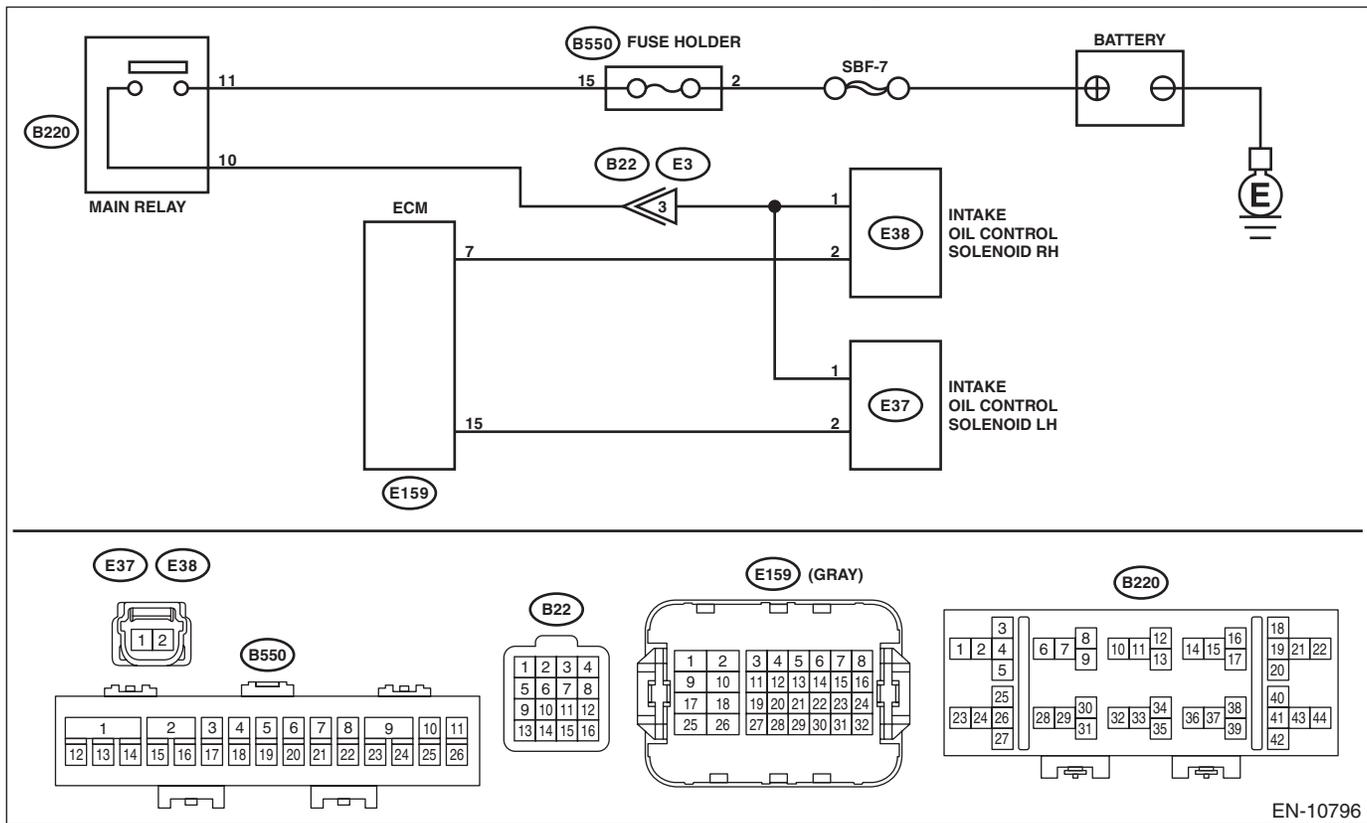
Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



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Step	Check	Yes	No
1 CHECK OUTPUT SIGNAL OF ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM connector and engine ground. Connector & terminal (E159) No. 7 (+) — Engine ground (-):	Is the voltage 10 V or more?	Go to step 2.	Go to step 3.

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Step	Check	Yes	No
2 CHECK FOR POOR CONTACT. Check for poor contact of ECM connector.	Is there poor contact of ECM connector?	Repair the poor contact of ECM connector.	Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again. NOTE: In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.
3 CHECK POWER SUPPLY TO THE INTAKE OIL CONTROL SOLENOID RH. Measure the voltage between intake oil control solenoid RH connector and engine ground. <i>Connector & terminal</i> <i>(E38) No. 1 (+) — Engine ground (-):</i>	Is the voltage 10 V or more?	Go to step 4.	Repair the power supply circuit.
4 CHECK HARNESS BETWEEN ECM AND INTAKE OIL CONTROL SOLENOID RH CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from the ECM and intake oil control solenoid RH. 3) Measure the resistance between intake oil control solenoid RH connector and engine ground. <i>Connector & terminal</i> <i>(E38) No. 2 — Engine ground:</i>	Is the resistance 1 M Ω or more?	Go to step 5.	Repair the short circuit to ground in harness between ECM connector and intake oil control solenoid RH connector.
5 CHECK HARNESS BETWEEN ECM AND INTAKE OIL CONTROL SOLENOID RH CONNECTOR. Measure the resistance of harness between ECM connector and intake oil control solenoid RH. <i>Connector & terminal</i> <i>(E159) No. 7 — (E38) No. 2:</i>	Is the resistance less than 1 Ω ?	Go to step 6.	Repair the harness and connector. NOTE: In this case, repair the following item: <ul style="list-style-type: none"> • Open circuit in harness between ECM connector and intake oil control solenoid RH connector • Poor contact of coupling connector
6 CHECK INTAKE OIL CONTROL SOLENOID RH. Measure the resistance between intake oil control solenoid RH terminals. <i>Terminals</i> <i>No. 1 — No. 2:</i>	Is the resistance 6 — 12 Ω ?	Repair the poor contact of intake oil control solenoid RH connector.	Replace the intake oil control solenoid RH. <Ref. to FU(w/o STI)-108, Oil Control Solenoid.>

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F: DTC P0011 INTAKE CAMSHAFT POSITION - TIMING OVER-ADVANCED OR SYSTEM PERFORMANCE (BANK 1)

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-16, DTC P0011 INTAKE CAMSHAFT POSITION - TIMING OVER-ADVANCED OR SYSTEM PERFORMANCE (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Engine stalls.
- Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

	Step	Check	Yes	No
1	IDENTIFYING FAULTY PART. 1) Perform the Clear Memory Mode. <Ref. to EN(w/o STI)(diag)-61, Clear Memory Mode.> 2) Replace the defective oil control solenoid by the other (RH or LH, intake side or exhaust side) oil control solenoid. 3) Perform appropriate drive cycle test. <Ref. to EN(w/o STI)(diag)-50, Drive Cycle.> 4) Make sure that the fault occurrence (DTC and incorrect advancing) has shifted to the other location.	Did the detected DTC shift to the location where the oil control solenoid was replaced?	Replace the faulty oil control solenoid.	Go to step 2.
2	CHECK CURRENT DATA. 1) Start the engine and let it idle. 2) Read the value of «VVT Adv. Ang. Amount R» using the Subaru Select Monitor. NOTE: For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.>	Is the value of «VVT Adv. Ang. Amount R» approx. 0 deg?	Go to step 3.	Check the following item and repair or replace if necessary. <ul style="list-style-type: none"> • Intake cam sprocket (clog or dirt of oil routing, setting of spring) • Intake camshaft (dirt, damage of camshaft)
3	CHECK CURRENT DATA. 1) Drive with acceleration and deceleration at 80 km/h (50 MPH) or less. NOTE: Drive to an extent that the duty output of oil flow control solenoid valve increases. 2) Read the values of «OCV Duty R» and «VVT Adv. Ang. Amount R» using the Subaru Select Monitor. NOTE: For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.>	When the value of «OCV Duty R» increases more than 10%, is the value of «VVT Adv. Ang. Amount R» approx. 0 deg?	Check the following item and repair or replace if necessary. <ul style="list-style-type: none"> • Intake cam sprocket (clog or dirt of oil routing, setting of spring) • Intake camshaft (dirt, damage of camshaft) 	Perform the following procedures, and clean the oil routing. Replace the engine oil and idle the engine for 5 minutes, and then replace the oil filter and engine oil. <Ref. to LU(w/o STI)-11, REPLACEMENT, Engine Oil.> <Ref. to LU(w/o STI)-53, Engine Oil Filter.>

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G: DTC P0013 B CAMSHAFT POSITION ACTUATOR CIRCUIT/OPEN (BANK 1)

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-18, DTC P0013 B CAMSHAFT POSITION ACTUATOR CIRCUIT/OPEN (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

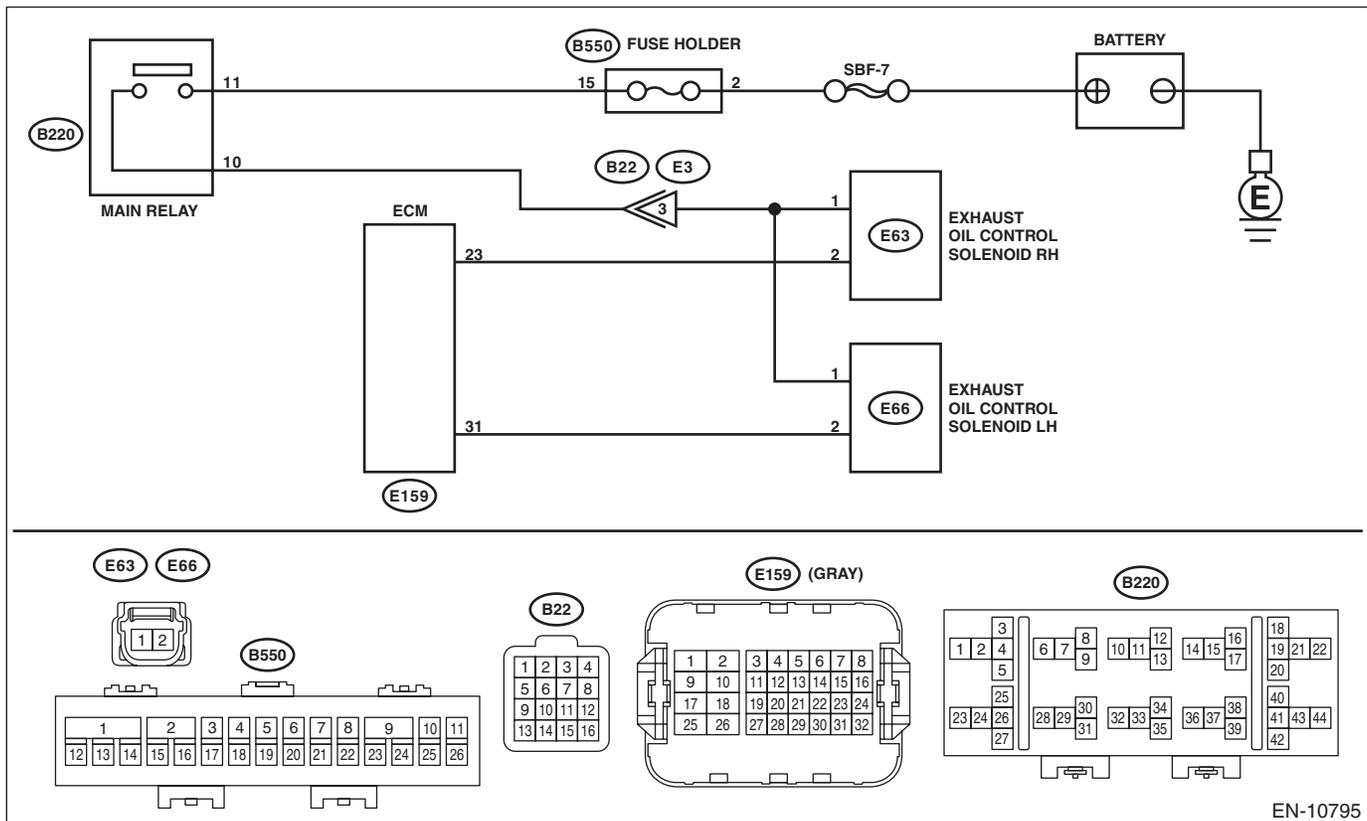
Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10795

Step	Check	Yes	No
1 CHECK OUTPUT SIGNAL OF ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM connector and engine ground. Connector & terminal (E159) No. 23 (+) — Engine ground (-):	Is the voltage 10 V or more?	Go to step 2.	Go to step 3.

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Step	Check	Yes	No
2 CHECK FOR POOR CONTACT. Check for poor contact of ECM connector.	Is there poor contact of ECM connector?	Repair the poor contact of ECM connector.	Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again. NOTE: In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.
3 CHECK POWER SUPPLY TO THE EXHAUST OIL CONTROL SOLENOID RH. Measure the voltage between exhaust oil control solenoid RH connector and engine ground. Connector & terminal (E63) No. 1 (+) — Engine ground (-):	Is the voltage 10 V or more?	Go to step 4.	Repair the power supply circuit.
4 CHECK HARNESS BETWEEN ECM AND EXHAUST OIL CONTROL SOLENOID RH CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and exhaust oil control solenoid RH. 3) Measure the resistance between exhaust oil control solenoid RH connector and engine ground. Connector & terminal (E63) No. 2 — Engine ground:	Is the resistance 1 M Ω or more?	Go to step 5.	Repair the short circuit to ground in harness between ECM connector and exhaust oil control solenoid RH connector.
5 CHECK HARNESS BETWEEN ECM AND EXHAUST OIL CONTROL SOLENOID RH CONNECTOR. Measure the resistance of harness between ECM connector and exhaust oil control solenoid RH. Connector & terminal (E159) No. 23 — (E63) No. 2:	Is the resistance less than 1 Ω ?	Go to step 6.	Repair the harness and connector. NOTE: In this case, repair the following item: <ul style="list-style-type: none"> • Open circuit in harness between ECM connector and exhaust oil control solenoid RH connector • Poor contact of coupling connector
6 CHECK EXHAUST OIL CONTROL SOLENOID RH. Measure the resistance between exhaust oil control solenoid RH terminals. Terminals No. 1 — No. 2:	Is the resistance 6 — 12 Ω ?	Repair the poor contact of exhaust oil control solenoid RH connector.	Replace the exhaust oil control solenoid RH. <Ref. to FU(w/o STI)-108, Oil Control Solenoid.>

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H: DTC P0014 EXHAUST AVCS SYSTEM 1 (RANGE/PERFORMANCE)

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-19, DTC P0014 EXHAUST AVCS SYSTEM 1 (RANGE/PERFORMANCE), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Engine stalls.
- Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 IDENTIFYING FAULTY PART. 1) Perform the Clear Memory Mode. <Ref. to EN(w/o STI)(diag)-61, Clear Memory Mode.> 2) Replace the defective oil control solenoid by the other (RH or LH, intake side or exhaust side) oil control solenoid. 3) Perform appropriate drive cycle test. <Ref. to EN(w/o STI)(diag)-50, Drive Cycle.> 4) Make sure that the fault occurrence (DTC and incorrect advancing) has shifted to the other location.	Did the detected DTC shift to the location where the oil control solenoid was replaced?	Replace the faulty oil control solenoid.	Go to step 2.
2 CHECK CURRENT DATA. 1) Start the engine and let it idle. 2) Read the value of «Exh. VVT Retard Ang. R» using the Subaru Select Monitor. NOTE: For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.>	Is the value of «Exh. VVT Retard Ang. R» approx. 0 deg?	Go to step 3.	Check the following item and repair or replace if necessary. • Exhaust cam sprocket (clog or dirt of oil routing, setting of spring) • Exhaust camshaft (dirt, damage of camshaft)
3 CHECK CURRENT DATA. 1) Drive with acceleration and deceleration at 80 km/h (50 MPH) or less. NOTE: Drive to an extent that the duty output of oil flow control solenoid valve increases. 2) Read the values of «Exh. OCV Duty R» and «Exh. VVT Retard Ang. R» using the Subaru Select Monitor. NOTE: For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.>	When the value of «Exh. OCV Duty R» increases more than 10%, is the value of «Exh. VVT Retard Ang. R» approx. 0 deg?	Check the following item and repair or replace if necessary. • Exhaust cam sprocket (clog or dirt of oil routing, setting of spring) • Exhaust camshaft (dirt, damage of camshaft)	Perform the following procedures, and clean the oil routing. Replace the engine oil and idle the engine for 5 minutes, and then replace the oil filter and engine oil. <Ref. to LU(w/o STI)-11, REPLACEMENT, Engine Oil.> <Ref. to LU(w/o STI)-53, Engine Oil Filter.>

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ENGINE (DIAGNOSTICS)

I: DTC P0016 CRANKSHAFT POSITION - CAMSHAFT POSITION CORRELATION (BANK1)

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-20, DTC P0016 CRANKSHAFT POSITION - CAMSHAFT POSITION CORRELATION (BANK1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Engine stalls.
- Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DISPLAY.	Is DTC other than P0016, P0017, P0018 or P0019 displayed?	Check the appropriate DTC using the "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK INTAKE OIL CONTROL SOLENOID RH. Check the intake oil control solenoid RH. <Ref. to FU(w/o STI)-110, INSPECTION, Oil Control Solenoid.>	Is the intake oil control solenoid RH normal?	Go to step 3.	Replace the intake oil control solenoid RH. <Ref. to FU(w/o STI)-108, Oil Control Solenoid.>
3 CHECK INSTALLATION CONDITION OF TIMING CHAIN. Using ST and by turning the crankshaft, align the alignment marks of crank sprocket, intake cam sprocket and exhaust cam sprocket. <Ref. to ME(w/o STI)-116, Timing Chain Assembly.> ST 18252AA000 CRANKSHAFT SOCKET	Is the timing chain installed in the proper position?	Go to step 4.	Correct the installation condition of timing chain. <Ref. to ME(w/o STI)-116, Timing Chain Assembly.>
4 CHECK CAM CARRIER FILTER. Check the filter installed to the cam carrier. <Ref. to ME(w/o STI)-209, INSPECTION, Cam Carrier.>	Is the cam carrier filter normal?	Replace the intake cam sprocket RH. <Ref. to ME(w/o STI)-141, Cam Sprocket.> After the operation is complete, go to the next step. Go to step 5.	Replace the cam carrier filter. <Ref. to ME(w/o STI)-172, Cam Carrier.>

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Step	Check	Yes	No
<p>5</p> <p>CHECK CURRENT DATA.</p> <p>1) Clear the memory using the Subaru Select Monitor or general scan tool. <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.></p> <p>2) Start the engine and warm up completely.</p> <p>3) Using the Subaru Select Monitor, read the values of «VVT Initial Position Learning Value #1» and «VVT Adv. Ang. Amount R» while the vehicle is in stable condition for 30 seconds or more with the engine idling.</p> <p>NOTE: For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <p>4) Calculate the values using the following formula. Ignore the unit at this time. «VVT Initial Position Learning Value #1» – (60 + «VVT Adv. Ang. Amount R») </p>	<p>Is the calculation result less than 10?</p>	<p>Go to step 6.</p>	<p>Replace the ECM. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).></p>
<p>6</p> <p>CHECK DTC.</p> <p>1) Clear the memory using the Subaru Select Monitor or general scan tool. <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.></p> <p>2) Perform drive cycle N. <Ref. to EN(w/o STI)(diag)-59, DRIVE CYCLE N, PROCEDURE, Drive Cycle.></p>	<p>Is the same DTC as current diagnosis output?</p>	<p>Replace the ECM. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).></p>	<p>End.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

J: DTC P0017 CRANK AND CAM TIMING B SYSTEM FAILURE (BANK 1)

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-21, DTC P0017 CRANK AND CAM TIMING B SYSTEM FAILURE (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Engine stalls.
- Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DISPLAY. Is DTC other than P0016, P0017, P0018 or P0019 displayed?	Check the appropriate DTC using the "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2	CHECK EXHAUST OIL CONTROL SOLENOID RH. Check the exhaust oil control solenoid RH. <Ref. to FU(w/o STI)-110, INSPECTION, Oil Control Solenoid.>	Go to step 3.	Replace the exhaust oil control solenoid RH. <Ref. to FU(w/o STI)-108, Oil Control Solenoid.>
3	CHECK INSTALLATION CONDITION OF TIMING CHAIN. Using ST and by turning the crankshaft, align the alignment marks of crank sprocket, intake cam sprocket and exhaust cam sprocket. <Ref. to ME(w/o STI)-116, Timing Chain Assembly.> ST 18252AA000 CRANKSHAFT SOCKET	Go to step 4.	Correct the installation condition of timing chain. <Ref. to ME(w/o STI)-116, Timing Chain Assembly.>
4	CHECK CAM CARRIER FILTER. Check the filter installed to the cam carrier. <Ref. to ME(w/o STI)-209, INSPECTION, Cam Carrier.>	Replace the exhaust cam sprocket RH. <Ref. to ME(w/o STI)-141, Cam Sprocket.> After the operation is complete, go to the next step. Go to step 5.	Replace the cam carrier filter. <Ref. to ME(w/o STI)-172, Cam Carrier.>

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Step	Check	Yes	No
<p>5</p> <p>CHECK CURRENT DATA.</p> <p>1) Clear the memory using the Subaru Select Monitor or general scan tool. <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.></p> <p>2) Start the engine and warm up completely.</p> <p>3) Using the Subaru Select Monitor, read the values of «VVT Ex Initial Position Learning Value #1» and «Exh. VVT Retard Ang. R» while the vehicle is in stable condition for 30 seconds or more with the engine idling.</p> <p>NOTE: For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <p>4) Calculate the values using the following formula. Ignore the unit at this time. «VVT Ex Initial Position Learning Value #1» – (90 – «Exh. VVT Retard Ang. R») </p>	<p>Is the calculation result less than 10?</p>	<p>Go to step 6.</p>	<p>Replace the ECM. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).></p>
<p>6</p> <p>CHECK DTC.</p> <p>1) Clear the memory using the Subaru Select Monitor or general scan tool. <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.></p> <p>2) Perform drive cycle N. <Ref. to EN(w/o STI)(diag)-59, DRIVE CYCLE N, PROCEDURE, Drive Cycle.></p>	<p>Is the same DTC as current diagnosis output?</p>	<p>Replace the ECM. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).></p>	<p>End.</p>

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ENGINE (DIAGNOSTICS)

K: DTC P0018 CRANKSHAFT POSITION - CAMSHAFT POSITION CORRELATION (BANK2)

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-22, DTC P0018 CRANKSHAFT POSITION - CAMSHAFT POSITION CORRELATION (BANK2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Engine stalls.
- Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DISPLAY. Is DTC other than P0016, P0017, P0018 or P0019 displayed?	Check the appropriate DTC using the "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2	CHECK INTAKE OIL CONTROL SOLENOID LH. Check the intake oil control solenoid LH. <Ref. to FU(w/o STI)-110, INSPECTION, Oil Control Solenoid.>	Go to step 3.	Replace the intake oil control solenoid LH. <Ref. to FU(w/o STI)-108, Oil Control Solenoid.>
3	CHECK INSTALLATION CONDITION OF TIMING CHAIN. Using ST and by turning the crankshaft, align the alignment marks of crank sprocket, intake cam sprocket and exhaust cam sprocket. <Ref. to ME(w/o STI)-116, Timing Chain Assembly.> ST 18252AA000 CRANKSHAFT SOCKET	Go to step 4.	Correct the installation condition of timing chain. <Ref. to ME(w/o STI)-116, Timing Chain Assembly.>
4	CHECK CAM CARRIER FILTER. Check the filter installed to the cam carrier. <Ref. to ME(w/o STI)-209, INSPECTION, Cam Carrier.>	Replace the intake cam sprocket LH. <Ref. to ME(w/o STI)-141, Cam Sprocket.> After the operation is complete, go to the next step. Go to step 5.	Replace the cam carrier filter. <Ref. to ME(w/o STI)-172, Cam Carrier.>

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Step	Check	Yes	No
<p>5</p> <p>CHECK CURRENT DATA.</p> <p>1) Clear the memory using the Subaru Select Monitor or general scan tool. <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.></p> <p>2) Start the engine and warm up completely.</p> <p>3) Using the Subaru Select Monitor, read the values of «VVT Initial Position Learning Value #2» and «VVT Adv. Ang. Amount L» while the vehicle is in stable condition for 30 seconds or more with the engine idling.</p> <p>NOTE: For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <p>4) Calculate the values using the following formula. Ignore the unit at this time. «VVT Initial Position Learning Value #2» – (60 + «VVT Adv. Ang. Amount L») </p>	<p>Is the calculation result less than 10?</p>	<p>Go to step 6.</p>	<p>Replace the ECM. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).></p>
<p>6</p> <p>CHECK DTC.</p> <p>1) Clear the memory using the Subaru Select Monitor or general scan tool. <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.></p> <p>2) Perform drive cycle N. <Ref. to EN(w/o STI)(diag)-59, DRIVE CYCLE N, PROCEDURE, Drive Cycle.></p>	<p>Is the same DTC as current diagnosis output?</p>	<p>Replace the ECM. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).></p>	<p>End.</p>

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ENGINE (DIAGNOSTICS)

L: DTC P0019 CRANK AND CAM TIMING B SYSTEM FAILURE (BANK 2)

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-22, DTC P0019 CRANK AND CAM TIMING B SYSTEM FAILURE (BANK 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Engine stalls.
- Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DISPLAY. Is DTC other than P0016, P0017, P0018 or P0019 displayed?	Check the appropriate DTC using the "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2	CHECK EXHAUST OIL CONTROL SOLENOID LH. Check the exhaust oil control solenoid LH. <Ref. to FU(w/o STI)-110, INSPECTION, Oil Control Solenoid.>	Go to step 3.	Replace the exhaust oil control solenoid LH. <Ref. to FU(w/o STI)-108, Oil Control Solenoid.>
3	CHECK INSTALLATION CONDITION OF TIMING CHAIN. Using ST and by turning the crankshaft, align the alignment marks of crank sprocket, intake cam sprocket and exhaust cam sprocket. <Ref. to ME(w/o STI)-116, Timing Chain Assembly.> ST 18252AA000 CRANKSHAFT SOCKET	Go to step 4.	Correct the installation condition of timing chain. <Ref. to ME(w/o STI)-116, Timing Chain Assembly.>
4	CHECK CAM CARRIER FILTER. Check the filter installed to the cam carrier. <Ref. to ME(w/o STI)-209, INSPECTION, Cam Carrier.>	Replace the exhaust cam sprocket LH. <Ref. to ME(w/o STI)-141, Cam Sprocket.> After the operation is complete, go to the next step. Go to step 5.	Replace the cam carrier filter. <Ref. to ME(w/o STI)-172, Cam Carrier.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>5</p> <p>CHECK CURRENT DATA.</p> <p>1) Clear the memory using the Subaru Select Monitor or general scan tool. <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.></p> <p>2) Start the engine and warm up completely.</p> <p>3) Using the Subaru Select Monitor, read the values of «VVT Ex Initial Position Learning Value #2» and «Exh. VVT Retard Ang. L» while the vehicle is in stable condition for 30 seconds or more with the engine idling.</p> <p>NOTE: For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <p>4) Calculate the values using the following formula. Ignore the unit at this time. «VVT Ex Initial Position Learning Value #2» – (90 – «Exh. VVT Retard Ang. L») </p>	<p>Is the calculation result less than 10?</p>	<p>Go to step 6.</p>	<p>Replace the ECM. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).></p>
<p>6</p> <p>CHECK DTC.</p> <p>1) Clear the memory using the Subaru Select Monitor or general scan tool. <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.></p> <p>2) Perform drive cycle N. <Ref. to EN(w/o STI)(diag)-59, DRIVE CYCLE N, PROCEDURE, Drive Cycle.></p>	<p>Is the same DTC as current diagnosis output?</p>	<p>Replace the ECM. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).></p>	<p>End.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

M: DTC P0020 "A" CAMSHAFT POSITION ACTUATOR CIRCUIT/OPEN (BANK 2)

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-22, DTC P0020 "A" CAMSHAFT POSITION ACTUATOR CIRCUIT/OPEN (BANK 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

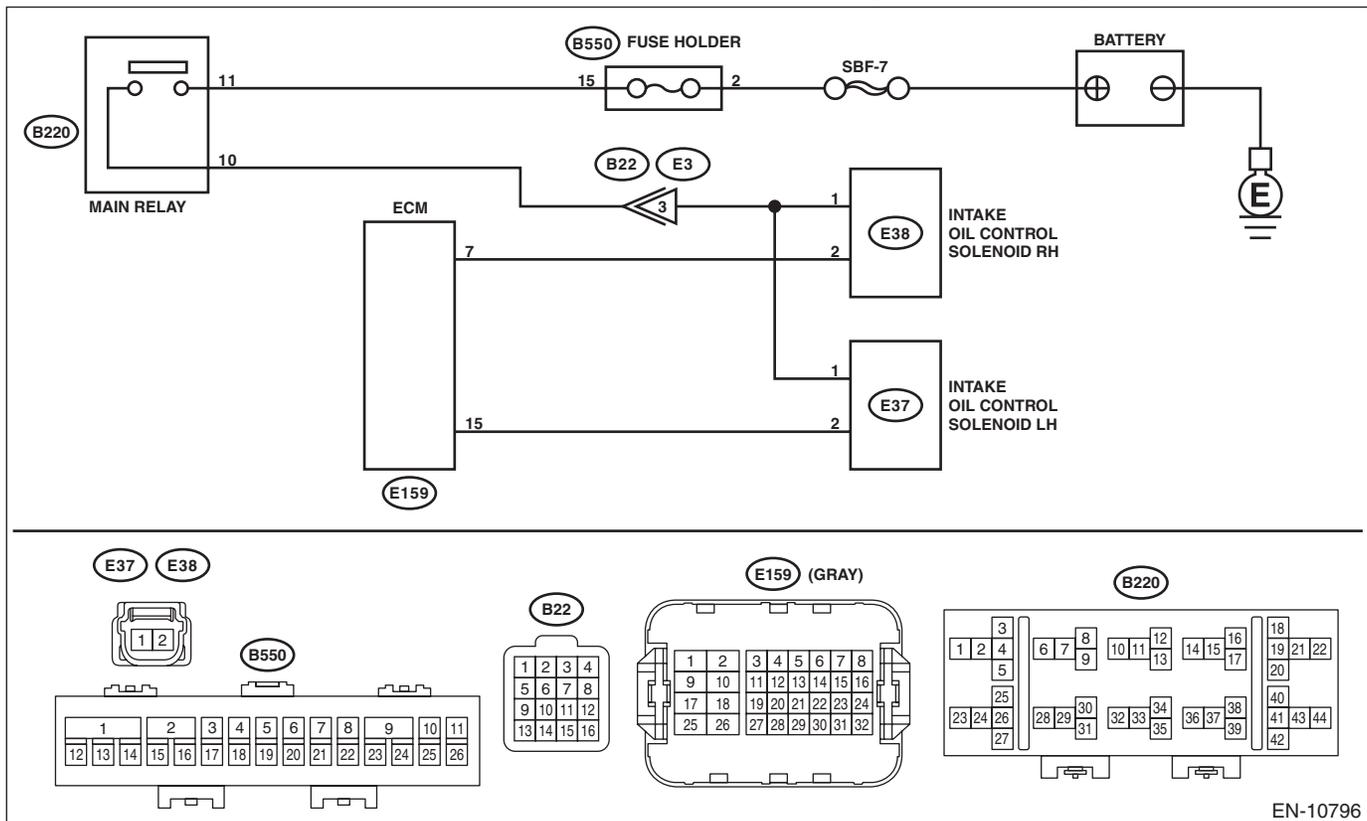
Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10796

Step	Check	Yes	No
1 CHECK OUTPUT SIGNAL OF ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM connector and engine ground. Connector & terminal (E159) No. 15 (+) — Engine ground (-):	Is the voltage 10 V or more?	Go to step 2.	Go to step 3.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
2 CHECK FOR POOR CONTACT. Check for poor contact of ECM connector.	Is there poor contact of ECM connector?	Repair the poor contact of ECM connector.	Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again. NOTE: In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.
3 CHECK POWER SUPPLY TO THE INTAKE OIL CONTROL SOLENOID LH. Measure the voltage between intake oil control solenoid LH connector and engine ground. <i>Connector & terminal</i> <i>(E37) No. 1 (+) — Engine ground (-):</i>	Is the voltage 10 V or more?	Go to step 4.	Repair the power supply circuit.
4 CHECK HARNESS BETWEEN ECM AND INTAKE OIL CONTROL SOLENOID LH CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and intake oil control solenoid LH. 3) Measure the resistance between intake oil control solenoid LH connector and engine ground. <i>Connector & terminal</i> <i>(E37) No. 2 — Engine ground:</i>	Is the resistance 1 M Ω or more?	Go to step 5.	Repair the short circuit to ground in harness between ECM connector and intake oil control solenoid LH connector.
5 CHECK HARNESS BETWEEN ECM AND INTAKE OIL CONTROL SOLENOID LH CONNECTOR. Measure the resistance of harness between ECM connector and intake oil control solenoid LH. <i>Connector & terminal</i> <i>(E159) No. 15 — (E37) No. 2:</i>	Is the resistance less than 1 Ω ?	Go to step 6.	Repair the harness and connector. NOTE: In this case, repair the following item: <ul style="list-style-type: none"> • Open circuit in harness between ECM connector and intake oil control solenoid LH connector • Poor contact of coupling connector
6 CHECK INTAKE OIL CONTROL SOLENOID LH. Measure the resistance between intake oil control solenoid LH terminals. <i>Terminals</i> <i>No. 1 — No. 2:</i>	Is the resistance 6 — 12 Ω ?	Repair the poor contact of intake oil control solenoid LH connector.	Replace the intake oil control solenoid LH. <Ref. to FU(w/o STI)-108, Oil Control Solenoid.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

N: DTC P0021 INTAKE CAMSHAFT POSITION - TIMING OVER-ADVANCED OR SYSTEM PERFORMANCE (BANK 2)

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-22, DTC P0021 INTAKE CAMSHAFT POSITION - TIMING OVER-ADVANCED OR SYSTEM PERFORMANCE (BANK 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Engine stalls.
- Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

	Step	Check	Yes	No
1	IDENTIFYING FAULTY PART. 1) Perform the Clear Memory Mode. <Ref. to EN(w/o STI)(diag)-61, Clear Memory Mode.> 2) Replace the defective oil control solenoid by the other (RH or LH, intake side or exhaust side) oil control solenoid. 3) Perform appropriate drive cycle test. <Ref. to EN(w/o STI)(diag)-50, Drive Cycle.> 4) Make sure that the fault occurrence (DTC and incorrect advancing) has shifted to the other location.	Did the detected DTC shift to the location where the oil control solenoid was replaced?	Replace the faulty oil control solenoid.	Go to step 2.
2	CHECK CURRENT DATA. 1) Start the engine and let it idle. 2) Read the value of «VVT Adv. Ang. Amount L» using the Subaru Select Monitor. NOTE: For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.>	Is the value of «VVT Adv. Ang. Amount L» approx. 0 deg?	Go to step 3.	Check the following item and repair or replace if necessary. <ul style="list-style-type: none"> • Intake cam sprocket (clog or dirt of oil routing, setting of spring) • Intake camshaft (dirt, damage of camshaft)
3	CHECK CURRENT DATA. 1) Drive with acceleration and deceleration at 80 km/h (50 MPH) or less. NOTE: Drive to an extent that the duty output of oil flow control solenoid valve increases. 2) Read the values of «OCV Duty L» and «VVT Adv. Ang. Amount L» using the Subaru Select Monitor. NOTE: For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.>	When the value of «OCV Duty L» increases more than 10%, is the value of «VVT Adv. Ang. Amount L» approx. 0 deg?	Check the following item and repair or replace if necessary. <ul style="list-style-type: none"> • Intake cam sprocket (clog or dirt of oil routing, setting of spring) • Intake camshaft (dirt, damage of camshaft) 	Perform the following procedures, and clean the oil routing. Replace the engine oil and idle the engine for 5 minutes, and then replace the oil filter and engine oil. <Ref. to LU(w/o STI)-11, REPLACEMENT, Engine Oil.> <Ref. to LU(w/o STI)-53, Engine Oil Filter.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

O: DTC P0023 B CAMSHAFT POSITION ACTUATOR CIRCUIT/OPEN (BANK 2)

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-22, DTC P0023 B CAMSHAFT POSITION ACTUATOR CIRCUIT/OPEN (BANK 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

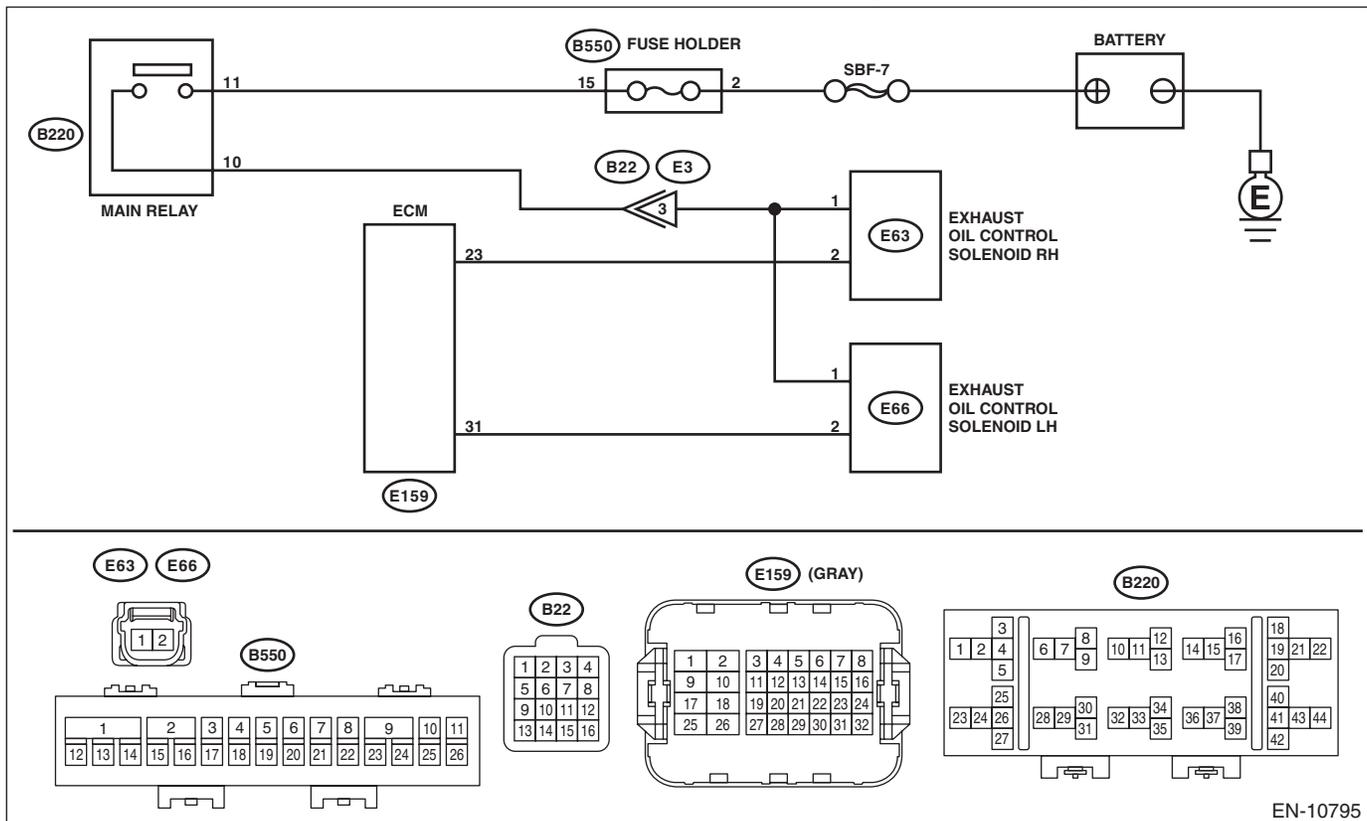
Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10795

Step	Check	Yes	No
1 CHECK OUTPUT SIGNAL OF ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM connector and engine ground. Connector & terminal (E159) No. 31 (+) — Engine ground (-):	Is the voltage 10 V or more?	Go to step 2.	Go to step 3.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>2 CHECK FOR POOR CONTACT. Check for poor contact of ECM connector.</p>	<p>Is there poor contact of ECM connector?</p>	<p>Repair the poor contact of ECM connector.</p>	<p>Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again. NOTE: In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.</p>
<p>3 CHECK POWER SUPPLY TO THE EXHAUST OIL CONTROL SOLENOID LH. Measure the voltage between exhaust oil control solenoid LH connector and engine ground. Connector & terminal (E66) No. 1 (+) — Engine ground (-):</p>	<p>Is the voltage 10 V or more?</p>	<p>Go to step 4.</p>	<p>Repair the power supply circuit.</p>
<p>4 CHECK HARNESS BETWEEN ECM AND EXHAUST OIL CONTROL SOLENOID LH CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and exhaust oil control solenoid LH. 3) Measure the resistance between exhaust oil control solenoid LH connector and engine ground. Connector & terminal (E66) No. 2 — Engine ground:</p>	<p>Is the resistance 1 MΩ or more?</p>	<p>Go to step 5.</p>	<p>Repair the short circuit to ground in harness between ECM connector and exhaust oil control solenoid LH connector.</p>
<p>5 CHECK HARNESS BETWEEN ECM AND EXHAUST OIL CONTROL SOLENOID LH CONNECTOR. Measure the resistance of harness between ECM connector and exhaust oil control solenoid LH. Connector & terminal (E159) No. 31 — (E66) No. 2:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 6.</p>	<p>Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and exhaust oil control solenoid LH connector • Poor contact of coupling connector</p>
<p>6 CHECK EXHAUST OIL CONTROL SOLENOID LH. Measure the resistance between exhaust oil control solenoid LH terminals. Terminals No. 1 — No. 2:</p>	<p>Is the resistance 6 — 12 Ω?</p>	<p>Repair the poor contact of exhaust oil control solenoid LH connector.</p>	<p>Replace the exhaust oil control solenoid LH. <Ref. to FU(w/o STI)-108, Oil Control Solenoid.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

P: DTC P0024 EXHAUST AVCS SYSTEM 2 (RANGE/PERFORMANCE)

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-22, DTC P0024 EXHAUST AVCS SYSTEM 2 (RANGE/PERFORMANCE), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Engine stalls.
- Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 IDENTIFYING FAULTY PART. 1) Perform the Clear Memory Mode. <Ref. to EN(w/o STI)(diag)-61, Clear Memory Mode.> 2) Replace the defective oil control solenoid by the other (RH or LH, intake side or exhaust side) oil control solenoid. 3) Perform appropriate drive cycle test. <Ref. to EN(w/o STI)(diag)-50, Drive Cycle.> 4) Make sure that the fault occurrence (DTC and incorrect advancing) has shifted to the other location.	Did the detected DTC shift to the location where the oil control solenoid was replaced?	Replace the faulty oil control solenoid.	Go to step 2.
2 CHECK CURRENT DATA. 1) Start the engine and let it idle. 2) Read the value of «Exh. VVT Retard Ang. L» using the Subaru Select Monitor. NOTE: For detailed operation procedures, refer to “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.>	Is the value of «Exh. VVT Retard Ang. L» approx. 0 deg?	Go to step 3.	Check the following item and repair or replace if necessary. • Exhaust cam sprocket (clog or dirt of oil routing, setting of spring) • Exhaust camshaft (dirt, damage of camshaft)
3 CHECK CURRENT DATA. 1) Drive with acceleration and deceleration at 80 km/h (50 MPH) or less. NOTE: Drive to an extent that the duty output of oil flow control solenoid valve increases. 2) Read the values of «Exh. OCV Duty L» and «Exh. VVT Retard Ang. L» using the Subaru Select Monitor. NOTE: For detailed operation procedures, refer to “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.>	When the value of «Exh. OCV Duty L» increases more than 10%, is the value of «Exh. VVT Retard Ang. L» approx. 0 deg?	Check the following item and repair or replace if necessary. • Exhaust cam sprocket (clog or dirt of oil routing, setting of spring) • Exhaust camshaft (dirt, damage of camshaft)	Perform the following procedures, and clean the oil routing. Replace the engine oil and idle the engine for 5 minutes, and then replace the oil filter and engine oil. <Ref. to LU(w/o STI)-11, REPLACEMENT, Engine Oil.> <Ref. to LU(w/o STI)-53, Engine Oil Filter.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Q: DTC P0030 HO2S HEATER CONTROL CIRCUIT (BANK 1 SENSOR 1)

DTC DETECTING CONDITION:

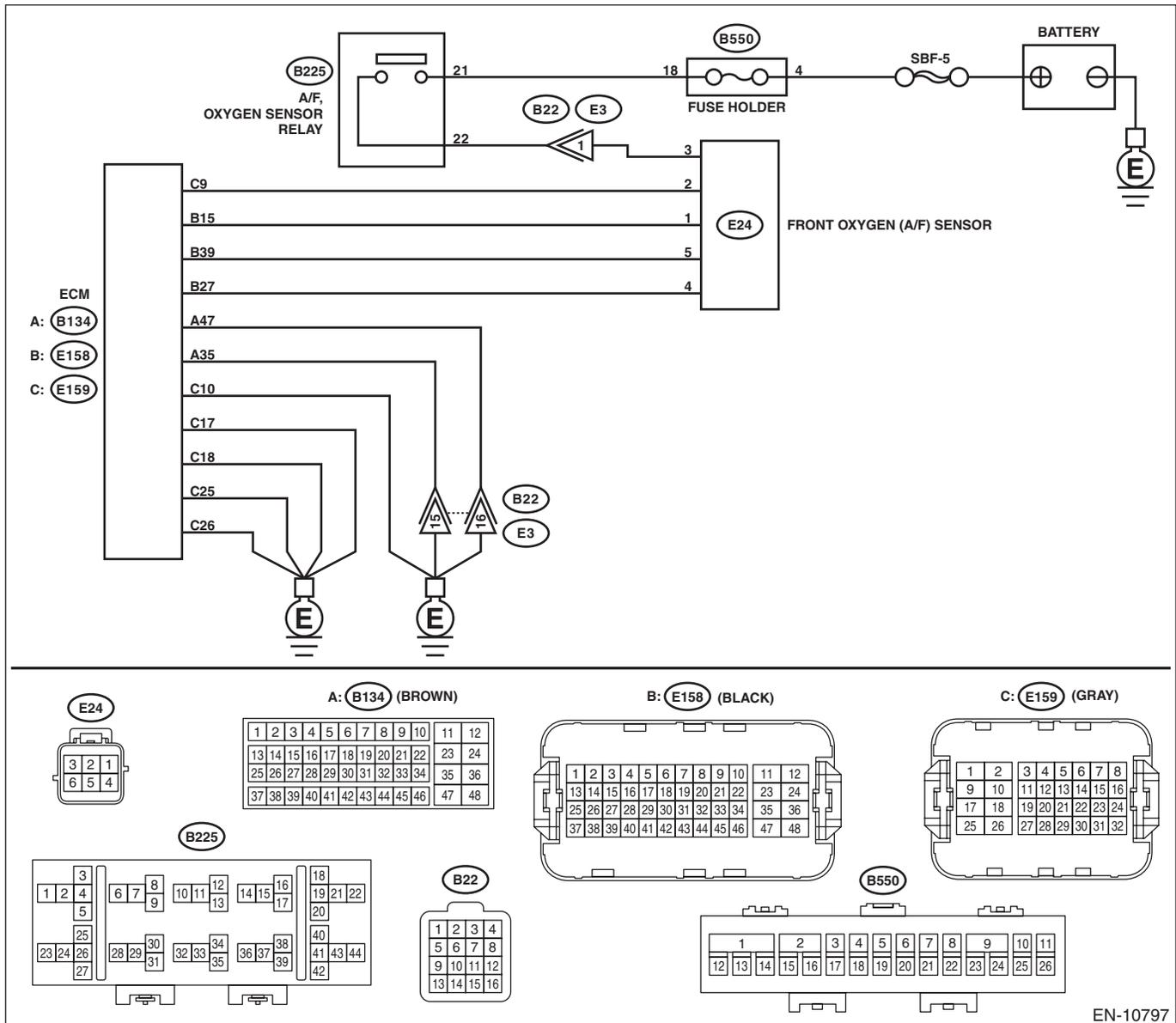
- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-22, DTC P0030 HO2S HEATER CONTROL CIRCUIT (BANK 1 SENSOR 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10797

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.</p> <p>1) Start and warm up the engine. 2) Turn the ignition switch to OFF. 3) Disconnect the connectors from ECM and front oxygen (A/F) sensor. 4) Measure the resistance of harness between ECM connector and front oxygen (A/F) sensor connector.</p> <p>Connector & terminal (E158) No. 15 — (E24) No. 1: (E159) No. 9 — (E24) No. 2: (E158) No. 27 — (E24) No. 4: (E158) No. 39 — (E24) No. 5:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 2.</p>	<p>Repair the open circuit of harness between ECM connector and front oxygen (A/F) sensor connector.</p>
<p>2 CHECK FRONT OXYGEN (A/F) SENSOR. Measure the resistance between front oxygen (A/F) sensor terminals.</p> <p>Terminals No. 2 — No. 3:</p>	<p>Is the resistance 2 — 3 Ω?</p>	<p>Go to step 3.</p>	<p>Replace the front oxygen (A/F) sensor. <Ref. to FU(w/o STI)-126, Front Oxygen (A/F) Sensor.></p>
<p>3 CHECK FOR POOR CONTACT. Check for poor contact of ECM and front oxygen (A/F) sensor connector.</p>	<p>Is there poor contact of ECM or front oxygen (A/F) sensor connector?</p>	<p>Repair the poor contact of ECM or front oxygen (A/F) sensor connector.</p>	<p>Replace the front oxygen (A/F) sensor. <Ref. to FU(w/o STI)-126, Front Oxygen (A/F) Sensor.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

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

DTC DETECTING CONDITION:

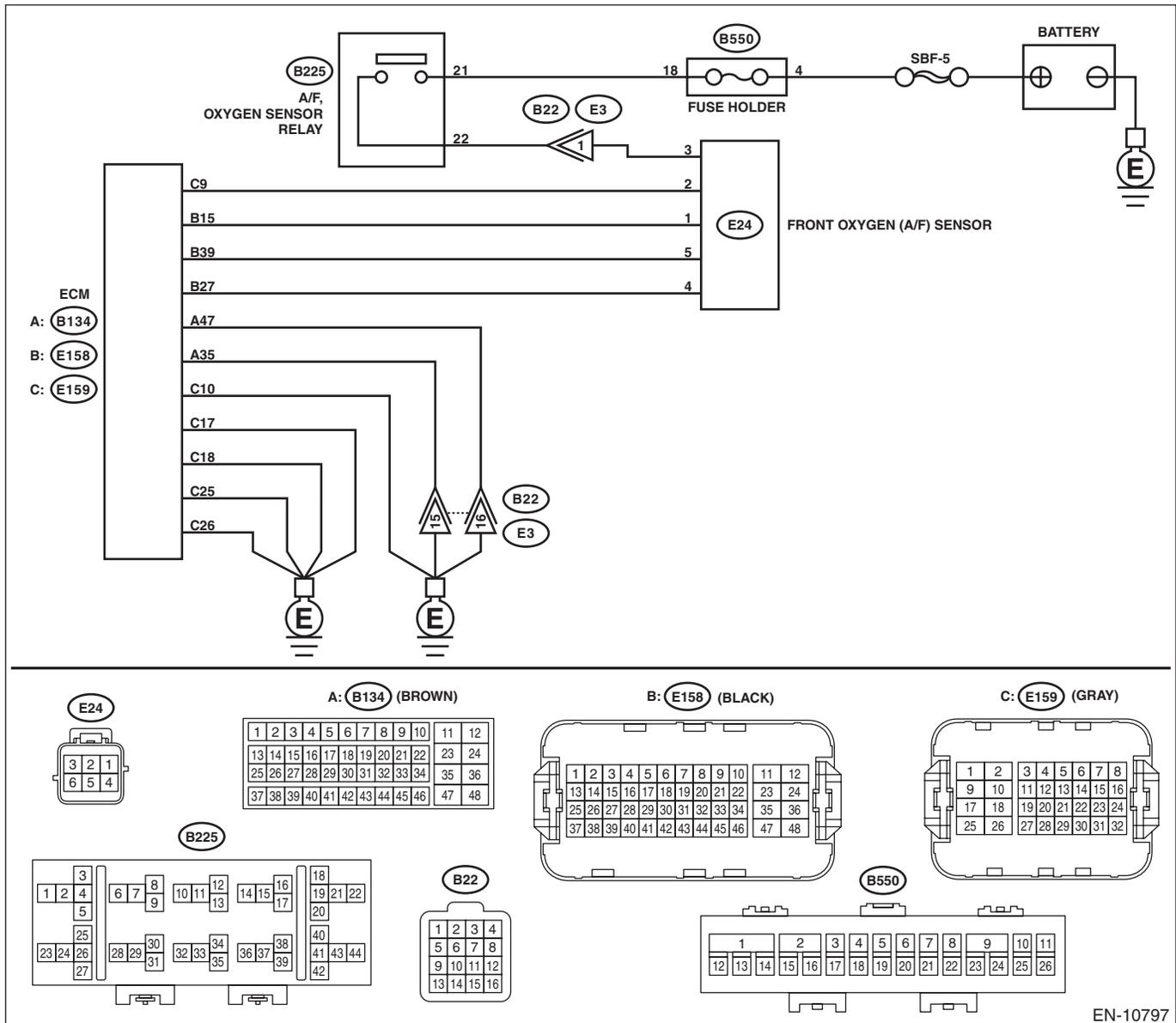
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-24, DTC P0031 HO2S HEATER CONTROL CIRCUIT LOW (BANK 1 SENSOR 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1 CHECK POWER SUPPLY TO FRONT OXYGEN (A/F) SENSOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connectors 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.</p> <p>Connector & terminal (E24) No. 3 (+) — Engine ground (-):</p>	Is the voltage 10 V or more?	Go to step 2.	Repair the power supply line. NOTE: In this case, repair the following item: <ul style="list-style-type: none"> • Open circuit in harness between A/F, oxygen sensor relay and front oxygen (A/F) sensor connector • Poor contact of A/F, oxygen sensor relay connector • Poor contact of coupling connector • Malfunction of A/F, oxygen sensor relay
<p>2 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connector and front oxygen (A/F) sensor connector.</p> <p>Connector & terminal (E24) No. 2 — (E159) No. 9:</p>	Is the resistance less than 1 Ω ?	Go to step 3.	Repair the open circuit of harness between ECM connector and front oxygen (A/F) sensor connector.
<p>3 CHECK GROUND CIRCUIT FOR ECM.</p> <p>Measure the resistance of harness between ECM connector and engine ground.</p> <p>Connector & terminal (B134) No. 35 — Engine ground: (B134) No. 47 — Engine ground: (E159) No. 10 — Engine ground: (E159) No. 17 — Engine ground: (E159) No. 18 — Engine ground: (E159) No. 25 — Engine ground: (E159) No. 26 — Engine ground:</p>	Is the resistance less than 5 Ω ?	Go to step 4.	Repair the harness and connector. NOTE: In this case, repair the following item: <ul style="list-style-type: none"> • Open circuit of harness between ECM connector and engine ground • Poor contact of coupling connector
<p>4 CHECK FRONT OXYGEN (A/F) SENSOR.</p> <p>Measure the resistance between front oxygen (A/F) sensor terminals.</p> <p>Terminals No. 2 — No. 3:</p>	Is the resistance 2 — 3 Ω ?	Repair the poor contact of ECM connector.	Replace the front oxygen (A/F) sensor. <Ref. to FU(w/o STI)-126, Front Oxygen (A/F) Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

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

DTC DETECTING CONDITION:

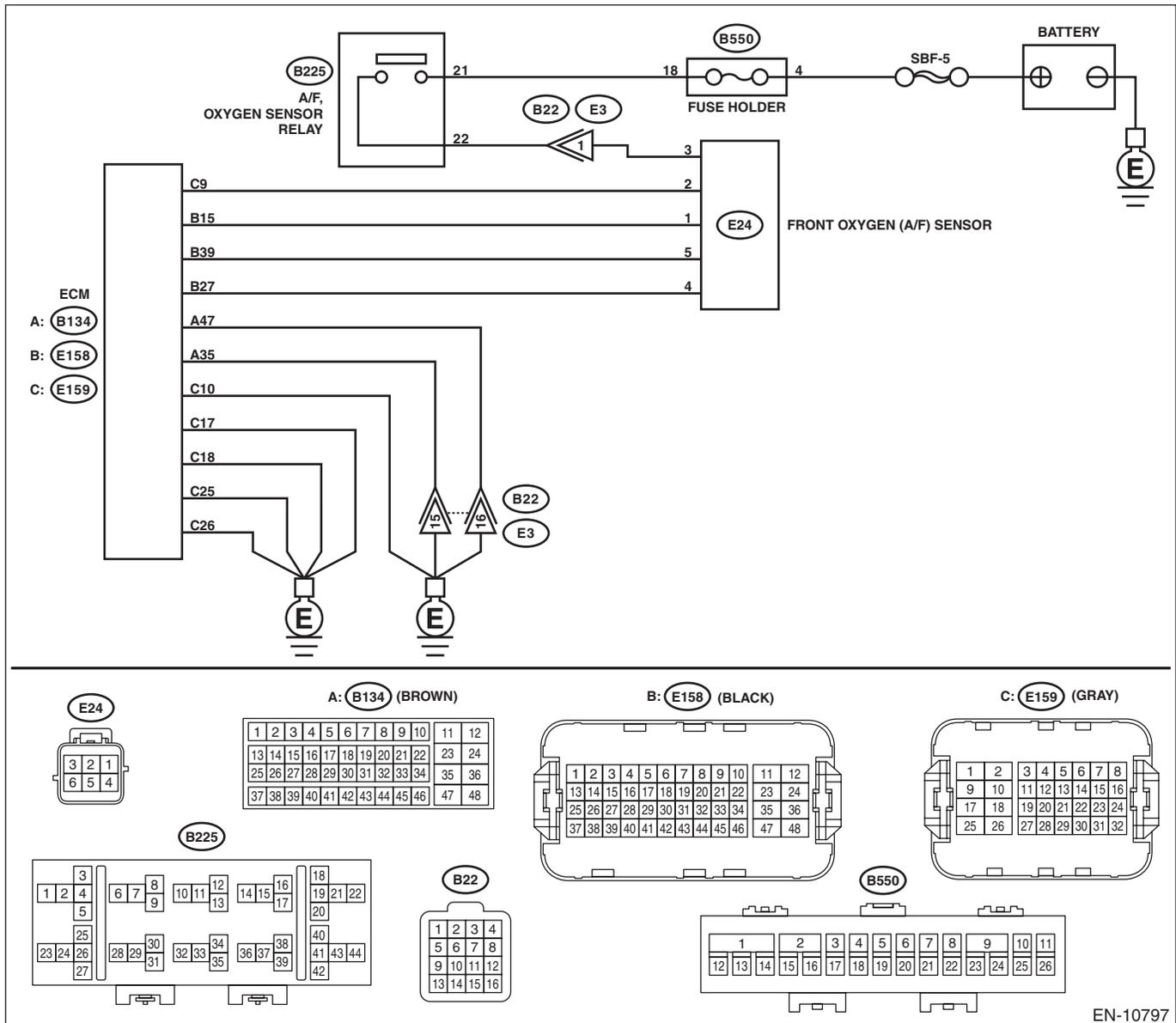
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-25, DTC P0032 HO2S HEATER CONTROL CIRCUIT HIGH (BANK 1 SENSOR 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Measure the voltage between ECM connector and engine ground.</p> <p>Connector & terminal (E159) No. 9 (+) — Engine ground (-):</p>	<p>Is the voltage 10 V or more?</p>	<p>Repair the short circuit to power in the harness between ECM connector and front oxygen (A/F) sensor connector.</p>	<p>Go to step 2.</p>
<p>2 CHECK GROUND CIRCUIT FOR ECM.</p> <p>1) Disconnect the connector from ECM.</p> <p>2) Measure the resistance between the ECM connector and engine ground.</p> <p>Connector & terminal (B134) No. 35 — Engine ground: (B134) No. 47 — Engine ground: (E159) No. 10 — Engine ground: (E159) No. 17 — Engine ground: (E159) No. 18 — Engine ground: (E159) No. 25 — Engine ground: (E159) No. 26 — Engine ground:</p>	<p>Is the resistance less than 5 Ω?</p>	<p>Repair the poor contact of ECM connector.</p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case, repair the following item:</p> <ul style="list-style-type: none"> • Open circuit of harness between ECM connector and engine ground • Poor contact of coupling connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

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

DTC DETECTING CONDITION:

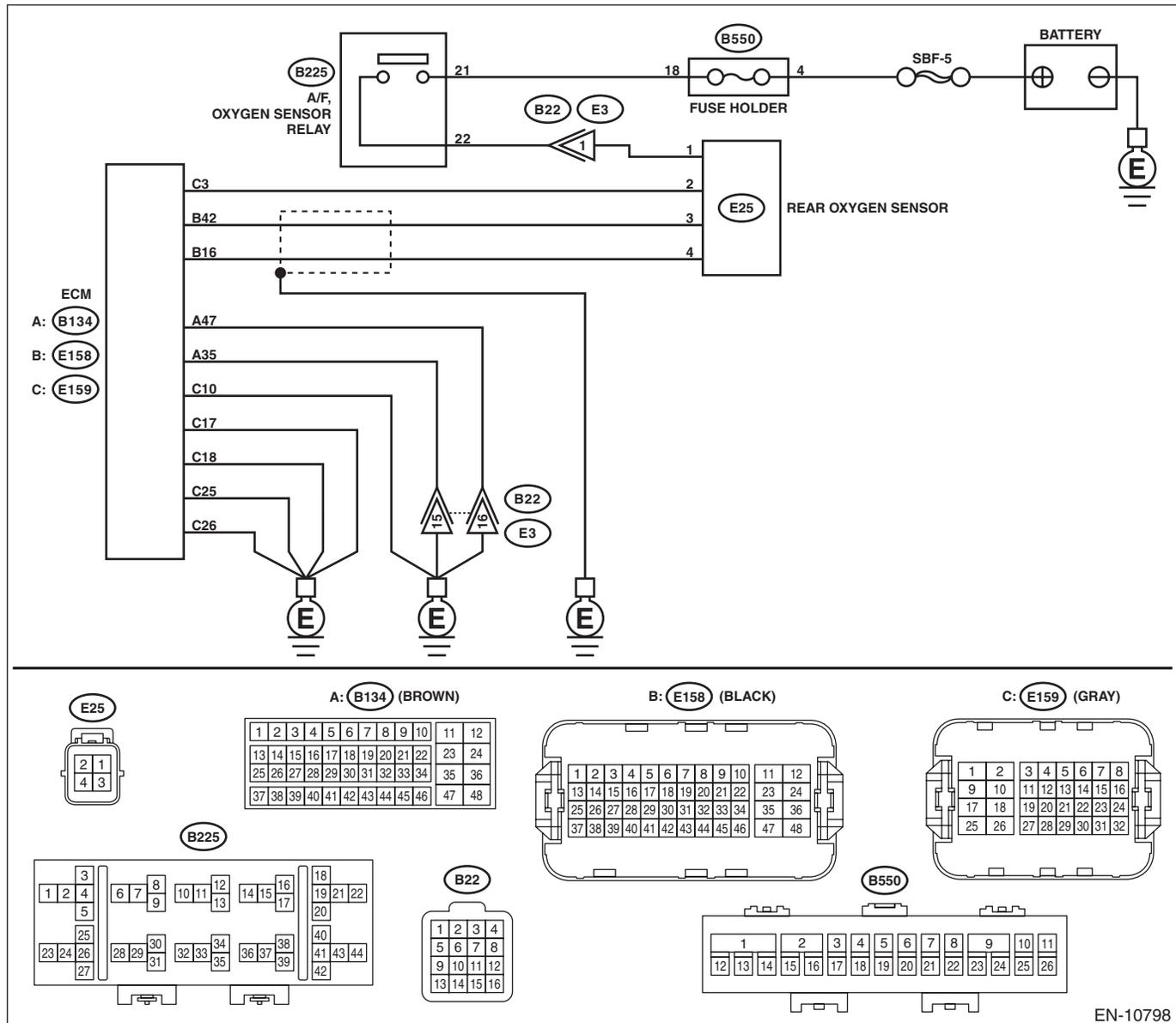
- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-26, DTC P0037 HO2S HEATER CONTROL CIRCUIT LOW (BANK 1 SENSOR 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10798

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1 CHECK POWER SUPPLY TO REAR OXY-GEN SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from rear oxygen sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between rear oxygen sensor connector and engine ground. Connector & terminal (E25) No. 1 (+) — Engine ground (-):</p>	Is the voltage 10 V or more?	Go to step 2.	Repair the power supply line. NOTE: In this case, repair the following item: • Open circuit in harness between A/F, oxygen sensor relay and rear oxygen sensor connector • Poor contact of A/F, oxygen sensor relay connector • Poor contact of coupling connector • Malfunction of A/F, oxygen sensor relay
<p>2 CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connector and rear oxygen sensor connector. Connector & terminal (E25) No. 2 — (E159) No. 3:</p>	Is the resistance less than 1 Ω ?	Go to step 3.	Repair the open circuit of harness between ECM connector and rear oxygen sensor connector.
<p>3 CHECK GROUND CIRCUIT FOR ECM. Measure the resistance of harness between ECM connector and engine ground. Connector & terminal (B134) No. 35 — Engine ground: (B134) No. 47 — Engine ground: (E159) No. 10 — Engine ground: (E159) No. 17 — Engine ground: (E159) No. 18 — Engine ground: (E159) No. 25 — Engine ground: (E159) No. 26 — Engine ground:</p>	Is the resistance less than 5 Ω ?	Go to step 4.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit of harness between ECM connector and engine ground • Poor contact of coupling connector
<p>4 CHECK REAR OXYGEN SENSOR. Measure the resistance between rear oxygen sensor connector terminals. Terminals No. 1 — No. 2:</p>	Is the resistance 5 — 7 Ω ?	Repair the poor contact of ECM connector.	Replace the rear oxygen sensor. <Ref. to FU(w/o STI)-128, Rear Oxygen Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

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

DTC DETECTING CONDITION:

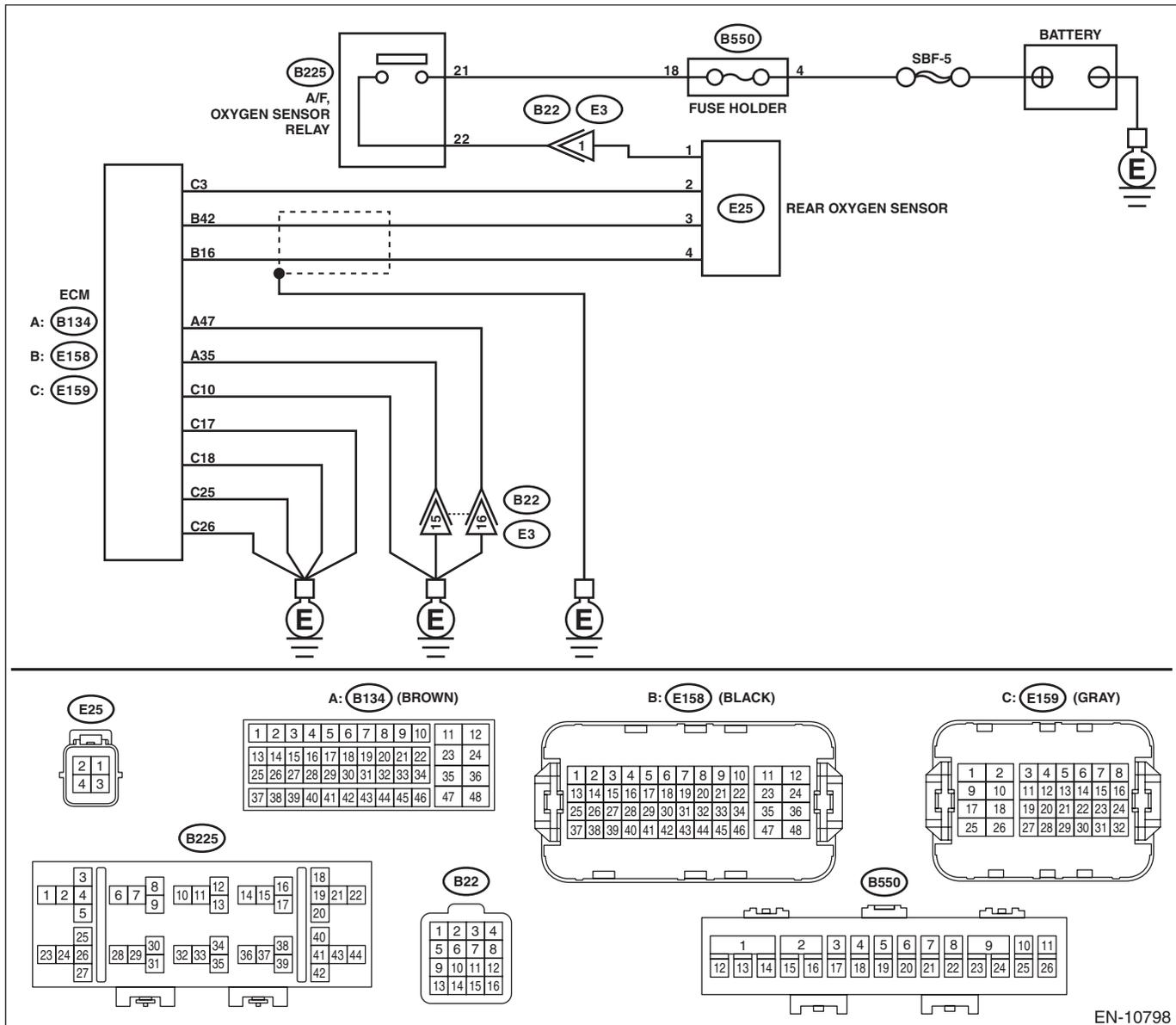
- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-27, DTC P0038 HO2S HEATER CONTROL CIRCUIT HIGH (BANK 1 SENSOR 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



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Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Measure the voltage between ECM connector and engine ground. Connector & terminal (E159) No. 3 (+) — Engine ground (-):	Is the voltage 10 V or more?	Repair the short circuit to power in the harness between ECM connector and rear oxygen sensor connector.	Go to step 2.
2 CHECK GROUND CIRCUIT FOR ECM. 1) Disconnect the connector from ECM. 2) Measure the resistance between the ECM connector and engine ground. Connector & terminal (B134) No. 35 — Engine ground: (B134) No. 47 — Engine ground: (E159) No. 10 — Engine ground: (E159) No. 17 — Engine ground: (E159) No. 18 — Engine ground: (E159) No. 25 — Engine ground: (E159) No. 26 — Engine ground:	Is the resistance less than 5 Ω ?	Repair the poor contact of ECM connector.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit of harness between ECM connector and engine ground • Poor contact of coupling connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

V: DTC P0068 MAP/MAF - THROTTLE POSITION CORRELATION

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-28, DTC P0068 MAP/MAF - THROTTLE POSITION CORRELATION, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK AIR INTAKE SYSTEM.	Are there holes, loose bolts or disconnection of hose on air intake system?	Repair the air intake system.	Go to step 2.
2 CHECK MANIFOLD ABSOLUTE PRESSURE AND INTAKE AIR TEMPERATURE SENSOR. 1) Start the engine and warm up engine until coolant temperature is higher than 75°C (167°F). 2) For CVT models, set the select lever to "P" range or "N" range, and for MT models, place the shift lever in the neutral position. 3) Turn the A/C switch to OFF. 4) Turn all the accessory switches to OFF. 5) Using the Subaru Select Monitor or a general scan tool, read the value in «Mani. Absolute Pressure». NOTE: • Subaru Select Monitor For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the "General Scan Tool Instruction Manual".	Is the value in «Mani. Absolute Pressure» 73.3 — 106.6 kPa (550 — 800 mmHg, 21.65 — 31.50 inHg) when the ignition is turned ON, and 20.0 — 46.7 kPa (150 — 350 mmHg, 5.91 — 13.78 inHg) during idling?	Go to step 3.	Replace the manifold absolute pressure and intake air temperature sensor. <Ref. to FU(w/o STI)-120, Manifold Absolute Pressure and Intake Air Temperature Sensor.>
3 CHECK THROTTLE OPENING ANGLE. Using the Subaru Select Monitor or a general scan tool, read the value in «Throttle Opening Angle». NOTE: • Subaru Select Monitor For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the "General Scan Tool Instruction Manual".	Is the value in «Throttle Opening Angle» with the throttle fully closed less than 5%?	Go to step 4.	Replace the electronic throttle control. <Ref. to FU(w/o STI)-15, Throttle Body.>
4 CHECK THROTTLE OPENING ANGLE.	Is the value in «Throttle Opening Angle» with the throttle fully open 85% or more?	Replace the manifold absolute pressure and intake air temperature sensor. <Ref. to FU(w/o STI)-120, Manifold Absolute Pressure and Intake Air Temperature Sensor.>	Replace the electronic throttle control. <Ref. to FU(w/o STI)-15, Throttle Body.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

W: DTC P0071 AMBIENT TEMPERATURE SENSOR CIRCUIT "A" RANGE/PERFORMANCE

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-30, DTC P0071 AMBIENT TEMPERATURE SENSOR CIRCUIT "A" RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check the appropriate DTC using the "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK CURRENT DATA. 1) Turn the ignition switch to ON. 2) Read the value of «Ambient Air Temperature» using the Subaru Select Monitor or a general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedures, refer to "Current Data Display For HVAC System". <Ref. to AC(diag)-40, Read Current Data.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual. 3) Read the change of the value in «Ambient Air Temperature» while heating and cooling the ambient sensor using a hair dryer. CAUTION: Do not heat the part to the temperature where you cannot touch it with your bare hand in order to prevent burning yourself and protect the part.	Does the value of «Ambient Air Temperature» change between heating and cooling?	Repair the poor contact of ECM connector.	Replace the ambient sensor. <Ref. to AC-72, Ambient Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

X: DTC P0072 AMBIENT TEMPERATURE SENSOR CIRCUIT "A" LOW

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-32, DTC P0072 AMBIENT TEMPERATURE SENSOR CIRCUIT "A" LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

Step	Check	Yes	No
1 CHECK DTC. Check for DTC. <Ref. to EN(w/o STI)(diag)-46, Read Diagnostic Trouble Code (DTC).>	Is P0072 or P0073 displayed in «Present fault»?	Go to step 2.	Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again. NOTE: In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.
2 CHECK COMBINATION METER. Check the combination meter system. <Ref. to IDI(diag)-2, Basic Diagnostic Procedure.>	Is the combination meter system normal?	Repair the poor contact of ECM connector.	Repair the combination meter system. <Ref. to IDI(diag)-2, Basic Diagnostic Procedure.>

Y: DTC P0073 AMBIENT TEMPERATURE SENSOR CIRCUIT "A" HIGH

NOTE:

For the diagnostic procedure, refer to DTC P0072. <Ref. to EN(w/o STI)(diag)-129, DTC P0072 AMBIENT TEMPERATURE SENSOR CIRCUIT "A" LOW, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Z: DTC P0087 FUEL RAIL/SYSTEM PRESSURE - TOO LOW

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-33, DTC P0087 FUEL RAIL/SYSTEM PRESSURE - TOO LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Improper idling
- Poor driving performance
- Poor acceleration

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK FOR FUEL DELIVERY LINE LEAKAGE. Visually check the fuel delivery line for leakage. WARNING: <ul style="list-style-type: none"> • When checking fuel delivery line during engine operation, be very careful so that one's hair, body and clothes do not touch the rotating part in the engine compartment. • If there is fuel leakage, the fuel can be combusted spontaneously by the engine heat, resulting in serious accident. Therefore, take extra care of possible fuel leakage. • Prepare the necessary fire-extinguishing appliance for immediate fire fighting in case of fire. NOTE: Concerning the section where visible inspection is difficult, the fuel odor provides a good indication of determining the fuel leakage.	Are there leaks from the fuel delivery line?	Replace the faulty fuel delivery line. <Ref. to FU(w/o STI)-194, Fuel Delivery and Evaporation Lines.> <Ref. to FU(w/o STI)-51, Fuel Injector.>	Go to step 2.
2 CHECK FOR ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check the appropriate DTC using the "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Go to step 3.
3 CHECK EXPERIENCE OF RUNNING OUT OF FUEL. Check if there was an experience of running out of fuel using "Check List for Interview". <Ref. to EN(w/o STI)(diag)-5, CHECK LIST NO. 2, CHECK, Check List for Interview.>	Has the vehicle experienced running out of fuel?	Finish the diagnosis. NOTE: DTC may be stored by running out of fuel.	Go to step 4.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
4 CHECK FUEL PRESSURE. 1) Start the engine. 2) Using the Subaru Select Monitor, read the values in «Fuel Rail Pressure A» and «Commanded Fuel Rail Pressure A» when racing the engine. NOTE: For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.>	Is the value in «Fuel Rail Pressure A» synchronized with the one in «Commanded Fuel Rail Pressure A»?	Go to step 5.	<ul style="list-style-type: none"> • The value in «Fuel Rail Pressure A» does not increase: Go to step 7. • The value in «Fuel Rail Pressure A» does not change: Replace the fuel pressure sensor. <Ref. to FU(w/o STI)-71, Fuel Pressure Sensor.>
5 CHECK OF FUEL PUMP. 1) Turn the ignition switch to ON. (engine OFF) 2) From «Fuel Pump Control» of «System Operation Check Mode», check the operating sound of the fuel pump when performing «ON/OFF drive» for the fuel pump. NOTE: For detailed operation procedures, refer to “PC application help for Subaru Select Monitor”.	Does the fuel pump emit operating sound?	Go to step 6.	Check fuel pump circuit. <Ref. to EN(w/o STI)(diag)-82, FUEL PUMP CIRCUIT, Diagnostics for Engine Starting Failure.>
6 CHECK FUEL PRESSURE (LOW PRESSURE SIDE). Check the fuel pressure on low-pressure side. <Ref. to ME(w/o STI)-31, INSPECTION, Fuel Pressure.>	Is the fuel pressure normal?	Go to step 7.	Check the fuel pump and fuel delivery line. <Ref. to FU(w/o STI)-172, INSPECTION, Fuel Pump.> <Ref. to FU(w/o STI)-201, INSPECTION, Fuel Delivery and Evaporation Lines.>
7 CHECK FOR FUEL DELIVERY LINE LEAKAGE (HIGH PRESSURE SIDE). 1) Start the engine. 2) Using the Subaru Select Monitor, read the change in value of «Fuel Rail Pressure A» when stopping the engine. NOTE: <ul style="list-style-type: none"> • In order to maintain the communication with Subaru Select Monitor, turn the ignition switch to OFF, and immediately turn it to ON. • For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.> 	Does the value of «Fuel Rail Pressure A» decrease rapidly?	Go to step 8.	Go to step 9.
8 CHECK HIGH-PRESSURE FUEL PUMP. Check the high-pressure fuel pump. <Ref. to FU(w/o STI)-82, INSPECTION, High Pressure Fuel Pump.>	Is the high-pressure fuel pump normal?	Go to step 9.	Replace the high-pressure fuel pump. <Ref. to FU(w/o STI)-74, High Pressure Fuel Pump.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>9 CHECK FOR REPRODUCTION OF FAILURE. 1) Perform the Clear Memory Mode. <Ref. to EN(w/o STI)(diag)-61, Clear Memory Mode.> 2) Perform appropriate drive cycle test. <Ref. to EN(w/o STI)(diag)-50, Drive Cycle.> 3) Read the DTC. <Ref. to EN(w/o STI)(diag)-46, Read Diagnostic Trouble Code (DTC).></p>	<p>Is the same DTC as current diagnosis output?</p>	<p>Replace the high-pressure fuel pump. <Ref. to FU(w/o STI)-74, High Pressure Fuel Pump.> After replacement, go to the next step. Go to step 10. NOTE: When the high-pressure fuel pump has been replaced in step 8, go to the next step without replacing the high-pressure fuel pump. Go to step 11.</p>	<p>End.</p>
<p>10 CHECK FOR REPRODUCTION OF FAILURE. 1) Perform the Clear Memory Mode. <Ref. to EN(w/o STI)(diag)-61, Clear Memory Mode.> 2) Perform appropriate drive cycle test. <Ref. to EN(w/o STI)(diag)-50, Drive Cycle.> 3) Read the DTC. <Ref. to EN(w/o STI)(diag)-46, Read Diagnostic Trouble Code (DTC).></p>	<p>Is the same DTC as current diagnosis output?</p>	<p>Go to step 11.</p>	<p>End.</p>
<p>11 CHECK FOR FUEL DELIVERY LINE LEAKAGE (HIGH PRESSURE SIDE). 1) Start the engine. 2) Using the Subaru Select Monitor, read the change in value of «Fuel Rail Pressure A» when stopping the engine. NOTE: • In order to maintain the communication with Subaru Select Monitor, turn the ignition switch to OFF, and immediately turn it to ON. • For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p>	<p>Does the value of «Fuel Rail Pressure A» decrease rapidly?</p>	<p>Replace the fuel injector. <Ref. to FU(w/o STI)-51, Fuel Injector.></p>	<p>Repair the poor contact of ECM connector.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

AA:DTC P0088 FUEL RAIL/SYSTEM PRESSURE - TOO HIGH

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-34, DTC P0088 FUEL RAIL/SYSTEM PRESSURE - TOO HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Poor driving performance
- Poor acceleration

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No	
1	CHECK FOR ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check the appropriate DTC using the "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2	CHECK FUEL PRESSURE. 1) Start the engine. 2) Using Subaru Select Monitor, read the values in «Fuel Rail Pressure A» and «Commanded Fuel Rail Pressure A» until the vehicle is accelerated to 60 km/h (37.3 MPH) from the parked state and stops again. CAUTION: • Follow traffic rules and give the highest priority to safe driving. • During driving, do not operate or gaze at the Subaru Select Monitor. • Always check the measurement value after bringing the vehicle to a stop in a safe place. NOTE: • In order to apply the running load to the vehicle, actually drive the vehicle, and read the measurement value. • For detailed operation procedures, refer to "Current Data Display For Engine". <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.>	Is the value in «Fuel Rail Pressure A» synchronized with the one in «Commanded Fuel Rail Pressure A»?	Replace the high-pressure fuel pump. <Ref. to FU(w/o STI)-74, High Pressure Fuel Pump.> After replacement, go to the next step. Go to step 3.	Replace the fuel pressure sensor. <Ref. to FU(w/o STI)-71, Fuel Pressure Sensor.>
3	CHECK FOR REPRODUCTION OF FAILURE. 1) Perform the Clear Memory Mode. <Ref. to EN(w/o STI)(diag)-61, Clear Memory Mode.> 2) Perform appropriate drive cycle test. <Ref. to EN(w/o STI)(diag)-50, Drive Cycle.> 3) Read the DTC. <Ref. to EN(w/o STI)(diag)-46, Read Diagnostic Trouble Code (DTC).>	Is the same DTC as current diagnosis output?	Repair the poor contact of ECM connector.	End.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

AB:DTC P0096 INTAKE AIR TEMPERATURE SENSOR #2 RANGE/PERFORMANCE PROBLEM

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-35, DTC P0096 INTAKE AIR TEMPERATURE SENSOR #2 RANGE/PERFORMANCE PROBLEM, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Improper idling
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check the appropriate DTC using the "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK CURRENT DATA. 1) Turn the ignition switch to ON. 2) Read the value of «IAT Sensor #12» using the Subaru Select Monitor or a general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedures, refer to "Current Data Display For Engine". <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual. 3) Read the change of the value in «IAT Sensor #12» while heating and cooling the manifold absolute pressure and intake air temperature sensor using a hair dryer. CAUTION: Do not heat the part to the temperature where you cannot touch it with your bare hand in order to prevent burning yourself and protect the part.	Does the value of «IAT Sensor #12» change between heating and cooling?	Repair the poor contact of ECM connector.	Replace the manifold absolute pressure and intake air temperature sensor. <Ref. to FU(w/o STI)-120, Manifold Absolute Pressure and Intake Air Temperature Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

AC:DTC P0097 INTAKE AIR TEMPERATURE SENSOR #2 CIRCUIT (LOW)

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-37, DTC P0097 INTAKE AIR TEMPERATURE SENSOR #2 CIRCUIT (LOW), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

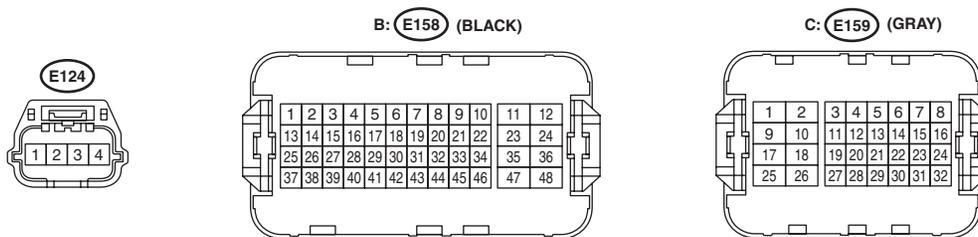
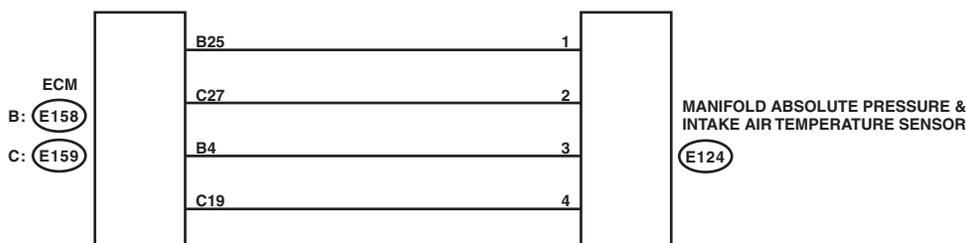
- Improper idling
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



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Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	<p>CHECK CURRENT DATA.</p> <p>1) Start the engine.</p> <p>2) Read the value of «IAT Sensor #12» using the Subaru Select Monitor or a general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • General scan tool <p>For detailed operation procedures, refer to the general scan tool operation manual.</p>	<p>Is the value in «IAT Sensor #12» 120°C (248°F) or more?</p>	<p>Go to step 2.</p>	<p>Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again.</p> <p>NOTE:</p> <p>In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.</p>
2	<p>CHECK HARNESS BETWEEN ECM AND MANIFOLD ABSOLUTE PRESSURE AND INTAKE AIR TEMPERATURE SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connector from ECM and the manifold absolute pressure and intake air temperature sensor.</p> <p>3) Measure the resistance between the ECM connector and engine ground.</p> <p>Connector & terminal (E158) No. 25 — Engine ground:</p>	<p>Is the resistance 1 MΩ or more?</p>	<p>Replace the manifold absolute pressure and intake air temperature sensor. <Ref. to FU(w/o STI)-120, Manifold Absolute Pressure and Intake Air Temperature Sensor.></p>	<p>Repair the ground short circuit of harness between ECM connector and the manifold absolute pressure and intake air temperature sensor connector.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

AD:DTC P0098 INTAKE AIR TEMPERATURE SENSOR #2 CIRCUIT (HIGH)

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-38, DTC P0098 INTAKE AIR TEMPERATURE SENSOR #2 CIRCUIT (HIGH), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

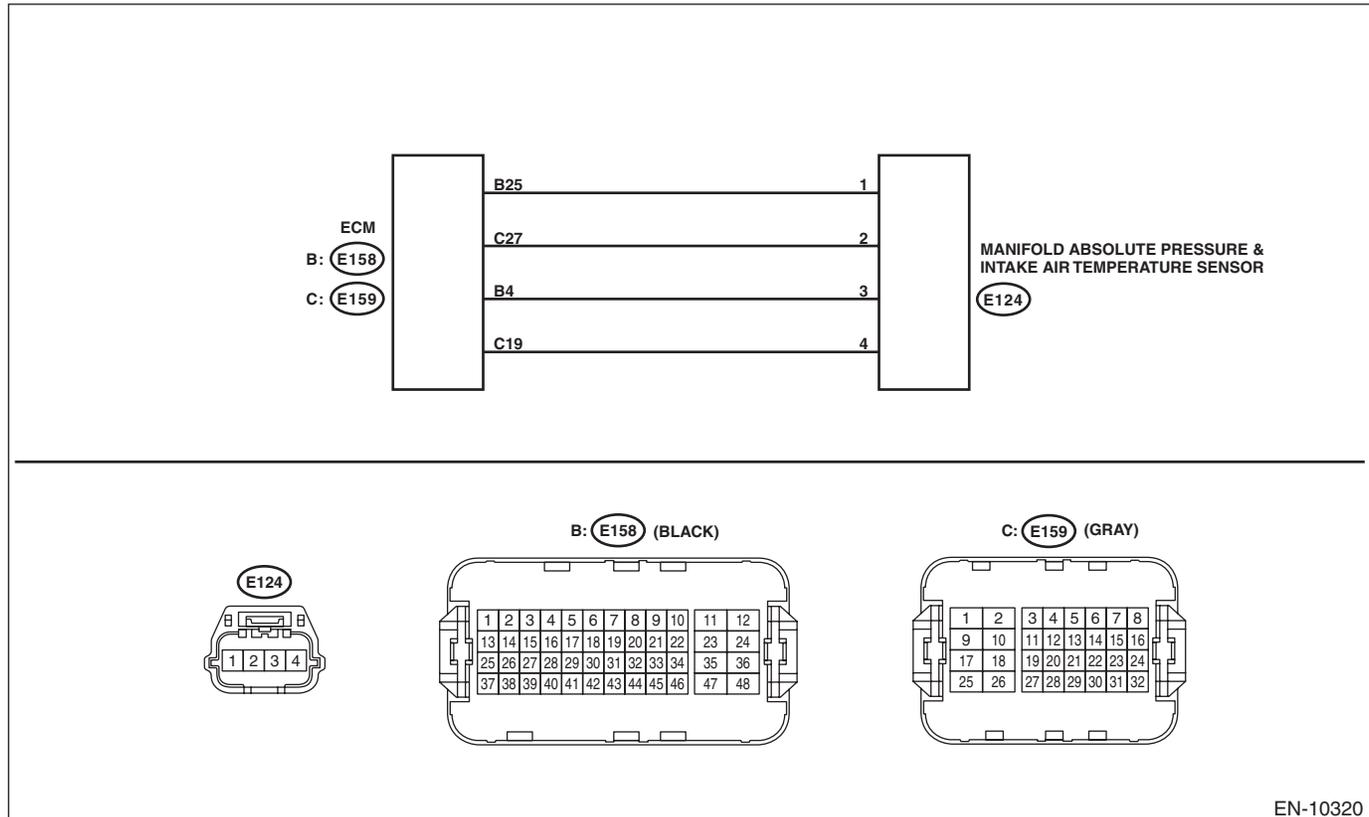
- Improper idling
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



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Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1</p> <p>CHECK CURRENT DATA.</p> <p>1) Start the engine.</p> <p>2) Read the value of «IAT Sensor #12» using the Subaru Select Monitor or a general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • General scan tool <p>For detailed operation procedures, refer to the general scan tool operation manual.</p>	<p>Is the value in «IAT Sensor #12» less than -40°C (-40°F)?</p>	<p>Go to step 2.</p>	<p>Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again.</p> <p>NOTE:</p> <p>In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.</p>
<p>2</p> <p>CHECK FOR POOR CONTACT.</p> <p>Check for poor contact of ECM and manifold absolute pressure and intake air temperature sensor connector.</p>	<p>Is there poor contact of ECM or manifold absolute pressure and intake air temperature sensor connector?</p>	<p>Repair the poor contact of ECM or manifold absolute pressure and intake air temperature sensor connector.</p>	<p>Go to step 3.</p>
<p>3</p> <p>CHECK HARNESS BETWEEN ECM AND MANIFOLD ABSOLUTE PRESSURE AND INTAKE AIR TEMPERATURE SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connector from ECM and the manifold absolute pressure and intake air temperature sensor.</p> <p>3) Measure the resistance of harness between ECM connector and the manifold absolute pressure and intake air temperature sensor connector.</p> <p>Connector & terminal</p> <p>(E158) No. 25 — (E124) No. 1:</p> <p>(E159) No. 27 — (E124) No. 2:</p>	<p>Is the resistance less than $1\ \Omega$?</p>	<p>Go to step 4.</p>	<p>Repair the open circuit of the harness between the ECM connector and the manifold absolute pressure & intake air temperature sensor connector.</p>
<p>4</p> <p>CHECK HARNESS BETWEEN ECM AND MANIFOLD ABSOLUTE PRESSURE AND INTAKE AIR TEMPERATURE SENSOR CONNECTOR.</p> <p>1) Connect all connectors.</p> <p>2) Turn the ignition switch to ON.</p> <p>3) Measure the voltage between ECM connector and engine ground.</p> <p>Connector & terminal</p> <p>(E158) No. 25 (+) — Engine ground (-):</p>	<p>Is the voltage 5 V or more?</p>	<p>Repair the short circuit to power in harness between ECM connector and the manifold absolute pressure and intake air temperature sensor connector.</p>	<p>Replace the manifold absolute pressure and intake air temperature sensor. <Ref. to FU(w/o STI)-120, Manifold Absolute Pressure and Intake Air Temperature Sensor.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

AE:DTC P0101 MASS OR VOLUME AIR FLOW CIRCUIT RANGE/PERFORMANCE

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-39, DTC P0101 MASS OR VOLUME AIR FLOW CIRCUIT RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Improper idling
- Engine stalls.
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check the appropriate DTC using the "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Replace the mass air flow and intake air temperature sensor. <Ref. to FU(w/o STI)-118, Mass Air Flow and Intake Air Temperature Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

AF:DTC P0102 MASS OR VOLUME AIR FLOW CIRCUIT LOW INPUT

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-41, DTC P0102 MASS OR VOLUME AIR FLOW CIRCUIT LOW INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

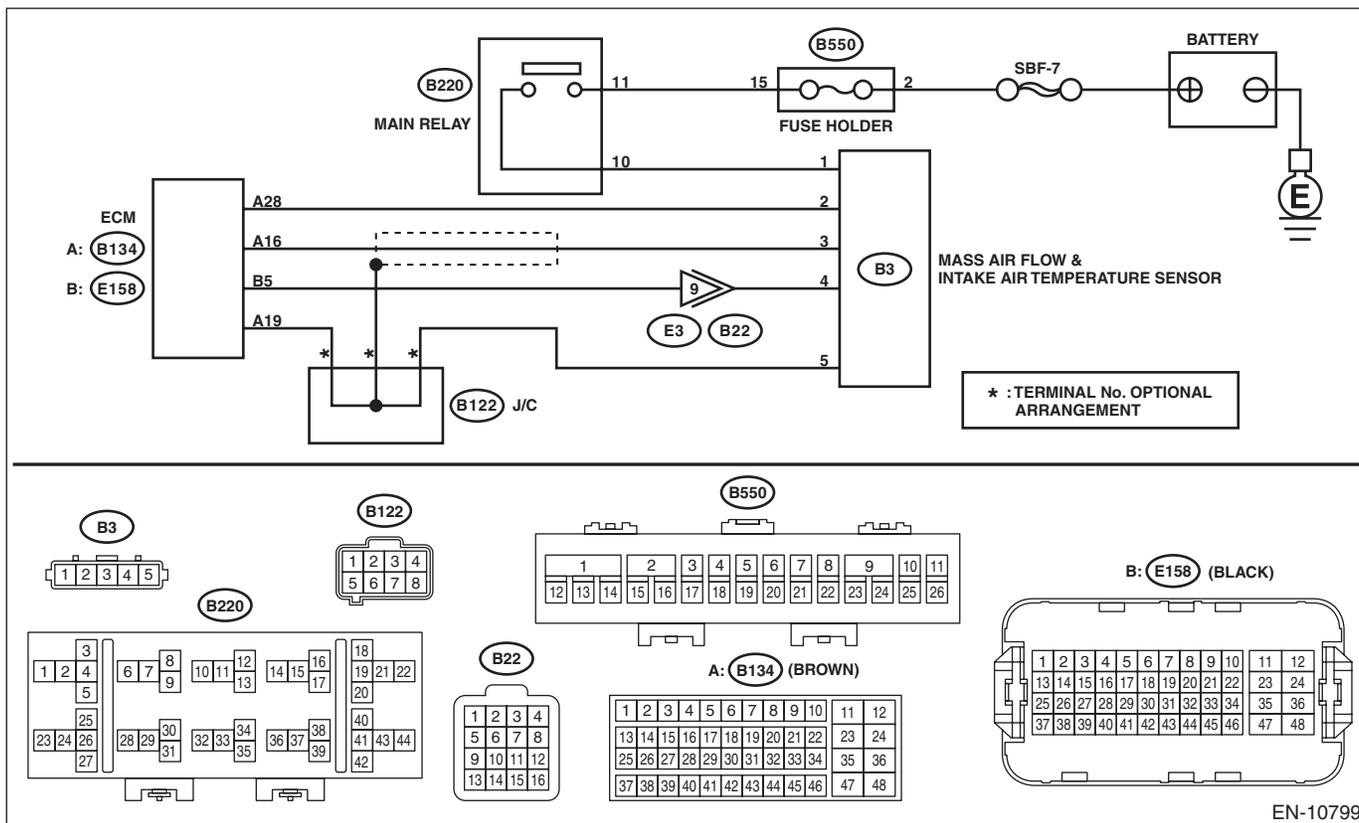
- Improper idling
- Engine stalls.
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10799

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1 CHECK CURRENT DATA. 1) Start the engine. 2) Read the value of «Air Flow Sensor Voltage» using Subaru Select Monitor. NOTE: For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p>	<p>Is the value of «Air Flow Sensor Voltage» less than 0.2 V?</p>	<p>Go to step 2.</p>	<p>Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again. NOTE: In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.</p>
<p>2 CHECK POWER SUPPLY OF MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from the mass air flow and intake air temperature sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between mass air flow and intake air temperature sensor connector and engine ground. <i>Connector & terminal</i> <i>(B3) No. 1 (+) — Engine ground (-):</i></p>	<p>Is the voltage 10 V or more?</p>	<p>Go to step 3.</p>	<p>Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between main relay and mass air flow and intake air temperature sensor connector • Poor contact of main relay connector</p>
<p>3 CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM connector and the mass air flow and intake air temperature sensor connector. <i>Connector & terminal</i> <i>(B134) No. 16 — (B3) No. 3:</i></p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 4.</p>	<p>Repair the open circuit of harness between ECM connector and the mass air flow and intake air temperature sensor connector.</p>
<p>4 CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR CONNECTOR. Measure the resistance between the ECM connector and engine ground. <i>Connector & terminal</i> <i>(B134) No. 16 — Engine ground:</i></p>	<p>Is the resistance 1 MΩ or more?</p>	<p>Go to step 5.</p>	<p>Repair the ground short circuit of harness between ECM connector and the mass air flow and intake air temperature sensor connector.</p>
<p>5 CHECK FOR POOR CONTACT. Check for poor contact of ECM and mass air flow and intake air temperature sensor connector.</p>	<p>Is there poor contact of ECM or mass air flow and intake air temperature sensor connector?</p>	<p>Repair the poor contact of ECM or mass air flow and intake air temperature sensor connector.</p>	<p>Replace the mass air flow and intake air temperature sensor. <Ref. to FU(w/o STI)-118, Mass Air Flow and Intake Air Temperature Sensor.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-42, DTC P0103 MASS OR VOLUME AIR FLOW CIRCUIT HIGH INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

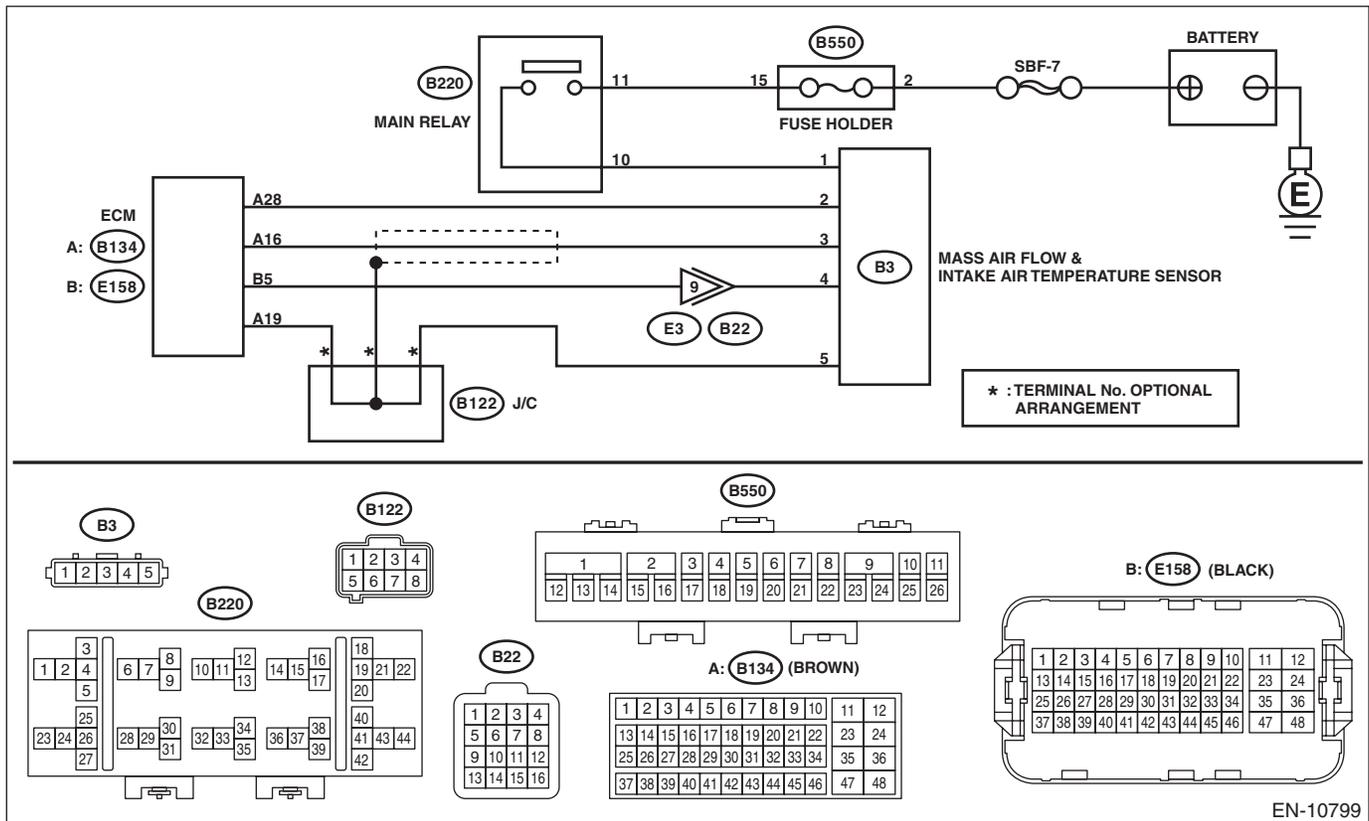
- Improper idling
- Engine stalls.
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10799

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	<p>CHECK CURRENT DATA.</p> <p>1) Start the engine.</p> <p>2) Read the value of «Air Flow Sensor Voltage» using Subaru Select Monitor.</p> <p>NOTE: For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p>	Is the value of «Air Flow Sensor Voltage» 5 V or more?	Go to step 2.	<p>Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again.</p> <p>NOTE: In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.</p>
2	<p>CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connectors from the mass air flow and intake air temperature sensor.</p> <p>3) Start the engine.</p> <p>4) Read the value of «Air Flow Sensor Voltage» using Subaru Select Monitor.</p> <p>NOTE: For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p>	Is the value of «Air Flow Sensor Voltage» 5 V or more?	Repair the short circuit of harness to power supply between ECM connector and the mass air flow and intake air temperature sensor connector.	Go to step 3.
3	<p>CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Measure the resistance of harness between mass air flow and intake air temperature sensor connector and engine ground.</p> <p>Connector & terminal (B3) No. 2 — Engine ground:</p>	Is the resistance less than 5 Ω?	Go to step 4.	<p>Repair the harness and connector.</p> <p>NOTE: In this case, repair the following item:</p> <ul style="list-style-type: none"> • Open circuit in harness between ECM connector and the mass air flow and intake air temperature sensor connector • Poor contact of ECM connector
4	<p>CHECK FOR POOR CONTACT.</p> <p>Check for poor contact of mass air flow and intake air temperature sensor connector.</p>	Is there poor contact of mass air flow and intake air temperature sensor connector?	Repair the poor contact of mass air flow and intake air temperature sensor connector.	Replace the mass air flow and intake air temperature sensor. <Ref. to FU(w/o STI)-118, Mass Air Flow and Intake Air Temperature Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

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

DTC DETECTING CONDITION:

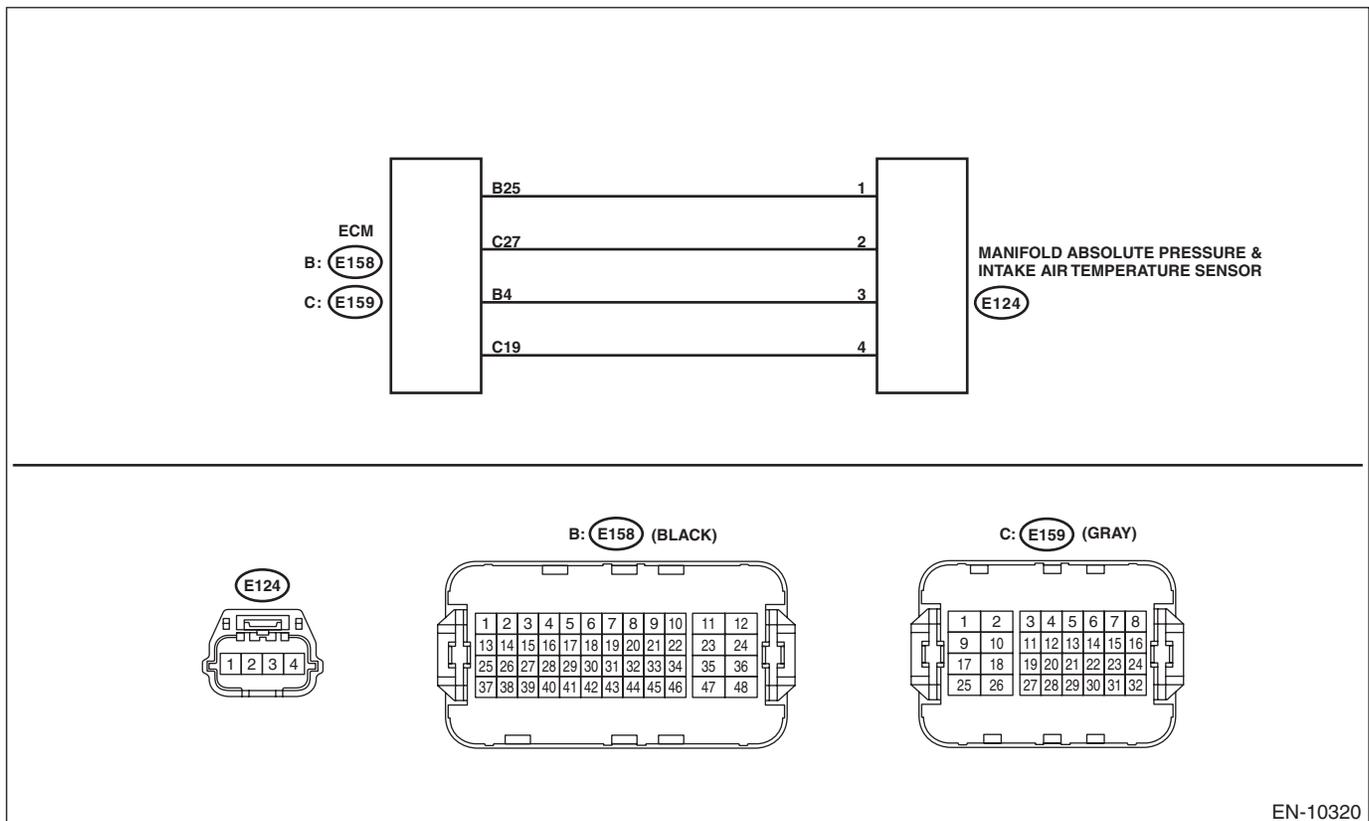
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-43, DTC P0107 MANIFOLD ABSOLUTE PRESSURE/BAROMETRIC PRESSURE CIRCUIT LOW INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10320

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	<p>CHECK CURRENT DATA.</p> <p>1) Start the engine.</p> <p>2) Read the value of «Mani. Absolute Pressure» using the Subaru Select Monitor or a general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • General scan tool <p>For detailed operation procedures, refer to the general scan tool operation manual.</p>	<p>Is the value of «Mani. Absolute Pressure» less than 13.3 kPa (100 mmHg, 3.94 inHg)?</p>	<p>Go to step 2.</p>	<p>Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again.</p> <p>NOTE:</p> <p>In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.</p>
2	<p>CHECK POWER SUPPLY OF MANIFOLD ABSOLUTE PRESSURE AND INTAKE AIR TEMPERATURE SENSOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connector from the manifold absolute pressure and intake air temperature sensor.</p> <p>3) Turn the ignition switch to ON.</p> <p>4) Measure the voltage between the manifold absolute pressure and intake air temperature sensor connector and engine ground.</p> <p>Connector & terminal (E124) No. 4 (+) — Engine ground (-):</p>	<p>Is the voltage 4.5 V or more?</p>	<p>Go to step 3.</p>	<p>Repair the harness and connector.</p> <p>NOTE:</p> <p>In this case, repair the following item:</p> <ul style="list-style-type: none"> • Open circuit of harness between ECM connector and the manifold absolute pressure and intake air temperature sensor connector • Poor contact of ECM connector
3	<p>CHECK HARNESS BETWEEN ECM AND MANIFOLD ABSOLUTE PRESSURE AND INTAKE AIR TEMPERATURE SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connector from ECM.</p> <p>3) Measure the resistance of harness between ECM connector and the manifold absolute pressure and intake air temperature sensor connector.</p> <p>Connector & terminal (E158) No. 4 — (E124) No. 3:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 4.</p>	<p>Repair the open circuit in harness between the manifold absolute pressure and intake air temperature sensor connector.</p>
4	<p>CHECK HARNESS BETWEEN ECM AND MANIFOLD ABSOLUTE PRESSURE AND INTAKE AIR TEMPERATURE SENSOR CONNECTOR.</p> <p>Measure the resistance between the ECM connector and engine ground.</p> <p>Connector & terminal (E158) No. 4 — Engine ground:</p>	<p>Is the resistance 1 MΩ or more?</p>	<p>Go to step 5.</p>	<p>Repair the ground short circuit of harness between ECM connector and the manifold absolute pressure and intake air temperature sensor connector.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
5 CHECK FOR POOR CONTACT. Check for poor contact of ECM and manifold absolute pressure and intake air temperature sensor connector.	Is there poor contact of ECM or manifold absolute pressure and intake air temperature sensor connector?	Repair the poor contact of ECM or manifold absolute pressure and intake air temperature sensor connector.	Replace the manifold absolute pressure and intake air temperature sensor. <Ref. to FU(w/o STI)-120, Manifold Absolute Pressure and Intake Air Temperature Sensor.>

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

DTC DETECTING CONDITION:

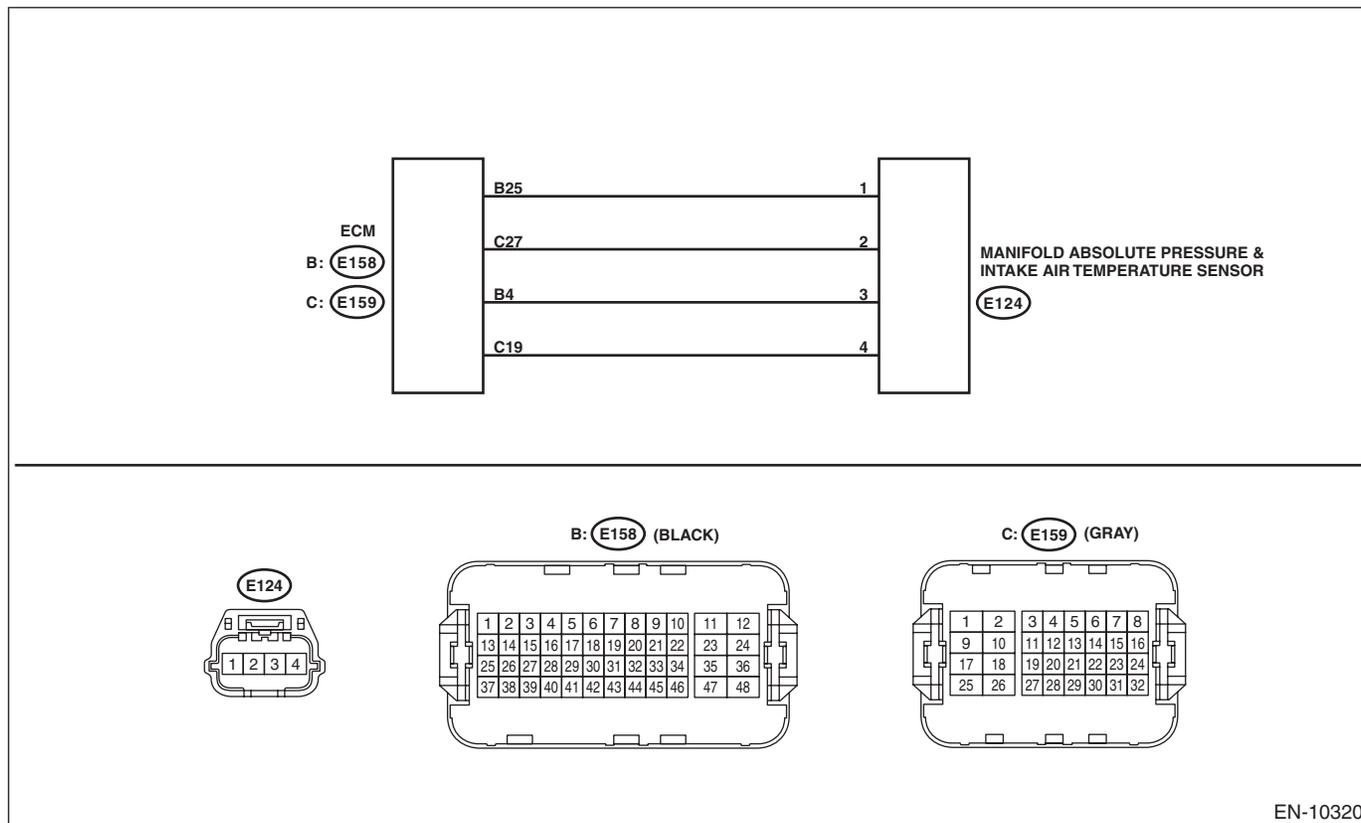
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-44, DTC P0108 MANIFOLD ABSOLUTE PRESSURE/BAROMETRIC PRESSURE CIRCUIT HIGH INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10320

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1</p> <p>CHECK CURRENT DATA.</p> <p>1) Start the engine.</p> <p>2) Read the value of «Mani. Absolute Pressure» using the Subaru Select Monitor or a general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • General scan tool <p>For detailed operation procedures, refer to the general scan tool operation manual.</p>	<p>Is the value of «Mani. Absolute Pressure» 256 kPa (1,920.2 mmHg, 75.6 inHg) or more?</p>	<p>Go to step 2.</p>	<p>Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again.</p> <p>NOTE:</p> <p>In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.</p>
<p>2</p> <p>CHECK HARNESS BETWEEN ECM AND MANIFOLD ABSOLUTE PRESSURE AND INTAKE AIR TEMPERATURE SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connector from the manifold absolute pressure and intake air temperature sensor.</p> <p>3) Start the engine.</p> <p>4) Read the value of «Mani. Absolute Pressure» using the Subaru Select Monitor or a general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • General scan tool <p>For detailed operation procedures, refer to the general scan tool operation manual.</p>	<p>Is the value of «Mani. Absolute Pressure» 256 kPa (1,920.2 mmHg, 75.6 inHg) or more?</p>	<p>Repair the short circuit to power in harness between ECM connector and the manifold absolute pressure and intake air temperature sensor connector.</p>	<p>Go to step 3.</p>
<p>3</p> <p>CHECK HARNESS BETWEEN ECM AND MANIFOLD ABSOLUTE PRESSURE AND INTAKE AIR TEMPERATURE SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Measure the resistance of harness between manifold absolute pressure and intake air temperature sensor connector and engine ground.</p> <p>Connector & terminal (E124) No. 2 — Engine ground:</p>	<p>Is the resistance less than 5 Ω?</p>	<p>Go to step 4.</p>	<p>Repair the harness and connector.</p> <p>NOTE:</p> <p>In this case, repair the following item:</p> <ul style="list-style-type: none"> • Open circuit of harness between ECM connector and the manifold absolute pressure and intake air temperature sensor connector • Poor contact of ECM connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
4 CHECK FOR POOR CONTACT. Check for poor contact of the manifold absolute pressure and intake air temperature sensor connector.	Is there poor contact of the manifold absolute pressure and intake air temperature sensor connector?	Repair the poor contact of the manifold absolute pressure and intake air temperature sensor connector.	Replace the manifold absolute pressure and intake air temperature sensor. <Ref. to FU(w/o STI)-120, Manifold Absolute Pressure and Intake Air Temperature Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

AJ:DTC P0111 INTAKE AIR TEMPERATURE SENSOR RANGE/PERFORMANCE PROBLEM

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-45, DTC P0111 INTAKE AIR TEMPERATURE SENSOR RANGE/PERFORMANCE PROBLEM, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Improper idling
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check the appropriate DTC using the "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK CURRENT DATA. 1) Turn the ignition switch to ON. 2) Read the value of «IAT Sensor #11» using the Subaru Select Monitor or a general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedures, refer to "Current Data Display For Engine". <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual. 3) Read the change of the value in «IAT Sensor #11» while heating and cooling the mass air flow and intake air temperature sensor using a hair dryer. CAUTION: Do not heat the part to the temperature where you cannot touch it with your bare hand in order to prevent burning yourself and protect the part.	Does the value of «IAT Sensor #11» change between heating and cooling?	Repair the poor contact of ECM connector.	Replace the mass air flow and intake air temperature sensor. <Ref. to FU(w/o STI)-118, Mass Air Flow and Intake Air Temperature Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	<p>CHECK CURRENT DATA.</p> <p>1) Start the engine.</p> <p>2) Read the value of «IAT Sensor #11» using the Subaru Select Monitor or a general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • General scan tool <p>For detailed operation procedures, refer to the general scan tool operation manual.</p>	Is the value in «IAT Sensor #11» 120°C (248°F) or more?	Go to step 2.	<p>Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again.</p> <p>NOTE:</p> <p>In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.</p>
2	<p>CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connector from ECM and the mass air flow and intake air temperature sensor.</p> <p>3) Measure the resistance between the ECM connector and engine ground.</p> <p>Connector & terminal (E158) No. 5 — Engine ground:</p>	Is the resistance 1 MΩ or more?	Replace the mass air flow and intake air temperature sensor. <Ref. to FU(w/o STI)-118, Mass Air Flow and Intake Air Temperature Sensor.>	Repair the ground short circuit of harness between ECM connector and the mass air flow and intake air temperature sensor connector.

AL:DTC P0113 INTAKE AIR TEMPERATURE SENSOR 1 CIRCUIT HIGH

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-49, DTC P0113 INTAKE AIR TEMPERATURE SENSOR 1 CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

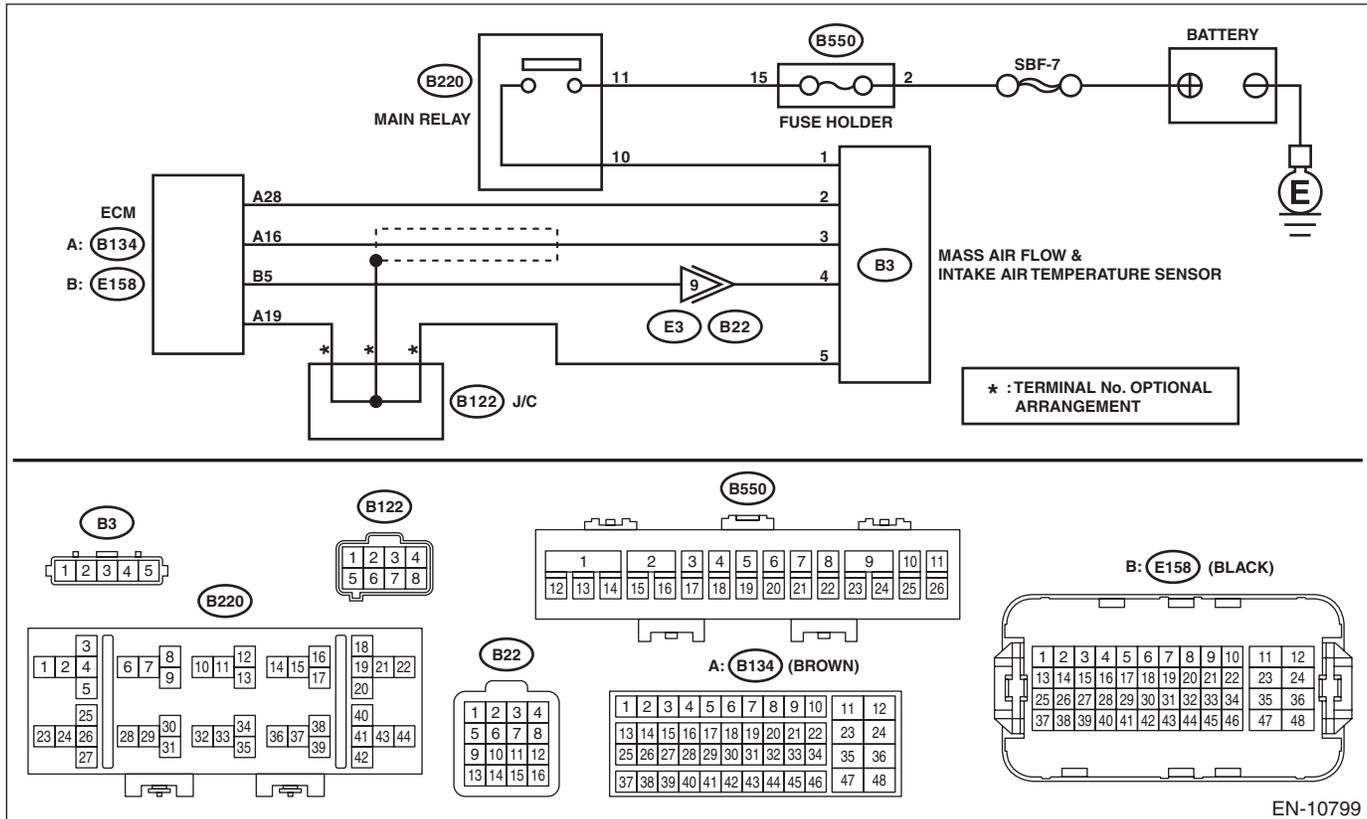
- Improper idling
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10799

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK CURRENT DATA. 1) Start the engine. 2) Read the value of «IAT Sensor #11» using the Subaru Select Monitor or a general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value in «IAT Sensor #11» less than -40°C (-40°F)?	Go to step 2.	Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again. NOTE: In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.
2 CHECK FOR POOR CONTACT. Check for poor contact of ECM and mass air flow and intake air temperature sensor connector.	Is there poor contact of ECM or mass air flow and intake air temperature sensor connector?	Repair the poor contact of ECM or mass air flow and intake air temperature sensor connector.	Go to step 3.
3 CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and the mass air flow and intake air temperature sensor. 3) Measure the resistance of harness between ECM connector and the mass air flow and intake air temperature sensor connector. Connector & terminal (E158) No. 5 — (B3) No. 4: (B134) No. 19 — (B3) No. 5:	Is the resistance less than $1\ \Omega$?	Go to step 4.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and the mass air flow and intake air temperature sensor connector • Poor contact of coupling connector
4 CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR CONNECTOR. 1) Connect all connectors. 2) Turn the ignition switch to ON. 3) Measure the voltage between ECM connector and engine ground. Connector & terminal (E158) No. 5 (+) — Engine ground (-):	Is the voltage 5 V or more?	Repair the short circuit of harness to power supply between ECM connector and the mass air flow and intake air temperature sensor connector.	Replace the mass air flow and intake air temperature sensor. <Ref. to FU(w/o STI)-118, Mass Air Flow and Intake Air Temperature Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

AM:DTC P0116 ENGINE COOLANT TEMPERATURE SENSOR 1 CIRCUIT RANGE/PERFORMANCE

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-50, DTC P0116 ENGINE COOLANT TEMPERATURE SENSOR 1 CIRCUIT RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Hard to start
- Improper idling
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check the appropriate DTC using the "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK ENGINE COOLANT TEMPERATURE SENSOR. 1) Disconnect the connectors from the engine coolant temperature sensor. 2) Measure the resistance between engine coolant temperature sensor terminals when the engine coolant is cold and after warmed up. Terminals No. 1 — No. 2:	Is the resistance of engine coolant temperature sensor different between when engine coolant is cold and after warmed up?	Repair the poor contact of ECM connector.	Replace the engine coolant temperature sensor. <Ref. to FU(w/o STI)-93, Engine Coolant Temperature Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

AN:DTC P0117 ENGINE COOLANT TEMPERATURE CIRCUIT LOW

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-52, DTC P0117 ENGINE COOLANT TEMPERATURE CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

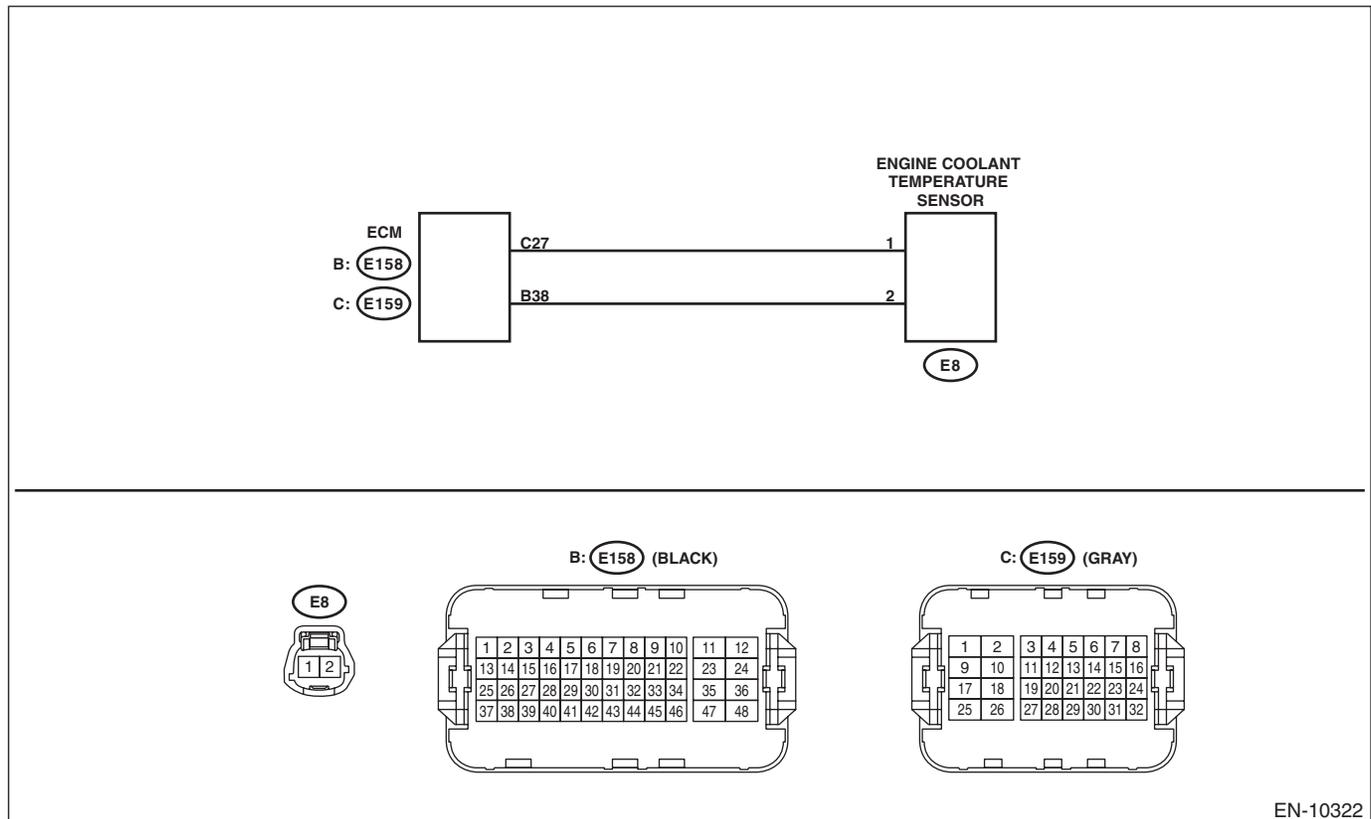
- Hard to start
- Improper idling
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10322

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	<p>CHECK CURRENT DATA.</p> <p>1) Start the engine.</p> <p>2) Read the value of «Coolant Temp.» using the Subaru Select Monitor or a general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • General scan tool <p>For detailed operation procedures, refer to the general scan tool operation manual.</p>	<p>Is the value of «Coolant Temp.» 150°C (302°F) or more?</p>	<p>Go to step 2.</p>	<p>Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again.</p> <p>NOTE:</p> <p>In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.</p>
2	<p>CHECK HARNESS BETWEEN ECM AND ENGINE COOLANT TEMPERATURE SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connectors from ECM and engine coolant temperature sensor.</p> <p>3) Measure the resistance between the ECM connector and engine ground.</p> <p>Connector & terminal (E158) No. 38 — Engine ground:</p>	<p>Is the resistance 1 MΩ or more?</p>	<p>Replace the engine coolant temperature sensor. <Ref. to FU(w/o STI)-93, Engine Coolant Temperature Sensor.></p>	<p>Repair the short circuit to ground in harness between ECM connector and engine coolant temperature sensor connector.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

AO:DTC P0118 ENGINE COOLANT TEMPERATURE CIRCUIT HIGH

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-53, DTC P0118 ENGINE COOLANT TEMPERATURE CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

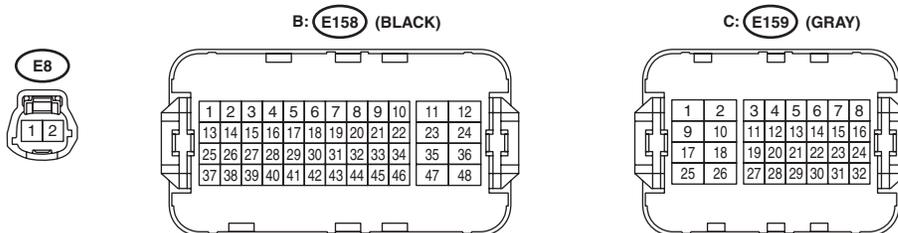
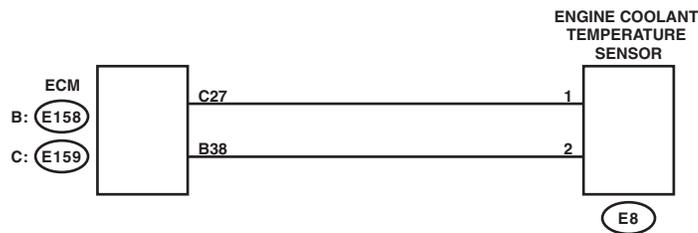
- Hard to start
- Improper idling
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10322

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	<p>CHECK CURRENT DATA.</p> <p>1) Start the engine.</p> <p>2) Read the value of «Coolant Temp.» using the Subaru Select Monitor or a general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • General scan tool <p>For detailed operation procedures, refer to the general scan tool operation manual.</p>	Is the value of «Coolant Temp.» less than -40°C (-40°F)?	Go to step 2.	<p>Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again.</p> <p>NOTE:</p> <p>In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.</p>
2	<p>CHECK FOR POOR CONTACT.</p> <p>Check for poor contact of ECM and engine coolant temperature sensor connector.</p>	Is there poor contact of ECM or engine coolant temperature sensor connector?	Repair the poor contact of ECM or engine coolant temperature sensor connector.	Go to step 3.
3	<p>CHECK HARNESS BETWEEN ECM AND ENGINE COOLANT TEMPERATURE SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connectors from ECM and engine coolant temperature sensor.</p> <p>3) Measure the resistance of harness between ECM connector and engine coolant temperature sensor connector.</p> <p>Connector & terminal</p> <p>(E159) No. 27 — (E8) No. 1:</p> <p>(E158) No. 38 — (E8) No. 2:</p>	Is the resistance less than $1\ \Omega$?	Go to step 4.	Repair the open circuit of the harness between the ECM connector and engine coolant temperature sensor connector.
4	<p>CHECK HARNESS BETWEEN ECM AND ENGINE COOLANT TEMPERATURE SENSOR CONNECTOR.</p> <p>1) Connect all connectors.</p> <p>2) Turn the ignition switch to ON.</p> <p>3) Measure the voltage between ECM connector and engine ground.</p> <p>Connector & terminal</p> <p>(E158) No. 38 (+) — Engine ground (-):</p>	Is the voltage 5 V or more?	Repair the short circuit of harness to power supply between ECM connector and engine coolant temperature sensor connector.	Replace the engine coolant temperature sensor. <Ref. to FU(w/o STI)-93, Engine Coolant Temperature Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

AP:DTC P0122 THROTTLE/PEDAL POSITION SENSOR/SWITCH “A” CIRCUIT LOW

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-54, DTC P0122 THROTTLE/PEDAL POSITION SENSOR/SWITCH “A” CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Improper idling
- Engine stalls.
- Poor driving performance

CAUTION:

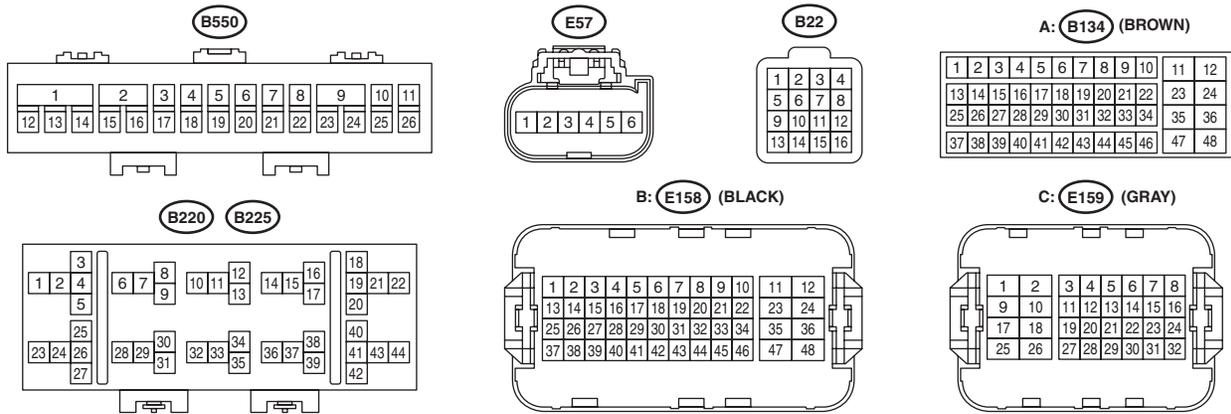
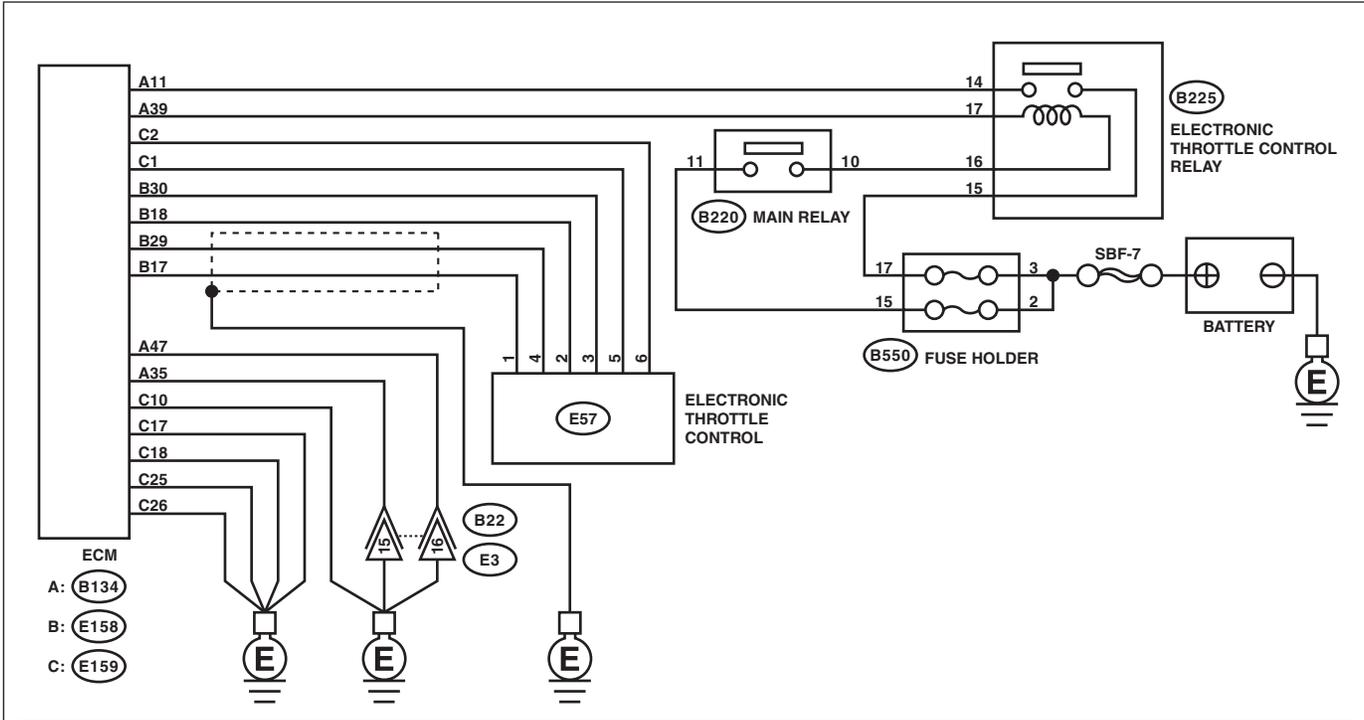
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10800

Step	Check	Yes	No
<p>1</p> <p>CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connectors from ECM and electronic throttle control.</p> <p>3) Measure the resistance between the ECM connector and engine ground.</p> <p>Connector & terminal (E158) No. 18 — Engine ground: (E158) No. 17 — Engine ground:</p>	<p>Is the resistance 1 MΩ or more?</p>	<p>Go to step 2.</p>	<p>Repair the ground short circuit of harness between ECM connector and electronic throttle control connector.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
2 CHECK SHORT CIRCUIT INSIDE THE ECM. 1) Connect the connector to ECM. 2) Measure the resistance between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 1 — Engine ground:	Is the resistance 1 M Ω or more?	Replace the electronic throttle control. <Ref. to FU(w/o STI)-15, Throttle Body.>	Repair the ground short circuit of harness between ECM connector and electronic throttle control connector. Replace the ECM if defective. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).>

AQ:DTC P0123 THROTTLE/PEDAL POSITION SENSOR/SWITCH “A” CIRCUIT HIGH

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-55, DTC P0123 THROTTLE/PEDAL POSITION SENSOR/SWITCH “A” CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Improper idling
- Engine stalls.
- Poor driving performance

CAUTION:

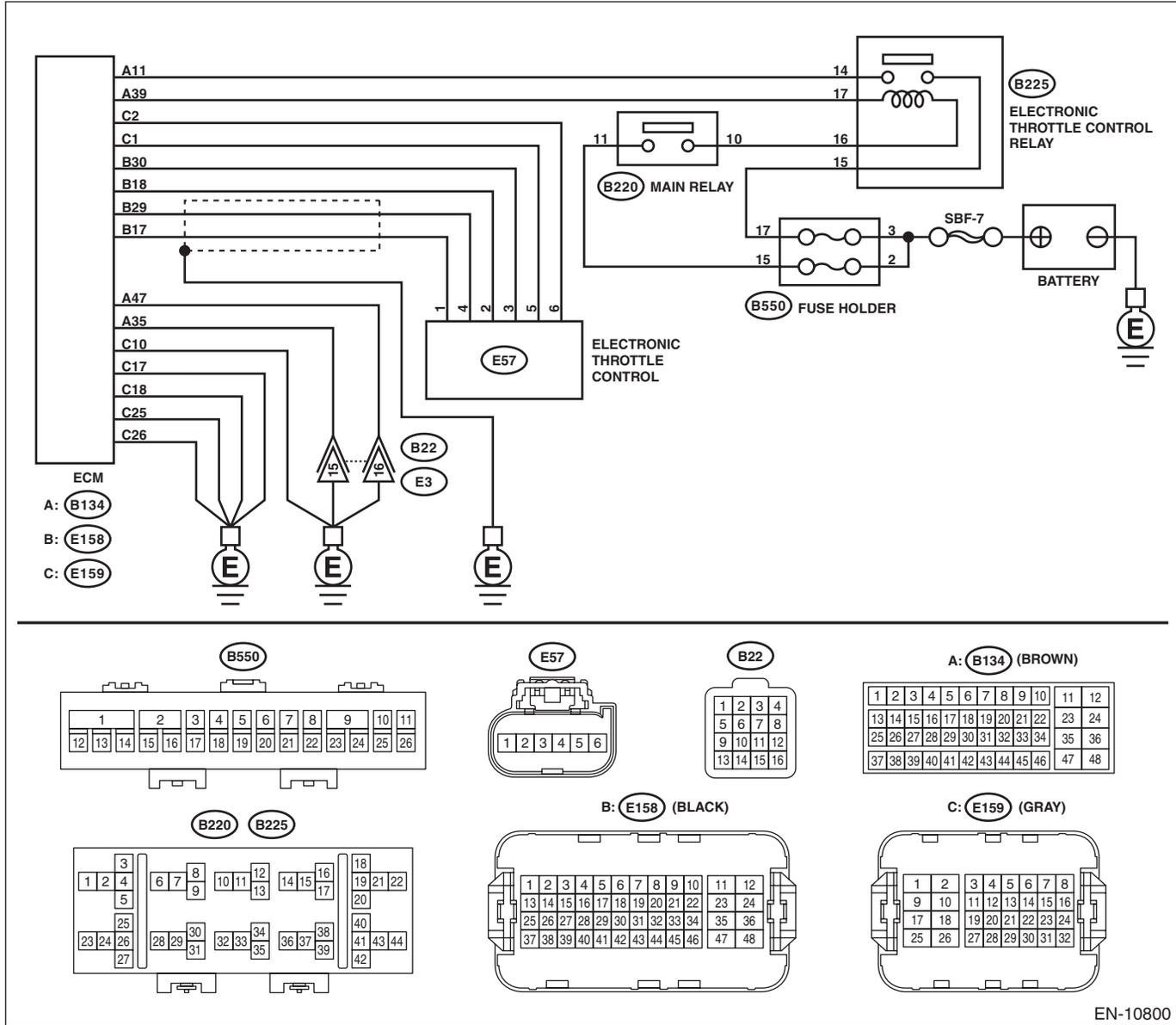
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10800

Step	Check	Yes	No
<p>1</p> <p>CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connectors from ECM and electronic throttle control.</p> <p>3) Measure the resistance of harness between ECM connector and electronic throttle control connector.</p> <p>Connector & terminal (E158) No. 17 — (E57) No. 1: (E158) No. 30 — (E57) No. 3:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 2.</p>	<p>Repair the open circuit of harness between ECM connector and electronic throttle control connector.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>2</p> <p>CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL CONNECTOR.</p> <p>1) Connect the connector to ECM. 2) Measure the resistance between electronic throttle control connector and engine ground.</p> <p>Connector & terminal (E57) No. 3 — Engine ground:</p>	<p>Is the resistance less than 5 Ω?</p>	<p>Go to step 3.</p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case, repair the following item:</p> <ul style="list-style-type: none"> • Open circuit of harness between ECM connector and engine ground • Poor contact of ECM connector • Poor contact of coupling connector
<p>3</p> <p>CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL CONNECTOR.</p> <p>1) Turn the ignition switch to ON. 2) Measure the voltage between electronic throttle control connector and engine ground.</p> <p>Connector & terminal (E57) No. 1 (+) — Engine ground (-):</p>	<p>Is the voltage 5 V or more?</p>	<p>Repair the short circuit to power in the harness between ECM connector and electronic throttle control connector.</p>	<p>Go to step 4.</p>
<p>4</p> <p>CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connectors.</p> <p>Connector & terminal (E158) No. 17 — (E158) No. 18:</p>	<p>Is the resistance 1 MΩ or more?</p>	<p>Repair the poor contact of electronic throttle control connector. Replace the electronic throttle control if defective. <Ref. to FU(w/o STI)-15, Throttle Body.></p>	<p>Repair the short circuit to power in the harness between ECM connector and electronic throttle control connector.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

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

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-56, DTC P0125 INSUFFICIENT COOLANT TEMPERATURE FOR CLOSED LOOP FUEL CONTROL, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Engine does not return to idle.

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

	Step	Check	Yes	No
1	CHECK TIRE SIZE.	Is the tire size as specified and the same size as three other wheels?	Go to step 2.	Replace the tire.
2	CHECK ENGINE COOLANT. Check the following items: <ul style="list-style-type: none">• Amount of engine coolant• Engine coolant freeze• Contamination of engine coolant	Is the engine coolant normal?	Go to step 3.	Fill or replace the engine coolant. <Ref. to CO(w/o STI)-13, REPLACEMENT, Engine Coolant.>
3	CHECK THERMOSTAT.	Does the thermostat remain opened?	Replace the thermostat. <Ref. to CO(w/o STI)-33, Thermostat.>	Replace the engine coolant temperature sensor. <Ref. to FU(w/o STI)-93, Engine Coolant Temperature Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

AS:DTC P0128 COOLANT THERMOSTAT (ENGINE COOLANT TEMPERATURE BELOW THERMOSTAT REGULATING TEMPERATURE)

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-58, DTC P0128 COOLANT THERMOSTAT (ENGINE COOLANT TEMPERATURE BELOW THERMOSTAT REGULATING TEMPERATURE), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Thermostat remains open.

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check the appropriate DTC using the "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK ENGINE COOLANT.	Is the engine coolant amount normal?	Go to step 3.	Refill the engine coolant. <Ref. to CO(w/o STI)-13, Engine Coolant.>
3 CHECK RADIATOR FAN. 1) Start the engine. 2) Check the radiator fan operation.	Does the radiator fan continuously rotate for 3 minutes or more during idling?	Repair radiator fan circuit. <Ref. to CO(w/o STI)-46, Radiator Main Fan and Fan Motor.> <Ref. to CO(w/o STI)-49, Radiator Sub Fan and Fan Motor.>	Replace the thermostat. <Ref. to CO(w/o STI)-33, Thermostat.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

AT:DTC P0130 O2 SENSOR CIRCUIT (BANK 1 SENSOR 1)

DTC DETECTING CONDITION:

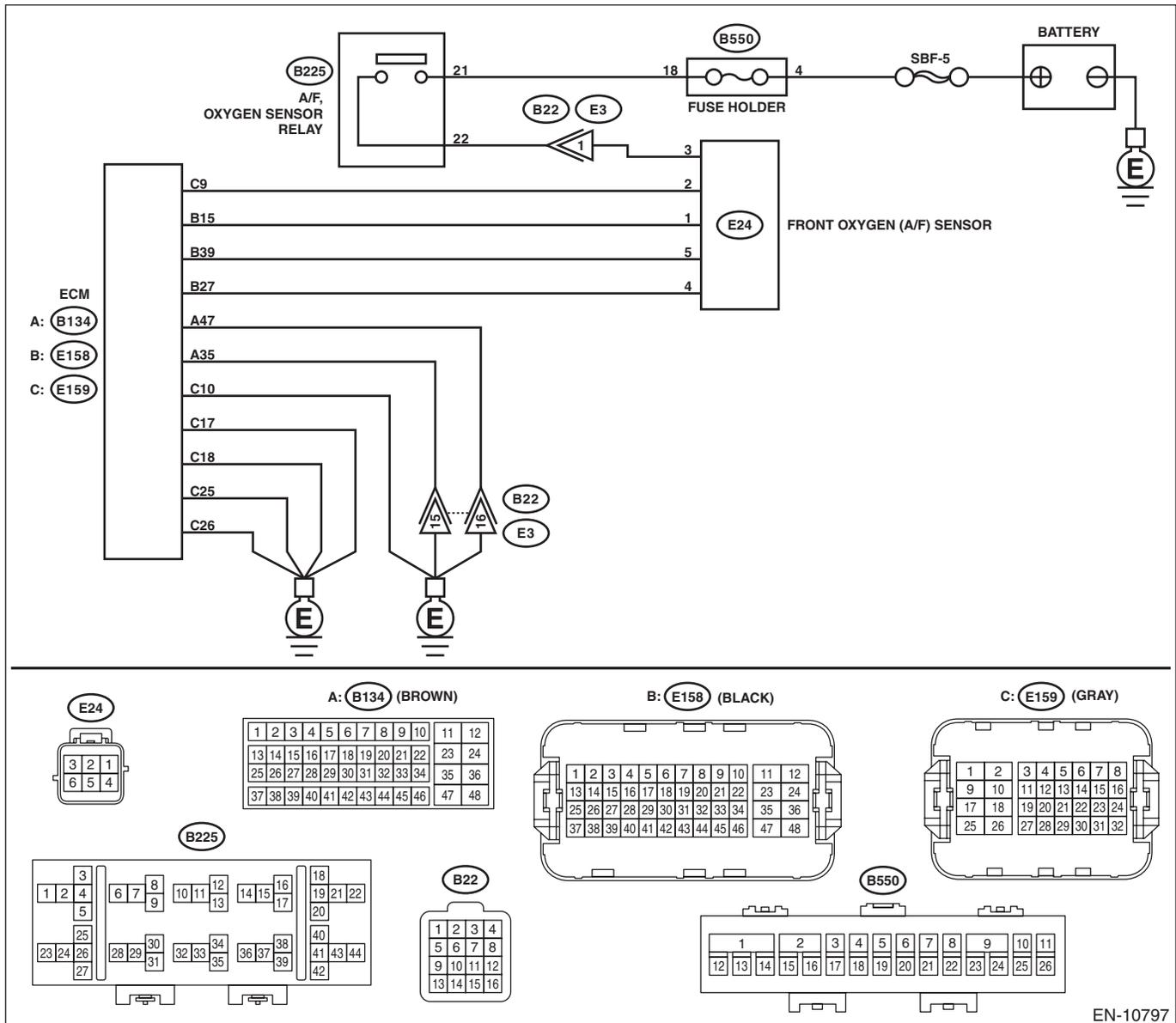
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-61, DTC P0130 O2 SENSOR CIRCUIT (BANK 1 SENSOR 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10797

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1</p> <p>CHECK FRONT OXYGEN (A/F) SENSOR DATA.</p> <p>1) Start the engine and warm up engine until coolant temperature is higher than 75°C (167°F).</p> <p>2) Idle the engine for one minute or more.</p> <p>3) Read the value of «A/F Sensor #11» using the Subaru Select Monitor or a general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> Subaru Select Monitor <p>For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <ul style="list-style-type: none"> General scan tool <p>For detailed operation procedures, refer to the general scan tool operation manual.</p>	<p>Is the value of «A/F Sensor #11» 1.20 — 3.00 V?</p>	<p>Go to step 2.</p>	<p>Go to step 3.</p>
<p>2</p> <p>CHECK FRONT OXYGEN (A/F) SENSOR DATA.</p> <p>1) Race the engine so that the engine speed reaches 3,000 rpm. (Five times in total)</p> <p>2) Read the value of «A/F Sensor #11» at racing using the Subaru Select Monitor or a general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> To increase engine speed to 3,000 rpm, slowly depress accelerator pedal for approximately 5 seconds, and quickly release accelerator pedal to decrease engine speed. Normally, the air fuel ratio is rich during racing. 	<p>Is the value of «A/F Sensor #11» 2.5 V or more?</p>	<p>Go to step 5.</p>	<p>Go to step 3.</p>
<p>3</p> <p>CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connectors from ECM and front oxygen (A/F) sensor.</p> <p>3) Measure the resistance of harness between ECM connector and front oxygen (A/F) sensor connector.</p> <p>Connector & terminal</p> <p>(E158) No. 15 — (E24) No. 1:</p> <p>(E158) No. 27 — (E24) No. 4:</p> <p>(E158) No. 39 — (E24) No. 5:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 4.</p>	<p>Repair the open circuit of harness between ECM connector and front oxygen (A/F) sensor connector.</p>
<p>4</p> <p>CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.</p> <p>Measure the resistance between the ECM connector and engine ground.</p> <p>Connector & terminal</p> <p>(E158) No. 15 — Engine ground:</p> <p>(E158) No. 27 — Engine ground:</p> <p>(E158) No. 39 — Engine ground:</p>	<p>Is the resistance 1 MΩ or more?</p>	<p>Go to step 5.</p>	<p>Repair the short circuit to ground in harness between ECM connector and front oxygen (A/F) sensor connector.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
5 CHECK EXHAUST SYSTEM. Check exhaust system parts. NOTE: Check the following items. <ul style="list-style-type: none">• Looseness and improper fitting of exhaust system parts• Damage (crack, hole etc.) of parts• Looseness of front oxygen (A/F) sensor• Loose part and improper installation between front oxygen (A/F) sensor and rear oxygen sensor	Is there any fault in exhaust system?	Repair or replace faulty parts.	Replace the front oxygen (A/F) sensor. <Ref. to FU(w/o STI)-126, Front Oxygen (A/F) Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

AU:DTC P0131 O2 SENSOR CIRCUIT LOW VOLTAGE (BANK 1 SENSOR 1)

DTC DETECTING CONDITION:

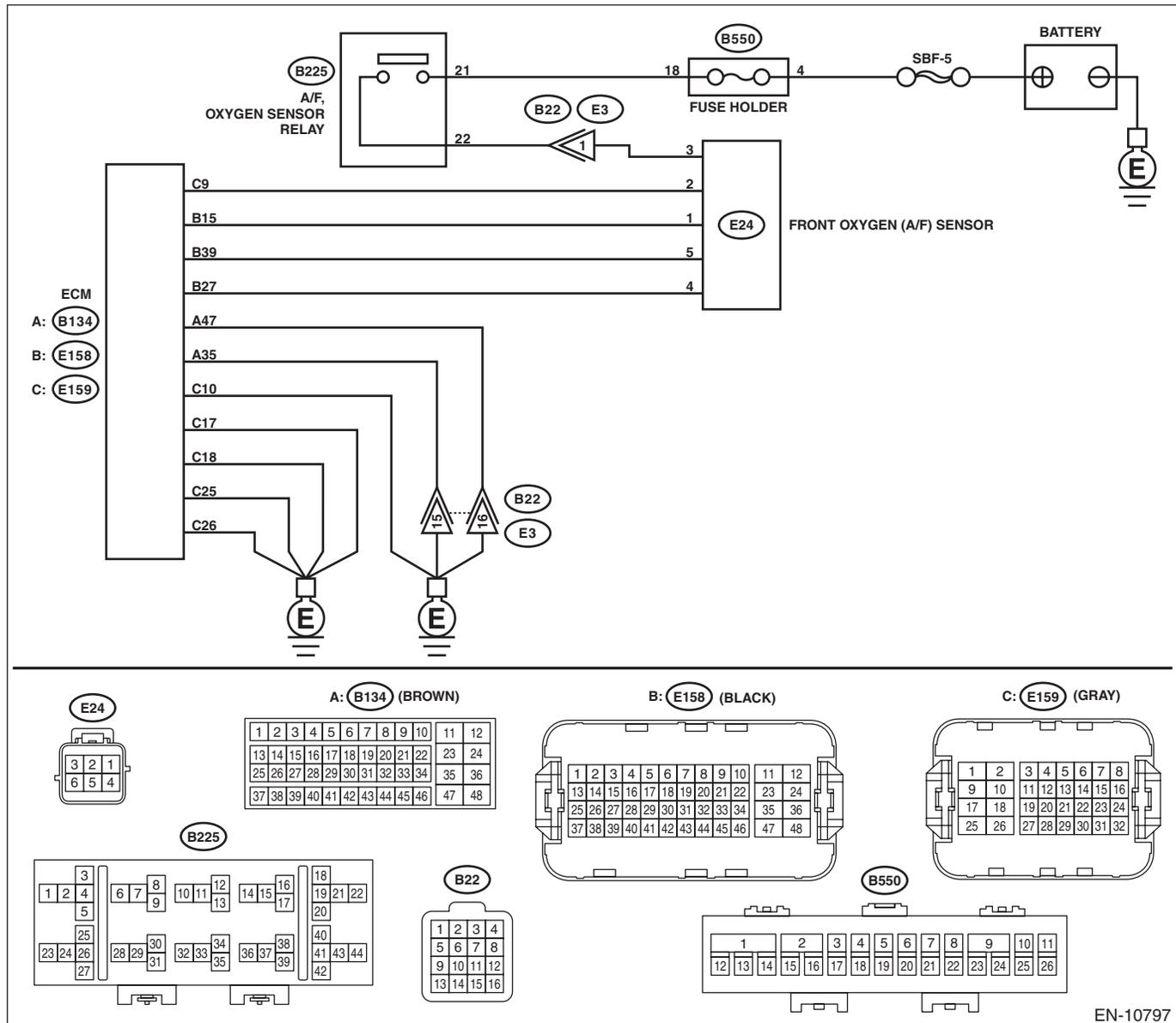
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-62, DTC P0131 O2 SENSOR CIRCUIT LOW VOLTAGE (BANK 1 SENSOR 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10797

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK FRONT OXYGEN (A/F) SENSOR CONNECTOR.	Has water entered the connector?	Completely remove any water inside.	Go to step 2.
2 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and front oxygen (A/F) sensor. 3) Measure the resistance between the ECM connector and engine ground. Connector & terminal (E158) No. 15 — Engine ground: (E158) No. 27 — Engine ground: (E158) No. 39 — Engine ground:	Is the resistance 1 MΩ or more?	Go to step 3.	Repair the short circuit to ground in harness between ECM connector and front oxygen (A/F) sensor connector.
3 CHECK FOR POOR CONTACT. Check for poor contact of the front oxygen (A/F) sensor connector.	Is there poor contact of front oxygen (A/F) sensor connector?	Repair the poor contact of front oxygen (A/F) sensor connector.	Replace the front oxygen (A/F) sensor. <Ref. to FU(w/o STI)-126, Front Oxygen (A/F) Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK FRONT OXYGEN (A/F) SENSOR CONNECTOR.	Has water entered the connector?	Completely remove any water inside.	Go to step 2.
2 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from front oxygen (A/F) sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between ECM connector and engine ground. Connector & terminal <i>(E158) No. 15 (+) — Engine ground (-):</i> <i>(E158) No. 27 (+) — Engine ground (-):</i> <i>(E158) No. 39 (+) — Engine ground (-):</i>	Is the voltage 8 V or more?	Repair the short circuit to power in the harness between ECM connector and front oxygen (A/F) sensor connector.	Replace the front oxygen (A/F) sensor. <Ref. to FU(w/o STI)-126, Front Oxygen (A/F) Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

AW:DTC P0134 O2 SENSOR CIRCUIT NO ACTIVITY DETECTED (BANK 1 SENSOR 1)

DTC DETECTING CONDITION:

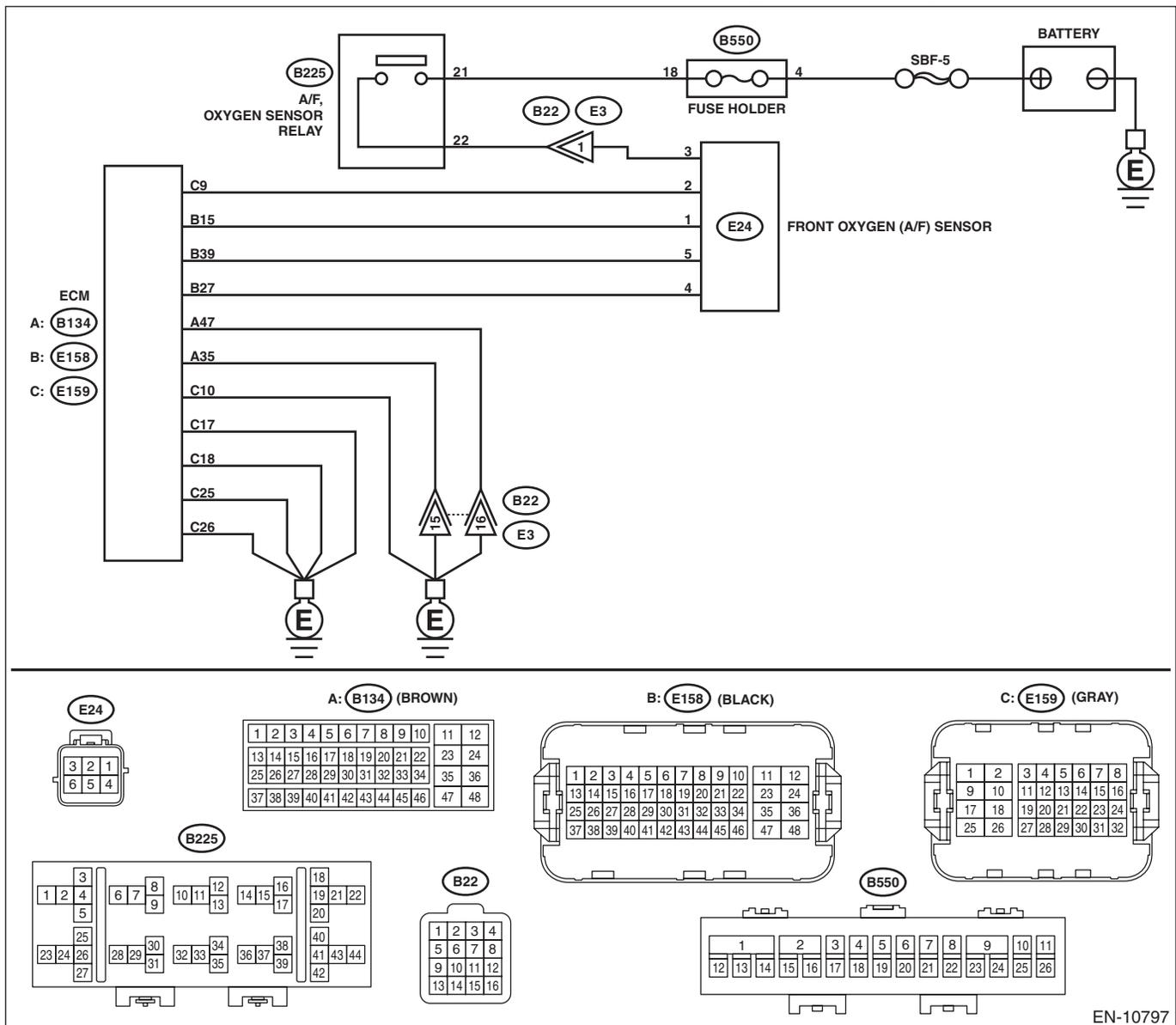
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-64, DTC P0134 O2 SENSOR CIRCUIT NO ACTIVITY DETECTED (BANK 1 SENSOR 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10797

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1</p> <p>CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and front oxygen (A/F) sensor. 3) Measure the resistance of harness between ECM connector and front oxygen (A/F) sensor connector.</p> <p>Connector & terminal (E158) No. 15 — (E24) No. 1: (E158) No. 27 — (E24) No. 4: (E158) No. 39 — (E24) No. 5:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 2.</p>	<p>Repair the open circuit of harness between ECM connector and front oxygen (A/F) sensor connector.</p>
<p>2</p> <p>CHECK FOR POOR CONTACT. Check for poor contact of ECM and front oxygen (A/F) sensor connector.</p>	<p>Is there poor contact of ECM or front oxygen (A/F) sensor connector?</p>	<p>Repair the poor contact of ECM or front oxygen (A/F) sensor connector.</p>	<p>Replace the front oxygen (A/F) sensor. <Ref. to FU(w/o STI)-126, Front Oxygen (A/F) Sensor.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

AX:DTC P0137 O2 SENSOR CIRCUIT LOW VOLTAGE (BANK 1 SENSOR 2)

DTC DETECTING CONDITION:

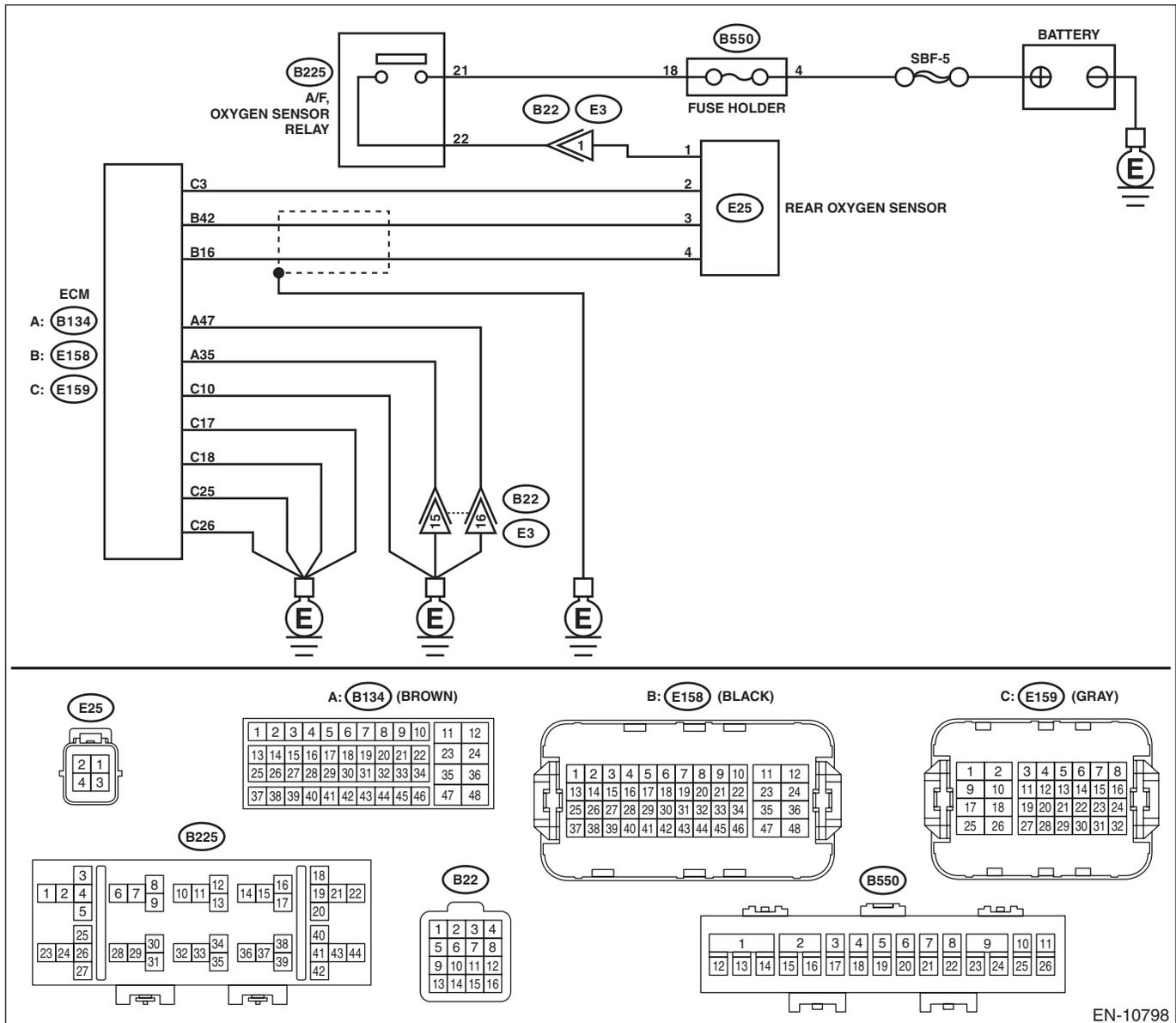
- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-66, DTC P0137 O2 SENSOR CIRCUIT LOW VOLTAGE (BANK 1 SENSOR 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	<p>CHECK REAR OXYGEN SENSOR DATA.</p> <p>1) Warm up the engine until engine coolant temperature is higher than 75°C (167°F), and keep the engine speed at 3,000 rpm. (2 minutes maximum)</p> <p>2) Read the value of «Oxygen sensor #12» using the Subaru Select Monitor or a general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> Subaru Select Monitor <p>For detailed operation procedures, refer to “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <ul style="list-style-type: none"> General scan tool <p>For detailed operation procedures, refer to the general scan tool operation manual.</p>	Is the value of «Oxygen sensor #12» 0.490 V or more?	Go to step 6.	Go to step 2.
2	<p>CHECK REAR OXYGEN SENSOR CONNECTOR.</p>	Has water entered the connector?	Completely remove any water inside.	Go to step 3.
3	<p>CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connector from ECM and rear oxygen sensor.</p> <p>3) Measure the resistance of harness between ECM connector and rear oxygen sensor connector.</p> <p>Connector & terminal (E158) No. 42 — (E25) No. 3: (E158) No. 16 — (E25) No. 4:</p>	Is the resistance less than 1 Ω?	Go to step 4.	Repair the open circuit of harness between ECM connector and rear oxygen sensor connector.
4	<p>CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR.</p> <p>Measure the resistance of harness between ECM connector and rear oxygen sensor connector.</p> <p>Connector & terminal (E158) No. 16 — Engine ground (E158) No. 42 — Engine ground</p>	Is the resistance 1 Ω or more?	Go to step 5.	Repair the short circuit to ground in harness between ECM connector and rear oxygen sensor connector.
5	<p>CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR.</p> <p>1) Connect the connector to ECM.</p> <p>2) Turn the ignition switch to ON.</p> <p>3) Measure the voltage between rear oxygen sensor connector and engine ground.</p> <p>Connector & terminal (E25) No. 3 (+) — Engine ground (-):</p>	Is the voltage 1.8 V or more?	Replace the rear oxygen sensor. <Ref. to FU(w/o STI)-128, Rear Oxygen Sensor.>	Replace the ECM. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).>
6	<p>CHECK EXHAUST SYSTEM.</p> <p>Check exhaust system parts.</p> <p>NOTE:</p> <p>Check the following items.</p> <ul style="list-style-type: none"> Looseness and improper fitting of exhaust system parts Damage (crack, hole etc.) of parts Loose part and improper installation between front oxygen (A/F) sensor and rear oxygen sensor 	Is there any fault in exhaust system?	Repair or replace faulty parts.	Replace the rear oxygen sensor. <Ref. to FU(w/o STI)-128, Rear Oxygen Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

AY:DTC P0138 O2 SENSOR CIRCUIT HIGH VOLTAGE (BANK 1 SENSOR 2)

DTC DETECTING CONDITION:

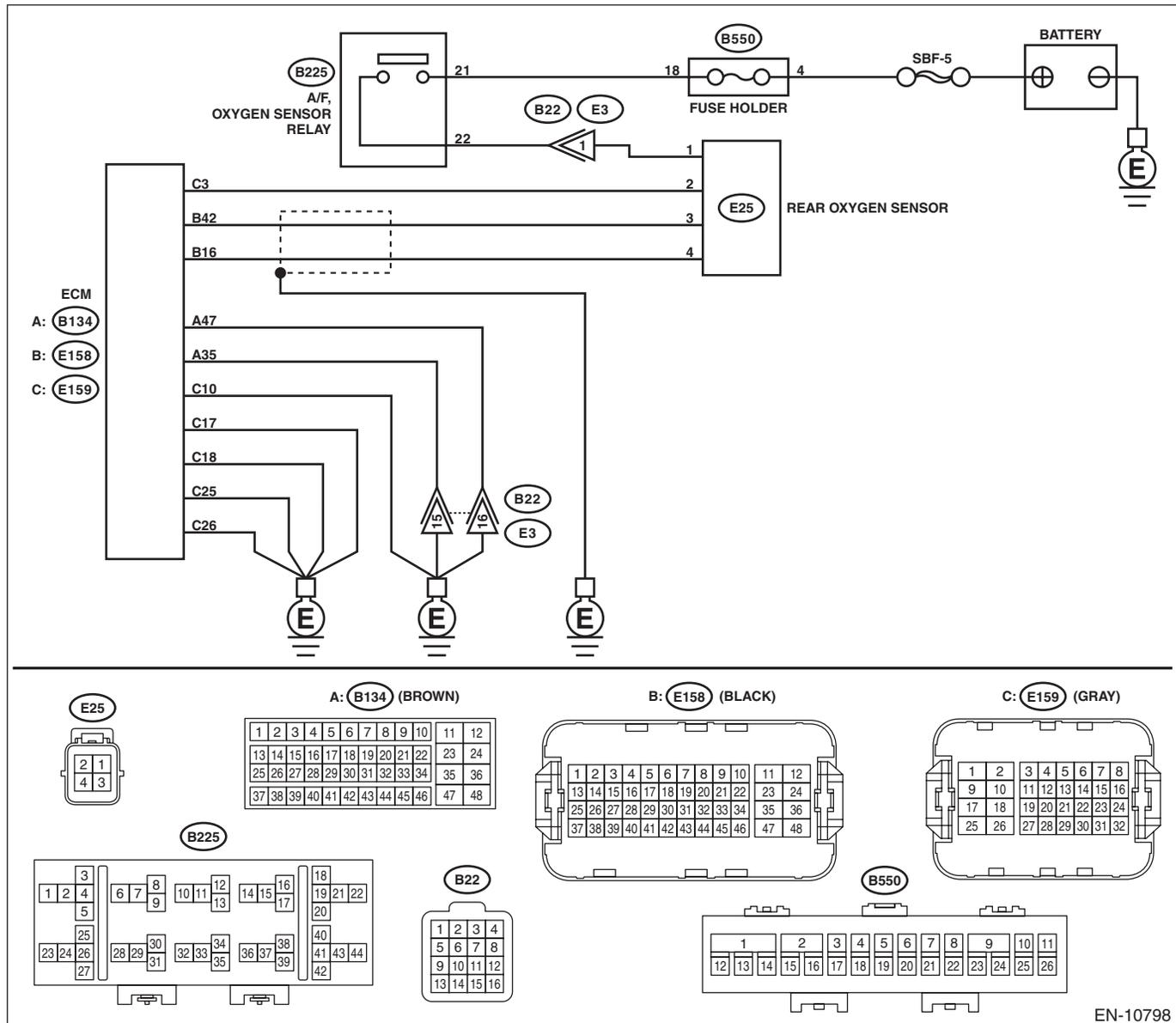
- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-67, DTC P0138 O2 SENSOR CIRCUIT HIGH VOLTAGE (BANK 1 SENSOR 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK REAR OXYGEN SENSOR DATA. 1) Warm up the engine until engine coolant temperature is higher than 75°C (167°F), and rapidly reduce the engine speed from 3,000 rpm. 2) Read the value of «Oxygen sensor #12» using the Subaru Select Monitor or a general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedures, refer to “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value of «Oxygen sensor #12» 0.250 V or less?	Go to step 5.	Go to step 2.
2 CHECK REAR OXYGEN SENSOR CONNECTOR.	Has water entered the connector?	Completely remove any water inside.	Go to step 3.
3 CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and rear oxygen sensor. 3) Measure the resistance of harness between ECM connector and rear oxygen sensor connector. <i>Connector & terminal</i> <i>(E158) No. 42 — (E25) No. 3:</i> <i>(E158) No. 16 — (E25) No. 4:</i>	Is the resistance less than 1 Ω?	Go to step 4.	Repair the open circuit of harness between ECM connector and rear oxygen sensor connector.
4 CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR. 1) Connect the connector to ECM. 2) Turn the ignition switch to ON. 3) Measure the voltage between rear oxygen sensor connector and engine ground. <i>Connector & terminal</i> <i>(E25) No. 3 (+) — Engine ground (-):</i>	Is the voltage 2.3 V or less?	Replace the rear oxygen sensor. <Ref. to FU(w/o STI)-128, Rear Oxygen Sensor.>	Replace the ECM. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).>
5 CHECK EXHAUST SYSTEM. Check exhaust system parts. NOTE: Check the following items. <ul style="list-style-type: none"> • Looseness and improper fitting of exhaust system parts • Damage (crack, hole etc.) of parts • Loose part and improper installation between front oxygen (A/F) sensor and rear oxygen sensor 	Is there any fault in exhaust system?	Repair or replace faulty parts.	Replace the rear oxygen sensor. <Ref. to FU(w/o STI)-128, Rear Oxygen Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

AZ:DTC P013A O2 SENSOR SLOW RESPONSE - RICH TO LEAN (BANK 1 SENSOR 2)

DTC DETECTING CONDITION:

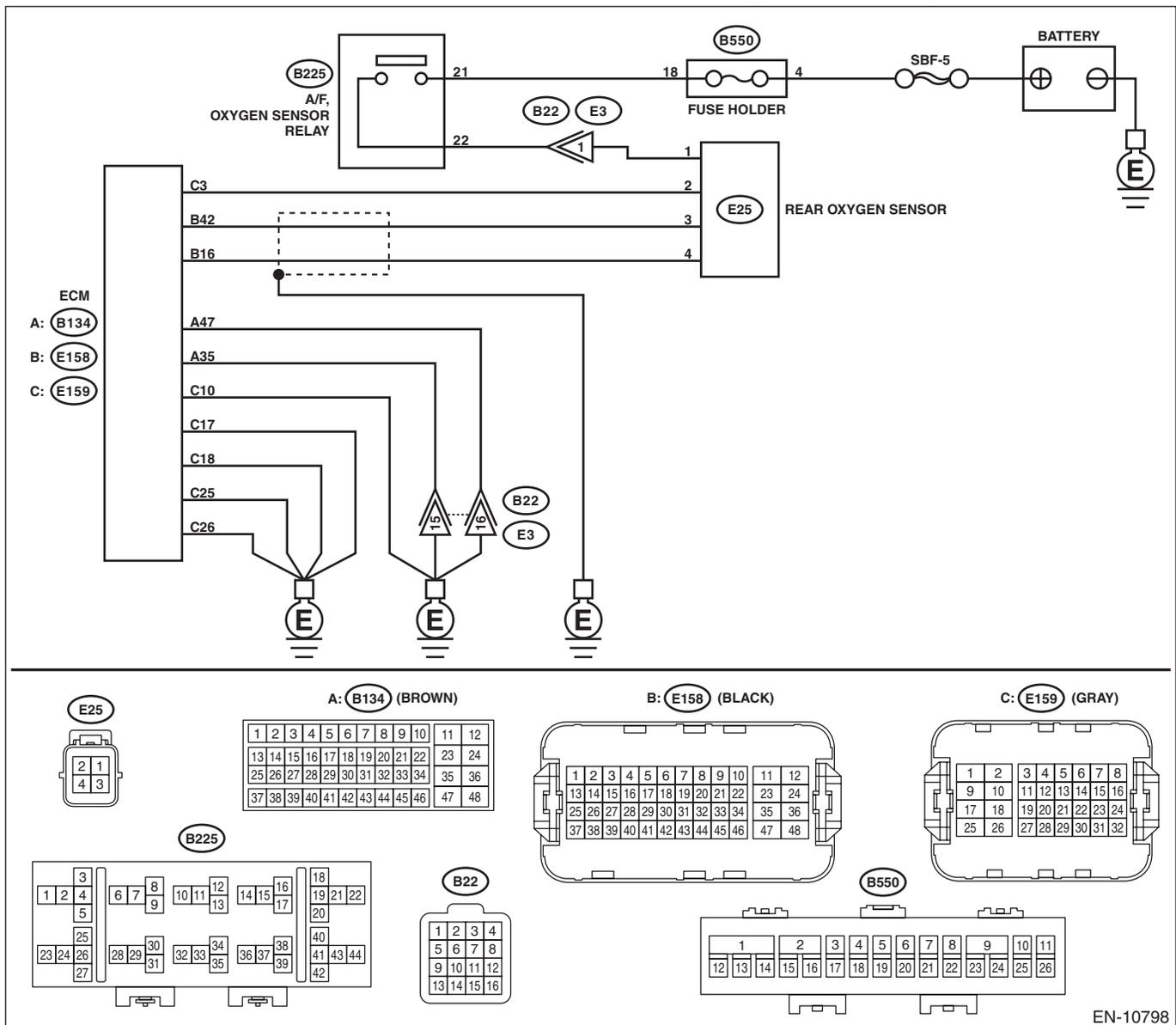
- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-68, DTC P013A O2 SENSOR SLOW RESPONSE - RICH TO LEAN (BANK 1 SENSOR 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10798

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and rear oxygen sensor. 3) Measure the resistance of harness between ECM connector and rear oxygen sensor connector. <i>Connector & terminal</i> <i>(E158) No. 16 — (E25) No. 4:</i>	Is the resistance less than 1 Ω?	Go to step 2.	Repair the open circuit of harness between ECM connector and rear oxygen sensor connector.
2 CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR. Measure the resistance between rear oxygen sensor connector and engine ground. <i>Connector & terminal</i> <i>(E25) No. 4 — Engine ground:</i>	Is the resistance 1 MΩ or more?	Go to step 3.	Repair the short circuit to ground in harness between ECM connector and rear oxygen sensor connector.
3 CHECK REAR OXYGEN SENSOR. Measure the resistance between rear oxygen sensor terminals. <i>Terminals</i> <i>No. 3 — No. 4</i>	Is the resistance less than 1 Ω?	Replace the rear oxygen sensor. <Ref. to FU(w/o STI)-128, Rear Oxygen Sensor.>	Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again. NOTE: In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.

BA:DTC P013B O2 SENSOR SLOW RESPONSE - LEAN TO RICH (BANK 1 SENSOR 2)

NOTE:

For the diagnostic procedure, refer to DTC P013A. <Ref. to EN(w/o STI)(diag)-181, DTC P013A O2 SENSOR SLOW RESPONSE - RICH TO LEAN (BANK 1 SENSOR 2), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BB:DTC P013E O2 SENSOR DELAYED RESPONSE - RICH TO LEAN (BANK 1 SENSOR 2)

NOTE:

For the diagnostic procedure, refer to DTC P013A. <Ref. to EN(w/o STI)(diag)-181, DTC P013A O2 SENSOR SLOW RESPONSE - RICH TO LEAN (BANK 1 SENSOR 2), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BC:DTC P013F O2 SENSOR DELAYED RESPONSE - LEAN TO RICH (BANK 1 SENSOR 2)

NOTE:

For the diagnostic procedure, refer to DTC P013A. <Ref. to EN(w/o STI)(diag)-181, DTC P013A O2 SENSOR SLOW RESPONSE - RICH TO LEAN (BANK 1 SENSOR 2), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

BD:DTC P0141 O2 SENSOR HEATER CIRCUIT (BANK1 SENSOR2)

DTC DETECTING CONDITION:

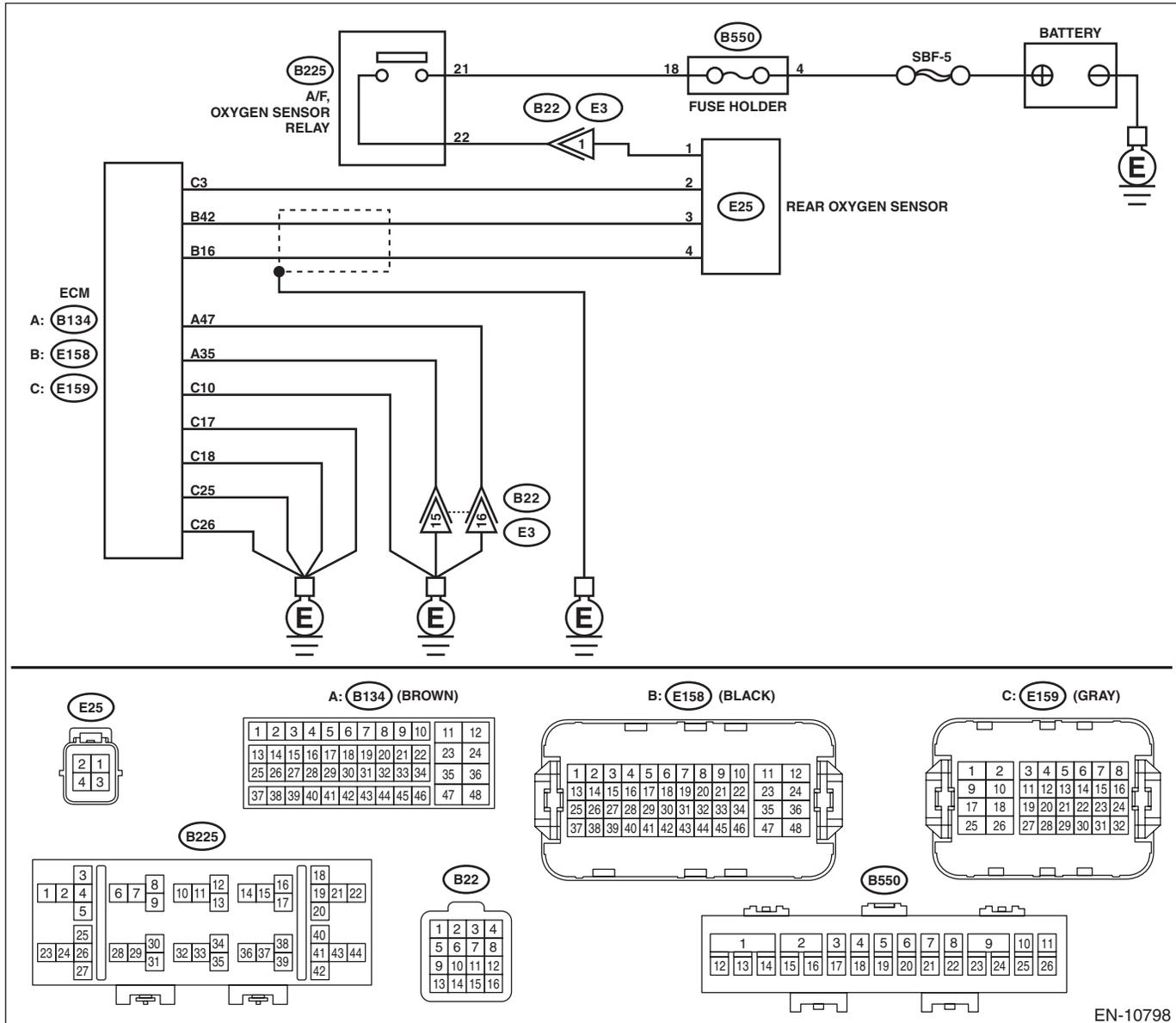
- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-76, DTC P0141 O2 SENSOR HEATER CIRCUIT (BANK1 SENSOR2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10798

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK POWER SUPPLY TO REAR OXYGEN SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from rear oxygen sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between rear oxygen sensor connector and engine ground. Connector & terminal (E25) No. 1 (+) — Engine ground (-):	Is the voltage 10 V or more?	Go to step 2.	Repair the power supply line. NOTE: In this case, repair the following item: • Open circuit in harness between A/F, oxygen sensor relay and rear oxygen sensor connector • Poor contact of A/F, oxygen sensor relay connector • Poor contact of coupling connector • Malfunction of A/F, oxygen sensor relay
2 CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connector and rear oxygen sensor connector. Connector & terminal (E25) No. 2 — (E159) No. 3:	Is the resistance less than 1 Ω ?	Go to step 3.	Repair the open circuit of harness between ECM connector and rear oxygen sensor connector.
3 CHECK GROUND CIRCUIT FOR ECM. Measure the resistance of harness between ECM connector and engine ground. Connector & terminal (B134) No. 35 — Engine ground: (B134) No. 47 — Engine ground: (E159) No. 10 — Engine ground: (E159) No. 17 — Engine ground: (E159) No. 18 — Engine ground: (E159) No. 25 — Engine ground: (E159) No. 26 — Engine ground:	Is the resistance less than 5 Ω ?	Go to step 4.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit of harness between ECM connector and engine ground • Poor contact of coupling connector
4 CHECK REAR OXYGEN SENSOR. Measure the resistance between rear oxygen sensor connector terminals. Terminals No. 1 — No. 2:	Is the resistance 5.4 — 7.3 Ω ?	Repair the poor contact of ECM connector.	Replace the rear oxygen sensor. <Ref. to FU(w/o STI)-128, Rear Oxygen Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

BE:DTC P014C O2 SENSOR SLOW RESPONSE - RICH TO LEAN (BANK 1 SENSOR 1)

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-77, DTC P014C O2 SENSOR SLOW RESPONSE - RICH TO LEAN (BANK 1 SENSOR 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK EXHAUST SYSTEM. NOTE: Check the following items. <ul style="list-style-type: none">• Loose installation of front portion of exhaust pipe onto cylinder heads• Loose connection between front exhaust pipe and front catalytic converter• Damage of exhaust pipe resulting in a hole	Is there any fault in exhaust system?	Repair the exhaust system.	Replace the front oxygen (A/F) sensor. <Ref. to FU(w/o STI)-126, Front Oxygen (A/F) Sensor.>

BF:DTC P014D O2 SENSOR SLOW RESPONSE - LEAN TO RICH (BANK 1 SENSOR 1)

NOTE:

For the diagnostic procedure, refer to DTC P014C. <Ref. to EN(w/o STI)(diag)-185, DTC P014C O2 SENSOR SLOW RESPONSE - RICH TO LEAN (BANK 1 SENSOR 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BG:DTC P015A O2 SENSOR DELAYED RESPONSE - RICH TO LEAN (BANK 1 SENSOR 1)

NOTE:

For the diagnostic procedure, refer to DTC P014C. <Ref. to EN(w/o STI)(diag)-185, DTC P014C O2 SENSOR SLOW RESPONSE - RICH TO LEAN (BANK 1 SENSOR 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BH:DTC P015B O2 SENSOR DELAYED RESPONSE - LEAN TO RICH (BANK 1 SENSOR 1)

NOTE:

For the diagnostic procedure, refer to DTC P014C. <Ref. to EN(w/o STI)(diag)-185, DTC P014C O2 SENSOR SLOW RESPONSE - RICH TO LEAN (BANK 1 SENSOR 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BI: DTC P0171 SYSTEM TOO LEAN (BANK 1)

NOTE:

For the diagnostic procedure, refer to DTC P0172. <Ref. to EN(w/o STI)(diag)-186, DTC P0172 SYSTEM TOO RICH (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

BJ:DTC P0172 SYSTEM TOO RICH (BANK 1)

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-86, DTC P0172 SYSTEM TOO RICH (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

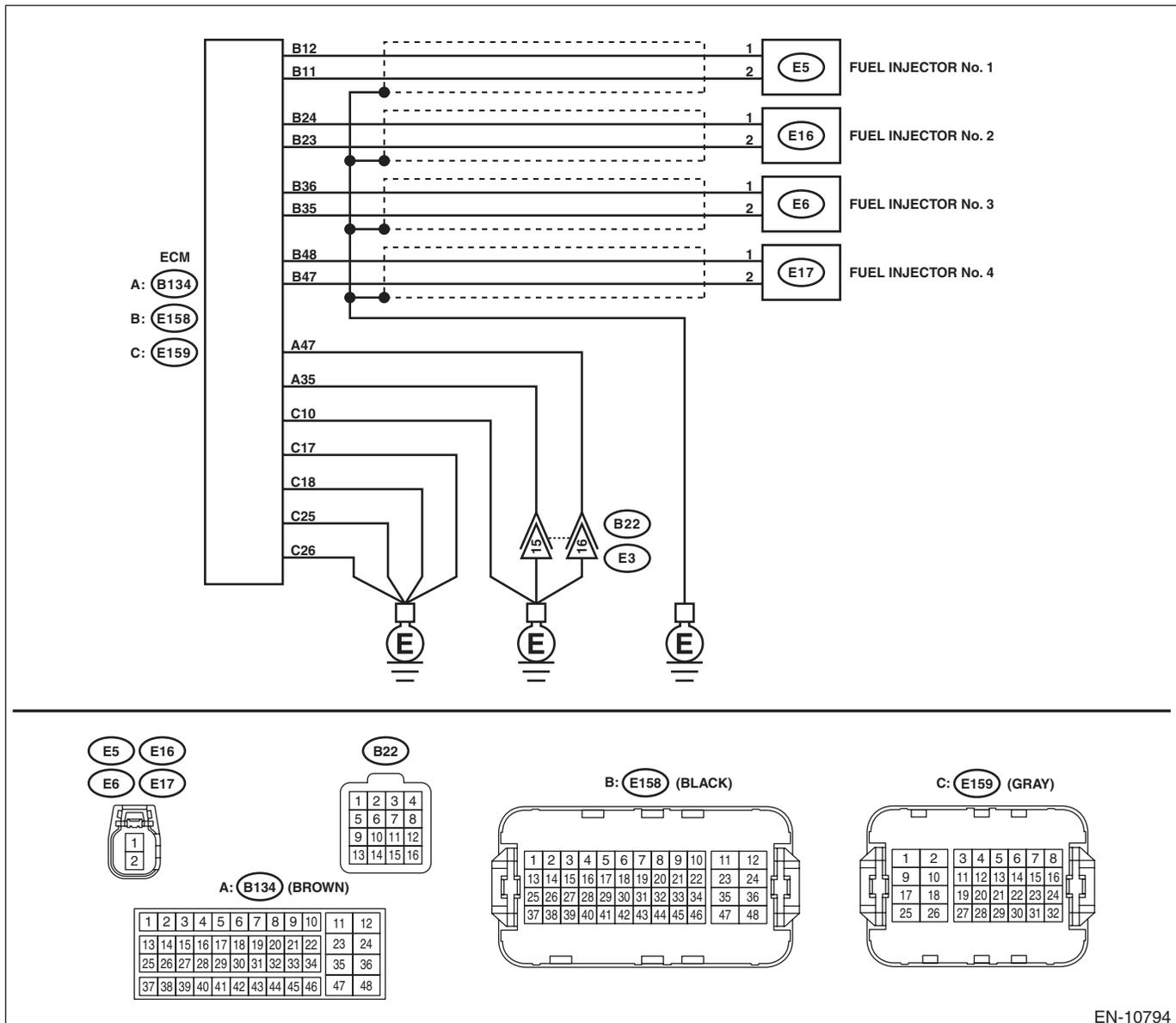
- Improper idling
- Engine stalls.
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10794

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1 CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connectors.</p> <p>Connector & terminal #1 (E158) No. 11 — (E158) No. 12: #2 (E158) No. 23 — (E158) No. 24: #3 (E158) No. 35 — (E158) No. 36: #4 (E158) No. 47 — (E158) No. 48:</p>	<p>Is resistance 1.89 — 2.31 Ω at 20°C (68°F)?</p>	Go to step 3.	Go to step 2.
<p>2 CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR.</p> <p>1) Disconnect the connector from fuel injector. 2) Measure the resistance of harness between ECM connector and defective fuel injector connector.</p> <p>Connector & terminal #1 (E158) No. 12 — (E5) No. 1: #1 (E158) No. 11 — (E5) No. 2: #2 (E158) No. 24 — (E16) No. 1: #2 (E158) No. 23 — (E16) No. 2: #3 (E158) No. 36 — (E6) No. 1: #3 (E158) No. 35 — (E6) No. 2: #4 (E158) No. 48 — (E17) No. 1: #4 (E158) No. 47 — (E17) No. 2:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Repair or replace the following items.</p> <ul style="list-style-type: none"> • Poor contact of fuel injector connector • Defective fuel injector <Ref. to FU(w/o STI)-51, Fuel Injector.> 	<p>Repair the open circuit of the harness between the ECM connector and fuel injector connector.</p>
<p>3 CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR.</p> <p>Measure the resistance between the ECM connector and engine ground.</p> <p>Connector & terminal #1 (E158) No. 12 — Engine ground: #1 (E158) No. 11 — Engine ground: #2 (E158) No. 24 — Engine ground: #2 (E158) No. 23 — Engine ground: #3 (E158) No. 36 — Engine ground: #3 (E158) No. 35 — Engine ground: #4 (E158) No. 48 — Engine ground: #4 (E158) No. 47 — Engine ground:</p>	<p>Is the resistance 1 MΩ or more?</p>	Go to step 5.	Go to step 4.
<p>4 CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR.</p> <p>1) Disconnect the connector from fuel injector. 2) Measure the resistance between ECM connector and engine ground on defective fuel injectors.</p> <p>Connector & terminal #1 (E158) No. 12 — Engine ground: #1 (E158) No. 11 — Engine ground: #2 (E158) No. 24 — Engine ground: #2 (E158) No. 23 — Engine ground: #3 (E158) No. 36 — Engine ground: #3 (E158) No. 35 — Engine ground: #4 (E158) No. 48 — Engine ground: #4 (E158) No. 47 — Engine ground:</p>	<p>Is the resistance 1 MΩ or more?</p>	<p>Replace the faulty fuel injector. <Ref. to FU(w/o STI)-51, Fuel Injector.></p>	<p>Repair the short circuit to ground in harness between ECM connector and fuel injector connector.</p>
<p>5 CHECK EXHAUST SYSTEM.</p>	<p>Are there holes or loose bolts on exhaust system?</p>	<p>Repair the exhaust system.</p>	Go to step 6.
<p>6 CHECK AIR INTAKE SYSTEM.</p>	<p>Are there holes, loose bolts or disconnection of hose on air intake system?</p>	<p>Repair the air intake system.</p>	Go to step 7.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>7</p> <p>CHECK FUEL PRESSURE.</p> <p>WARNING: Place “NO OPEN FLAMES” signs near the working area.</p> <p>CAUTION: Be careful not to spill fuel.</p> <p>Measure the fuel pressure. <Ref. to ME(w/o STI)-31, INSPECTION, Fuel Pressure.></p> <p>CAUTION: Release fuel pressure before removing the fuel pressure gauge.</p>	<p>Is the measured value 328 — 358 kPa (3.3 — 3.7 kgf/cm², 48 — 52 psi)?</p>	Go to step 8.	<p>Check the fuel pump and fuel delivery line. <Ref. to FU(w/o STI)-172, INSPECTION, Fuel Pump.> <Ref. to FU(w/o STI)-201, INSPECTION, Fuel Delivery and Evaporation Lines.></p>
<p>8</p> <p>CHECK ENGINE COOLANT TEMPERATURE SENSOR.</p> <p>1) Start the engine and warm up completely. 2) Read the value of «Coolant Temp.» using the Subaru Select Monitor or a general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • General scan tool <p>For detailed operation procedures, refer to the general scan tool operation manual.</p>	<p>Is the value of «Coolant Temp.» 75°C (167°F) or more?</p>	Go to step 9.	<p>Replace the engine coolant temperature sensor. <Ref. to FU(w/o STI)-93, Engine Coolant Temperature Sensor.></p>
<p>9</p> <p>CHECK MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR.</p> <p>1) Start the engine and warm up engine until coolant temperature is higher than 75°C (167°F). 2) For CVT models, set the select lever to “P” range or “N” range, and for MT models, place the shift lever in the neutral position. 3) Turn the A/C switch to OFF. 4) Turn all the accessory switches to OFF. 5) Read the value of «Mass Air Flow» using the Subaru Select Monitor or a general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • General scan tool <p>For detailed operation procedures, refer to the general scan tool operation manual.</p>	<p>Is the value of «Mass Air Flow» 2.0 — 5.0 g/s (0.26 — 0.66 lb/m)?</p>	Go to step 10.	<p>Replace the mass air flow and intake air temperature sensor. <Ref. to FU(w/o STI)-118, Mass Air Flow and Intake Air Temperature Sensor.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>10 CHECK MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR.</p> <p>1) Start the engine and warm up engine until coolant temperature is higher than 75°C (167°F).</p> <p>2) For CVT models, set the select lever to “P” range or “N” range, and for MT models, place the shift lever in the neutral position.</p> <p>3) Turn the A/C switch to OFF.</p> <p>4) Turn all the accessory switches to OFF.</p> <p>5) Open the front hood.</p> <p>6) Measure the ambient temperature.</p> <p>7) Read the value of «IAT Sensor #11» using the Subaru Select Monitor or a general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • General scan tool <p>For detailed operation procedures, refer to the general scan tool operation manual.</p>	<p>Subtract ambient temperature value from the value of «IAT Sensor #11». Is the obtained value -10 — 50°C (-18 — 90°F)?</p>	<p>Go to step 11.</p>	<p>Check the mass air flow and intake air temperature sensor. <Ref. to FU(w/o STI)-118, Mass Air Flow and Intake Air Temperature Sensor.></p>
<p>11 CHECK FUEL INJECTOR.</p> <p>Check fuel injector. <Ref. to FU(w/o STI)-70, INSPECTION, Fuel Injector.></p>	<p>Are fuel injectors OK?</p>	<p>Repair the poor contact of ECM connector.</p>	<p>Replace the faulty fuel injector. <Ref. to FU(w/o STI)-51, Fuel Injector.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

BK:DTC P0191 FUEL RAIL PRESSURE SENSOR "A" CIRCUIT RANGE/PERFORMANCE

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-87, DTC P0191 FUEL RAIL PRESSURE SENSOR "A" CIRCUIT RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

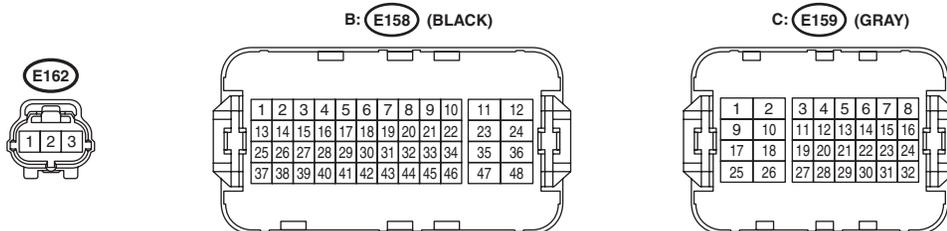
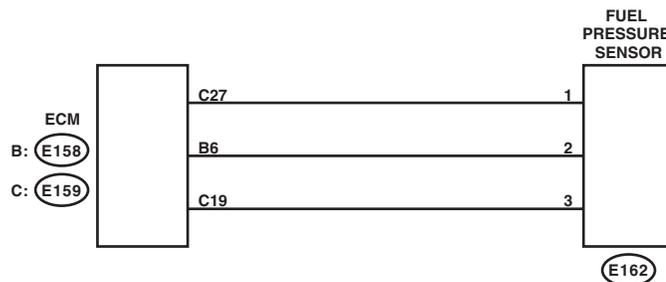
- Improper idling
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10324

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1</p> <p>CHECK CURRENT DATA.</p> <p>1) Start the engine.</p> <p>2) Read the value of «Fuel Rail Pressure A» using the Subaru Select Monitor or a general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • General scan tool <p>For detailed operation procedures, refer to the general scan tool operation manual.</p>	<p>Is the value of «Fuel Rail Pressure A» 2,500 kPa (25.49 kgf/cm², 362.6 psi) or more?</p>	<p>Go to step 2.</p>	<p>Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again.</p> <p>NOTE:</p> <p>In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.</p>
<p>2</p> <p>CHECK FUEL PRESSURE SENSOR POWER SUPPLY.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connector from the fuel pressure sensor.</p> <p>3) Turn the ignition switch to ON.</p> <p>4) Measure the voltage between fuel pressure sensor connector and engine ground.</p> <p>Connector & terminal (E162) No. 3 (+) — Engine ground (-):</p>	<p>Is the voltage 4.5 V or more?</p>	<p>Go to step 3.</p>	<p>Go to step 6.</p>
<p>3</p> <p>CHECK FUEL PRESSURE SENSOR SIGNAL.</p> <p>1) Connect all connectors.</p> <p>2) Start the engine.</p> <p>3) Read the value of «Fuel Rail Pressure A» when idling using the Subaru Select Monitor or a general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • General scan tool <p>For detailed operation procedures, refer to the general scan tool operation manual.</p> <p>4) Measure the voltage between ECM connectors.</p> <p>Connector & terminal (E158) No. 6 (+) — (E159) No. 27 (-):</p>	<p>When the value of «Fuel Rail Pressure A» during idling is approx. 4,000 kPa (40.79 kgf/cm², 580.2 psi), is the voltage 0.75 — 1.5 V?</p>	<p>Repair the poor contact of ECM connector.</p>	<p>Go to step 4.</p>
<p>4</p> <p>CHECK HARNESS BETWEEN ECM AND FUEL PRESSURE SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connector from ECM and fuel pressure sensor.</p> <p>3) Measure the resistance of harness between ECM connector and fuel pressure sensor connector.</p> <p>Connector & terminal (E159) No. 27 — (E162) No. 1: (E158) No. 6 — (E162) No. 2:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 5.</p>	<p>Repair the open circuit in harness between ECM connector and fuel pressure sensor connector.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
5 CHECK HARNESS BETWEEN ECM AND FUEL PRESSURE SENSOR CONNECTOR. Measure the resistance between the ECM connector and engine ground. <i>Connector & terminal</i> <i>(E158) No. 6 — Engine ground:</i> <i>(E159) No. 27 — Engine ground:</i>	Is the resistance 1 M Ω or more?	Replace the fuel pressure sensor. <Ref. to FU(w/o STI)-71, Fuel Pressure Sensor.>	Repair the ground short circuit of harness between ECM connector and fuel pressure sensor connector.
6 CHECK HARNESS BETWEEN ECM AND FUEL PRESSURE SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM connector and fuel pressure sensor connector. <i>Connector & terminal</i> <i>(E159) No. 19 — (E162) No. 3:</i>	Is the resistance less than 1 Ω ?	Go to step 7.	Repair the open circuit in harness between ECM connector and fuel pressure sensor connector.
7 CHECK HARNESS BETWEEN ECM AND FUEL PRESSURE SENSOR CONNECTOR. Measure the resistance between the ECM connector and engine ground. <i>Connector & terminal</i> <i>(E159) No. 19 — Engine ground:</i>	Is the resistance 1 M Ω or more?	Repair the poor contact of ECM connector.	Repair the ground short circuit of harness between ECM connector and fuel pressure sensor connector.

BL:DTC P0192 FUEL RAIL PRESSURE SENSOR CIRCUIT LOW

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-88, DTC P0192 FUEL RAIL PRESSURE SENSOR CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

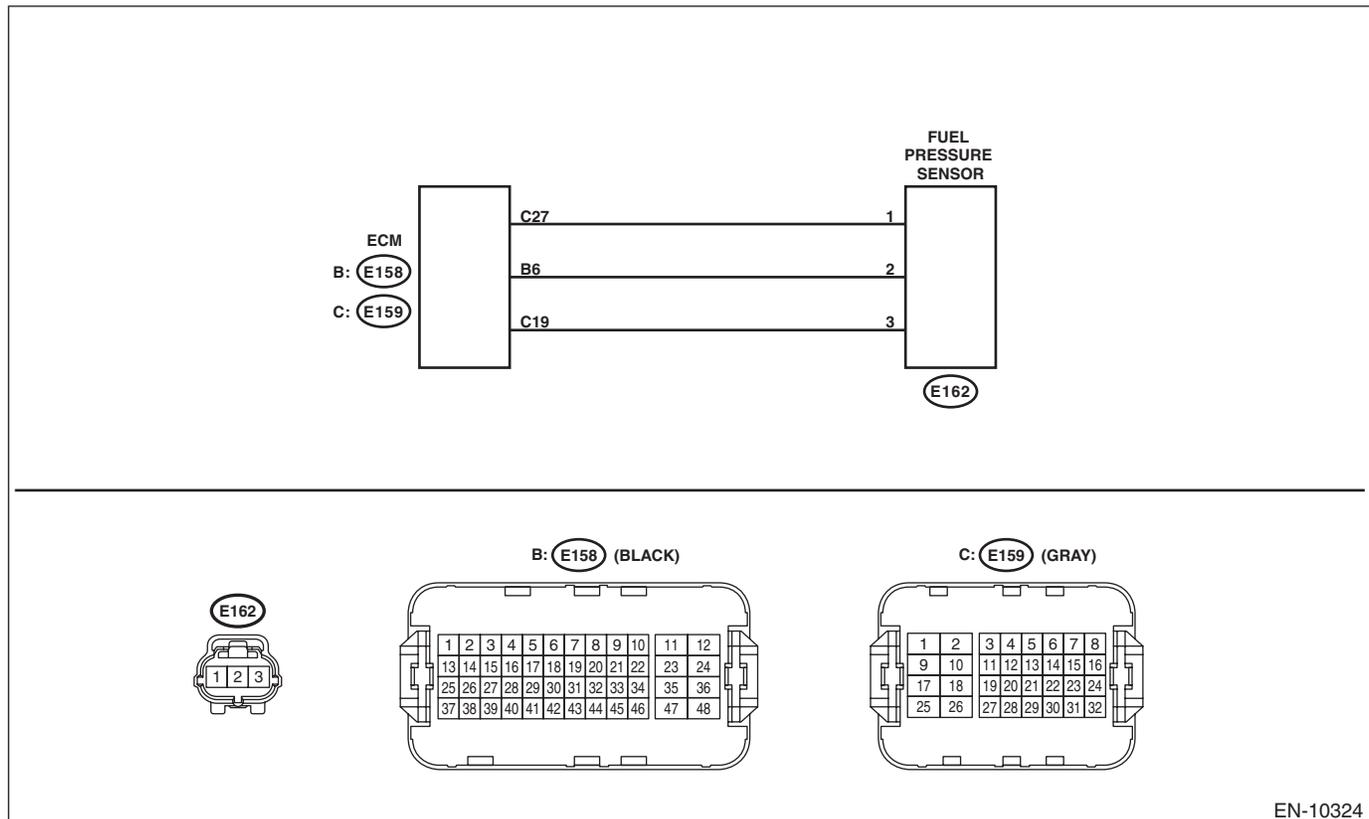
- Improper idling
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10324

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	<p>CHECK CURRENT DATA.</p> <p>1) Start the engine.</p> <p>2) Read the value of «Fuel Rail Pressure A» using the Subaru Select Monitor or a general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • General scan tool <p>For detailed operation procedures, refer to the general scan tool operation manual.</p>	<p>Is the value of «Fuel Rail Pressure A» approx. 0 kPa (0 kgf/cm², 0 psi)?</p>	<p>Go to step 2.</p>	<p>Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again.</p> <p>NOTE:</p> <p>In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.</p>
2	<p>CHECK HARNESS BETWEEN ECM AND FUEL PRESSURE SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connector from ECM and fuel pressure sensor.</p> <p>3) Measure the resistance between the ECM connector and engine ground.</p> <p>Connector & terminal (E158) No. 6 — Engine ground:</p>	<p>Is the resistance 1 MΩ or more?</p>	<p>Replace the fuel pressure sensor. <Ref. to FU(w/o STI)-71, Fuel Pressure Sensor.></p>	<p>Repair the ground short circuit of harness between ECM connector and fuel pressure sensor connector.</p>

BM:DTC P0193 FUEL RAIL PRESSURE SENSOR CIRCUIT HIGH

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-89, DTC P0193 FUEL RAIL PRESSURE SENSOR CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

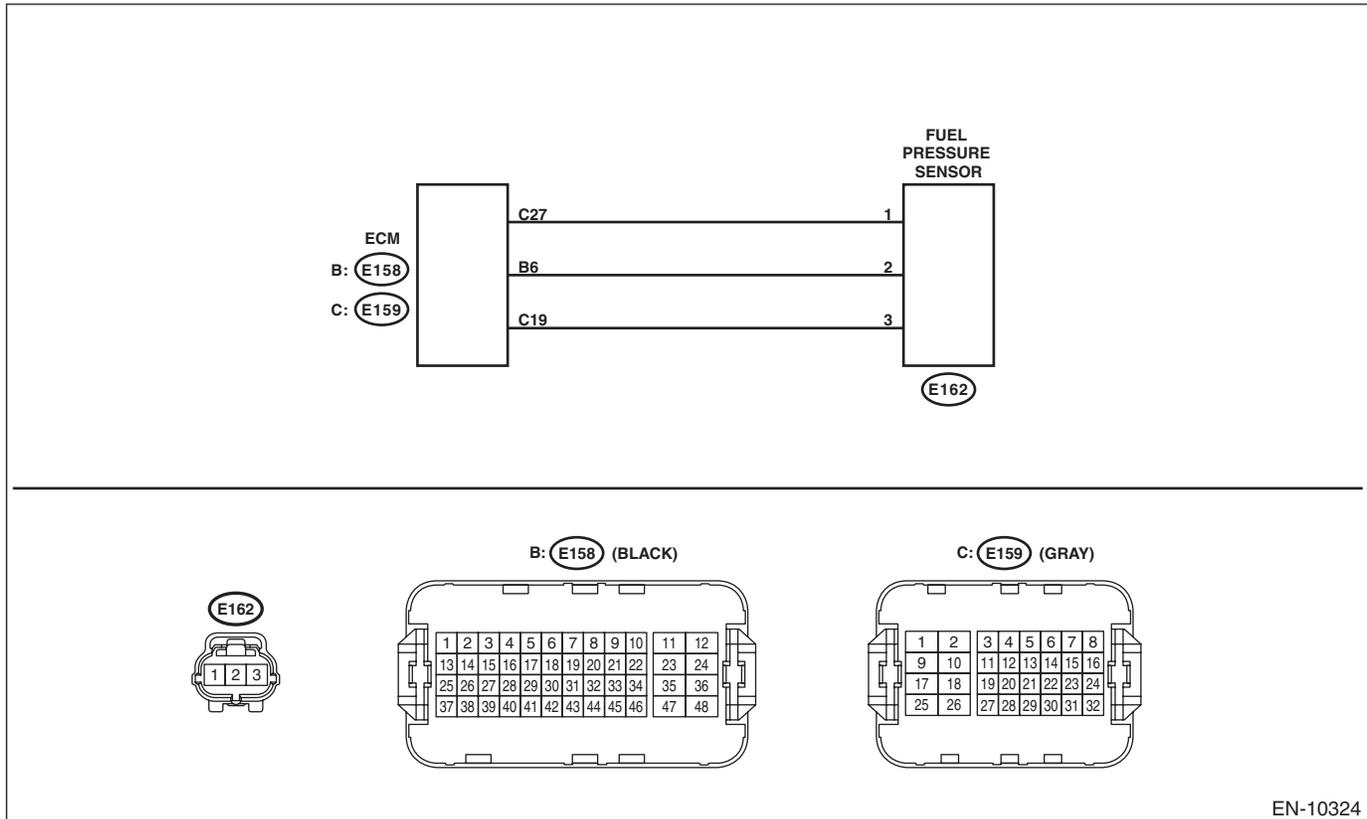
- Improper idling
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10324

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK CURRENT DATA. 1) Start the engine. 2) Read the value of «Fuel Rail Pressure A» using the Subaru Select Monitor or a general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value of «Fuel Rail Pressure A» 30,000 kPa (305.9 kgf/cm ² , 4,351 psi) or more?	Go to step 2.	Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again. NOTE: In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.
2 CHECK FOR POOR CONTACT. Check for poor contact of ECM and fuel pressure sensor connector.	Is there poor contact of the ECM or fuel pressure sensor connector?	Repair the poor contact of the ECM or fuel pressure sensor connector.	Go to step 3.
3 CHECK HARNESS BETWEEN ECM AND FUEL PRESSURE SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and fuel pressure sensor. 3) Measure the resistance of harness between ECM connector and fuel pressure sensor connector. <i>Connector & terminal</i> <i>(E159) No. 27 — (E162) No. 1:</i> <i>(E158) No. 6 — (E162) No. 2:</i>	Is the resistance less than 1 Ω?	Go to step 4.	Repair the open circuit in harness between ECM connector and fuel pressure sensor connector.
4 CHECK HARNESS BETWEEN ECM AND FUEL PRESSURE SENSOR CONNECTOR. 1) Connect all connectors. 2) Turn the ignition switch to ON. 3) Measure the voltage between ECM connector and engine ground. <i>Connector & terminal</i> <i>(E158) No. 6 (+) — Engine ground (-):</i>	Is the voltage 5 V or more?	Repair the short circuit to power in the harness between ECM connector and fuel pressure sensor connector.	Replace the fuel pressure sensor. <Ref. to FU(w/o STI)-71, Fuel Pressure Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

BN:DTC P0196 ENGINE OIL TEMPERATURE SENSOR CIRCUIT RANGE/PERFORMANCE

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-90, DTC P0196 ENGINE OIL TEMPERATURE SENSOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

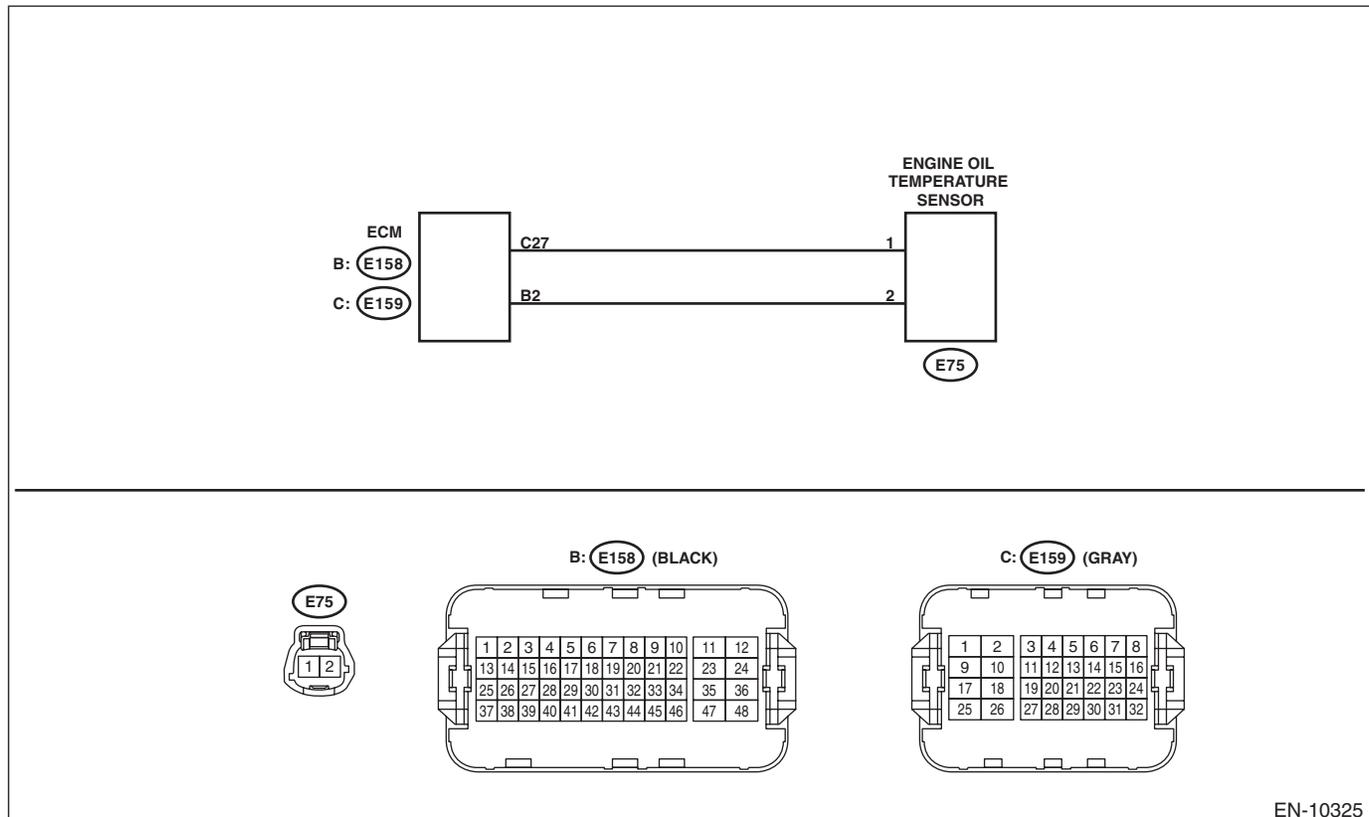
- Hard to start
- Improper idling
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10325

Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DISPLAY. Is any other DTC displayed?	Check the appropriate DTC using the "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Go to step 2.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>2 CHECK ENGINE OIL TEMPERATURE SENSOR. 1) Disconnect the connectors from the engine oil temperature sensor. 2) Measure the resistance between engine oil temperature sensor terminals when the engine is cold and after warmed up. <i>Terminals</i> <i>No. 1 — No. 2:</i></p>	<p>Is the resistance of engine oil temperature sensor different between when engine is cold and after warmed up?</p>	<p>Repair the poor contact of ECM connector.</p>	<p>Replace the engine oil temperature sensor. <Ref. to FU(w/o STI)-96, Engine Oil Temperature Sensor.></p>

BO:DTC P0197 ENGINE OIL TEMPERATURE SENSOR LOW

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-92, DTC P0197 ENGINE OIL TEMPERATURE SENSOR LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

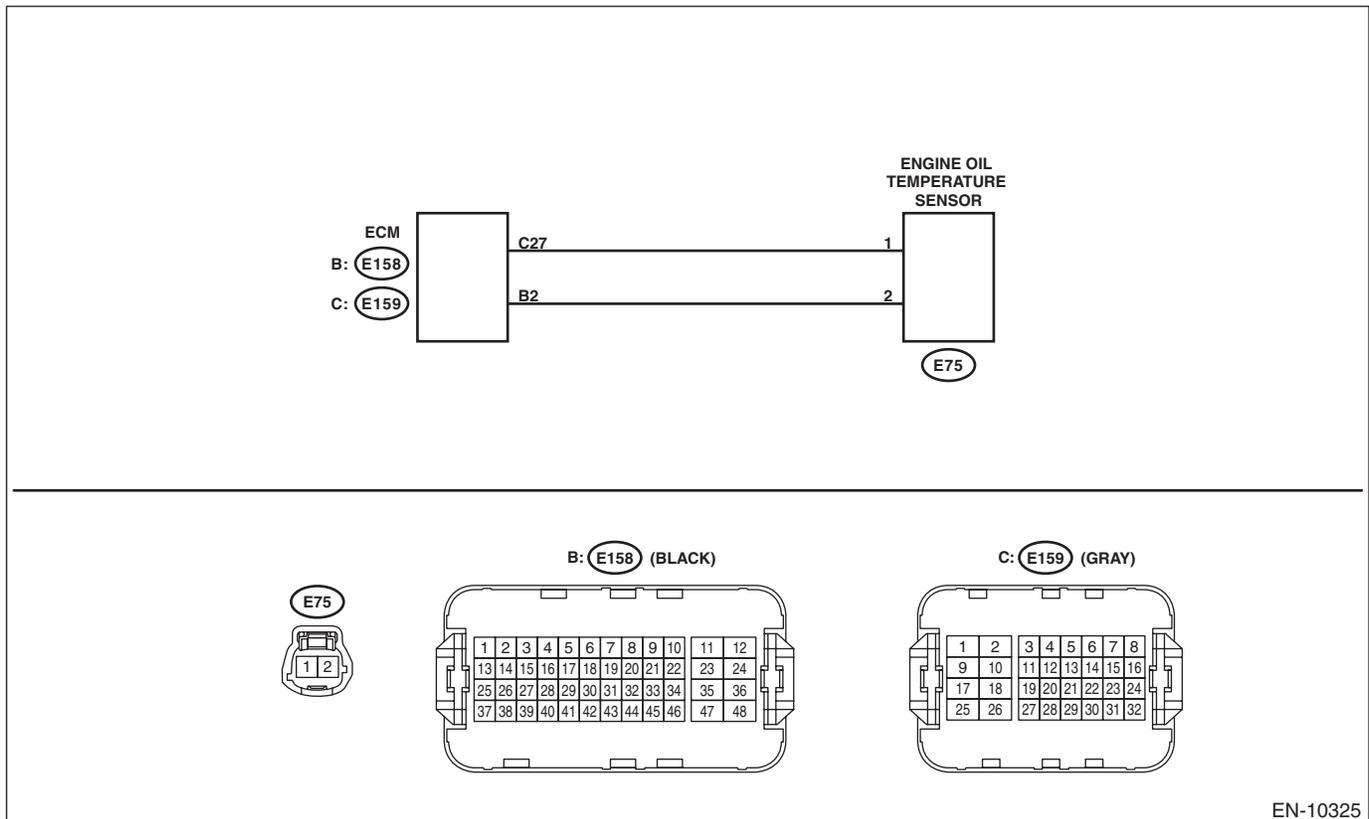
- Hard to start
- Improper idling
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10325

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1</p> <p>CHECK CURRENT DATA.</p> <p>1) Start the engine.</p> <p>2) Read the value of «Oil Temperature» using the Subaru Select Monitor or a general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • General scan tool <p>For detailed operation procedures, refer to the general scan tool operation manual.</p>	<p>Is the value of «Oil Temperature» 150°C (302°F) or more?</p>	<p>Go to step 2.</p>	<p>Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again.</p> <p>NOTE:</p> <p>In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.</p>
<p>2</p> <p>CHECK HARNESS BETWEEN ECM AND ENGINE OIL TEMPERATURE SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connectors from the ECM and engine oil temperature sensor.</p> <p>3) Measure the resistance between the ECM connector and engine ground.</p> <p>Connector & terminal (E158) No. 2 — Engine ground:</p>	<p>Is the resistance 1 MΩ or more?</p>	<p>Replace the engine oil temperature sensor. <Ref. to FU(w/o STI)-96, Engine Oil Temperature Sensor.></p>	<p>Repair the short circuit to ground in the harness between the ECM connector and engine oil temperature sensor connector.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

BP:DTC P0198 ENGINE OIL TEMPERATURE SENSOR HIGH

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-93, DTC P0198 ENGINE OIL TEMPERATURE SENSOR HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

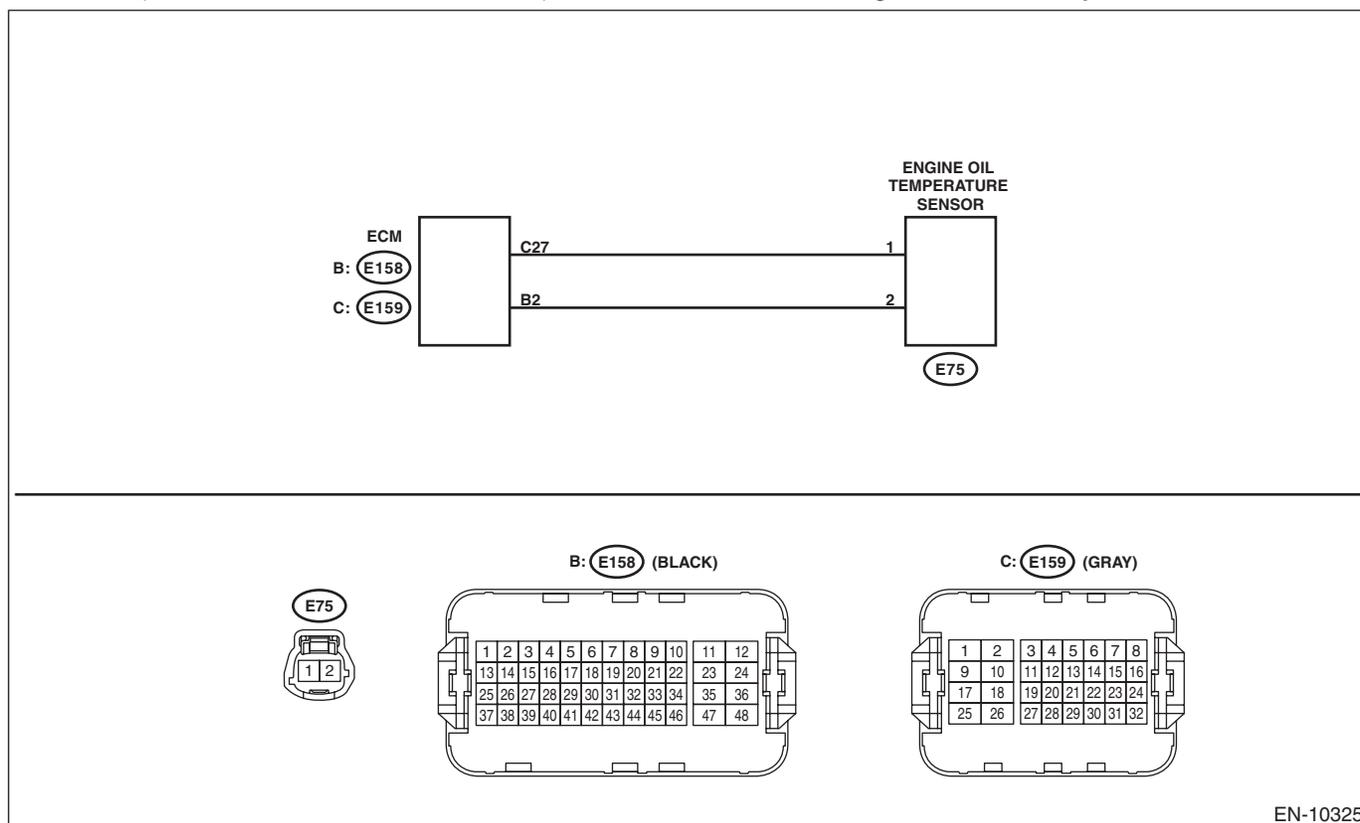
- Hard to start
- Improper idling
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10325

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1 CHECK CURRENT DATA. 1) Start the engine. 2) Read the value of «Oil Temperature» using the Subaru Select Monitor or a general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.</p>	<p>Is the value of «Oil Temperature» -40°C (-40°F) or less?</p>	<p>Go to step 2.</p>	<p>Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again. NOTE: In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.</p>
<p>2 CHECK FOR POOR CONTACT. Check for poor contact between the ECM and engine oil temperature sensor connectors.</p>	<p>Is there poor contact of the ECM or engine oil temperature sensor connectors?</p>	<p>Repair the poor contact of ECM or engine oil temperature sensor connector.</p>	<p>Go to step 3.</p>
<p>3 CHECK HARNESS BETWEEN ECM AND ENGINE OIL TEMPERATURE SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from the ECM and engine oil temperature sensor. 3) Measure the resistance of the harness between the ECM connector and engine oil temperature sensor connector. Connector & terminal (E159) No. 27 — (E75) No. 1: (E158) No. 2 — (E75) No. 2:</p>	<p>Is the resistance less than $1\ \Omega$?</p>	<p>Go to step 4.</p>	<p>Repair the open circuit in the harness between ECM connector and engine oil temperature sensor connector.</p>
<p>4 CHECK HARNESS BETWEEN ECM AND ENGINE OIL TEMPERATURE SENSOR CONNECTOR. 1) Connect all connectors. 2) Turn the ignition switch to ON. 3) Measure the voltage between ECM connector and engine ground. Connector & terminal (E158) No. 2 (+) — Engine ground (-):</p>	<p>Is the voltage 5 V or more?</p>	<p>Repair the short circuit to power in harness between ECM connector and engine oil temperature sensor connector.</p>	<p>Replace the engine oil temperature sensor. <Ref. to FU(w/o STI)-96, Engine Oil Temperature Sensor.></p>

BQ:DTC P0222 THROTTLE/PEDAL POSITION SENSOR/SWITCH “B” CIRCUIT LOW

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-94, DTC P0222 THROTTLE/PEDAL POSITION SENSOR/SWITCH “B” CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Improper idling
- Poor driving performance
- Engine stalls.

CAUTION:

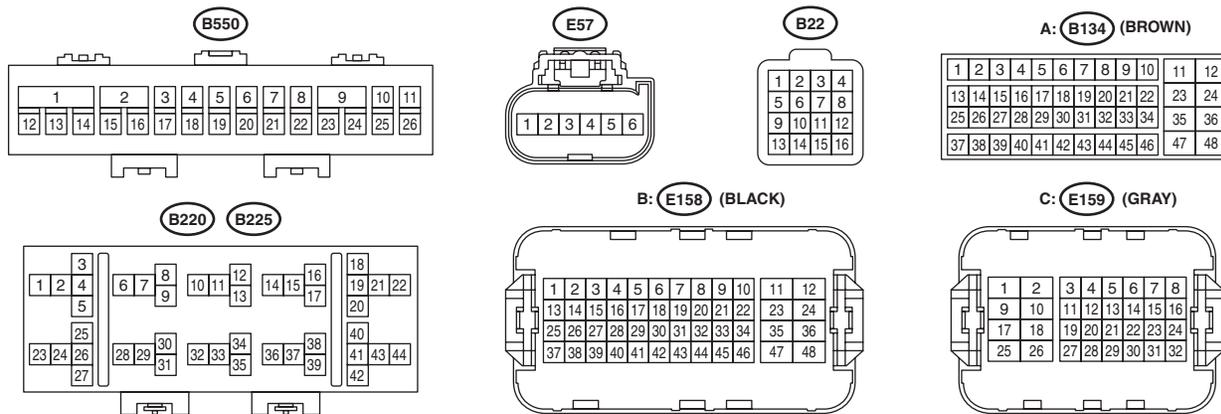
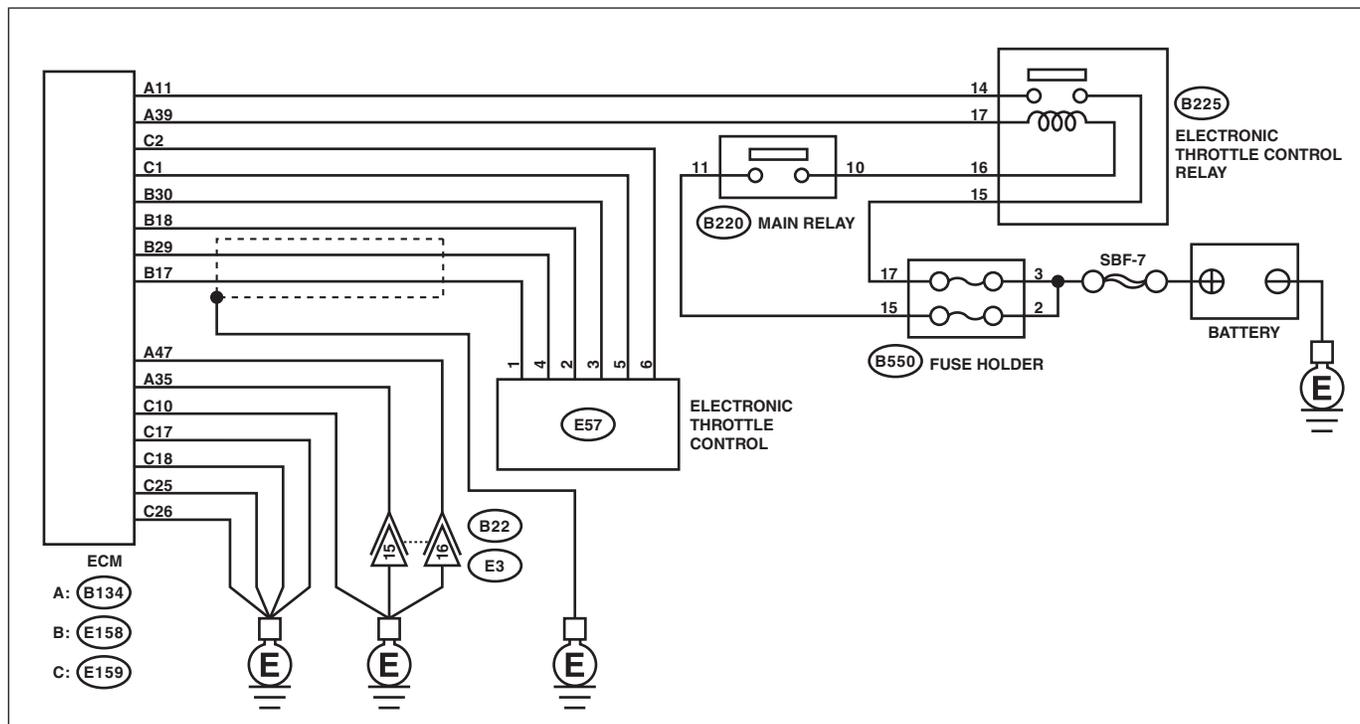
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10800

Step	Check	Yes	No
<p>1</p> <p>CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connectors from ECM and electronic throttle control.</p> <p>3) Measure the resistance between the ECM connector and engine ground.</p> <p>Connector & terminal (E158) No. 18 — Engine ground: (E158) No. 29 — Engine ground:</p>	<p>Is the resistance 1 MΩ or more?</p>	<p>Go to step 2.</p>	<p>Repair the ground short circuit of harness between ECM connector and electronic throttle control connector.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
2 CHECK SHORT CIRCUIT INSIDE THE ECM. 1) Connect the connector to ECM. 2) Measure the resistance between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 4 — Engine ground:	Is the resistance 1 M Ω or more?	Replace the electronic throttle control. <Ref. to FU(w/o STI)-15, Throttle Body.>	Repair the ground short circuit of harness between ECM connector and electronic throttle control connector. Replace the ECM if defective. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

BR:DTC P0223 THROTTLE/PEDAL POSITION SENSOR/SWITCH “B” CIRCUIT HIGH

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-95, DTC P0223 THROTTLE/PEDAL POSITION SENSOR/SWITCH “B” CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Improper idling
- Poor driving performance
- Engine stalls.

CAUTION:

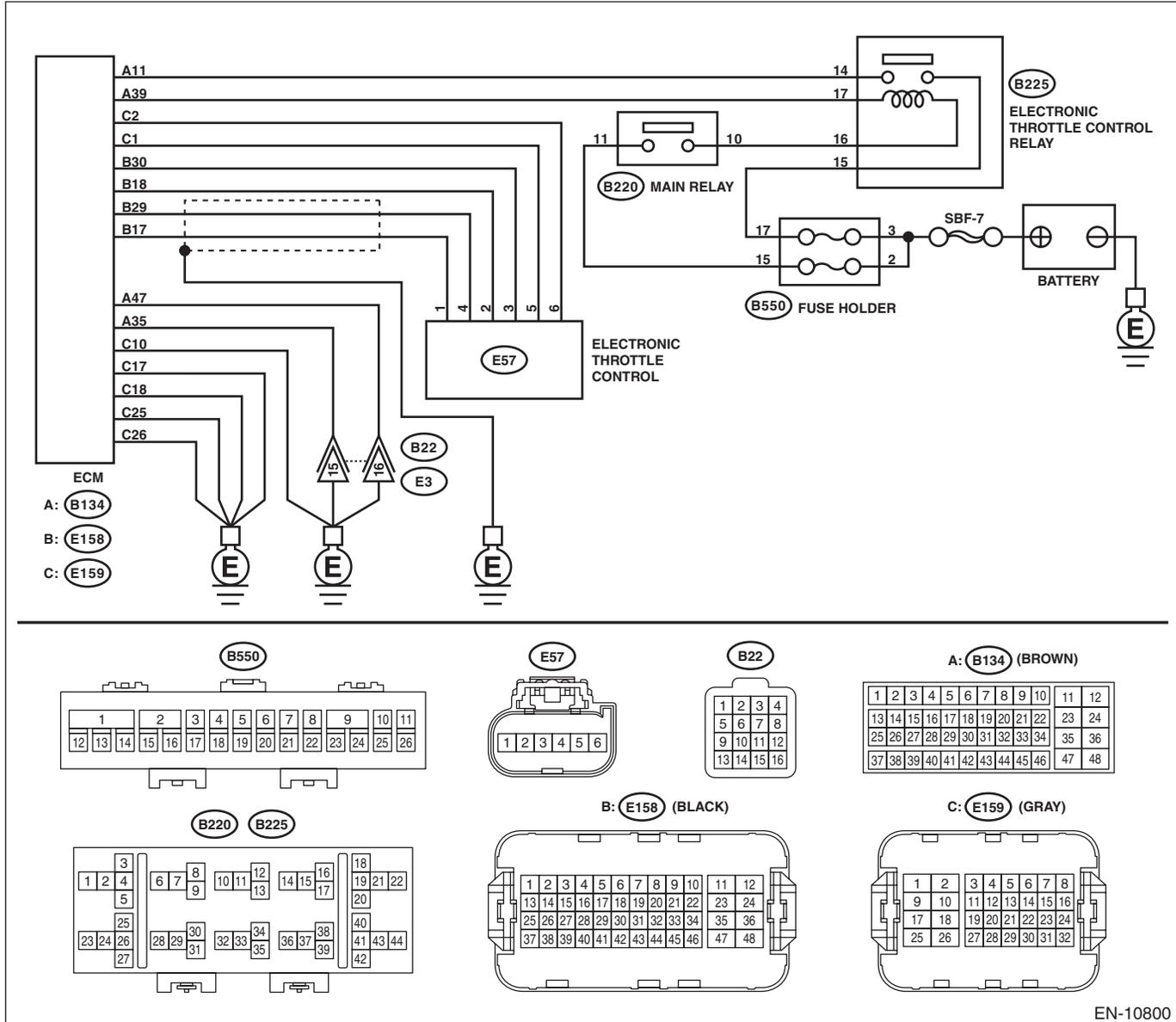
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10800

Step	Check	Yes	No
<p>1</p> <p>CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connectors from ECM and electronic throttle control.</p> <p>3) Measure the resistance of harness between ECM connector and electronic throttle control connector.</p> <p>Connector & terminal (E158) No. 29 — (E57) No. 4: (E158) No. 30 — (E57) No. 3:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 2.</p>	<p>Repair the open circuit of harness between ECM connector and electronic throttle control connector.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
2 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL CONNECTOR. 1) Connect the connector to ECM. 2) Measure the resistance between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 3 — Engine ground:	Is the resistance less than 5 Ω ?	Go to step 3.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit of harness between ECM connector and engine ground • Poor contact of ECM connector • Poor contact of coupling connector
3 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL CONNECTOR. 1) Turn the ignition switch to ON. 2) Measure the voltage between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 4 (+) — Engine ground (-):	Is the voltage 5 V or more?	Repair the short circuit to power in the harness between ECM connector and electronic throttle control connector.	Go to step 4.
4 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connectors. Connector & terminal (E158) No. 18 — (E158) No. 29:	Is the resistance 1 M Ω or more?	Repair the poor contact of electronic throttle control connector. Replace the electronic throttle control if defective. <Ref. to FU(w/o STI)-15, Throttle Body.>	Repair the short circuit to power in the harness between ECM connector and electronic throttle control connector.

BS:DTC P0230 FUEL PUMP PRIMARY CIRCUIT

DTC DETECTING CONDITION:

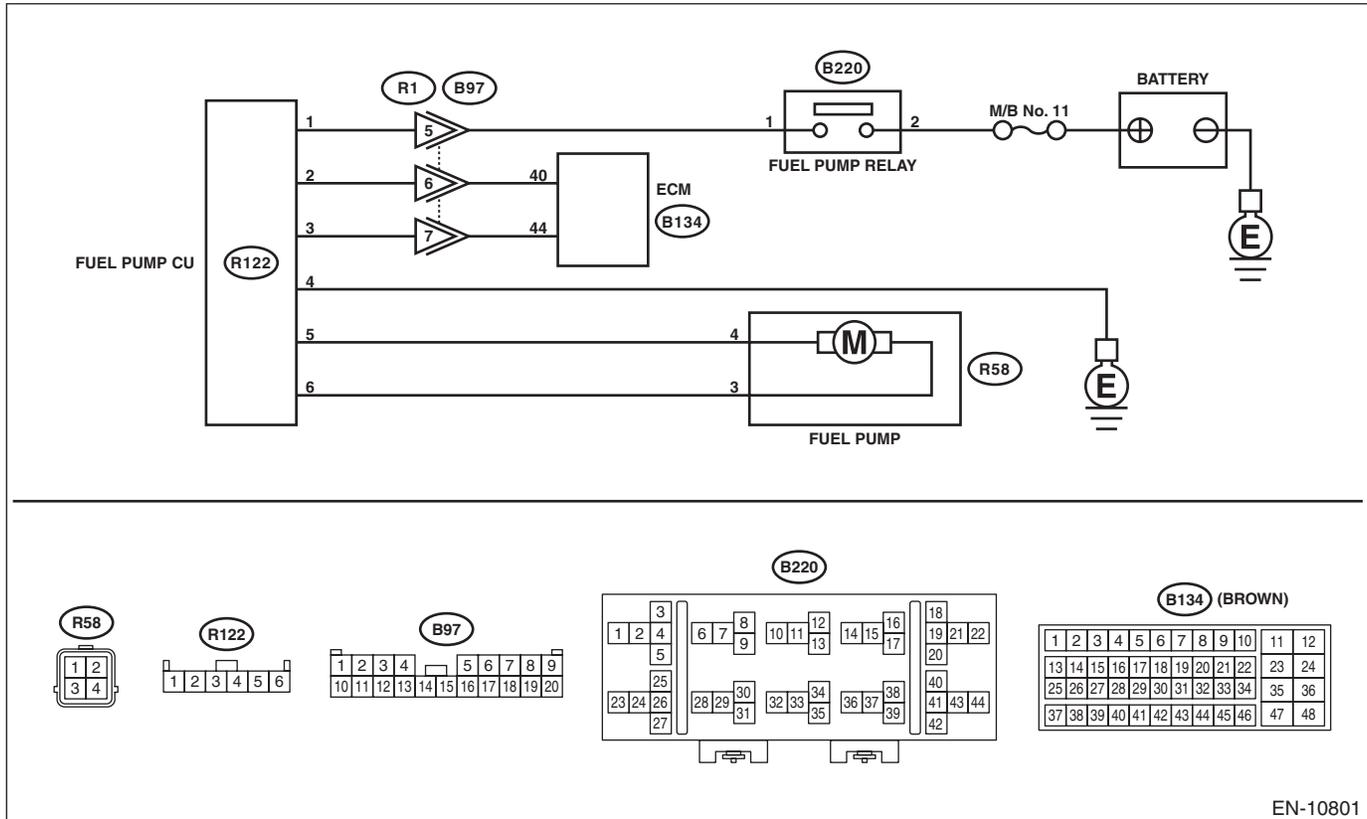
- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-96, DTC P0230 FUEL PUMP PRIMARY CIRCUIT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10801

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1 CHECK POWER SUPPLY CIRCUIT TO FUEL PUMP CONTROL UNIT.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from fuel pump control unit. 3) Turn the ignition switch to ON. 4) Measure the voltage between fuel pump control unit connector and engine ground.</p> <p>Connector & terminal (R122) No. 1 (+) — Engine ground (-):</p>	Is the voltage 10 V or more?	Go to step 2.	Repair the power supply circuit. NOTE: In this case, repair the following item: <ul style="list-style-type: none"> • Open circuit or short circuit to ground in harness between fuel pump relay connector and fuel pump control unit connector • Poor contact of fuel pump control unit connector • Poor contact of fuel pump relay connector • Poor contact of coupling connector
<p>2 CHECK GROUND CIRCUIT OF FUEL PUMP CONTROL UNIT.</p> <p>1) Turn the ignition switch to OFF. 2) Measure the resistance of harness between fuel pump control unit connector and engine ground.</p> <p>Connector & terminal (R122) No. 4 — Engine ground:</p>	Is the resistance less than 5 Ω ?	Go to step 3.	Repair the open circuit between fuel pump control unit connector and engine ground.
<p>3 CHECK HARNESS BETWEEN FUEL PUMP CONTROL UNIT AND FUEL PUMP CONNECTOR.</p> <p>1) Disconnect the connector from fuel pump. 2) Measure the resistance of harness between fuel pump control unit and fuel pump connector.</p> <p>Connector & terminal (R122) No. 5 — (R58) No. 4: (R122) No. 6 — (R58) No. 3:</p>	Is the resistance less than 1 Ω ?	Go to step 4.	Repair the open circuit in harness between fuel pump control unit connector and fuel pump connector.
<p>4 CHECK HARNESS BETWEEN FUEL PUMP CONTROL UNIT AND FUEL PUMP CONNECTOR.</p> <p>Measure the resistance between fuel pump control unit connector and engine ground.</p> <p>Connector & terminal (R122) No. 5 — Engine ground: (R122) No. 6 — Engine ground:</p>	Is the resistance 1 M Ω or more?	Go to step 5.	Repair the short circuit to ground in harness between fuel pump control unit connector and fuel pump connector.
<p>5 CHECK HARNESS BETWEEN ECM AND FUEL PUMP CONTROL UNIT CONNECTOR.</p> <p>1) Disconnect the connector from ECM. 2) Measure the resistance of harness between ECM connector and fuel pump control unit connector.</p> <p>Connector & terminal (B134) No. 40 — (R122) No. 2: (B134) No. 44 — (R122) No. 3:</p>	Is the resistance less than 1 Ω ?	Go to step 6.	Repair the harness and connector. NOTE: In this case, repair the following item: <ul style="list-style-type: none"> • Open circuit in harness between ECM connector and fuel pump control unit connector • Poor contact of coupling connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
6 CHECK HARNESS BETWEEN ECM AND FUEL PUMP CONTROL UNIT CONNECTOR. Measure the resistance between fuel pump control unit connector and engine ground. Connector & terminal (R122) No. 2 — Engine ground: (R122) No. 3 — Engine ground:	Is the resistance 1 M Ω or more?	Go to step 7.	Repair the short circuit to ground in harness between ECM connector and fuel pump control unit connector.
7 CHECK FOR POOR CONTACT. Check for poor contact of ECM and fuel pump control unit connector.	Is there poor contact of ECM or fuel pump control unit connector?	Repair the poor contact of ECM or fuel pump control unit connector.	Go to step 8.
8 CHECK EXPERIENCE OF RUNNING OUT OF FUEL.	Has the vehicle experienced running out of fuel?	Finish the diagnosis. NOTE: DTC may be recorded as a result of fuel pump idling while running out of fuel.	Replace the fuel pump control unit. <Ref. to FU(w/o STI)-145, Fuel Pump Control Unit.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

BT:DTC P023F FUEL PUMP SECONDARY CIRCUIT/OPEN

DTC DETECTING CONDITION:

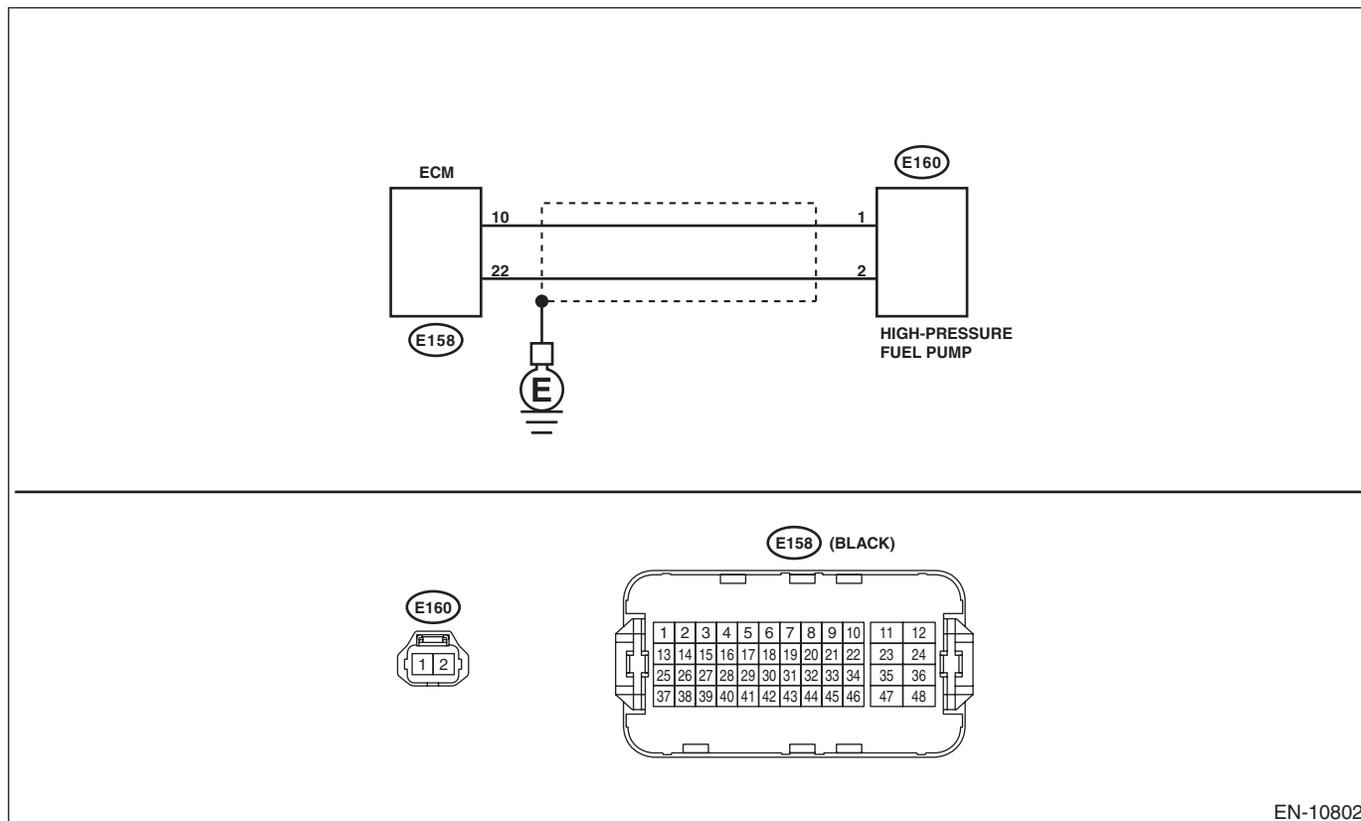
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-97, DTC P023F FUEL PUMP SECONDARY CIRCUIT/OPEN, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10802

Step	Check	Yes	No
1	CHECK HIGH-PRESSURE FUEL PUMP. Check the high-pressure fuel pump. <Ref. to FU(w/o STI)-82, INSPECTION, High Pressure Fuel Pump.>	Go to step 2.	Replace the high-pressure fuel pump. <Ref. to FU(w/o STI)-74, High Pressure Fuel Pump.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
2 CHECK HARNESS BETWEEN ECM AND HIGH-PRESSURE FUEL PUMP CONNECTOR. 1) Disconnect the connector from ECM and high-pressure fuel pump. 2) Measure the resistance of harness between ECM connector and high-pressure fuel pump connector. Connector & terminal (E158) No. 10 — (E160) No. 1: (E158) No. 22 — (E160) No. 2:	Is the resistance less than 1 Ω ?	Go to step 3.	Repair the open circuit in harness between ECM connector and high-pressure fuel pump connector.
3 CHECK HARNESS BETWEEN ECM AND HIGH-PRESSURE FUEL PUMP CONNECTOR. Measure the resistance between high-pressure fuel pump connector and engine ground. Connector & terminal (E160) No. 1 — Engine ground: (E160) No. 2 — Engine ground:	Is the resistance 1 M Ω or more?	Repair the poor contact of ECM connector.	Repair the short circuit to ground in harness between ECM connector and high-pressure fuel pump connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-98, DTC P0244 TURBO/SUPER CHARGER WASTEGATE SOLENOID "A" RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

	Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check the appropriate DTC using the "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2	CHECK WASTEGATE ACTUATOR PIPING AND WASTEGATE CONTROL SOLENOID VALVE PIPING.	Are there any damage or disconnection of hose in wastegate actuator piping or wastegate control solenoid valve piping?	Connect the wastegate actuator pipe or wastegate control solenoid valve pipe properly. If defective, replace the hose.	Replace the wastegate control solenoid valve. <Ref. to FU(w/o STI)-123, Wastegate Control Solenoid Valve.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

BV:DTC P0245 TURBO/SUPER CHARGER WASTEGATE SOLENOID "A" LOW

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-100, DTC P0245 TURBO/SUPER CHARGER WASTEGATE SOLENOID "A" LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

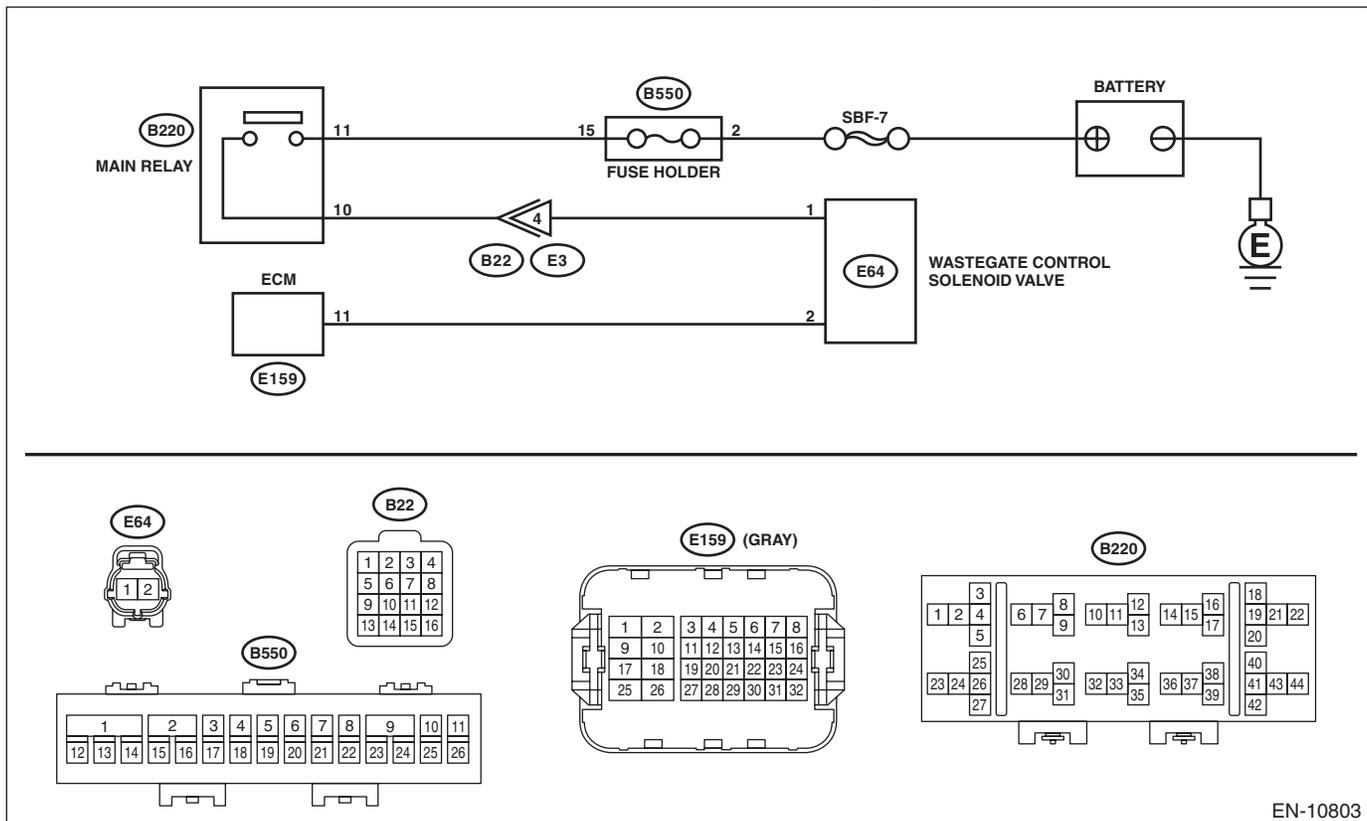
Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10803

Step	Check	Yes	No
1 CHECK OUTPUT SIGNAL OF ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM connector and engine ground. Connector & terminal (E159) No. 11 (+) — Engine ground (-):	Is the voltage 10 V or more?	Go to step 2.	Go to step 3.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
2 CHECK FOR POOR CONTACT. Check for poor contact of ECM connector.	Is there poor contact of ECM connector?	Repair the poor contact of ECM connector.	Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again. NOTE: In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.
3 CHECK POWER SUPPLY TO WASTEGATE CONTROL SOLENOID VALVE. Measure the voltage between wastegate control solenoid valve connector and engine ground. <i>Connector & terminal</i> <i>(E64) No. 1 (+) — Engine ground (-):</i>	Is the voltage 10 V or more?	Go to step 4.	Repair the power supply circuit.
4 CHECK HARNESS BETWEEN ECM AND WASTEGATE CONTROL SOLENOID VALVE CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and wastegate control solenoid valve. 3) Measure the resistance between wastegate control solenoid valve connector and engine ground. <i>Connector & terminal</i> <i>(E64) No. 2 — Engine ground:</i>	Is the resistance 1 M Ω or more?	Go to step 5.	Repair ground short circuit of harness between ECM connector and wastegate control solenoid valve connector.
5 CHECK HARNESS BETWEEN ECM AND WASTEGATE CONTROL SOLENOID VALVE CONNECTOR. Measure the resistance of harness between ECM connector and wastegate control solenoid valve connector. <i>Connector & terminal</i> <i>(E159) No. 11 — (E64) No. 2:</i>	Is the resistance less than 1 Ω ?	Go to step 6.	Repair open circuit in harness between ECM connector and wastegate control solenoid valve connector.
6 CHECK WASTEGATE CONTROL SOLENOID VALVE. 1) Remove the wastegate control solenoid valve. 2) Measure the resistance between wastegate control solenoid valve terminals. <i>Terminals</i> <i>No. 1 — No. 2:</i>	Is the resistance 10 — 100 Ω ?	Repair poor contact of wastegate control solenoid valve connector.	Replace the wastegate control solenoid valve. <Ref. to FU(w/o STI)-123, Wastegate Control Solenoid Valve.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

BW:DTC P0246 TURBO/SUPER CHARGER WASTEGATE SOLENOID "A" HIGH

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-101, DTC P0246 TURBO/SUPER CHARGER WASTEGATE SOLENOID "A" HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

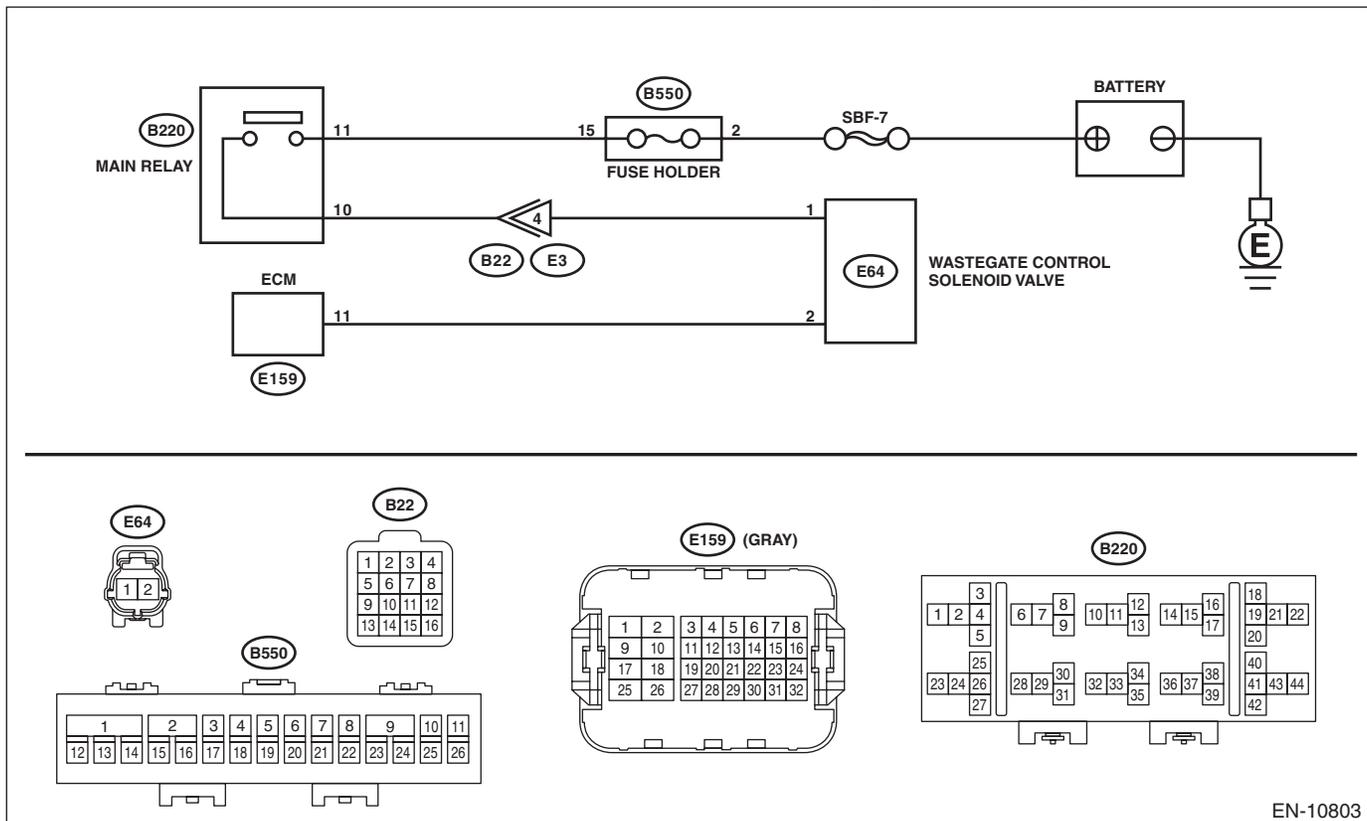
Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10803

Step	Check	Yes	No	
1	<p>CHECK HARNESS BETWEEN ECM AND WASTEGATE CONTROL SOLENOID VALVE CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connectors from ECM and wastegate control solenoid valve.</p> <p>3) Turn the ignition switch to ON.</p> <p>4) Measure the voltage between ECM connector and engine ground.</p> <p>Connector & terminal (E159) No. 11 (+) — Engine ground (-):</p>	Is the voltage 10 V or more?	Repair short circuit to power in harness between ECM connector and wastegate control solenoid valve connector.	Go to step 2.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
2 CHECK WASTEGATE CONTROL SOLENOID VALVE. 1) Turn the ignition switch to OFF. 2) Measure the resistance between wastegate control solenoid valve terminals. Terminals No. 1 — No. 2:	Is the resistance less than 1 Ω ?	Replace the wastegate control solenoid valve. <Ref. to FU(w/o STI)-123, Wastegate Control Solenoid Valve.>	Repair the poor contact of ECM connector.

BX:DTC P0300 RANDOM/MULTIPLE CYLINDER MISFIRE DETECTED

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- Immediately at fault recognition (A misfire which could damage catalyst occurs.)
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-101, DTC P0300 RANDOM/MULTIPLE CYLINDER MISFIRE DETECTED, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Engine stalls.
- Improper idling
- Rough driving

CAUTION:

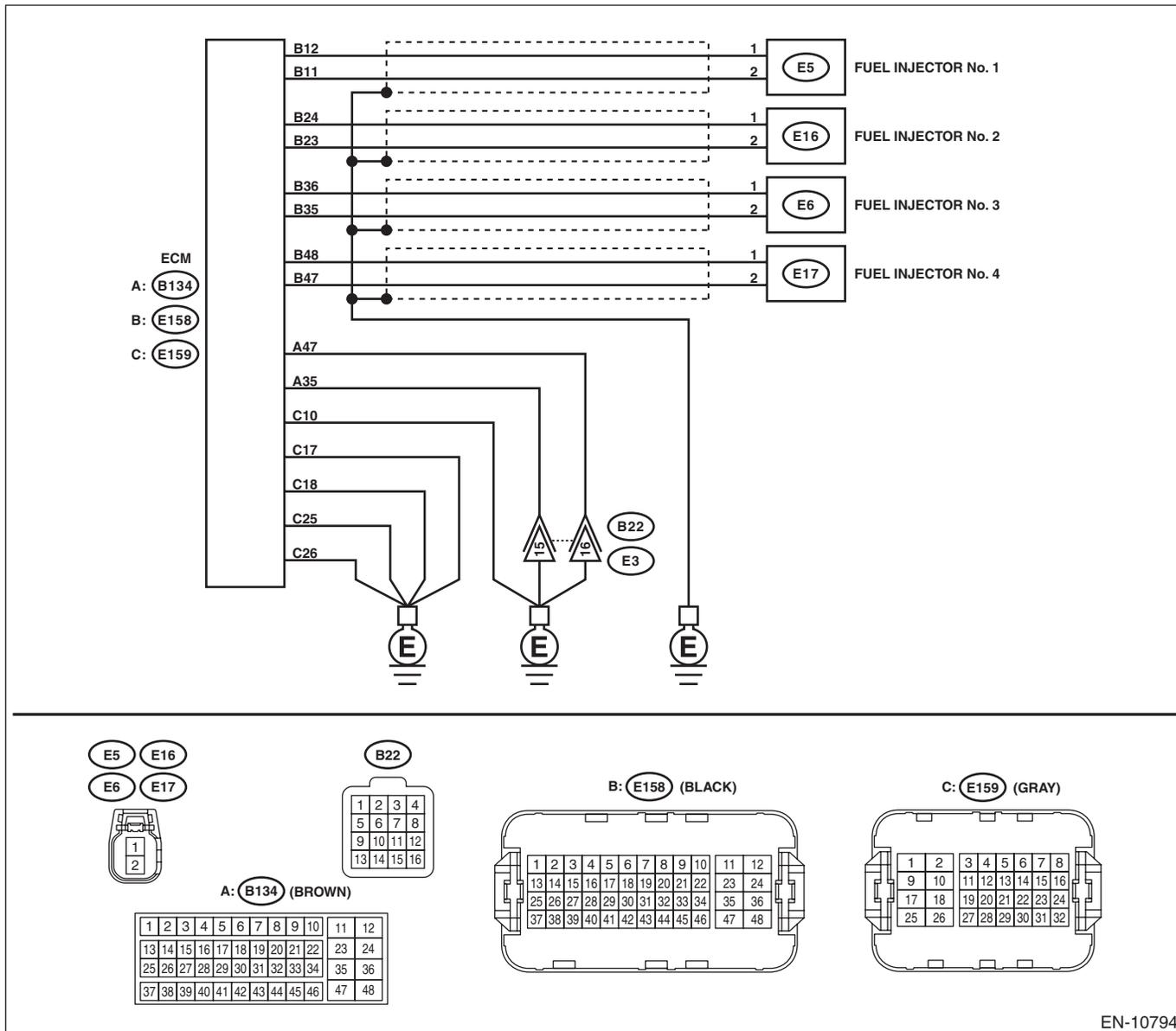
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10794

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1</p> <p>CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from all fuel injectors. 3) Measure the resistance between all fuel injector connectors and engine ground.</p> <p>Connector & terminal</p> <p>#1 (E5) No. 1 — Engine ground: #1 (E5) No. 2 — Engine ground: #2 (E16) No. 1 — Engine ground: #2 (E16) No. 2 — Engine ground: #3 (E6) No. 1 — Engine ground: #3 (E6) No. 2 — Engine ground: #4 (E17) No. 1 — Engine ground: #4 (E17) No. 2 — Engine ground:</p>	<p>Is the resistance 1 MΩ or more?</p>	<p>Go to step 2.</p>	<p>Repair the short circuit to ground in harness between ECM connector and fuel injector connector.</p>
<p>2</p> <p>CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR.</p> <p>Measure the resistance of harness between ECM connector and fuel injector connector on all cylinders.</p> <p>Connector & terminal</p> <p>#1 (E158) No. 12 — (E5) No. 1: #1 (E158) No. 11 — (E5) No. 2: #2 (E158) No. 24 — (E16) No. 1: #2 (E158) No. 23 — (E16) No. 2: #3 (E158) No. 36 — (E6) No. 1: #3 (E158) No. 35 — (E6) No. 2: #4 (E158) No. 48 — (E17) No. 1: #4 (E158) No. 47 — (E17) No. 2:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 3.</p>	<p>Repair the open circuit of the harness between the ECM connector and fuel injector connector.</p>
<p>3</p> <p>CHECK FUEL INJECTOR.</p> <p>Check all fuel injectors. <Ref. to FU(w/o STI)-70, INSPECTION, Fuel Injector.></p>	<p>Are fuel injectors OK?</p>	<p>Go to step 4.</p>	<p>Replace the faulty fuel injector. <Ref. to FU(w/o STI)-51, Fuel Injector.></p>
<p>4</p> <p>CHECK INSTALLATION CONDITION OF CAMSHAFT POSITION SENSOR/CRANKSHAFT POSITION SENSOR.</p>	<p>Is the camshaft position sensor or crankshaft position sensor loosely installed?</p>	<p>Tighten the camshaft position sensor or crankshaft position sensor. <Ref. to FU(w/o STI)-104, INSTALLATION, Camshaft Position Sensor.> <Ref. to FU(w/o STI)-99, INSTALLATION, Crankshaft Position Sensor.></p>	<p>Go to step 5.</p>
<p>5</p> <p>CHECK CRANKSHAFT POSITION SENSOR PLATE.</p>	<p>Is the crankshaft position sensor plate rusted or does it have broken teeth?</p>	<p>Replace the crankshaft position sensor plate. <Ref. to ME(w/o STI)-260, Cylinder Block.></p>	<p>Go to step 6.</p>
<p>6</p> <p>CHECK INSTALLATION CONDITION OF TIMING CHAIN.</p> <p>Turn the crankshaft using ST, and align the alignment mark on crank sprocket with alignment mark on cylinder block.</p> <p>ST 18252AA000 CRANKSHAFT SOCKET</p>	<p>Is the timing chain dislocated from its proper position?</p>	<p>Correct the installation condition of timing chain. <Ref. to ME(w/o STI)-116, Timing Chain Assembly.></p>	<p>Go to step 7.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
7	CHECK FUEL LEVEL.	Go to step 8 .	Refill the fuel so that the fuel meter indication is higher than the "Lower" level, and proceed to the next step. Go to step 8 .
8	CHECK STATUS OF MALFUNCTION INDICATOR LIGHT. 1) Clear the memory using the Subaru Select Monitor or general scan tool. <Ref. to EN(w/o STI)(diag)-61, Clear Memory Mode.> 2) Start the engine, and drive the vehicle 10 minutes or more.	Go to step 10 .	Go to step 9 .
9	CHECK CAUSE OF MISFIRE.	Finish diagnostics operation, if the engine has no abnormality.	Repair the poor contact of connector. NOTE: In this case, repair the following item: • Poor contact of ignition coil connector • Poor contact of fuel injector connector on faulty cylinders • Poor contact of ECM connector • Poor contact of coupling connector
10	CHECK AIR INTAKE SYSTEM.	Repair the air intake system. NOTE: Check the following items. • Are there air leaks or air suction caused by loose or dislocated nuts and bolts? • Are there cracks or any disconnection of hoses?	Go to step 11 .
11	CHECK ALL CYLINDERS.	Repair or replace the faulty part of the faulty cylinder. NOTE: Check the following items. • Spark plug • Ignition coil • Fuel injector • Compression ratio • Skipping timing chain teeth	Go to DTC P0171. <Ref. to EN(w/o STI)(diag)-185, DTC P0171 SYSTEM TOO LEAN (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

BY:DTC P0301 CYLINDER 1 MISFIRE DETECTED

NOTE:

For the diagnostic procedure, refer to DTC P0304. <Ref. to EN(w/o STI)(diag)-224, DTC P0304 CYLINDER 4 MISFIRE DETECTED, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BZ:DTC P0302 CYLINDER 2 MISFIRE DETECTED

NOTE:

For the diagnostic procedure, refer to DTC P0304. <Ref. to EN(w/o STI)(diag)-224, DTC P0304 CYLINDER 4 MISFIRE DETECTED, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

CA:DTC P0303 CYLINDER 3 MISFIRE DETECTED

NOTE:

For the diagnostic procedure, refer to DTC P0304. <Ref. to EN(w/o STI)(diag)-224, DTC P0304 CYLINDER 4 MISFIRE DETECTED, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

CB:DTC P0304 CYLINDER 4 MISFIRE DETECTED

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- Immediately at fault recognition (A misfire which could damage catalyst occurs.)
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-106, DTC P0304 CYLINDER 4 MISFIRE DETECTED, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Engine stalls.
- Improper idling
- Rough driving

CAUTION:

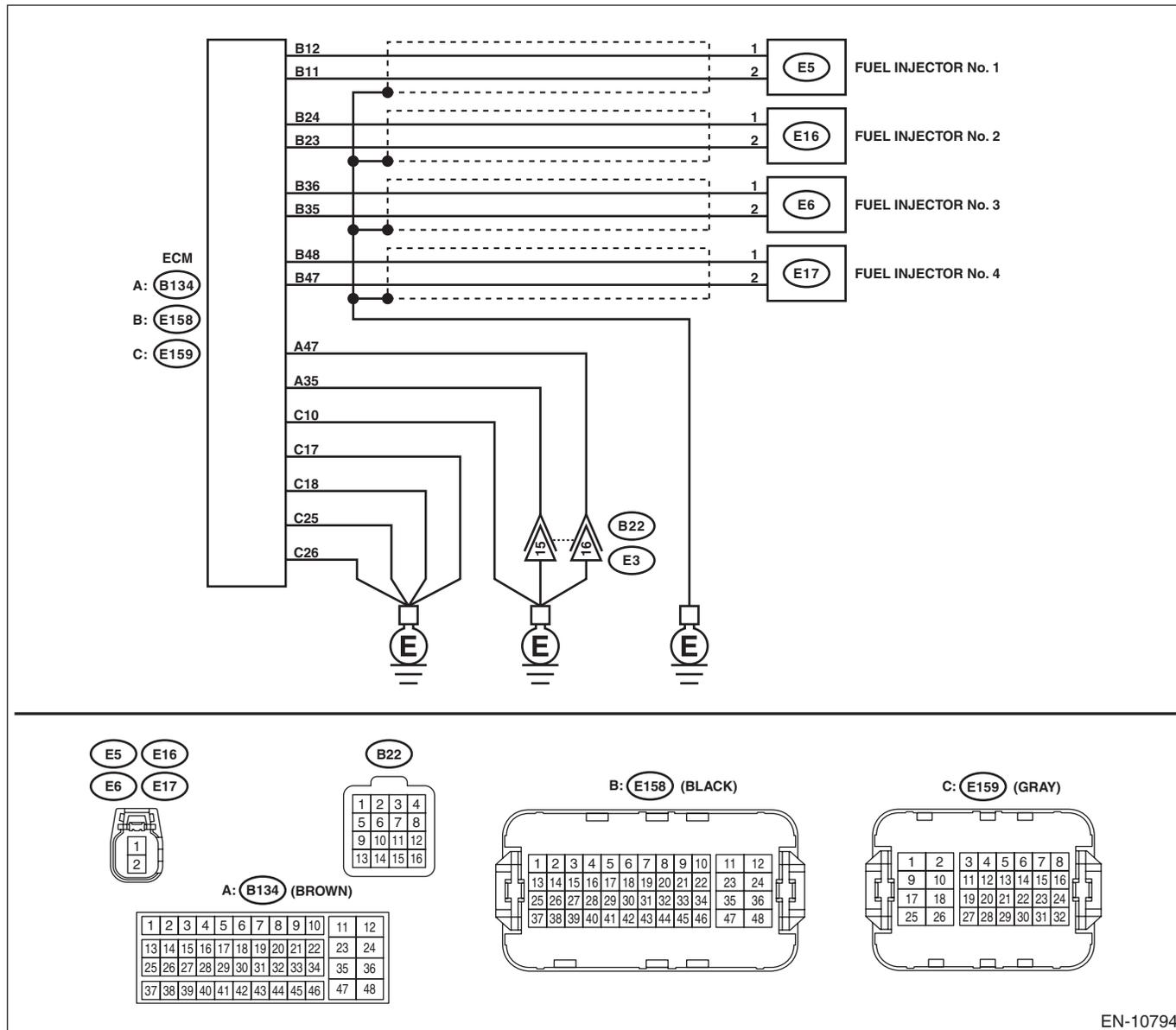
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10794

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from fuel injector on faulty cylinders. 3) Measure the resistance between fuel injector connector and engine ground on faulty cylinders. Connector & terminal #1 (E5) No. 1 — Engine ground: #1 (E5) No. 2 — Engine ground: #2 (E16) No. 1 — Engine ground: #2 (E16) No. 2 — Engine ground: #3 (E6) No. 1 — Engine ground: #3 (E6) No. 2 — Engine ground: #4 (E17) No. 1 — Engine ground: #4 (E17) No. 2 — Engine ground:	Is the resistance 1 MΩ or more?	Go to step 2.	Repair the short circuit to ground in harness between ECM connector and fuel injector connector.
2 CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR. Measure the resistance of harness between ECM connector and fuel injector connector on faulty cylinders. Connector & terminal #1 (E158) No. 12 — (E5) No. 1: #1 (E158) No. 11 — (E5) No. 2: #2 (E158) No. 24 — (E16) No. 1: #2 (E158) No. 23 — (E16) No. 2: #3 (E158) No. 36 — (E6) No. 1: #3 (E158) No. 35 — (E6) No. 2: #4 (E158) No. 48 — (E17) No. 1: #4 (E158) No. 47 — (E17) No. 2:	Is the resistance less than 1 Ω?	Go to step 3.	Repair the open circuit of the harness between the ECM connector and fuel injector connector.
3 CHECK FUEL INJECTOR. Check the fuel injector on faulty cylinder. <Ref. to FU(w/o STI)-70, INSPECTION, Fuel Injector.>	Are fuel injectors OK?	Go to step 4.	Replace the faulty fuel injector. <Ref. to FU(w/o STI)-51, Fuel Injector.>
4 CHECK INSTALLATION CONDITION OF CAMSHAFT POSITION SENSOR/CRANKSHAFT POSITION SENSOR.	Is the camshaft position sensor or crankshaft position sensor loosely installed?	Tighten the camshaft position sensor or crankshaft position sensor. <Ref. to FU(w/o STI)-104, INSTALLATION, Camshaft Position Sensor.> <Ref. to FU(w/o STI)-99, INSTALLATION, Crankshaft Position Sensor.>	Go to step 5.
5 CHECK CRANKSHAFT POSITION SENSOR PLATE.	Is the crankshaft position sensor plate rusted or does it have broken teeth?	Replace the crankshaft position sensor plate. <Ref. to ME(w/o STI)-260, Cylinder Block.>	Go to step 6.
6 CHECK INSTALLATION CONDITION OF TIMING CHAIN. Turn the crankshaft using ST, and align the alignment mark on crank sprocket with alignment mark on cylinder block. ST 18252AA000 CRANKSHAFT SOCKET	Is the timing chain dislocated from its proper position?	Correct the installation condition of timing chain. <Ref. to ME(w/o STI)-116, Timing Chain Assembly.>	Go to step 7.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
7 CHECK FUEL LEVEL.	Is the fuel meter indication higher than the "Lower" level?	Go to step 8.	Refill the fuel so that the fuel meter indication is higher than the "Lower" level, and proceed to the next step. Go to step 8.
8 CHECK STATUS OF MALFUNCTION INDICATOR LIGHT. 1) Clear the memory using the Subaru Select Monitor or general scan tool. <Ref. to EN(w/o STI)(diag)-61, Clear Memory Mode.> 2) Start the engine, and drive the vehicle 10 minutes or more.	Does the malfunction indicator light illuminate or blink?	Go to step 10.	Go to step 9.
9 CHECK CAUSE OF MISFIRE.	Was the cause of misfire identified when the engine is running?	Finish diagnostics operation, if the engine has no abnormality.	Repair the poor contact of connector. NOTE: In this case, repair the following item: • Poor contact of ignition coil connector • Poor contact of fuel injector connector on faulty cylinders • Poor contact of ECM connector • Poor contact of coupling connector
10 CHECK AIR INTAKE SYSTEM.	Is there any fault in air intake system?	Repair the air intake system. NOTE: Check the following items. • Are there air leaks or air suction caused by loose or dislocated nuts and bolts? • Are there cracks or any disconnection of hoses?	Go to step 11.
11 CHECK CYLINDER.	Is there any fault in the cylinder?	Repair or replace faulty parts. NOTE: Check the following items. • Spark plug • Ignition coil • Fuel injector • Compression ratio • Skipping timing chain teeth	Go to DTC P0171. <Ref. to EN(w/o STI)(diag)-185, DTC P0171 SYSTEM TOO LEAN (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-107, DTC P0327 KNOCK SENSOR 1 CIRCUIT LOW (BANK 1 OR SINGLE SENSOR), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

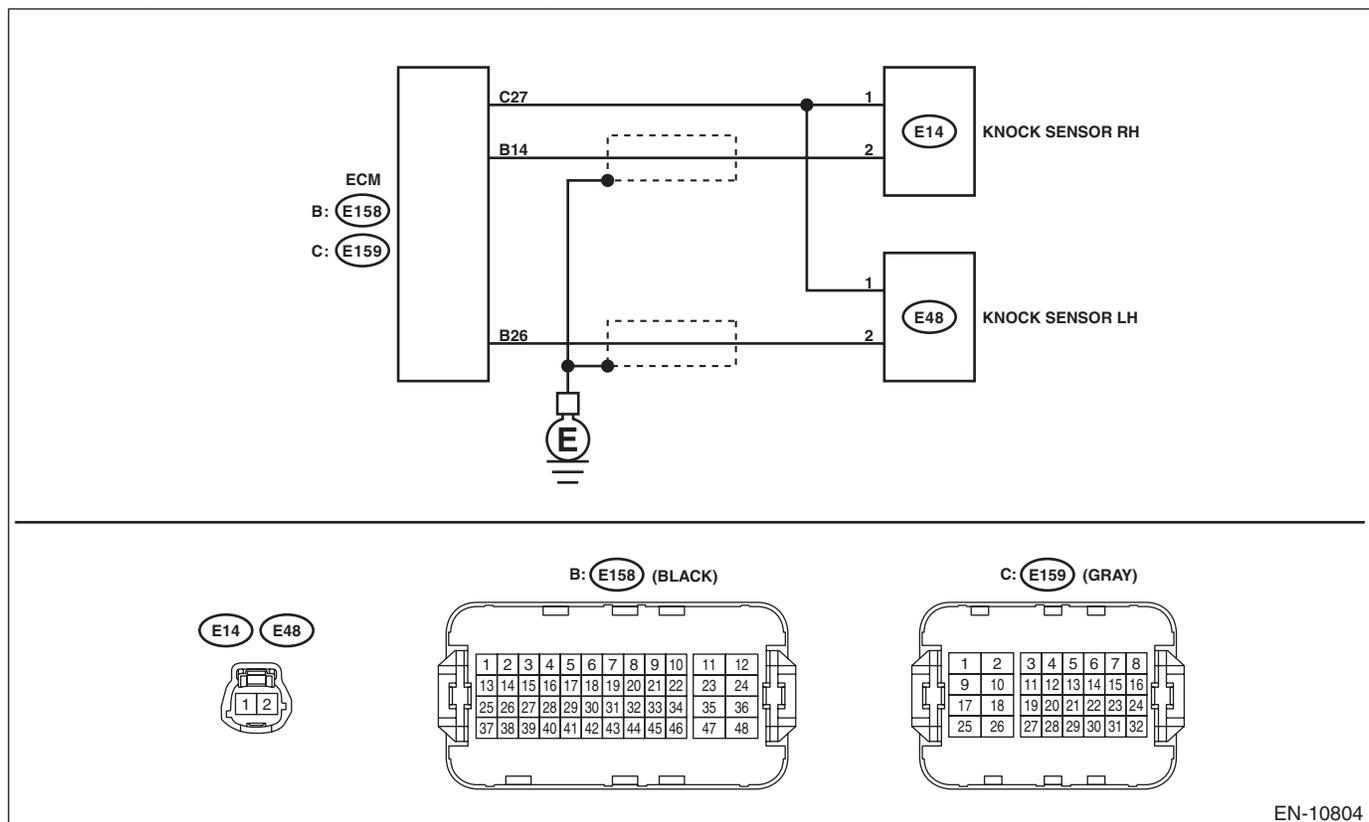
- Poor driving performance
- Knocking occurs

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



Step	Check	Yes	No
1 CHECK HARNESS BETWEEN ECM AND KNOCK SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connectors. <i>Connector & terminal</i> <i>(E158) No. 14 — (E159) No. 27:</i>	Is the resistance less than 500 kΩ?	Go to step 2.	Go to step 3.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>2</p> <p>CHECK KNOCK SENSOR.</p> <p>1) Disconnect the connector from the knock sensor.</p> <p>2) Measure the resistance between knock sensor connectors.</p> <p>Terminals No. 1 — No. 2:</p>	<p>Is the resistance less than 500 kΩ?</p>	<p>Replace the knock sensor. <Ref. to FU(w/o STI)-111, Knock Sensor.></p>	<p>Repair the short circuit to ground in harness between ECM connector and knock sensor connector.</p> <p>NOTE: The harness between both connectors are shielded. Remove the shield and repair the short circuit of harness.</p>
<p>3</p> <p>CHECK INPUT SIGNAL OF ECM.</p> <p>1) Connect the ECM.</p> <p>2) Turn the ignition switch to ON.</p> <p>3) Measure the voltage between ECM connector and engine ground.</p> <p>Connector & terminal (E158) No. 14 (+) — Engine ground (-):</p>	<p>Is the voltage 2 V or more?</p>	<p>Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again.</p> <p>NOTE: In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.</p>	<p>Repair the short circuit to ground in harness between ECM connector and knock sensor connector.</p> <p>NOTE: The harness between both connectors are shielded. Remove the shield and repair the short circuit of harness.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-108, DTC P0328 KNOCK SENSOR 1 CIRCUIT HIGH (BANK 1 OR SINGLE SENSOR), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

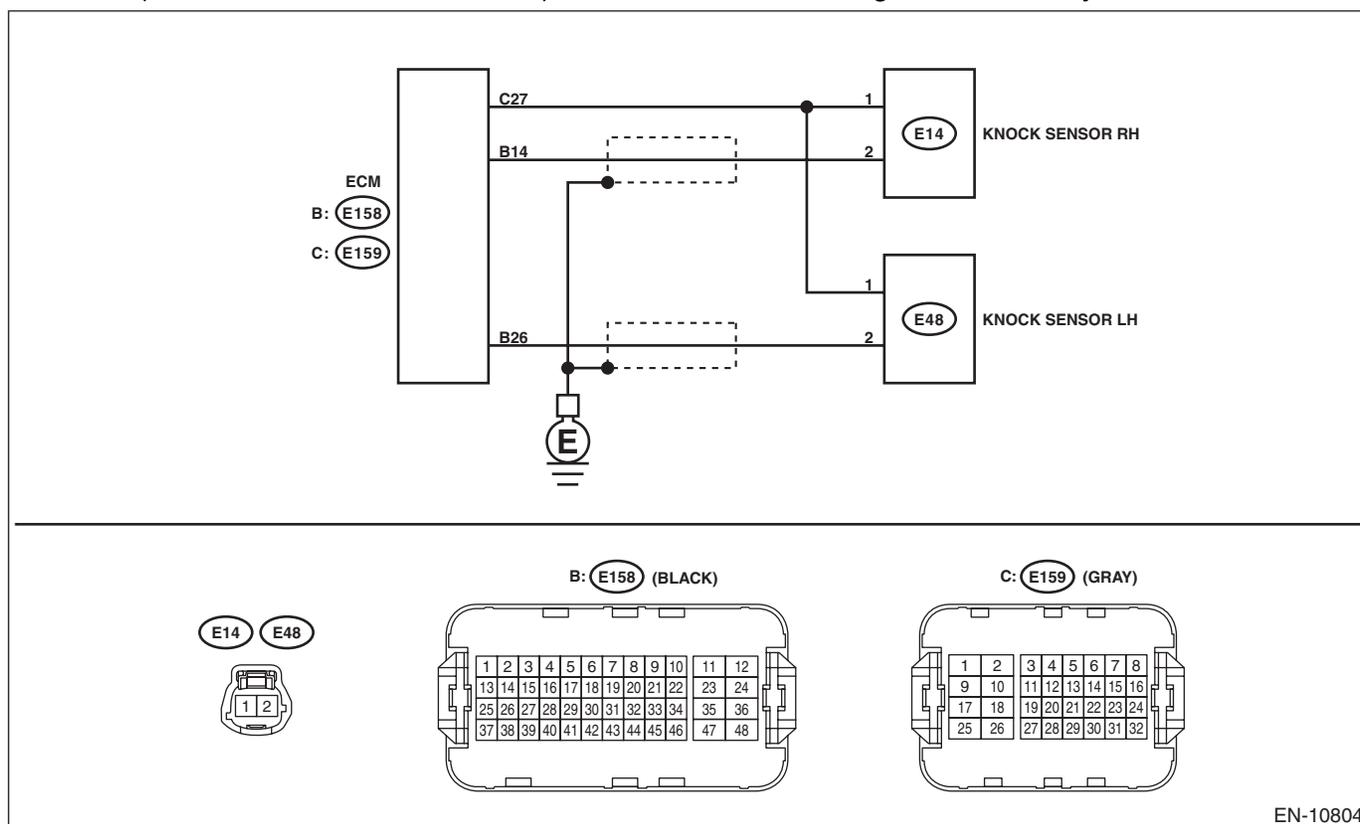
- Poor driving performance
- Knocking occurs

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10804

Step	Check	Yes	No
1 CHECK HARNESS BETWEEN ECM AND KNOCK SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connectors. <i>Connector & terminal</i> <i>(E158) No. 14 — (E159) No. 27:</i>	Is the resistance 600 kΩ or more?	Go to step 2.	Repair the poor contact of ECM connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
2 CHECK KNOCK SENSOR. 1) Disconnect the connector from the knock sensor. 2) Measure the resistance between knock sensor terminals. Terminals No. 1 — No. 2:	Is the resistance 600 k Ω or more?	Replace the knock sensor. <Ref. to FU(w/o STI)-111, Knock Sensor.>	Repair the open circuit in harness between ECM connector and knock sensor connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

CE:DTC P0332 KNOCK SENSOR 2 CIRCUIT LOW (BANK 2)

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-109, DTC P0332 KNOCK SENSOR 2 CIRCUIT LOW (BANK 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

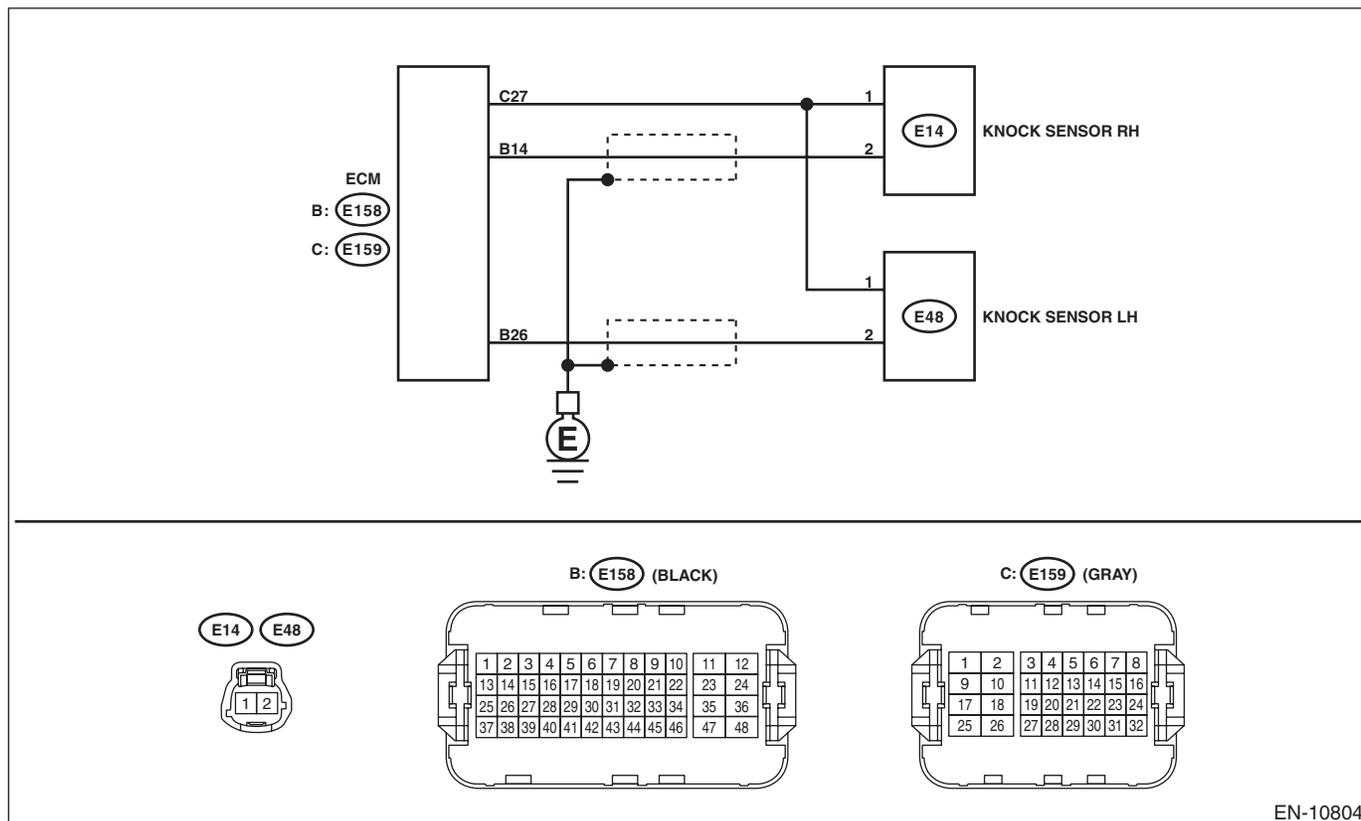
- Driving performance problem
- Knocking occurs

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10804

Step	Check	Yes	No
1 CHECK HARNESS BETWEEN ECM AND KNOCK SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connectors. <i>Connector & terminal</i> <i>(E158) No. 26 — (E159) No. 27:</i>	Is the resistance less than 500 kΩ?	Go to step 2.	Go to step 3.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>2</p> <p>CHECK KNOCK SENSOR.</p> <p>1) Disconnect the connector from the knock sensor.</p> <p>2) Measure the resistance between knock sensor connectors.</p> <p>Terminals No. 1 — No. 2:</p>	<p>Is the resistance less than 500 kΩ?</p>	<p>Replace the knock sensor. <Ref. to FU(w/o STI)-111, Knock Sensor.></p>	<p>Repair the short circuit to ground in harness between ECM connector and knock sensor connector.</p> <p>NOTE: The harness between both connectors are shielded. Remove the shield and repair the short circuit of harness.</p>
<p>3</p> <p>CHECK INPUT SIGNAL OF ECM.</p> <p>1) Connect the ECM.</p> <p>2) Turn the ignition switch to ON.</p> <p>3) Measure the voltage between ECM connector and engine ground.</p> <p>Connector & terminal (E158) No. 26 (+) — Engine ground (-):</p>	<p>Is the voltage 2 V or more?</p>	<p>Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again.</p> <p>NOTE: In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.</p>	<p>Repair the short circuit to ground in harness between ECM connector and knock sensor connector.</p> <p>NOTE: The harness between both connectors are shielded. Remove the shield and repair the short circuit of harness.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

CF:DTC P0333 KNOCK SENSOR 2 CIRCUIT HIGH (BANK 2)

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-110, DTC P0333 KNOCK SENSOR 2 CIRCUIT HIGH (BANK 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

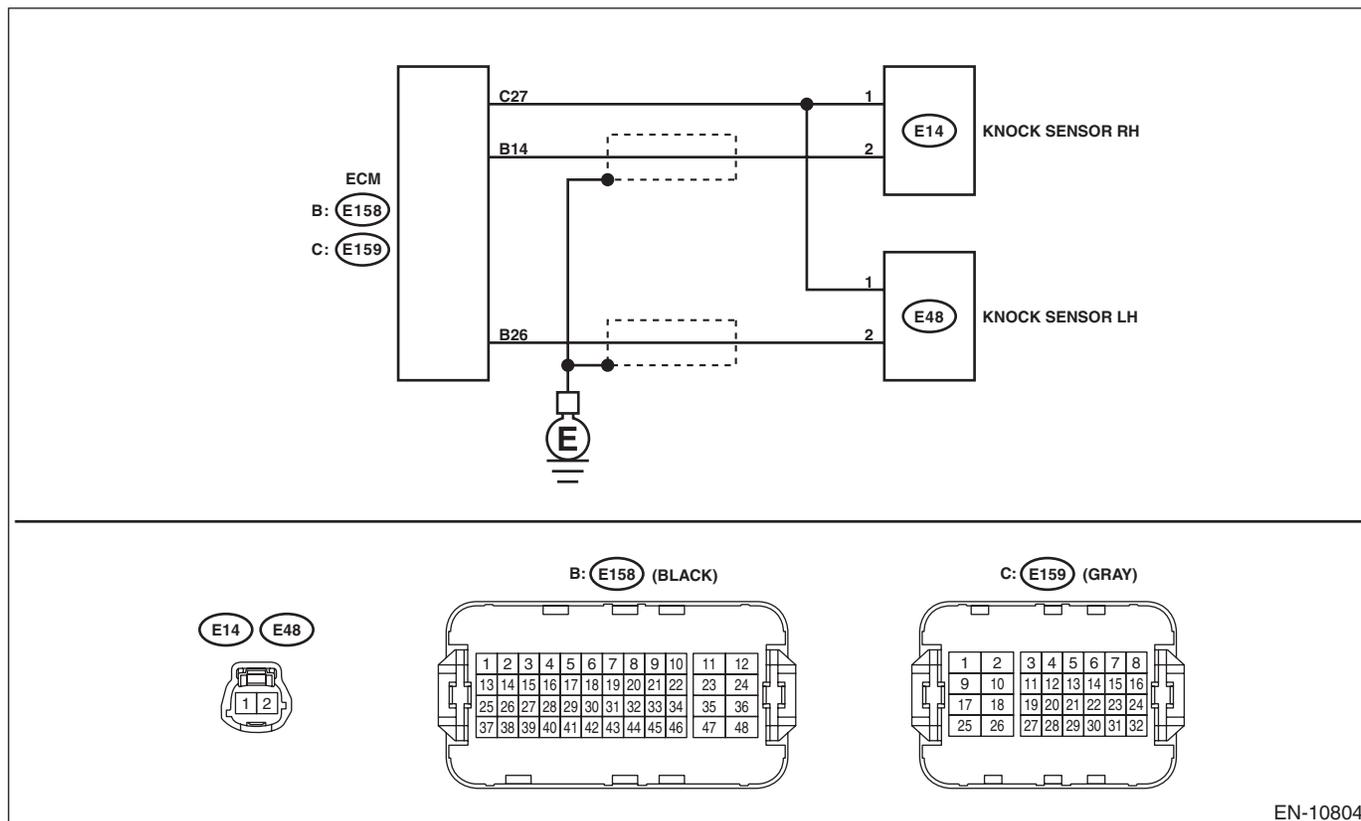
- Driving performance problem
- Knocking occurs

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10804

Step	Check	Yes	No
1 CHECK HARNESS BETWEEN ECM AND KNOCK SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connectors. <i>Connector & terminal</i> <i>(E158) No. 26 — (E159) No. 27:</i>	Is the resistance 600 kΩ or more?	Go to step 2.	Repair the poor contact of ECM connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
2 CHECK KNOCK SENSOR. 1) Disconnect the connector from the knock sensor. 2) Measure the resistance between knock sensor terminals. Terminals No. 1 — No. 2:	Is the resistance 600 kΩ or more?	Replace the knock sensor. <Ref. to FU(w/o STI)-111, Knock Sensor.>	Repair the open circuit in harness between ECM connector and knock sensor connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK POWER SUPPLY OF CRANKSHAFT POSITION SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the crankshaft position sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between crankshaft position sensor connector and engine ground. Connector & terminal (E10) No. 1 (+) — Engine ground (-):	Is the voltage 10 V or more?	Go to step 2.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit or short circuit to ground in harness between main relay connector and crankshaft position sensor connector • Poor contact of coupling connector
2 CHECK HARNESS BETWEEN ECM AND CRANKSHAFT POSITION SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connector and crankshaft position sensor connector. Connector & terminal (E158) No. 19 — (E10) No. 2: (E158) No. 31 — (E10) No. 3:	Is the resistance less than 1 Ω?	Go to step 3.	Repair the open circuit in the harness between the ECM connector and crankshaft position sensor connector.
3 CHECK HARNESS BETWEEN ECM AND CRANKSHAFT POSITION SENSOR CONNECTOR. Measure the resistance between crankshaft position sensor connector and engine ground. Connector & terminal (E10) No. 2 — Engine ground: (E10) No. 3 — Engine ground:	Is the resistance 1 MΩ or more?	Go to step 4.	Repair short circuit to ground in harness between ECM connector and crankshaft position sensor connector.
4 CHECK HARNESS BETWEEN ECM AND CRANKSHAFT POSITION SENSOR CONNECTOR. Measure the voltage between crankshaft position sensor connector and engine ground. Connector & terminal (E10) No. 2 (+) — Engine ground (-): (E10) No. 3 (+) — Engine ground (-):	Is the voltage 5 V or more?	Repair the short circuit to power in the harness between ECM connector and crankshaft position sensor connector.	Go to step 5.
5 CHECK CONDITION OF CRANKSHAFT POSITION SENSOR.	Is the crankshaft position sensor installation bolt tightened securely?	Go to step 6.	Tighten the crankshaft position sensor installation bolt securely. <Ref. to FU(w/o STI)-99, INSTALLATION, Crankshaft Position Sensor.>
6 CHECK CRANKSHAFT POSITION SENSOR. Check waveform of crankshaft position sensor. <Ref. to EN(w/o STI)(diag)-20, Engine Control Module (ECM) I/O Signal.>	Is there any abnormality in waveform?	Replace the crankshaft position sensor. <Ref. to FU(w/o STI)-103, Camshaft Position Sensor.>	Repair the following item. • Poor contact of ECM connector • Poor contact of crankshaft position sensor connector • Poor contact of coupling connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

CH:DTC P0336 CRANKSHAFT POSITION SENSOR “A” CIRCUIT RANGE/PERFORMANCE

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-113, 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 servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

	Step	Check	Yes	No
1	CHECK CONDITION OF CRANKSHAFT POSITION SENSOR. Turn the ignition switch to OFF.	Is the crankshaft position sensor installation bolt tightened securely?	Go to step 2.	Tighten the crankshaft position sensor installation bolt securely. <Ref. to FU(w/o STI)-98, Crankshaft Position Sensor.>
2	CHECK CRANKSHAFT POSITION SENSOR PLATE.	Is there crack or damage in the crankshaft position sensor plate teeth?	Replace the crankshaft position sensor plate. <Ref. to ME(w/o STI)-260, Cylinder Block.>	Go to step 3.
3	CHECK INSTALLATION CONDITION OF TIMING CHAIN. Turn the crankshaft, and align alignment mark on crank sprocket with alignment mark on cylinder block. ST 18252AA000 CRANKSHAFT SOCKET	Is the timing chain dislocated from its proper position?	Correct the installation condition of timing chain. <Ref. to ME(w/o STI)-116, Timing Chain Assembly.>	Replace the crankshaft position sensor. <Ref. to FU(w/o STI)-98, Crankshaft Position Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-115, DTC P0340 CAMSHAFT POSITION SENSOR "A" CIRCUIT (BANK 1 OR SINGLE SENSOR), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

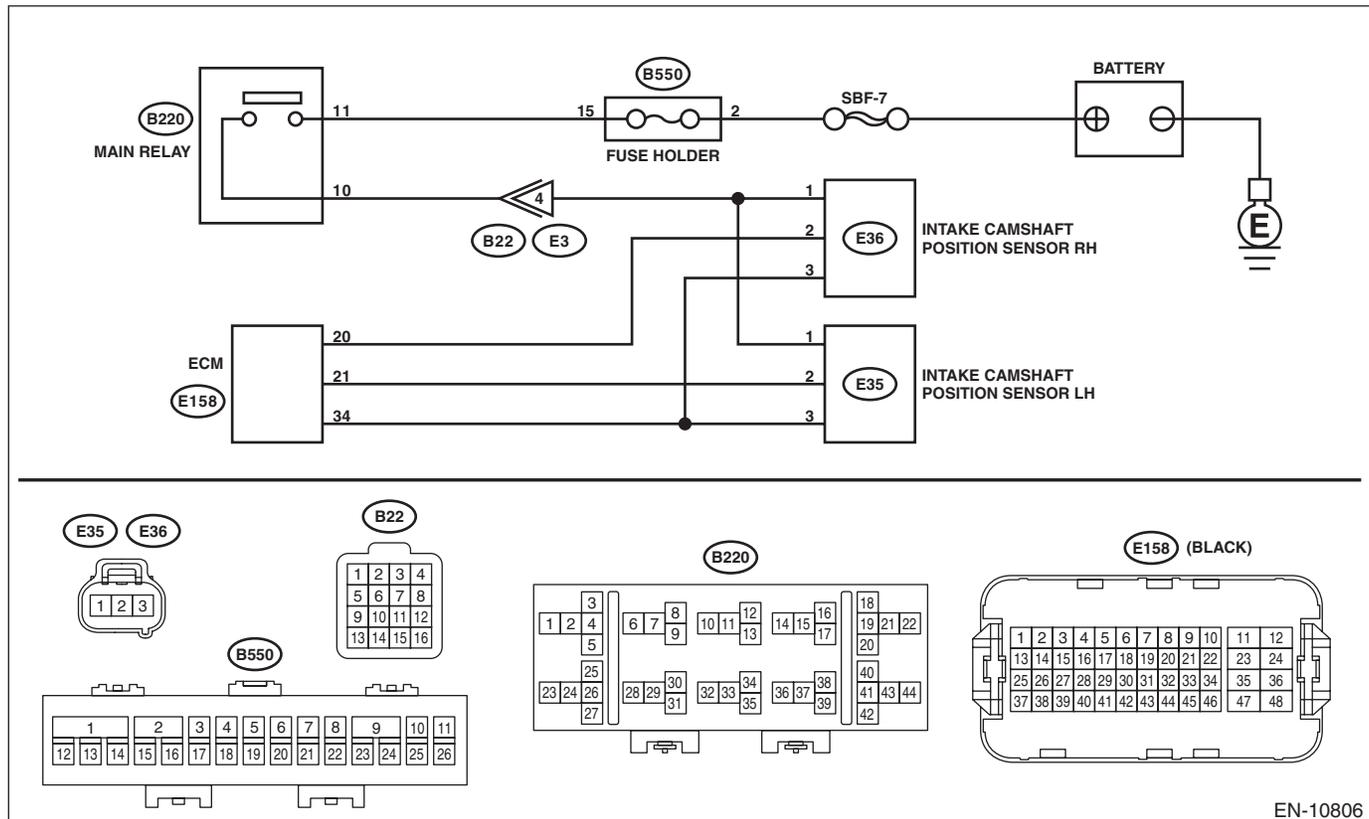
- Engine stalls.
- Failure of engine to start

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10806

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1 CHECK POWER SUPPLY OF CAMSHAFT POSITION SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from camshaft position sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between camshaft position sensor connector and engine ground. Connector & terminal (E36) No. 1 (+) — Engine ground (-):</p>	Is the voltage 10 V or more?	Go to step 2.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit or short circuit to ground in harness between main relay connector and camshaft position sensor connector • Poor contact of coupling connector
<p>2 CHECK HARNESS BETWEEN ECM AND CAMSHAFT POSITION SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connector and camshaft position sensor connector. Connector & terminal (E158) No. 20 — (E36) No. 2: (E158) No. 34 — (E36) No. 3:</p>	Is the resistance less than 1 Ω?	Go to step 3.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and camshaft position sensor connector • Poor contact of coupling connector
<p>3 CHECK HARNESS BETWEEN ECM AND CAMSHAFT POSITION SENSOR CONNECTOR. Measure the resistance between camshaft position sensor connector and engine ground. Connector & terminal (E36) No. 2 — Engine ground:</p>	Is the resistance 1 MΩ or more?	Go to step 4.	Repair short circuit to ground in harness between ECM connector and camshaft position sensor connector.
<p>4 CHECK HARNESS BETWEEN ECM AND CAMSHAFT POSITION SENSOR CONNECTOR. Measure the voltage between camshaft position sensor connector and engine ground. Connector & terminal (E36) No. 2 (+) — Engine ground (-):</p>	Is the voltage 5 V or more?	Repair the short circuit to power in the harness between ECM connector and camshaft position sensor connector.	Go to step 5.
<p>5 CHECK CONDITION OF CAMSHAFT POSITION SENSOR.</p>	Is the camshaft position sensor installation bolt tightened securely?	Go to step 6.	Tighten the camshaft position sensor installation bolt securely. <Ref. to FU(w/o STI)-104, INSTALLATION, Camshaft Position Sensor.>
<p>6 CHECK CAMSHAFT POSITION SENSOR. Check the waveform of the camshaft position sensor. <Ref. to EN(w/o STI)(diag)-20, Engine Control Module (ECM) I/O Signal.></p>	Is there any abnormality in waveform?	Replace the camshaft position sensor. <Ref. to FU(w/o STI)-103, Camshaft Position Sensor.>	Repair the following item. • Poor contact of ECM connector • Poor contact of camshaft position sensor connector • Poor contact of coupling connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

CJ:DTC P0341 CAMSHAFT POSITION SENSOR "A" CIRCUIT RANGE/PERFORMANCE (BANK 1 OR SINGLE SENSOR)

NOTE:

For the diagnostic procedure, refer to DTC P0340. <Ref. to EN(w/o STI)(diag)-239, DTC P0340 CAMSHAFT POSITION SENSOR "A" CIRCUIT (BANK 1 OR SINGLE SENSOR), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-118, DTC P0345 CAMSHAFT POSITION SENSOR "A" CIRCUIT (BANK 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

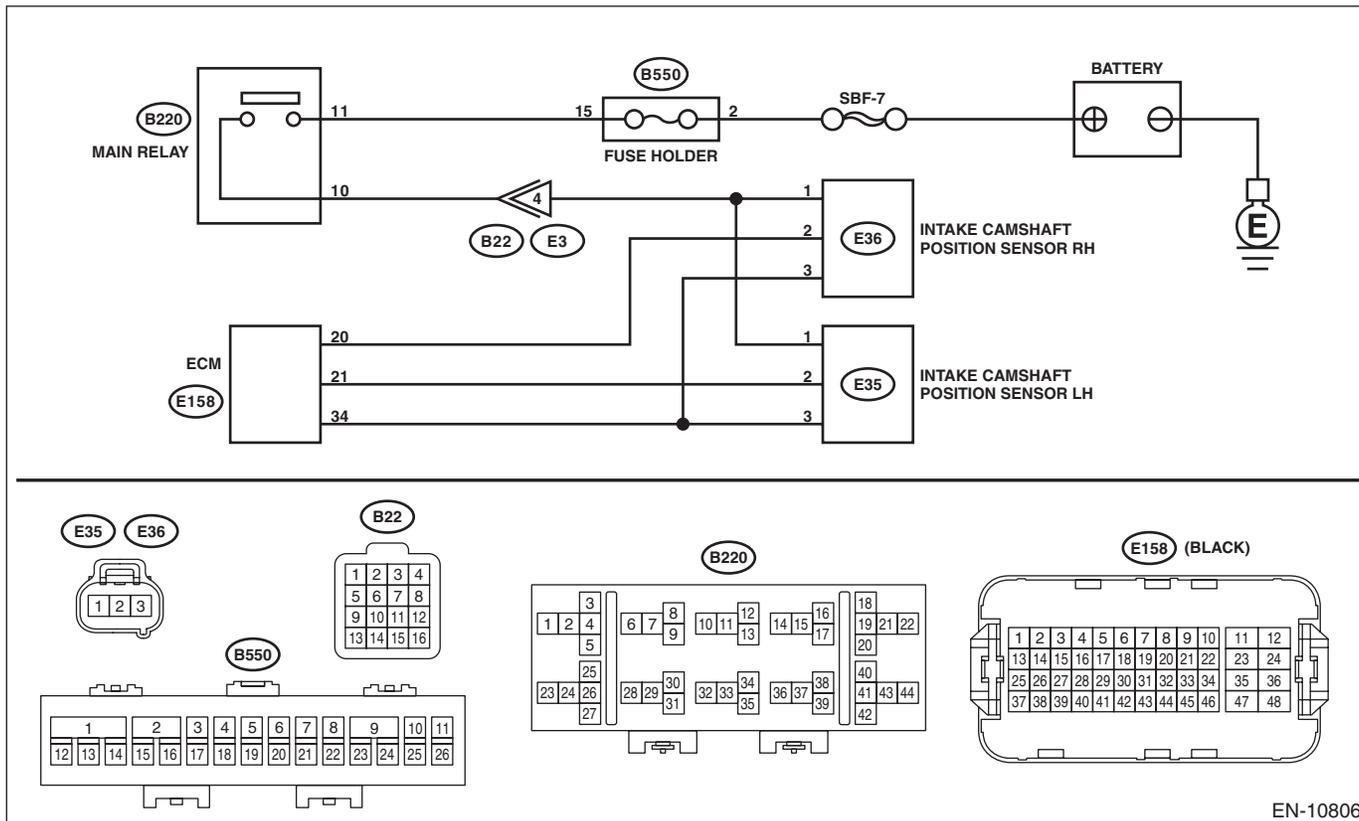
- Engine stalls.
- Failure of engine to start

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10806

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK POWER SUPPLY OF CAMSHAFT POSITION SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from camshaft position sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between camshaft position sensor connector and engine ground. Connector & terminal (E35) No. 1 (+) — Engine ground (-):	Is the voltage 10 V or more?	Go to step 2.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit or short circuit to ground in harness between main relay connector and camshaft position sensor connector • Poor contact of coupling connector
2 CHECK HARNESS BETWEEN ECM AND CAMSHAFT POSITION SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connector and camshaft position sensor connector. Connector & terminal (E158) No. 21 — (E35) No. 2: (E158) No. 34 — (E35) No. 3:	Is the resistance less than 1 Ω?	Go to step 3.	Repair the open circuit in the harness between the ECM connector and camshaft position sensor connector.
3 CHECK HARNESS BETWEEN ECM AND CAMSHAFT POSITION SENSOR CONNECTOR. Measure the resistance between camshaft position sensor connector and engine ground. Connector & terminal (E35) No. 2 — Engine ground:	Is the resistance 1 MΩ or more?	Go to step 4.	Repair short circuit to ground in harness between ECM connector and camshaft position sensor connector.
4 CHECK HARNESS BETWEEN ECM AND CAMSHAFT POSITION SENSOR CONNECTOR. Measure the voltage between camshaft position sensor connector and engine ground. Connector & terminal (E35) No. 2 (+) — Engine ground (-):	Is the voltage 5 V or more?	Repair the short circuit to power in the harness between ECM connector and camshaft position sensor connector.	Go to step 5.
5 CHECK CONDITION OF CAMSHAFT POSITION SENSOR.	Is the camshaft position sensor installation bolt tightened securely?	Go to step 6.	Tighten the camshaft position sensor installation bolt securely. <Ref. to FU(w/o STI)-104, INSTALLATION, Camshaft Position Sensor.>
6 CHECK CAMSHAFT POSITION SENSOR. Check the waveform of the camshaft position sensor. <Ref. to EN(w/o STI)(diag)-20, Engine Control Module (ECM) I/O Signal.>	Is there any abnormality in waveform?	Replace the camshaft position sensor. <Ref. to FU(w/o STI)-103, Camshaft Position Sensor.>	Repair the following item. • Poor contact of ECM connector • Poor contact of camshaft position sensor connector • Poor contact of coupling connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

CL:DTC P0346 CAMSHAFT POSITION SENSOR "A" CIRCUIT RANGE/PERFORMANCE (BANK 2)

NOTE:

For the diagnostic procedure, refer to DTC P0345. <Ref. to EN(w/o STI)(diag)-242, DTC P0345 CAMSHAFT POSITION SENSOR "A" CIRCUIT (BANK 2), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

CM:DTC P0351 IGNITION COIL A PRIMARY/SECONDARY CIRCUIT

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-119, DTC P0351 IGNITION COIL A PRIMARY/SECONDARY CIRCUIT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

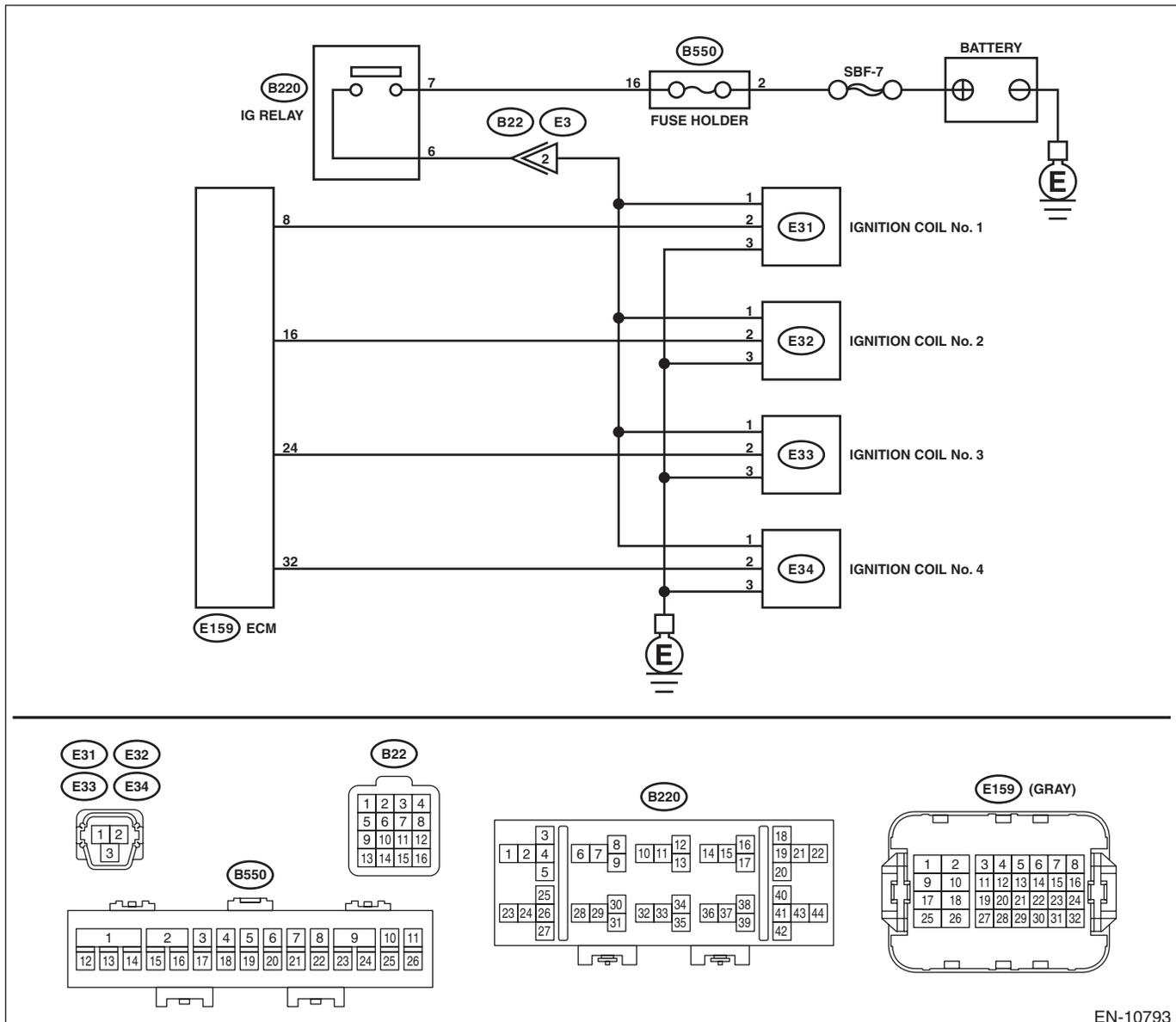
- Improper idling
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10793

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK IGNITION COIL POWER SUPPLY CIRCUIT. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ignition coil. 3) Turn the ignition switch to ON. 4) Measure the voltage between ignition coil connector and engine ground. Connector & terminal <i>DTC P0351; (E31) No. 1 (+) — Engine ground (-):</i> <i>DTC P0352; (E32) No. 1 (+) — Engine ground (-):</i> <i>DTC P0353; (E33) No. 1 (+) — Engine ground (-):</i> <i>DTC P0354; (E34) No. 1 (+) — Engine ground (-):</i>	Is the voltage 10 V or more?	Go to step 2.	Repair the harness and connector. NOTE: In this case, repair the following item: <ul style="list-style-type: none"> • Open circuit or short circuit to ground in harness of power supply circuit • Blown out of fuse • Poor contact of IG relay connector • Poor contact of coupling connector • Faulty IG relay
2 CHECK HARNESS OF IGNITION COIL GROUND CIRCUIT. 1) Turn the ignition switch to OFF. 2) Measure the resistance of harness between ignition coil connector and engine ground. Connector & terminal <i>DTC P0351; (E31) No. 3 — Engine ground:</i> <i>DTC P0352; (E32) No. 3 — Engine ground:</i> <i>DTC P0353; (E33) No. 3 — Engine ground:</i> <i>DTC P0354; (E34) No. 3 — Engine ground:</i>	Is the resistance less than 5 Ω?	Go to step 3.	Repair the open circuit in harness between ignition coil connector and engine grounding terminal.
3 CHECK HARNESS BETWEEN ECM AND IGNITION COIL CONNECTOR. 1) Disconnect the connector from ECM. 2) Measure the resistance between ignition coil connector and engine ground. Connector & terminal <i>DTC P0351; (E31) No. 2 — Engine ground:</i> <i>DTC P0352; (E32) No. 2 — Engine ground:</i> <i>DTC P0353; (E33) No. 2 — Engine ground:</i> <i>DTC P0354; (E34) No. 2 — Engine ground:</i>	Is the resistance 1 MΩ or more?	Go to step 4.	Repair the ground short circuit of harness between ECM connector and ignition coil connector.
4 CHECK HARNESS BETWEEN ECM AND IGNITION COIL CONNECTOR. Measure the resistance of harness between ECM connector and ignition coil connector. Connector & terminal <i>DTC P0351; (E159) No. 8 — (E31) No. 2:</i> <i>DTC P0352; (E159) No. 16 — (E32) No. 2:</i> <i>DTC P0353; (E159) No. 24 — (E33) No. 2:</i> <i>DTC P0354; (E159) No. 32 — (E34) No. 2:</i>	Is the resistance less than 1 Ω?	Go to step 5.	Repair the open circuit in harness between ECM connector and ignition coil connector.
5 CHECK FOR POOR CONTACT. Check for poor contact of ECM connector.	Is there poor contact of ECM connector?	Repair the poor contact of ECM connector.	Go to step 6.
6 CHECK SPARK PLUG CONDITION. 1) Remove the spark plug of the corresponding cylinder. <Ref. to IG(w/o STI)-4, REMOVAL, Spark Plug.> 2) Check the spark plug condition. <Ref. to IG(w/o STI)-8, INSPECTION, Spark Plug.>	Is the spark plug condition normal?	Replace the ignition coil. <Ref. to IG(w/o STI)-11, Ignition Coil.>	Replace the spark plug. <Ref. to IG(w/o STI)-4, Spark Plug.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

CN:DTC P0352 IGNITION COIL B PRIMARY/SECONDARY CIRCUIT

NOTE:

For the diagnostic procedure, refer to DTC P0351. <Ref. to EN(w/o STI)(diag)-245, DTC P0351 IGNITION COIL A PRIMARY/SECONDARY CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

CO:DTC P0353 IGNITION COIL C PRIMARY/SECONDARY CIRCUIT

NOTE:

For the diagnostic procedure, refer to DTC P0351. <Ref. to EN(w/o STI)(diag)-245, DTC P0351 IGNITION COIL A PRIMARY/SECONDARY CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

CP:DTC P0354 IGNITION COIL D PRIMARY/SECONDARY CIRCUIT

NOTE:

For the diagnostic procedure, refer to DTC P0351. <Ref. to EN(w/o STI)(diag)-245, DTC P0351 IGNITION COIL A PRIMARY/SECONDARY CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

CQ:DTC P0365 CAMSHAFT POSITION SENSOR "B" CIRCUIT (BANK 1)

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-120, DTC P0365 CAMSHAFT POSITION SENSOR "B" CIRCUIT (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

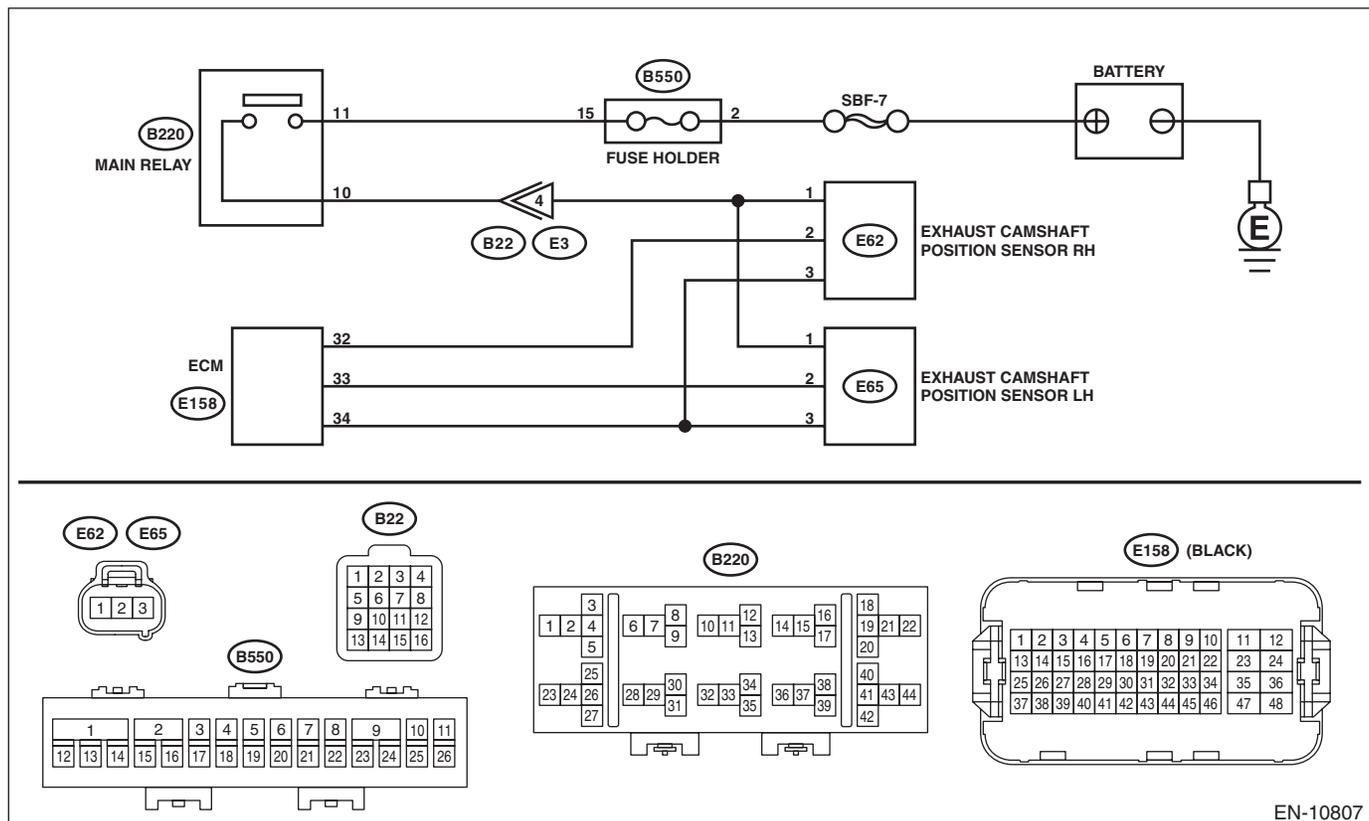
- Engine stalls.
- Failure of engine to start

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10807

Step	Check	Yes	No
1 CHECK POWER SUPPLY OF CAMSHAFT POSITION SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from camshaft position sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between camshaft position sensor connector and engine ground. Connector & terminal (E62) No. 1 (+) — Engine ground (-):	Is the voltage 10 V or more?	Go to step 2.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between main relay and camshaft position sensor connector • Poor contact of coupling connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
2 CHECK HARNESS BETWEEN ECM AND CAMSHAFT POSITION SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connector and camshaft position sensor connector. <i>Connector & terminal</i> <i>(E158) No. 32 — (E62) No. 2:</i> <i>(E158) No. 34 — (E62) No. 3:</i>	Is the resistance less than 1 Ω?	Go to step 3.	Repair the open circuit in the harness between the ECM connector and camshaft position sensor connector.
3 CHECK HARNESS BETWEEN ECM AND CAMSHAFT POSITION SENSOR CONNECTOR. Measure the resistance between camshaft position sensor connector and engine ground. <i>Connector & terminal</i> <i>(E62) No. 2 — Engine ground:</i>	Is the resistance 1 MΩ or more?	Go to step 4.	Repair short circuit to ground in harness between ECM connector and camshaft position sensor connector.
4 CHECK HARNESS BETWEEN ECM AND CAMSHAFT POSITION SENSOR CONNECTOR. Measure the voltage between camshaft position sensor connector and engine ground. <i>Connector & terminal</i> <i>(E62) No. 2 (+) — Engine ground (-):</i>	Is the voltage 5 V or more?	Repair the short circuit to power in the harness between ECM connector and camshaft position sensor connector.	Go to step 5.
5 CHECK CONDITION OF CAMSHAFT POSITION SENSOR.	Is the camshaft position sensor installation bolt tightened securely?	Go to step 6.	Tighten the camshaft position sensor installation bolt securely. <Ref. to FU(w/o STI)-104, INSTALLATION, Camshaft Position Sensor.>
6 CHECK CAMSHAFT POSITION SENSOR. Check the waveform of the camshaft position sensor. <Ref. to EN(w/o STI)(diag)-20, Engine Control Module (ECM) I/O Signal.>	Is there any abnormality in waveform?	Replace the camshaft position sensor. <Ref. to FU(w/o STI)-103, Camshaft Position Sensor.>	Repair the following item. <ul style="list-style-type: none"> • Poor contact of ECM connector • Poor contact of camshaft position sensor connector • Poor contact of coupling connector

CR:DTC P0366 CAMSHAFT POSITION SENSOR B CIRCUIT RANGE/PERFORMANCE (BANK 1)

NOTE:

For the diagnostic procedure, refer to DTC P0365. <Ref. to EN(w/o STI)(diag)-248, DTC P0365 CAMSHAFT POSITION SENSOR “B” CIRCUIT (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

CS:DTC P0390 CAMSHAFT POSITION SENSOR "B" CIRCUIT (BANK 2)

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-122, DTC P0390 CAMSHAFT POSITION SENSOR "B" CIRCUIT (BANK 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

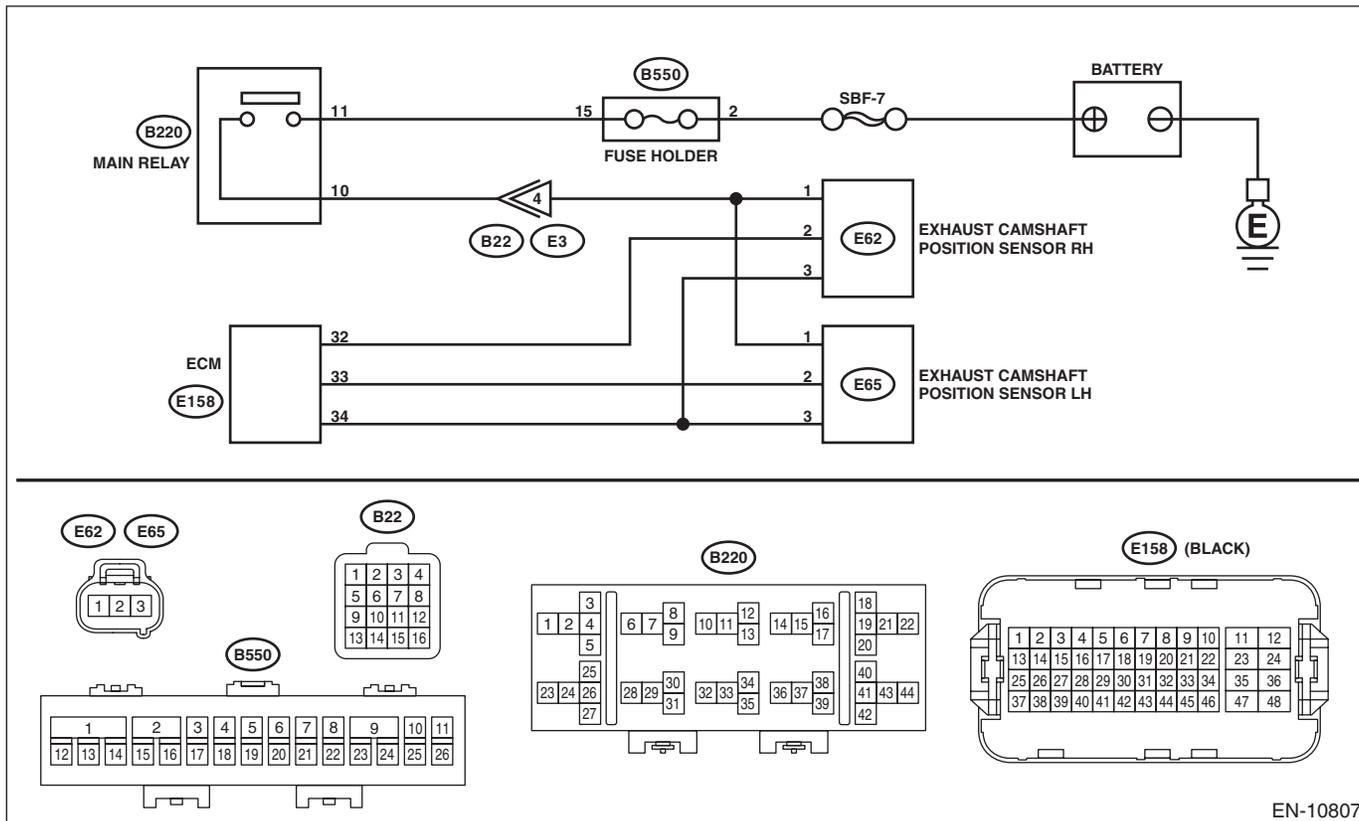
- Engine stalls.
- Failure of engine to start

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10807

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1</p> <p>CHECK POWER SUPPLY OF CAMSHAFT POSITION SENSOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from camshaft position sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between camshaft position sensor connector and engine ground.</p> <p>Connector & terminal (E65) No. 1 (+) — Engine ground (-):</p>	<p>Is the voltage 10 V or more?</p>	<p>Go to step 2.</p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case, repair the following item:</p> <ul style="list-style-type: none"> • Open circuit or short circuit to ground in harness between main relay connector and camshaft position sensor connector • Poor contact of coupling connector
<p>2</p> <p>CHECK HARNESS BETWEEN ECM AND CAMSHAFT POSITION SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connector and camshaft position sensor connector.</p> <p>Connector & terminal (E158) No. 33 — (E65) No. 2: (E158) No. 34 — (E65) No. 3:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 3.</p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case, repair the following item:</p> <ul style="list-style-type: none"> • Open circuit in harness between ECM connector and camshaft position sensor connector • Poor contact of coupling connector
<p>3</p> <p>CHECK HARNESS BETWEEN ECM AND CAMSHAFT POSITION SENSOR CONNECTOR.</p> <p>Measure the resistance between camshaft position sensor connector and engine ground.</p> <p>Connector & terminal (E65) No. 2 — Engine ground:</p>	<p>Is the resistance 1 MΩ or more?</p>	<p>Go to step 4.</p>	<p>Repair short circuit to ground in harness between ECM connector and camshaft position sensor connector.</p>
<p>4</p> <p>CHECK HARNESS BETWEEN ECM AND CAMSHAFT POSITION SENSOR CONNECTOR.</p> <p>Measure the voltage between camshaft position sensor connector and engine ground.</p> <p>Connector & terminal (E65) No. 2 (+) — Engine ground (-):</p>	<p>Is the voltage 5 V or more?</p>	<p>Repair the short circuit to power in the harness between ECM connector and camshaft position sensor connector.</p>	<p>Go to step 5.</p>
<p>5</p> <p>CHECK CONDITION OF CAMSHAFT POSITION SENSOR.</p>	<p>Is the camshaft position sensor installation bolt tightened securely?</p>	<p>Go to step 6.</p>	<p>Tighten the camshaft position sensor installation bolt securely. <Ref. to FU(w/o STI)-104, INSTALLATION, Camshaft Position Sensor.></p>
<p>6</p> <p>CHECK CAMSHAFT POSITION SENSOR.</p> <p>Check the waveform of the camshaft position sensor. <Ref. to EN(w/o STI)(diag)-20, Engine Control Module (ECM) I/O Signal.></p>	<p>Is there any abnormality in waveform?</p>	<p>Replace the camshaft position sensor. <Ref. to FU(w/o STI)-103, Camshaft Position Sensor.></p>	<p>Repair the following item.</p> <ul style="list-style-type: none"> • Poor contact of ECM connector • Poor contact of camshaft position sensor connector • Poor contact of coupling connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

CT:DTC P0391 CAMSHAFT POSITION SENSOR B CIRCUIT RANGE/PERFORMANCE (BANK 2)

NOTE:

For the diagnostic procedure, refer to DTC P0390. <Ref. to EN(w/o STI)(diag)-250, DTC P0390 CAMSHAFT POSITION SENSOR "B" CIRCUIT (BANK 2), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

CU:DTC P0400 EXHAUST GAS RECIRCULATION FLOW

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-123, DTC P0400 EXHAUST GAS RECIRCULATION FLOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Movement performance problem when engine is low speed.
- Improper idling
- Movement performance problem

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

	Step	Check	Yes	No
1	CHECK CURRENT DATA. 1) Start the engine. 2) Read the value of «Mani. Absolute Pressure» using the Subaru Select Monitor or a general scan tool. NOTE: <ul style="list-style-type: none">• Subaru Select Monitor For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.> <ul style="list-style-type: none">• General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value of «Mani. Absolute Pressure» 53.3 kPa (400 mmHg, 15.75 inHg) or more?	Make sure that the EGR control valve, manifold absolute pressure sensor and throttle body are installed securely.	Go to step 2.
2	CHECK EGR CONTROL VALVE. Remove the EGR control valve.	Are there any holes, clogged lines or foreign matters in the EGR system?	Repair the EGR system.	Replace EGR control valve. <Ref. to EC(w/o STI)-35, EGR Control Valve.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

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

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-126, DTC P0420 CATALYST SYSTEM EFFICIENCY BELOW THRESHOLD (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

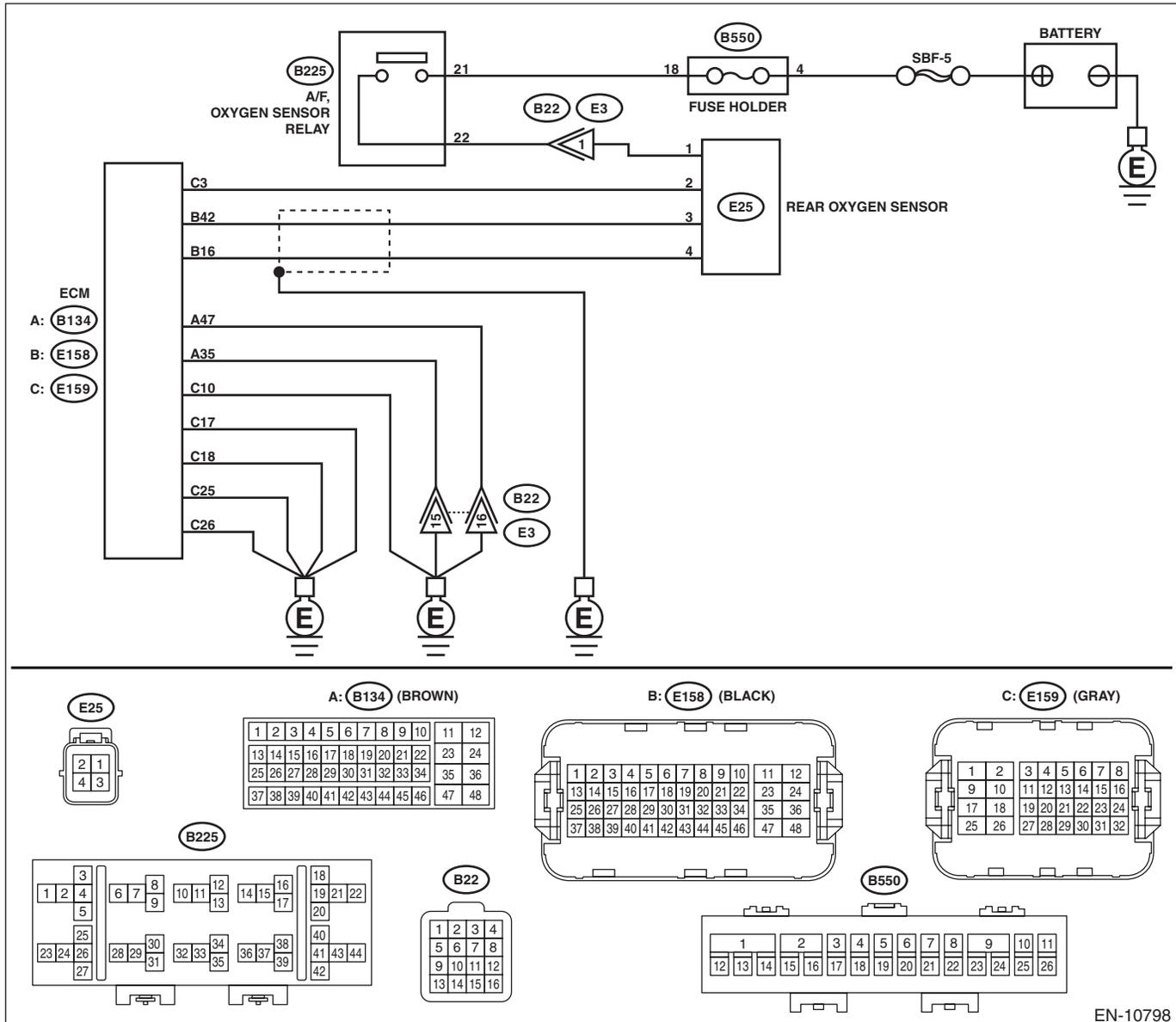
- Engine stalls.
- Idle mixture is out of specifications.

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10798

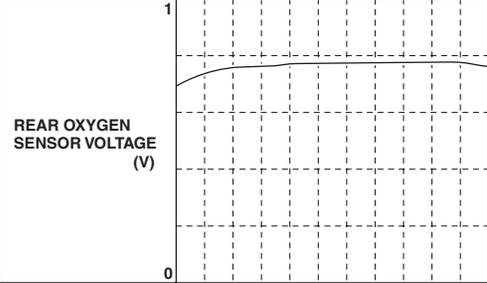
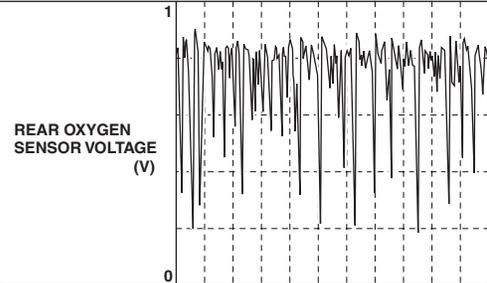
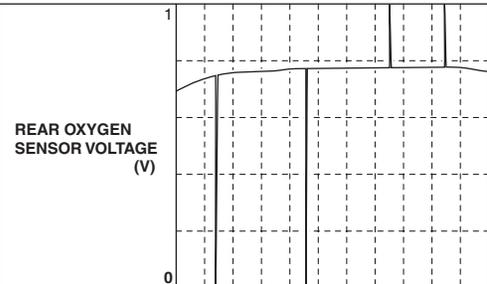
Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1 CHECK EXHAUST SYSTEM. Check for gas leaks or air suction caused by loose or dislocated nuts and bolts, and open hole at exhaust pipes.</p> <p>NOTE: Check the following positions.</p> <ul style="list-style-type: none"> • Between cylinder head and front exhaust pipe • Between front exhaust pipe and front catalytic converter • Between front catalytic converter and rear catalytic converter • Loose or improperly attached front oxygen (A/F) sensor or rear oxygen sensor 	<p>Is there any fault in exhaust system?</p>	<p>Repair or replace the exhaust system. <Ref. to EX(w/o STI)-2, General Description.></p>	<p>Go to step 2.</p>
<p>2 CHECK WAVEFORM DATA ON THE SUBARU SELECT MONITOR (WHILE DRIVING).</p> <p>1) Drive at a constant speed between 80 — 112 km/h (50 — 70 MPH).</p> <p>2) After 5 minutes have elapsed in the condition of step 1), use the Subaru Select Monitor while still driving to read the waveform data.</p> <ul style="list-style-type: none"> • At normal condition <div> </div> <p style="text-align: right;">EN-06666</p> <ul style="list-style-type: none"> • At abnormal condition (numerous inversion) <div> </div> <p style="text-align: right;">EN-06667</p>	<p>Is a normal waveform displayed?</p>	<p>Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again.</p> <p>NOTE: In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.</p>	<p>Go to step 3.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>3</p> <p>CHECK WAVEFORM DATA ON THE SUBARU SELECT MONITOR (WHILE IDLING).</p> <p>1) Run the engine at idle. 2) In the condition of step 1), use the Subaru Select Monitor to read the waveform data.</p> <ul style="list-style-type: none"> At normal condition  <p>10 sec/div EN-06668</p> <ul style="list-style-type: none"> At abnormal condition 1 (numerous inversion)  <p>10 sec/div EN-06669</p> <ul style="list-style-type: none"> At abnormal condition 2 (noise input)  <p>10 sec/div EN-06670</p>	<p>Is a normal waveform displayed?</p>	<p>Go to step 4.</p>	<ul style="list-style-type: none"> The waveform is displayed at abnormal condition 1: Go to step 4. The waveform is displayed at abnormal condition 2: Go to step 5.
<p>4</p> <p>CHECK CATALYTIC CONVERTER.</p>	<p>Is the catalytic converter damaged?</p>	<p>Replace the catalytic converter. <Ref. to EX(w/o STI)-35, Center Exhaust Pipe.></p>	<p>Go to step 5.</p>
<p>5</p> <p>CHECK REAR OXYGEN SENSOR CONNECTOR.</p>	<p>Has water entered the connector?</p>	<p>Completely remove any water inside.</p>	<p>Go to step 6.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>6 CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and rear oxygen sensor. 3) Measure the resistance of harness between ECM connector and rear oxygen sensor connector.</p> <p>Connector & terminal (E158) No. 42 — (E25) No. 3: (E158) No. 16 — (E25) No. 4:</p>	Is the resistance less than 1 Ω ?	Go to step 7.	Repair the open circuit of harness between ECM connector and rear oxygen sensor connector.
<p>7 CHECK REAR OXYGEN SENSOR SHIELD.</p> <p>1) Turn the ignition switch to OFF. 2) Expose the rear oxygen sensor connector body side harness sensor shield. 3) Measure the resistance between sensor shield and engine ground.</p>	Is the resistance less than 1 Ω ?	Go to step 8.	Repair the open circuit of rear oxygen sensor harness.
<p>8 CHECK ENGINE OIL AMOUNT AND EXHAUST GAS.</p> <p>1) Check the engine oil amount. <Ref. to LU(w/o STI)-10, INSPECTION, Engine Oil.> 2) Check exhaust gas during idling.</p>	Does the engine oil amount drop or white smoke emit from the muffler?	Check the engine, and repair the defective part. <Ref. to ME(w/o STI)-352, INSPECTION, Engine Trouble in General.> After repairing the engine, replace the front catalytic converter. <Ref. to EX(w/o STI)-35, Center Exhaust Pipe.> After the catalytic converter is replaced, perform step 2 to check the normal waveform is displayed, and then exit the procedure.	Go to step 9.
<p>9 CHECK IGNITION SYSTEM.</p> <p>1) Check the spark plug. <Ref. to IG(w/o STI)-8, INSPECTION, Spark Plug.> 2) Check the status of the ignition coil connector and the spark plug terminal.</p>	Is there any fault in the ignition system?	After repairing the ignition system, replace the front catalytic converter. <Ref. to EX(w/o STI)-35, Center Exhaust Pipe.> After the catalytic converter is replaced, perform step 2 to check the normal waveform is displayed, and then exit the procedure.	Go to step 10.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
10 CHECK FUEL SYSTEM. 1) Refer to and check the items in "Insufficient fuel supply to fuel injector" (except for "a. Fuel pump does not operate.") and "Leakage or blow out of fuel". <Ref. to FU(w/o STI)-202, INSPECTION, Fuel System Trouble in General.> 2) Check throttle body. <Ref. to FU(w/o STI)-16, INSPECTION, Throttle Body.> 3) Check intake manifold. <Ref. to FU(w/o STI)-42, INSPECTION, Intake Manifold.>	Is there any fault in the fuel system?	After repairing the fuel system, replace the front catalytic converter. <Ref. to EX(w/o STI)-35, Center Exhaust Pipe.> After the catalytic converter is replaced, perform step 2 to check the normal waveform is displayed, and then exit the procedure.	Go to step 11.
11 CHECK DTC.	Is any other DTC displayed?	Check the appropriate DTC using the "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).> After checking the DTC, replace the front catalytic converter. <Ref. to EX(w/o STI)-35, Center Exhaust Pipe.> After the catalytic converter is replaced, perform step 2 to check the normal waveform is displayed, and then exit the procedure.	Replace the rear oxygen sensor. <Ref. to FU(w/o STI)-128, Rear Oxygen Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

CW:DTC P0441 EVAPORATIVE EMISSION CONT. SYS. INCORRECT PURGE FLOW

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-128, DTC P0441 EVAPORATIVE EMISSION CONT. SYS. INCORRECT PURGE FLOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check the appropriate DTC using the "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK PURGE CONTROL SOLENOID VALVE. Operate the purge control solenoid valve using the Subaru Select Monitor. NOTE: For detailed procedures, refer to "System Operation Check Mode". <Ref. to EN(w/o STI)(diag)-62, System Operation Check Mode.>	Does the purge control solenoid valve operate?	Go to step 3.	Replace the purge control solenoid valve. <Ref. to EC(w/o STI)-22, Purge Control Solenoid Valve.>
3 CHECK EVAPORATIVE EMISSION CONTROL SYSTEM LINE. Turn the ignition switch to OFF.	Are there holes, cracks, clogging, or disconnection, misconnection of hoses or pipes in evaporative emission control system?	Repair or replace the hoses or pipes.	Repair the poor contact of ECM connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

CX:DTC P0451 EVAPORATIVE EMISSION SYSTEM PRESSURE SENSOR/ SWITCH RANGE/PERFORMANCE

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-130, DTC P0451 EVAPORATIVE EMISSION SYSTEM PRESSURE SENSOR/SWITCH RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check the appropriate DTC using the "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK CURRENT DATA. 1) Turn the ignition switch to ON (engine OFF). 2) Using the Subaru Select Monitor or general scan tool, read the value in «Absolute Evap Sys. Pressure» and «Mani. Absolute Pressure», and compare them with the actual atmospheric pressure. NOTE: • Subaru Select Monitor For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual. • To read the actual atmospheric pressure, connect the Subaru Select Monitor or general scan tool to the other known good vehicle.	Is the difference with the actual atmospheric pressure 6.2 kPa (46.5 mmHg, 1.83 inHg) or more?	Replace the part that showed larger deviation from the actual atmospheric pressure than the other. • If deviations in value for «Absolute Evap Sys. Pressure» is larger: Replace the leak check valve assembly. <Ref. to EC(w/o STI)-54, Leak Check Valve Assembly.> • If deviations in value for «Mani. Absolute Pressure» is larger: Replace the manifold absolute pressure and intake air temperature sensor. <Ref. to FU(w/o STI)-120, Manifold Absolute Pressure and Intake Air Temperature Sensor.>	Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again. NOTE: In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	<p>CHECK CURRENT DATA.</p> <p>1) Turn the ignition switch to ON.</p> <p>2) Read the value of «Absolute Evap Sys. Pressure» using the Subaru Select Monitor or a general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedures, refer to “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • General scan tool <p>For detailed operation procedures, refer to the general scan tool operation manual.</p>	Is the value in «Absolute Evap Sys. Pressure» 34 kPa (255 mmHg, 10 inHg) or less?	Go to step 2.	<p>Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again.</p> <p>NOTE:</p> <p>In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.</p>
2	<p>CHECK POWER SUPPLY OF LEAK CHECK VALVE ASSEMBLY.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connector from the leak check valve assembly.</p> <p>3) Turn the ignition switch to ON.</p> <p>4) Measure the voltage between the leak check valve assembly connector and chassis ground.</p> <p>Connector & terminal (R400) No. 6 (+) — Chassis ground (-):</p>	Is the voltage 4.5 V or more?	Go to step 3.	<p>Repair the harness and connector.</p> <p>NOTE:</p> <p>In this case, repair the following item:</p> <ul style="list-style-type: none"> • Open circuit in harness between ECM connector and the leak check valve assembly connector • Poor contact of ECM connector • Poor contact of coupling connector
3	<p>CHECK HARNESS BETWEEN ECM AND LEAK CHECK VALVE ASSEMBLY CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connector from ECM.</p> <p>3) Measure the resistance between ECM connector and chassis ground.</p> <p>Connector & terminal (B134) No. 15 — Chassis ground:</p>	Is the resistance 1 MΩ or more?	Go to step 4.	Repair the short circuit to ground in harness between ECM connector and leak check valve assembly connector.
4	<p>CHECK FOR POOR CONTACT.</p> <p>Check for poor contact of leak check valve assembly connector.</p>	Is there poor contact in the leak check valve assembly connector?	Repair the poor contact in the leak check valve assembly connector.	Replace the leak check valve assembly. <Ref. to EC(w/o STI)-54, Leak Check Valve Assembly.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

CZ:DTC P0453 EVAPORATIVE EMISSION SYSTEM PRESSURE SENSOR/ SWITCH HIGH

DTC DETECTING CONDITION:

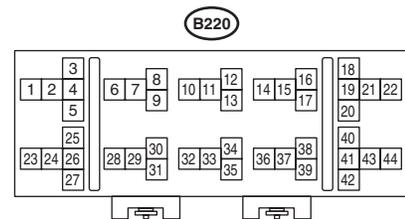
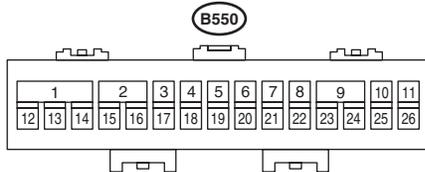
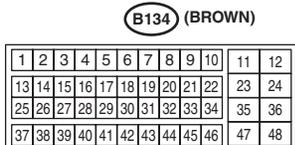
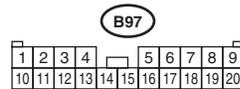
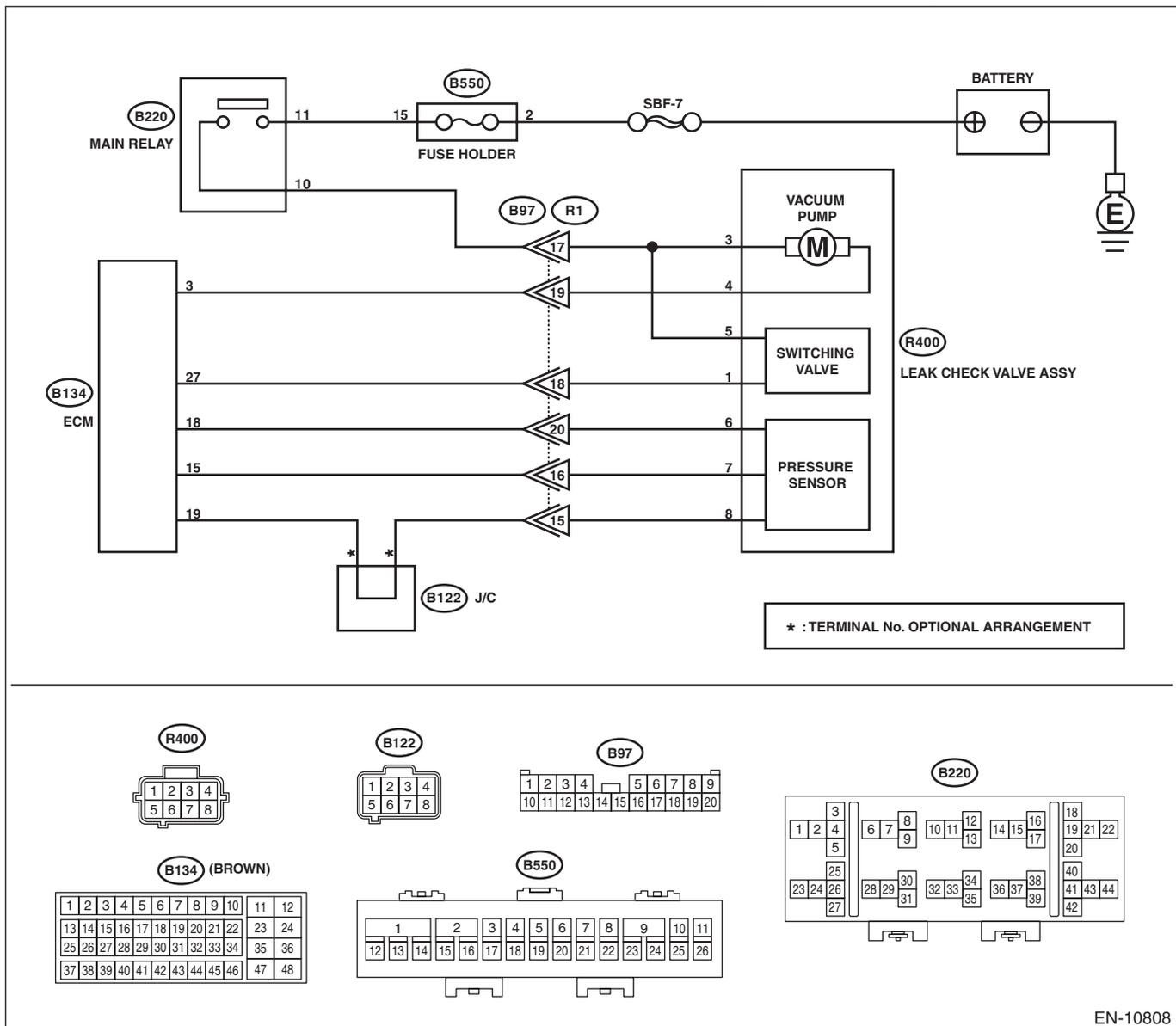
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-133, DTC P0453 EVAPORATIVE EMISSION SYSTEM PRESSURE SENSOR/SWITCH HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10808

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	<p>CHECK CURRENT DATA.</p> <p>1) Turn the ignition switch to ON.</p> <p>2) Read the value of «Absolute Evap Sys. Pressure» using the Subaru Select Monitor or a general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> Subaru Select Monitor <p>For detailed operation procedures, refer to “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <ul style="list-style-type: none"> General scan tool <p>For detailed operation procedures, refer to the general scan tool operation manual.</p>	Is the value in «Absolute Evap Sys. Pressure» 125 kPa (938 mmHg, 36.9 inHg) or more?	Go to step 2.	<p>Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again.</p> <p>NOTE:</p> <p>In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.</p>
2	<p>CHECK HARNESS BETWEEN ECM AND LEAK CHECK VALVE ASSEMBLY CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connector from ECM and the leak check valve assembly.</p> <p>3) Measure the resistance of harness between ECM connector and the leak check valve assembly connector.</p> <p>Connector & terminal</p> <p>(B134) No. 15 — (R400) No. 7:</p> <p>(B134) No. 19 — (R400) No. 8:</p>	Is the resistance less than 1 Ω?	Go to step 3.	<p>Repair the harness and connector.</p> <p>NOTE:</p> <p>In this case, repair the following item:</p> <ul style="list-style-type: none"> Open circuit in harness between ECM connector and the leak check valve assembly connector Poor contact of coupling connector Poor contact of joint connector
3	<p>CHECK FOR POOR CONTACT.</p> <p>Check for poor contact of ECM and the leak check valve assembly connector.</p>	Is there poor contact in ECM and the leak check valve assembly connector?	Repair the poor contact of ECM and the leak check valve assembly connector.	Go to step 4.
4	<p>CHECK LEAK CHECK VALVE ASSEMBLY.</p> <p>Check the pressure sensor of the leak check valve assembly. <Ref. to EC(w/o STI)-70, CHECK PRESSURE SENSOR, INSPECTION, Leak Check Valve Assembly.></p>	Is the pressure sensor of the leak check valve assembly OK?	Repair the short circuit to power in harness between ECM connector and leak check valve assembly connector.	Replace the leak check valve assembly. <Ref. to EC(w/o STI)-54, Leak Check Valve Assembly.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

DA:DTC P0455 EVAPORATIVE EMISSION SYSTEM LEAK DETECTED (LARGE LEAK)

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-134, DTC P0455 EVAPORATIVE EMISSION SYSTEM LEAK DETECTED (LARGE 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.
- Fuel filler cap loose or lost

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

	Step	Check	Yes	No
1	CHECK FUEL FILLER CAP. 1) Turn the ignition switch to OFF. 2) Check the fuel filler cap. NOTE: The DTC is stored in memory if fuel filler cap is or was loose or if the cap chain has caught while tightening.	Is the fuel filler cap tightened securely?	Go to step 2.	Tighten fuel filler cap securely.
2	CHECK FUEL FILLER CAP.	Is the fuel filler cap genuine?	Go to step 3.	Replace with a genuine fuel filler cap.
3	CHECK FUEL FILLER PIPE GASKET.	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 FU(w/o STI)-163, Fuel Filler Pipe.>	Go to step 4.
4	CHECK PURGE CONTROL SOLENOID VALVE. Check air-tightness of the purge control solenoid valve. <Ref. to EC(w/o STI)-29, INSPECTION, Purge Control Solenoid Valve.>	Is the purge control solenoid valve OK?	Go to step 5.	Replace the purge control solenoid valve. <Ref. to EC(w/o STI)-22, Purge Control Solenoid Valve.>
5	CHECK EVAPORATIVE EMISSION CONTROL SYSTEM LINE.	Are there holes on the evaporation line?	Repair or replace the evaporation line. <Ref. to FU(w/o STI)-194, Fuel Delivery and Evaporation Lines.>	Go to step 6.
6	CHECK CANISTER.	Are there holes on the canister?	Replace the canister. <Ref. to EC(w/o STI)-8, Canister.>	Go to step 7.
7	CHECK LEAK CHECK VALVE ASSEMBLY.	Are there damage or holes on the leak check valve assembly?	Replace the leak check valve assembly. <Ref. to EC(w/o STI)-54, Leak Check Valve Assembly.>	Go to step 8.
8	CHECK FUEL TANK. Remove the fuel tank. <Ref. to FU(w/o STI)-152, Fuel Tank.>	Are there damage or holes on the fuel tank?	Repair or replace the fuel tank. <Ref. to FU(w/o STI)-152, Fuel Tank.>	Go to step 9.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No	
9	CHECK ANY OTHER MECHANICAL TROUBLE IN EVAPORATIVE EMISSION CONTROL SYSTEM.	Are there holes, cracks, clogging, or disconnection, misconnection of hoses or pipes in evaporative emission control system?	Repair or replace the hoses or pipes.	Repair the poor contact of ECM connector.

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

NOTE:

For the diagnostic procedure, refer to DTC P0455. <Ref. to EN(w/o STI)(diag)-265, DTC P0455 EVAPORATIVE EMISSION SYSTEM LEAK DETECTED (LARGE LEAK), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

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

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-140, DTC P0458 EVAPORATIVE EMISSION SYSTEM PURGE CONTROL VALVE CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

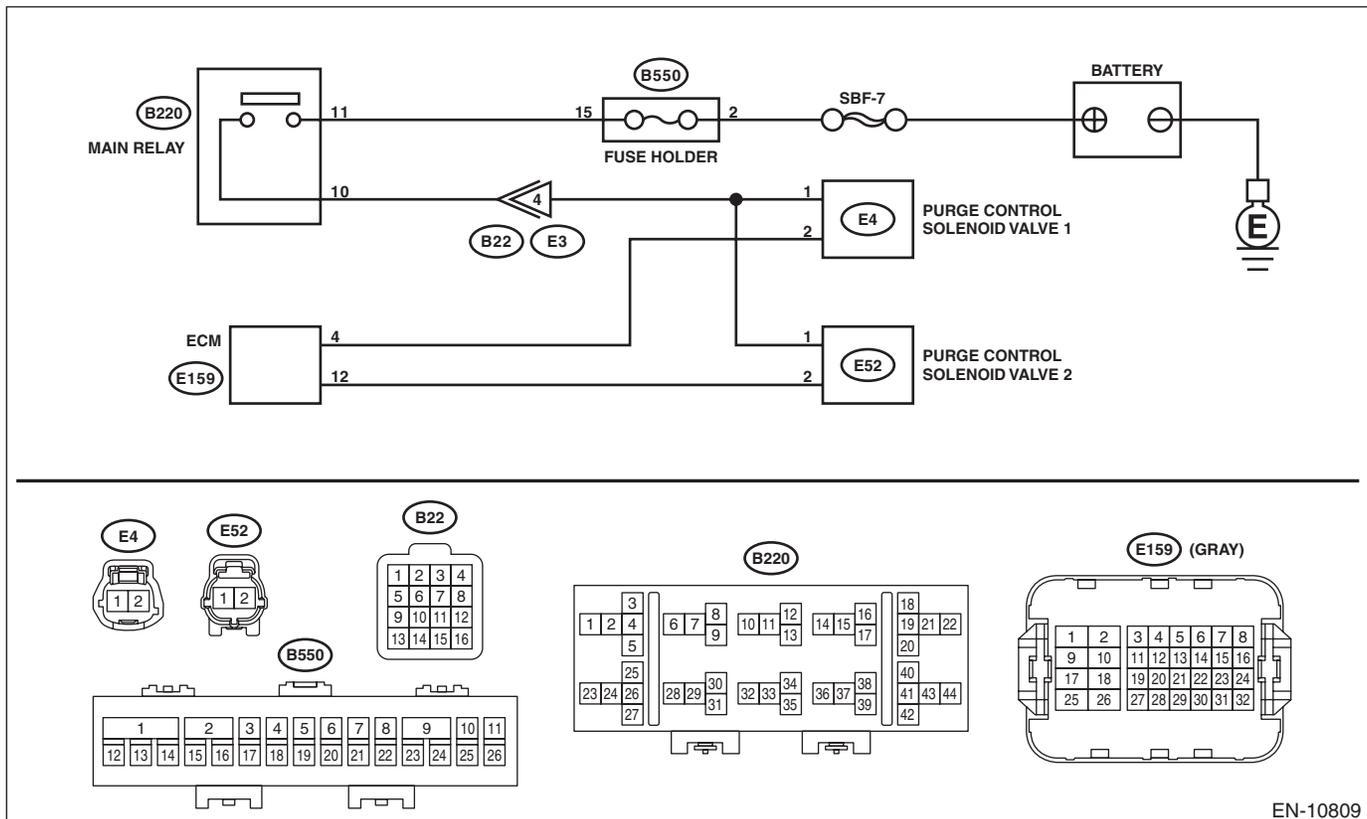
Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	<p>CHECK OUTPUT SIGNAL OF ECM.</p> <p>1) Turn the ignition switch to ON.</p> <p>2) Measure the voltage between ECM connector and engine ground.</p> <p>Connector & terminal (E159) No. 4 (+) — Engine ground (-):</p>	Is the voltage 10 V or more?	Go to step 2.	Go to step 3.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
2 CHECK FOR POOR CONTACT. Check for poor contact of ECM connector.	Is there poor contact of ECM connector?	Repair the poor contact of ECM connector.	Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again. NOTE: In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.
3 CHECK POWER SUPPLY TO PURGE CONTROL SOLENOID VALVE 1 CONNECTOR. Measure the voltage between purge control solenoid valve 1 connector and engine ground. Connector & terminal (E4) No. 1 (+) — Engine ground (-):	Is the voltage 10 V or more?	Go to step 4.	Repair the power supply circuit.
4 CHECK HARNESS BETWEEN ECM AND PURGE CONTROL SOLENOID VALVE 1 CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and purge control solenoid valve 1. 3) Measure the resistance between the purge control solenoid valve 1 connector and engine ground. Connector & terminal (E4) No. 2 — Engine ground:	Is the resistance 1 M Ω or more?	Go to step 5.	Repair the ground short circuit of harness between ECM connector and purge control solenoid valve 1 connector.
5 CHECK HARNESS BETWEEN ECM AND PURGE CONTROL SOLENOID VALVE 1 CONNECTOR. Measure the resistance of harness between ECM connector and purge control solenoid valve 1 connector. Connector & terminal (E159) No. 4 — (E4) No. 2:	Is the resistance less than 1 Ω ?	Go to step 6.	Repair the open circuit in harness between ECM connector and purge control solenoid valve 1 connector.
6 CHECK PURGE CONTROL SOLENOID VALVE 1. 1) Remove the purge control solenoid valve 1. 2) Measure the resistance between purge control solenoid valve 1 terminals. Terminals No. 1 — No. 2:	Is the resistance 10 — 100 Ω ?	Repair the poor contact of the purge control solenoid valve 1 connector.	Replace the purge control solenoid valve 1. <Ref. to EC(w/o STI)-22, Purge Control Solenoid Valve.>

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

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-141, DTC P0459 EVAPORATIVE EMISSION SYSTEM PURGE CONTROL VALVE CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

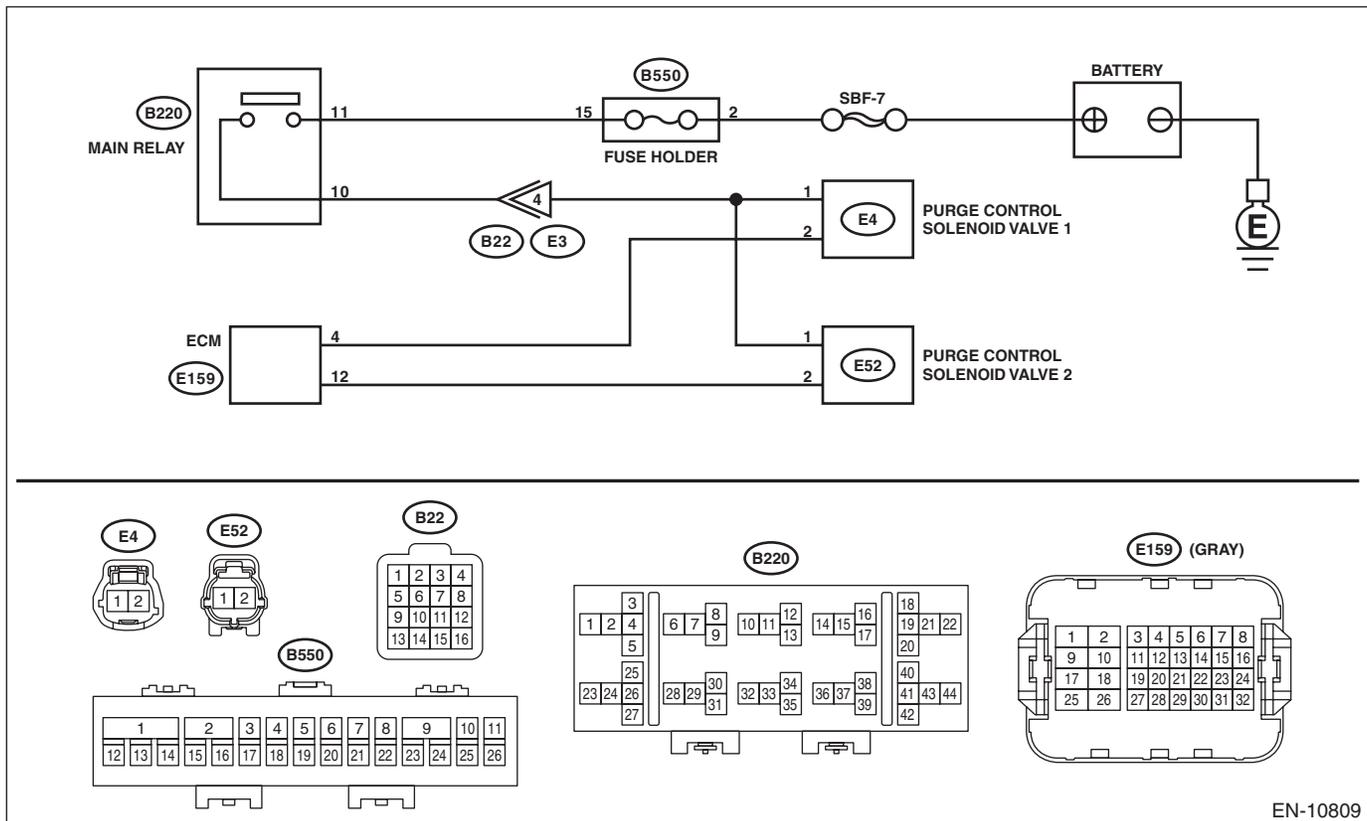
Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



Step	Check	Yes	No
<p>1</p> <p>CHECK HARNESS BETWEEN ECM AND PURGE CONTROL SOLENOID VALVE 1 CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and purge control solenoid valve 1. 3) Turn the ignition switch to ON. 4) Measure the voltage between ECM connector and engine ground.</p> <p>Connector & terminal (E159) No. 4 (+) — Engine ground (-):</p>	<p>Is the voltage 10 V or more?</p>	<p>Repair the short circuit to power in harness between ECM connector and purge control solenoid valve 1 connector.</p>	<p>Go to step 2.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
2 CHECK PURGE CONTROL SOLENOID VALVE 1. 1) Turn the ignition switch to OFF. 2) Measure the resistance between purge control solenoid valve 1 terminals. Terminals No. 1 — No. 2:	Is the resistance less than 1 Ω ?	Replace the purge control solenoid valve 1. <Ref. to EC(w/o STI)-22, Purge Control Solenoid Valve.>	Repair the poor contact of ECM connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

DE:DTC P0461 FUEL LEVEL SENSOR “A” CIRCUIT RANGE/PERFORMANCE

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-142, DTC P0461 FUEL LEVEL SENSOR “A” CIRCUIT RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check the appropriate DTC using the “List of Diagnostic Trouble Code (DTC)”. <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Replace the fuel level sensor and fuel sub level sensor. <Ref. to FU(w/o STI)-173, Fuel Level Sensor.> <Ref. to FU(w/o STI)-176, Fuel Sub Level Sensor.>

DF:DTC P0462 FUEL LEVEL SENSOR “A” CIRCUIT LOW

NOTE:

For the diagnostic procedure, refer to DTC P0463. <Ref. to EN(w/o STI)(diag)-272, DTC P0463 FUEL LEVEL SENSOR “A” CIRCUIT HIGH, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

DG:DTC P0463 FUEL LEVEL SENSOR “A” CIRCUIT HIGH

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-144, DTC P0463 FUEL LEVEL SENSOR “A” CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DISPLAY.	Is DTC P0462 or P0463 displayed on the Subaru Select Monitor?	Check the combination meter. <Ref. to IDI(diag)-2, Basic Diagnostic Procedure.>	Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again. NOTE: In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.

DH:DTC P0500 VEHICLE SPEED SENSOR “A”

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-145, DTC P0500 VEHICLE SPEED SENSOR “A”, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK DTC OF VDC. Check DTC of VDC.	Is DTC of VDC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-42, List of Diagnostic Trouble Code (DTC).>	Repair the poor contact of ECM connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

DI: DTC P0506 IDLE AIR CONTROL SYSTEM RPM LOWER THAN EXPECTED

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-146, DTC P0506 IDLE AIR CONTROL SYSTEM RPM LOWER THAN EXPECTED, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Hard to start the engine.
- Engine does not start.
- Improper idling
- Engine stalls.

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check the appropriate DTC using the "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK AIR CLEANER ELEMENT. 1) Turn the ignition switch to OFF. 2) Check the air cleaner element.	Is there excessive clogging on air cleaner element?	Replace the air cleaner element. <Ref. to IN(w/o STI)-7, Air Cleaner Element.>	Go to step 3.
3 CHECK ELECTRONIC THROTTLE CONTROL. 1) Remove the electronic throttle control. <Ref. to FU(w/o STI)-15, REMOVAL, Throttle Body.> 2) Check the electronic throttle control.	Are foreign matter found inside electronic throttle control?	Remove foreign matter from electronic throttle control.	Perform the diagnosis of DTC P2101. <Ref. to EN(w/o STI)(diag)-423, DTC P2101 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

DJ:DTC P0507 IDLE AIR CONTROL SYSTEM RPM HIGHER THAN EXPECTED

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-147, DTC P0507 IDLE AIR CONTROL SYSTEM RPM HIGHER THAN EXPECTED, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Engine keeps running at higher speed than specified idle speed.

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check the appropriate DTC using the "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK AIR INTAKE SYSTEM. 1) Start and idle the engine. 2) Check the following items. • Loose installation of intake manifold and throttle body • Cracks of intake manifold gasket and throttle body gasket • Disconnection of vacuum hoses	Is there any fault in air intake system?	Repair air suction and leaks.	Go to step 3.
3 CHECK ELECTRONIC THROTTLE CONTROL. 1) Turn the ignition switch to OFF. 2) Remove the electronic throttle control. <Ref. to FU(w/o STI)-15, REMOVAL, Throttle Body.> 3) Check the electronic throttle control.	Are foreign matter found inside electronic throttle control?	Remove foreign matter from electronic throttle control.	Perform the diagnosis of DTC P2101. <Ref. to EN(w/o STI)(diag)-423, DTC P2101 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

DK:DTC P050A COLD START IDLE AIR CONTROL SYSTEM PERFORMANCE

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-148, DTC P050A COLD START IDLE AIR CONTROL SYSTEM PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Engine keeps running at higher speed than specified idle speed.
- Engine keeps running at a lower speed than the specified idle speed.
- Engine stalls.

CAUTION:

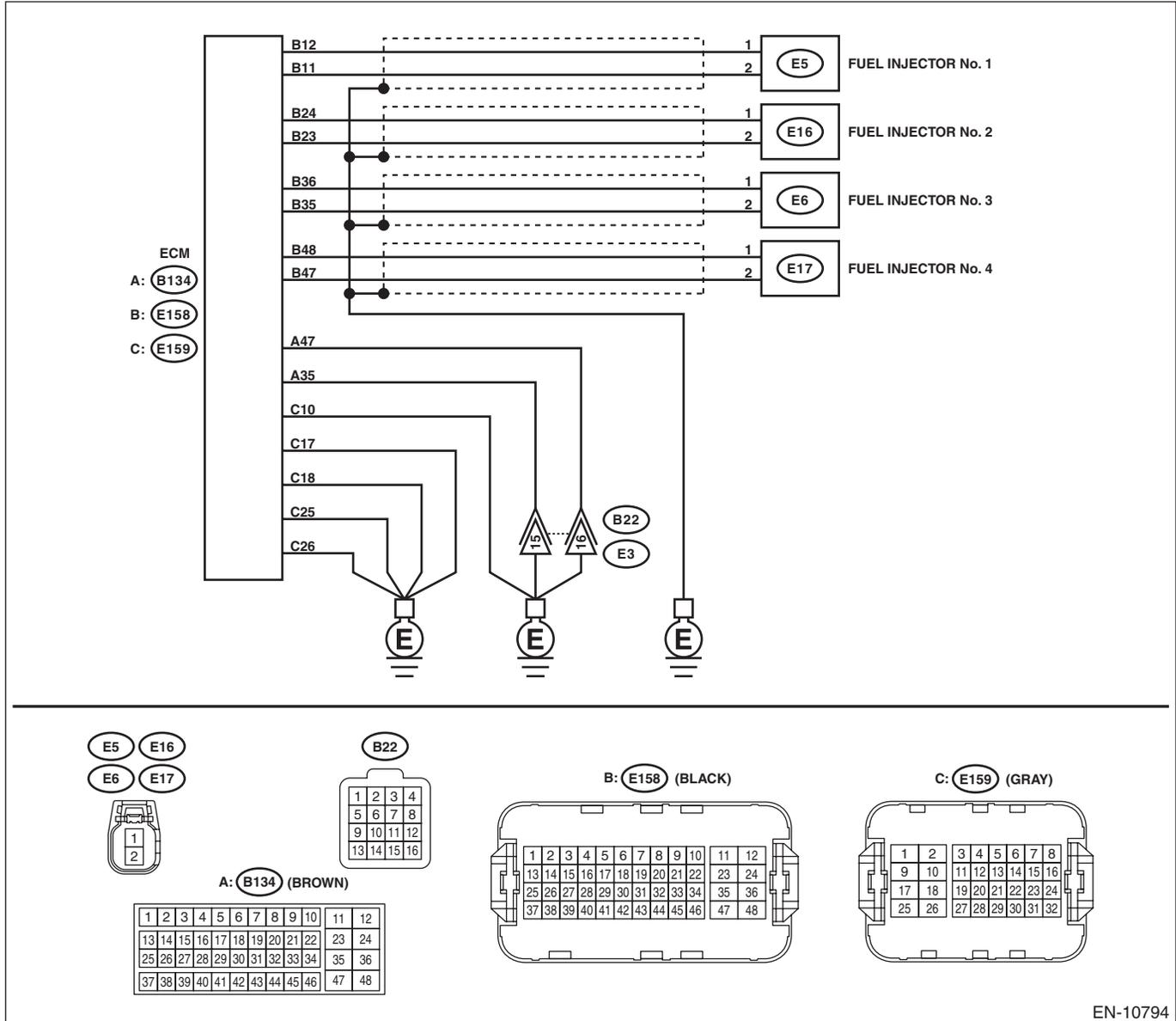
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10794

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
4 CHECK AIR INTAKE SYSTEM.	Are there holes, loose bolts or disconnection of hose on air intake system?	Repair the air intake system.	Go to step 5.
5 CHECK FUEL PRESSURE. WARNING: Place “NO OPEN FLAMES” signs near the working area. CAUTION: Be careful not to spill fuel. Measure the fuel pressure. <Ref. to ME(w/o STI)-31, INSPECTION, Fuel Pressure.> CAUTION: Release fuel pressure before removing the fuel pressure gauge.	Is the measured value 328 — 358 kPa (3.3 — 3.7 kgf/cm ² , 48 — 52 psi)?	Go to step 6.	Check the fuel pump and fuel delivery line. <Ref. to FU(w/o STI)-172, INSPECTION, Fuel Pump.> <Ref. to FU(w/o STI)-201, INSPECTION, Fuel Delivery and Evaporation Lines.>
6 CHECK ENGINE COOLANT TEMPERATURE SENSOR. 1) Start the engine and warm up completely. 2) Read the value of «Coolant Temp.» using the Subaru Select Monitor or a general scan tool. NOTE: <ul style="list-style-type: none"> • Subaru Select Monitor For detailed operation procedures, refer to “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.> <ul style="list-style-type: none"> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value of «Coolant Temp.» 75°C (167°F) or more?	Go to step 7.	Replace the engine coolant temperature sensor. <Ref. to FU(w/o STI)-93, Engine Coolant Temperature Sensor.>
7 CHECK MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR. 1) Start the engine and warm up engine until coolant temperature is higher than 75°C (167°F). 2) For CVT models, set the select lever to “P” range or “N” range, and for MT models, place the shift lever in the neutral position. 3) Turn the A/C switch to OFF. 4) Turn all the accessory switches to OFF. 5) Read the value of «Mass Air Flow» using the Subaru Select Monitor or a general scan tool. NOTE: <ul style="list-style-type: none"> • Subaru Select Monitor For detailed operation procedures, refer to “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.> <ul style="list-style-type: none"> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value of «Mass Air Flow» 2.0 — 5.0 g/s (0.26 — 0.66 lb/m)?	Go to step 8.	Replace the mass air flow and intake air temperature sensor. <Ref. to FU(w/o STI)-118, Mass Air Flow and Intake Air Temperature Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>8 CHECK MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR.</p> <p>1) Start the engine and warm up engine until coolant temperature is higher than 75°C (167°F).</p> <p>2) For CVT models, set the select lever to “P” range or “N” range, and for MT models, place the shift lever in the neutral position.</p> <p>3) Turn the A/C switch to OFF.</p> <p>4) Turn all the accessory switches to OFF.</p> <p>5) Open the front hood.</p> <p>6) Measure the ambient temperature.</p> <p>7) Read the value of «IAT Sensor #11» using the Subaru Select Monitor or a general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedures, refer to “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • General scan tool <p>For detailed operation procedures, refer to the general scan tool operation manual.</p>	<p>Subtract ambient temperature value from the value of «IAT Sensor #11». Is the obtained value -10 — 50°C (-18 — 90°F)?</p>	<p>Go to step 9.</p>	<p>Check the mass air flow and intake air temperature sensor. <Ref. to FU(w/o STI)-118, Mass Air Flow and Intake Air Temperature Sensor.></p>
<p>9 CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connector from fuel injector on faulty cylinders.</p> <p>3) Measure the resistance between fuel injector connector and engine ground on faulty cylinders.</p> <p>Connector & terminal</p> <p>#1 (E5) No. 1 — Engine ground:</p> <p>#1 (E5) No. 2 — Engine ground:</p> <p>#2 (E16) No. 1 — Engine ground:</p> <p>#2 (E16) No. 2 — Engine ground:</p> <p>#3 (E6) No. 1 — Engine ground:</p> <p>#3 (E6) No. 2 — Engine ground:</p> <p>#4 (E17) No. 1 — Engine ground:</p> <p>#4 (E17) No. 2 — Engine ground:</p>	<p>Is the resistance 1 MΩ or more?</p>	<p>Go to step 10.</p>	<p>Repair the short circuit to ground in harness between ECM connector and fuel injector connector.</p>
<p>10 CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR.</p> <p>Measure the resistance of harness between ECM and fuel injector connector on faulty cylinders.</p> <p>Connector & terminal</p> <p>#1 (E158) No. 12 — (E5) No. 1:</p> <p>#1 (E158) No. 11 — (E5) No. 2:</p> <p>#2 (E158) No. 24 — (E16) No. 1:</p> <p>#2 (E158) No. 23 — (E16) No. 2:</p> <p>#3 (E158) No. 36 — (E6) No. 1:</p> <p>#3 (E158) No. 35 — (E6) No. 2:</p> <p>#4 (E158) No. 48 — (E17) No. 1:</p> <p>#4 (E158) No. 47 — (E17) No. 2:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 11.</p>	<p>Repair the open circuit of the harness between the ECM connector and fuel injector connector.</p>
<p>11 CHECK FUEL INJECTOR.</p> <p>Check the fuel injector on faulty cylinder. <Ref. to FU(w/o STI)-70, INSPECTION, Fuel Injector.></p>	<p>Are fuel injectors OK?</p>	<p>Go to step 12.</p>	<p>Replace the faulty fuel injector. <Ref. to FU(w/o STI)-51, Fuel Injector.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
12 CHECK INSTALLATION CONDITION OF CAMSHAFT POSITION SENSOR/CRANKSHAFT POSITION SENSOR.	Is the camshaft position sensor or crankshaft position sensor loosely installed?	Tighten the camshaft position sensor or crankshaft position sensor. <Ref. to FU(w/o STI)-104, INSTALLATION, Camshaft Position Sensor.> <Ref. to FU(w/o STI)-99, INSTALLATION, Crankshaft Position Sensor.>	Go to step 13.
13 CHECK CRANKSHAFT POSITION SENSOR PLATE.	Is the crankshaft position sensor plate rusted or does it have broken teeth?	Replace the crankshaft position sensor plate. <Ref. to ME(w/o STI)-260, Cylinder Block.>	Go to step 14.
14 CHECK INSTALLATION CONDITION OF TIMING CHAIN. Turn the crankshaft using ST, and align the alignment mark on crank sprocket with alignment mark on cylinder block. ST 18252AA000 CRANKSHAFT SOCKET	Is the timing chain dislocated from its proper position?	Correct the installation condition of timing chain. <Ref. to ME(w/o STI)-116, Timing Chain Assembly.>	Go to step 15.
15 CHECK ELECTRONIC THROTTLE CONTROL RELAY. 1) Turn the ignition switch to OFF. 2) Remove the electronic throttle control relay. 3) Connect the battery to terminals No. 16 and No. 17 of electronic throttle control relay. 4) Measure the resistance between electronic throttle control relay terminals. Terminals No. 14 — No. 15:	Is the resistance less than 1 Ω ?	Go to step 16.	Replace the electronic throttle control relay. <Ref. to FU(w/o STI)-139, Electronic Throttle Control Relay.>
16 CHECK POWER SUPPLY OF ELECTRONIC THROTTLE CONTROL RELAY. Measure the voltage between electronic throttle control relay connector and chassis ground. Connector & terminal (B225) No. 15 (+) — Chassis ground (-):	Is the voltage 10 V or more?	Go to step 17.	Repair the open or ground short circuit of power supply circuit.
17 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL RELAY CONNECTOR. 1) Disconnect the connector from ECM. 2) Turn the ignition switch to ON. 3) Measure the voltage between electronic throttle control relay connector and chassis ground. Connector & terminal (B225) No. 17 (+) — Chassis ground (-):	Is the voltage 10 V or more?	Repair the short circuit to power in the harness between ECM connector and electronic throttle control relay connector.	Go to step 18.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
18 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL RELAY CONNECTOR. 1) Turn the ignition switch to OFF. 2) Measure the resistance between electronic throttle control relay connector and chassis ground. <i>Connector & terminal</i> <i>(B225) No. 14 — Chassis ground:</i> <i>(B225) No. 17 — Chassis ground:</i>	Is the resistance 1 M Ω or more?	Go to step 19.	Repair the short circuit to ground in harness between ECM connector and electronic throttle control relay connector.
19 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL RELAY CONNECTOR. Measure the resistance between ECM connector and electronic throttle control relay connector. <i>Connector & terminal</i> <i>(B134) No. 39 — (B225) No. 17:</i> <i>(B134) No. 11 — (B225) No. 14:</i>	Is the resistance less than 1 Ω ?	Go to step 20.	Repair the open circuit in harness between ECM connector and electronic throttle control relay connector.
20 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from electronic throttle control. 3) Measure the resistance between the ECM connector and engine ground. <i>Connector & terminal</i> <i>(E158) No. 18 — Engine ground:</i> <i>(E158) No. 17 — Engine ground:</i> <i>(E158) No. 29 — Engine ground:</i>	Is the resistance 1 M Ω or more?	Go to step 21.	Repair the ground short circuit of harness between ECM connector and electronic throttle control connector.
21 CHECK SHORT CIRCUIT INSIDE THE ECM. 1) Connect the connector to ECM. 2) Measure the resistance between electronic throttle control connector and engine ground. <i>Connector & terminal</i> <i>(E57) No. 1 — Engine ground:</i> <i>(E57) No. 4 — Engine ground:</i>	Is the resistance 1 M Ω or more?	Go to step 22.	Repair the ground short circuit of harness between ECM connector and electronic throttle control connector. Replace the ECM if defective. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).>
22 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL CONNECTOR. 1) Disconnect the connector from ECM. 2) Measure the resistance of harness between ECM connector and electronic throttle control connector. <i>Connector & terminal</i> <i>(E158) No. 17 — (E57) No. 1:</i> <i>(E158) No. 30 — (E57) No. 3:</i> <i>(E158) No. 29 — (E57) No. 4:</i>	Is the resistance less than 1 Ω ?	Go to step 23.	Repair the open circuit of harness between ECM connector and electronic throttle control connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
23 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL CONNECTOR. 1) Connect the connector to ECM. 2) Measure the resistance between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 3 — Engine ground:	Is the resistance less than 5 Ω ?	Go to step 24.	Repair the harness and connector. NOTE: In this case, repair the following item: <ul style="list-style-type: none"> • Open circuit of harness between ECM connector and engine ground • Poor contact of ECM connector • Poor contact of coupling connector
24 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL CONNECTOR. 1) Turn the ignition switch to ON. 2) Measure the voltage between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 1 (+) — Engine ground (-): (E57) No. 4 (+) — Engine ground (-):	Is the voltage 5 V or more?	Repair the short circuit to power in the harness between ECM connector and electronic throttle control connector.	Go to step 25.
25 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connectors. Connector & terminal (E158) No. 18 — (E158) No. 17: (E158) No. 18 — (E158) No. 29:	Is the resistance 1 M Ω or more?	Go to step 26.	Repair the short circuit to power in the harness between ECM connector and electronic throttle control connector.
26 CHECK SENSOR OUTPUT. 1) Connect all connectors. 2) Turn the ignition switch to ON. 3) Read the value of «Main-Throttle Sensor» using Subaru Select Monitor. NOTE: For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.>	Is the value of «Main-Throttle Sensor» 0.60 — 0.65 V?	Go to step 27.	Repair the poor contact of electronic throttle control connector. Replace the electronic throttle control if defective. <Ref. to FU(w/o STI)-15, Throttle Body.>
27 CHECK SENSOR OUTPUT. Read the value of «Sub-Throttle Sensor» using Subaru Select Monitor. NOTE: For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.>	Is the value of «Sub-Throttle Sensor» 0.60 — 0.65 V?	Go to step 28.	Repair the poor contact of electronic throttle control connector. Replace the electronic throttle control if defective. <Ref. to FU(w/o STI)-15, Throttle Body.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
28 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL MOTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and electronic throttle control. 3) Measure the resistance between ECM connector and electronic throttle control connector. Connector & terminal (E159) No. 1 — (E57) No. 5: (E159) No. 2 — (E57) No. 6:	Is the resistance less than 1 Ω ?	Go to step 29.	Repair the open circuit of harness between ECM connector and electronic throttle control.
29 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL MOTOR. 1) Connect the connector to ECM. 2) Turn the ignition switch to ON. 3) Measure the voltage between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 5 (+) — Engine ground (-): (E57) No. 6 (+) — Engine ground (-):	Is the voltage 5 V or more?	Repair the short circuit to power in the harness between ECM connector and electronic throttle control connector.	Go to step 30.
30 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL MOTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 5 — Engine ground: (E57) No. 6 — Engine ground:	Is the resistance 1 M Ω or more?	Go to step 31.	Repair the ground short circuit of harness between ECM connector and electronic throttle control connector.
31 CHECK ELECTRONIC THROTTLE CONTROL MOTOR HARNESS. Measure the resistance between electronic throttle control connectors. Connector & terminal (E57) No. 5 — (E57) No. 6:	Is the resistance 1 M Ω or more?	Go to step 32.	Repair the short circuit in harness between ECM connector and electronic throttle control connector.
32 CHECK ELECTRONIC THROTTLE CONTROL GROUND CIRCUIT. Measure the resistance between the ECM connector and engine ground. Connector & terminal (B134) No. 35 — Engine ground: (B134) No. 47 — Engine ground: (E159) No. 10 — Engine ground: (E159) No. 17 — Engine ground: (E159) No. 18 — Engine ground: (E159) No. 25 — Engine ground: (E159) No. 26 — Engine ground:	Is the resistance less than 5 Ω ?	Go to step 33.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit of harness between ECM connector and engine ground • Poor contact of coupling connector
33 CHECK ELECTRONIC THROTTLE CONTROL. Measure the resistance between electronic throttle control terminals. Terminals No. 5 — No. 6:	Is the resistance 50 Ω or less?	Go to step 34.	Replace the electronic throttle control. <Ref. to FU(w/o STI)-15, Throttle Body.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
34 CHECK ELECTRONIC THROTTLE CONTROL. Move the throttle valve to the fully open and fully closed positions with fingers. Check that the valve returns to the specified position when releasing fingers.	Does the valve return to the specified position? Standard value: 3 mm (0.12 in) from fully closed position	Repair the poor contact of ECM connector.	Replace the electronic throttle control. <Ref. to FU(w/o STI)-15, Throttle Body.>

DL:DTC P050B COLD START IGNITION TIMING PERFORMANCE

NOTE:

For the diagnostic procedure, refer to DTC P050A. <Ref. to EN(w/o STI)(diag)-275, DTC P050A COLD START IDLE AIR CONTROL SYSTEM PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

DM:DTC P0512 STARTER REQUEST CIRCUIT

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-150, DTC P0512 STARTER REQUEST CIRCUIT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Failure of engine to start

CAUTION:

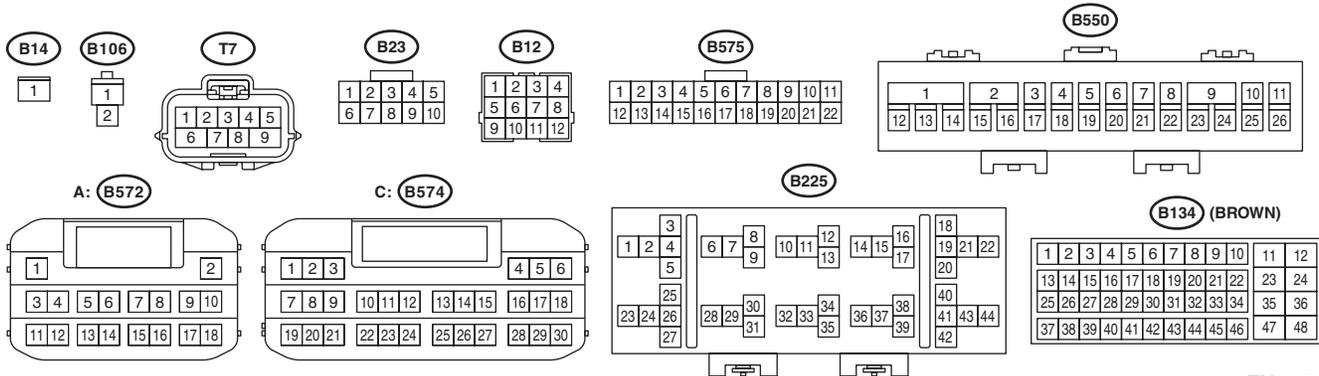
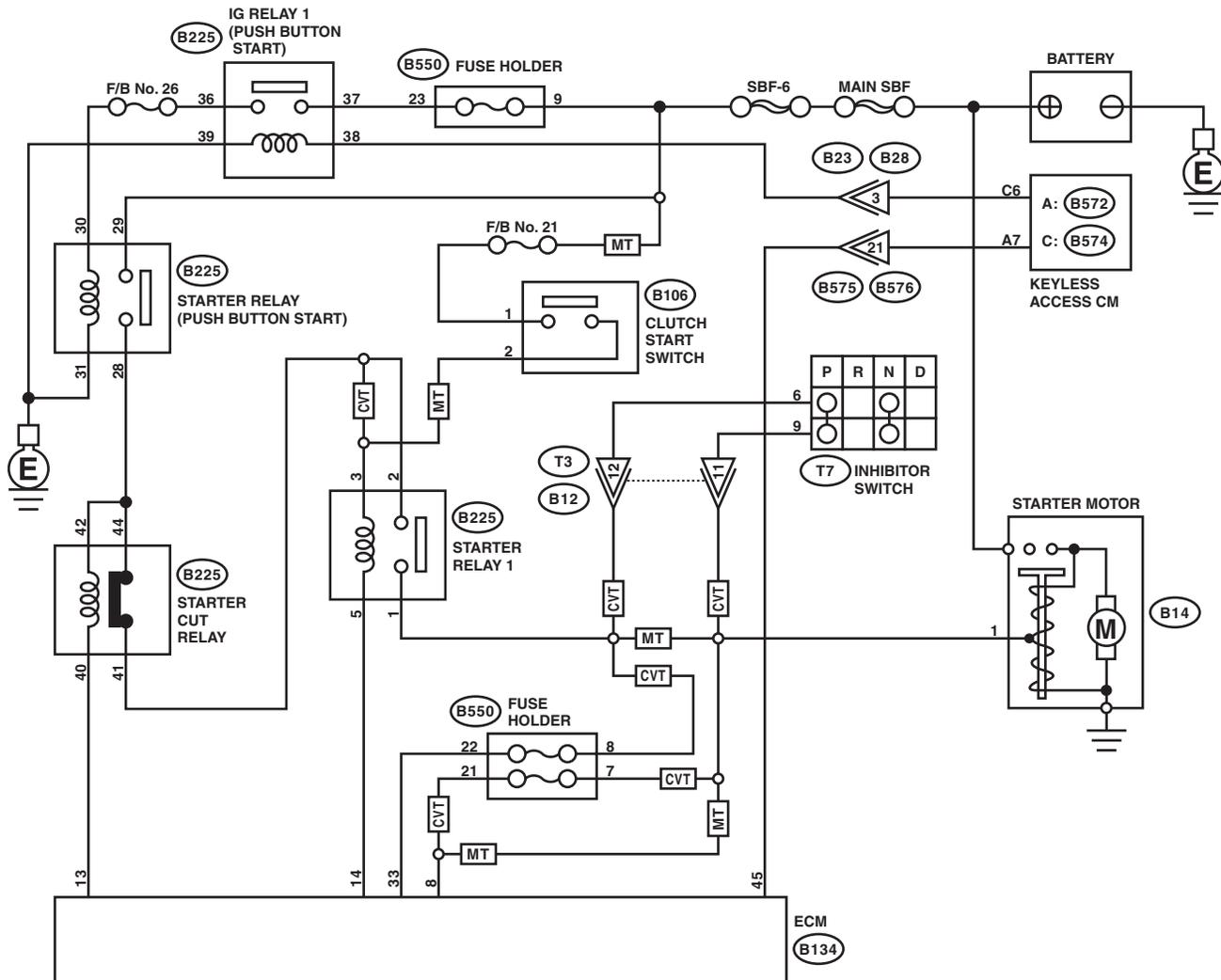
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

WIRING DIAGRAM:

Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10791

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	CHECK PUSH BUTTON IGNITION SWITCH. Operate the push button ignition switch.	Does it operate smoothly without catch?	Go to step 2.	Replace the push button ignition switch. <Ref. to SL-106, Push Button Ignition Switch.>
2	CHECK DTC. 1) Clear the memory using the Subaru Select Monitor or general scan tool. <Ref. to EN(w/o STI)(diag)-61, Clear Memory Mode.> 2) Start and idle the engine for three minutes or more.	Is the same DTC as current diagnosis output?	Go to step 3.	Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again. NOTE: In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.
3	CHECK HARNESS BETWEEN ECM AND KEYLESS ACCESS CM. 1) Turn the ignition to OFF. 2) Disconnect the connector from ECM. 3) Turn the ignition to ON. 4) Measure the voltage between ECM connector and engine ground. Connector & terminal (B134) No. 45 (+) — Engine ground (-):	Is the voltage 10 V or more?	Repair the short circuit to power supply in harness between ECM connector and keyless access CM connector.	Repair the poor contact of ECM connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

DN:DTC P0560 SYSTEM VOLTAGE

DTC DETECTING CONDITION:

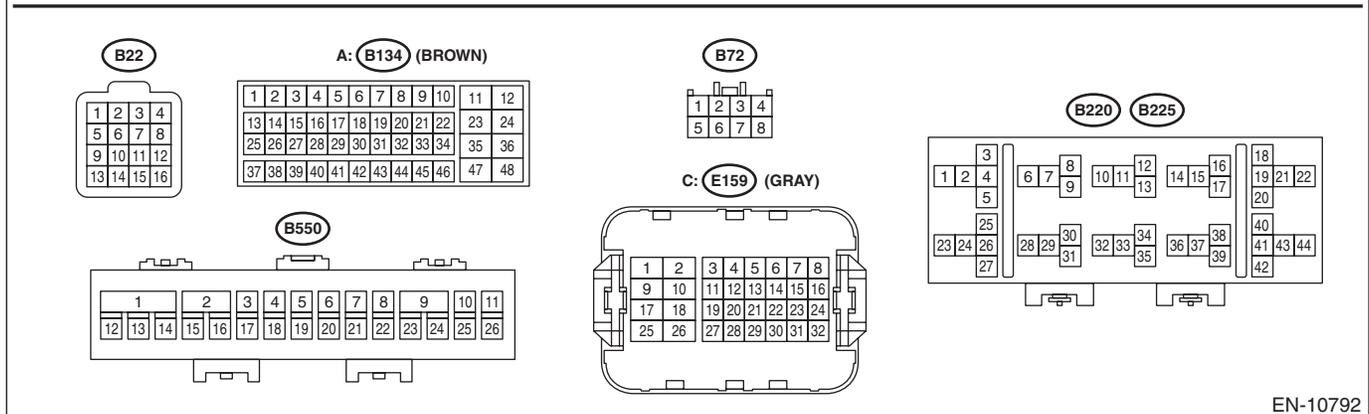
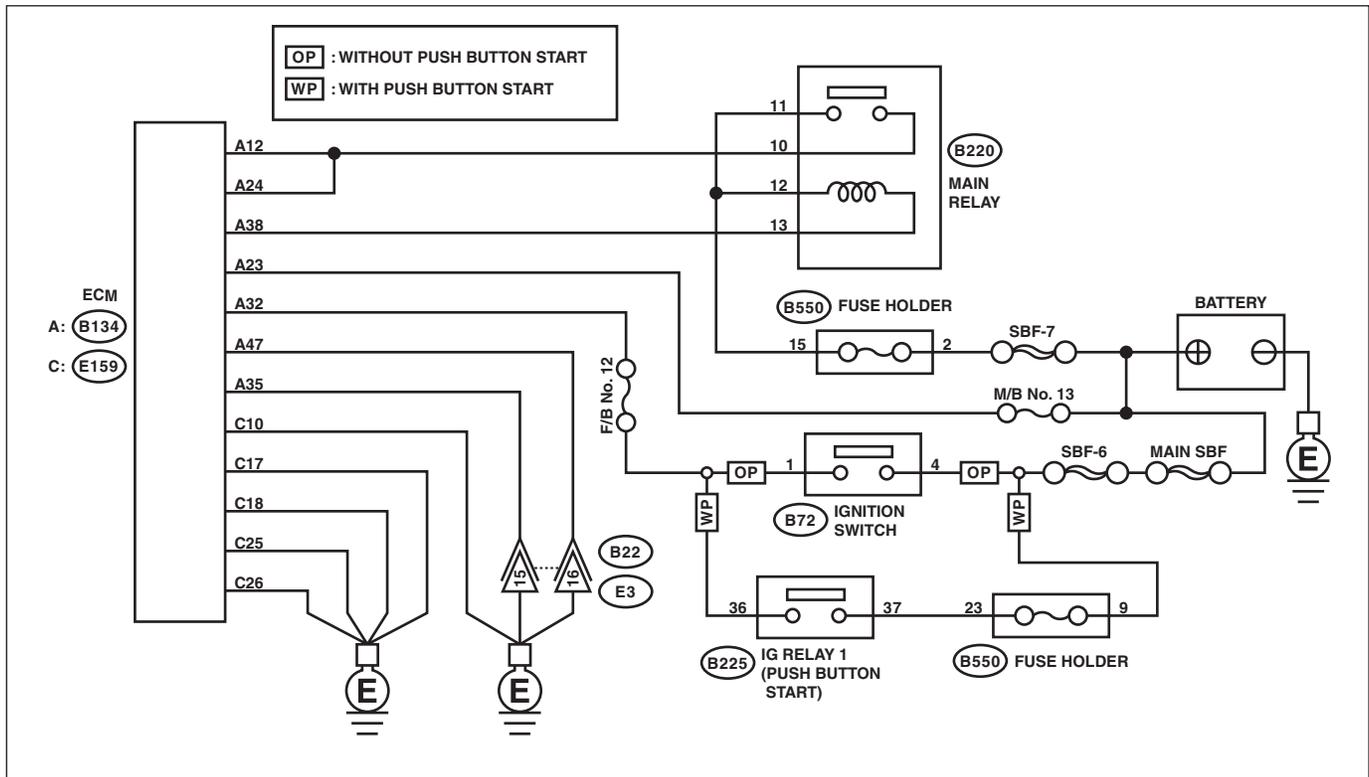
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-151, DTC P0560 SYSTEM VOLTAGE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10792

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	CHECK INPUT SIGNAL OF ECM. 1) Turn the ignition switch to OFF. 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B134) No. 23 (+) — Chassis ground (-):	Is the voltage 10 V or more?	Repair the poor contact of ECM connector.	Go to step 2.
2	CHECK HARNESS BETWEEN ECM AND MAIN FUSE BOX CONNECTOR. 1) Disconnect the connector from ECM. 2) Measure the resistance between ECM connector and chassis ground. Connector & terminal (B134) No. 23 — Chassis ground:	Is the resistance 1 MΩ or more?	Go to step 3.	Repair the short circuit to ground in harness between ECM connector and battery terminal.
3	CHECK FUSE NO. 13 (MAIN FUSE BOX).	Is the fuse blown out?	Replace the fuse.	Repair the harness and connector. NOTE: In this case, repair the following item: <ul style="list-style-type: none"> • Open circuit in harness between ECM connector and battery • Poor contact of ECM connector • Poor contact of battery terminal

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-152, 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 servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check the appropriate DTC using the "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again. NOTE: In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.

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

NOTE:

For the diagnostic procedure, refer to DTC P0606. <Ref. to EN(w/o STI)(diag)-291, DTC P0606 CONTROL MODULE PROCESSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK INPUT VOLTAGE OF ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM connector and engine ground. Connector & terminal (B134) No. 12 (+) — Engine ground (-): (B134) No. 24 (+) — Engine ground (-):	Is the voltage 10 — 13 V?	Go to step 2.	Repair the open or ground short circuit of power supply circuit.
2 CHECK INPUT VOLTAGE OF ECM. 1) Start the engine. 2) Measure the voltage between ECM connector and engine ground. Connector & terminal (B134) No. 12 (+) — Engine ground (-): (B134) No. 24 (+) — Engine ground (-):	Is the voltage 13 — 15 V?	Go to step 3.	Repair the open or ground short circuit of power supply circuit.
3 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and electronic throttle control. 3) Measure the resistance of harness between ECM connector and electronic throttle control connector. Connector & terminal (E158) No. 18 — (E57) No. 2: (E158) No. 30 — (E57) No. 3:	Is the resistance less than 1 Ω?	Go to step 4.	Repair the open circuit of harness between ECM connector and electronic throttle control connector.
4 CHECK ECM GROUND HARNESS. 1) Connect all connectors. 2) Turn the ignition to ON. 3) Measure the voltage between ECM connector and engine ground. Connector & terminal (B134) No. 35 (+) — Engine ground (-): (B134) No. 47 (+) — Engine ground (-): (E159) No. 10 (+) — Engine ground (-): (E159) No. 17 (+) — Engine ground (-): (E159) No. 18 (+) — Engine ground (-): (E159) No. 25 (+) — Engine ground (-): (E159) No. 26 (+) — Engine ground (-):	Is the voltage less than 1 V?	Check the connector for poor contact and check the harness. Replace the ECM if no fault is found. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).>	Repair the harness and connector. NOTE: In this case, repair the following item: <ul style="list-style-type: none"> • Open circuit in ground circuit • Loose engine ground terminal • Poor contact of coupling connector

DR:DTC P060A INTERNAL CONTROL MODULE MONITORING PROCESSOR PERFORMANCE

NOTE:

For the diagnostic procedure, refer to DTC P0606. <Ref. to EN(w/o STI)(diag)-291, DTC P0606 CONTROL MODULE PROCESSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

DS:DTC P060B INTERNAL CONTROL MODULE A/D PROCESSING PERFORMANCE

NOTE:

For the diagnostic procedure, refer to DTC P0606. <Ref. to EN(w/o STI)(diag)-291, DTC P0606 CONTROL MODULE PROCESSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

DT:DTC P0616 STARTER RELAY CIRCUIT LOW

1. MODEL WITHOUT PUSH BUTTON START

DTC DETECTING CONDITION:

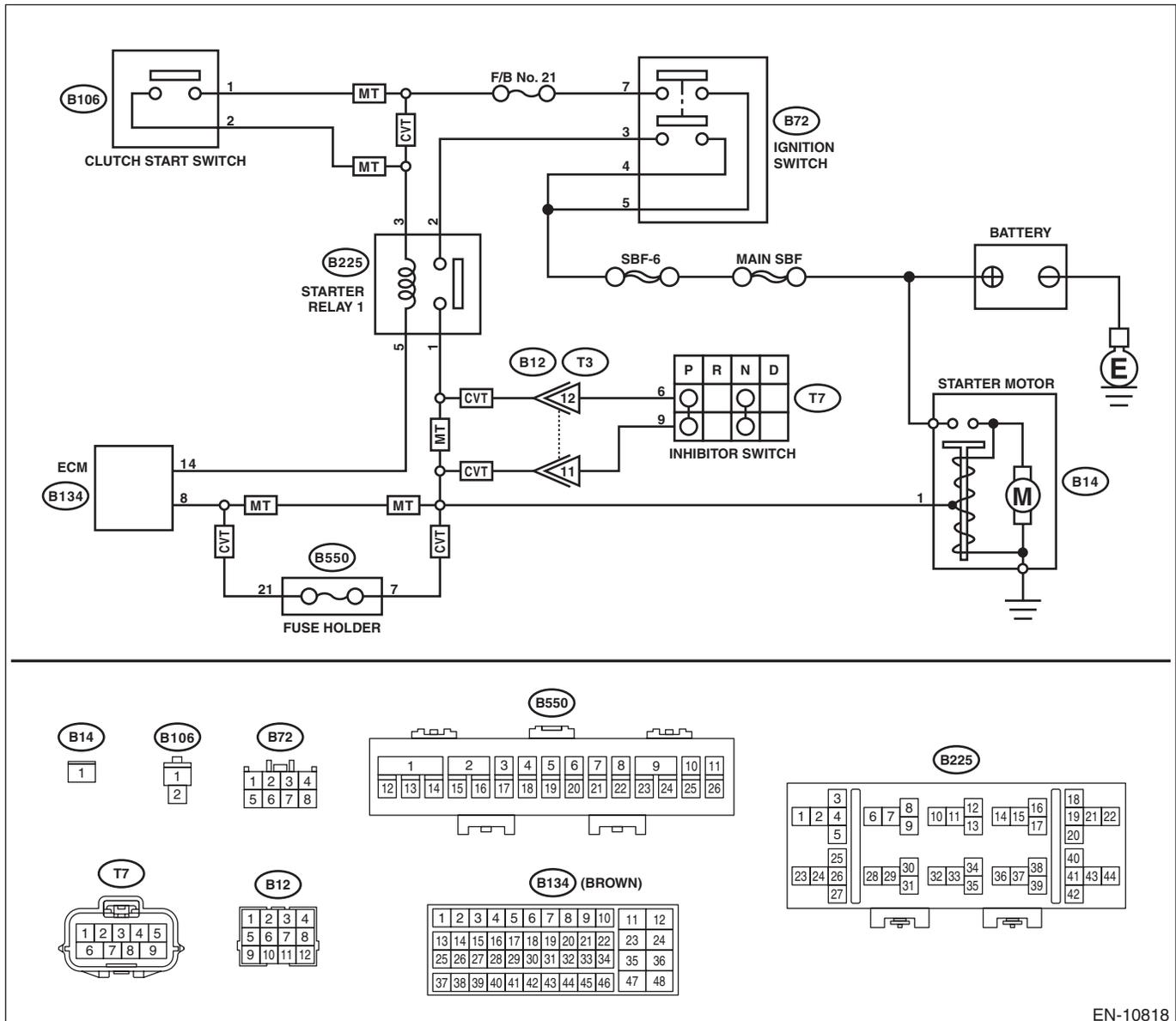
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-157, DTC P0616 STARTER RELAY CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10818

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK HARNESS BETWEEN ECM AND STARTER RELAY CONNECTOR. 1) Turn the ignition switch to OFF. 2) Remove the starter relay. 3) Disconnect the connectors from ECM and starter motor. 4) Measure the resistance of harness between ECM connector and starter relay connector. Connector & terminal (B134) No. 8 — (B225) No. 1: NOTE: For CVT model, place the select lever in "P" range or "N" range.	Is the resistance less than 1 Ω?	Go to step 3.	NOTE: Check the following item and repair or replace if necessary. • Open circuit of harness between ECM connector and starter relay connector • Poor contact of coupling connector
3 CHECK HARNESS BETWEEN ECM AND STARTER RELAY CONNECTOR. Measure the resistance between ECM connector and chassis ground. Connector & terminal (B134) No. 8 — Chassis ground:	Is the resistance 1 MΩ or more?	Repair the poor contact of ECM connector.	Repair the short circuit to ground in harness between ECM connector and starter relay connector.

2. MODEL WITH PUSH BUTTON START

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-157, DTC P0616 STARTER RELAY CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Failure of engine to start

CAUTION:

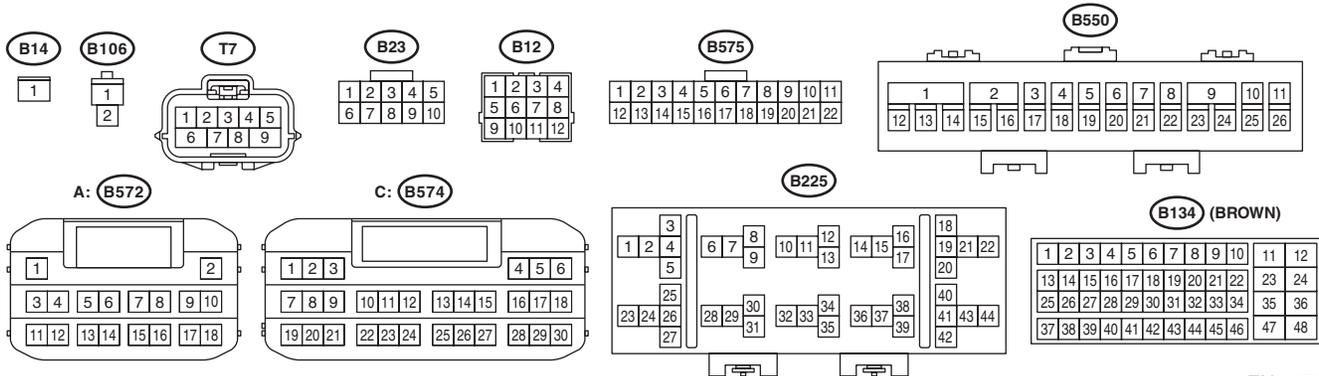
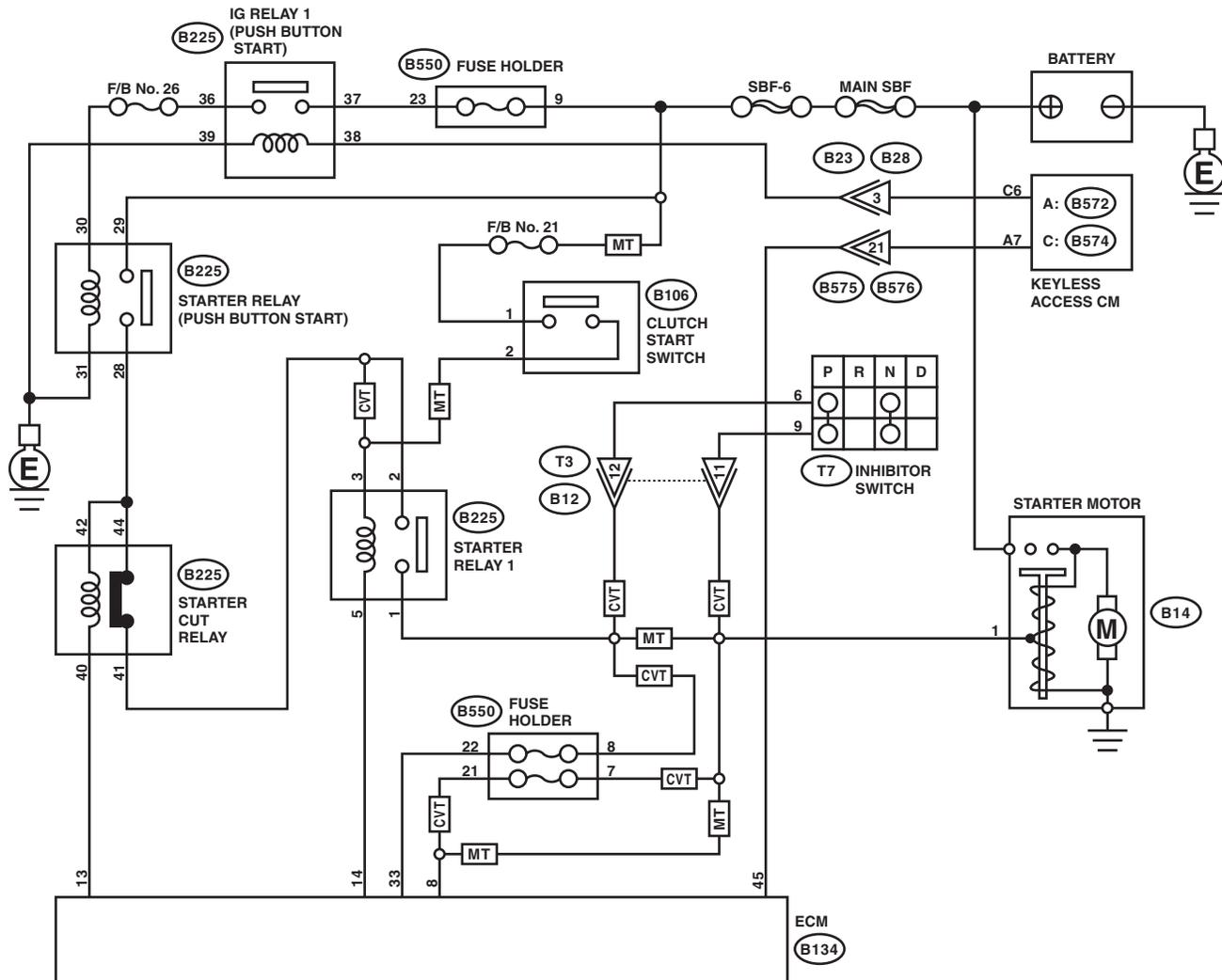
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

WIRING DIAGRAM:

Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10791

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK HARNESS BETWEEN ECM AND STARTER RELAY CONNECTOR. 1) Turn the ignition to OFF. 2) Disconnect the connector from ECM. 3) Remove the starter relay. 4) Measure the resistance of harness between ECM connector and starter relay connector. NOTE: For CVT model, place the select lever in "P" range or "N" range. Connector & terminal (B134) No. 8 — (B225) No. 1:	Is the resistance less than 1 Ω?	Go to step 2.	Repair the harness and connector. NOTE: In this case, repair the following item: <ul style="list-style-type: none"> • Open circuit of harness between ECM connector and starter relay connector • Poor contact of coupling connector
2 CHECK HARNESS BETWEEN ECM AND STARTER RELAY CONNECTOR. 1) Disconnect the connector from starter motor. 2) Measure the resistance between the ECM connector and engine ground. Connector & terminal (B134) No. 8 — Engine ground:	Is the resistance 1 MΩ or more?	Repair the poor contact of ECM connector.	Repair the short circuit to ground in harness between ECM connector and starter relay connector.

DU:DTC P0617 STARTER RELAY CIRCUIT HIGH

1. MODEL WITHOUT PUSH BUTTON START

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-158, DTC P0617 STARTER RELAY CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

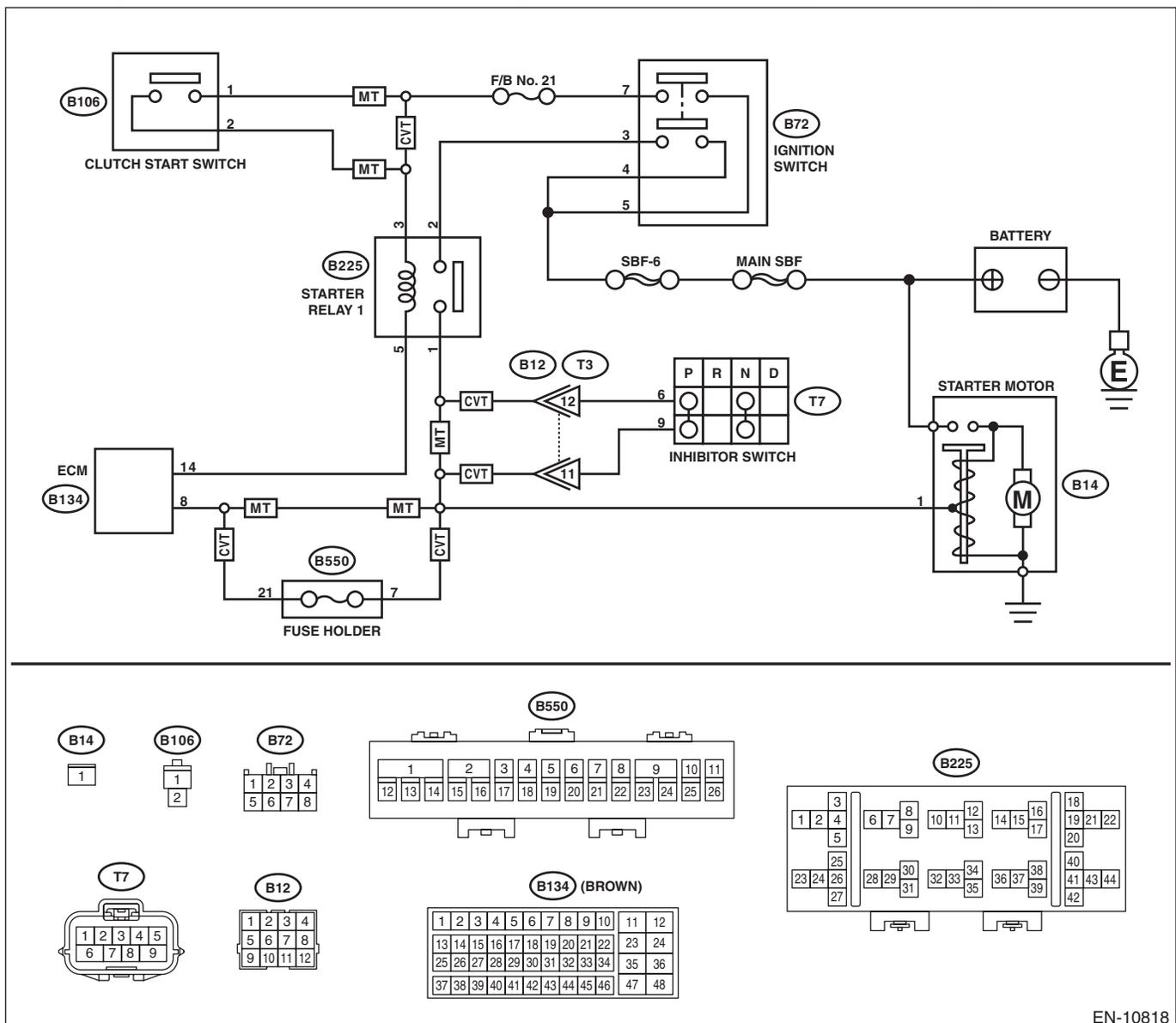
Failure of engine to start

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check the appropriate DTC using the "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK HARNESS BETWEEN ECM AND STARTER RELAY CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Turn the ignition switch to ON. 4) Measure the voltage between ECM connector and chassis ground. <i>Connector & terminal</i> <i>(B134) No. 8 (+) — Chassis ground (-):</i> NOTE: For CVT model, place the select lever in "P" range or "N" range.	Is the voltage 10 V or more?	Repair the short circuit to power in harness between ECM connector and starter relay connector.	Repair the poor contact of ECM connector.

2. MODEL WITH PUSH BUTTON START

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-158, DTC P0617 STARTER RELAY CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Failure of engine to start

CAUTION:

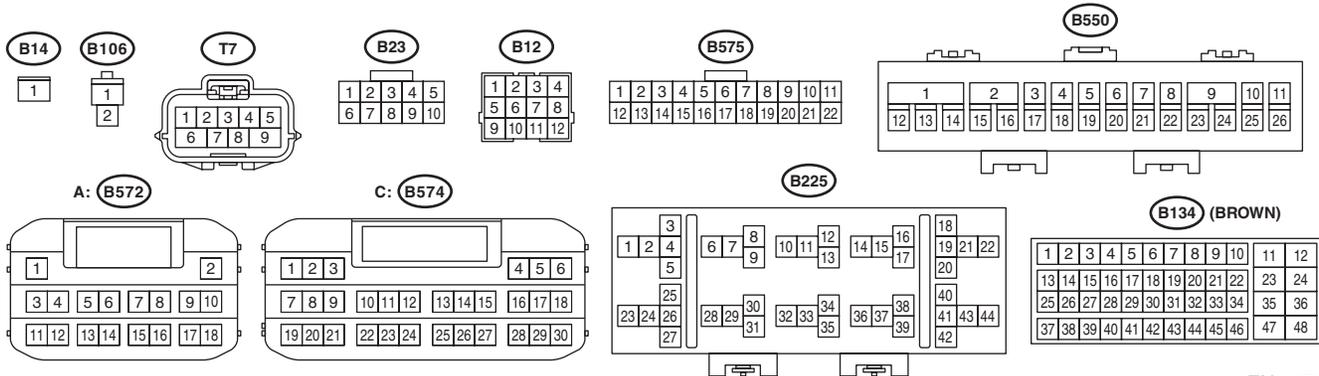
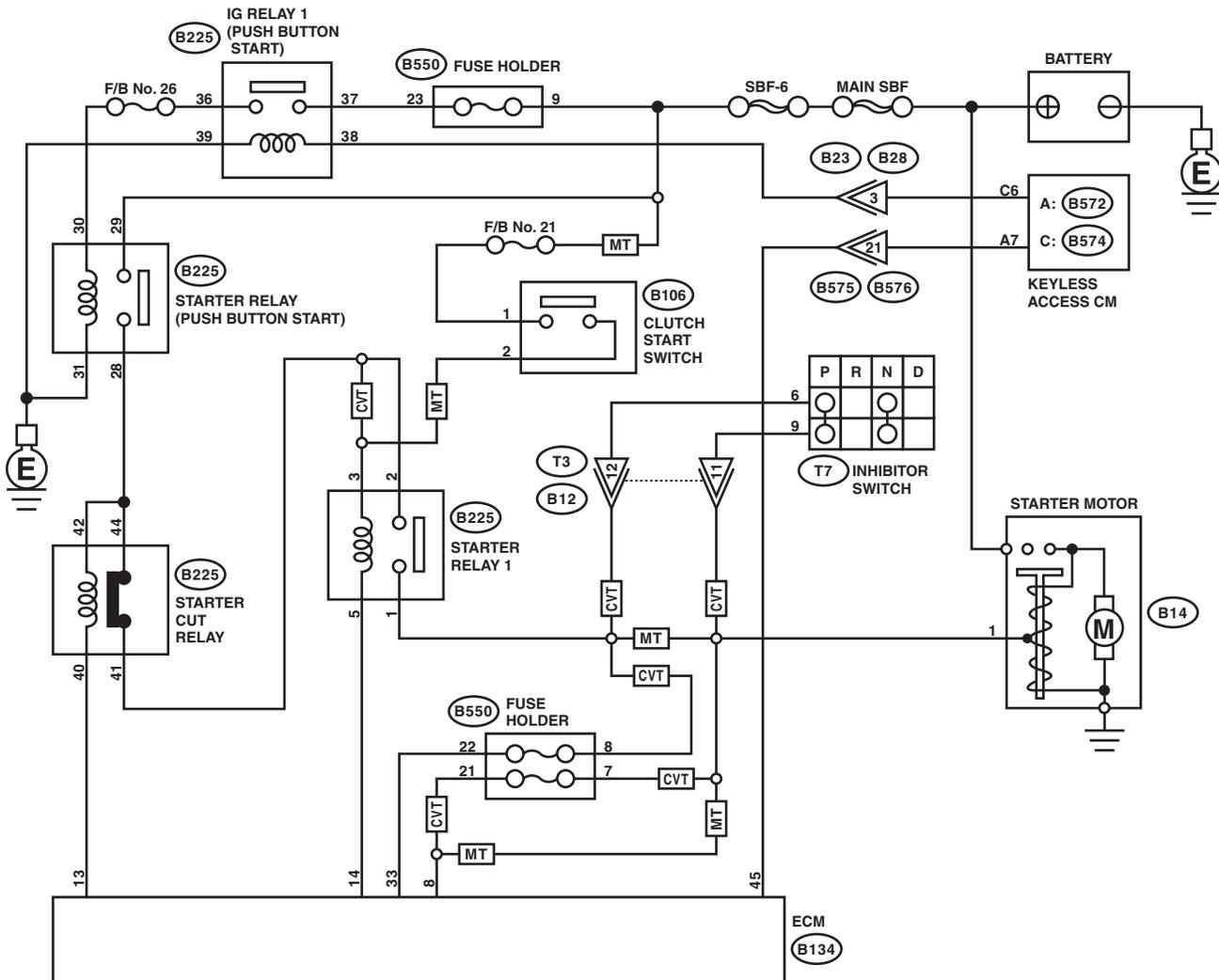
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

WIRING DIAGRAM:

Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10791

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK STARTER MOTOR. 1) Turn the ignition to ON. 2) Check the starter motor condition.	Is the starter motor rotating?	Go to step 2.	Repair the short circuit to power supply. NOTE: In this case, repair the following harnesses: • Short circuit to power supply in harness between ECM connector and starter relay connector • Short circuit to power supply in harness between ECM connector and starter motor • Short circuit to power supply in harness between starter relay connector and starter motor
2 CHECK HARNESS BETWEEN STARTER CUT RELAY CONNECTOR AND STARTER RELAY CONNECTOR. 1) Turn the ignition to OFF. 2) Disconnect the connector from starter motor. 3) Remove the starter cut relay and starter relay. 4) Turn the ignition to ON. 5) Measure the voltage between starter relay connector and chassis ground. Connector & terminal (B225) No. 2 (+) — Chassis ground (-):	Is the voltage 10 V or more?	Repair the short circuit to power supply in harness between starter cut relay connector and starter relay connector.	Go to step 3.
3 CHECK STARTER CUT RELAY. 1) Connect the battery to starter cut relay terminals No. 40 and No. 42. 2) Measure the resistance between starter cut relay terminals. Terminals No. 41 — No. 44:	Is the resistance 1 M Ω or more?	Go to step 6.	Replace the starter cut relay. <Ref. to SL-116, Starter Cut Relay.> Go to step 4.
4 CHECK HARNESS BETWEEN ECM AND STARTER RELAY CONNECTOR. 1) Disconnect the connector from ECM. 2) Measure the resistance between the ECM connector and engine ground. Connector & terminal (B134) No. 14 — Engine ground:	Is the resistance 1 M Ω or more?	Go to step 5.	Repair the short circuit to ground in harness between ECM connector and starter relay connector.
5 CHECK STARTER RELAY. Measure the resistance between starter relay terminals. Terminals No. 1 — No. 2:	Is the resistance 1 M Ω or more?	Go to step 6.	Replace the starter relay. <Ref. to EN(w/o STI)(diag)-9, LOCATION, Electrical Component Location.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>6</p> <p>CHECK HARNESS BETWEEN ECM, STARTER RELAY CONNECTOR AND STARTER MOTOR.</p> <p>1) Disconnect the connector from ECM. 2) Turn the ignition to ON. 3) Measure the voltage between ECM connector and engine ground.</p> <p>Connector & terminal (B134) No. 8 (+) — Engine ground (-):</p>	<p>Is the voltage 10 V or more?</p>	<p>Repair the short circuit to power supply.</p> <p>NOTE: In this case, repair the following harnesses:</p> <ul style="list-style-type: none"> • Short circuit to power supply in harness between ECM connector and starter relay connector • Short circuit to power supply in harness between ECM connector and starter motor • Short circuit to power supply in harness between starter relay connector and starter motor 	<p>Repair the poor contact of ECM connector.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

DV:DTC P062D FUEL INJECTOR DRIVER CIRCUIT PERFORMANCE (BANK 1)

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-159, DTC P062D FUEL INJECTOR DRIVER CIRCUIT PERFORMANCE (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

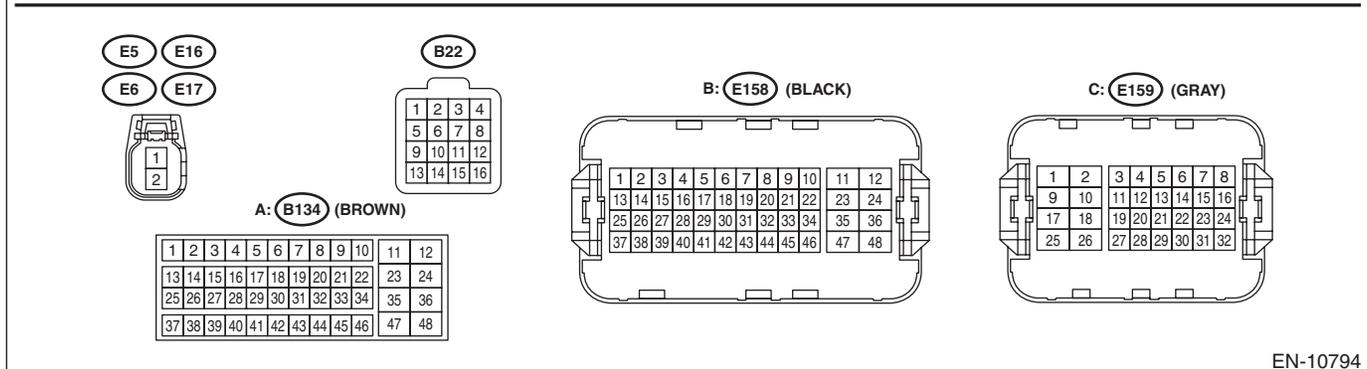
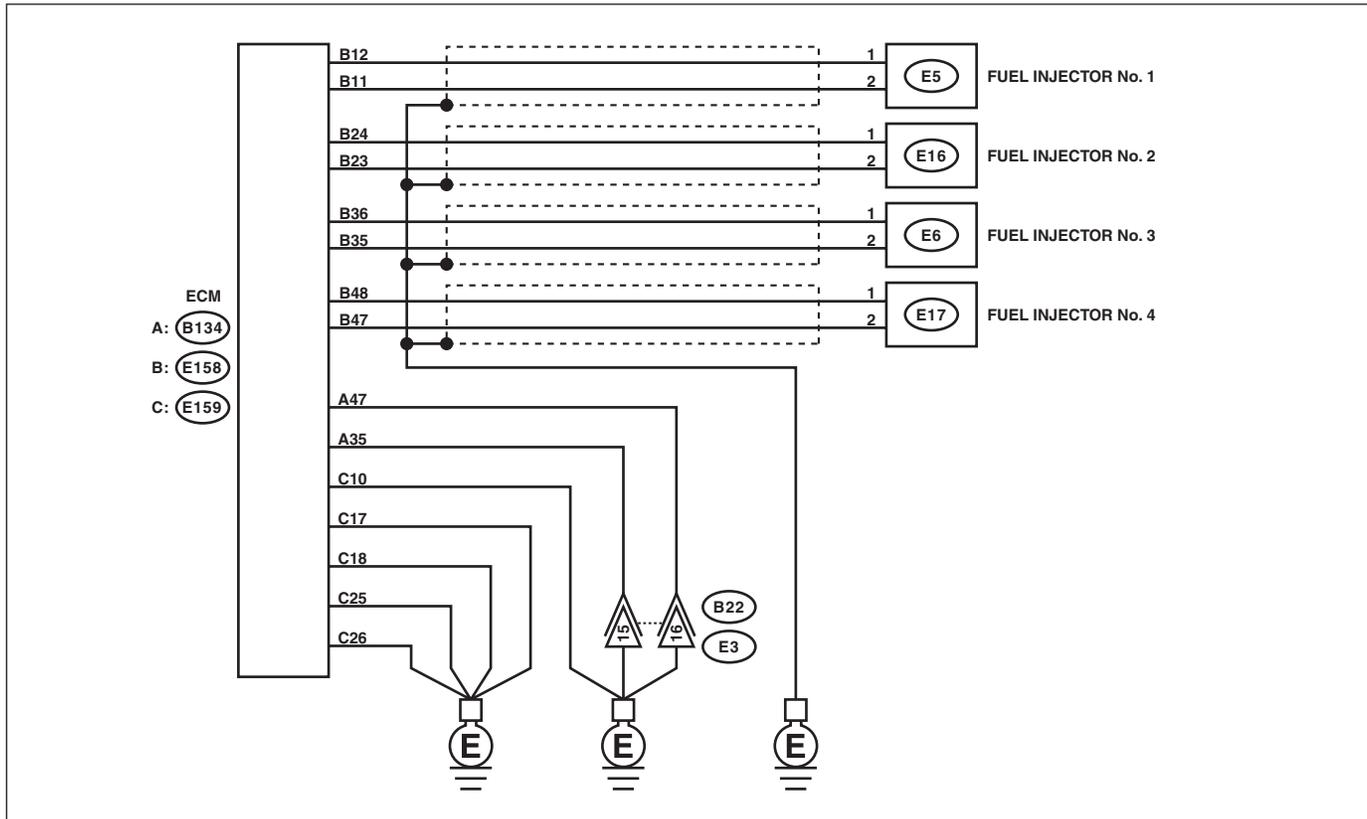
- Engine does not start.
- Engine stalls.

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10794

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DISPLAY. Is any other DTC displayed?	Check the appropriate DTC using the "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2	CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connectors. Connector & terminal #1 (E158) No. 11 — (E158) No. 12: #2 (E158) No. 23 — (E158) No. 24: #3 (E158) No. 35 — (E158) No. 36: #4 (E158) No. 47 — (E158) No. 48:	Is resistance 1.89 — 2.31 Ω at 20°C (68°F)?	Go to step 4.
3	CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR. 1) Disconnect the connector from fuel injector. 2) Measure the resistance of harness between ECM connector and defective fuel injector connector. Connector & terminal #1 (E158) No. 12 — (E5) No. 1: #1 (E158) No. 11 — (E5) No. 2: #2 (E158) No. 24 — (E16) No. 1: #2 (E158) No. 23 — (E16) No. 2: #3 (E158) No. 36 — (E6) No. 1: #3 (E158) No. 35 — (E6) No. 2: #4 (E158) No. 48 — (E17) No. 1: #4 (E158) No. 47 — (E17) No. 2:	Is the resistance less than 1 Ω ?	Repair or replace the following items. • Poor contact of fuel injector connector • Defective fuel injector <Ref. to FU(w/o STI)-51, Fuel Injector.>
4	CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR. Measure the resistance between the ECM connector and engine ground. Connector & terminal #1 (E158) No. 12 — Engine ground: #1 (E158) No. 11 — Engine ground: #2 (E158) No. 24 — Engine ground: #2 (E158) No. 23 — Engine ground: #3 (E158) No. 36 — Engine ground: #3 (E158) No. 35 — Engine ground: #4 (E158) No. 48 — Engine ground: #4 (E158) No. 47 — Engine ground:	Is the resistance 1 M Ω or more?	Repair the poor contact of ECM connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
5 CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR. 1) Disconnect the connector from fuel injector. 2) Measure the resistance between ECM connector and engine ground on defective fuel injectors. Connector & terminal #1 (E158) No. 12 — Engine ground: #1 (E158) No. 11 — Engine ground: #2 (E158) No. 24 — Engine ground: #2 (E158) No. 23 — Engine ground: #3 (E158) No. 36 — Engine ground: #3 (E158) No. 35 — Engine ground: #4 (E158) No. 48 — Engine ground: #4 (E158) No. 47 — Engine ground:	Is the resistance 1 M Ω or more?	Replace the faulty fuel injector. <Ref. to FU(w/o STI)-51, Fuel Injector.>	Repair the short circuit to ground in harness between ECM connector and fuel injector connector.

DW:DTC P062F INTERNAL CONTROL MODULE EEPROM ERROR

NOTE:

For the diagnostic procedure, refer to DTC P0606. <Ref. to EN(w/o STI)(diag)-291, DTC P0606 CONTROL MODULE PROCESSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

DX:DTC P0685 ECM/PCM POWER RELAY CONTROL CIRCUIT/OPEN

DTC DETECTING CONDITION:

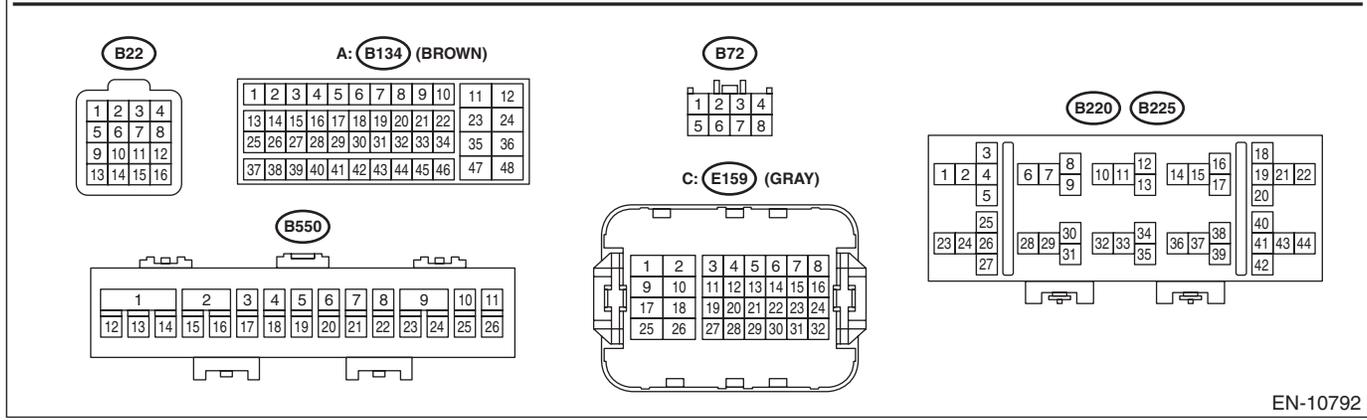
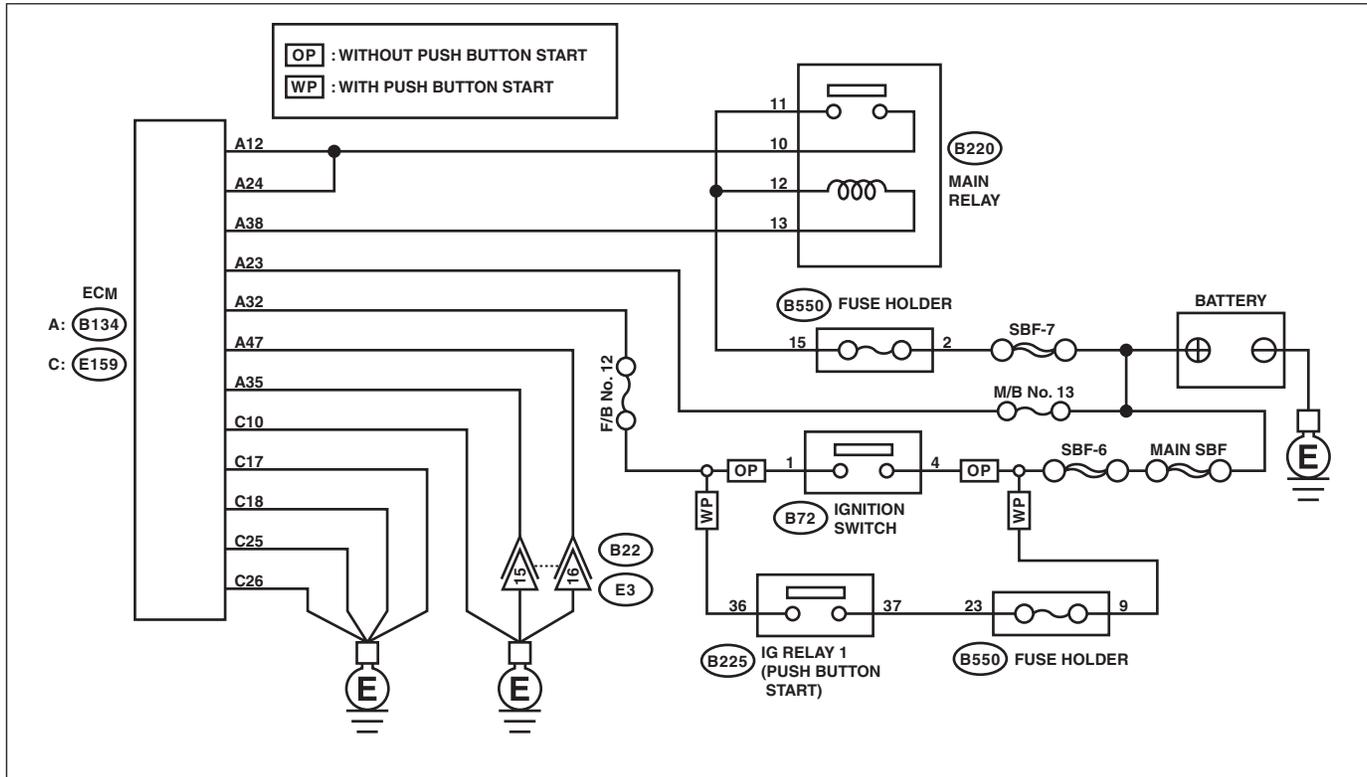
- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-161, DTC P0685 ECM/PCM POWER RELAY CONTROL CIRCUIT/OPEN, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10792

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK ECM CONNECTOR. Check the connecting condition of ECM connector.	Is the ECM connector correctly connected?	Go to step 2.	Connect the ECM connector correctly.
2 CHECK HARNESS BETWEEN ECM AND MAIN RELAY CONNECTOR. 1) Turn the ignition switch to OFF. 2) Remove the main relay. 3) Disconnect the connector from ECM. 4) Measure the resistance between the ECM connector and engine ground. <i>Connector & terminal</i> <i>(B134) No. 38 — Engine ground:</i>	Is the resistance 1 MΩ or more?	Go to step 3.	Repair the short circuit to ground in harness between ECM connector and main relay connector.
3 CHECK HARNESS BETWEEN ECM AND MAIN RELAY CONNECTOR. 1) Install the main relay. 2) Turn the ignition switch to ON. 3) Measure the voltage between ECM connector and engine ground. <i>Connector & terminal</i> <i>(B134) No. 12 (+) — Engine ground (-):</i> <i>(B134) No. 24 (+) — Engine ground (-):</i>	Is the voltage 10 V or more?	Repair the harness and connector. NOTE: In this case, repair the following item: • Short circuit to power supply in harness between ECM connector and main relay connector • Defective main relay	Repair the poor contact of ECM connector.

DY:DTC P0700 TRANSMISSION CONTROL SYSTEM (MIL REQUEST)

NOTE:

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

DZ:DTC P081A STARTER DISABLE CIRCUIT LOW

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-163, DTC P081A STARTER DISABLE CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

Failure of engine to start

CAUTION:

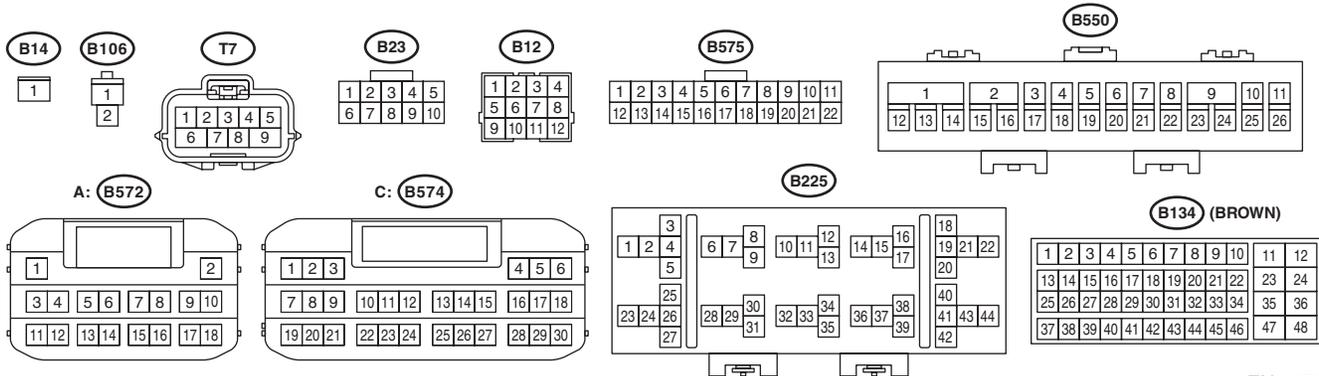
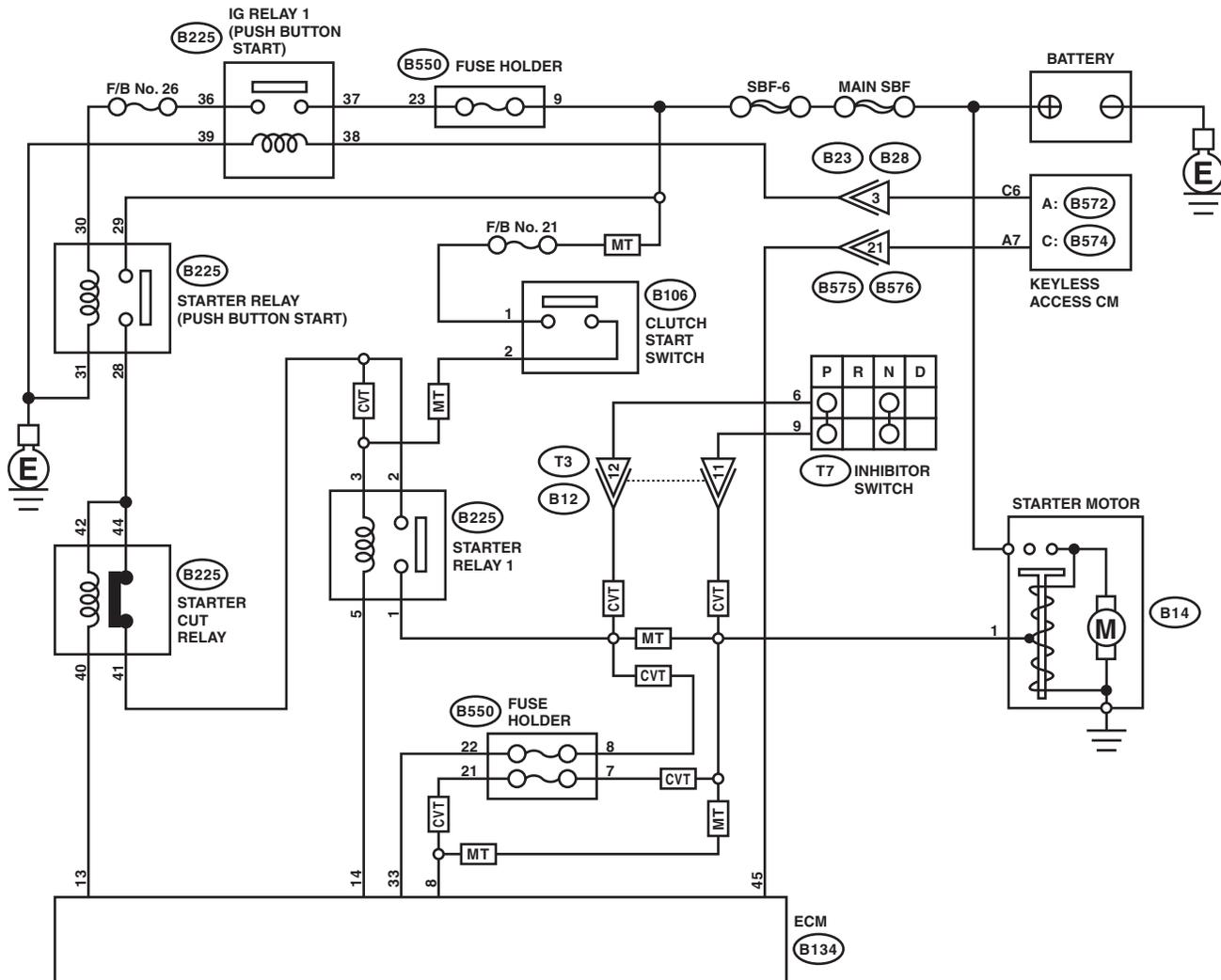
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

WIRING DIAGRAM:

Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10791

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1 CHECK HARNESS BETWEEN STARTER RELAY (PUSH BUTTON START) CONNECTOR AND STARTER CUT RELAY CONNECTOR.</p> <p>1) Turn the ignition to OFF. 2) Remove the starter relay (push button start) and starter cut relay. 3) Measure the resistance of harness between starter relay (push button start) connector and starter cut relay connector.</p> <p>Connector & terminal (B225) No. 28 — (B225) No. 42:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 2.</p>	<p>Repair the open circuit in harness between starter relay (push button start) connector and starter cut relay connector.</p>
<p>2 CHECK HARNESS BETWEEN ECM AND STARTER CUT RELAY CONNECTOR.</p> <p>1) Disconnect the connector from ECM. 2) Measure the resistance of harness between ECM connector and starter cut relay connector.</p> <p>Connector & terminal (B134) No. 13 — (B225) No. 40:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 3.</p>	<p>Repair the open circuit of harness between ECM connector and starter cut relay connector.</p>
<p>3 CHECK STARTER CUT RELAY.</p> <p>1) Connect the battery to starter cut relay terminals No. 40 and No. 42. 2) Measure the resistance between starter cut relay terminals.</p> <p>Terminals No. 41 — No. 44:</p>	<p>Is the resistance 1 MΩ or more?</p>	<p>Repair the poor contact of ECM connector.</p>	<p>Replace the starter cut relay. <Ref. to SL-116, Starter Cut Relay.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

EA:DTC P0851 PARK/NEUTRAL SWITCH INPUT CIRCUIT LOW (AT MODEL)

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-164, DTC P0851 PARK/NEUTRAL SWITCH INPUT CIRCUIT LOW (AT MODEL), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

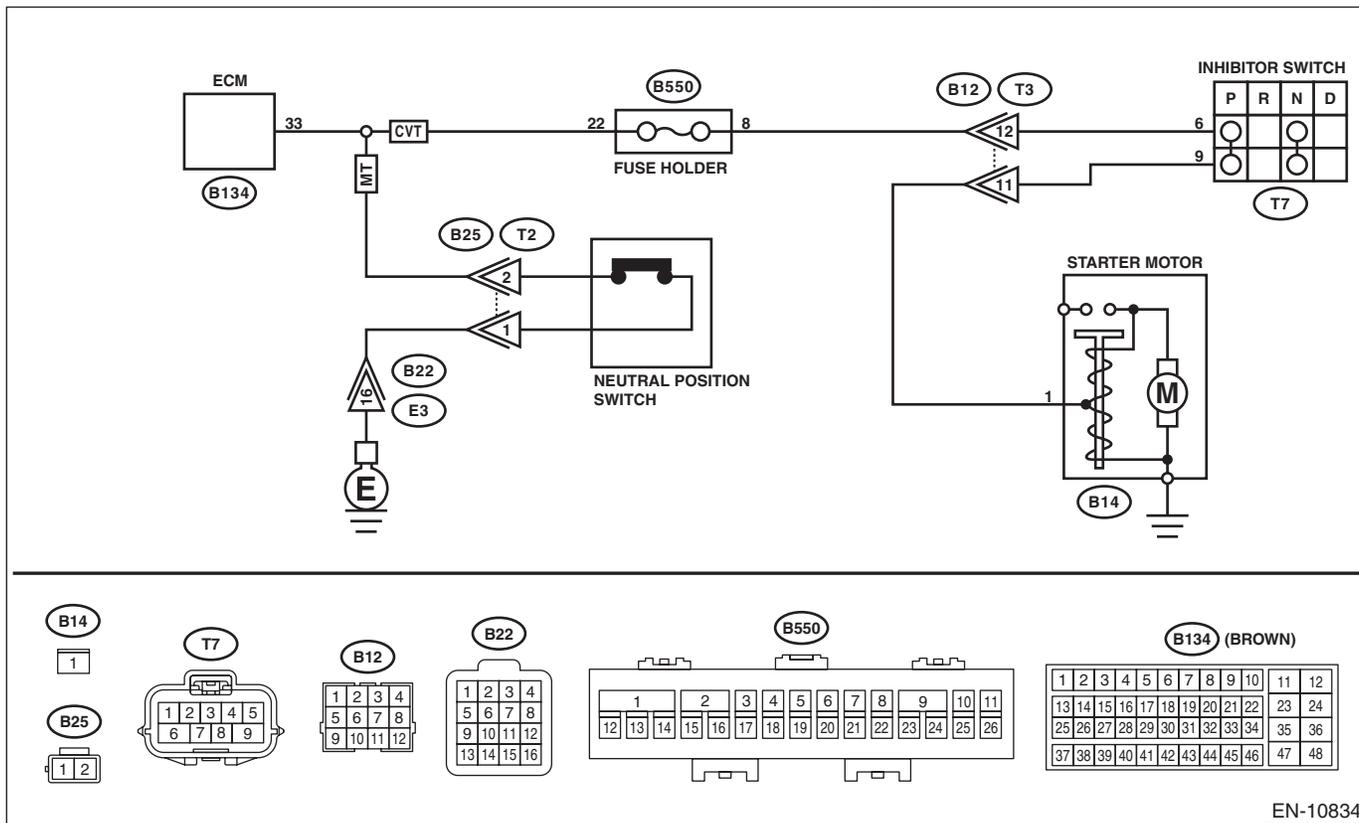
Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10834

Step	Check	Yes	No
1	CHECK SELECT CABLE.	Repair or adjust the select cable. <Ref. to CS-42, Select Cable.>	Go to step 2.
2	CHECK INPUT SIGNAL OF ECM. 1) Turn the ignition switch to ON. 2) Place the select lever in other than "P" range and "N" range. 3) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B134) No. 33 (+) — Chassis ground (-):	Repair the poor contact of ECM connector.	Go to step 3.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
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 between ECM connector and chassis ground. <i>Connector & terminal</i> <i>(B134) No. 33 — Chassis ground:</i>	Is the resistance 1 MΩ or more?	Go to step 4.	Repair the short circuit to ground in harness between ECM connector and transmission harness connector.
4 CHECK TRANSMISSION HARNESS CONNECTOR. 1) Disconnect the connector from inhibitor switch. 2) Measure the resistance between transmission harness connector and engine ground. <i>Connector & terminal</i> <i>(T3) No. 12 — Engine ground:</i>	Is the resistance 1 MΩ or more?	Replace the inhibitor switch. <Ref. to CVT(TR690)-92, Inhibitor Switch.>	Repair short circuit to ground in harness between transmission harness connector and inhibitor switch connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

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

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-165, DTC P0851 NEUTRAL SWITCH INPUT CIRCUIT LOW (MT MODEL), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

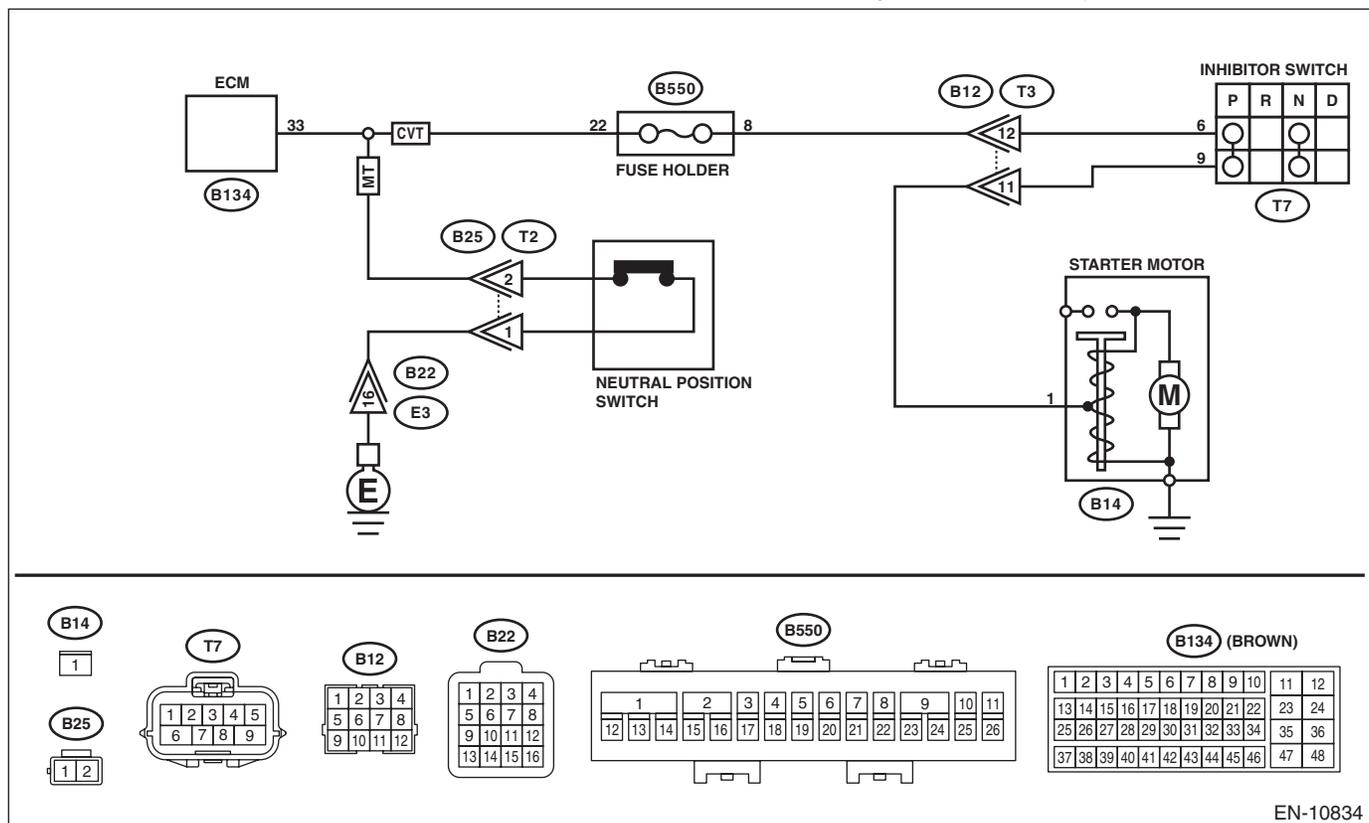
Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10834

Step	Check	Yes	No
1 CHECK INPUT SIGNAL OF ECM. 1) Turn the ignition switch to ON. 2) Place the shift lever in a position other than neutral. 3) Measure the voltage between ECM connector and engine ground. Connector & terminal (B134) No. 33 (+) — Engine ground (-):	Is the voltage 10 V or more?	Repair the poor contact of ECM connector.	Go to step 2.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>2</p> <p>CHECK HARNESS BETWEEN ECM AND NEUTRAL POSITION SWITCH CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connectors from ECM and neutral position switch.</p> <p>3) Measure the resistance between the ECM connector and engine ground.</p> <p>Connector & terminal (B134) No. 33 — Engine ground:</p>	<p>Is the resistance 1 MΩ or more?</p>	<p>Replace the neutral position switch. <Ref. to 6MT(TY75)-45, Switches and Harness.></p>	<p>Repair the short circuit to ground harness between ECM connector and neutral position switch connector.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

EC:DTC P0852 PARK/NEUTRAL SWITCH INPUT CIRCUIT HIGH (AT MODEL)

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-166, DTC P0852 PARK/NEUTRAL SWITCH INPUT CIRCUIT HIGH (AT MODEL), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

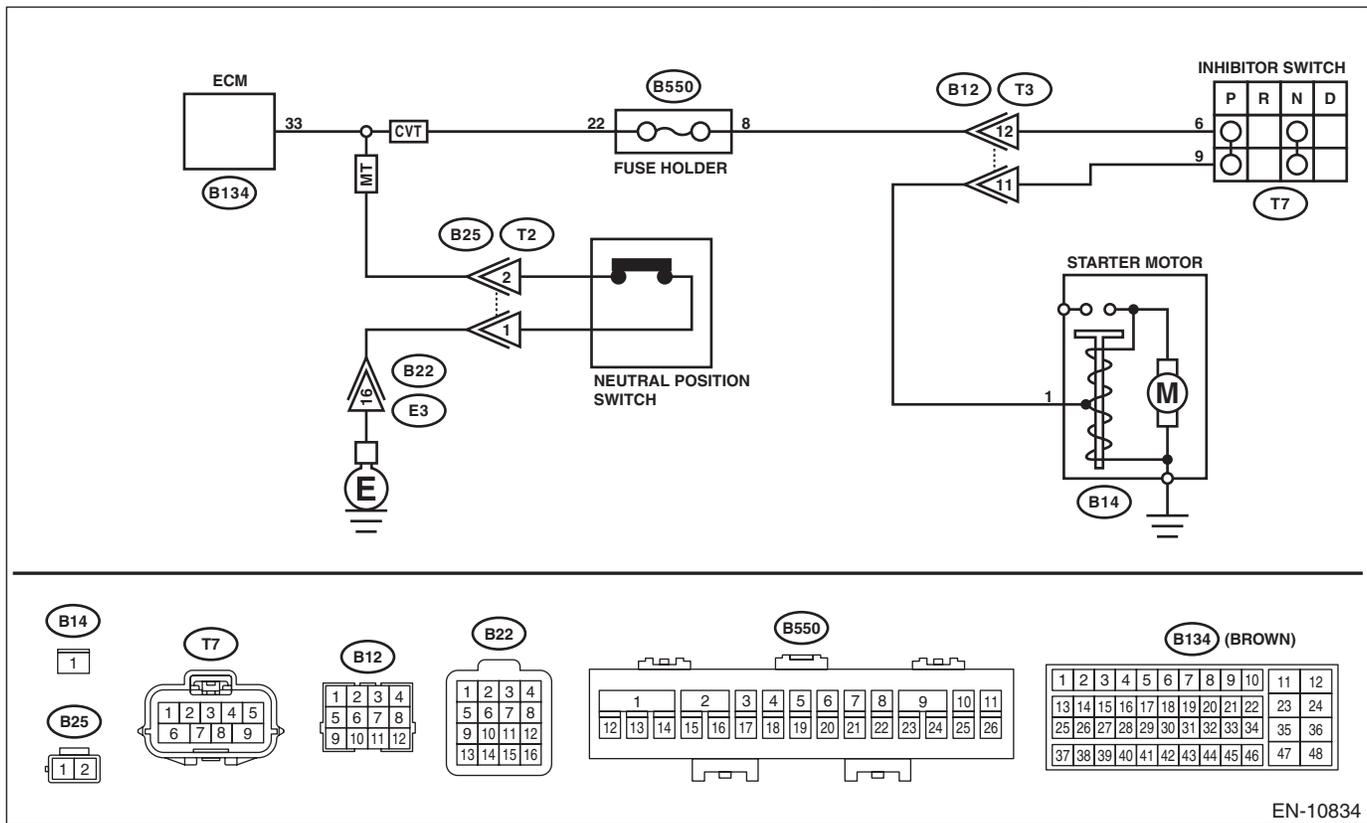
Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10834

Step	Check	Yes	No
1	CHECK SELECT CABLE.		
	Is there any fault in select cable?	Repair or adjust the select cable. <Ref. to CS-42, Select Cable.>	Go to step 2.
2	CHECK INPUT SIGNAL OF ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground with select lever at "P" range and "N" range. Connector & terminal (B134) No. 33 (+) — Chassis ground (-):	Is the voltage less than 1 V? Repair the poor contact of ECM connector.	Go to step 3.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>3</p> <p>CHECK HARNESS BETWEEN ECM AND INHIBITOR SWITCH CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connectors from ECM and inhibitor switch.</p> <p>3) Measure the resistance of harness between ECM connector and inhibitor switch connector.</p> <p>Connector & terminal (B134) No. 33 — (T7) No. 6:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 4.</p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case, repair the following item:</p> <ul style="list-style-type: none"> • Blown out of fuse • Open circuit in harness between ECM connector and inhibitor switch connector • Poor contact of coupling connector
<p>4</p> <p>CHECK INHIBITOR SWITCH GROUND LINE.</p> <p>Measure the resistance of harness between inhibitor switch connector and engine ground.</p> <p>Connector & terminal (T7) No. 9 — Engine ground:</p>	<p>Is the resistance less than 5 Ω?</p>	<p>Replace the inhibitor switch. <Ref. to CVT(TR690)-92, Inhibitor Switch.></p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case, repair the following item:</p> <ul style="list-style-type: none"> • Open circuit of harness between inhibitor switch connector and starter motor ground line • Poor contact of coupling connector • Poor contact of starter motor connector • Poor contact of starter motor ground • Starter motor

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>2 CHECK HARNESS BETWEEN ECM AND NEUTRAL POSITION SWITCH CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and neutral position switch. 3) Measure the resistance of harness between ECM connector and neutral position switch connector. <i>Connector & terminal</i> <i>(B134) No. 33 — (B25) No. 2:</i></p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 3.</p>	<p>Repair the open circuit in harness between ECM connector and transmission harness connector.</p>
<p>3 CHECK HARNESS BETWEEN NEUTRAL POSITION SWITCH CONNECTOR AND CHASSIS GROUND. Measure the resistance of harness between neutral position switch connector and chassis ground. <i>Connector & terminal</i> <i>(B25) No. 1 — Chassis ground:</i></p>	<p>Is the resistance less than 5 Ω?</p>	<p>Go to step 4.</p>	<p>Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between neutral position switch connector and chassis ground • Poor contact of coupling connector</p>
<p>4 CHECK NEUTRAL POSITION SWITCH. 1) Place the shift lever in neutral. 2) Measure the resistance between neutral position switch connector terminals. <i>Connector & terminal</i> <i>(T2) No. 1 — (T2) No. 2:</i></p>	<p>Is the resistance less than 1 Ω?</p>	<p>Repair the poor contact of neutral position switch connector.</p>	<p>Replace the neutral position switch. <Ref. to 6MT(TY75)-45, Switches and Harness.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

EE:DTC P1134 A/F SENSOR MICRO-COMPUTER PROBLEM

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-168, DTC P1134 A/F SENSOR MICRO-COMPUTER PROBLEM, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check the appropriate DTC using the "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Replace the ECM. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

EF:DTC P113A O2 SENSOR CIRCUIT (OPEN) (BANK1 SENSOR2)

DTC DETECTING CONDITION:

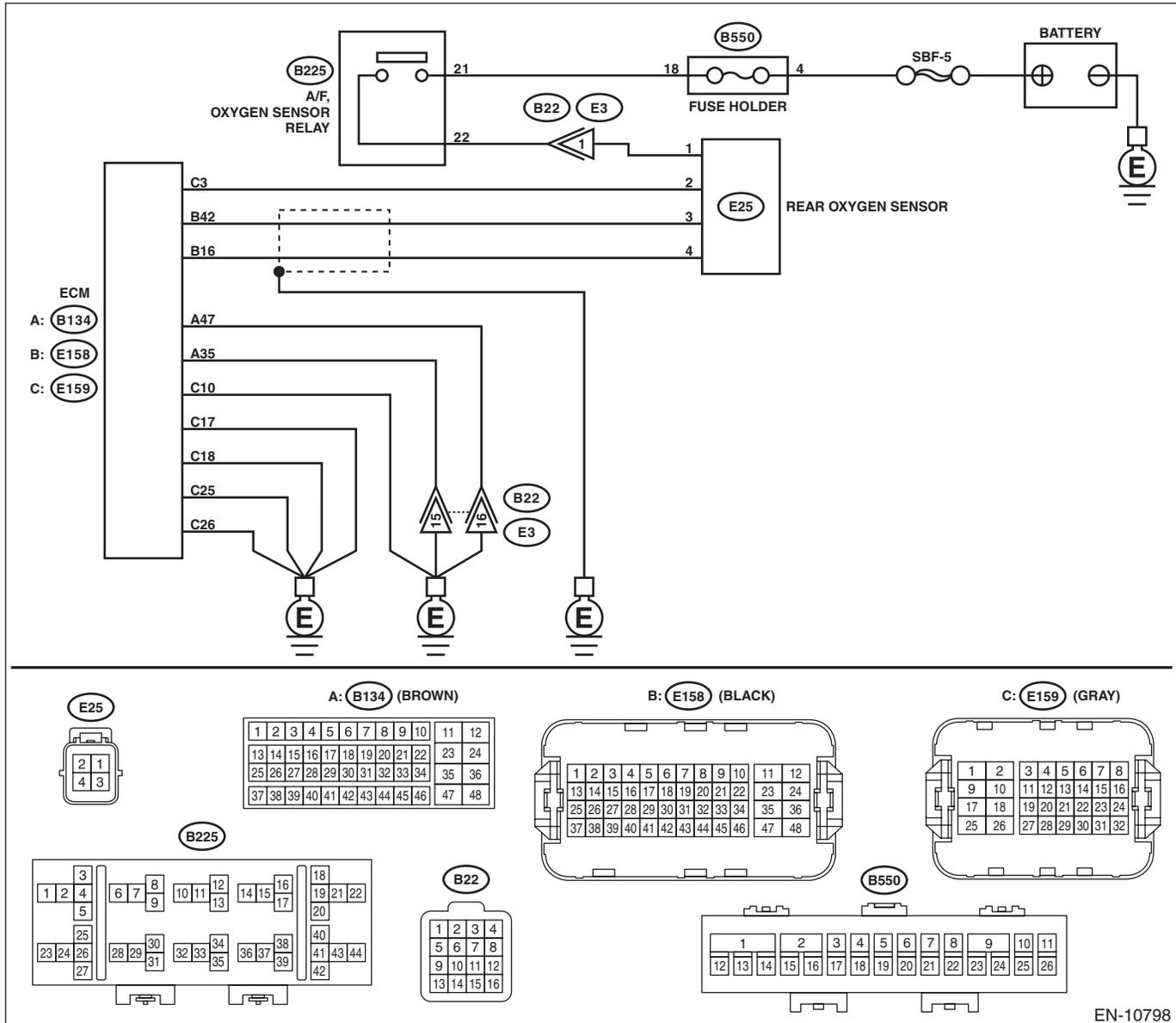
- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-169, DTC P113A O2 SENSOR CIRCUIT (OPEN) (BANK1 SENSOR2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10798

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No	
1	CHECK FOR ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check the appropriate DTC using the "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2	CHECK REAR OXYGEN SENSOR DATA. 1) Warm up the engine until engine coolant temperature is higher than 75°C (167°F), and keep the engine speed at 3,000 rpm. (2 minutes maximum) 2) Read the value of «Oxygen sensor #12» using the Subaru Select Monitor or a general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value of «Oxygen sensor #12» 0.490 V or more?	Go to step 6.	Go to step 3.
3	CHECK REAR OXYGEN SENSOR CONNECTOR.	Has water entered the connector?	Completely remove any water inside.	Go to step 4.
4	CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and rear oxygen sensor. 3) Measure the resistance of harness between ECM connector and rear oxygen sensor connector. Connector & terminal (E158) No. 42 — (E25) No. 3: (E158) No. 16 — (E25) No. 4:	Is the resistance less than 1 Ω?	Go to step 5.	Repair the open circuit of harness between ECM connector and rear oxygen sensor connector.
5	CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR. Measure the resistance of harness between ECM connector and rear oxygen sensor connector. Connector & terminal (E158) No. 16 — Engine ground (E158) No. 42 — Engine ground	Is the resistance 1 Ω or more?	Go to step 6.	Repair the short circuit to ground in harness between ECM connector and rear oxygen sensor connector.
6	CHECK EXHAUST SYSTEM. Check exhaust system parts. NOTE: Check the following items. • Looseness and improper fitting of exhaust system parts • Damage (crack, hole etc.) of parts • Loose part and improper installation between front oxygen (A/F) sensor and rear oxygen sensor	Is there any fault in exhaust system?	Repair or replace faulty parts.	Replace the rear oxygen sensor. <Ref. to FU(w/o STI)-128, Rear Oxygen Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

EG:DTC P1160 RETURN SPRING FAILURE

NOTE:

For the diagnostic procedure, refer to DTC P2101. <Ref. to EN(w/o STI)(diag)-423, DTC P2101 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

EH:DTC P1261 DI INJECTOR CIRCUIT / OPEN - (CYLINDER 1)

DTC DETECTING CONDITION:

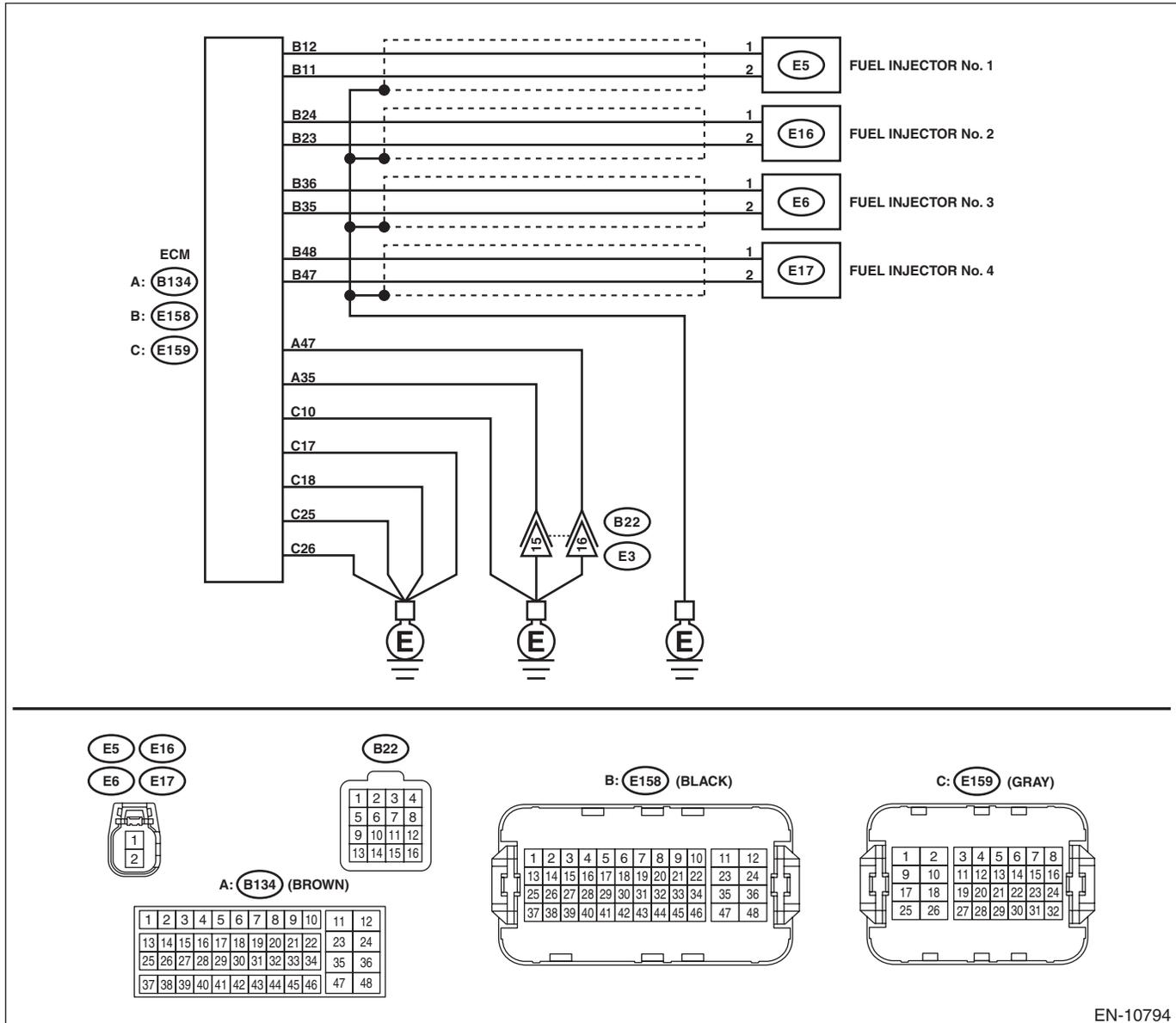
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-171, DTC P1261 DI INJECTOR CIRCUIT / OPEN - (CYLINDER 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10794

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM terminals on faulty fuel injectors. Connector & terminal #1 (E158) No. 11 — (E158) No. 12: #2 (E158) No. 23 — (E158) No. 24: #3 (E158) No. 35 — (E158) No. 36: #4 (E158) No. 47 — (E158) No. 48:	Is resistance 1.89 — 2.31 Ω at 20°C (68°F)?	Go to step 2.	Go to step 3.
2 CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR. Measure the resistance between ECM and engine ground on faulty injectors. Connector & terminal #1 (E158) No. 12 — Engine ground: #1 (E158) No. 11 — Engine ground: #2 (E158) No. 24 — Engine ground: #2 (E158) No. 23 — Engine ground: #3 (E158) No. 36 — Engine ground: #3 (E158) No. 35 — Engine ground: #4 (E158) No. 48 — Engine ground: #4 (E158) No. 47 — Engine ground:	Is the resistance 1 M Ω or more?	Repair the poor contact of ECM connector.	Go to step 3.
3 CHECK FUEL INJECTOR. Check the fuel injector on faulty cylinder. <Ref. to FU(w/o STI)-70, INSPECTION, Fuel Injector.>	Are fuel injectors OK?	Repair the open or ground short circuit in harness between ECM connector and fuel injector connector.	Replace the faulty fuel injector. <Ref. to FU(w/o STI)-51, Fuel Injector.>

EI: DTC P1262 DI INJECTOR CIRCUIT / OPEN - (CYLINDER 2)

NOTE:

For the diagnostic procedure, refer to DTC P1261. <Ref. to EN(w/o STI)(diag)-322, DTC P1261 DI INJECTOR CIRCUIT / OPEN - (CYLINDER 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

EJ: DTC P1263 DI INJECTOR CIRCUIT / OPEN - (CYLINDER 3)

NOTE:

For the diagnostic procedure, refer to DTC P1261. <Ref. to EN(w/o STI)(diag)-322, DTC P1261 DI INJECTOR CIRCUIT / OPEN - (CYLINDER 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

EK: DTC P1264 DI INJECTOR CIRCUIT / OPEN - (CYLINDER 4)

NOTE:

For the diagnostic procedure, refer to DTC P1261. <Ref. to EN(w/o STI)(diag)-322, DTC P1261 DI INJECTOR CIRCUIT / OPEN - (CYLINDER 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

EL:DTC P1449 EVAPORATIVE EMISSION CONT. SYS. AIR FILTER CLOG

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-173, DTC P1449 EVAPORATIVE EMISSION CONT. SYS. AIR FILTER CLOG, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check the appropriate DTC using the "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK DRAIN TUBE A AND DRAIN PIPE BETWEEN LEAK CHECK VALVE ASSEMBLY AND DRAIN FILTER.	Is the drain tube A or the drain pipe between leak check valve assembly and drain filter clogged?	Replace the drain tube A or the drain pipe between leak check valve assembly and drain filter. <Ref. to EC(w/o STI)-54, Leak Check Valve Assembly.> <Ref. to EC(w/o STI)-50, Drain Filter.>	Go to step 3.
3 CHECK DRAIN FILTER.	Is the drain filter clogged?	Replace the drain filter. <Ref. to EC(w/o STI)-50, Drain Filter.>	Replace the leak check valve assembly. <Ref. to EC(w/o STI)-54, Leak Check Valve Assembly.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

EM:DTC P1451 EVAPORATIVE EMISSION CONT. SYS.

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-174, DTC P1451 EVAPORATIVE EMISSION CONT. SYS., Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No	
1	CHECK DRAIN TUBE BETWEEN CANISTER AND LEAK CHECK VALVE ASSEMBLY.	Is the drain tube between canister and leak check valve assembly clogged?	Replace the drain tube between the canister and leak check valve assembly. <Ref. to EC(w/o STI)-54, Leak Check Valve Assembly.>	Go to step 2.
2	CHECK HOSES BETWEEN CANISTER AND FUEL TANK.	Are the hoses between the canister and fuel tank clogged?	Replace the hoses between the canister and fuel tank. <Ref. to EC(w/o STI)-8, Canister.> <Ref. to FU(w/o STI)-152, Fuel Tank.>	Replace the canister. <Ref. to EC(w/o STI)-8, Canister.> After the operation is complete, go to the next step. Go to step 3.
3	CHECK EVAPORATIVE EMISSION CONTROL SYSTEM. Perform drive cycle I. <Ref. to EN(w/o STI)(diag)-56, DRIVE CYCLE I, PROCEDURE, Drive Cycle.>	Is DTC P1451 displayed on the display?	Replace the leak check valve assembly. <Ref. to EC(w/o STI)-54, Leak Check Valve Assembly.>	End.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

EN:DTC P1458 CPC2 SOLENOID VALVE (CIRCUIT LOW)

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-175, DTC P1458 CPC2 SOLENOID VALVE (CIRCUIT LOW), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

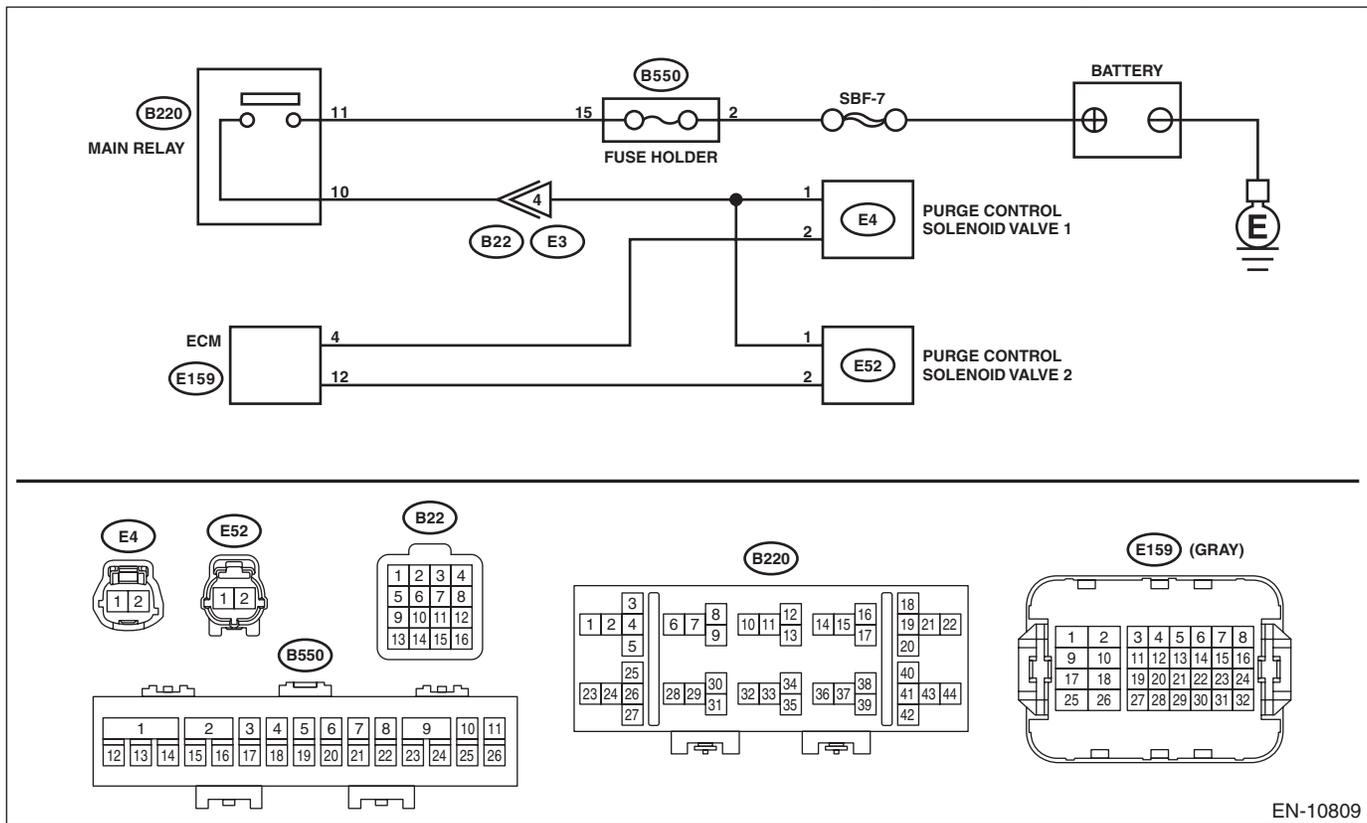
Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10809

Step	Check	Yes	No
1 CHECK OUTPUT SIGNAL OF ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM connector and engine ground. Connector & terminal (E159) No. 12 (+) — Engine ground (-):	Is the voltage 10 V or more?	Go to step 2.	Go to step 3.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
2 CHECK FOR POOR CONTACT. Check for poor contact of ECM connector.	Is there poor contact of ECM connector?	Repair the poor contact of ECM connector.	Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again. NOTE: In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.
3 CHECK POWER SUPPLY TO PURGE CONTROL SOLENOID VALVE 2. Measure the voltage between purge control solenoid valve 2 connector and engine ground. Connector & terminal (E52) No. 1 (+) — Engine ground (-):	Is the voltage 10 V or more?	Go to step 4.	Repair the power supply circuit.
4 CHECK HARNESS BETWEEN ECM AND PURGE CONTROL SOLENOID VALVE 2 CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and purge control solenoid valve 2. 3) Measure the resistance between the purge control solenoid valve 2 connector and engine ground. Connector & terminal (E52) No. 2 — Engine ground:	Is the resistance 1 M Ω or more?	Go to step 5.	Repair the ground short circuit of harness between ECM connector and purge control solenoid valve 2 connector.
5 CHECK HARNESS BETWEEN ECM AND PURGE CONTROL SOLENOID VALVE 2 CONNECTOR. Measure the resistance of harness between ECM connector and purge control solenoid valve 2 connector. Connector & terminal (E159) No. 12 — (E52) No. 2:	Is the resistance less than 1 Ω ?	Go to step 6.	Repair the harness and connector. NOTE: In this case, repair the following item: <ul style="list-style-type: none"> • Open circuit of harness between ECM connector and purge control solenoid valve 2 connector • Poor contact of coupling connector
6 CHECK PURGE CONTROL SOLENOID VALVE 2. 1) Remove the purge control solenoid valve 2. 2) Measure the resistance between purge control solenoid valve 2 terminals. Terminals No. 1 — No. 2:	Is the resistance 10 — 100 Ω ?	Repair the poor contact of the purge control solenoid valve 2 connector.	Replace the purge control solenoid valve 2. <Ref. to EC(w/o STI)-22, Purge Control Solenoid Valve.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

EO:DTC P1459 CPC2 SOLENOID VALVE (CIRCUIT HIGH)

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-176, DTC P1459 CPC2 SOLENOID VALVE (CIRCUIT HIGH), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

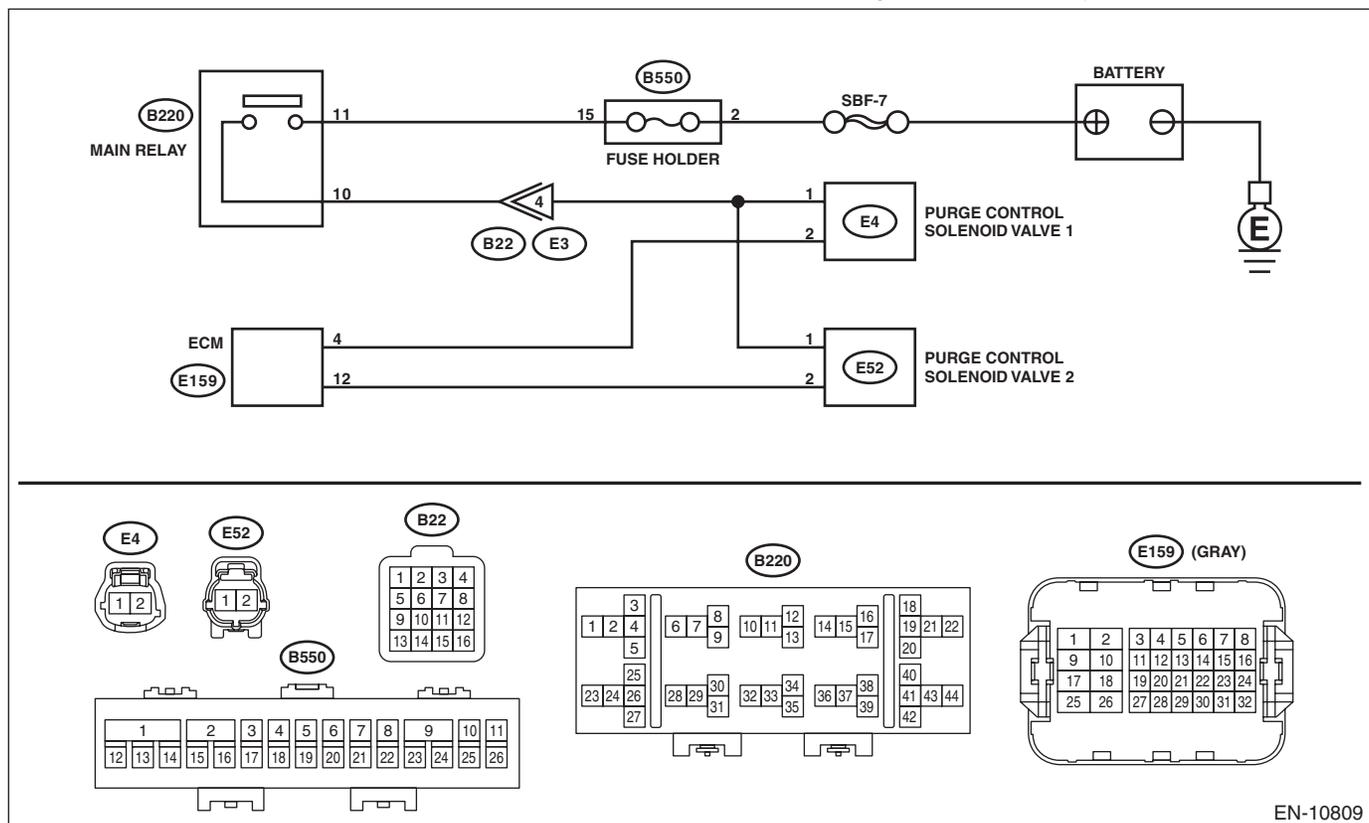
Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10809

Step	Check	Yes	No
<p>1</p> <p>CHECK HARNESS BETWEEN ECM AND PURGE CONTROL SOLENOID VALVE 2 CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connectors from ECM and purge control solenoid valve 2.</p> <p>3) Turn the ignition switch to ON.</p> <p>4) Measure the voltage between ECM connector and engine ground.</p> <p>Connector & terminal (E159) No. 12 (+) — Engine ground (-):</p>	<p>Is the voltage 10 V or more?</p>	<p>Repair the short circuit to power in harness between ECM connector and purge control solenoid valve 2 connector.</p>	<p>Go to step 2.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
2 CHECK PURGE CONTROL SOLENOID VALVE 2. 1) Turn the ignition switch to OFF. 2) Measure the resistance between purge control solenoid valve 2 terminals. <i>Terminals</i> <i>No. 1 — No. 2:</i>	Is the resistance less than 1 Ω ?	Replace the purge control solenoid valve 2. <Ref. to EC(w/o STI)-22, Purge Control Solenoid Valve.>	Repair the poor contact of ECM connector.

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

NOTE:

For the diagnostic procedure, refer to DTC P1498. <Ref. to EN(w/o STI)(diag)-330, DTC P1498 EGR SOLENOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (LOW INPUT), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

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

NOTE:

For the diagnostic procedure, refer to DTC P1499. <Ref. to EN(w/o STI)(diag)-332, DTC P1499 EGR SOLENOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (HIGH INPUT), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

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

NOTE:

For the diagnostic procedure, refer to DTC P1498. <Ref. to EN(w/o STI)(diag)-330, DTC P1498 EGR SOLENOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (LOW INPUT), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

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

NOTE:

For the diagnostic procedure, refer to DTC P1499. <Ref. to EN(w/o STI)(diag)-332, DTC P1499 EGR SOLENOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (HIGH INPUT), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

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

NOTE:

For the diagnostic procedure, refer to DTC P1498. <Ref. to EN(w/o STI)(diag)-330, DTC P1498 EGR SOLENOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (LOW INPUT), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

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

NOTE:

For the diagnostic procedure, refer to DTC P1499. <Ref. to EN(w/o STI)(diag)-332, DTC P1499 EGR SOLENOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (HIGH INPUT), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-178, DTC P1498 EGR SOLENOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (LOW INPUT), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

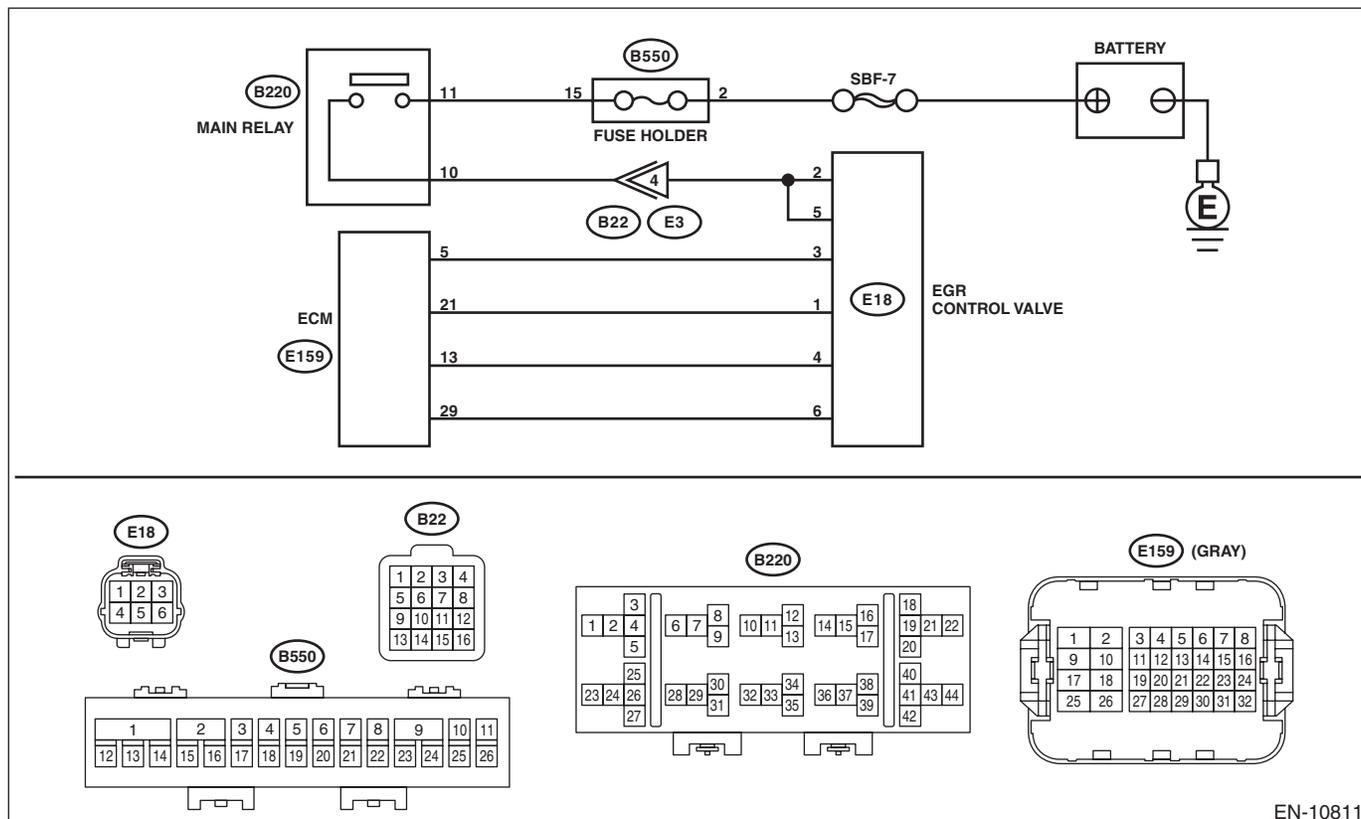
- Improper idling
- Poor driving performance
- Engine breathing

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10811

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1 CHECK POWER SUPPLY TO EGR CONTROL VALVE.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from the EGR control valve. 3) Turn the ignition switch to ON. 4) Measure the voltage between EGR control valve connector and engine ground.</p> <p>Connector & terminal (E18) No. 2 (+) — Engine ground (-): (E18) No. 5 (+) — Engine ground (-):</p>	Is the voltage 10 V or more?	Go to step 2.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between EGR control valve and main relay connector • Poor contact of coupling connector
<p>2 CHECK HARNESS BETWEEN ECM AND EGR CONTROL VALVE CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connector and EGR control valve connector.</p> <p>Connector & terminal DTC P1492; (E159) No. 5 — (E18) No. 3: DTC P1494; (E159) No. 21 — (E18) No. 1: DTC P1496; (E159) No. 13 — (E18) No. 4: DTC P1498; (E159) No. 29 — (E18) No. 6:</p>	Is the resistance less than 1 Ω?	Go to step 3.	Repair the open circuit of the harness between the ECM connector and EGR control valve connector.
<p>3 CHECK HARNESS BETWEEN ECM AND EGR CONTROL VALVE CONNECTOR.</p> <p>1) Disconnect the connector from ECM. 2) Measure the resistance between the ECM connector and engine ground.</p> <p>Connector & terminal DTC P1492; (E159) No. 5 — Engine ground: DTC P1494; (E159) No. 21 — Engine ground: DTC P1496; (E159) No. 13 — Engine ground: DTC P1498; (E159) No. 29 — Engine ground:</p>	Is the resistance 1 MΩ or more?	Go to step 4.	Repair ground short circuit of harness between ECM connector and EGR control valve connector.
<p>4 CHECK FOR POOR CONTACT.</p> <p>Check for poor contact between ECM connector and EGR control valve connector.</p>	Is there poor contact in ECM or EGR control valve connector?	Repair the poor contact of ECM or EGR control valve connector.	Replace EGR control valve. <Ref. to EC(w/o STI)-35, EGR Control Valve.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-179, DTC P1499 EGR SOLENOID VALVE SIGNAL #4 CIRCUIT MALFUNCTION (HIGH INPUT), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

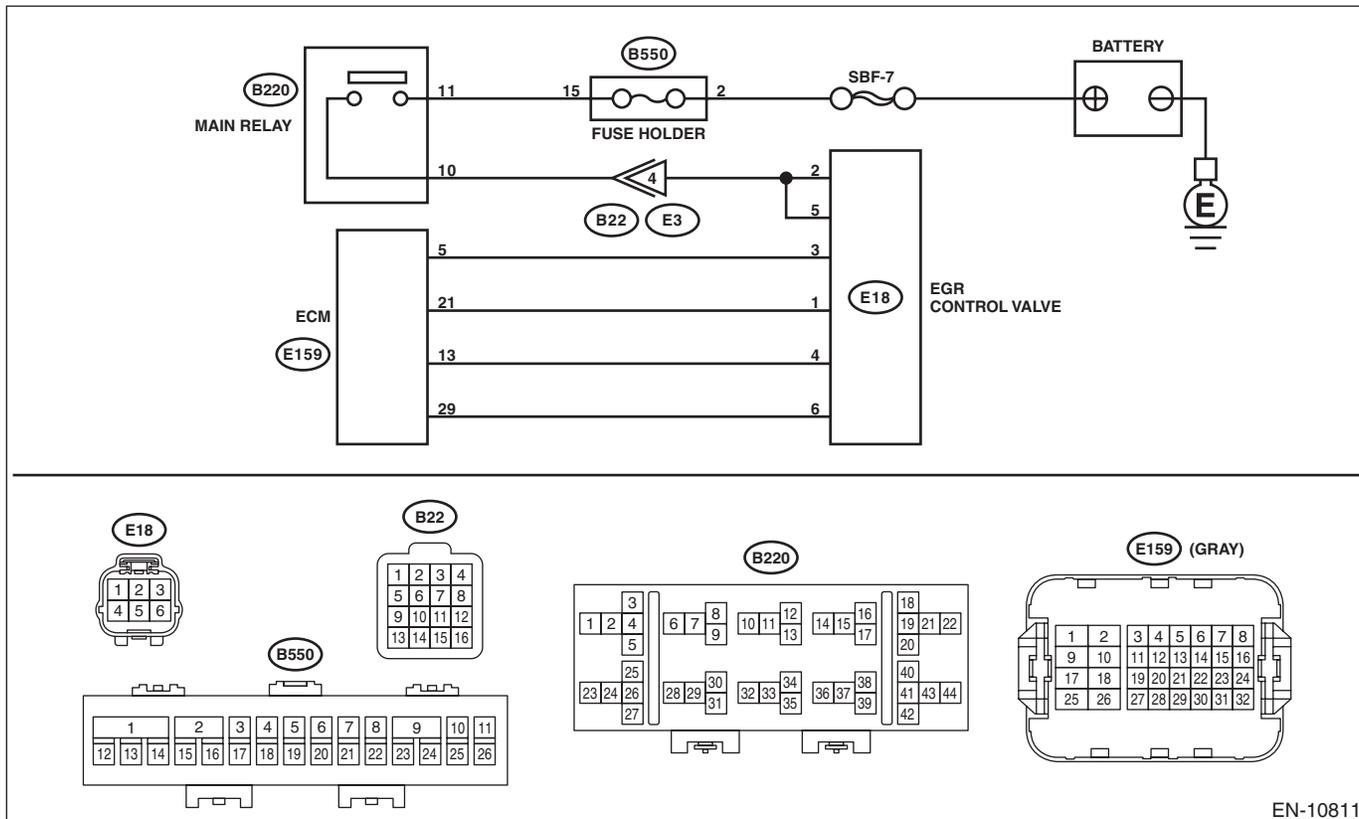
- Improper idling
- Poor driving performance
- Engine breathing

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10811

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	<p>CHECK HARNESS BETWEEN ECM AND EGR CONTROL VALVE CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and EGR control valve. 3) Turn the ignition switch to ON. 4) Measure the voltage between ECM connector and engine ground.</p> <p>Connector & terminal DTC P1493; (E159) No. 5 (+) — Engine ground (-): DTC P1495; (E159) No. 21 (+) — Engine ground (-): DTC P1497; (E159) No. 13 (+) — Engine ground (-): DTC P1499; (E159) No. 29 (+) — Engine ground (-):</p>	Is the voltage 10 V or more?	Repair the short circuit to power supply in the harness between the ECM connector and EGR control valve connector.	Go to step 2.
2	<p>CHECK EGR CONTROL VALVE.</p> <p>Measure the resistance between EGR control valve terminals.</p> <p>Terminals DTC P1493; No. 2 — No. 3: DTC P1495; No. 2 — No. 1: DTC P1497; No. 5 — No. 4: DTC P1499; No. 5 — No. 6:</p>	Is the resistance 20 Ω or more?	Repair the poor contact of ECM connector.	Replace EGR control valve. <Ref. to EC(w/o STI)-35, EGR Control Valve.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

EX:DTC P1603 ENGINE STALL HISTORY

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-180, DTC P1603 ENGINE STALL HISTORY, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode. <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>

NOTE:

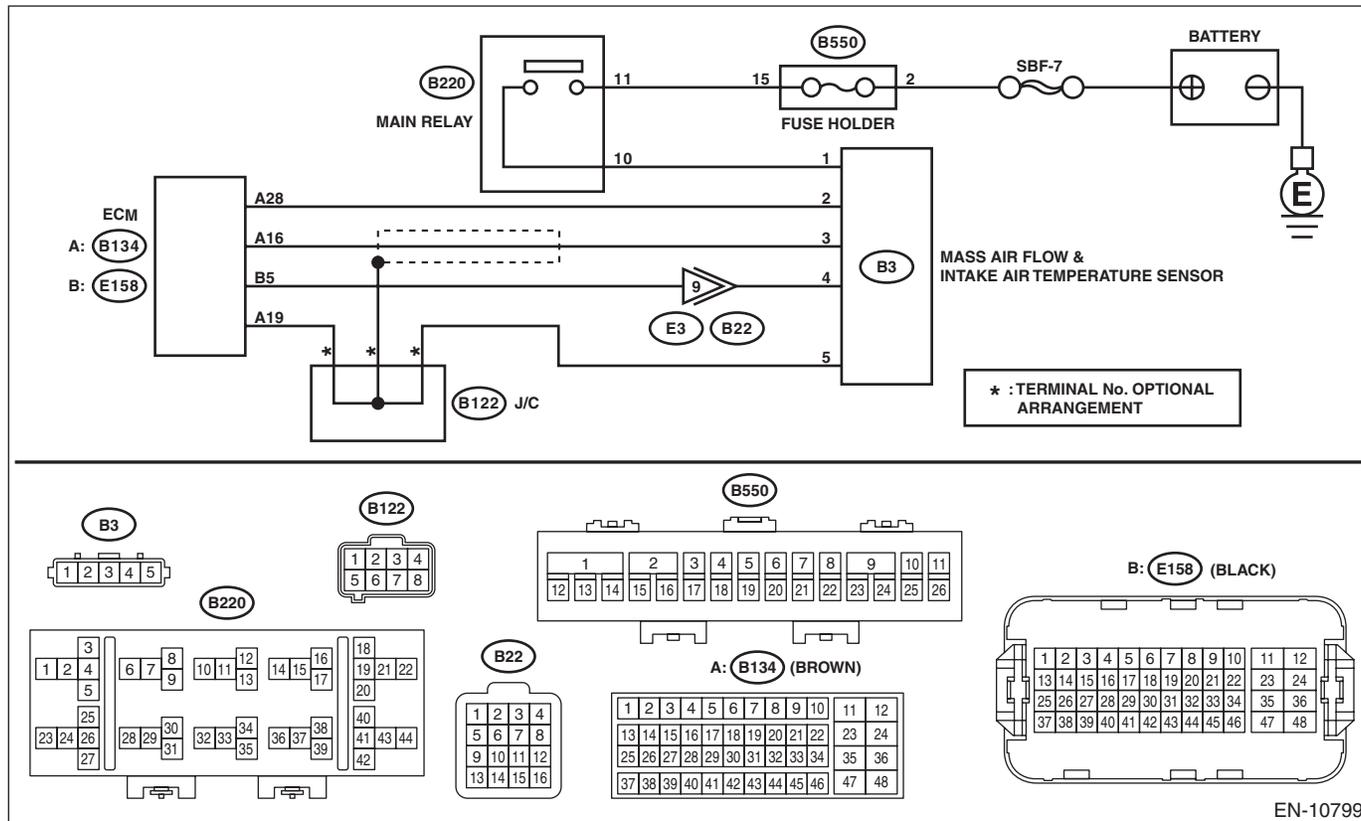
This DTC may be detected even if fault does not occur in the vehicle. If the customer does not ask for inspection, perform the clear memory mode without inspection and return the vehicle to the user.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

WIRING DIAGRAM:

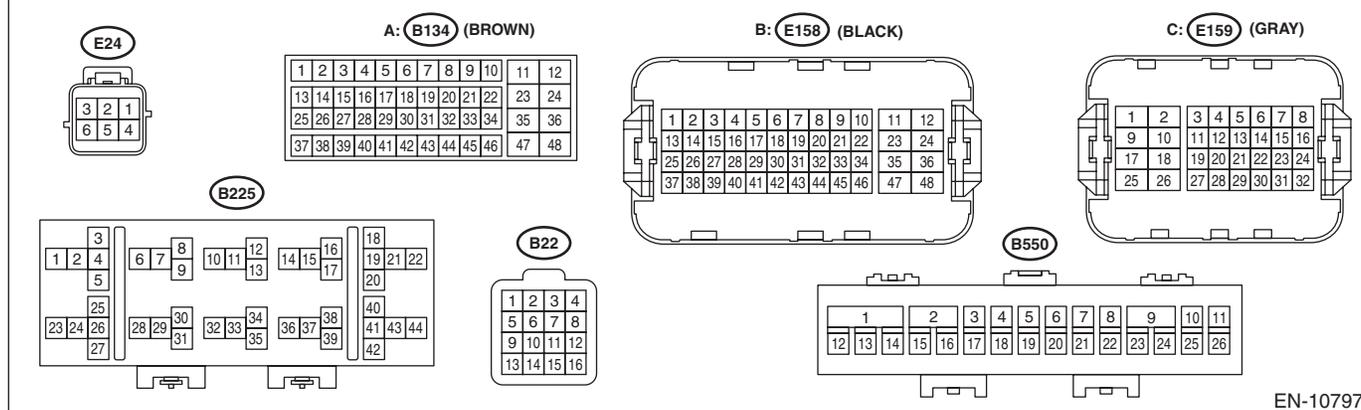
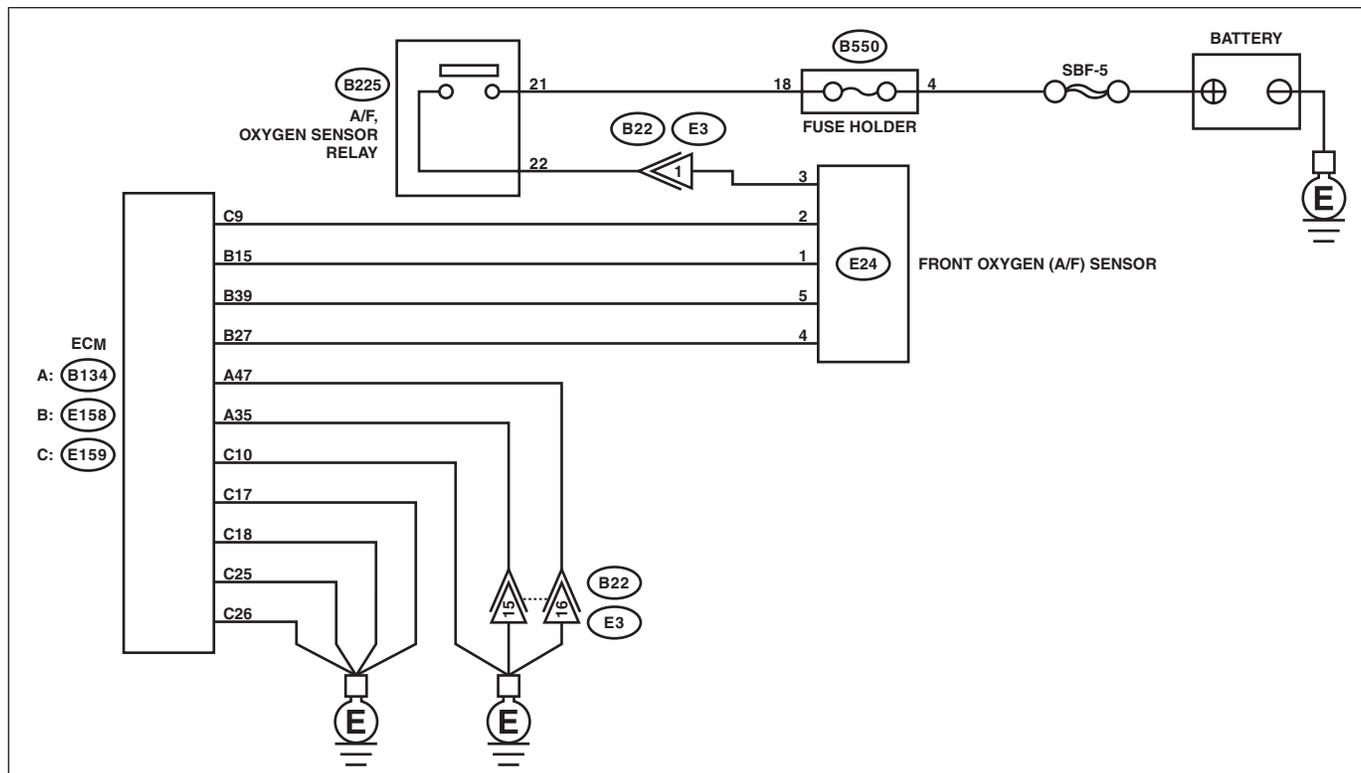
- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10799

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

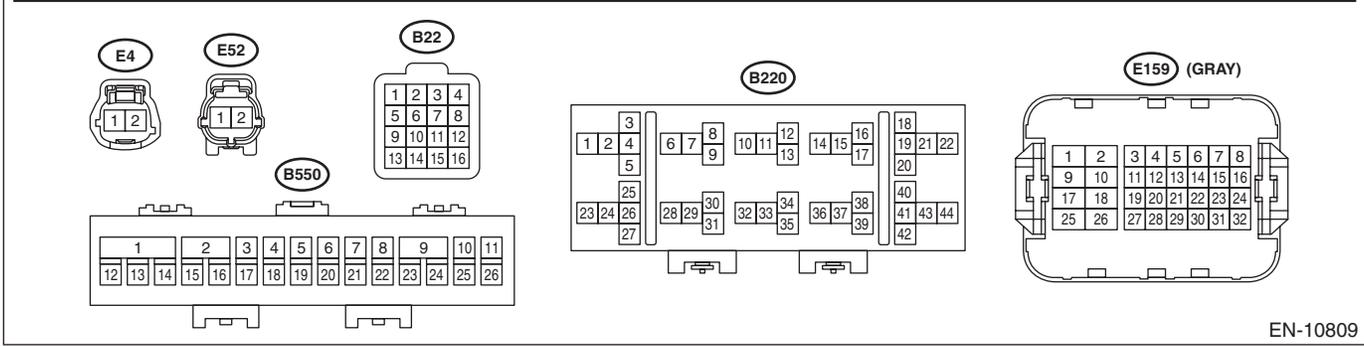
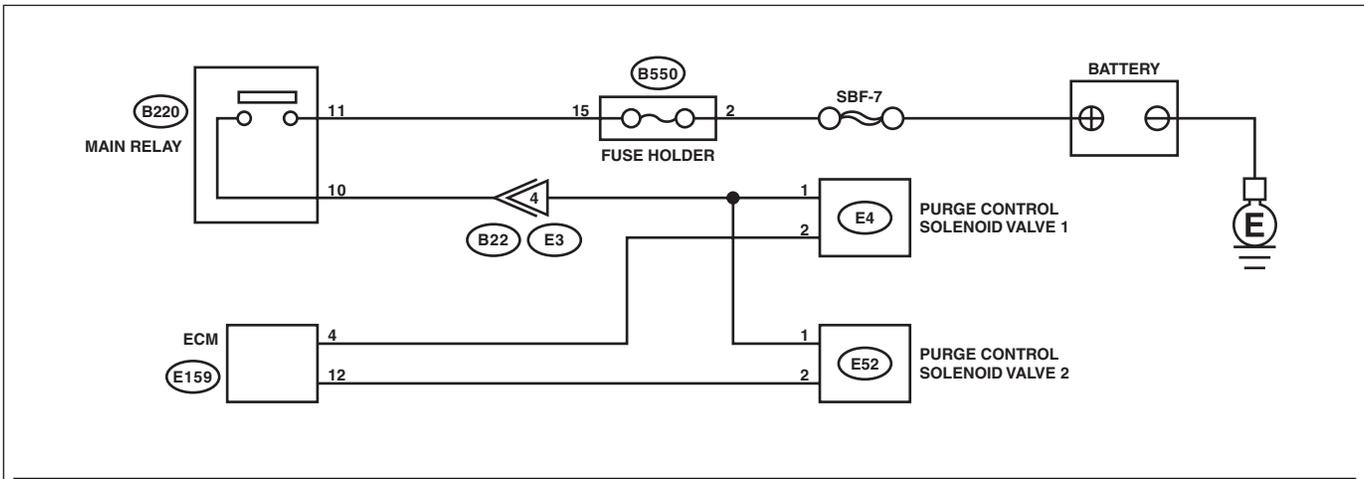
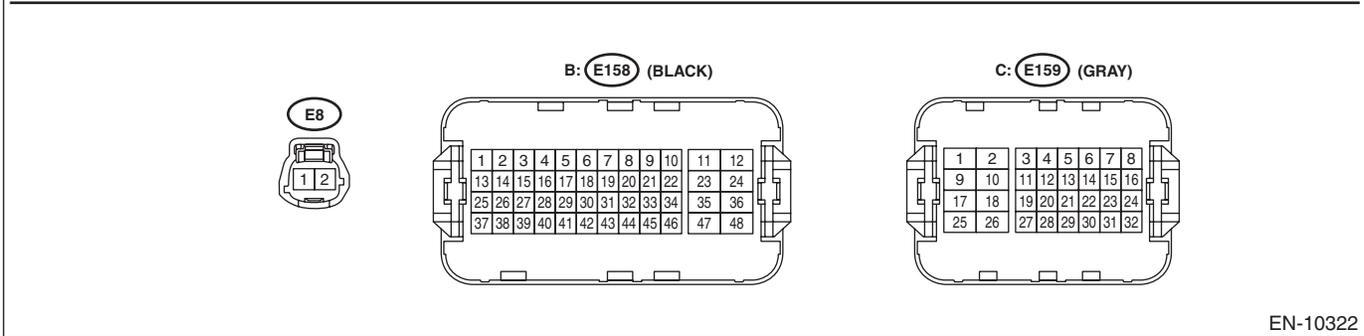
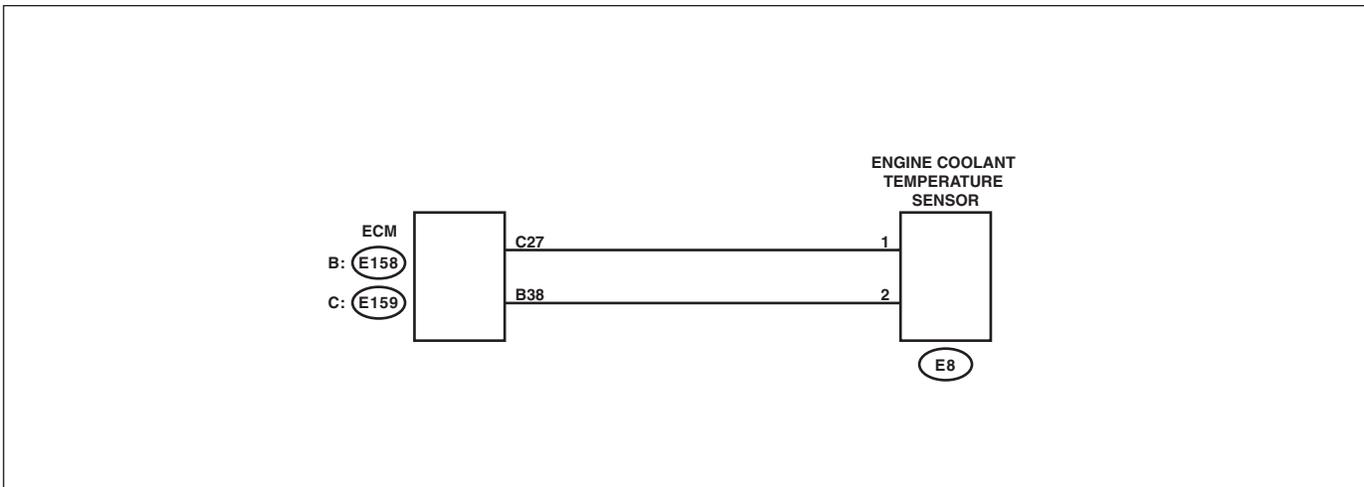
ENGINE (DIAGNOSTICS)



EN-10797

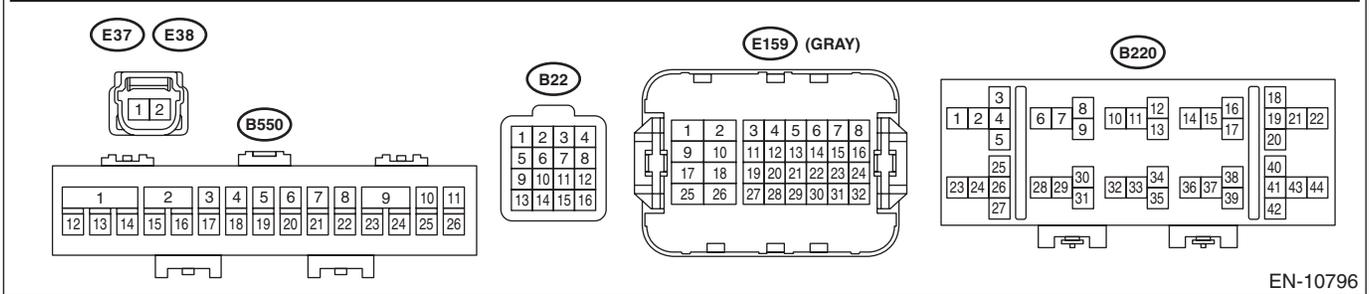
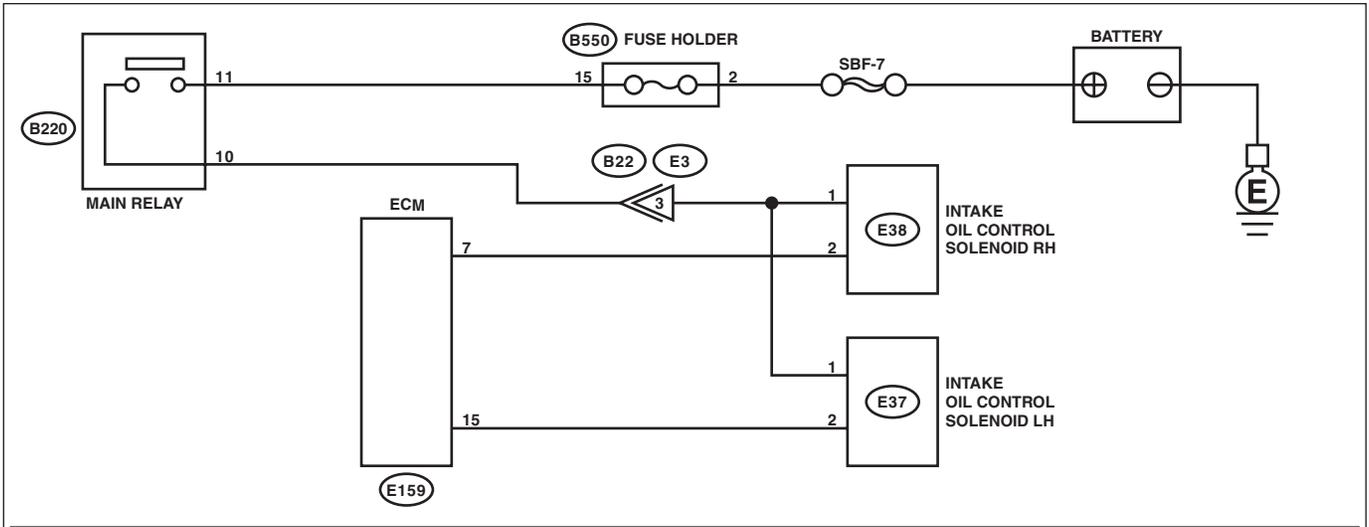
Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

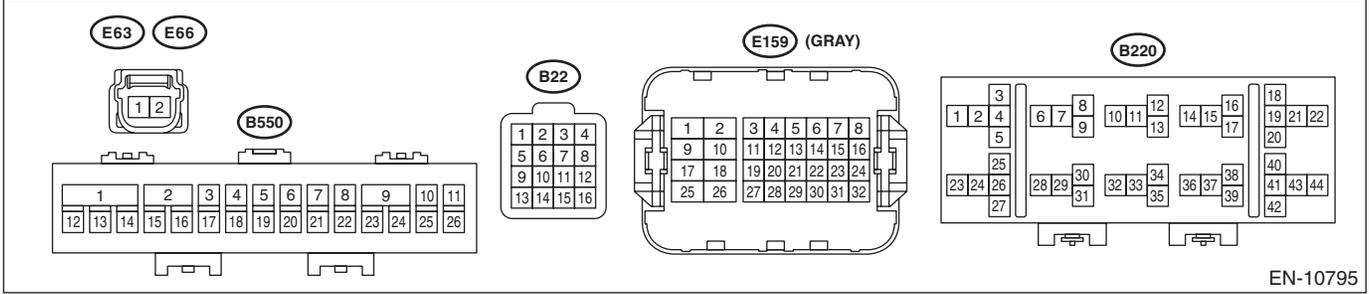
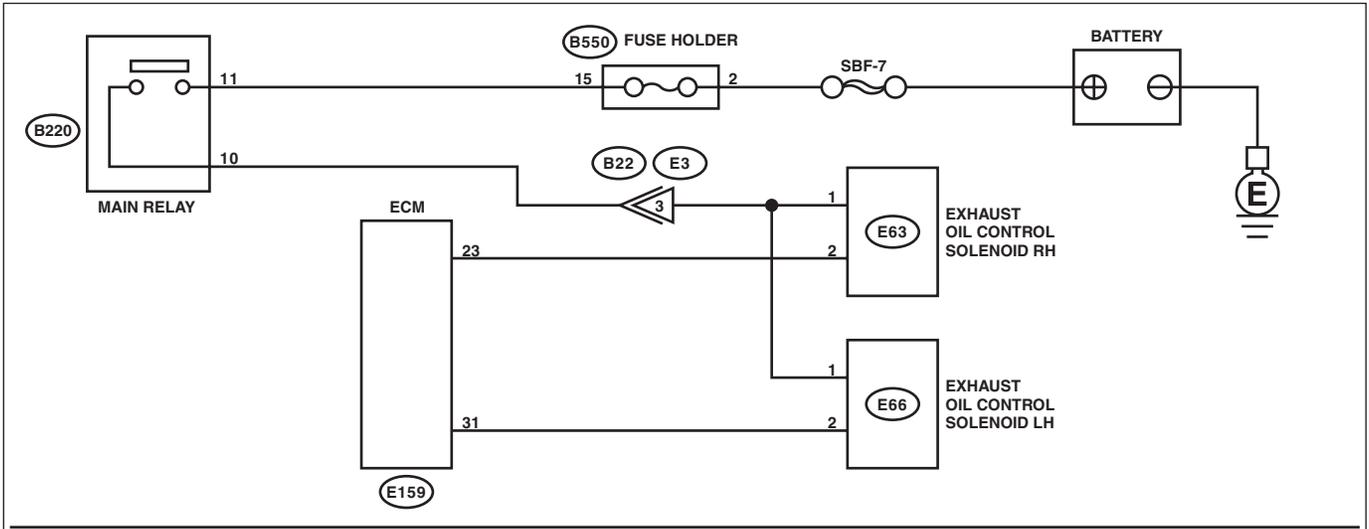


Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)



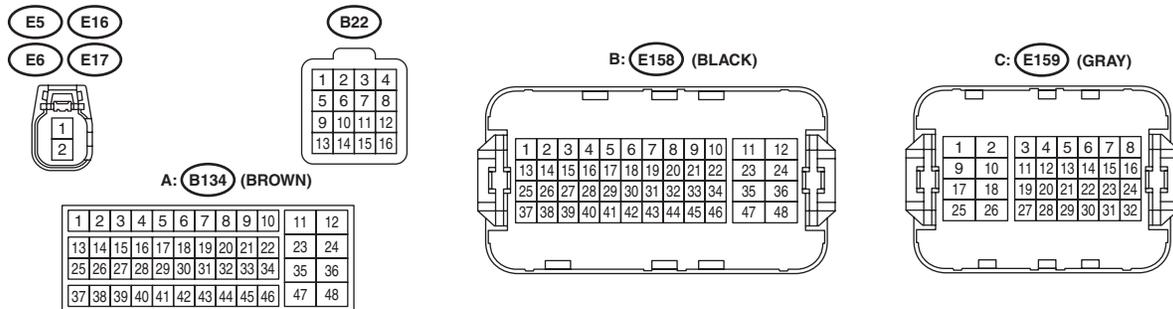
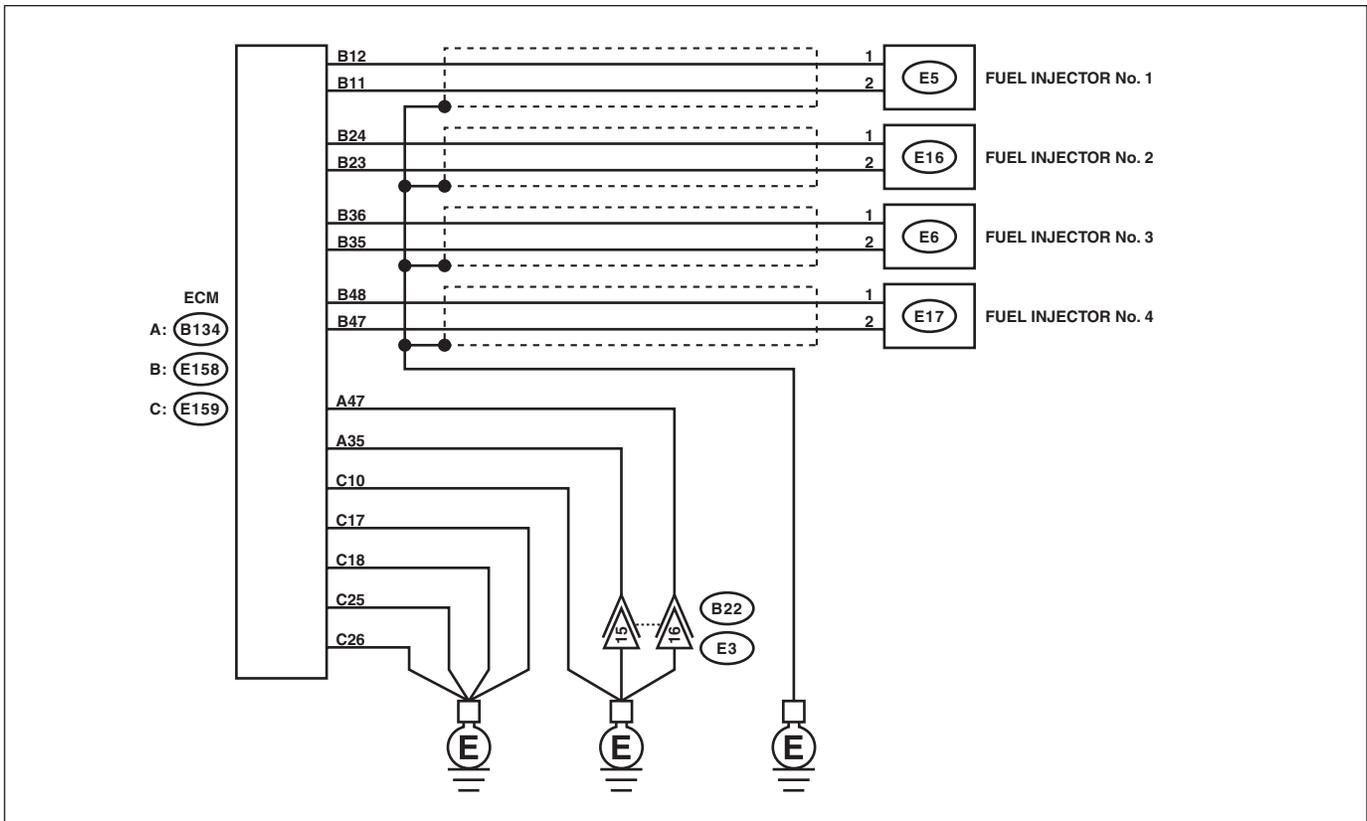
EN-10796



EN-10795

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)



EN-10794

Step	Check	Yes	No	
1	CHECK DTC.	Is any other DTC displayed?	Check DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2	CHECK FREEZE FRAME DATA. Using the Subaru Select Monitor, read the value in «Fuel Level». NOTE: For detailed operation procedures, refer to "Engine Freeze Frame Data Display". <Ref. to EN(w/o STI)(diag)-43, DISPLAY OF ENGINE FREEZE FRAME DATA, OPERATION, Subaru Select Monitor.>	Is the value of «Fuel Level» 16.4% or more?	Go to step 3.	Fuel may be run out. If the fault occurs after refueling, continue the diagnosis. Go to step 3.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
3 CHECK FREEZE FRAME DATA. Read the value of «Control module voltage» using Subaru Select Monitor. NOTE: For detailed operation procedures, refer to “Engine Freeze Frame Data Display”. <Ref. to EN(w/o STI)(diag)-43, DISPLAY OF ENGINE FREEZE FRAME DATA, OPERATION, Subaru Select Monitor.>	Is the value of «Control module voltage» 11 V or more?	Go to step 4.	Check the battery and generator. <Ref. to SC(w/o STI)-51, INSPECTION, Battery.> <Ref. to SC(w/o STI)-45, INSPECTION, Generator.>
4 CHECK FOR MALFUNCTION OCCURRENCE.	Did you ask the customer about the driving condition and engine speed status when the fault occurred?	<ul style="list-style-type: none"> The engine speed dropped slowly and then the engine stalled during idling or deceleration: Go to step 5. The engine speed dropped rapidly and then the engine stalled during idling or deceleration: Go to step 82. The engine stalled during standing start, acceleration, or constant speed driving: Go to step 89. 	Ask the customer about the driving condition and engine speed status when fault occurred.
5 CHECK FREEZE FRAME DATA. 1) Read the values of «Short term fuel trim B1» and «Long term fuel trim B1», using the Subaru Select Monitor. NOTE: For detailed operation procedures, refer to “Engine Freeze Frame Data Display”. <Ref. to EN(w/o STI)(diag)-43, DISPLAY OF ENGINE FREEZE FRAME DATA, OPERATION, Subaru Select Monitor.> 2) Obtain the sum values of «Short term fuel trim B1» and «Long term fuel trim B1» in each freeze frame data.	Is the sum value of «Short term fuel trim B1» and «Long term fuel trim B1» within $\pm 15\%$ in each freeze frame data?	Go to step 56.	<ul style="list-style-type: none"> More than 15% in each freeze frame data: Go to step 6. Less than -15% in any one of freeze frame data: Go to step 40.
6 CHECK AIR INTAKE SYSTEM. Check the installing condition of the air intake system.	Are there holes, loose bolts or disconnection of hose on air intake system?	Repair the air intake system. <Ref. to IN(w/o STI)-2, General Description.>	Go to step 7.
7 CHECK PURGE CONTROL SOLENOID VALVE. Check purge control solenoid valve 1 and purge control solenoid valve 2. <Ref. to EC(w/o STI)-29, INSPECTION, Purge Control Solenoid Valve.>	Are the purge control solenoid valve 1 and the purge control solenoid valve 2 normal?	Go to step 8.	Replace the faulty purge control solenoid valve. <Ref. to EC(w/o STI)-22, Purge Control Solenoid Valve.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
8 CHECK FREEZE FRAME DATA. Read the value of «Stop Light Switch» using Subaru Select Monitor. NOTE: For detailed operation procedures, refer to “Engine Freeze Frame Data Display”. <Ref. to EN(w/o STI)(diag)-43, DISPLAY OF ENGINE FREEZE FRAME DATA, OPERATION, Subaru Select Monitor.>	Does the value of «Stop Light Switch» indicate OFF in all freeze frame data?	Go to step 11.	Go to step 9.
9 CHECK CURRENT DATA. 1) Start the engine and warm up completely. 2) Read the value of «Short term fuel trim B1» both when the brake pedal is released and depressed using Subaru Select Monitor. NOTE: For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, DISPLAY CURRENT ENGINE DATA, OPERATION, Subaru Select Monitor.>	Does the value of «Short term fuel trim B1» with the brake pedal depressed increase by 10% or more compared to when the pedal is released?	Replace the brake booster. <Ref. to BR-55, Brake Booster.>	Go to step 10.
10 CHECK CURRENT DATA. 1) Start the engine and warm up completely. 2) While reproducing the faulty condition of the vehicle, read the values of «Short term fuel trim B1» and «Long term fuel trim B1» using the Subaru Select Monitor. NOTE: For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, DISPLAY CURRENT ENGINE DATA, OPERATION, Subaru Select Monitor.> 3) Obtain the sum values of «Short term fuel trim B1» and «Long term fuel trim B1».	Is the sum value of «Short term fuel trim B1» and «Long term fuel trim B1» within $\pm 15\%$?	Go to step 11.	Replace the brake booster. <Ref. to BR-55, Brake Booster.>
11 CHECK IGNITION SYSTEM. Check the ignition system. <Ref. to EN(w/o STI)(diag)-80, IGNITION CONTROL SYSTEM, Diagnostics for Engine Starting Failure.>	Is the ignition system normal?	Go to step 12.	Repair the ignition system. <Ref. to IG(w/o STI)-2, General Description.>
12 CHECK FREEZE FRAME DATA. Read the value of «A/F Sensor #1» using the Subaru Select Monitor. NOTE: For detailed operation procedures, refer to “Engine Freeze Frame Data Display”. <Ref. to EN(w/o STI)(diag)-43, DISPLAY OF ENGINE FREEZE FRAME DATA, OPERATION, Subaru Select Monitor.>	Is the value of «A/F Sensor #1» 1.00 or more?	Go to step 17.	Go to step 13.
13 CHECK MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR. Check the mass air flow and intake air temperature sensor. <Ref. to FU(w/o STI)-118, INSPECTION, Mass Air Flow and Intake Air Temperature Sensor.>	Is the mass air flow and intake air temperature sensor normal?	Go to step 14.	Replace the mass air flow and intake air temperature sensor. <Ref. to FU(w/o STI)-118, Mass Air Flow and Intake Air Temperature Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
14 CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and the mass air flow and intake air temperature sensor. 3) Measure the resistance of harness between ECM connector and the mass air flow and intake air temperature sensor connector. Connector & terminal (B134) No. 16 — (B3) No. 3: (B134) No. 28 — (B3) No. 2:	Is the resistance less than 1 Ω ?	Go to step 15.	Repair the open circuit of harness between ECM connector and the mass air flow and intake air temperature sensor connector.
15 CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR CONNECTOR. Measure the resistance between the ECM connector and engine ground. Connector & terminal (B134) No. 16 — Engine ground: (B134) No. 28 — Engine ground:	Is the resistance 1 M Ω or more?	Go to step 16.	Repair the ground short circuit of harness between ECM connector and the mass air flow and intake air temperature sensor connector.
16 CHECK CURRENT DATA. 1) Start the engine and warm up completely. 2) Using the Subaru Select Monitor, read the value of «Calculated load value», then compare it with that of «Calculated load value» listed in «Engine Current Data Display». <Ref. to EN(w/o STI)(diag)-37, DISPLAY CURRENT ENGINE DATA, OPERATION, Subaru Select Monitor.> NOTE: <ul style="list-style-type: none"> The value of «Calculated load value» change depending on how the engine internal parts settle in. If the value is out of standard, judge it again by comparing the vehicle with another one with the same specifications and similar conditions such as travel distance. For detailed operation procedures, refer to «Current Data Display For Engine». <Ref. to EN(w/o STI)(diag)-37, DISPLAY CURRENT ENGINE DATA, OPERATION, Subaru Select Monitor.> 	Does the value of «Calculated load value» falls between 90 — 110% of the value described in the list?	Go to step 21.	Replace the mass air flow and intake air temperature sensor. <Ref. to FU(w/o STI)-118, Mass Air Flow and Intake Air Temperature Sensor.>
17 CHECK FRONT OXYGEN (A/F) SENSOR DATA. 1) Start the engine and warm up completely. 2) Raise the engine speed up to 2,500 rpm and maintain it for approx. three minutes. 3) Release the accelerator pedal and idle the engine. 4) Using «Injection Quantity Control» in «System Operation Check Mode», read the value of «A/F Sensor #1» at the increase rate of both 12% and -12%. NOTE: <ul style="list-style-type: none"> Perform the operation immediately after the engine comes into idling condition, otherwise the front oxygen (A/F) sensor will be cooled. For detailed procedures, refer to «System Operation Check Mode». <Ref. to EN(w/o STI)(diag)-62, System Operation Check Mode.> 	Does the value of «A/F Sensor #1» change to less than 0.88 at the increase rate of 12%, and to 1.12 or more at the rate of -12%?	Go to step 21.	Go to step 18.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>18 CHECK POWER SUPPLY TO FRONT OXYGEN (A/F) SENSOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connectors 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.</p> <p>Connector & terminal (E24) No. 3 (+) — Engine ground (-):</p>	Is the voltage 10 V or more?	Go to step 19.	Repair the power supply line. NOTE: In this case, repair the following item: <ul style="list-style-type: none"> • Open circuit in harness between A/F, oxygen sensor relay and front oxygen (A/F) sensor connector • Poor contact of A/F, oxygen sensor relay connector • Poor contact of coupling connector • Malfunction of A/F, oxygen sensor relay
<p>19 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM connector and front oxygen (A/F) sensor connector.</p> <p>Connector & terminal (E158) No. 15 — (E24) No. 1: (E158) No. 27 — (E24) No. 4: (E158) No. 39 — (E24) No. 5: (E159) No. 9 — (E24) No. 2:</p>	Is the resistance less than 1 Ω?	Go to step 20.	Repair the open circuit of harness between ECM connector and front oxygen (A/F) sensor connector.
<p>20 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.</p> <p>Measure the resistance between the ECM connector and engine ground.</p> <p>Connector & terminal (E158) No. 15 — Engine ground: (E158) No. 27 — Engine ground: (E158) No. 39 — Engine ground: (E159) No. 9 — Engine ground:</p>	Is the resistance 1 MΩ or more?	Go to step 21.	Repair the short circuit to ground in harness between ECM connector and front oxygen (A/F) sensor connector.
<p>21 CHECK FREEZE FRAME DATA.</p> <p>Using the Subaru Select Monitor, read the values in «Coolant Temp.» and «Ambient Temperature».</p> <p>NOTE: For detailed operation procedures, refer to “Engine Freeze Frame Data Display”. <Ref. to EN(w/o STI)(diag)-43, DISPLAY OF ENGINE FREEZE FRAME DATA, OPERATION, Subaru Select Monitor.></p>	Is the value of «Coolant Temp.» 120°C (248°F) or more? Or, is the value of «Coolant Temp.» lower than «Ambient Temperature» by 15°C (27°F) or more?	Go to step 22.	Go to step 25.
<p>22 CHECK ENGINE COOLANT TEMPERATURE SENSOR.</p> <p>Check the engine coolant temperature sensor. <Ref. to FU(w/o STI)-94, INSPECTION, Engine Coolant Temperature Sensor.></p>	Is the engine coolant temperature sensor normal?	Go to step 23.	Replace the engine coolant temperature sensor. <Ref. to FU(w/o STI)-93, Engine Coolant Temperature Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
23 CHECK HARNESS BETWEEN ECM AND ENGINE COOLANT TEMPERATURE SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and engine coolant temperature sensor. 3) Measure the resistance of harness between ECM connector and engine coolant temperature sensor connector. <i>Connector & terminal</i> <i>(E159) No. 27 — (E8) No. 1:</i> <i>(E158) No. 38 — (E8) No. 2:</i>	Is the resistance less than 1 Ω?	Go to step 24.	Repair the open circuit of the harness between the ECM connector and engine coolant temperature sensor connector.
24 CHECK HARNESS BETWEEN ECM AND ENGINE COOLANT TEMPERATURE SENSOR CONNECTOR. Measure the resistance between the ECM connector and engine ground. <i>Connector & terminal</i> <i>(E158) No. 38 — Engine ground:</i> <i>(E159) No. 27 — Engine ground:</i>	Is the resistance 1 MΩ or more?	Go to step 25.	Repair the short circuit to ground in harness between ECM connector and engine coolant temperature sensor connector.
25 CHECK FREEZE FRAME DATA. Using the Subaru Select Monitor, read the value in «Evap Purge Flow». NOTE: For detailed operation procedures, refer to “Engine Freeze Frame Data Display”. <Ref. to EN(w/o STI)(diag)-43, DISPLAY OF ENGINE FREEZE FRAME DATA, OPERATION, Subaru Select Monitor.>	Is the value of «Evap Purge Flow» 0% in all freeze frame data?	Go to step 35.	Go to step 26.
26 CHECK PURGE CONTROL SOLENOID VALVE 1. 1) Select «CPC Solenoid Valve» from “Actuator ON/OFF Operation” in “System Operation Check Mode”. NOTE: For detailed procedures, refer to “System Operation Check Mode”. <Ref. to EN(w/o STI)(diag)-62, System Operation Check Mode.> 2) Check if the ventilation changes according to ON/OFF switching operation.	Does the ventilation of purge control solenoid valve 1 change correctly?	Go to step 30.	Go to step 27.
27 CHECK POWER SUPPLY TO PURGE CONTROL SOLENOID VALVE 1 CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from purge control solenoid valve 1. 3) Turn the ignition switch to ON. 4) Measure the voltage between purge control solenoid valve 1 connector and engine ground. <i>Connector & terminal</i> <i>(E4) No. 1 (+) — Engine ground (-):</i>	Is the voltage 10 V or more?	Go to step 28.	Repair the power supply circuit.
28 CHECK HARNESS BETWEEN ECM AND PURGE CONTROL SOLENOID VALVE 1 CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM connector and purge control solenoid valve 1 connector. <i>Connector & terminal</i> <i>(E159) No. 4 — (E4) No. 2:</i>	Is the resistance less than 1 Ω?	Go to step 29.	Repair the open circuit in harness between ECM connector and purge control solenoid valve 1 connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
29 CHECK HARNESS BETWEEN ECM AND PURGE CONTROL SOLENOID VALVE 1 CONNECTOR. Measure the resistance between the purge control solenoid valve 1 connector and engine ground. <i>Connector & terminal</i> <i>(E4) No. 2 — Engine ground:</i>	Is the resistance 1 M Ω or more?	Go to step 30.	Repair the ground short circuit of harness between ECM connector and purge control solenoid valve 1 connector.
30 CHECK PURGE CONTROL SOLENOID VALVE 2. 1) Connect all connectors. 2) Select «CPC Solenoid 2» from “Actuator ON/OFF Operation” in “System Operation Check Mode”. NOTE: For detailed procedures, refer to “System Operation Check Mode”. <Ref. to EN(w/o STI)(diag)-62, System Operation Check Mode.> 3) Check if the ventilation changes according to ON/OFF switching operation.	Does the ventilation of purge control solenoid valve 2 change correctly?	Go to step 35.	Go to step 31.
31 CHECK POWER SUPPLY TO PURGE CONTROL SOLENOID VALVE 2 CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from purge control solenoid valve 2. 3) Turn the ignition switch to ON. 4) Measure the voltage between purge control solenoid valve 2 connector and engine ground. <i>Connector & terminal</i> <i>(E52) No. 1 (+) — Engine ground (-):</i>	Is the voltage 10 V or more?	Go to step 32.	Repair the power supply circuit.
32 CHECK HARNESS BETWEEN ECM AND PURGE CONTROL SOLENOID VALVE 2 CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM connector and purge control solenoid valve 2 connector. <i>Connector & terminal</i> <i>(E159) No. 12 — (E52) No. 2:</i>	Is the resistance less than 1 Ω ?	Go to step 33.	Repair the open circuit in harness between ECM connector and purge control solenoid valve 2 connector.
33 CHECK HARNESS BETWEEN ECM AND PURGE CONTROL SOLENOID VALVE 2 CONNECTOR. Measure the resistance between the purge control solenoid valve 2 connector and engine ground. <i>Connector & terminal</i> <i>(E52) No. 2 — Engine ground:</i>	Is the resistance 1 M Ω or more?	Go to step 34.	Repair the ground short circuit of harness between ECM connector and purge control solenoid valve 2 connector.
34 CHECK FOR POOR CONTACT. Check for poor contact of ECM connector.	Is there poor contact of ECM connector?	Repair the poor contact of ECM connector.	Replace the ECM. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
35 CHECK OF FUEL PUMP. 1) Select «Fuel Pump» from “Actuator ON/OFF Operation” in “System Operation Check Mode”. NOTE: For detailed procedures, refer to “System Operation Check Mode”. <Ref. to EN(w/o STI)(diag)-62, System Operation Check Mode.> 2) Check if operating sound occurs in the fuel pump according to ON/OFF switching operation.	Does the fuel pump emit operating sound?	Go to step 37.	Go to step 36.
36 CHECK OF FUEL PUMP. Check fuel pump. <Ref. to FU(w/o STI)-172, INSPECTION, Fuel Pump.>	Is the fuel pump normal?	Check fuel pump system. <Ref. to EN(w/o STI)(diag)-209, DTC P0230 FUEL PUMP PRIMARY CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>	Replace the fuel pump. <Ref. to FU(w/o STI)-168, Fuel Pump.>
37 CHECK FUEL TANK. Check if any foreign matters such as iron powder exist in the fuel tank.	Is there any foreign matter in the fuel tank?	Remove foreign matter from the fuel tank.	Go to step 38.
38 CHECK FUEL PRESSURE. WARNING: Place “NO OPEN FLAMES” signs near the working area. CAUTION: Be careful not to spill fuel. Measure the fuel pressure. <Ref. to ME(w/o STI)-31, INSPECTION, Fuel Pressure.> CAUTION: Release fuel pressure before removing the fuel pressure gauge.	Is the measured value 340 — 400 kPa (3.5 — 4.1 kgf/cm ² , 49 — 58 psi)?	Go to step 39.	Check the fuel pump and fuel delivery line. <Ref. to FU(w/o STI)-172, INSPECTION, Fuel Pump.> <Ref. to FU(w/o STI)-201, INSPECTION, Fuel Delivery and Evaporation Lines.>
39 CHECK FREEZE FRAME DATA. Using the Subaru Select Monitor, read the values in «Fuel Rail Pressure A» and «Commanded Fuel Rail Pressure A». NOTE: For detailed operation procedures, refer to “Engine Freeze Frame Data Display”. <Ref. to EN(w/o STI)(diag)-43, DISPLAY OF ENGINE FREEZE FRAME DATA, OPERATION, Subaru Select Monitor.>	Is the value in «Fuel Rail Pressure A» synchronized with the one in «Commanded Fuel Rail Pressure A» in all freeze frame data?	Perform the Clear Memory Mode to complete. <Ref. to EN(w/o STI)(diag)-61, Clear Memory Mode.>	Check the high-pressure fuel pump. <Ref. to FU(w/o STI)-82, INSPECTION, High Pressure Fuel Pump.>
40 CHECK IGNITION SYSTEM. Check the ignition system. <Ref. to EN(w/o STI)(diag)-80, IGNITION CONTROL SYSTEM, Diagnostics for Engine Starting Failure.>	Is the ignition system normal?	Go to step 41.	Repair the ignition system. <Ref. to IG(w/o STI)-2, General Description.>

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ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>41 CHECK FREEZE FRAME DATA. Using the Subaru Select Monitor, read the value of «Calculated load value», then compare it with that of «Calculated load value» listed in “Engine Current Data Display”. <Ref. to EN(w/o STI)(diag)-37, DISPLAY CURRENT ENGINE DATA, OPERATION, Subaru Select Monitor.> NOTE: • The value of «Calculated load value» change depending on how the engine internal parts settle in. If the value is out of standard, judge it again by comparing the vehicle with another one with the same specifications and similar conditions such as travel distance. • For detailed operation procedures, refer to “Engine Freeze Frame Data Display”. <Ref. to EN(w/o STI)(diag)-43, DISPLAY OF ENGINE FREEZE FRAME DATA, OPERATION, Subaru Select Monitor.></p>	Is the value of «Calculated load value» 110% or more of the value described in the list?	Go to step 43.	Go to step 42.
<p>42 CHECK FREEZE FRAME DATA. Read the value of «A/F Sensor #1» using the Subaru Select Monitor. NOTE: For detailed operation procedures, refer to “Engine Freeze Frame Data Display”. <Ref. to EN(w/o STI)(diag)-43, DISPLAY OF ENGINE FREEZE FRAME DATA, OPERATION, Subaru Select Monitor.></p>	Is the value of «A/F Sensor #1» less than 1.00?	Go to step 47.	Go to step 52.
<p>43 CHECK MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR. Check the mass air flow and intake air temperature sensor. <Ref. to FU(w/o STI)-118, INSPECTION, Mass Air Flow and Intake Air Temperature Sensor.></p>	Is the mass air flow and intake air temperature sensor normal?	Go to step 44.	Replace the mass air flow and intake air temperature sensor. <Ref. to FU(w/o STI)-118, Mass Air Flow and Intake Air Temperature Sensor.>
<p>44 CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and the mass air flow and intake air temperature sensor. 3) Measure the resistance of harness between ECM connector and the mass air flow and intake air temperature sensor connector. Connector & terminal (B134) No. 16 — (B3) No. 3: (B134) No. 28 — (B3) No. 2:</p>	Is the resistance less than 1 Ω?	Go to step 45.	Repair the open circuit of harness between ECM connector and the mass air flow and intake air temperature sensor connector.
<p>45 CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR CONNECTOR. Measure the resistance between the ECM connector and engine ground. Connector & terminal (B134) No. 16 — Engine ground: (B134) No. 28 — Engine ground:</p>	Is the resistance 1 MΩ or more?	Go to step 46.	Repair the ground short circuit of harness between ECM connector and the mass air flow and intake air temperature sensor connector.

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ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>46 CHECK CURRENT DATA. 1) Start the engine and warm up completely. 2) Using the Subaru Select Monitor, read the value of «Calculated load value», then compare it with that of «Calculated load value» listed in “Engine Current Data Display”. <Ref. to EN(w/o STI)(diag)-37, DISPLAY CURRENT ENGINE DATA, OPERATION, Subaru Select Monitor.> NOTE: • The value of «Calculated load value» change depending on how the engine internal parts settle in. If the value is out of standard, judge it again by comparing the vehicle with another one with the same specifications and similar conditions such as travel distance. • For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, DISPLAY CURRENT ENGINE DATA, OPERATION, Subaru Select Monitor.></p>	<p>Does the value of «Calculated load value» falls between 90 — 110% of the value described in the list?</p>	<p>Go to step 47.</p>	<p>Replace the mass air flow and intake air temperature sensor. <Ref. to FU(w/o STI)-118, Mass Air Flow and Intake Air Temperature Sensor.></p>
<p>47 CHECK CURRENT DATA. 1) Start the engine and warm up completely. 2) Raise the engine speed up to 2,500 rpm and maintain it for approx. three minutes. 3) Release the accelerator pedal and idle the engine. 4) Using «Injection Quantity Control» in «System Operation Check Mode», read the value of «A/F Sensor #1» at the increase rate of both 12% and -12%. NOTE: • Perform the operation immediately after the engine comes into idling condition, otherwise the front oxygen (A/F) sensor will be cooled. • For detailed procedures, refer to “System Operation Check Mode”. <Ref. to EN(w/o STI)(diag)-62, System Operation Check Mode.></p>	<p>Does the value of «A/F Sensor #1» change to less than 0.88 at the increase rate of 12%, and to 1.12 or more at the rate of -12%?</p>	<p>Go to step 52.</p>	<p>Go to step 48.</p>
<p>48 CHECK FREEZE FRAME DATA. Read the value of «A/F Sensor #1 Resistance» using the Subaru Select Monitor. NOTE: For detailed operation procedures, refer to “Engine Freeze Frame Data Display”. <Ref. to EN(w/o STI)(diag)-43, DISPLAY OF ENGINE FREEZE FRAME DATA, OPERATION, Subaru Select Monitor.></p>	<p>Is the value of «A/F Sensor #1 Resistance» 500 Ω or more?</p>	<p>Replace the front oxygen (A/F) sensor. <Ref. to FU(w/o STI)-126, Front Oxygen (A/F) Sensor.></p>	<p>Go to step 49.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>49 CHECK POWER SUPPLY TO FRONT OXYGEN (A/F) SENSOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connectors 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.</p> <p>Connector & terminal (E24) No. 3 (+) — Engine ground (-):</p>	Is the voltage 10 V or more?	Go to step 50.	Repair the power supply line. NOTE: In this case, repair the following item: <ul style="list-style-type: none"> • Open circuit in harness between A/F, oxygen sensor relay and front oxygen (A/F) sensor connector • Poor contact of A/F, oxygen sensor relay connector • Poor contact of coupling connector • Malfunction of A/F, oxygen sensor relay
<p>50 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM connector and front oxygen (A/F) sensor connector.</p> <p>Connector & terminal (E158) No. 15 — (E24) No. 1: (E158) No. 27 — (E24) No. 4: (E158) No. 39 — (E24) No. 5: (E159) No. 9 — (E24) No. 2:</p>	Is the resistance less than 1 Ω?	Go to step 51.	Repair the open circuit of harness between ECM connector and front oxygen (A/F) sensor connector.
<p>51 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.</p> <p>Measure the resistance between the ECM connector and engine ground.</p> <p>Connector & terminal (E158) No. 15 — Engine ground: (E158) No. 27 — Engine ground: (E158) No. 39 — Engine ground: (E159) No. 9 — Engine ground:</p>	Is the resistance 1 MΩ or more?	Go to step 52.	Repair the short circuit to ground in harness between ECM connector and front oxygen (A/F) sensor connector.
<p>52 CHECK FREEZE FRAME DATA.</p> <p>Using the Subaru Select Monitor, read the values in «Coolant Temp.» and «Ambient Temperature».</p> <p>NOTE: For detailed operation procedures, refer to “Engine Freeze Frame Data Display”. <Ref. to EN(w/o STI)(diag)-43, DISPLAY OF ENGINE FREEZE FRAME DATA, OPERATION, Subaru Select Monitor.></p>	Is the value of «Coolant Temp.» 120°C (248°F) or more? Or, is the value of «Coolant Temp.» lower than «Ambient Temperature» by 15°C (27°F) or more?	Go to step 53.	Perform the Clear Memory Mode to complete. <Ref. to EN(w/o STI)(diag)-61, Clear Memory Mode.>
<p>53 CHECK ENGINE COOLANT TEMPERATURE SENSOR.</p> <p>Check the engine coolant temperature sensor. <Ref. to FU(w/o STI)-94, INSPECTION, Engine Coolant Temperature Sensor.></p>	Is the engine coolant temperature sensor normal?	Go to step 54.	Replace the engine coolant temperature sensor. <Ref. to FU(w/o STI)-93, Engine Coolant Temperature Sensor.>

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ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
54 CHECK HARNESS BETWEEN ECM AND ENGINE COOLANT TEMPERATURE SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and engine coolant temperature sensor. 3) Measure the resistance of harness between ECM connector and engine coolant temperature sensor connector. <i>Connector & terminal</i> <i>(E159) No. 27 — (E8) No. 1:</i> <i>(E158) No. 38 — (E8) No. 2:</i>	Is the resistance less than 1 Ω?	Go to step 55.	Repair the open circuit of the harness between the ECM connector and engine coolant temperature sensor connector.
55 CHECK HARNESS BETWEEN ECM AND ENGINE COOLANT TEMPERATURE SENSOR CONNECTOR. Measure the resistance between the ECM connector and engine ground. <i>Connector & terminal</i> <i>(E158) No. 38 — Engine ground:</i> <i>(E159) No. 27 — Engine ground:</i>	Is the resistance 1 MΩ or more?	Even if DTC is detected, it has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again. NOTE: In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.	Repair the short circuit to ground in harness between ECM connector and engine coolant temperature sensor connector.
56 CHECK IGNITION SYSTEM. Check the ignition system. <Ref. to EN(w/o STI)(diag)-80, IGNITION CONTROL SYSTEM, Diagnostics for Engine Starting Failure.>	Is the ignition system normal?	Go to step 57.	Repair the ignition system. <Ref. to IG(w/o STI)-2, General Description.>

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ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>57 CHECK FREEZE FRAME DATA.</p> <p>1) Using Subaru Select Monitor, read the values of «Idle Mass Air Flow Feedback correct», «ISC Learning Value» and «Idle dirty throttle correct» in freeze frame data.</p> <p>NOTE: For detailed operation procedures, refer to “Engine Freeze Frame Data Display”. <Ref. to EN(w/o STI)(diag)-43, DISPLAY OF ENGINE FREEZE FRAME DATA, OPERATION, Subaru Select Monitor.></p> <p>2) Obtain the sum value of «Idle Mass Air Flow Feedback correct», «ISC Learning Value» and «Idle dirty throttle correct».</p> <p>3) Start the engine and warm up completely.</p> <p>4) Using Subaru Select Monitor, read the values of «Idle Mass Air Flow Feedback correct», «ISC Learning Value» and «Idle dirty throttle correct» in current data at normal idling.</p> <p>NOTE: For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, DISPLAY CURRENT ENGINE DATA, OPERATION, Subaru Select Monitor.></p> <p>5) Obtain the sum value of «Idle Mass Air Flow Feedback correct», «ISC Learning Value» and «Idle dirty throttle correct».</p>	<p>Is the sum value of freeze frame data less than 80% of the sum value of current data?</p>	<p>Go to step 58.</p>	<p>Go to step 60.</p>
<p>58 CHECK AIR INTAKE SYSTEM.</p> <p>Check the installing condition of the air intake system.</p>	<p>Are there holes, loose bolts or disconnection of hose on air intake system?</p>	<p>Repair the air intake system. <Ref. to IN(w/o STI)-2, General Description.></p>	<p>Go to step 59.</p>
<p>59 CHECK AIR INTAKE SYSTEM.</p> <p>Check the air intake system related parts.</p> <ul style="list-style-type: none"> • Brake booster: <Ref. to BR-59, INSPECTION, Brake Booster.> • Mass air flow and intake air temperature sensor: <Ref. to FU(w/o STI)-118, INSPECTION, Mass Air Flow and Intake Air Temperature Sensor.> • PCV pipe: <Ref. to EC(w/o STI)-73, INSPECTION, PCV Pipe.> • PCV connector: <Ref. to EC(w/o STI)-75, INSPECTION, PCV Connector.> • PCV hose: <Ref. to EC(w/o STI)-77, INSPECTION, PCV Hose.> • PCV hose assembly: <Ref. to EC(w/o STI)-79, INSPECTION, PCV Hose Assembly.> • PCV valve: <Ref. to EC(w/o STI)-82, INSPECTION, PCV Valve.> • Purge control solenoid valve 1 and purge control solenoid valve 2: <Ref. to EC(w/o STI)-29, INSPECTION, Purge Control Solenoid Valve.> 	<p>Are all of the air intake system related parts normal?</p>	<p>Go to step 77.</p>	<p>Replace the parts if defective.</p>

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Step	Check	Yes	No
<p>60 CHECK FREEZE FRAME DATA.</p> <p>1) Using the Subaru Select Monitor, read the values of the followings: «VVT Adv. Ang. Amount R», «VVT Advance Target Angle Amount R», «VVT Adv. Ang. Amount L», «VVT Advance Target Angle Amount L», «Exh. VVT Retard Ang. R», «Ex VVT Retard Target Angle R», «Exh. VVT Retard Ang. L» and «Ex VVT Retard Target Angle L».</p> <p>NOTE: For detailed operation procedures, refer to “Engine Freeze Frame Data Display”. <Ref. to EN(w/o STI)(diag)-43, DISPLAY OF ENGINE FREEZE FRAME DATA, OPERATION, Subaru Select Monitor.></p> <p>2) Using the Subaru Select Monitor, compare the respective values between the followings: «VVT Adv. Ang. Amount R» and «VVT Advance Target Angle Amount R», «VVT Adv. Ang. Amount L» and «VVT Advance Target Angle Amount L», «Exh. VVT Retard Ang. R» and «Ex VVT Retard Target Angle R», «Exh. VVT Retard Ang. L» and «Ex VVT Retard Target Angle L».</p>	Does all of the advance angle amount and retard angle amount synchronize with their target values?	Go to step 77.	<p>Diagnose the part that does not synchronize.</p> <ul style="list-style-type: none"> • Intake RH: Go to step 61. • Intake LH: Go to step 65. • Exhaust RH: Go to step 69. • Exhaust LH: Go to step 73.
<p>61 CHECK POWER SUPPLY TO THE INTAKE OIL CONTROL SOLENOID RH.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connector from the intake oil control solenoid RH.</p> <p>3) Turn the ignition switch to ON.</p> <p>4) Measure the voltage between intake oil control solenoid RH connector and engine ground.</p> <p>Connector & terminal (E38) No. 1 (+) — Engine ground (-):</p>	Is the voltage 10 V or more?	Go to step 62.	Repair the power supply circuit.
<p>62 CHECK HARNESS BETWEEN ECM AND INTAKE OIL CONTROL SOLENOID RH CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connector from ECM.</p> <p>3) Measure the resistance of harness between ECM connector and intake oil control solenoid RH.</p> <p>Connector & terminal (E159) No. 7 — (E38) No. 2:</p>	Is the resistance less than 1 Ω?	Go to step 63.	Repair the open circuit in harness between ECM connector and intake oil control solenoid RH connector.
<p>63 CHECK HARNESS BETWEEN ECM AND INTAKE OIL CONTROL SOLENOID RH CONNECTOR.</p> <p>Measure the resistance between intake oil control solenoid RH connector and engine ground.</p> <p>Connector & terminal (E38) No. 2 — Engine ground:</p>	Is the resistance 1 MΩ or more?	Go to step 64.	Repair the short circuit to ground in harness between ECM connector and intake oil control solenoid RH connector.
<p>64 CHECK INTAKE OIL CONTROL SOLENOID RH.</p> <p>Check the intake oil control solenoid RH. <Ref. to FU(w/o STI)-110, INSPECTION, Oil Control Solenoid.></p>	Is the intake oil control solenoid RH normal?	Replace the intake cam sprocket RH. <Ref. to ME(w/o STI)-141, Cam Sprocket.>	Replace the intake oil control solenoid RH. <Ref. to FU(w/o STI)-108, Oil Control Solenoid.>

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Step	Check	Yes	No
65 CHECK POWER SUPPLY TO THE INTAKE OIL CONTROL SOLENOID LH. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the intake oil control solenoid LH. 3) Turn the ignition switch to ON. 4) Measure the voltage between intake oil control solenoid LH connector and engine ground. <i>Connector & terminal</i> <i>(E37) No. 1 (+) — Engine ground (-):</i>	Is the voltage 10 V or more?	Go to step 66 .	Repair the power supply circuit.
66 CHECK HARNESS BETWEEN ECM AND INTAKE OIL CONTROL SOLENOID LH CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM connector and intake oil control solenoid LH. <i>Connector & terminal</i> <i>(E159) No. 15 — (E37) No. 2:</i>	Is the resistance less than 1 Ω ?	Go to step 67 .	Repair the open circuit in harness between ECM connector and intake oil control solenoid LH connector.
67 CHECK HARNESS BETWEEN ECM AND INTAKE OIL CONTROL SOLENOID LH CONNECTOR. Measure the resistance between intake oil control solenoid LH connector and engine ground. <i>Connector & terminal</i> <i>(E37) No. 2 — Engine ground:</i>	Is the resistance 1 M Ω or more?	Go to step 68 .	Repair the short circuit to ground in harness between ECM connector and intake oil control solenoid LH connector.
68 CHECK INTAKE OIL CONTROL SOLENOID LH. Check the intake oil control solenoid LH. <Ref. to FU(w/o STI)-110, INSPECTION, Oil Control Solenoid.>	Is the intake oil control solenoid LH normal?	Replace the intake cam sprocket LH. <Ref. to ME(w/o STI)-141, Cam Sprocket.>	Replace the intake oil control solenoid LH. <Ref. to FU(w/o STI)-108, Oil Control Solenoid.>
69 CHECK POWER SUPPLY TO THE EXHAUST OIL CONTROL SOLENOID RH. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the exhaust oil control solenoid RH. 3) Turn the ignition switch to ON. 4) Measure the voltage between exhaust oil control solenoid RH connector and engine ground. <i>Connector & terminal</i> <i>(E63) No. 1 (+) — Engine ground (-):</i>	Is the voltage 10 V or more?	Go to step 70 .	Repair the power supply circuit.
70 CHECK HARNESS BETWEEN ECM AND EXHAUST OIL CONTROL SOLENOID RH CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM connector and exhaust oil control solenoid RH. <i>Connector & terminal</i> <i>(E159) No. 23 — (E63) No. 2:</i>	Is the resistance less than 1 Ω ?	Go to step 71 .	Repair the open circuit in harness between ECM connector and exhaust oil control solenoid RH connector.

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Step	Check	Yes	No
71 CHECK HARNESS BETWEEN ECM AND EXHAUST OIL CONTROL SOLENOID RH CONNECTOR. Measure the resistance between exhaust oil control solenoid RH connector and engine ground. <i>Connector & terminal</i> <i>(E63) No. 2 — Engine ground:</i>	Is the resistance 1 M Ω or more?	Go to step 72.	Repair the short circuit to ground in harness between ECM connector and exhaust oil control solenoid RH connector.
72 CHECK EXHAUST OIL CONTROL SOLENOID RH. Check the exhaust oil control solenoid RH. <Ref. to FU(w/o STI)-110, INSPECTION, Oil Control Solenoid.>	Is the exhaust oil control solenoid RH normal?	Replace the exhaust cam sprocket RH. <Ref. to ME(w/o STI)-141, Cam Sprocket.>	Replace the exhaust oil control solenoid RH. <Ref. to FU(w/o STI)-108, Oil Control Solenoid.>
73 CHECK POWER SUPPLY TO THE EXHAUST OIL CONTROL SOLENOID LH. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the exhaust oil control solenoid LH. 3) Turn the ignition switch to ON. 4) Measure the voltage between exhaust oil control solenoid LH connector and engine ground. <i>Connector & terminal</i> <i>(E66) No. 1 (+) — Engine ground (-):</i>	Is the voltage 10 V or more?	Go to step 74.	Repair the power supply circuit.
74 CHECK HARNESS BETWEEN ECM AND EXHAUST OIL CONTROL SOLENOID LH CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM connector and exhaust oil control solenoid LH. <i>Connector & terminal</i> <i>(E159) No. 31 — (E66) No. 2:</i>	Is the resistance less than 1 Ω ?	Go to step 75.	Repair the open circuit in harness between ECM connector and exhaust oil control solenoid LH connector.
75 CHECK HARNESS BETWEEN ECM AND EXHAUST OIL CONTROL SOLENOID LH CONNECTOR. Measure the resistance between exhaust oil control solenoid LH connector and engine ground. <i>Connector & terminal</i> <i>(E66) No. 2 — Engine ground:</i>	Is the resistance 1 M Ω or more?	Go to step 76.	Repair the short circuit to ground in harness between ECM connector and exhaust oil control solenoid LH connector.
76 CHECK EXHAUST OIL CONTROL SOLENOID LH. Check the exhaust oil control solenoid LH. <Ref. to FU(w/o STI)-110, INSPECTION, Oil Control Solenoid.>	Is the exhaust oil control solenoid LH normal?	Replace the exhaust cam sprocket LH. <Ref. to ME(w/o STI)-141, Cam Sprocket.>	Replace the exhaust oil control solenoid LH. <Ref. to FU(w/o STI)-108, Oil Control Solenoid.>
77 CHECK ENGINE COOLANT TEMPERATURE SENSOR. Check the engine coolant temperature sensor. <Ref. to FU(w/o STI)-94, INSPECTION, Engine Coolant Temperature Sensor.>	Is the engine coolant temperature sensor normal?	Go to step 78.	Replace the engine coolant temperature sensor. <Ref. to FU(w/o STI)-93, Engine Coolant Temperature Sensor.>

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Step	Check	Yes	No
78 CHECK HARNESS BETWEEN ECM AND ENGINE COOLANT TEMPERATURE SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and engine coolant temperature sensor. 3) Measure the resistance of harness between ECM connector and engine coolant temperature sensor connector. Connector & terminal <i>(E159) No. 27 — (E8) No. 1:</i> <i>(E158) No. 38 — (E8) No. 2:</i>	Is the resistance less than 1 Ω?	Go to step 79.	Repair the open circuit of the harness between the ECM connector and engine coolant temperature sensor connector.
79 CHECK HARNESS BETWEEN ECM AND ENGINE COOLANT TEMPERATURE SENSOR CONNECTOR. Measure the resistance between the ECM connector and engine ground. Connector & terminal <i>(E158) No. 38 — Engine ground:</i> <i>(E159) No. 27 — Engine ground:</i>	Is the resistance 1 MΩ or more?	Go to step 80.	Repair the short circuit to ground in harness between ECM connector and engine coolant temperature sensor connector.
80 CHECK MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR. Check the mass air flow and intake air temperature sensor. <Ref. to FU(w/o STI)-118, INSPECTION, Mass Air Flow and Intake Air Temperature Sensor.>	Is the mass air flow and intake air temperature sensor normal?	Go to step 81.	Replace the mass air flow and intake air temperature sensor. <Ref. to FU(w/o STI)-118, Mass Air Flow and Intake Air Temperature Sensor.>
81 CHECK MANIFOLD ABSOLUTE PRESSURE AND INTAKE AIR TEMPERATURE SENSOR. Check the manifold absolute pressure and intake air temperature sensor. <Ref. to FU(w/o STI)-121, INSPECTION, Manifold Absolute Pressure and Intake Air Temperature Sensor.>	Is the manifold absolute pressure and intake air temperature sensor normal?	Perform the Clear Memory Mode to complete. <Ref. to EN(w/o STI)(diag)-61, Clear Memory Mode.>	Check the manifold absolute pressure and intake air temperature sensor. <Ref. to FU(w/o STI)-120, Manifold Absolute Pressure and Intake Air Temperature Sensor.>
82 CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and fuel injectors. 3) Measure the resistance of harness between ECM connector and fuel injector connector. Connector & terminal <i>#1 (E158) No. 12 — (E5) No. 1:</i> <i>#1 (E158) No. 11 — (E5) No. 2:</i> <i>#2 (E158) No. 24 — (E16) No. 1:</i> <i>#2 (E158) No. 23 — (E16) No. 2:</i> <i>#3 (E158) No. 36 — (E6) No. 1:</i> <i>#3 (E158) No. 35 — (E6) No. 2:</i> <i>#4 (E158) No. 48 — (E17) No. 1:</i> <i>#4 (E158) No. 47 — (E17) No. 2:</i>	Is the resistance less than 1 Ω?	Go to step 83.	Repair the open circuit of the harness between the ECM connector and fuel injector connector.

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Step	Check	Yes	No
83 CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR. Measure the resistance between the ECM connector and engine ground. Connector & terminal <i>#1 (E158) No. 12 — Engine ground:</i> <i>#1 (E158) No. 11 — Engine ground:</i> <i>#2 (E158) No. 24 — Engine ground:</i> <i>#2 (E158) No. 23 — Engine ground:</i> <i>#3 (E158) No. 36 — Engine ground:</i> <i>#3 (E158) No. 35 — Engine ground:</i> <i>#4 (E158) No. 48 — Engine ground:</i> <i>#4 (E158) No. 47 — Engine ground:</i>	Is the resistance 1 MΩ or more?	Go to step 84 .	Repair the short circuit to ground in harness between ECM connector and fuel injector connector.
84 CHECK IGNITION SYSTEM. Check the ignition system. <Ref. to EN(w/o STI)(diag)-80, IGNITION CONTROL SYSTEM, Diagnostics for Engine Starting Failure.>	Is the ignition system normal?	Go to step 85 .	Repair the ignition system. <Ref. to IG(w/o STI)-2, General Description.>
85 CHECK FREEZE FRAME DATA. Using the Subaru Select Monitor, read the values in «A/C Compressor Signal» and «Idle A/C load correct». NOTE: For detailed operation procedures, refer to “Engine Freeze Frame Data Display”. <Ref. to EN(w/o STI)(diag)-43, DISPLAY OF ENGINE FREEZE FRAME DATA, OPERATION, Subaru Select Monitor.>	Does the value of «A/C Compressor Signal» indicate ON output, and does the value of «Idle A/C load correct» increase?	Check the air conditioner. <Ref. to AC(diag)-12, INSPECTION, Diagnostics with Phenomenon.> <Ref. to AC(diag)-2, PROCEDURE, Basic Diagnostic Procedure.>	Go to step 86 .
86 CHECK FREEZE FRAME DATA. 1) Using the Subaru Select Monitor, read the value of «Electric Load Feedback Val». NOTE: For detailed operation procedures, refer to “Engine Freeze Frame Data Display”. <Ref. to EN(w/o STI)(diag)-43, DISPLAY OF ENGINE FREEZE FRAME DATA, OPERATION, Subaru Select Monitor.> 2) Compare the value of «Electric Load Feedback Val» with that of «ISC Learning Value», which is described in “Engine Current Data Display”. <Ref. to EN(w/o STI)(diag)-37, DISPLAY CURRENT ENGINE DATA, OPERATION, Subaru Select Monitor.> NOTE: For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, DISPLAY CURRENT ENGINE DATA, OPERATION, Subaru Select Monitor.>	Is the value of «Electric Load Feedback Val» 20% or more of «ISC Learning Value»?	Check the generator and power assisted system. <Ref. to SC(w/o STI)-45, INSPECTION, Generator.> <Ref. to PS(diag)-2, Basic Diagnostic Procedure.>	Go to step 87 .
87 CHECK FREEZE FRAME DATA. 1) Using the Subaru Select Monitor, read the values of «Vehicle Speed», «Engine Speed» and «AT turbine speed». NOTE: For detailed operation procedures, refer to “Engine Freeze Frame Data Display”. <Ref. to EN(w/o STI)(diag)-43, DISPLAY OF ENGINE FREEZE FRAME DATA, OPERATION, Subaru Select Monitor.>	Is there any freeze frame data indicating that the value of «Vehicle Speed» is less than 30 km/h (18.6 MPH), and that the difference in values between «Engine Speed» and «AT turbine speed» is less than 100 rpm?	Repair the CVT. <Ref. to CVT(TR690)-3, General Description.>	Go to step 88 .

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
88 CHECK DTC.	Is DTC of CVT displayed? <Ref. to CVT(diag)-16, OPERATION, Read Diagnostic Trouble Code (DTC).>	Check the appropriate DTC using the "List of Diagnostic Trouble Code (DTC)". <Ref. to CVT(diag)-32, List of Diagnostic Trouble Code (DTC).>	Even if DTC is detected, it has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again. NOTE: In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.
89 CHECK FREEZE FRAME DATA. Using the Subaru Select Monitor, read the values in «Calculated load value» and «Relative Throttle Pos.». NOTE: For detailed operation procedures, refer to "Engine Freeze Frame Data Display". <Ref. to EN(w/o STI)(diag)-43, DISPLAY OF ENGINE FREEZE FRAME DATA, OPERATION, Subaru Select Monitor.>	Is the value of «Calculated load value» decreasing while that of «Relative Throttle Pos.» is increasing?	Go to step 90 .	Go to step 94 .
90 CHECK MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR. Check the mass air flow and intake air temperature sensor. <Ref. to FU(w/o STI)-118, INSPECTION, Mass Air Flow and Intake Air Temperature Sensor.>	Is the mass air flow and intake air temperature sensor normal?	Go to step 91 .	Replace the mass air flow and intake air temperature sensor. <Ref. to FU(w/o STI)-118, Mass Air Flow and Intake Air Temperature Sensor.>
91 CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and the mass air flow and intake air temperature sensor. 3) Measure the resistance of harness between ECM connector and the mass air flow and intake air temperature sensor connector. Connector & terminal (B134) No. 16 — (B3) No. 3: (B134) No. 28 — (B3) No. 2:	Is the resistance less than 1 Ω?	Go to step 92 .	Repair the open circuit of harness between ECM connector and the mass air flow and intake air temperature sensor connector.
92 CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR CONNECTOR. Measure the resistance between the ECM connector and engine ground. Connector & terminal (B134) No. 16 — Engine ground: (B134) No. 28 — Engine ground:	Is the resistance 1 MΩ or more?	Go to step 93 .	Repair the ground short circuit of harness between ECM connector and the mass air flow and intake air temperature sensor connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
93 CHECK CURRENT DATA. 1) Start the engine and warm up completely. 2) Using the Subaru Select Monitor, read the value of «Calculated load value», then compare it with that of «Calculated load value» listed in “Engine Current Data Display”. <Ref. to EN(w/o STI)(diag)-37, DISPLAY CURRENT ENGINE DATA, OPERATION, Subaru Select Monitor.> NOTE: <ul style="list-style-type: none"> • The value of «Calculated load value» change depending on how the engine internal parts settle in. If the value is out of standard, judge it again by comparing the vehicle with another one with the same specifications and similar conditions such as travel distance. • For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, DISPLAY CURRENT ENGINE DATA, OPERATION, Subaru Select Monitor.> 	Does the value of «Calculated load value» falls between 90 — 110% of the value described in the list?	Go to step 94.	Replace the mass air flow and intake air temperature sensor. <Ref. to FU(w/o STI)-118, Mass Air Flow and Intake Air Temperature Sensor.>
94 CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and fuel injectors. 3) Measure the resistance of harness between ECM connector and fuel injector connector. Connector & terminal <i>#1 (E158) No. 12 — (E5) No. 1:</i> <i>#1 (E158) No. 11 — (E5) No. 2:</i> <i>#2 (E158) No. 24 — (E16) No. 1:</i> <i>#2 (E158) No. 23 — (E16) No. 2:</i> <i>#3 (E158) No. 36 — (E6) No. 1:</i> <i>#3 (E158) No. 35 — (E6) No. 2:</i> <i>#4 (E158) No. 48 — (E17) No. 1:</i> <i>#4 (E158) No. 47 — (E17) No. 2:</i>	Is the resistance less than 1 Ω?	Go to step 95.	Repair the open circuit of the harness between the ECM connector and fuel injector connector.
95 CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR. Measure the resistance between the ECM connector and engine ground. Connector & terminal <i>#1 (E158) No. 12 — Engine ground:</i> <i>#1 (E158) No. 11 — Engine ground:</i> <i>#2 (E158) No. 24 — Engine ground:</i> <i>#2 (E158) No. 23 — Engine ground:</i> <i>#3 (E158) No. 36 — Engine ground:</i> <i>#3 (E158) No. 35 — Engine ground:</i> <i>#4 (E158) No. 48 — Engine ground:</i> <i>#4 (E158) No. 47 — Engine ground:</i>	Is the resistance 1 MΩ or more?	Go to step 96.	Repair the short circuit to ground in harness between ECM connector and fuel injector connector.
96 CHECK IGNITION SYSTEM. Check the ignition system. <Ref. to EN(w/o STI)(diag)-80, IGNITION CONTROL SYSTEM, Diagnostics for Engine Starting Failure.>	Is the ignition system normal?	Go to step 97.	Repair the ignition system. <Ref. to IG(w/o STI)-2, General Description.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
97 CHECK OF FUEL PUMP. 1) Select «Fuel Pump» from “Actuator ON/OFF Operation” in “System Operation Check Mode”. NOTE: For detailed procedures, refer to “System Operation Check Mode”. <Ref. to EN(w/o STI)(diag)-62, System Operation Check Mode.> 2) Check if operating sound occurs in the fuel pump according to ON/OFF switching operation.	Does the fuel pump emit operating sound?	Go to step 99 .	Go to step 98 .
98 CHECK OF FUEL PUMP. Check fuel pump. <Ref. to FU(w/o STI)-172, INSPECTION, Fuel Pump.>	Is the fuel pump normal?	Check fuel pump system. <Ref. to EN(w/o STI)(diag)-209, DTC P0230 FUEL PUMP PRIMARY CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>	Replace the fuel pump. <Ref. to FU(w/o STI)-168, Fuel Pump.>
99 CHECK FUEL TANK. Check if any foreign matters such as iron powder exist in the fuel tank.	Is there any foreign matter in the fuel tank?	Remove foreign matter from the fuel tank.	Go to step 100 .
100 CHECK FUEL PRESSURE. WARNING: Place “NO OPEN FLAMES” signs near the working area. CAUTION: Be careful not to spill fuel. Measure the fuel pressure. <Ref. to ME(w/o STI)-31, INSPECTION, Fuel Pressure.> CAUTION: Release fuel pressure before removing the fuel pressure gauge.	Is the measured value 340 — 400 kPa (3.5 — 4.1 kgf/cm ² , 49 — 58 psi)?	Go to step 101 .	Check the fuel pump and fuel delivery line. <Ref. to FU(w/o STI)-172, INSPECTION, Fuel Pump.> <Ref. to FU(w/o STI)-201, INSPECTION, Fuel Delivery and Evaporation Lines.>
101 CHECK FREEZE FRAME DATA. Using the Subaru Select Monitor, read the values in «Fuel Rail Pressure A» and «Commanded Fuel Rail Pressure A». NOTE: For detailed operation procedures, refer to “Engine Freeze Frame Data Display”. <Ref. to EN(w/o STI)(diag)-43, DISPLAY OF ENGINE FREEZE FRAME DATA, OPERATION, Subaru Select Monitor.>	Is the value in «Fuel Rail Pressure A» synchronized with the one in «Commanded Fuel Rail Pressure A» in all freeze frame data?	Go to step 102 .	Check the high-pressure fuel pump. <Ref. to FU(w/o STI)-82, INSPECTION, High Pressure Fuel Pump.>
102 CHECK ENGINE RUNNING CONDITION. Check the engine running condition using “Roughness monitor” in the Subaru Select Monitor. NOTE: For detailed operation procedures, refer to “PC application help for Subaru Select Monitor”.	Is there a large difference in the speed between each cylinder?	It is possible that the compression pressure of the engine is not sufficient. Check the engine. <Ref. to ME(w/o STI)-352, INSPECTION, Engine Trouble in General.>	Perform the Clear Memory Mode to complete. <Ref. to EN(w/o STI)(diag)-61, Clear Memory Mode.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

EY:DTC P1604 STARTABILITY MALFUNCTION

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-181, DTC P1604 STARTABILITY MALFUNCTION, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode. <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>

NOTE:

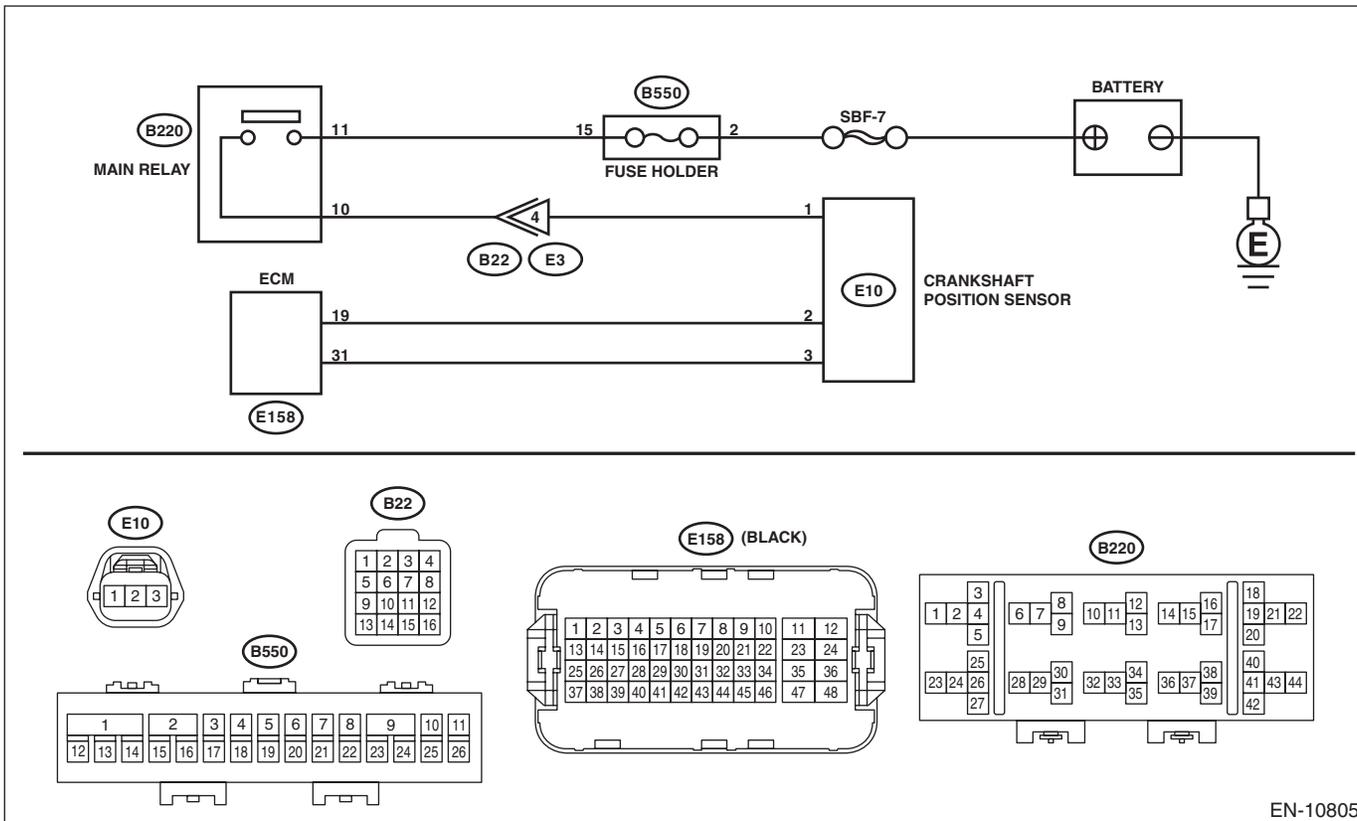
This DTC may be detected even if fault does not occur in the vehicle. If the customer does not ask for inspection, perform the clear memory mode without inspection and return the vehicle to the user.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

WIRING DIAGRAM:

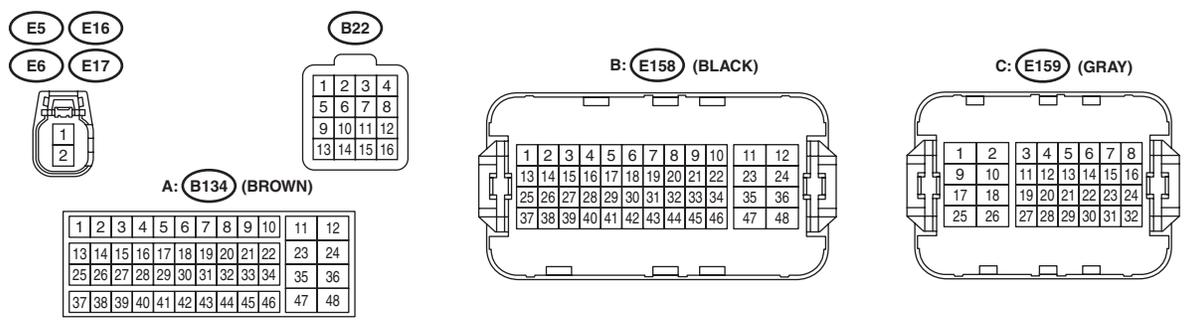
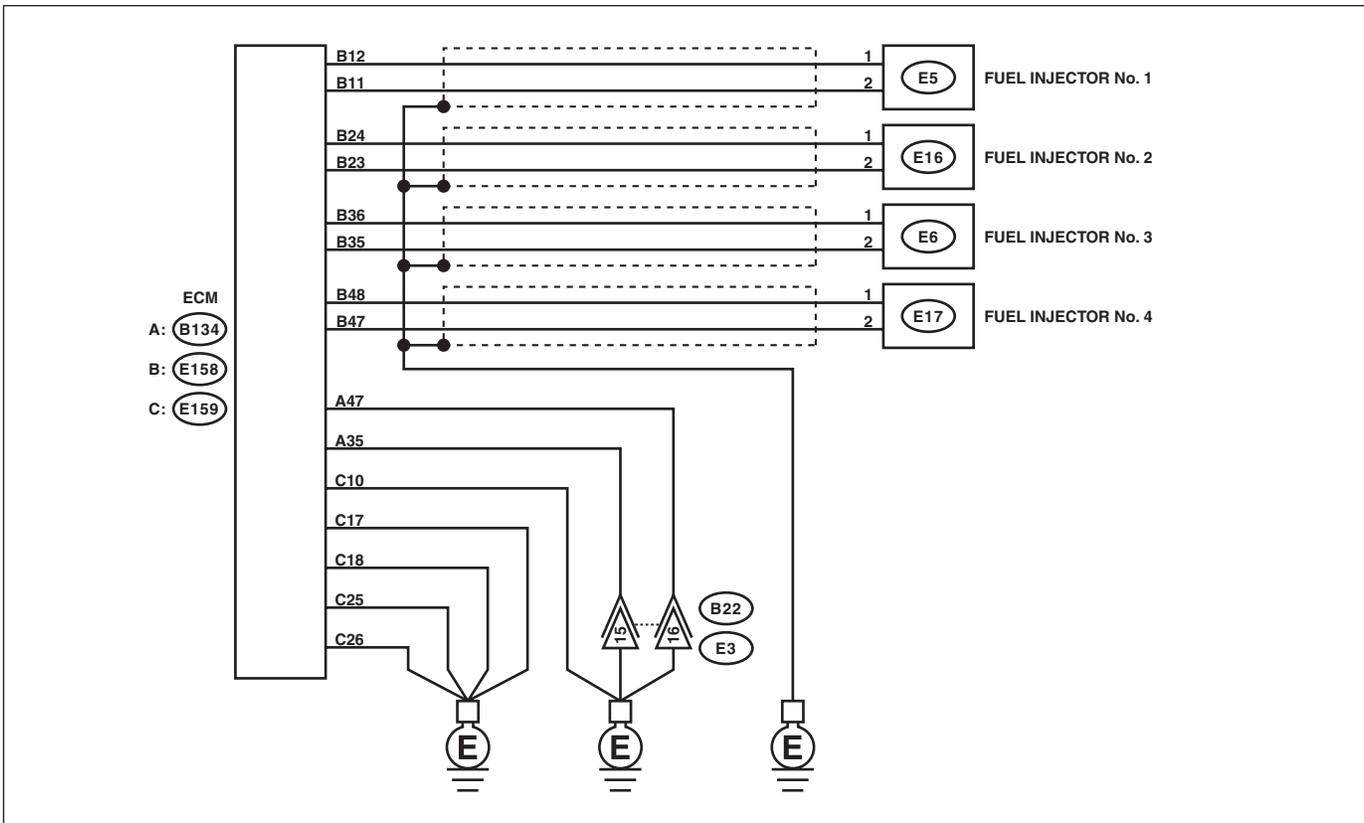
- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10805

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

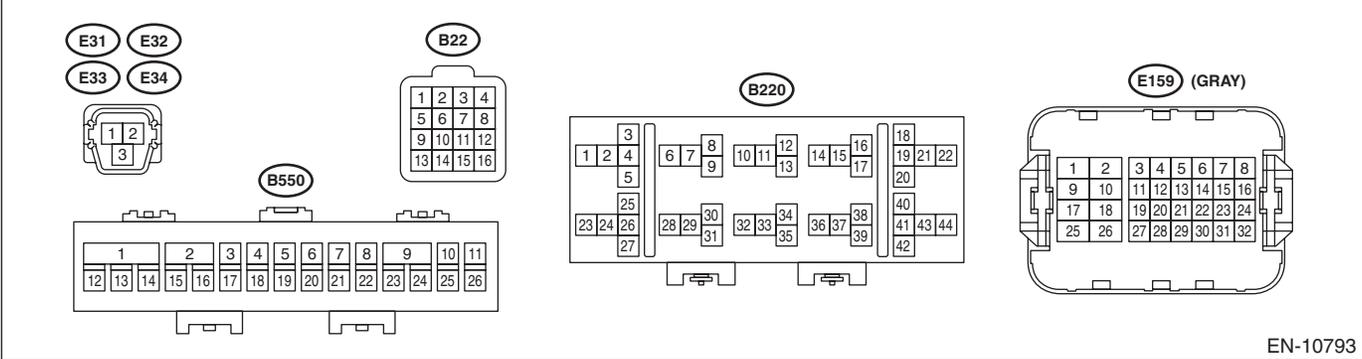
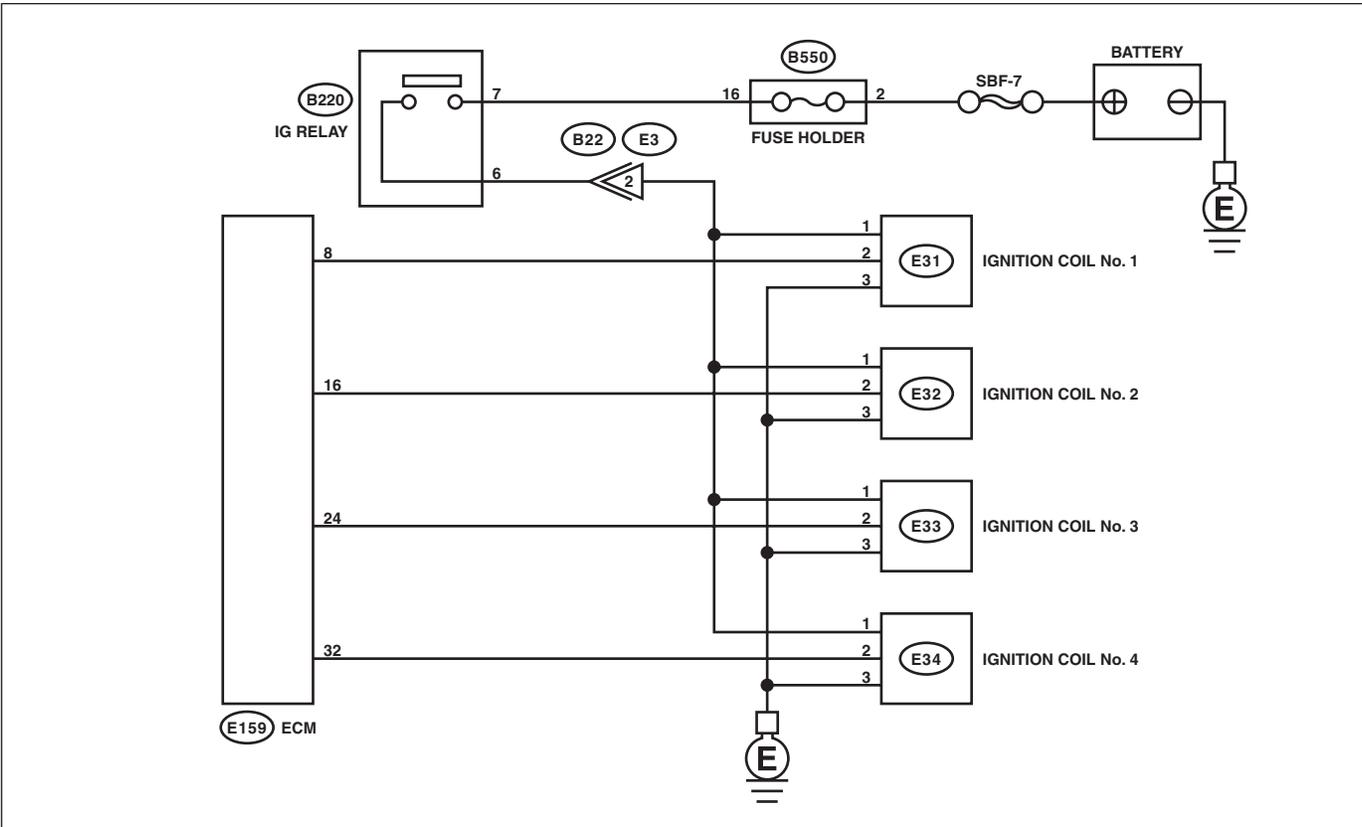
ENGINE (DIAGNOSTICS)



EN-10794

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

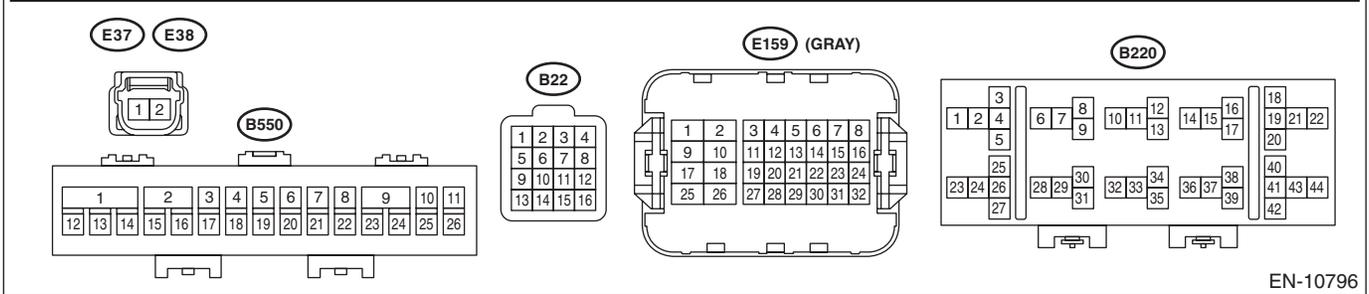
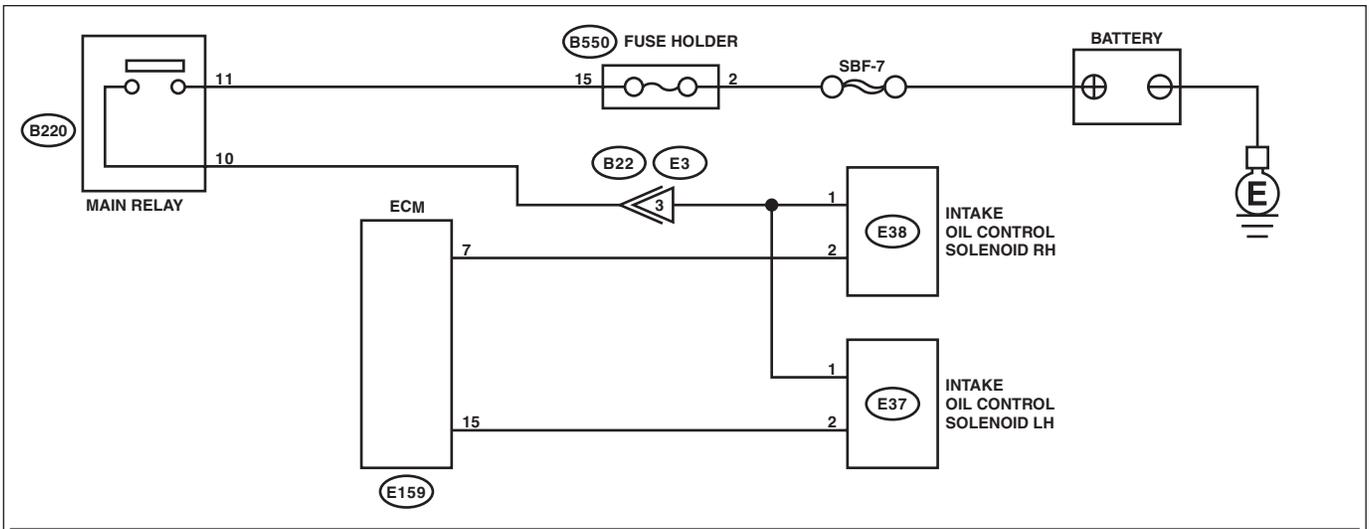
ENGINE (DIAGNOSTICS)



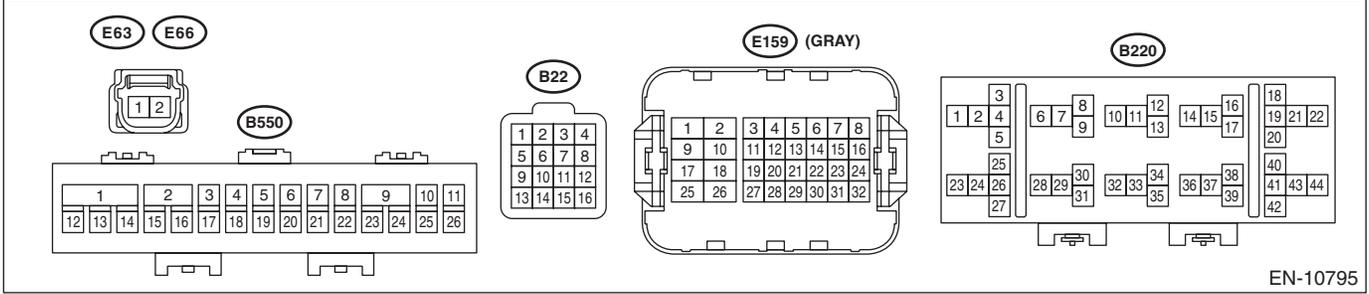
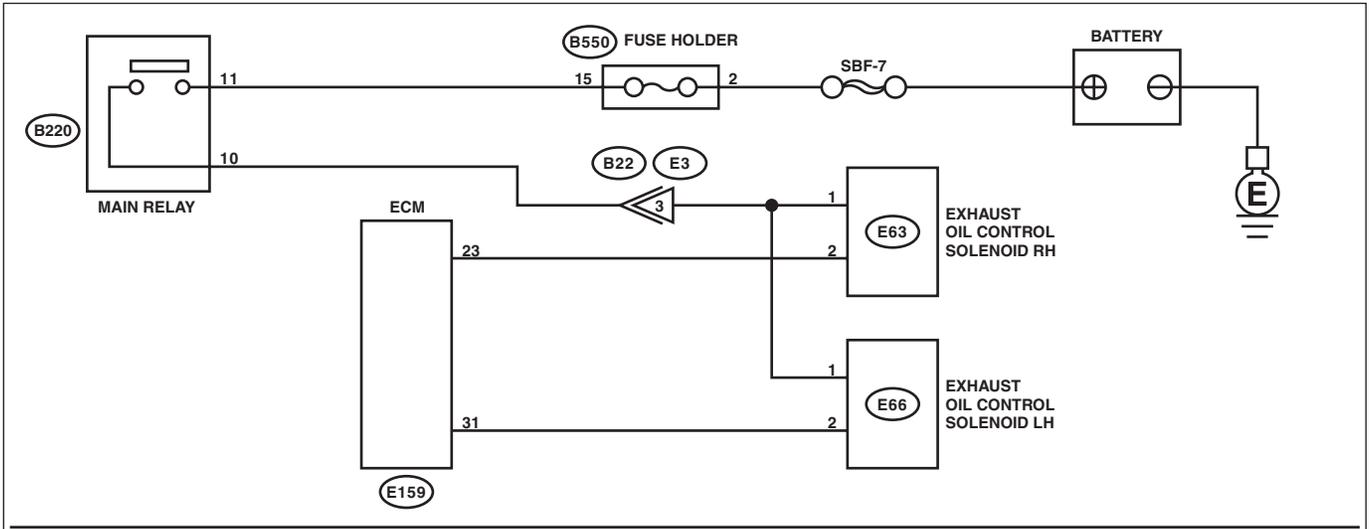
EN-10793

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)



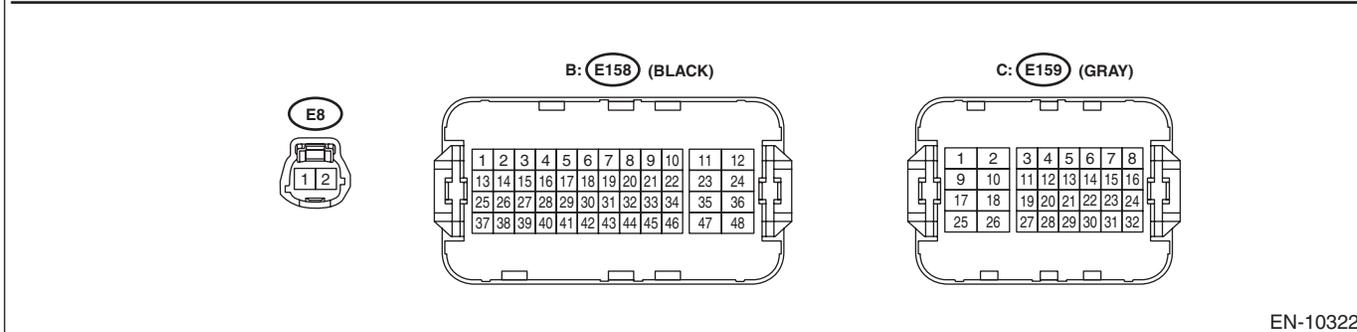
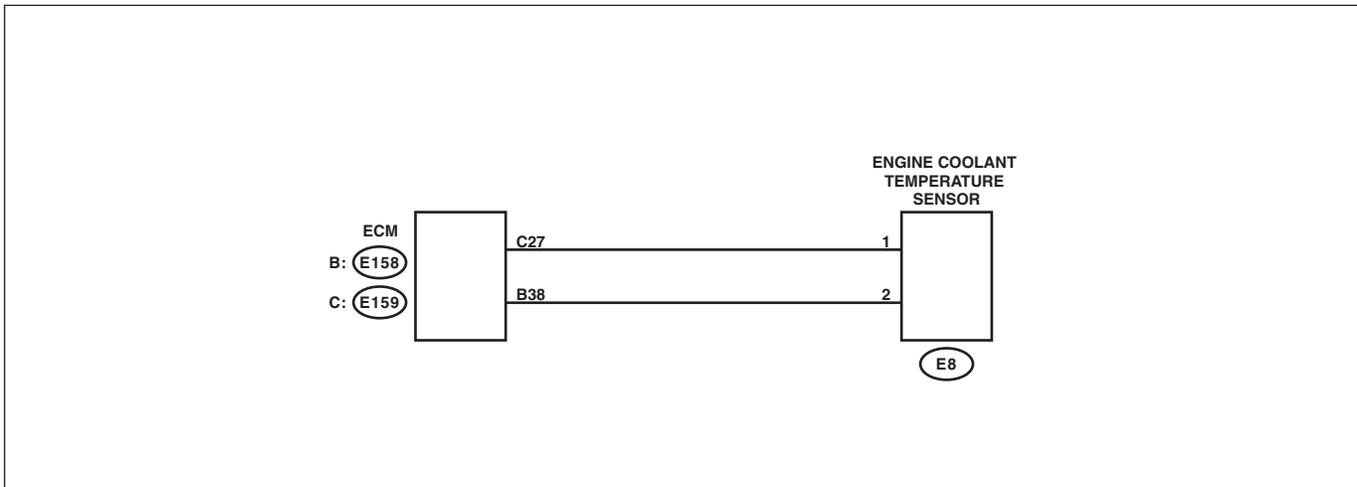
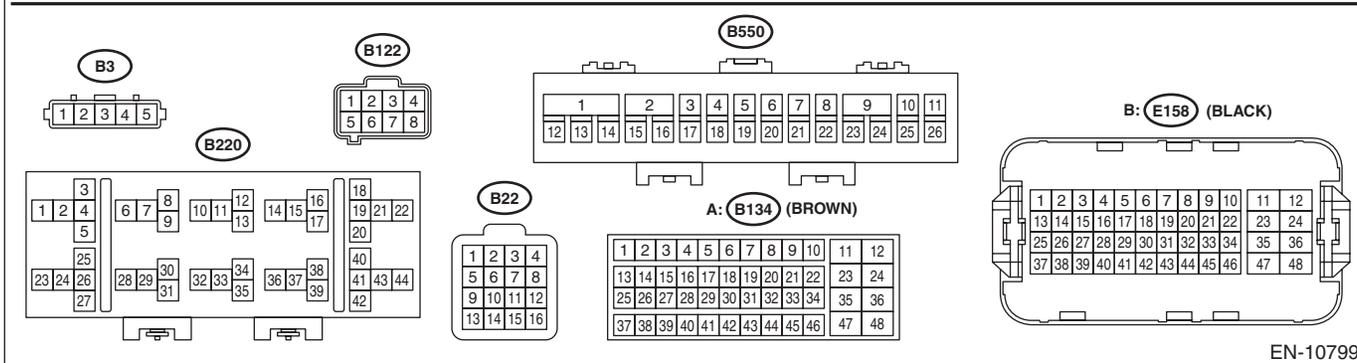
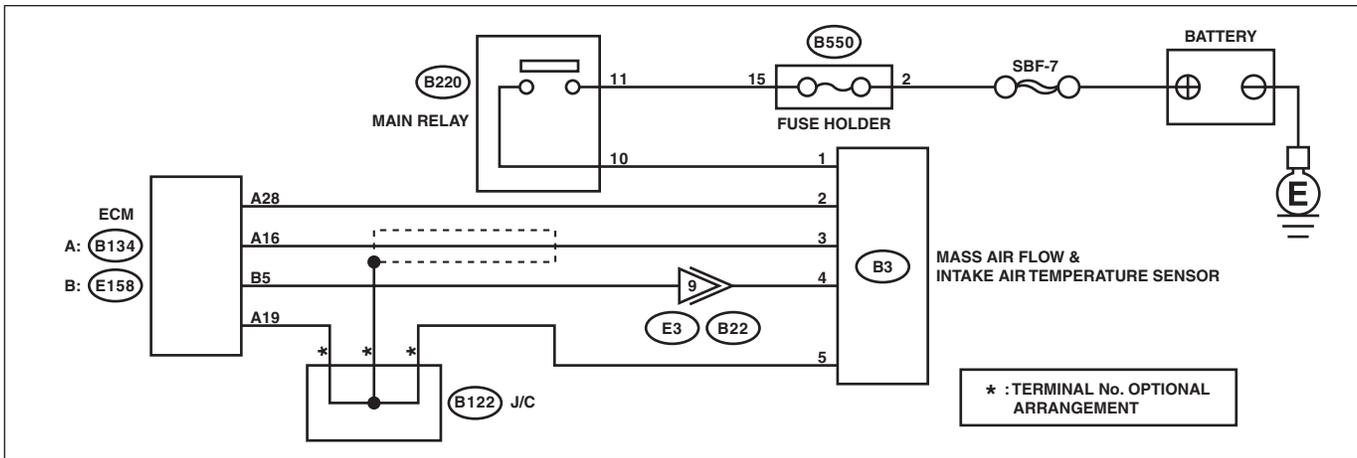
EN-10796



EN-10795

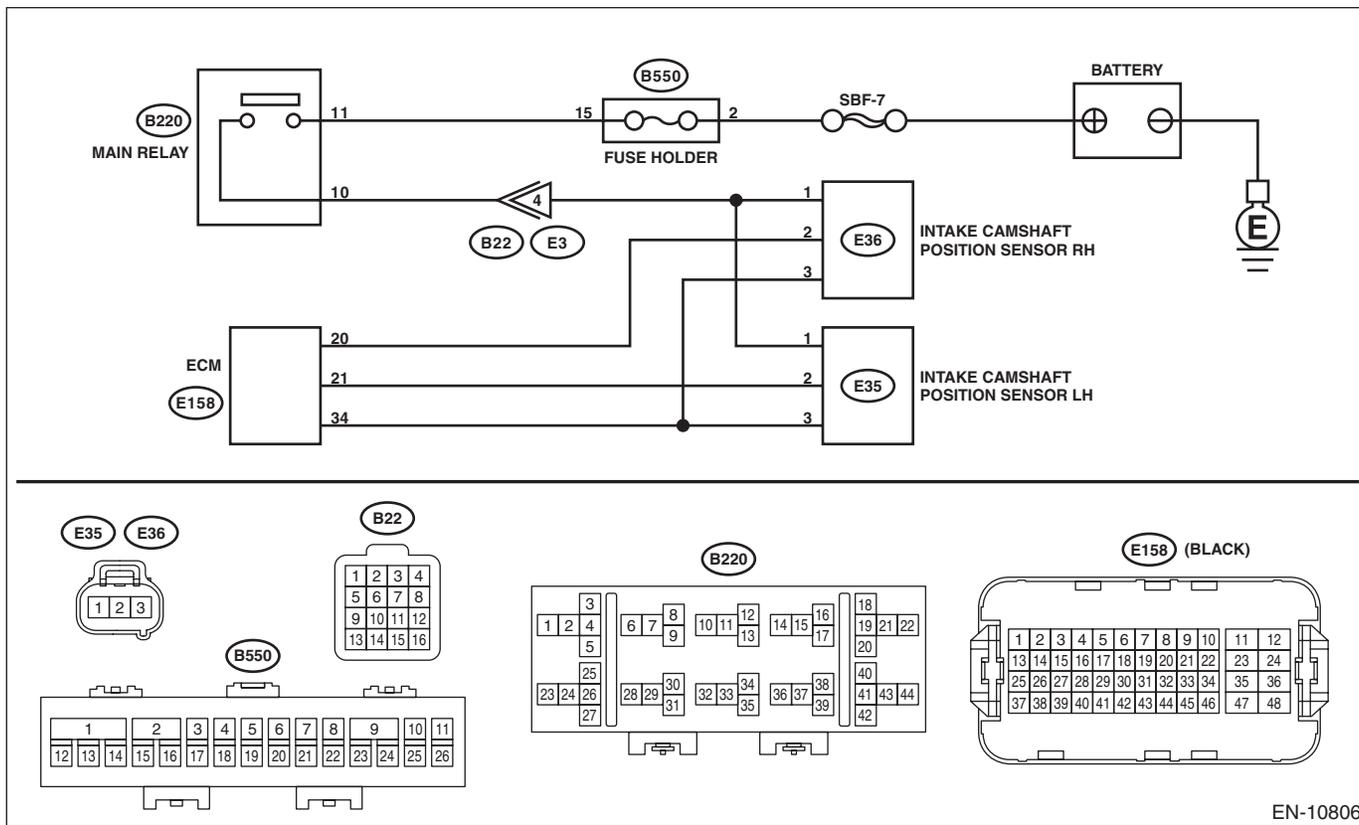
Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

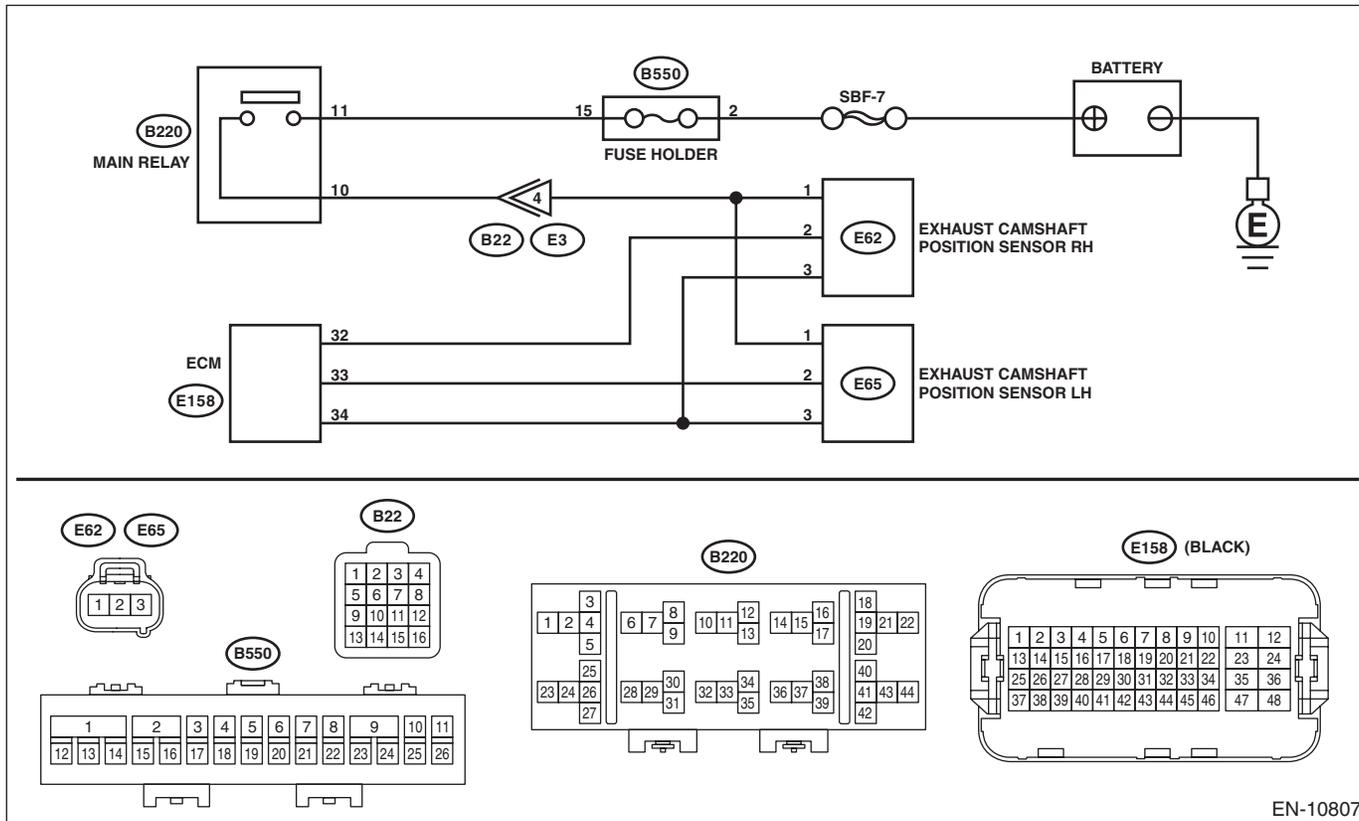


Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)



EN-10806



EN-10807

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK DTC.	Is any other DTC displayed?	Check DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK IMMOBILIZER. Check the immobilizer. <Ref. to IM(diag)-2, Basic Diagnostic Procedure.>	Is the immobilizer normal?	Go to step 3.	Repair the immobilizer. <Ref. to IM(diag)-2, Basic Diagnostic Procedure.>
3 CHECK FOR MALFUNCTION OCCURRENCE.	Is it possible to reproduce the faulty phenomenon or to identify the faulty condition?	Go to step 30.	Go to step 4.
4 CHECK FREEZE FRAME DATA. Using the Subaru Select Monitor, read the values in «Engine Speed» and «Control module voltage». NOTE: For detailed operation procedures, refer to "Engine Freeze Frame Data Display". <Ref. to EN(w/o STI)(diag)-43, DISPLAY OF ENGINE FREEZE FRAME DATA, OPERATION, Subaru Select Monitor.>	Is the value of «Engine Speed» 0 rpm?	<ul style="list-style-type: none"> When the value of «Control module voltage» is less than 5 V: Check the battery. <Ref. to SC(w/o STI)-51, INSPECTION, Battery.> When the value of «Control module voltage» is 5 V or more: Go to step 5. 	<ul style="list-style-type: none"> When the value of «Engine Speed» is less than 250 rpm: Go to step 12. When the value of «Engine Speed» is 250 rpm or more: Go to step 20.
5 CHECK FREEZE FRAME DATA. Read the value of «Control module voltage» using Subaru Select Monitor. NOTE: For detailed operation procedures, refer to "Engine Freeze Frame Data Display". <Ref. to EN(w/o STI)(diag)-43, DISPLAY OF ENGINE FREEZE FRAME DATA, OPERATION, Subaru Select Monitor.>	Is the value of «Control module voltage» less than 9 V?	It is possible that the engine friction is too large. Check the engine. <Ref. to ME(w/o STI)-352, INSPECTION, Engine Trouble in General.>	<ul style="list-style-type: none"> When the value of «Control module voltage» changes in any one of freeze frame data: Go to step 6. When the value of «Control module voltage» does not change in all freeze frame data: Check the starter motor circuit. <Ref. to EN(w/o STI)(diag)-67, STARTERMOTOR CIRCUIT, Diagnostics for Engine Starting Failure.>
6 CHECK INSTALLATION CONDITION OF CRANKSHAFT POSITION SENSOR.	Is the crankshaft position sensor installed correctly?	Go to step 7.	Install the crankshaft position sensor correctly. <Ref. to FU(w/o STI)-99, INSTALLATION, Crankshaft Position Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
7 CHECK CRANKSHAFT POSITION SENSOR. Check the crankshaft position sensor. <Ref. to FU(w/o STI)-100, INSPECTION, Crankshaft Position Sensor.>	Is the crankshaft position sensor normal?	Go to step 8.	Replace the crankshaft position sensor. <Ref. to FU(w/o STI)-98, Crankshaft Position Sensor.>
8 CHECK POWER SUPPLY TO CRANKSHAFT POSITION SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the crankshaft position sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between crankshaft position sensor connector and engine ground. <i>Connector & terminal</i> <i>(E10) No. 1 (+) — Engine ground (-):</i>	Is the voltage 10 V or more?	Go to step 9.	Repair the power supply circuit.
9 CHECK HARNESS BETWEEN ECM AND CRANKSHAFT POSITION SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM connector and crankshaft position sensor connector. <i>Connector & terminal</i> <i>(E158) No. 19 — (E10) No. 2:</i> <i>(E158) No. 31 — (E10) No. 3:</i>	Is the resistance less than 1 Ω?	Go to step 10.	Repair the open circuit in the harness between the ECM connector and crankshaft position sensor connector.
10 CHECK HARNESS BETWEEN ECM AND CRANKSHAFT POSITION SENSOR CONNECTOR. Measure the resistance between crankshaft position sensor connector and engine ground. <i>Connector & terminal</i> <i>(E10) No. 2 — Engine ground:</i> <i>(E10) No. 3 — Engine ground:</i>	Is the resistance 1 MΩ or more?	Go to step 11.	Repair short circuit to ground in harness between ECM connector and crankshaft position sensor connector.
11 CHECK FOR MALFUNCTION OCCURRENCE. 1) Replace the crankshaft position sensor. <Ref. to FU(w/o STI)-98, Crankshaft Position Sensor.> 2) Check that the fault is removed.	Is the fault removed?	Perform the Clear Memory Mode to complete. <Ref. to EN(w/o STI)(diag)-61, Clear Memory Mode.>	Replace the ECM. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).>
12 CHECK FREEZE FRAME DATA. Using the Subaru Select Monitor, read the values in «Coolant Temp.», «Ambient Temperature» and «Fuel Pump Duty». NOTE: For detailed operation procedures, refer to “Engine Freeze Frame Data Display”. <Ref. to EN(w/o STI)(diag)-43, DISPLAY OF ENGINE FREEZE FRAME DATA, OPERATION, Subaru Select Monitor.>	Is the value of «Coolant Temp.» 120°C (248°F) or more? Or, is the value of «Coolant Temp.» lower than «Ambient Temperature» by 15°C (27°F) or more?	Replace the engine coolant temperature sensor. <Ref. to FU(w/o STI)-93, Engine Coolant Temperature Sensor.>	<ul style="list-style-type: none"> • When the value of «Fuel Pump Duty» is 60% or more: Go to step 13. • When the value of «Fuel Pump Duty» is less than 60%: Check the fuel pump system. <Ref. to EN(w/o STI)(diag)-209, DTC P0230 FUEL PUMP PRIMARY CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>13 CHECK OF FUEL PUMP. 1) Select «Fuel Pump» from “Actuator ON/OFF Operation” in “System Operation Check Mode”.</p> <p>NOTE: For detailed procedures, refer to “System Operation Check Mode”. <Ref. to EN(w/o STI)(diag)-62, System Operation Check Mode.></p> <p>2) Check if operating sound occurs in the fuel pump according to ON/OFF switching operation.</p>	Does the fuel pump emit operating sound?	Go to step 15.	Go to step 14.
<p>14 CHECK OF FUEL PUMP. Check fuel pump. <Ref. to FU(w/o STI)-172, INSPECTION, Fuel Pump.></p>	Is the fuel pump normal?	Check fuel pump system. <Ref. to EN(w/o STI)(diag)-209, DTC P0230 FUEL PUMP PRIMARY CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>	Replace the fuel pump. <Ref. to FU(w/o STI)-168, Fuel Pump.>
<p>15 CHECK FUEL TANK. Check if any foreign matters such as iron powder exist in the fuel tank.</p>	Is there any foreign matter in the fuel tank?	Remove foreign matter from the fuel tank.	Go to step 16.
<p>16 CHECK FUEL PRESSURE.</p> <p>WARNING: Place “NO OPEN FLAMES” signs near the working area.</p> <p>CAUTION: Be careful not to spill fuel.</p> <p>Measure the fuel pressure. <Ref. to ME(w/o STI)-31, INSPECTION, Fuel Pressure.></p> <p>CAUTION: Release fuel pressure before removing the fuel pressure gauge.</p>	Is the measured value 340 — 400 kPa (3.5 — 4.1 kgf/cm ² , 49 — 58 psi)?	Go to step 17.	Check the fuel pump and fuel delivery line. <Ref. to FU(w/o STI)-172, INSPECTION, Fuel Pump.> <Ref. to FU(w/o STI)-201, INSPECTION, Fuel Delivery and Evaporation Lines.>
<p>17 CHECK FREEZE FRAME DATA. Using the Subaru Select Monitor, read the values in «Fuel Rail Pressure A» and «Commanded Fuel Rail Pressure A».</p> <p>NOTE: For detailed operation procedures, refer to “Engine Freeze Frame Data Display”. <Ref. to EN(w/o STI)(diag)-43, DISPLAY OF ENGINE FREEZE FRAME DATA, OPERATION, Subaru Select Monitor.></p>	Is the value in «Fuel Rail Pressure A» synchronized with the one in «Commanded Fuel Rail Pressure A» in all freeze frame data?	Go to step 18.	Check the high-pressure fuel pump. <Ref. to FU(w/o STI)-82, INSPECTION, High Pressure Fuel Pump.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
18 CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and fuel injectors. 3) Measure the resistance of harness between ECM connector and fuel injector connector. Connector & terminal <i>#1 (E158) No. 12 — (E5) No. 1:</i> <i>#1 (E158) No. 11 — (E5) No. 2:</i> <i>#2 (E158) No. 24 — (E16) No. 1:</i> <i>#2 (E158) No. 23 — (E16) No. 2:</i> <i>#3 (E158) No. 36 — (E6) No. 1:</i> <i>#3 (E158) No. 35 — (E6) No. 2:</i> <i>#4 (E158) No. 48 — (E17) No. 1:</i> <i>#4 (E158) No. 47 — (E17) No. 2:</i>	Is the resistance less than 1 Ω?	Go to step 19.	Repair the open circuit of the harness between the ECM connector and fuel injector connector.
19 CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR. Measure the resistance between the ECM connector and engine ground. Connector & terminal <i>#1 (E158) No. 12 — Engine ground:</i> <i>#1 (E158) No. 11 — Engine ground:</i> <i>#2 (E158) No. 24 — Engine ground:</i> <i>#2 (E158) No. 23 — Engine ground:</i> <i>#3 (E158) No. 36 — Engine ground:</i> <i>#3 (E158) No. 35 — Engine ground:</i> <i>#4 (E158) No. 48 — Engine ground:</i> <i>#4 (E158) No. 47 — Engine ground:</i>	Is the resistance 1 MΩ or more?	Go to step 29.	Repair the short circuit to ground in harness between ECM connector and fuel injector connector.
20 CHECK FREEZE FRAME DATA. Using the Subaru Select Monitor, read the values in «Coolant Temp.», «Ambient Temperature» and «Engine Speed». NOTE: For detailed operation procedures, refer to “Engine Freeze Frame Data Display”. <Ref. to EN(w/o STI)(diag)-43, DISPLAY OF ENGINE FREEZE FRAME DATA, OPERATION, Subaru Select Monitor.>	Is the value of «Coolant Temp.» 120°C (248°F) or more? Or, is the value of «Coolant Temp.» lower than «Ambient Temperature» by 15°C (27°F) or more?	Replace the engine coolant temperature sensor. <Ref. to FU(w/o STI)-93, Engine Coolant Temperature Sensor.>	<ul style="list-style-type: none"> • When the minimum value of «Engine Speed» is less than 300 rpm: Go to step 21. • When the minimum value of «Engine Speed» is 300 rpm or more: It is possible that the engine compression pressure is not sufficient. Check the engine. <Ref. to ME(w/o STI)-352, INSPECTION, Engine Trouble in General.>
21 CHECK FUEL INJECTOR. Check fuel injector. <Ref. to FU(w/o STI)-70, INSPECTION, Fuel Injector.>	Is there any deposit in the fuel injectors?	Replace the fuel injector. <Ref. to FU(w/o STI)-51, Fuel Injector.>	Go to step 22.
22 CHECK FUEL TANK. Check if any foreign matters such as iron powder exist in the fuel tank.	Is there any foreign matter in the fuel tank?	Remove foreign matter from the fuel tank.	Go to step 23.

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ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
23 CHECK FREEZE FRAME DATA. Using the Subaru Select Monitor, read the value in «Coolant Temp.». NOTE: For detailed operation procedures, refer to “Engine Freeze Frame Data Display”. <Ref. to EN(w/o STI)(diag)-43, DISPLAY OF ENGINE FREEZE FRAME DATA, OPERATION, Subaru Select Monitor.>	Is the value of «Coolant Temp.» 40 — 90°C (104 — 194°F)?	Go to step 25.	Go to step 24.
24 CHECK FUEL PRESSURE. WARNING: Place “NO OPEN FLAMES” signs near the working area. CAUTION: Be careful not to spill fuel. Measure the fuel pressure five minutes after the engine is stopped. <Ref. to ME(w/o STI)-31, INSPECTION, Fuel Pressure.> CAUTION: Release fuel pressure before removing the fuel pressure gauge. NOTE: If the engine does not start, measure the fuel pressure five minutes after cranking is completed.	Is the measured value 147 kPa (1.5 kgf/cm ² , 21 psi) or more?	Go to step 29.	Replace the pressure regulator. <Ref. to FU(w/o STI)-183, Fuel Filter.>
25 CHECK FUEL INJECTOR. 1) After the engine is stopped, scavenge inside of the intake manifold by applying compressed air. 2) Measure the HC concentration inside the intake manifold 15 minutes after scavenging is completed.	Is the HC concentration less than 4,000 ppm?	Go to step 27.	Go to step 26.
26 CHECK FUEL INJECTOR. Check fuel injector. <Ref. to FU(w/o STI)-70, INSPECTION, Fuel Injector.>	Are fuel injectors OK?	Go to step 27.	Replace the fuel injector. <Ref. to FU(w/o STI)-51, Fuel Injector.>
27 CHECK THROTTLE BODY. Check throttle body. <Ref. to FU(w/o STI)-16, INSPECTION, Throttle Body.>	Is there any deposit in the throttle body?	Replace the throttle body. <Ref. to FU(w/o STI)-15, Throttle Body.>	Go to step 28.
28 CHECK AIR INTAKE SYSTEM. Check the installing condition of the air intake system.	Are there holes, loose bolts or disconnection of hose on air intake system?	Repair the air intake system. <Ref. to IN(w/o STI)-2, General Description.>	Go to step 29.
29 CHECK FOR MALFUNCTION OCCURRENCE.	Is the fault removed?	Perform the Clear Memory Mode to complete. <Ref. to EN(w/o STI)(diag)-61, Clear Memory Mode.>	Go to step 30.

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ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
30 CHECK FOR MALFUNCTION OCCURRENCE.	Does cranking occur?	<ul style="list-style-type: none"> • When the engine speed is abnormal during cranking: Go to step 37. • When an initial combustion does not occur: Go to step 40. • When the engine stalls immediately after engine start: Go to step 57. • When the engine takes time to start: Go to step 80. 	Go to step 31 .
31 CHECK FOR MALFUNCTION OCCURRENCE.	Does the sound occur by a protruding starter pinion gear during cranking?	<ul style="list-style-type: none"> • When the starter motor does not rotate: Go to step 32. • When the starter motor rotates but does not engage: Go to step 34. 	Go to step 35 .
32 CHECK BATTERY. Check the battery. <Ref. to SC(w/o STI)-51, INSPECTION, Battery.>	Is the battery OK?	Go to step 33 .	Charge or replace the battery. <Ref. to SC(w/o STI)-50, Battery.>
33 CHECK ENGINE MAIN BODY. Using the ST, rotate the crankshaft. ST 18252AA000 CRANKSHAFT SOCKET	Does the crankshaft rotate smoothly?	Check the starter motor. <Ref. to SC(w/o STI)-24, INSPECTION, Starter.> NOTE: It is possible that the engine friction increased temporarily. Check if any foreign matter is mixed in engine oil. If a foreign matter is found, check the engine. <Ref. to ME(w/o STI)-352, INSPECTION, Engine Trouble in General.>	It is possible that the engine friction is too large. Check the engine. <Ref. to ME(w/o STI)-352, INSPECTION, Engine Trouble in General.>
34 CHECK STARTER MOTOR. Check the starter motor. <Ref. to SC(w/o STI)-24, INSPECTION, Starter.>	Is there any wear or damage in the starter pinion gear?	Repair the starter motor. <Ref. to SC(w/o STI)-7, Starter.>	<ul style="list-style-type: none"> • CVT model: Replace the torque converter assembly. <Ref. to CVT(TR690)-140, Torque Converter Assembly.> • MT model: Replace the flywheel. <Ref. to CL-15, Flywheel.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
35 CHECK BATTERY. Check the battery. <Ref. to SC(w/o STI)-51, INSPECTION, Battery.>	Is the battery OK?	Go to step 36.	Charge or replace the battery. <Ref. to SC(w/o STI)-50, Battery.>
36 CHECK STARTER MOTOR. Check the starter motor. <Ref. to SC(w/o STI)-24, INSPECTION, Starter.>	Is the starter motor OK?	Check the starter motor circuit. <Ref. to EN(w/o STI)(diag)-67, STARTER MOTOR CIRCUIT, Diagnostics for Engine Starting Failure.>	Repair the starter motor. <Ref. to SC(w/o STI)-7, Starter.>
37 CHECK CURRENT DATA. Read the value of «Engine Speed» during cranking using Subaru Select Monitor. NOTE: For detailed operation procedures, refer to «Current Data Display For Engine». <Ref. to EN(w/o STI)(diag)-37, DISPLAY CURRENT ENGINE DATA, OPERATION, Subaru Select Monitor.>	Is the value of «Engine Speed» 300 rpm or more?	It is possible that the compression pressure of the engine is not sufficient. Check the engine. <Ref. to ME(w/o STI)-352, INSPECTION, Engine Trouble in General.>	Go to step 38.
38 CHECK BATTERY. Check the battery. <Ref. to SC(w/o STI)-51, INSPECTION, Battery.>	Is the battery OK?	Go to step 39.	Charge or replace the battery. <Ref. to SC(w/o STI)-50, Battery.>
39 CHECK ENGINE MAIN BODY. Using the ST, rotate the crankshaft. ST 18252AA000 CRANKSHAFT SOCKET	Does the crankshaft rotate smoothly?	Check the starter motor. <Ref. to SC(w/o STI)-24, INSPECTION, Starter.> NOTE: It is possible that the engine friction increased temporarily. Check if any foreign matter is mixed in engine oil. If a foreign matter is found, check the engine. <Ref. to ME(w/o STI)-352, INSPECTION, Engine Trouble in General.>	It is possible that the engine friction is too large. Check the engine. <Ref. to ME(w/o STI)-352, INSPECTION, Engine Trouble in General.>
40 CHECK OPERATION OF EACH FUEL INJECTOR. Using a sound scope, check each fuel injector for operation sound during cranking.	Does the fuel injector emit operating sound?	Go to step 41.	Go to step 54.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
41 CHECK FUEL PRESSURE. WARNING: Place "NO OPEN FLAMES" signs near the working area. CAUTION: Be careful not to spill fuel. Measure the fuel pressure. <Ref. to ME(w/o STI)-31, INSPECTION, Fuel Pressure.> CAUTION: Release fuel pressure before removing the fuel pressure gauge.	Is the measured value 340 — 400 kPa (3.5 — 4.1 kgf/cm ² , 49 — 58 psi)?	Go to step 42.	Go to step 52.
42 CHECK IGNITION CONDITION. Check the ignition condition. <Ref. to EN(w/o STI)(diag)-80, IGNITION CONTROL SYSTEM, Diagnostics for Engine Starting Failure.>	Is the ignition condition normal?	Go to step 43.	Go to step 46.
43 CHECK FOR MALFUNCTION OCCURRENCE. Check for the condition of fault occurrence.	Does the fault occur only within approx. 15 to 120 minutes after the engine is stopped?	Go to step 45.	<ul style="list-style-type: none"> • When the fault occurs in two or three minutes or a long time after the engine is stopped: Go to step 44. • When the fault occurrence pattern is inconsistent: Go to step 94.
44 CHECK FUEL PRESSURE. WARNING: Place "NO OPEN FLAMES" signs near the working area. CAUTION: Be careful not to spill fuel. Measure the fuel pressure five minutes after the engine is stopped. <Ref. to ME(w/o STI)-31, INSPECTION, Fuel Pressure.> CAUTION: Release fuel pressure before removing the fuel pressure gauge. NOTE: If the engine does not start, measure the fuel pressure five minutes after cranking is completed.	Is the measured value 147 kPa (1.5 kgf/cm ² , 21 psi) or more?	Go to step 94.	Replace the pressure regulator. <Ref. to FU(w/o STI)-183, Fuel Filter.>
45 CHECK FUEL INJECTOR. 1) After the engine is stopped, scavenge inside of the intake manifold by applying compressed air. 2) Measure the HC concentration inside the intake manifold 15 minutes after scavenging is completed.	Is the HC concentration less than 4,000 ppm?	Go to step 94.	Replace the fuel injector. <Ref. to FU(w/o STI)-51, Fuel Injector.>
46 CHECK SPARK PLUG. Check the spark plug. <Ref. to IG(w/o STI)-8, INSPECTION, Spark Plug.>	Are the spark plugs normal?	Go to step 47.	Replace all spark plugs on all cylinders. <Ref. to IG(w/o STI)-4, Spark Plug.>

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ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>47 CHECK CURRENT DATA. Record the value of «Engine Speed» during cranking using Subaru Select Monitor. NOTE: For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, DISPLAY CURRENT ENGINE DATA, OPERATION, Subaru Select Monitor.></p>	Does the recorded value of «Engine Speed» contain data of 0 rpm?	It is possible that temporary fault occurs in the crankshaft position sensor circuit. Check the crankshaft position sensor circuit. <Ref. to EN(w/o STI)(diag)-236, DTC P0335 CRANKSHAFT POSITION SENSOR “A” CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>	Go to step 48 .
<p>48 CHECK IGNITION COIL POWER SUPPLY CIRCUIT. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ignition coil. 3) Turn the ignition switch to ON. 4) Measure the voltage between ignition coil connector and engine ground. Connector & terminal <i>(E31) No. 1 (+) — Engine ground (-):</i> <i>(E32) No. 1 (+) — Engine ground (-):</i> <i>(E33) No. 1 (+) — Engine ground (-):</i> <i>(E34) No. 1 (+) — Engine ground (-):</i></p>	Is the voltage 10 V or more?	Go to step 49 .	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit or short circuit to ground in power supply circuit • Poor contact of coupling connector • Blown out of fuse
<p>49 CHECK HARNESS BETWEEN ECM AND IGNITION COIL CONNECTOR. 1) Disconnect the connector from ECM. 2) Measure the resistance of harness between ECM connector and ignition coil connector. Connector & terminal <i>(E159) No. 8 — (E31) No. 2:</i> <i>(E159) No. 16 — (E32) No. 2:</i> <i>(E159) No. 24 — (E33) No. 2:</i> <i>(E159) No. 32 — (E34) No. 2:</i></p>	Is the resistance less than 1 Ω?	Go to step 50 .	Repair the open circuit in harness between ECM connector and ignition coil connector.
<p>50 CHECK HARNESS BETWEEN ECM AND IGNITION COIL CONNECTOR. Measure the resistance of harness between ECM connector and engine ground. Connector & terminal <i>(E159) No. 8 — Engine ground:</i> <i>(E159) No. 16 — Engine ground:</i> <i>(E159) No. 24 — Engine ground:</i> <i>(E159) No. 32 — Engine ground:</i></p>	Is the resistance 1 MΩ or more?	Go to step 51 .	Repair the ground short circuit of harness between ECM connector and ignition coil connector.
<p>51 CHECK HARNESS OF IGNITION COIL GROUND CIRCUIT. 1) Turn the ignition switch to OFF. 2) Measure the resistance of harness between ignition coil connector and engine ground. Connector & terminal <i>(E31) No. 3 — Engine ground:</i> <i>(E32) No. 3 — Engine ground:</i> <i>(E33) No. 3 — Engine ground:</i> <i>(E34) No. 3 — Engine ground:</i></p>	Is the resistance less than 5 Ω?	Replace the ignition coil. <Ref. to IG(w/o STI)-11, Ignition Coil.> If the fault occurs after servicing, continue the diagnosis. Go to step 99 .	Repair the open circuit in harness between ignition coil connector and engine grounding terminal.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
52 CHECK OF FUEL PUMP. 1) Select «Fuel Pump» from “Actuator ON/OFF Operation” in “System Operation Check Mode”. NOTE: For detailed procedures, refer to “System Operation Check Mode”. <Ref. to EN(w/o STI)(diag)-62, System Operation Check Mode.> 2) Check if operating sound occurs in the fuel pump according to ON/OFF switching operation.	Does the fuel pump emit operating sound?	Check the fuel pump and fuel delivery line. <Ref. to FU(w/o STI)-172, INSPECTION, Fuel Pump.> <Ref. to FU(w/o STI)-201, INSPECTION, Fuel Delivery and Evaporation Lines.>	Go to step 53 .
53 CHECK OF FUEL PUMP. Check fuel pump. <Ref. to FU(w/o STI)-172, INSPECTION, Fuel Pump.>	Is the fuel pump normal?	Check fuel pump system. <Ref. to EN(w/o STI)(diag)-209, DTC P0230 FUEL PUMP PRIMARY CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> If the fault occurs after servicing, continue the diagnosis. Go to step 94 .	Replace the fuel pump. <Ref. to FU(w/o STI)-168, Fuel Pump.>
54 CHECK CURRENT DATA. Record the value of «Engine Speed» during cranking using Subaru Select Monitor. NOTE: For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, DISPLAY CURRENT ENGINE DATA, OPERATION, Subaru Select Monitor.>	Does the recorded value of «Engine Speed» contain data of 0 rpm?	It is possible that temporary fault occurs in the crankshaft position sensor circuit. Check the crankshaft position sensor circuit. <Ref. to EN(w/o STI)(diag)-236, DTC P0335 CRANKSHAFT POSITION SENSOR “A” CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>	Go to step 55 .
55 CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and fuel injectors. 3) Measure the resistance of harness between ECM connector and fuel injector connector. Connector & terminal #1 (E158) No. 12 — (E5) No. 1: #1 (E158) No. 11 — (E5) No. 2: #2 (E158) No. 24 — (E16) No. 1: #2 (E158) No. 23 — (E16) No. 2: #3 (E158) No. 36 — (E6) No. 1: #3 (E158) No. 35 — (E6) No. 2: #4 (E158) No. 48 — (E17) No. 1: #4 (E158) No. 47 — (E17) No. 2:	Is the resistance less than 1 Ω?	Go to step 56 .	Repair the open circuit of the harness between the ECM connector and fuel injector connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
56 CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR. Measure the resistance between the ECM connector and engine ground. Connector & terminal #1 (E158) No. 12 — Engine ground: #1 (E158) No. 11 — Engine ground: #2 (E158) No. 24 — Engine ground: #2 (E158) No. 23 — Engine ground: #3 (E158) No. 36 — Engine ground: #3 (E158) No. 35 — Engine ground: #4 (E158) No. 48 — Engine ground: #4 (E158) No. 47 — Engine ground:	Is the resistance 1 MΩ or more?	Replace the ECM. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).>	Repair the short circuit to ground in harness between ECM connector and fuel injector connector.
57 CHECK MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR. Check the mass air flow and intake air temperature sensor. <Ref. to FU(w/o STI)-118, INSPECTION, Mass Air Flow and Intake Air Temperature Sensor.>	Is the mass air flow and intake air temperature sensor normal?	Go to step 58.	Go to step 78.
58 CHECK AIR INTAKE SYSTEM. Check the installing condition of the air intake system.	Are there holes, loose bolts or disconnection of hose on air intake system?	Repair the air intake system. <Ref. to IN(w/o STI)-2, General Description.>	Go to step 59.
59 CHECK ELECTRONIC THROTTLE CONTROL. 1) Disconnect the connectors from electronic throttle control. 2) Start the engine with the electronic throttle control connector disconnected.	Does the engine start?	Go to step 60.	Go to step 61.
60 CHECK THROTTLE BODY. Check throttle body. <Ref. to FU(w/o STI)-16, INSPECTION, Throttle Body.>	Is there any deposit in the throttle body?	Replace the throttle body. <Ref. to FU(w/o STI)-15, Throttle Body.>	Go to step 61.
61 CHECK FREEZE FRAME DATA. 1) Using the Subaru Select Monitor, read the values of the followings: «VVT Adv. Ang. Amount R», «VVT Advance Target Angle Amount R», «VVT Adv. Ang. Amount L», «VVT Advance Target Angle Amount L», «Exh. VVT Retard Ang. R», «Ex VVT Retard Target Angle R», «Exh. VVT Retard Ang. L» and «Ex VVT Retard Target Angle L». NOTE: For detailed operation procedures, refer to “Engine Freeze Frame Data Display”. <Ref. to EN(w/o STI)(diag)-43, DISPLAY OF ENGINE FREEZE FRAME DATA, OPERATION, Subaru Select Monitor.> 2) Using the Subaru Select Monitor, compare the respective values between the followings: «VVT Adv. Ang. Amount R» and «VVT Advance Target Angle Amount R», «VVT Adv. Ang. Amount L» and «VVT Advance Target Angle Amount L», «Exh. VVT Retard Ang. R» and «Ex VVT Retard Target Angle R», «Exh. VVT Retard Ang. L» and «Ex VVT Retard Target Angle L».	Does all of the advance angle amount and retard angle amount synchronize with their target values?	Go to step 112.	Diagnose the part where there is difference of 10 deg or more. <ul style="list-style-type: none"> • Intake RH: Go to step 62. • Intake LH: Go to step 66. • Exhaust RH: Go to step 70. • Exhaust LH: Go to step 74.

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ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
62 CHECK POWER SUPPLY TO THE INTAKE OIL CONTROL SOLENOID RH. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the intake oil control solenoid RH. 3) Turn the ignition switch to ON. 4) Measure the voltage between intake oil control solenoid RH connector and engine ground. <i>Connector & terminal</i> <i>(E38) No. 1 (+) — Engine ground (-):</i>	Is the voltage 10 V or more?	Go to step 63 .	Repair the power supply circuit.
63 CHECK HARNESS BETWEEN ECM AND INTAKE OIL CONTROL SOLENOID RH CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM connector and intake oil control solenoid RH. <i>Connector & terminal</i> <i>(E159) No. 7 — (E38) No. 2:</i>	Is the resistance less than 1 Ω ?	Go to step 64 .	Repair the open circuit in harness between ECM connector and intake oil control solenoid RH connector.
64 CHECK HARNESS BETWEEN ECM AND INTAKE OIL CONTROL SOLENOID RH CONNECTOR. Measure the resistance between intake oil control solenoid RH connector and engine ground. <i>Connector & terminal</i> <i>(E38) No. 2 — Engine ground:</i>	Is the resistance 1 M Ω or more?	Go to step 65 .	Repair the short circuit to ground in harness between ECM connector and intake oil control solenoid RH connector.
65 CHECK INTAKE OIL CONTROL SOLENOID RH. Check the intake oil control solenoid RH. <Ref. to FU(w/o STI)-110, INSPECTION, Oil Control Solenoid.>	Is the intake oil control solenoid RH normal?	Replace the intake cam sprocket RH. <Ref. to ME(w/o STI)-141, Cam Sprocket.>	Replace the intake oil control solenoid RH. <Ref. to FU(w/o STI)-108, Oil Control Solenoid.>
66 CHECK POWER SUPPLY TO THE INTAKE OIL CONTROL SOLENOID LH. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the intake oil control solenoid LH. 3) Turn the ignition switch to ON. 4) Measure the voltage between intake oil control solenoid LH connector and engine ground. <i>Connector & terminal</i> <i>(E37) No. 1 (+) — Engine ground (-):</i>	Is the voltage 10 V or more?	Go to step 67 .	Repair the power supply circuit.
67 CHECK HARNESS BETWEEN ECM AND INTAKE OIL CONTROL SOLENOID LH CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM connector and intake oil control solenoid LH. <i>Connector & terminal</i> <i>(E159) No. 15 — (E37) No. 2:</i>	Is the resistance less than 1 Ω ?	Go to step 68 .	Repair the open circuit in harness between ECM connector and intake oil control solenoid LH connector.
68 CHECK HARNESS BETWEEN ECM AND INTAKE OIL CONTROL SOLENOID LH CONNECTOR. Measure the resistance between intake oil control solenoid LH connector and engine ground. <i>Connector & terminal</i> <i>(E37) No. 2 — Engine ground:</i>	Is the resistance 1 M Ω or more?	Go to step 69 .	Repair the short circuit to ground in harness between ECM connector and intake oil control solenoid LH connector.

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ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
69 CHECK INTAKE OIL CONTROL SOLENOID LH. Check the intake oil control solenoid LH. <Ref. to FU(w/o STI)-110, INSPECTION, Oil Control Solenoid.>	Is the intake oil control solenoid LH normal?	Replace the intake cam sprocket LH. <Ref. to ME(w/o STI)-141, Cam Sprocket.>	Replace the intake oil control solenoid LH. <Ref. to FU(w/o STI)-108, Oil Control Solenoid.>
70 CHECK POWER SUPPLY TO THE EXHAUST OIL CONTROL SOLENOID RH. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the exhaust oil control solenoid RH. 3) Turn the ignition switch to ON. 4) Measure the voltage between exhaust oil control solenoid RH connector and engine ground. <i>Connector & terminal</i> <i>(E63) No. 1 (+) — Engine ground (-):</i>	Is the voltage 10 V or more?	Go to step 71.	Repair the power supply circuit.
71 CHECK HARNESS BETWEEN ECM AND EXHAUST OIL CONTROL SOLENOID RH CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM connector and exhaust oil control solenoid RH. <i>Connector & terminal</i> <i>(E159) No. 23 — (E63) No. 2:</i>	Is the resistance less than 1 Ω?	Go to step 72.	Repair the open circuit in harness between ECM connector and exhaust oil control solenoid RH connector.
72 CHECK HARNESS BETWEEN ECM AND EXHAUST OIL CONTROL SOLENOID RH CONNECTOR. Measure the resistance between exhaust oil control solenoid RH connector and engine ground. <i>Connector & terminal</i> <i>(E63) No. 2 — Engine ground:</i>	Is the resistance 1 MΩ or more?	Go to step 73.	Repair the short circuit to ground in harness between ECM connector and exhaust oil control solenoid RH connector.
73 CHECK EXHAUST OIL CONTROL SOLENOID RH. Check the exhaust oil control solenoid RH. <Ref. to FU(w/o STI)-110, INSPECTION, Oil Control Solenoid.>	Is the exhaust oil control solenoid RH normal?	Replace the exhaust cam sprocket RH. <Ref. to ME(w/o STI)-141, Cam Sprocket.>	Replace the exhaust oil control solenoid RH. <Ref. to FU(w/o STI)-108, Oil Control Solenoid.>
74 CHECK POWER SUPPLY TO THE EXHAUST OIL CONTROL SOLENOID LH. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the exhaust oil control solenoid LH. 3) Turn the ignition switch to ON. 4) Measure the voltage between exhaust oil control solenoid LH connector and engine ground. <i>Connector & terminal</i> <i>(E66) No. 1 (+) — Engine ground (-):</i>	Is the voltage 10 V or more?	Go to step 75.	Repair the power supply circuit.

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ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
75 CHECK HARNESS BETWEEN ECM AND EXHAUST OIL CONTROL SOLENOID LH CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM connector and exhaust oil control solenoid LH. <i>Connector & terminal</i> <i>(E159) No. 31 — (E66) No. 2:</i>	Is the resistance less than 1 Ω?	Go to step 76.	Repair the open circuit in harness between ECM connector and exhaust oil control solenoid LH connector.
76 CHECK HARNESS BETWEEN ECM AND EXHAUST OIL CONTROL SOLENOID LH CONNECTOR. Measure the resistance between exhaust oil control solenoid LH connector and engine ground. <i>Connector & terminal</i> <i>(E66) No. 2 — Engine ground:</i>	Is the resistance 1 MΩ or more?	Go to step 77.	Repair the short circuit to ground in harness between ECM connector and exhaust oil control solenoid LH connector.
77 CHECK EXHAUST OIL CONTROL SOLENOID LH. Check the exhaust oil control solenoid LH. <Ref. to FU(w/o STI)-110, INSPECTION, Oil Control Solenoid.>	Is the exhaust oil control solenoid LH normal?	Replace the exhaust cam sprocket LH. <Ref. to ME(w/o STI)-141, Cam Sprocket.>	Replace the exhaust oil control solenoid LH. <Ref. to FU(w/o STI)-108, Oil Control Solenoid.>
78 CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and the mass air flow and intake air temperature sensor. 3) Measure the resistance of harness between ECM connector and the mass air flow and intake air temperature sensor connector. <i>Connector & terminal</i> <i>(B134) No. 16 — (B3) No. 3:</i> <i>(B134) No. 28 — (B3) No. 2:</i>	Is the resistance less than 1 Ω?	Go to step 79.	Repair the open circuit of harness between ECM connector and the mass air flow and intake air temperature sensor connector.
79 CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR CONNECTOR. Measure the resistance between the ECM connector and engine ground. <i>Connector & terminal</i> <i>(B134) No. 16 — Engine ground:</i> <i>(B134) No. 28 — Engine ground:</i>	Is the resistance 1 MΩ or more?	Replace the mass air flow and intake air temperature sensor. <Ref. to FU(w/o STI)-118, Mass Air Flow and Intake Air Temperature Sensor.> If the fault occurs after servicing, continue the diagnosis. Go to step 112.	Repair the ground short circuit of harness between ECM connector and the mass air flow and intake air temperature sensor connector.

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Step	Check	Yes	No
<p>80</p> <p>CHECK ENGINE COOLANT TEMPERATURE SENSOR. Check the engine coolant temperature sensor. <Ref. to FU(w/o STI)-94, INSPECTION, Engine Coolant Temperature Sensor.></p>	<p>Is the engine coolant temperature sensor normal?</p>	<p>Go to step 81.</p>	<p>Replace the engine coolant temperature sensor. <Ref. to FU(w/o STI)-93, Engine Coolant Temperature Sensor.> If the fault occurs after servicing, replace the ECM. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).> If the fault still occurs after replacing the ECM, continue the diagnosis. Go to step 123.</p>
<p>81</p> <p>CHECK HARNESS BETWEEN ECM AND ENGINE COOLANT TEMPERATURE SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and engine coolant temperature sensor. 3) Measure the resistance of harness between ECM connector and engine coolant temperature sensor connector. Connector & terminal (E159) No. 27 — (E8) No. 1: (E158) No. 38 — (E8) No. 2:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 82.</p>	<p>Repair the open circuit of the harness between the ECM connector and engine coolant temperature sensor connector. If the fault occurs after servicing, replace the ECM. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).> If the fault still occurs after replacing the ECM, continue the diagnosis. Go to step 123.</p>
<p>82</p> <p>CHECK HARNESS BETWEEN ECM AND ENGINE COOLANT TEMPERATURE SENSOR CONNECTOR. Measure the resistance between the ECM connector and engine ground. Connector & terminal (E158) No. 38 — Engine ground: (E159) No. 27 — Engine ground:</p>	<p>Is the resistance 1 MΩ or more?</p>	<p>Go to step 83.</p>	<p>Repair the short circuit to ground in harness between ECM connector and engine coolant temperature sensor connector. If the fault occurs after servicing, replace the ECM. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).> If the fault still occurs after replacing the ECM, continue the diagnosis. Go to step 123.</p>

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ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
83 CHECK CURRENT DATA. 1) Turn the ignition switch to ON. (engine OFF) 2) Read the values of «Long term fuel trim B1» and «Atmosphere Pressure», using the Subaru Select Monitor. NOTE: For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, DISPLAY CURRENT ENGINE DATA, OPERATION, Subaru Select Monitor.>	Is the value of «Long term fuel trim B1» -25 — 25%, and «Atmosphere Pressure» 80 kPa (600 mmHg, 23.6 inHg) or more?	Go to step 86 .	Go to step 84 .
84 CHECK FOR MALFUNCTION OCCURRENCE. 1) Perform the Clear Memory Mode. <Ref. to EN(w/o STI)(diag)-61, Clear Memory Mode.> 2) Start the engine.	Does the engine start?	Go to step 85 .	Go to step 86 .
85 CHECK IDLE SPEED. Check the idle speed.	Is the idle speed stable?	Replace the mass air flow and intake air temperature sensor. <Ref. to FU(w/o STI)-118, Mass Air Flow and Intake Air Temperature Sensor.> If the fault occurs after servicing, replace the ECM. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).> If the fault still occurs after replacing the ECM, continue the diagnosis. Go to step 123 .	Replace the fuel injector. <Ref. to FU(w/o STI)-51, Fuel Injector.> If the fault occurs after servicing, replace the ECM. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).> If the fault still occurs after replacing the ECM, continue the diagnosis. Go to step 123 .
86 CHECK FUEL PRESSURE. WARNING: Place “NO OPEN FLAMES” signs near the working area. CAUTION: Be careful not to spill fuel. Measure the fuel pressure. <Ref. to ME(w/o STI)-31, INSPECTION, Fuel Pressure.> CAUTION: Release fuel pressure before removing the fuel pressure gauge.	Is the measured value 340 — 400 kPa (3.5 — 4.1 kgf/cm ² , 49 — 58 psi)?	Go to step 87 .	Go to step 93 .
87 CHECK FREEZE FRAME DATA. Using the Subaru Select Monitor, read the values in «Fuel Rail Pressure A» and «Commanded Fuel Rail Pressure A». NOTE: For detailed operation procedures, refer to “Engine Freeze Frame Data Display”. <Ref. to EN(w/o STI)(diag)-43, DISPLAY OF ENGINE FREEZE FRAME DATA, OPERATION, Subaru Select Monitor.>	Is the value in «Fuel Rail Pressure A» synchronized with the one in «Commanded Fuel Rail Pressure A» in all freeze frame data?	Go to step 88 .	Check the high-pressure fuel pump. <Ref. to FU(w/o STI)-82, INSPECTION, High Pressure Fuel Pump.>

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Step	Check	Yes	No
<p>88 CHECK SPARK PLUG. Check the spark plug. <Ref. to IG(w/o STI)-8, INSPECTION, Spark Plug.></p>	<p>Are all spark plug in all cylinders normal?</p>	<p>Go to step 89.</p>	<ul style="list-style-type: none"> • When spark plugs in some cylinders are faulty: Replace the faulty spark plugs of the cylinders, then check the ignition system and fuel system in the faulty cylinders. <Ref. to IG(w/o STI)-4, Spark Plug.> If the fault occurs after servicing, continue the diagnosis. Go to step 123. • When all spark plugs in all cylinders are faulty: Replace faulty spark plugs in all cylinders. <Ref. to IG(w/o STI)-4, Spark Plug.> If the fault occurs after servicing, continue the diagnosis. Go to step 123.
<p>89 CHECK FOR MALFUNCTION OCCURRENCE. Check for the condition of fault occurrence.</p>	<p>Does the fault occur only within approx. 15 to 120 minutes after the engine is stopped?</p>	<p>Go to step 91.</p>	<ul style="list-style-type: none"> • When the fault occurs in two or three minutes or a long time after the engine is stopped: Go to step 90. • When the fault occurrence pattern is inconsistent: Go to step 123.
<p>90 CHECK FUEL PRESSURE. WARNING: Place “NO OPEN FLAMES” signs near the working area. CAUTION: Be careful not to spill fuel. Measure the fuel pressure five minutes after the engine is stopped. <Ref. to ME(w/o STI)-31, INSPECTION, Fuel Pressure.> CAUTION: Release fuel pressure before removing the fuel pressure gauge. NOTE: If the engine does not start, measure the fuel pressure five minutes after cranking is completed.</p>	<p>Is the measured value 147 kPa (1.5 kgf/cm², 21 psi) or more?</p>	<p>Go to step 123.</p>	<p>Replace the pressure regulator. <Ref. to FU(w/o STI)-183, Fuel Filter.></p>

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Step	Check	Yes	No
91 CHECK PURGE CONTROL SOLENOID VALVE. Check purge control solenoid valve 1 and purge control solenoid valve 2. <Ref. to EC(w/o STI)-29, INSPECTION, Purge Control Solenoid Valve.>	Are the purge control solenoid valve 1 and the purge control solenoid valve 2 normal?	Go to step 92 .	Replace the faulty purge control solenoid valve. <Ref. to EC(w/o STI)-22, Purge Control Solenoid Valve.>
92 CHECK FUEL INJECTOR. 1) After the engine is stopped, scavenge inside of the intake manifold by applying compressed air. 2) Measure the HC concentration inside the intake manifold 15 minutes after scavenging is completed.	Is the HC concentration less than 4,000 ppm?	Go to step 123 .	Replace the fuel injector. <Ref. to FU(w/o STI)-51, Fuel Injector.>
93 CHECK OF FUEL PUMP. Check fuel pump. <Ref. to FU(w/o STI)-172, INSPECTION, Fuel Pump.>	Is the fuel pump normal?	Check fuel pump system. <Ref. to EN(w/o STI)(diag)-209, DTC P0230 FUEL PUMP PRIMARY CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> If the fault occurs after servicing, continue the diagnosis. Go to step 123 .	Replace the fuel pump. <Ref. to FU(w/o STI)-168, Fuel Pump.>
94 CHECK FUEL INJECTOR. Check fuel injector. <Ref. to FU(w/o STI)-70, INSPECTION, Fuel Injector.>	Are fuel injectors OK?	Go to step 95 .	Replace the fuel injector. <Ref. to FU(w/o STI)-51, Fuel Injector.>
95 CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and fuel injectors. 3) Measure the resistance of harness between ECM connector and fuel injector connector. Connector & terminal #1 (E158) No. 12 — (E5) No. 1: #1 (E158) No. 11 — (E5) No. 2: #2 (E158) No. 24 — (E16) No. 1: #2 (E158) No. 23 — (E16) No. 2: #3 (E158) No. 36 — (E6) No. 1: #3 (E158) No. 35 — (E6) No. 2: #4 (E158) No. 48 — (E17) No. 1: #4 (E158) No. 47 — (E17) No. 2:	Is the resistance less than 1 Ω?	Go to step 96 .	Repair the open circuit of the harness between the ECM connector and fuel injector connector.
96 CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR. Measure the resistance between the ECM connector and engine ground. Connector & terminal #1 (E158) No. 12 — Engine ground: #1 (E158) No. 11 — Engine ground: #2 (E158) No. 24 — Engine ground: #2 (E158) No. 23 — Engine ground: #3 (E158) No. 36 — Engine ground: #3 (E158) No. 35 — Engine ground: #4 (E158) No. 48 — Engine ground: #4 (E158) No. 47 — Engine ground:	Is the resistance 1 MΩ or more?	Go to step 97 .	Repair the short circuit to ground in harness between ECM connector and fuel injector connector.

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Step	Check	Yes	No
97 CHECK FOR MALFUNCTION OCCURRENCE. 1) Replace the crankshaft position sensor. <Ref. to FU(w/o STI)-98, Crankshaft Position Sensor.> 2) Check that the fault is removed.	Is the fault removed?	Perform the Clear Memory Mode to complete. <Ref. to EN(w/o STI)(diag)-61, Clear Memory Mode.>	Go to step 98 .
98 CHECK FOR MALFUNCTION OCCURRENCE. 1) Replace the camshaft position sensor. <Ref. to FU(w/o STI)-103, Camshaft Position Sensor.> 2) Check that the fault is removed.	Is the fault removed?	Perform the Clear Memory Mode to complete. <Ref. to EN(w/o STI)(diag)-61, Clear Memory Mode.>	Replace the ECM. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).>
99 CHECK INSTALLATION CONDITION OF CRANKSHAFT POSITION SENSOR.	Is the crankshaft position sensor installed correctly?	Go to step 100 .	Install the crankshaft position sensor correctly. <Ref. to FU(w/o STI)-99, INSTALLATION, Crankshaft Position Sensor.>
100 CHECK INSTALLATION CONDITION OF CAMSHAFT POSITION SENSOR.	Is the camshaft position sensor installed correctly?	Go to step 101 .	Install the camshaft position sensor correctly. <Ref. to FU(w/o STI)-104, INSTALLATION, Camshaft Position Sensor.>
101 CHECK POWER SUPPLY TO CRANKSHAFT POSITION SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the crankshaft position sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between crankshaft position sensor connector and engine ground. <i>Connector & terminal</i> <i>(E10) No. 1 (+) — Engine ground (-):</i>	Is the voltage 10 V or more?	Go to step 102 .	Repair the power supply circuit.
102 CHECK HARNESS BETWEEN ECM AND CRANKSHAFT POSITION SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM connector and crankshaft position sensor connector. <i>Connector & terminal</i> <i>(E158) No. 19 — (E10) No. 2:</i> <i>(E158) No. 31 — (E10) No. 3:</i>	Is the resistance less than 1 Ω ?	Go to step 103 .	Repair the open circuit in the harness between the ECM connector and crankshaft position sensor connector.
103 CHECK HARNESS BETWEEN ECM AND CRANKSHAFT POSITION SENSOR CONNECTOR. Measure the resistance between crankshaft position sensor connector and engine ground. <i>Connector & terminal</i> <i>(E10) No. 2 — Engine ground:</i> <i>(E10) No. 3 — Engine ground:</i>	Is the resistance 1 M Ω or more?	Go to step 104 .	Repair short circuit to ground in harness between ECM connector and crankshaft position sensor connector.

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Step	Check	Yes	No
<p>104 CHECK POWER SUPPLY OF INTAKE CAMSHAFT POSITION SENSOR.</p> <ol style="list-style-type: none"> 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the intake camshaft position sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between intake camshaft position sensor connector and engine ground. <p>Connector & terminal (E35) No. 1 (+) — Engine ground (-): (E36) No. 1 (+) — Engine ground (-):</p>	Is the voltage 10 V or more?	Go to step 105 .	<p>Repair the harness and connector.</p> <p>NOTE: In this case, repair the following item:</p> <ul style="list-style-type: none"> • Open circuit or short circuit to ground in harness between main relay connector and intake camshaft position sensor connector • Poor contact of coupling connector
<p>105 CHECK HARNESS BETWEEN ECM AND INTAKE CAMSHAFT POSITION SENSOR CONNECTOR.</p> <ol style="list-style-type: none"> 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connector and intake camshaft position sensor connector. <p>Connector & terminal (E158) No. 21 — (E35) No. 2: (E158) No. 34 — (E35) No. 3: (E158) No. 20 — (E36) No. 2: (E158) No. 34 — (E36) No. 3:</p>	Is the resistance less than 1 Ω ?	Go to step 106 .	<p>Repair the open circuit in the harness between ECM connector and intake camshaft position sensor connector.</p>
<p>106 CHECK HARNESS BETWEEN ECM AND INTAKE CAMSHAFT POSITION SENSOR CONNECTOR.</p> <p>Measure the resistance between intake camshaft position sensor connector and engine ground.</p> <p>Connector & terminal (E35) No. 2 — Engine ground: (E36) No. 2 — Engine ground:</p>	Is the resistance 1 M Ω or more?	Go to step 107 .	<p>Repair short circuit to ground in the harness between ECM connector and intake camshaft position sensor connector.</p>
<p>107 CHECK POWER SUPPLY OF EXHAUST CAMSHAFT POSITION SENSOR.</p> <ol style="list-style-type: none"> 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the exhaust camshaft position sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between exhaust camshaft position sensor connector and engine ground. <p>Connector & terminal (E62) No. 1 (+) — Engine ground (-): (E65) No. 1 (+) — Engine ground (-):</p>	Is the voltage 10 V or more?	Go to step 108 .	<p>Repair the harness and connector.</p> <p>NOTE: In this case, repair the following item:</p> <ul style="list-style-type: none"> • Open circuit in harness between main relay and exhaust camshaft position sensor connector • Poor contact of coupling connector

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Step	Check	Yes	No
108 CHECK HARNESS BETWEEN ECM AND EXHAUST CAMSHAFT POSITION SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connector and exhaust crankshaft position sensor connector. Connector & terminal (E158) No. 32 — (E62) No. 2: (E158) No. 34 — (E62) No. 3: (E158) No. 33 — (E65) No. 2: (E158) No. 34 — (E65) No. 3:	Is the resistance less than 1 Ω ?	Go to step 109.	Repair the open circuit in the harness between ECM connector and exhaust camshaft position sensor connector.
109 CHECK HARNESS BETWEEN ECM AND EXHAUST CAMSHAFT POSITION SENSOR. Measure the resistance between exhaust camshaft position sensor connector and engine ground. Connector & terminal (E62) No. 2 — Engine ground: (E65) No. 2 — Engine ground:	Is the resistance 1 M Ω or more?	Go to step 110.	Repair short circuit to ground in the harness between ECM connector and exhaust camshaft position sensor connector.
110 CHECK FOR MALFUNCTION OCCURRENCE. 1) Replace the crankshaft position sensor. <Ref. to FU(w/o STI)-98, Crankshaft Position Sensor.> 2) Check that the fault is removed.	Is the fault removed?	Perform the Clear Memory Mode to complete. <Ref. to EN(w/o STI)(diag)-61, Clear Memory Mode.>	Go to step 111.
111 CHECK FOR MALFUNCTION OCCURRENCE. 1) Replace the camshaft position sensor. <Ref. to FU(w/o STI)-103, Camshaft Position Sensor.> 2) Check that the fault is removed.	Is the fault removed?	Perform the Clear Memory Mode to complete. <Ref. to EN(w/o STI)(diag)-61, Clear Memory Mode.>	Replace the ECM. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).>
112 CHECK ENGINE COOLANT TEMPERATURE SENSOR. Check the engine coolant temperature sensor. <Ref. to FU(w/o STI)-94, INSPECTION, Engine Coolant Temperature Sensor.>	Is the engine coolant temperature sensor normal?	Go to step 113.	Replace the engine coolant temperature sensor. <Ref. to FU(w/o STI)-93, Engine Coolant Temperature Sensor.>
113 CHECK FUEL PRESSURE. 1) Read the value of «Fuel Rail Pressure A» during cranking 304 — during cranking using Subaru Select Monitor. NOTE: For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, DISPLAY CURRENT ENGINE DATA, OPERATION, Subaru Select Monitor.> WARNING: Place “NO OPEN FLAMES” signs near the working area. CAUTION: Be careful not to spill fuel. 2) Measure the fuel pressure five minutes after the engine is stopped. <Ref. to ME(w/o STI)-31, INSPECTION, Fuel Pressure.> CAUTION: Release fuel pressure before removing the fuel pressure gauge.	Is the value of «Fuel Rail Pressure A» during cranking 304 — 353 kPa (3.1 — 3.6 kgf/cm ² , 44 — 51 psi), and is the fuel pressure five minutes after engine stop 147 kPa (1.5 kgf/cm ² , 21 psi) or more?	Go to step 114.	Go to step 122.

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Step	Check	Yes	No
114 CHECK CURRENT DATA. 1) Turn the ignition switch to ON. (engine OFF) 2) Read the value of «Long term fuel trim B1» using the Subaru Select Monitor. NOTE: For detailed operation procedures, refer to "Current Data Display For Engine". <Ref. to EN(w/o STI)(diag)-37, DISPLAY CURRENT ENGINE DATA, OPERATION, Subaru Select Monitor.>	Does the value of «Long term fuel trim B1» fall within a range of -15 — 15%?	Go to step 115.	Replace the fuel injector. <Ref. to FU(w/o STI)-51, Fuel Injector.>
115 CHECK FOR MALFUNCTION OCCURRENCE. Start the engine and check the idling speed.	Is the idling speed stable all time?	It is possible that the fault comes from fuel. Replace fuel.	Go to step 116.
116 CHECK INSTALLATION CONDITION OF CRANKSHAFT POSITION SENSOR.	Is the crankshaft position sensor installed correctly?	Go to step 117.	Install the crankshaft position sensor correctly. <Ref. to FU(w/o STI)-99, INSTALLATION, Crankshaft Position Sensor.>
117 CHECK POWER SUPPLY TO CRANKSHAFT POSITION SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the crankshaft position sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between crankshaft position sensor connector and engine ground. <i>Connector & terminal</i> <i>(E10) No. 1 (+) — Engine ground (-):</i>	Is the voltage 10 V or more?	Go to step 118.	Repair the power supply circuit.
118 CHECK HARNESS BETWEEN ECM AND CRANKSHAFT POSITION SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM connector and crankshaft position sensor connector. <i>Connector & terminal</i> <i>(E158) No. 19 — (E10) No. 2:</i> <i>(E158) No. 31 — (E10) No. 3:</i>	Is the resistance less than 1 Ω?	Go to step 119.	Repair the open circuit in the harness between the ECM connector and crankshaft position sensor connector.
119 CHECK HARNESS BETWEEN ECM AND CRANKSHAFT POSITION SENSOR CONNECTOR. Measure the resistance between crankshaft position sensor connector and engine ground. <i>Connector & terminal</i> <i>(E10) No. 2 — Engine ground:</i> <i>(E10) No. 3 — Engine ground:</i>	Is the resistance 1 MΩ or more?	Go to step 120.	Repair short circuit to ground in harness between ECM connector and crankshaft position sensor connector.
120 CHECK COMPRESSION PRESSURE. Check the compression pressure. <Ref. to ME(w/o STI)-23, INSPECTION, Compression.>	Is the compression pressure normal?	Go to step 121.	Check the engine. <Ref. to ME(w/o STI)-352, INSPECTION, Engine Trouble in General.>

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Step	Check	Yes	No
<p>121 CHECK FOR MALFUNCTION OCCURRENCE. 1) Replace the crankshaft position sensor. <Ref. to FU(w/o STI)-98, Crankshaft Position Sensor.> 2) Check that the fault is removed.</p>	Is the fault removed?	Perform the Clear Memory Mode to complete. <Ref. to EN(w/o STI)(diag)-61, Clear Memory Mode.>	Check the valve timing. <Ref. to ME(w/o STI)-116, Timing Chain Assembly.> When the valve timing is normal, replace the ECM. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).>
<p>122 CHECK OF FUEL PUMP. Check fuel pump. <Ref. to FU(w/o STI)-172, INSPECTION, Fuel Pump.></p>	Is the fuel pump normal?	Check fuel pump system. <Ref. to EN(w/o STI)(diag)-209, DTC P0230 FUEL PUMP PRIMARY CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>	Replace the fuel pump. <Ref. to FU(w/o STI)-168, Fuel Pump.>
<p>123 CHECK FUEL PRESSURE. 1) Read the value of «Fuel Rail Pressure A» during cranking using Subaru Select Monitor. NOTE: For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, DISPLAY CURRENT ENGINE DATA, OPERATION, Subaru Select Monitor.> WARNING: Place “NO OPEN FLAMES” signs near the working area. CAUTION: Be careful not to spill fuel. 2) Measure the fuel pressure five minutes after the engine is stopped. <Ref. to ME(w/o STI)-31, INSPECTION, Fuel Pressure.> CAUTION: Release fuel pressure before removing the fuel pressure gauge.</p>	Is the value of «Fuel Rail Pressure A» during cranking 304 — 353 kPa (3.1 — 3.6 kgf/cm ² , 44 — 51 psi), and is the fuel pressure five minutes after engine stop 147 kPa (1.5 kgf/cm ² , 21 psi) or more?	Go to step 124.	Go to step 131.
<p>124 CHECK CURRENT DATA. 1) Turn the ignition switch to ON. (engine OFF) 2) Read the value of «Long term fuel trim B1» using the Subaru Select Monitor. NOTE: For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, DISPLAY CURRENT ENGINE DATA, OPERATION, Subaru Select Monitor.></p>	Does the value of «Long term fuel trim B1» fall within a range of -15 — 15%?	Go to step 125.	Replace the fuel injector. <Ref. to FU(w/o STI)-51, Fuel Injector.>
<p>125 CHECK FOR MALFUNCTION OCCURRENCE. Start the engine and check the idling speed.</p>	Is the idling speed stable all time?	It is possible that the fault comes from fuel. Replace fuel.	Go to step 126.

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Step	Check	Yes	No
126 CHECK INSTALLATION CONDITION OF CRANKSHAFT POSITION SENSOR.	Is the crankshaft position sensor installed correctly?	Go to step 127 .	Install the crankshaft position sensor correctly. <Ref. to FU(w/o STI)-99, INSTALLATION, Crankshaft Position Sensor.>
127 CHECK POWER SUPPLY TO CRANKSHAFT POSITION SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the crankshaft position sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between crankshaft position sensor connector and engine ground. Connector & terminal (E10) No. 1 (+) — Engine ground (-):	Is the voltage 10 V or more?	Go to step 128 .	Repair the power supply circuit.
128 CHECK HARNESS BETWEEN ECM AND CRANKSHAFT POSITION SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM connector and crankshaft position sensor connector. Connector & terminal (E158) No. 19 — (E10) No. 2: (E158) No. 31 — (E10) No. 3:	Is the resistance less than 1 Ω ?	Go to step 129 .	Repair the open circuit in the harness between the ECM connector and crankshaft position sensor connector.
129 CHECK HARNESS BETWEEN ECM AND CRANKSHAFT POSITION SENSOR CONNECTOR. Measure the resistance between crankshaft position sensor connector and engine ground. Connector & terminal (E10) No. 2 — Engine ground: (E10) No. 3 — Engine ground:	Is the resistance 1 M Ω or more?	Go to step 130 .	Repair short circuit to ground in harness between ECM connector and crankshaft position sensor connector.
130 CHECK FOR MALFUNCTION OCCURRENCE. 1) Replace the crankshaft position sensor. <Ref. to FU(w/o STI)-98, Crankshaft Position Sensor.> 2) Check that the fault is removed.	Is the fault removed?	Perform the Clear Memory Mode to complete. <Ref. to EN(w/o STI)(diag)-61, Clear Memory Mode.>	Replace the ECM. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).>
131 CHECK OF FUEL PUMP. Check fuel pump. <Ref. to FU(w/o STI)-172, INSPECTION, Fuel Pump.>	Is the fuel pump normal?	Go to step 132 .	Replace the fuel pump. <Ref. to FU(w/o STI)-168, Fuel Pump.>
132 CHECK FUEL PUMP SYSTEM. Check fuel pump system. <Ref. to EN(w/o STI)(diag)-209, DTC P0230 FUEL PUMP PRIMARY CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>	Is the fuel pump system normal?	Go to step 133 .	Repair the fuel pump system. <Ref. to EN(w/o STI)(diag)-209, DTC P0230 FUEL PUMP PRIMARY CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

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ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
133 CHECK PURGE CONTROL SOLENOID VALVE. Check purge control solenoid valve 1 and purge control solenoid valve 2. <Ref. to EC(w/o STI)-29, INSPECTION, Purge Control Solenoid Valve.>	Are the purge control solenoid valve 1 and the purge control solenoid valve 2 normal?	Go to step 134 .	Replace the faulty purge control solenoid valve. <Ref. to EC(w/o STI)-22, Purge Control Solenoid Valve.>
134 CHECK FUEL INJECTOR. 1) After the engine is stopped, scavenge inside of the intake manifold by applying compressed air. 2) Measure the HC concentration inside the intake manifold 15 minutes after scavenging is completed.	Is the HC concentration less than 4,000 ppm?	Go to step 135 .	Replace the fuel injector. <Ref. to FU(w/o STI)-51, Fuel Injector.>
135 CHECK INTAKE VALVE. Check the intake valve. <Ref. to ME(w/o STI)-236, INSPECTION, Cylinder Head.>	Is there any deposit in the intake valve?	Clean the intake valve. <Ref. to ME(w/o STI)-215, Cylinder Head.>	Go to step 136 .
136 CHECK ENGINE COOLANT TEMPERATURE SENSOR. Check the engine coolant temperature sensor. <Ref. to FU(w/o STI)-94, INSPECTION, Engine Coolant Temperature Sensor.>	Is the engine coolant temperature sensor normal?	Go to step 137 .	Replace the engine coolant temperature sensor. <Ref. to FU(w/o STI)-93, Engine Coolant Temperature Sensor.>
137 CHECK INSTALLATION CONDITION OF CRANKSHAFT POSITION SENSOR.	Is the crankshaft position sensor installed correctly?	Go to step 138 .	Install the crankshaft position sensor correctly. <Ref. to FU(w/o STI)-99, INSTALLATION, Crankshaft Position Sensor.>
138 CHECK INSTALLATION CONDITION OF CAMSHAFT POSITION SENSOR.	Is the camshaft position sensor installed correctly?	Go to step 139 .	Install the camshaft position sensor correctly. <Ref. to FU(w/o STI)-104, INSTALLATION, Camshaft Position Sensor.>
139 CHECK POWER SUPPLY TO CRANKSHAFT POSITION SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the crankshaft position sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between crankshaft position sensor connector and engine ground. <i>Connector & terminal</i> <i>(E10) No. 1 (+) — Engine ground (-):</i>	Is the voltage 10 V or more?	Go to step 140 .	Repair the power supply circuit.
140 CHECK HARNESS BETWEEN ECM AND CRANKSHAFT POSITION SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM connector and crankshaft position sensor connector. <i>Connector & terminal</i> <i>(E158) No. 19 — (E10) No. 2:</i> <i>(E158) No. 31 — (E10) No. 3:</i>	Is the resistance less than 1 Ω ?	Go to step 141 .	Repair the open circuit in the harness between the ECM connector and crankshaft position sensor connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
141 CHECK HARNESS BETWEEN ECM AND CRANKSHAFT POSITION SENSOR CONNECTOR. Measure the resistance between crankshaft position sensor connector and engine ground. Connector & terminal <i>(E10) No. 2 — Engine ground:</i> <i>(E10) No. 3 — Engine ground:</i>	Is the resistance 1 M Ω or more?	Go to step 142.	Repair short circuit to ground in harness between ECM connector and crankshaft position sensor connector.
142 CHECK POWER SUPPLY OF INTAKE CAMSHAFT POSITION SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the intake camshaft position sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between intake camshaft position sensor connector and engine ground. Connector & terminal <i>(E35) No. 1 (+) — Engine ground (-):</i> <i>(E36) No. 1 (+) — Engine ground (-):</i>	Is the voltage 10 V or more?	Go to step 143.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit or short circuit to ground in harness between main relay connector and intake camshaft position sensor connector • Poor contact of coupling connector
143 CHECK HARNESS BETWEEN ECM AND INTAKE CAMSHAFT POSITION SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connector and intake camshaft position sensor connector. Connector & terminal <i>(E158) No. 21 — (E35) No. 2:</i> <i>(E158) No. 34 — (E35) No. 3:</i> <i>(E158) No. 20 — (E36) No. 2:</i> <i>(E158) No. 34 — (E36) No. 3:</i>	Is the resistance less than 1 Ω ?	Go to step 144.	Repair the open circuit in the harness between ECM connector and intake camshaft position sensor connector.
144 CHECK HARNESS BETWEEN ECM AND INTAKE CAMSHAFT POSITION SENSOR CONNECTOR. Measure the resistance between intake camshaft position sensor connector and engine ground. Connector & terminal <i>(E35) No. 2 — Engine ground:</i> <i>(E36) No. 2 — Engine ground:</i>	Is the resistance 1 M Ω or more?	Go to step 145.	Repair short circuit to ground in the harness between ECM connector and intake camshaft position sensor connector.
145 CHECK POWER SUPPLY OF EXHAUST CAMSHAFT POSITION SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the exhaust camshaft position sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between exhaust camshaft position sensor connector and engine ground. Connector & terminal <i>(E62) No. 1 (+) — Engine ground (-):</i> <i>(E65) No. 1 (+) — Engine ground (-):</i>	Is the voltage 10 V or more?	Go to step 146.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between main relay and exhaust camshaft position sensor connector • Poor contact of coupling connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
146 CHECK HARNESS BETWEEN ECM AND EXHAUST CAMSHAFT POSITION SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connector and exhaust crankshaft position sensor connector. Connector & terminal (E158) No. 32 — (E62) No. 2: (E158) No. 34 — (E62) No. 3: (E158) No. 33 — (E65) No. 2: (E158) No. 34 — (E65) No. 3:	Is the resistance less than 1 Ω?	Go to step 147 .	Repair the open circuit in the harness between ECM connector and exhaust camshaft position sensor connector.
147 CHECK HARNESS BETWEEN ECM AND EXHAUST CAMSHAFT POSITION SENSOR. Measure the resistance between exhaust camshaft position sensor connector and engine ground. Connector & terminal (E62) No. 2 — Engine ground: (E65) No. 2 — Engine ground:	Is the resistance 1 MΩ or more?	Go to step 148 .	Repair short circuit to ground in the harness between ECM connector and exhaust camshaft position sensor connector.
148 CHECK COMPRESSION PRESSURE. Check the compression pressure. <Ref. to ME(w/o STI)-23, INSPECTION, Compression.>	Is the compression pressure normal?	Go to step 149 .	Check the engine. <Ref. to ME(w/o STI)-352, INSPECTION, Engine Trouble in General.>
149 CHECK FOR MALFUNCTION OCCURRENCE. 1) Replace the crankshaft position sensor. <Ref. to FU(w/o STI)-98, Crankshaft Position Sensor.> 2) Check that the fault is removed.	Is the fault removed?	Perform the Clear Memory Mode to complete. <Ref. to EN(w/o STI)(diag)-61, Clear Memory Mode.>	Go to step 150 .
150 CHECK FOR MALFUNCTION OCCURRENCE. 1) Replace the camshaft position sensor. <Ref. to FU(w/o STI)-103, Camshaft Position Sensor.> 2) Check that the fault is removed.	Is the fault removed?	Perform the Clear Memory Mode to complete. <Ref. to EN(w/o STI)(diag)-61, Clear Memory Mode.>	Check the valve timing. <Ref. to ME(w/o STI)-116, Timing Chain Assembly.> When the valve timing is normal, replace the ECM. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

EZ:DTC P1C00 BATTERY MONITOR MODULE "A"

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-182, DTC P1C00 BATTERY MONITOR MODULE "A", Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK DTC. Check for DTC. <Ref. to EN(w/o STI)(diag)-46, Read Diagnostic Trouble Code (DTC).>	Is P1C00 displayed in «Present fault»?	Replace the battery sensor. <Ref. to SC(w/o STI)-56, Battery Sensor.>	Even if DTC is detected, it has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-183, DTC P2004 INTAKE MANIFOLD RUNNER CONTROL STUCK OPEN (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check the appropriate DTC using the "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK TUMBLE GENERATOR VALVE RH. 1) Remove the tumble generator valve assembly RH. 2) Check the tumble generator valve.	Is there any dirt or clogging with foreign objects in the tumble generator valve?	Clean the tumble generator valve.	Replace the tumble generator valve RH. <Ref. to FU(w/o STI)-43, Tumble Generator Valve Assembly.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-184, DTC P2005 INTAKE MANIFOLD RUNNER CONTROL STUCK OPEN (BANK 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check the appropriate DTC using the "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK TUMBLE GENERATOR VALVE LH. 1) Remove the tumble generator valve assembly LH. 2) Check the tumble generator valve.	Is there any dirt or clogging with foreign objects in the tumble generator valve?	Clean the tumble generator valve.	Replace the tumble generator valve LH. <Ref. to FU(w/o STI)-43, Tumble Generator Valve Assembly.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-185, DTC P2006 INTAKE MANIFOLD RUNNER CONTROL STUCK CLOSED (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check the appropriate DTC using the "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK TUMBLE GENERATOR VALVE RH. 1) Remove the tumble generator valve assembly RH. 2) Check the tumble generator valve.	Is there any dirt or clogging with foreign objects in the tumble generator valve?	Clean the tumble generator valve.	Replace the tumble generator valve RH. <Ref. to FU(w/o STI)-43, Tumble Generator Valve Assembly.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-186, DTC P2007 INTAKE MANIFOLD RUNNER CONTROL STUCK CLOSED (BANK 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check the appropriate DTC using the "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK TUMBLE GENERATOR VALVE LH. 1) Remove the tumble generator valve assembly LH. 2) Check the tumble generator valve.	Is there any dirt or clogging with foreign objects in the tumble generator valve?	Clean the tumble generator valve.	Replace the tumble generator valve LH. <Ref. to FU(w/o STI)-43, Tumble Generator Valve Assembly.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

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

DTC DETECTING CONDITION:

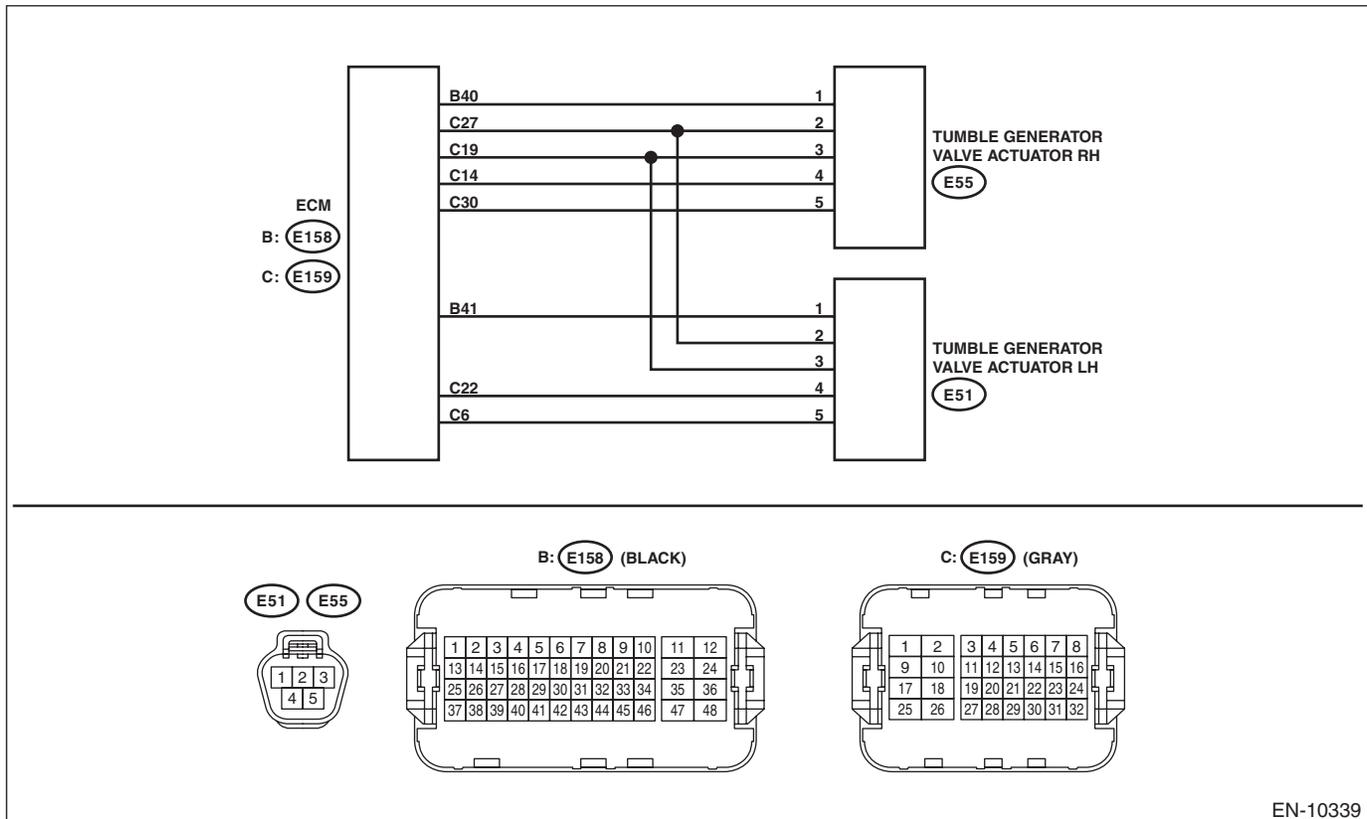
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-187, DTC P2009 INTAKE MANIFOLD RUNNER CONTROL CIRCUIT LOW (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



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Step	Check	Yes	No
1 CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ACTUATOR RH CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the voltage between ECM connector and engine ground. Connector & terminal (E159) No. 14 (+) — Engine ground (-): (E159) No. 30 (+) — Engine ground (-):	Is the voltage 5 V or more?	Repair the short circuit to power in harness between ECM connector and tumble generator valve actuator RH connector.	Replace the tumble generator valve actuator RH. <Ref. to FU(w/o STI)-45, Tumble Generator Valve Actuator.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

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

DTC DETECTING CONDITION:

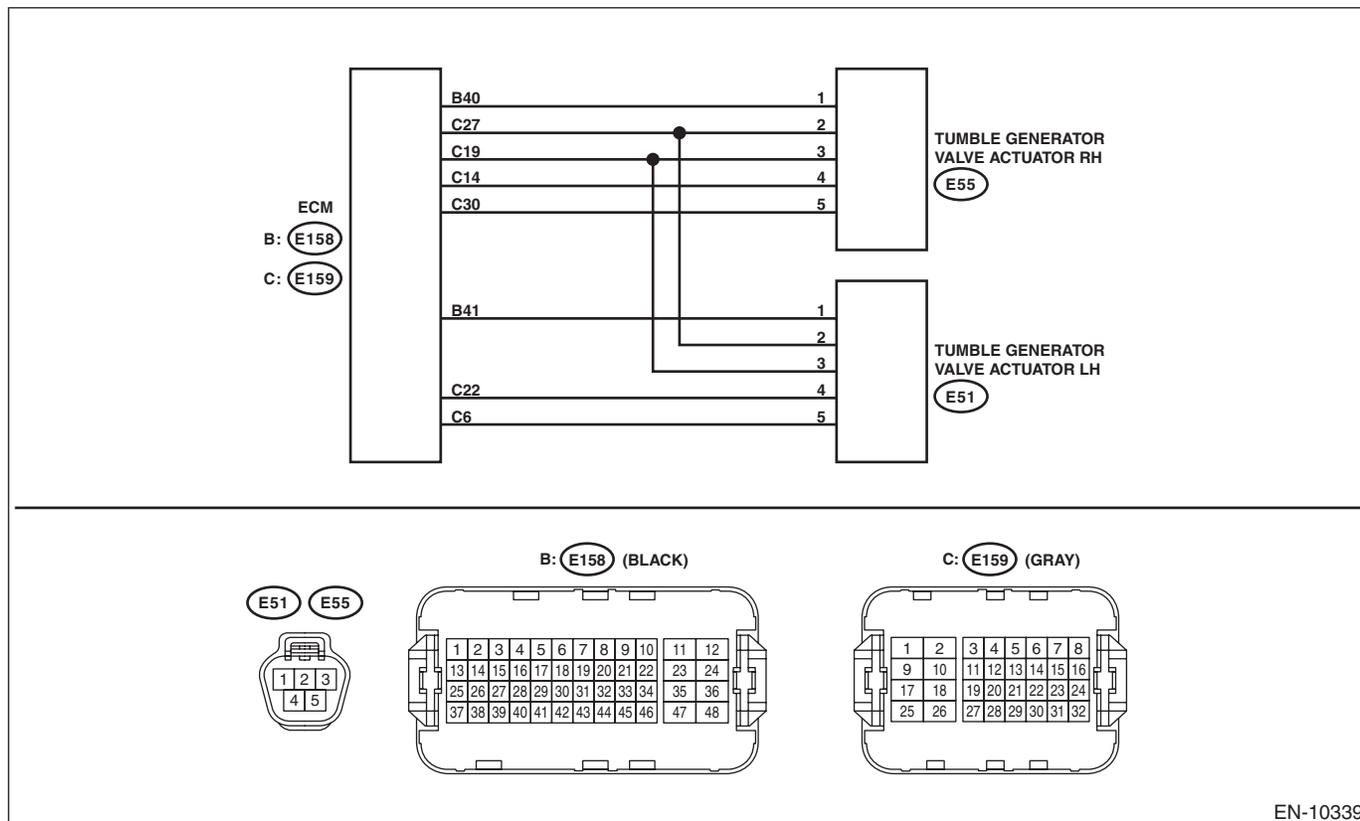
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-188, DTC P2012 INTAKE MANIFOLD RUNNER CONTROL CIRCUIT LOW (BANK 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



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Step	Check	Yes	No
<p>1</p> <p>CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ACTUATOR LH CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the voltage between ECM connector and engine ground.</p> <p>Connector & terminal (E159) No. 6 (+) — Engine ground (-): (E159) No. 22 (+) — Engine ground (-):</p>	<p>Is the voltage 5 V or more?</p>	<p>Repair the short circuit to power in harness between ECM connector and tumble generator valve actuator LH connector.</p>	<p>Replace the tumble generator valve actuator LH. <Ref. to FU(w/o STI)-45, Tumble Generator Valve Actuator.></p>

FG:DTC P2016 TUMBLE GENERATED VALVE POSITION SENSOR 1 CIRCUIT LOW

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-189, DTC P2016 TUMBLE GENERATED VALVE POSITION SENSOR 1 CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

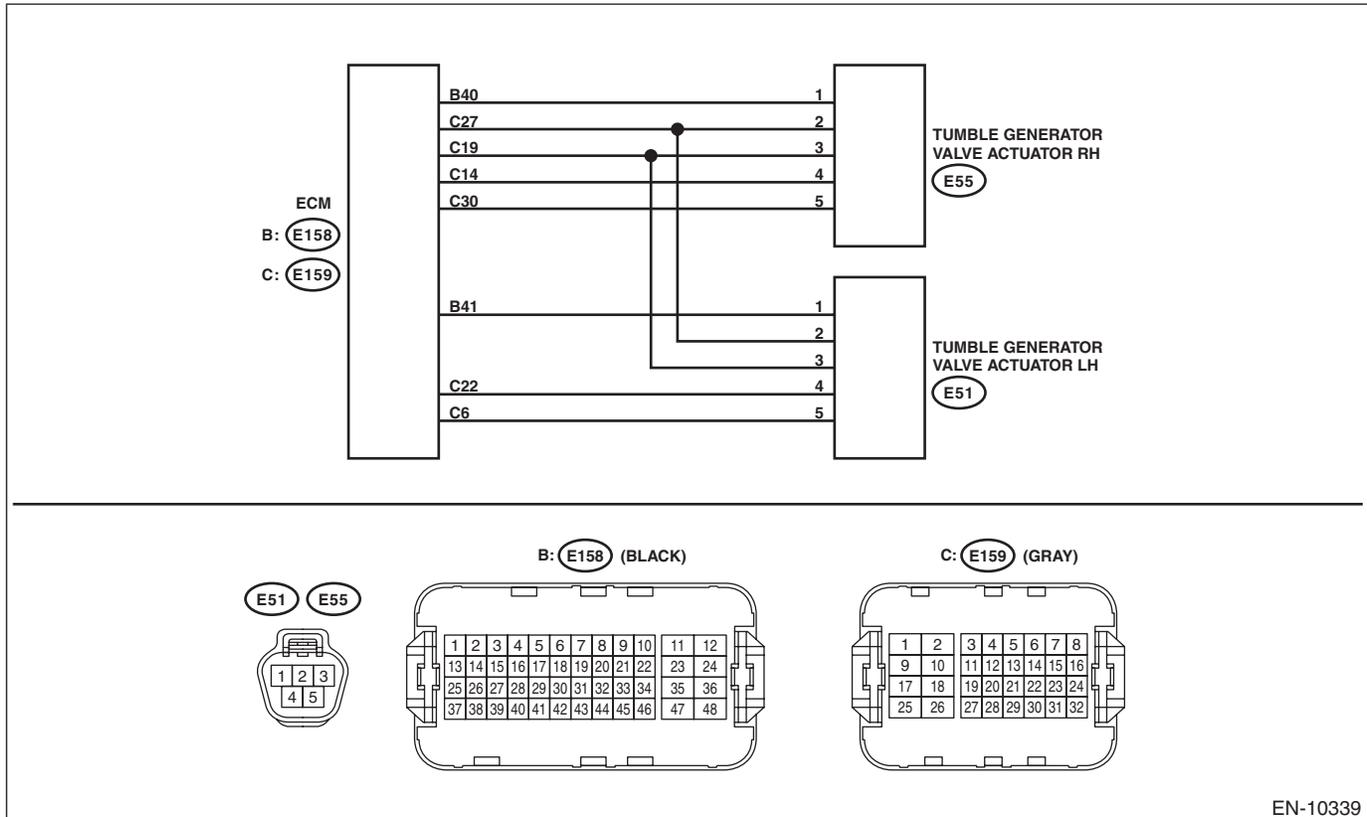
- Improper idling
- Engine stalls.
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



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Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	<p>CHECK CURRENT DATA.</p> <p>1) Start the engine.</p> <p>2) Read the value of «TGV Position Sensor R» using the Subaru Select Monitor.</p> <p>NOTE: For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p>	Is the value of «TGV Position Sensor R» less than 0.2 V?	Go to step 2.	<p>Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again.</p> <p>NOTE: In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.</p>
2	<p>CHECK POWER SUPPLY OF TUMBLE GENERATOR VALVE ACTUATOR RH.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connector from tumble generator valve actuator RH.</p> <p>3) Turn the ignition switch to ON.</p> <p>4) Measure the voltage between tumble generator valve actuator RH connector and engine ground.</p> <p>Connector & terminal (E55) No. 3 (+) — Engine ground (-):</p>	Is the voltage 4.5 V or more?	Go to step 3.	<p>Repair the harness and connector.</p> <p>NOTE: In this case, repair the following item:</p> <ul style="list-style-type: none"> • Open circuit in harness between ECM connector and tumble generator valve actuator RH connector • Poor contact of ECM connector
3	<p>CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ACTUATOR RH CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connector from ECM.</p> <p>3) Measure the resistance of harness between ECM connector and tumble generator valve actuator RH connector.</p> <p>Connector & terminal (E158) No. 40 — (E55) No. 1:</p>	Is the resistance less than 1 Ω?	Go to step 4.	Repair the open circuit in harness between ECM connector and tumble generator valve actuator RH connector.
4	<p>CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ACTUATOR RH CONNECTOR.</p> <p>Measure the resistance between the ECM connector and engine ground.</p> <p>Connector & terminal (E158) No. 40 — Engine ground:</p>	Is the resistance 1 MΩ or more?	Go to step 5.	Repair the short circuit to ground in harness between ECM connector and tumble generator valve actuator RH connector.
5	<p>CHECK FOR POOR CONTACT.</p> <p>Check for poor contact of ECM and tumble generator valve actuator RH connector.</p>	Is there poor contact of ECM or the tumble generator valve actuator RH connector?	Repair the poor contact of ECM or tumble generator valve actuator RH connector.	Replace the tumble generator valve actuator RH. <Ref. to FU(w/o STI)-43, Tumble Generator Valve Assembly.>

FH:DTC P2017 TUMBLE GENERATED VALVE POSITION SENSOR 1 CIRCUIT HIGH

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-190, DTC P2017 TUMBLE GENERATED VALVE POSITION SENSOR 1 CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

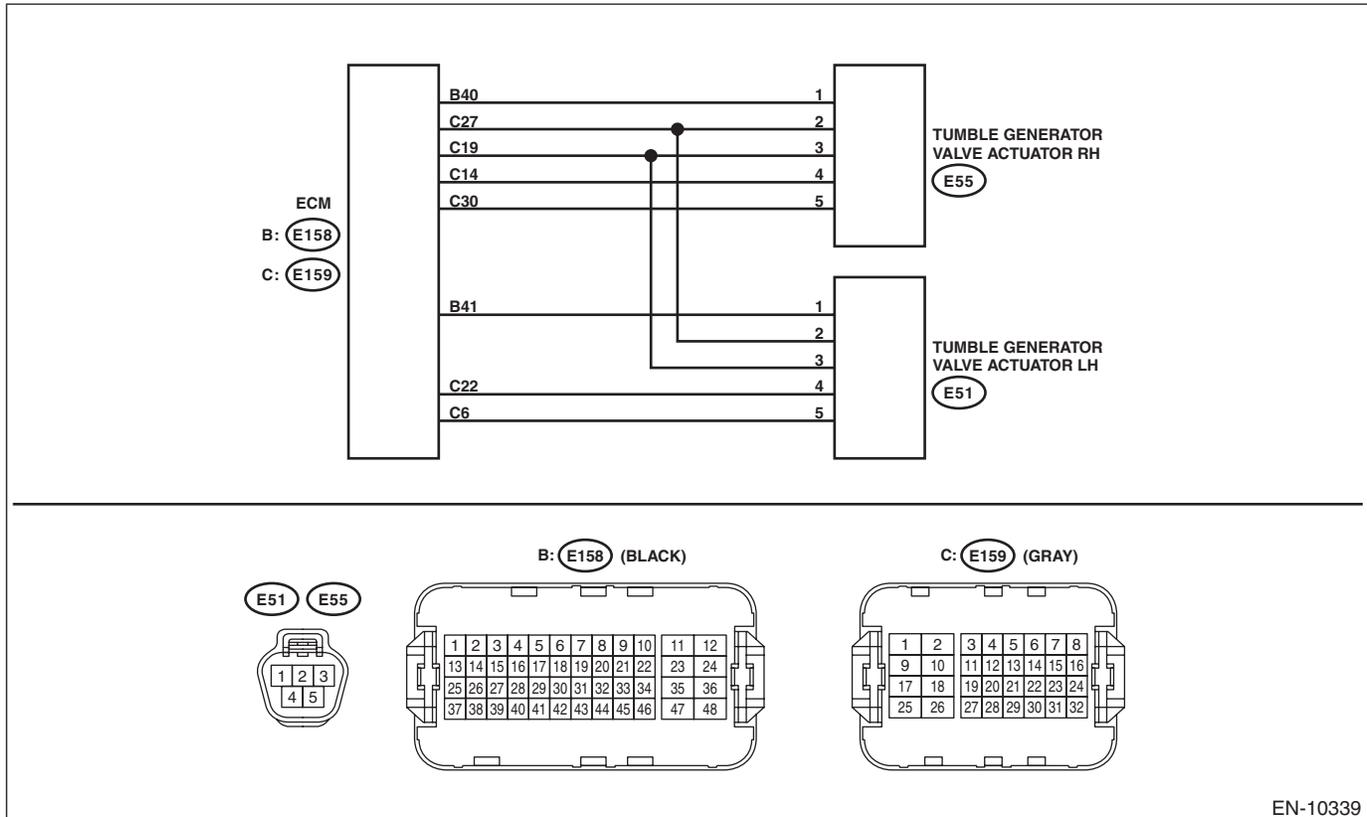
- Improper idling
- Engine stalls.
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10339

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1</p> <p>CHECK CURRENT DATA.</p> <p>1) Start the engine.</p> <p>2) Read the value of «TGV Position Sensor R» using the Subaru Select Monitor.</p> <p>NOTE: For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p>	<p>Is the value of «TGV Position Sensor R» 5 V or more?</p>	<p>Go to step 2.</p>	<p>Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again.</p> <p>NOTE: In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.</p>
<p>2</p> <p>CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ACTUATOR RH CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connector from tumble generator valve actuator RH.</p> <p>3) Start the engine.</p> <p>4) Read the value of «TGV Position Sensor R» using the Subaru Select Monitor.</p> <p>NOTE: For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p>	<p>Is the value of «TGV Position Sensor R» 5 V or more?</p>	<p>Repair the short circuit to power in harness between ECM connector and tumble generator valve actuator RH connector.</p>	<p>Go to step 3.</p>
<p>3</p> <p>CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ACTUATOR RH CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Measure the resistance of harness between tumble generator valve actuator RH connector and engine ground.</p> <p>Connector & terminal (E55) No. 2 — Engine ground:</p>	<p>Is the resistance less than 5 Ω?</p>	<p>Go to step 4.</p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case, repair the following item:</p> <ul style="list-style-type: none"> • Open circuit in harness between ECM connector and tumble generator valve actuator RH connector • Poor contact of ECM connector
<p>4</p> <p>CHECK FOR POOR CONTACT.</p> <p>Check for poor contact of tumble generator valve actuator RH connector.</p>	<p>Is there poor contact of the tumble generator valve actuator RH connector?</p>	<p>Repair the poor contact of tumble generator valve actuator RH connector.</p>	<p>Replace the tumble generator valve actuator RH. <Ref. to FU(w/o STI)-43, Tumble Generator Valve Assembly.></p>

FI: DTC P2021 TUMBLE GENERATED VALVE POSITION SENSOR 2 CIRCUIT LOW

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-191, DTC P2021 TUMBLE GENERATED VALVE POSITION SENSOR 2 CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

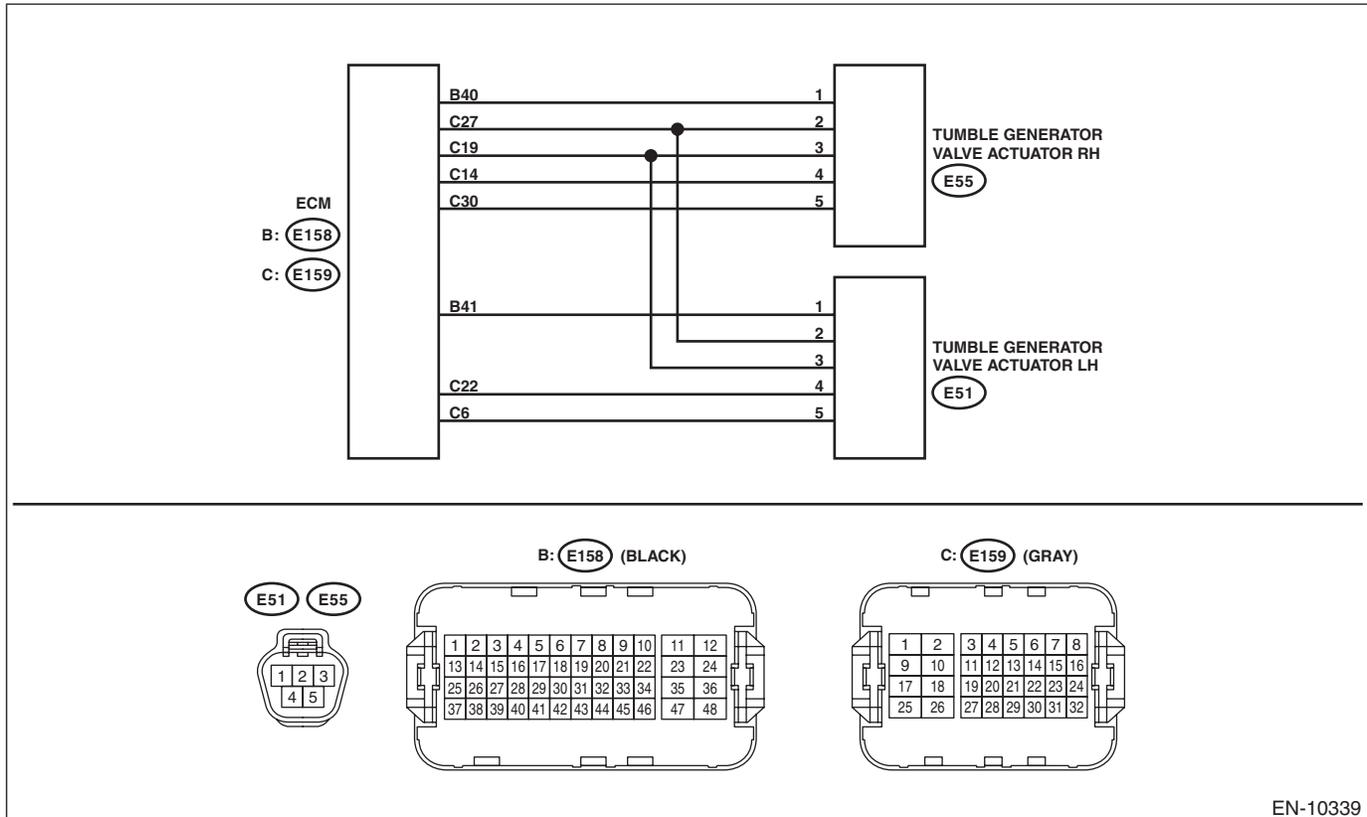
- Improper idling
- Engine stalls.
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10339

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1</p> <p>CHECK CURRENT DATA. 1) Start the engine. 2) Read the value of «TGV Position Sensor L» using the Subaru Select Monitor.</p> <p>NOTE: For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p>	<p>Is the value of «TGV Position Sensor L» less than 0.2 V?</p>	<p>Go to step 2.</p>	<p>Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again.</p> <p>NOTE: In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.</p>
<p>2</p> <p>CHECK POWER SUPPLY OF TUMBLE GENERATOR VALVE ACTUATOR LH. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from tumble generator valve actuator LH. 3) Turn the ignition switch to ON. 4) Measure the voltage between tumble generator valve actuator LH connector and engine ground.</p> <p>Connector & terminal (E51) No. 3 (+) — Engine ground (-):</p>	<p>Is the voltage 4.5 V or more?</p>	<p>Go to step 3.</p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case, repair the following item:</p> <ul style="list-style-type: none"> • Open circuit in harness between ECM connector and tumble generator valve actuator LH connector • Poor contact of ECM connector
<p>3</p> <p>CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ACTUATOR LH CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM connector and tumble generator valve actuator LH connector.</p> <p>Connector & terminal (E158) No. 41 — (E51) No. 1:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 4.</p>	<p>Repair the open circuit in harness between ECM connector and tumble generator valve actuator LH connector.</p>
<p>4</p> <p>CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ACTUATOR LH CONNECTOR. Measure the resistance between the ECM connector and engine ground.</p> <p>Connector & terminal (E158) No. 41 — Engine ground:</p>	<p>Is the resistance 1 MΩ or more?</p>	<p>Go to step 5.</p>	<p>Repair the short circuit to ground in harness between ECM connector and tumble generator valve actuator LH connector.</p>
<p>5</p> <p>CHECK FOR POOR CONTACT. Check for poor contact of ECM and tumble generator valve actuator LH connector.</p>	<p>Is there poor contact of ECM or the tumble generator valve actuator LH connector?</p>	<p>Repair the poor contact of ECM or tumble generator valve actuator LH connector.</p>	<p>Replace the tumble generator valve actuator LH. <Ref. to FU(w/o STI)-43, Tumble Generator Valve Assembly.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	<p>CHECK CURRENT DATA.</p> <p>1) Start the engine.</p> <p>2) Read the value of «TGV Position Sensor L» using the Subaru Select Monitor.</p> <p>NOTE: For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p>	Is the value of «TGV Position Sensor L» 5 V or more?	Go to step 2.	<p>Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again.</p> <p>NOTE: In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.</p>
2	<p>CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ACTUATOR LH CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connector from tumble generator valve actuator LH.</p> <p>3) Start the engine.</p> <p>4) Read the value of «TGV Position Sensor L» using the Subaru Select Monitor.</p> <p>NOTE: For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p>	Is the value of «TGV Position Sensor L» 5 V or more?	Repair the short circuit to power in harness between ECM connector and tumble generator valve actuator LH connector.	Go to step 3.
3	<p>CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ACTUATOR LH CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Measure the resistance of harness between tumble generator valve actuator LH connector and engine ground.</p> <p>Connector & terminal (E51) No. 2 — Engine ground:</p>	Is the resistance less than 5 Ω?	Go to step 4.	<p>Repair the harness and connector.</p> <p>NOTE: In this case, repair the following item:</p> <ul style="list-style-type: none"> • Open circuit in harness between ECM connector and tumble generator valve actuator LH connector • Poor contact of ECM connector
4	<p>CHECK FOR POOR CONTACT.</p> <p>Check for poor contact of tumble generator valve actuator LH connector.</p>	Is there poor contact of the tumble generator valve actuator LH connector?	Repair the poor contact of tumble generator valve actuator LH connector.	Replace the tumble generator valve actuator LH. <Ref. to FU(w/o STI)-43, Tumble Generator Valve Assembly.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

FK:DTC P2096 POST CATALYST FUEL TRIM SYSTEM TOO LEAN (BANK 1)

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-193, DTC P2096 POST CATALYST FUEL TRIM SYSTEM TOO LEAN (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

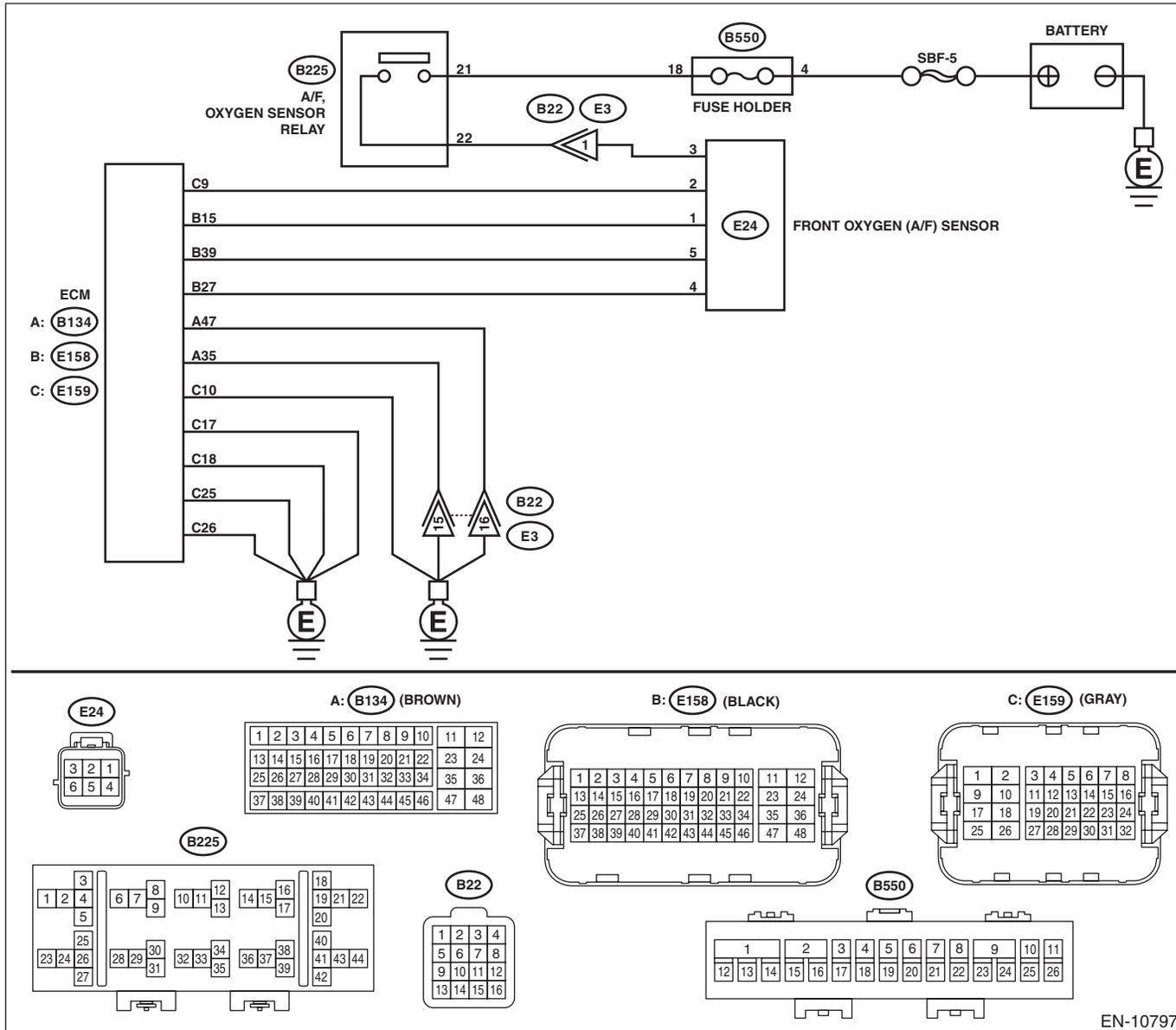
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

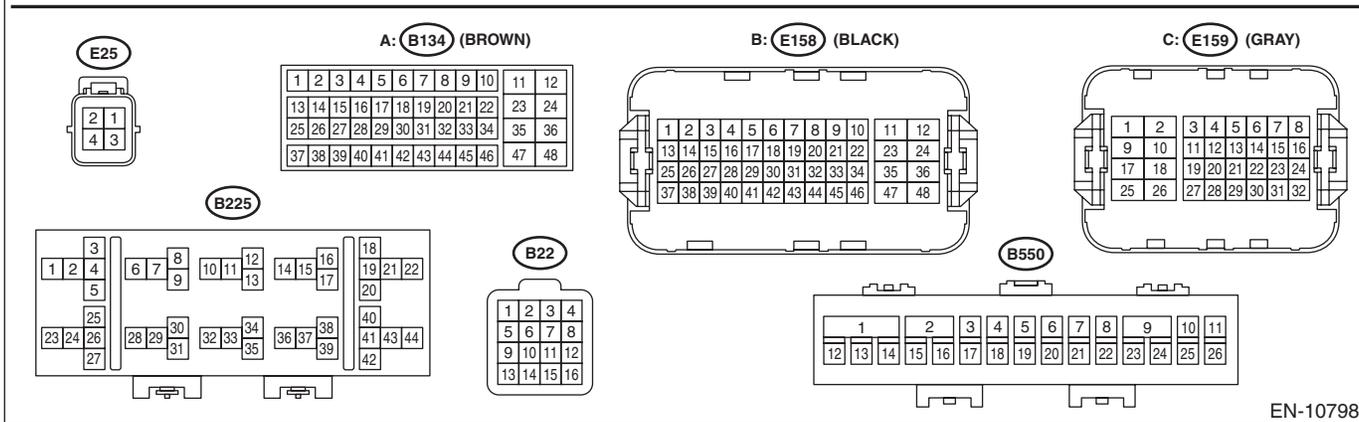
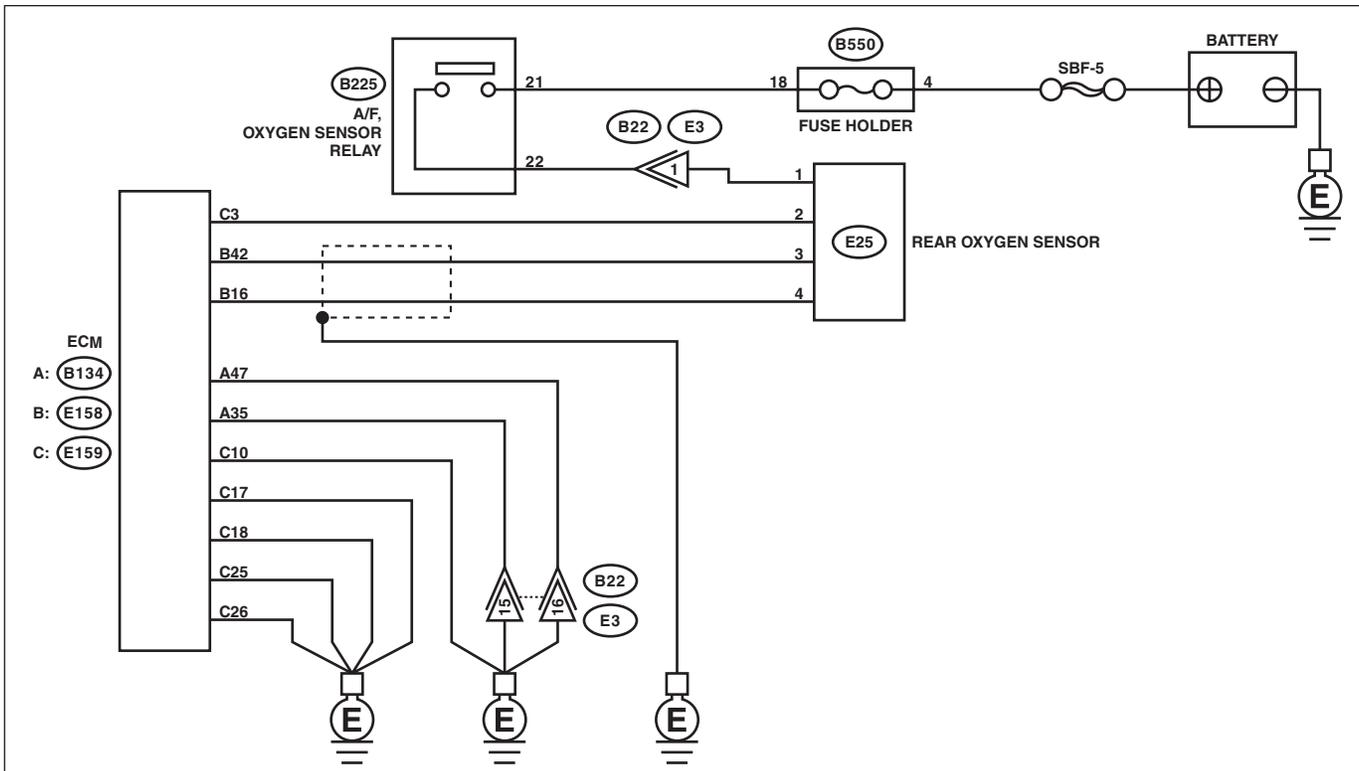
WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)



EN-10798

Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DISPLAY. Is any other DTC displayed?	Check DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2	CHECK FRONT OXYGEN (A/F) SENSOR CONNECTOR AND COUPLING CONNECTOR. Has water entered the connector?	Completely remove any water inside.	Go to step 3.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
3 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and front oxygen (A/F) sensor. 3) Measure the resistance of harness between ECM connector and front oxygen (A/F) sensor connector. <i>Connector & terminal</i> <i>(E158) No. 15 — (E24) No. 1:</i> <i>(E158) No. 27 — (E24) No. 4:</i> <i>(E158) No. 39 — (E24) No. 5:</i>	Is the resistance less than 1 Ω?	Go to step 4.	Repair the harness and connector. NOTE: In this case, repair the following item: <ul style="list-style-type: none"> • Open circuit in harness between ECM connector and front oxygen (A/F) sensor connector • Poor contact of coupling connector
4 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR. Measure the resistance between ECM connector and chassis ground. <i>Connector & terminal</i> <i>(B158) No. 15 — Chassis ground:</i> <i>(B158) No. 27 — Chassis ground:</i> <i>(B158) No. 39 — Chassis ground:</i>	Is the resistance 1 MΩ or more?	Go to step 5.	Repair the short circuit to ground in harness between ECM connector and front oxygen (A/F) sensor connector.
5 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR. 1) Connect the connector to ECM. 2) Turn the ignition switch to ON. 3) Measure the voltage between front oxygen (A/F) sensor connector and chassis ground. <i>Connector & terminal</i> <i>(E24) No. 1 (+) — Chassis ground (-):</i> <i>(E24) No. 4 (+) — Chassis ground (-):</i> <i>(E24) No. 5 (+) — Chassis ground (-):</i>	Is the voltage 8 V or more?	Repair the short circuit to power in the harness between ECM connector and front oxygen (A/F) sensor connector.	Go to step 6.
6 CHECK EXHAUST SYSTEM.	Are there holes or loose bolts on exhaust system?	Repair the exhaust system.	Go to step 7.
7 CHECK AIR INTAKE SYSTEM.	Are there holes, loose bolts or disconnection of hose on air intake system?	Repair the air intake system.	Go to step 8.
8 CHECK FUEL PRESSURE. WARNING: Place “NO OPEN FLAMES” signs near the working area. CAUTION: Be careful not to spill fuel. 1) Connect the front oxygen (A/F) sensor connector. 2) Measure the fuel pressure. <Ref. to ME(w/o STI)-31, INSPECTION, Fuel Pressure.> CAUTION: Release fuel pressure before removing the fuel pressure gauge.	Is the measured value 328 — 358 kPa (3.3 — 3.7 kgf/cm ² , 48 — 52 psi)?	Go to step 9.	Check the fuel pump and fuel delivery line. <Ref. to FU(w/o STI)-172, INSPECTION, Fuel Pump.> <Ref. to FU(w/o STI)-201, INSPECTION, Fuel Delivery and Evaporation Lines.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>9</p> <p>CHECK ENGINE COOLANT TEMPERATURE SENSOR.</p> <p>1) Start the engine and warm up completely.</p> <p>2) Read the value of «Coolant Temp.» using the Subaru Select Monitor or a general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedures, refer to “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • General scan tool <p>For detailed operation procedures, refer to the general scan tool operation manual.</p>	<p>Is the value of «Coolant Temp.» 75°C (167°F) or more?</p>	<p>Go to step 10.</p>	<p>Replace the engine coolant temperature sensor. <Ref. to FU(w/o STI)-93, Engine Coolant Temperature Sensor.></p>
<p>10</p> <p>CHECK MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR.</p> <p>1) Start the engine and warm up engine until coolant temperature is higher than 75°C (167°F).</p> <p>2) For CVT models, set the select lever to “P” range or “N” range, and for MT models, place the shift lever in the neutral position.</p> <p>3) Turn the A/C switch to OFF.</p> <p>4) Turn all the accessory switches to OFF.</p> <p>5) Read the value of «Mass Air Flow» using the Subaru Select Monitor or a general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedures, refer to “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • General scan tool <p>For detailed operation procedures, refer to the general scan tool operation manual.</p>	<p>Is the value in «Mass Air Flow» 2.0 — 5.0 g/s (0.26 — 0.66 lb/s)?</p>	<p>Go to step 11.</p>	<p>Replace the mass air flow and intake air temperature sensor. <Ref. to FU(w/o STI)-118, Mass Air Flow and Intake Air Temperature Sensor.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>11 CHECK MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR.</p> <p>1) Start the engine and warm up engine until coolant temperature is higher than 75°C (167°F).</p> <p>2) For CVT models, set the select lever to “P” range or “N” range, and for MT models, place the shift lever in the neutral position.</p> <p>3) Turn the A/C switch to OFF.</p> <p>4) Turn all the accessory switches to OFF.</p> <p>5) Open the front hood.</p> <p>6) Measure the ambient temperature.</p> <p>7) Read the value of «IAT Sensor #11» using the Subaru Select Monitor or a general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedures, refer to “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • General scan tool <p>For detailed operation procedures, refer to the general scan tool operation manual.</p>	<p>Subtract ambient temperature value from the value of «IAT Sensor #11». Is the obtained value -10 — 50°C (-18 — 90°F)?</p>	Go to step 12.	Check the mass air flow and intake air temperature sensor. <Ref. to FU(w/o STI)-118, Mass Air Flow and Intake Air Temperature Sensor.>
<p>12 CHECK REAR OXYGEN SENSOR DATA.</p> <p>1) Warm up the engine until engine coolant temperature is higher than 75°C (167°F), and keep the engine speed at 3,000 rpm. (2 minutes maximum)</p> <p>2) Read the value of «Oxygen sensor #12» using the Subaru Select Monitor or a general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedures, refer to “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • General scan tool <p>For detailed operation procedures, refer to the general scan tool operation manual.</p>	<p>Is the value of «Oxygen sensor #12» 0.490 V or more?</p>	Go to step 13.	Go to step 14.
<p>13 CHECK REAR OXYGEN SENSOR DATA.</p> <p>1) Warm up the engine until engine coolant temperature is higher than 75°C (167°F), and rapidly reduce the engine speed from 3,000 rpm.</p> <p>2) Read the value of «Oxygen sensor #12» using the Subaru Select Monitor or a general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedures, refer to “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • General scan tool <p>For detailed operation procedures, refer to the general scan tool operation manual.</p>	<p>Is the value of «Oxygen sensor #12» 0.250 V or more?</p>	Go to step 15.	Go to step 14.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
14 CHECK REAR OXYGEN SENSOR CONNECTOR AND COUPLING CONNECTOR.	Has water entered the connector?	Completely remove any water inside.	Go to step 16.
15 CHECK FRONT OXYGEN (A/F) SENSOR USING REAR OXYGEN SENSOR SIGNAL. 1) Warm up the engine until engine coolant temperature is higher than 75°C (167°F), then keep the engine idling for 5 minutes or more. 2) Read the value of «Oxygen sensor #12» using the Subaru Select Monitor or a general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedures, refer to “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value of «Oxygen sensor #12» kept at 0.250 V or less for 5 minutes or more?	Replace the front oxygen (A/F) sensor. <Ref. to FU(w/o STI)-126, Front Oxygen (A/F) Sensor.>	Go to step 16.
16 CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and rear oxygen sensor. 3) Measure the resistance of harness between ECM connector and rear oxygen sensor connector. <i>Connector & terminal</i> <i>(E158) No. 42 — (E25) No. 3:</i> <i>(E158) No. 16 — (E25) No. 4:</i>	Is the resistance less than 1 Ω?	Go to step 17.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and rear oxygen sensor connector • Poor contact of coupling connector
17 CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR. 1) Connect the connector to ECM. 2) Turn the ignition switch to ON. 3) Measure the voltage between rear oxygen sensor connector and chassis ground. <i>Connector & terminal</i> <i>(E25) No. 4 (+) — Chassis ground (-):</i>	Is the voltage 0.2 — 0.5 V?	Replace the rear oxygen sensor. <Ref. to FU(w/o STI)-128, Rear Oxygen Sensor.>	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and rear oxygen sensor connector • Poor contact of ECM connector • Poor contact of coupling connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

FL:DTC P2097 POST CATALYST FUEL TRIM SYSTEM TOO RICH (BANK 1)

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-194, DTC P2097 POST CATALYST FUEL TRIM SYSTEM TOO RICH (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

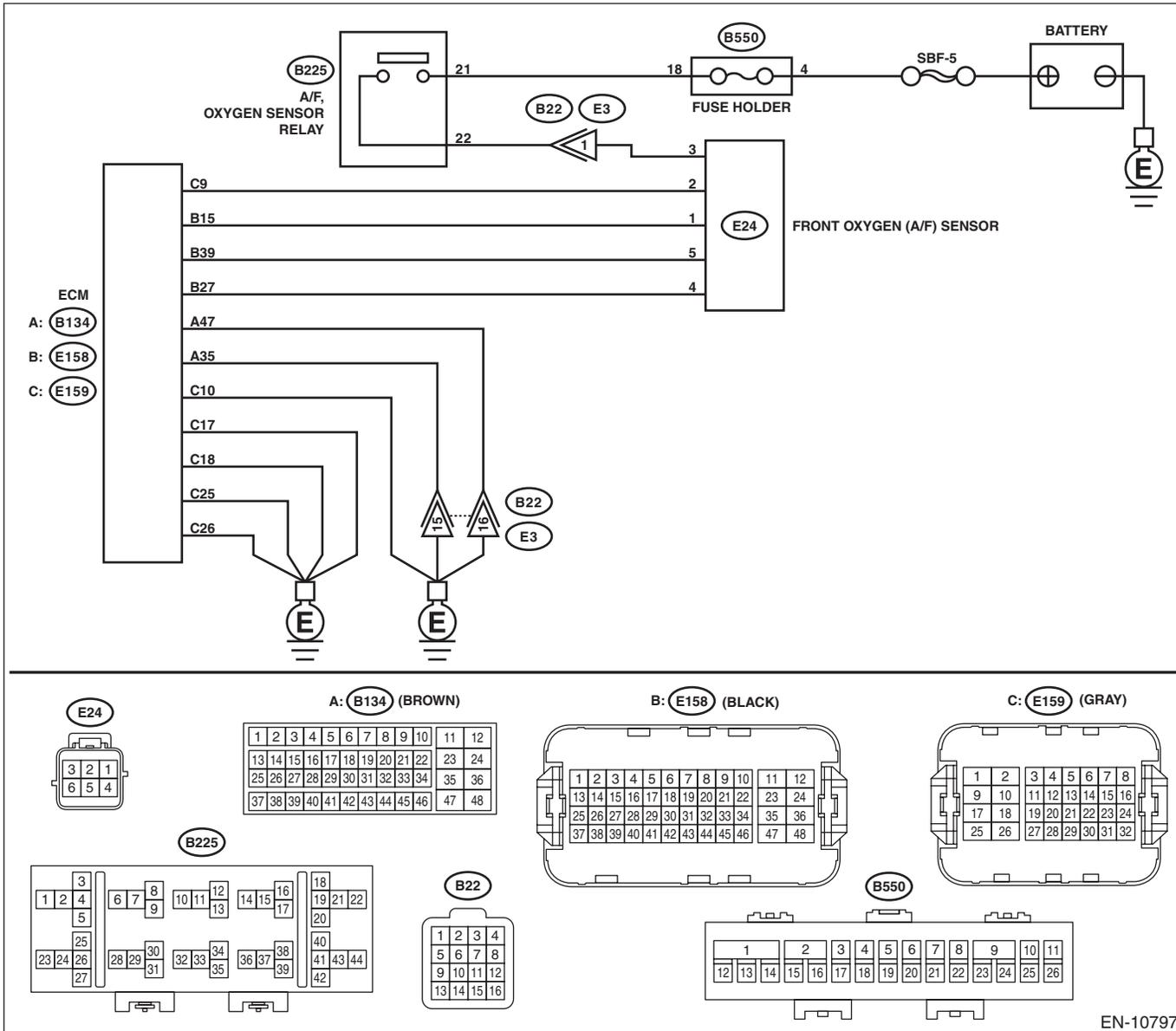
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

WIRING DIAGRAM:

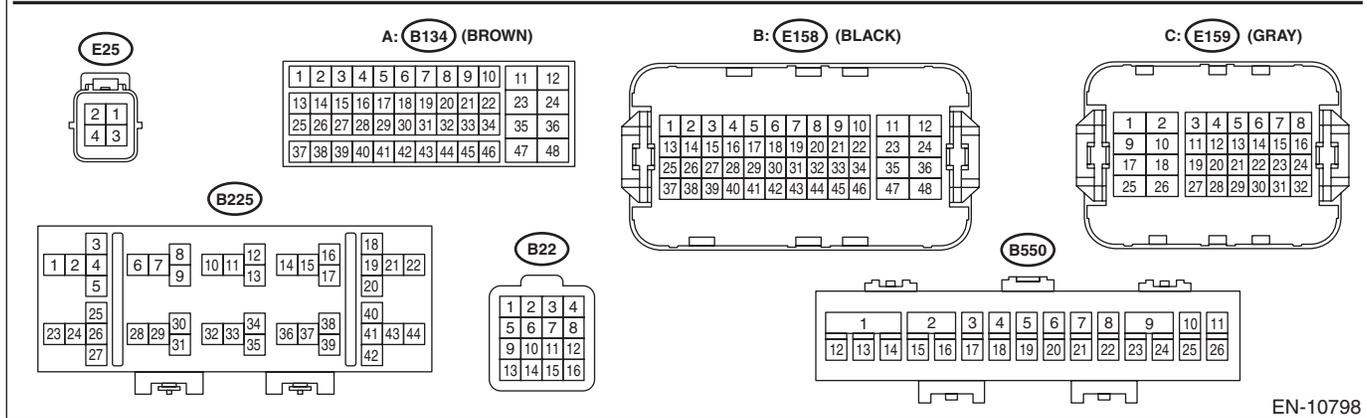
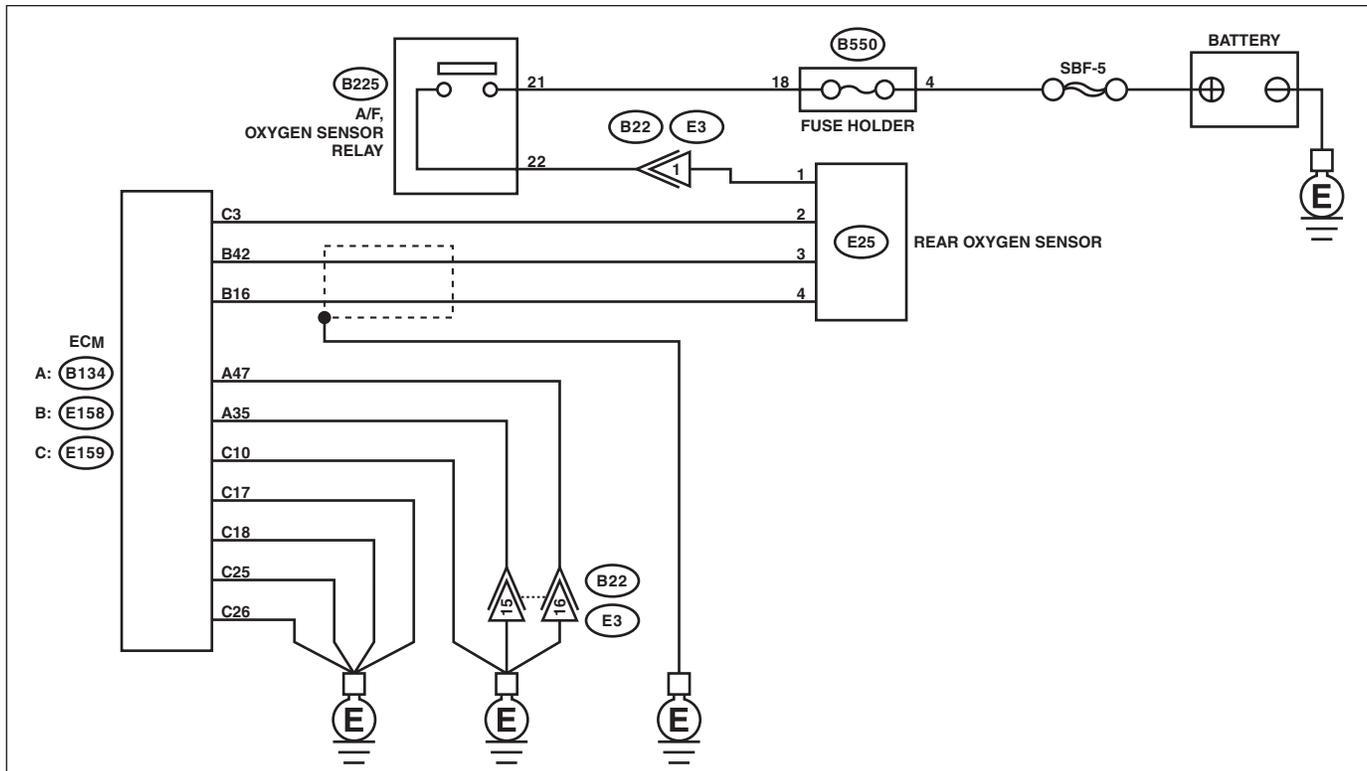
- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10797

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)



EN-10798

Step	Check	Yes	No
1	CHECK FOR ANY OTHER DTC ON DISPLAY. Is any other DTC displayed?	Check DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2	CHECK FRONT OXYGEN (A/F) SENSOR CONNECTOR AND COUPLING CONNECTOR. Has water entered the connector?	Completely remove any water inside.	Go to step 3.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>3</p> <p>CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and front oxygen (A/F) sensor. 3) Measure the resistance of harness between ECM connector and front oxygen (A/F) sensor connector.</p> <p>Connector & terminal (E158) No. 15 — (E24) No. 1: (E158) No. 27 — (E24) No. 4: (E158) No. 39 — (E24) No. 5:</p>	Is the resistance less than 1 Ω?	Go to step 4.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and front oxygen (A/F) sensor connector • Poor contact of coupling connector
<p>4</p> <p>CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.</p> <p>Measure the resistance between ECM connector and chassis ground.</p> <p>Connector & terminal (E158) No. 15 — Chassis ground: (E158) No. 27 — Chassis ground: (E158) No. 39 — Chassis ground:</p>	Is the resistance 1 MΩ or more?	Go to step 5.	Repair the short circuit to ground in harness between ECM connector and front oxygen (A/F) sensor connector.
<p>5</p> <p>CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.</p> <p>1) Connect the connector to ECM. 2) Turn the ignition switch to ON. 3) Measure the voltage between front oxygen (A/F) sensor connector and chassis ground.</p> <p>Connector & terminal (E24) No. 1 (+) — Chassis ground (-): (E24) No. 4 (+) — Chassis ground (-): (E24) No. 5 (+) — Chassis ground (-):</p>	Is the voltage 8 V or more?	Repair the short circuit to power in the harness between ECM connector and front oxygen (A/F) sensor connector.	Go to step 6.
<p>6</p> <p>CHECK EXHAUST SYSTEM.</p>	Are there holes or loose bolts on exhaust system?	Repair the exhaust system.	Go to step 7.
<p>7</p> <p>CHECK AIR INTAKE SYSTEM.</p>	Are there holes, loose bolts or disconnection of hose on air intake system?	Repair the air intake system.	Go to step 8.
<p>8</p> <p>CHECK FUEL PRESSURE.</p> <p>WARNING: Place “NO OPEN FLAMES” signs near the working area.</p> <p>CAUTION: Be careful not to spill fuel.</p> <p>1) Connect the front oxygen (A/F) sensor connector. 2) Measure the fuel pressure. <Ref. to ME(w/o STI)-31, INSPECTION, Fuel Pressure.></p> <p>CAUTION: Release fuel pressure before removing the fuel pressure gauge.</p>	Is the measured value 328 — 358 kPa (3.3 — 3.7 kgf/cm ² , 48 — 52 psi)?	Go to step 9.	Check the fuel pump and fuel delivery line. <Ref. to FU(w/o STI)-172, INSPECTION, Fuel Pump.> <Ref. to FU(w/o STI)-201, INSPECTION, Fuel Delivery and Evaporation Lines.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>9 CHECK ENGINE COOLANT TEMPERATURE SENSOR.</p> <p>1) Start the engine and warm up completely.</p> <p>2) Read the value of «Coolant Temp.» using the Subaru Select Monitor or a general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedures, refer to “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • General scan tool <p>For detailed operation procedures, refer to the general scan tool operation manual.</p>	<p>Is the value of «Coolant Temp.» 75°C (167°F) or more?</p>	<p>Go to step 10.</p>	<p>Replace the engine coolant temperature sensor. <Ref. to FU(w/o STI)-93, Engine Coolant Temperature Sensor.></p>
<p>10 CHECK MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR.</p> <p>1) Start the engine and warm up engine until coolant temperature is higher than 75°C (167°F).</p> <p>2) For CVT models, set the select lever to “P” range or “N” range, and for MT models, place the shift lever in the neutral position.</p> <p>3) Turn the A/C switch to OFF.</p> <p>4) Turn all the accessory switches to OFF.</p> <p>5) Read the value of «Mass Air Flow» using the Subaru Select Monitor or a general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedures, refer to “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • General scan tool <p>For detailed operation procedures, refer to the general scan tool operation manual.</p>	<p>Is the value in «Mass Air Flow» 2.0 — 5.0 g/s (0.26 — 0.66 lb/s)?</p>	<p>Go to step 11.</p>	<p>Replace the mass air flow and intake air temperature sensor. <Ref. to FU(w/o STI)-118, Mass Air Flow and Intake Air Temperature Sensor.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>11 CHECK MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR.</p> <p>1) Start the engine and warm up engine until coolant temperature is higher than 75°C (167°F).</p> <p>2) For CVT models, set the select lever to “P” range or “N” range, and for MT models, place the shift lever in the neutral position.</p> <p>3) Turn the A/C switch to OFF.</p> <p>4) Turn all the accessory switches to OFF.</p> <p>5) Open the front hood.</p> <p>6) Measure the ambient temperature.</p> <p>7) Read the value of «IAT Sensor #11» using the Subaru Select Monitor or a general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedures, refer to “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • General scan tool <p>For detailed operation procedures, refer to the general scan tool operation manual.</p>	<p>Subtract ambient temperature value from the value of «IAT Sensor #11». Is the obtained value -10 — 50°C (-18 — 90°F)?</p>	Go to step 12.	Check the mass air flow and intake air temperature sensor. <Ref. to FU(w/o STI)-118, Mass Air Flow and Intake Air Temperature Sensor.>
<p>12 CHECK REAR OXYGEN SENSOR DATA.</p> <p>1) Warm up the engine until engine coolant temperature is higher than 75°C (167°F), and keep the engine speed at 3,000 rpm. (2 minutes maximum)</p> <p>2) Read the value of «Oxygen sensor #12» using the Subaru Select Monitor or a general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedures, refer to “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • General scan tool <p>For detailed operation procedures, refer to the general scan tool operation manual.</p>	<p>Is the value of «Oxygen sensor #12» 0.490 V or more?</p>	Go to step 13.	Go to step 14.
<p>13 CHECK REAR OXYGEN SENSOR DATA.</p> <p>1) Warm up the engine until engine coolant temperature is higher than 75°C (167°F), and rapidly reduce the engine speed from 3,000 rpm.</p> <p>2) Read the value of «Oxygen sensor #12» using the Subaru Select Monitor or a general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedures, refer to “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • General scan tool <p>For detailed operation procedures, refer to the general scan tool operation manual.</p>	<p>Is the value of «Oxygen sensor #12» 0.250 V or less?</p>	Go to step 15.	Go to step 14.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
14 CHECK REAR OXYGEN SENSOR CONNECTOR AND COUPLING CONNECTOR.	Has water entered the connector?	Completely remove any water inside.	Go to step 16.
15 CHECK FRONT OXYGEN (A/F) SENSOR USING REAR OXYGEN SENSOR SIGNAL. 1) Warm up the engine until engine coolant temperature is higher than 75°C (167°F), then keep the engine idling for 5 minutes or more. 2) Read the value of «Oxygen sensor #12» using the Subaru Select Monitor or a general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedures, refer to “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value of «Oxygen sensor #12» kept at 0.8 V or more for 5 minutes or more?	Replace the front oxygen (A/F) sensor. <Ref. to FU(w/o STI)-126, Front Oxygen (A/F) Sensor.>	Go to step 16.
16 CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and rear oxygen sensor. 3) Measure the resistance of harness between ECM connector and rear oxygen sensor connector. Connector & terminal (E158) No. 42 — (E25) No. 3: (E158) No. 16 — (E25) No. 4:	Is the resistance less than 1 Ω?	Go to step 17.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and rear oxygen sensor connector • Poor contact of coupling connector
17 CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR. 1) Connect the connector to ECM. 2) Turn the ignition switch to ON. 3) Measure the voltage between rear oxygen sensor connector and chassis ground. Connector & terminal (E25) No. 4 (+) — Chassis ground (-):	Is the voltage 0.2 — 0.5 V?	Replace the rear oxygen sensor. <Ref. to FU(w/o STI)-128, Rear Oxygen Sensor.>	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and rear oxygen sensor connector • Poor contact of ECM connector • Poor contact of coupling connector

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-195, DTC P2101 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Improper idling
- Poor driving performance
- Engine stalls.

CAUTION:

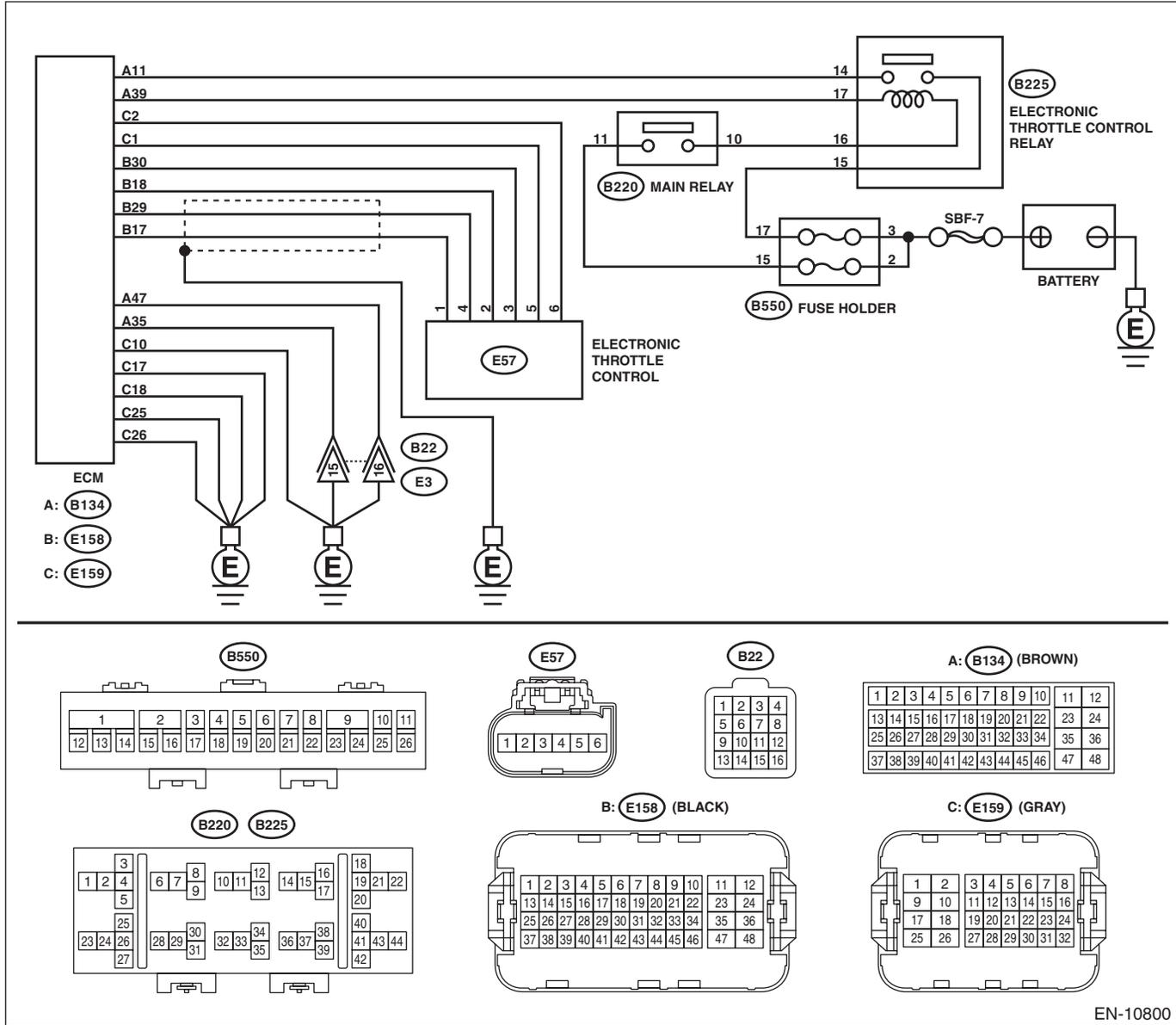
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10800

Step	Check	Yes	No
1 CHECK ELECTRONIC THROTTLE CONTROL RELAY. 1) Turn the ignition switch to OFF. 2) Remove the electronic throttle control relay. 3) Connect the battery to terminals No. 16 and No. 17 of electronic throttle control relay. 4) Measure the resistance between electronic throttle control relay terminals. Terminals No. 14 — No. 15:	Is the resistance less than 1 Ω?	Go to step 2.	Replace the electronic throttle control relay. <Ref. to FU(w/o STI)-139, Electronic Throttle Control Relay.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
2 CHECK POWER SUPPLY OF ELECTRONIC THROTTLE CONTROL RELAY. Measure the voltage between electronic throttle control relay connector and chassis ground. <i>Connector & terminal</i> <i>(B225) No. 15 (+) — Chassis ground (-):</i>	Is the voltage 10 V or more?	Go to step 3.	Repair the open or ground short circuit of power supply circuit.
3 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL RELAY CONNECTOR. 1) Disconnect the connector from ECM. 2) Turn the ignition switch to ON. 3) Measure the voltage between electronic throttle control relay connector and chassis ground. <i>Connector & terminal</i> <i>(B225) No. 17 (+) — Chassis ground (-):</i>	Is the voltage 10 V or more?	Repair the short circuit to power in the harness between ECM connector and electronic throttle control relay connector.	Go to step 4.
4 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL RELAY CONNECTOR. 1) Turn the ignition switch to OFF. 2) Measure the resistance between electronic throttle control relay connector and chassis ground. <i>Connector & terminal</i> <i>(B225) No. 14 — Chassis ground:</i> <i>(B225) No. 17 — Chassis ground:</i>	Is the resistance 1 M Ω or more?	Go to step 5.	Repair the short circuit to ground in harness between ECM connector and electronic throttle control relay connector.
5 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL RELAY CONNECTOR. Measure the resistance between ECM connector and electronic throttle control relay connector. <i>Connector & terminal</i> <i>(B134) No. 39 — (B225) No. 17:</i> <i>(B134) No. 11 — (B225) No. 14:</i>	Is the resistance less than 1 Ω ?	Go to step 6.	Repair the open circuit in harness between ECM connector and electronic throttle control relay connector.
6 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from electronic throttle control. 3) Measure the resistance between the ECM connector and engine ground. <i>Connector & terminal</i> <i>(E158) No. 18 — Engine ground:</i> <i>(E158) No. 17 — Engine ground:</i> <i>(E158) No. 29 — Engine ground:</i>	Is the resistance 1 M Ω or more?	Go to step 7.	Repair the ground short circuit of harness between ECM connector and electronic throttle control connector.
7 CHECK SHORT CIRCUIT INSIDE THE ECM. 1) Connect the connector to ECM. 2) Measure the resistance between electronic throttle control connector and engine ground. <i>Connector & terminal</i> <i>(E57) No. 1 — Engine ground:</i> <i>(E57) No. 4 — Engine ground:</i>	Is the resistance 1 M Ω or more?	Go to step 8.	Repair the ground short circuit of harness between ECM connector and electronic throttle control connector. Replace the ECM if defective. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
8 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL CONNECTOR. 1) Disconnect the connector from ECM. 2) Measure the resistance of harness between ECM connector and electronic throttle control connector. <i>Connector & terminal</i> <i>(E158) No. 17 — (E57) No. 1:</i> <i>(E158) No. 30 — (E57) No. 3:</i> <i>(E158) No. 29 — (E57) No. 4:</i>	Is the resistance less than 1 Ω ?	Go to step 9.	Repair the open circuit of harness between ECM connector and electronic throttle control connector.
9 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL CONNECTOR. 1) Connect the connector to ECM. 2) Measure the resistance between electronic throttle control connector and engine ground. <i>Connector & terminal</i> <i>(E57) No. 3 — Engine ground:</i>	Is the resistance less than 5 Ω ?	Go to step 10.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit of harness between ECM connector and engine ground • Poor contact of ECM connector • Poor contact of coupling connector
10 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL CONNECTOR. 1) Turn the ignition switch to ON. 2) Measure the voltage between electronic throttle control connector and engine ground. <i>Connector & terminal</i> <i>(E57) No. 1 (+) — Engine ground (-):</i> <i>(E57) No. 4 (+) — Engine ground (-):</i>	Is the voltage 5 V or more?	Repair the short circuit to power in the harness between ECM connector and electronic throttle control connector.	Go to step 11.
11 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connectors. <i>Connector & terminal</i> <i>(E158) No. 18 — (E158) No. 17:</i> <i>(E158) No. 18 — (E158) No. 29:</i>	Is the resistance 1 M Ω or more?	Go to step 12.	Repair the short circuit to power in the harness between ECM connector and electronic throttle control connector.
12 CHECK SENSOR OUTPUT. 1) Connect all connectors. 2) Start the engine and warm up completely. 3) Stop the engine, and then turn the ignition switch to ON (engine OFF). 4) Read the value of «Main-Throttle Sensor» using Subaru Select Monitor. NOTE: For detailed operation procedures, refer to «Current Data Display For Engine». <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.>	Is the value of «Main-Throttle Sensor» 0.60 — 0.65 V?	Go to step 13.	Repair the poor contact of electronic throttle control connector. Replace the electronic throttle control if defective. <Ref. to FU(w/o STI)-15, Throttle Body.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>13 CHECK SENSOR OUTPUT. Read the value of «Sub-Throttle Sensor» using Subaru Select Monitor. NOTE: For detailed operation procedures, refer to “Current Data Display For Engine”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p>	Is the value of «Sub-Throttle Sensor» 0.60 — 0.65 V?	Go to step 14.	Repair the poor contact of electronic throttle control connector. Replace the electronic throttle control if defective. <Ref. to FU(w/o STI)-15, Throttle Body.>
<p>14 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL MOTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and electronic throttle control. 3) Measure the resistance between ECM connector and electronic throttle control connector. Connector & terminal (E159) No. 1 — (E57) No. 5: (E159) No. 2 — (E57) No. 6:</p>	Is the resistance less than 1 Ω?	Go to step 15.	Repair the open circuit of harness between ECM connector and electronic throttle control.
<p>15 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL MOTOR. 1) Connect the connector to ECM. 2) Turn the ignition switch to ON. 3) Measure the voltage between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 5 (+) — Engine ground (-): (E57) No. 6 (+) — Engine ground (-):</p>	Is the voltage 5 V or more?	Repair the short circuit to power in the harness between ECM connector and electronic throttle control connector.	Go to step 16.
<p>16 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL MOTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between electronic throttle control connector and engine ground. Connector & terminal (E57) No. 5 — Engine ground: (E57) No. 6 — Engine ground:</p>	Is the resistance 1 MΩ or more?	Go to step 17.	Repair the ground short circuit of harness between ECM connector and electronic throttle control connector.
<p>17 CHECK ELECTRONIC THROTTLE CONTROL MOTOR HARNESS. Measure the resistance between electronic throttle control connectors. Connector & terminal (E57) No. 5 — (E57) No. 6:</p>	Is the resistance 1 MΩ or more?	Go to step 18.	Repair the short circuit in harness between ECM connector and electronic throttle control connector.
<p>18 CHECK ELECTRONIC THROTTLE CONTROL GROUND CIRCUIT. Measure the resistance between the ECM connector and engine ground. Connector & terminal (B134) No. 35 — Engine ground: (B134) No. 47 — Engine ground: (E159) No. 10 — Engine ground: (E159) No. 17 — Engine ground: (E159) No. 18 — Engine ground: (E159) No. 25 — Engine ground: (E159) No. 26 — Engine ground:</p>	Is the resistance less than 5 Ω?	Go to step 19.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit of harness between ECM connector and engine ground • Poor contact of coupling connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
19 CHECK ELECTRONIC THROTTLE CONTROL. Measure the resistance between electronic throttle control terminals. Terminals No. 5 — No. 6:	Is the resistance 50 Ω or less?	Go to step 20 .	Replace the electronic throttle control. <Ref. to FU(w/o STI)-15, Throttle Body.>
20 CHECK ELECTRONIC THROTTLE CONTROL. Move the throttle valve to the fully open and fully closed positions with fingers. Check that the valve returns to the specified position when releasing fingers.	Does the valve return to the specified position? Standard value: 3 mm (0.12 in) from fully closed position	Repair the poor contact of ECM connector.	Replace the electronic throttle control. <Ref. to FU(w/o STI)-15, Throttle Body.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

FN:DTC P2102 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT LOW

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-196, DTC P2102 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

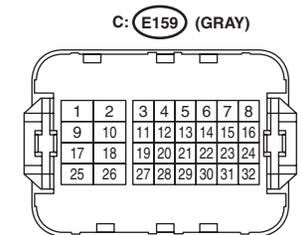
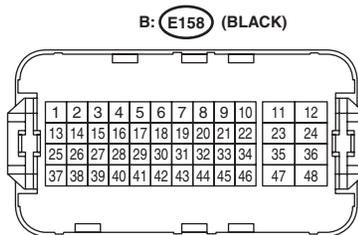
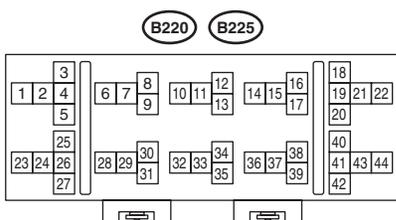
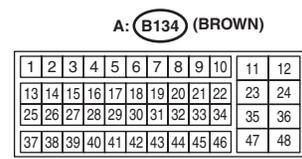
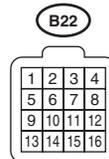
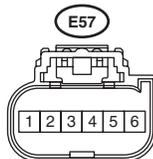
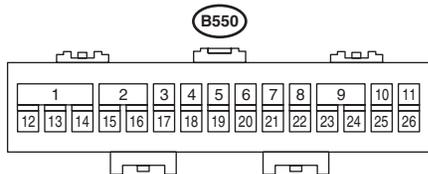
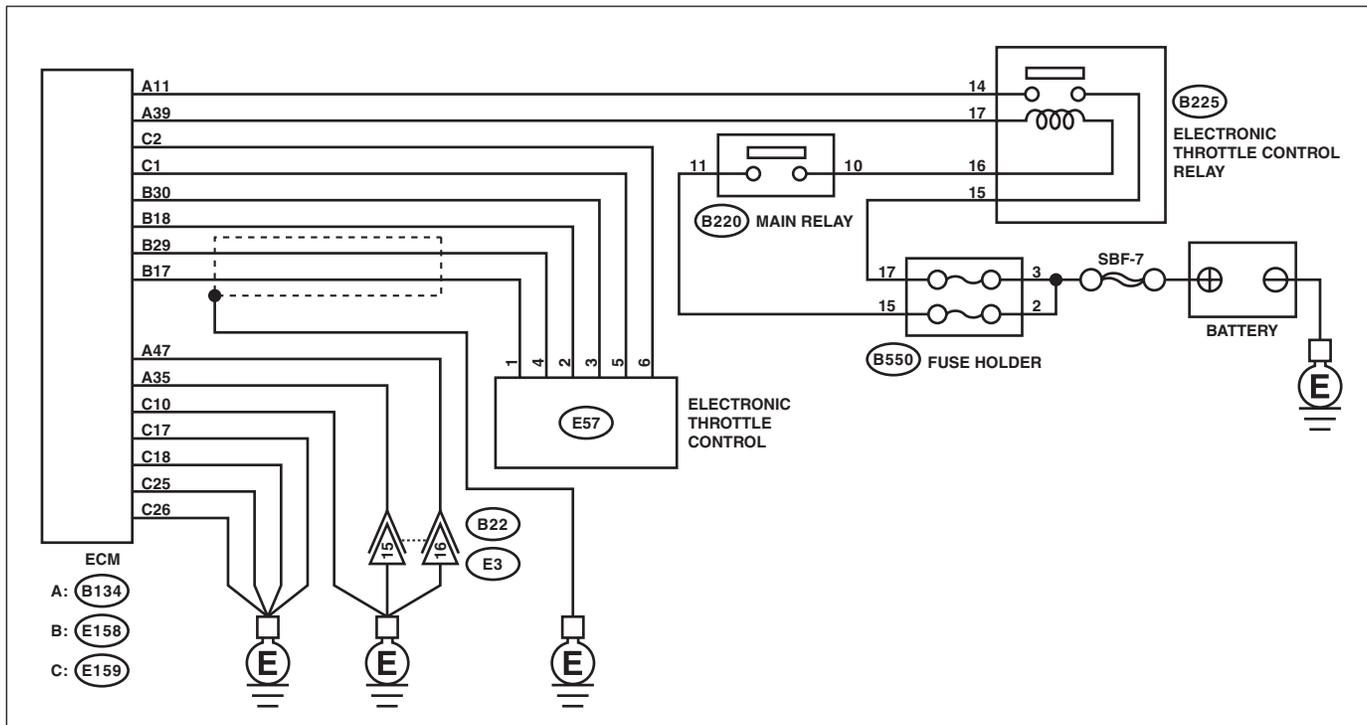
- Improper idling
- Poor driving performance
- Engine stalls.

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10800

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK ELECTRONIC THROTTLE CONTROL RELAY. 1) Turn the ignition switch to OFF. 2) Remove the electronic throttle control relay. 3) Connect the battery to terminals No. 16 and No. 17 of electronic throttle control relay. 4) Measure the resistance between electronic throttle control relay terminals. <i>Terminals</i> <i>No. 14 — No. 15:</i>	Is the resistance less than 1 Ω ?	Go to step 2.	Replace the electronic throttle control relay. <Ref. to FU(w/o STI)-139, Electronic Throttle Control Relay.>
2 CHECK POWER SUPPLY OF ELECTRONIC THROTTLE CONTROL RELAY. Measure the voltage between electronic throttle control relay connector and chassis ground. <i>Connector & terminal</i> <i>(B225) No. 15 (+) — Chassis ground (-):</i>	Is the voltage 10 V or more?	Go to step 3.	Repair the open or ground short circuit of power supply circuit.
3 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL RELAY CONNECTOR. 1) Disconnect the connector from ECM. 2) Turn the ignition switch to ON. 3) Measure the voltage between electronic throttle control relay connector and chassis ground. <i>Connector & terminal</i> <i>(B225) No. 17 (+) — Chassis ground (-):</i>	Is the voltage 10 V or more?	Repair the short circuit to power in the harness between ECM connector and electronic throttle control relay connector.	Go to step 4.
4 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL RELAY CONNECTOR. 1) Turn the ignition switch to OFF. 2) Measure the resistance between electronic throttle control relay connector and chassis ground. <i>Connector & terminal</i> <i>(B225) No. 14 — Chassis ground:</i> <i>(B225) No. 17 — Chassis ground:</i>	Is the resistance 1 M Ω or more?	Go to step 5.	Repair the short circuit to ground in harness between ECM connector and electronic throttle control relay connector.
5 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL RELAY CONNECTOR. Measure the resistance between ECM connector and electronic throttle control relay connector. <i>Connector & terminal</i> <i>(B135) No. 39 — (B225) No. 17:</i> <i>(B135) No. 11 — (B225) No. 14:</i>	Is the resistance less than 1 Ω ?	Repair the poor contact of ECM connector.	Repair the open circuit in harness between ECM connector and electronic throttle control relay connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

FO:DTC P2103 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT HIGH

DTC DETECTING CONDITION:

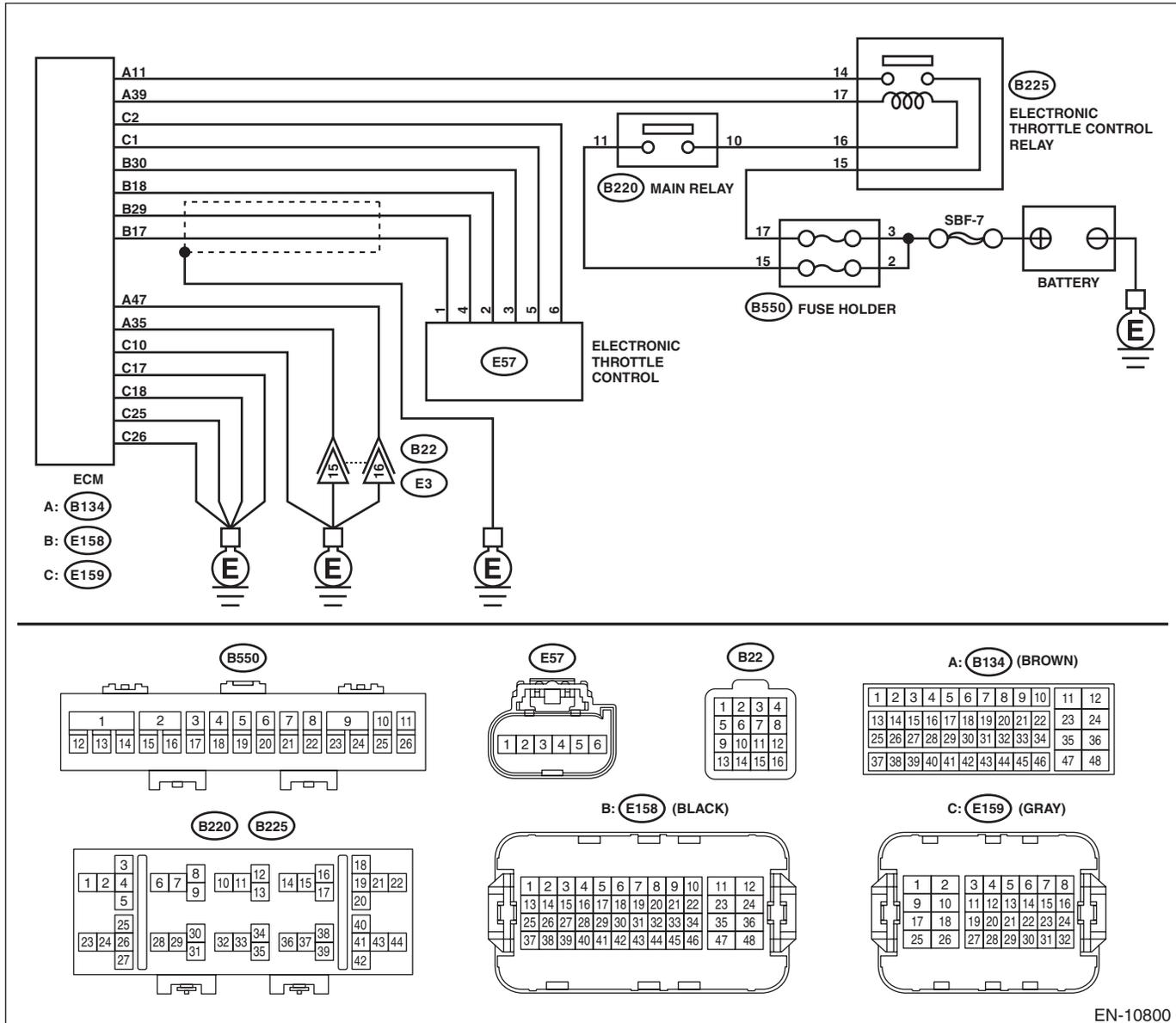
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-198, DTC P2103 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10800

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK ELECTRONIC THROTTLE CONTROL RELAY. 1) Turn the ignition switch to OFF. 2) Remove the electronic throttle control relay. 3) Measure the resistance between electronic throttle control relay terminals. <i>Terminals</i> <i>No. 14 — No. 15:</i>	Is the resistance 1 MΩ or more?	Go to step 2.	Replace the electronic throttle control relay. <Ref. to FU(w/o STI)-139, Electronic Throttle Control Relay.>
2 CHECK SHORT CIRCUIT OF ELECTRONIC THROTTLE CONTROL RELAY POWER SUPPLY. 1) Turn the ignition switch to ON. 2) Measure the voltage between electronic throttle control relay connector and chassis ground. <i>Connector & terminal</i> <i>(B225) No. 14 (+) — Chassis ground (-):</i>	Is the voltage 10 V or more?	Repair the short circuit to power in the harness between ECM connector and electronic throttle control relay connector.	Go to step 3.
3 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL RELAY CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between the ECM connector and engine ground. <i>Connector & terminal</i> <i>(B134) No. 39 — Engine ground:</i>	Is the resistance 1 MΩ or more?	Repair the poor contact of ECM connector.	Repair the short circuit to ground in harness between ECM connector and electronic throttle control relay connector.

FP:DTC P2109 THROTTLE/PEDAL POSITION SENSOR “A” MINIMUM STOP PERFORMANCE

NOTE:

For the diagnostic procedure, refer to DTC P2101. <Ref. to EN(w/o STI)(diag)-423, DTC P2101 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

FQ:DTC P2119 THROTTLE ACTUATOR CONTROL THROTTLE BODY RANGE/ PERFORMANCE

NOTE:

For the diagnostic procedure, refer to DTC P2101. <Ref. to EN(w/o STI)(diag)-423, DTC P2101 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-202, DTC P2122 THROTTLE/PEDAL POSITION SENSOR/SWITCH "D" CIRCUIT LOW INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

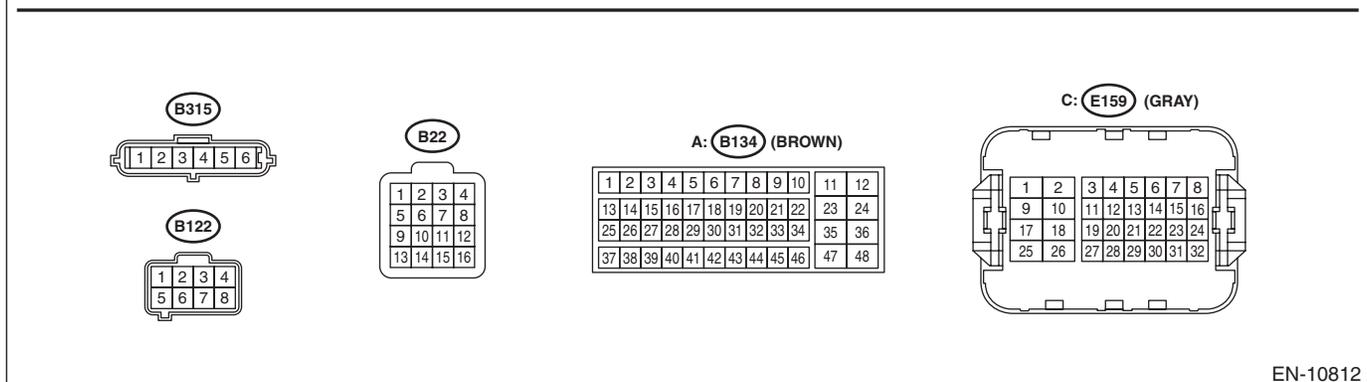
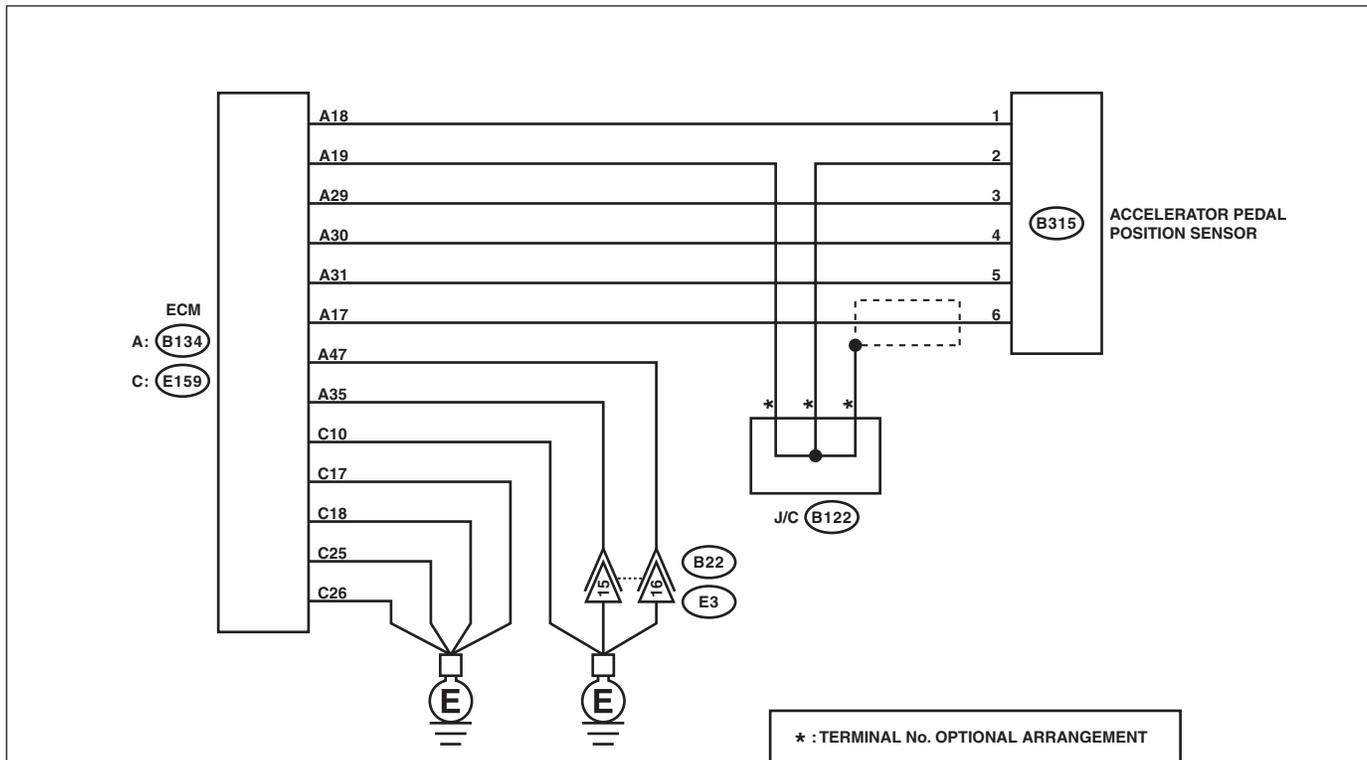
- Improper idling
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10812

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1</p> <p>CHECK HARNESS BETWEEN ECM AND ACCELERATOR PEDAL POSITION SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and accelerator pedal position sensor. 3) Measure the resistance between the ECM connector and engine ground.</p> <p>Connector & terminal (B134) No. 30 — Engine ground: (B134) No. 17 — Engine ground: (B134) No. 17 — (B134) No. 19:</p>	<p>Is the resistance 1 MΩ or more?</p>	<p>Go to step 2.</p>	<p>Repair the short circuit to ground in harness between ECM connector and accelerator pedal position sensor connector.</p>
<p>2</p> <p>CHECK SHORT CIRCUIT INSIDE THE ECM.</p> <p>1) Connect the connector to ECM. 2) Measure the resistance between accelerator pedal position sensor connector and chassis ground.</p> <p>Connector & terminal (B315) No. 6 — Chassis ground:</p>	<p>Is the resistance 1 MΩ or more?</p>	<p>Replace the accelerator pedal. <Ref. to SP(w/o STI)-4, Accelerator Pedal.></p>	<p>Repair the short circuit to ground in harness between ECM connector and accelerator pedal position sensor connector. Replace the ECM if defective. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-203, DTC P2123 THROTTLE/PEDAL POSITION SENSOR/SWITCH "D" CIRCUIT HIGH INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

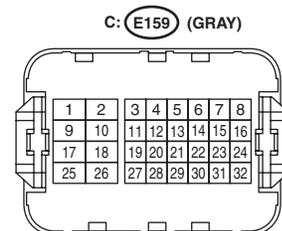
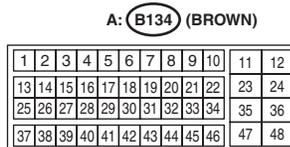
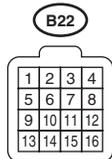
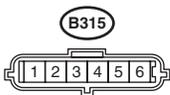
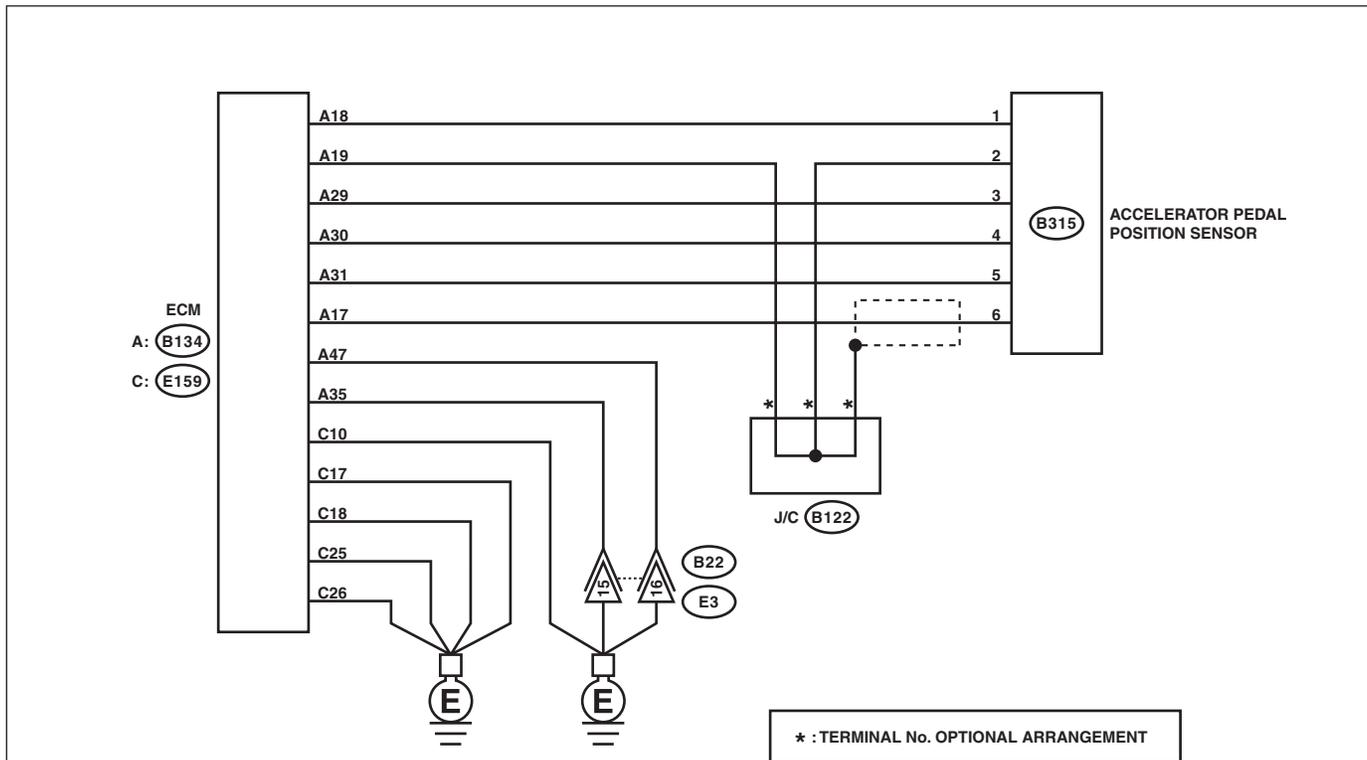
- Improper idling
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10812

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1 CHECK HARNESS BETWEEN ECM AND ACCELERATOR PEDAL POSITION SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and accelerator pedal position sensor. 3) Measure the resistance of harness between ECM connector and accelerator pedal position sensor connector.</p> <p>Connector & terminal (B134) No. 17 — (B315) No. 6: (B134) No. 31 — (B315) No. 5:</p>	Is the resistance less than 1 Ω?	Go to step 2.	Repair the open circuit of harness between ECM connector and accelerator pedal position sensor connector.
<p>2 CHECK HARNESS BETWEEN ECM AND ACCELERATOR PEDAL POSITION SENSOR CONNECTOR.</p> <p>1) Connect the connector to ECM. 2) Measure the resistance between accelerator pedal position sensor connector and chassis ground.</p> <p>Connector & terminal (B315) No. 5 — Chassis ground:</p>	Is the resistance less than 5 Ω?	Go to step 3.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit of harness between ECM connector and engine ground • Poor contact of ECM connector • Poor contact of coupling connector
<p>3 CHECK HARNESS BETWEEN ECM AND ACCELERATOR PEDAL POSITION SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to ON. 2) Measure the voltage between accelerator pedal position sensor connector and chassis ground.</p> <p>Connector & terminal (B315) No. 6 (+) — Chassis ground (-):</p>	Is the voltage 5 V or more?	Repair the short circuit to power supply in harness between ECM connector and accelerator pedal position sensor connector.	Go to step 4.
<p>4 CHECK HARNESS BETWEEN ECM AND ACCELERATOR PEDAL POSITION SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connectors.</p> <p>Connector & terminal (B134) No. 17 — (B134) No. 30:</p>	Is the resistance 1 MΩ or more?	Repair the poor contact of accelerator pedal position sensor connector. Replace the accelerator pedal if defective. <Ref. to SP(w/o STI)-4, Accelerator Pedal.>	Repair the short circuit to power supply in harness between ECM connector and accelerator pedal position sensor connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-204, DTC P2127 THROTTLE/PEDAL POSITION SENSOR/SWITCH "E" CIRCUIT LOW INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

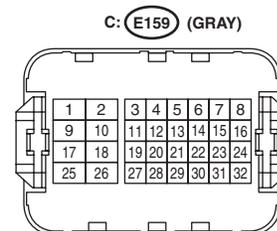
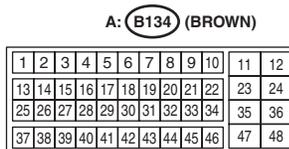
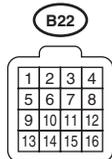
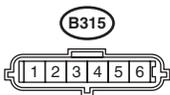
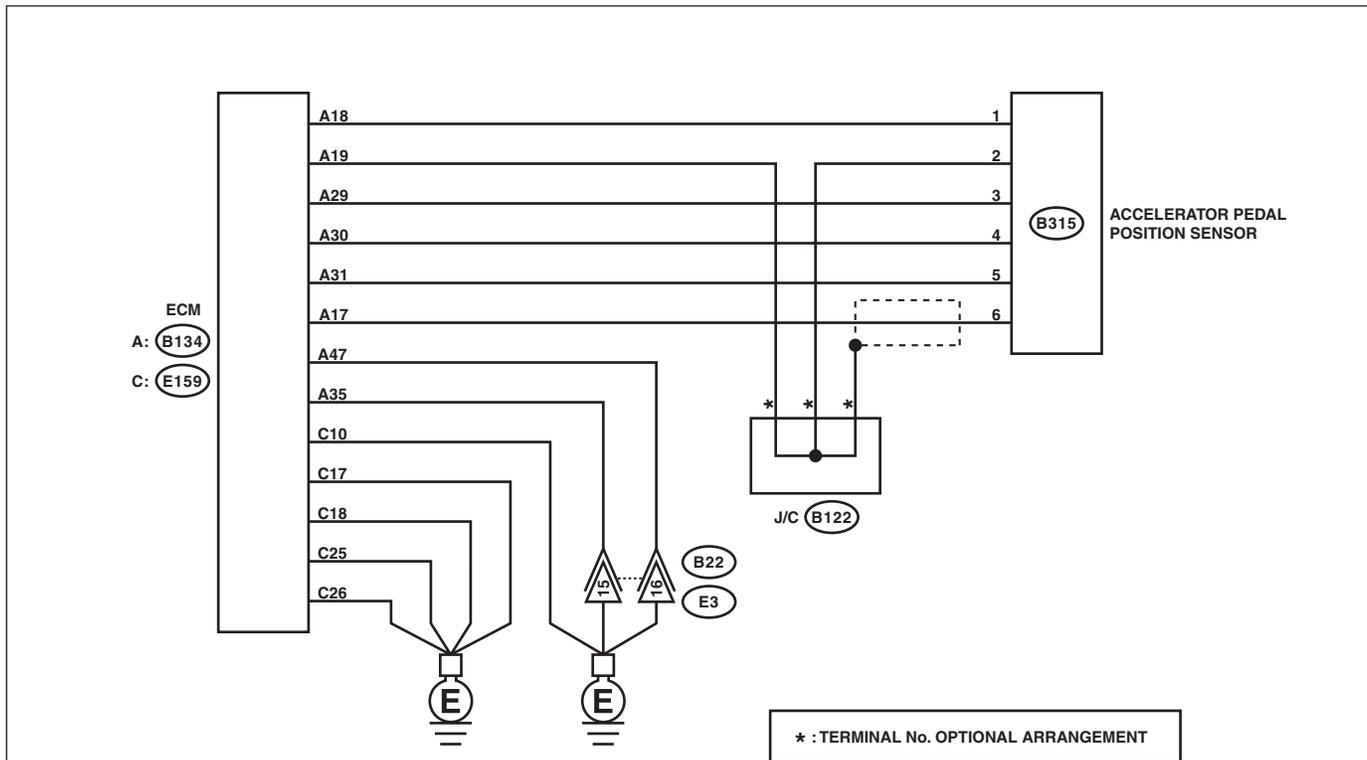
- Improper idling
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10812

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1</p> <p>CHECK HARNESS BETWEEN ECM AND ACCELERATOR PEDAL POSITION SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and accelerator pedal position sensor. 3) Measure the resistance between the ECM connector and engine ground.</p> <p>Connector & terminal (B134) No. 18 — Engine ground: (B134) No. 29 — Engine ground:</p>	<p>Is the resistance 1 MΩ or more?</p>	<p>Go to step 2.</p>	<p>Repair the short circuit to ground in harness between ECM connector and accelerator pedal position sensor connector.</p>
<p>2</p> <p>CHECK SHORT CIRCUIT INSIDE THE ECM.</p> <p>1) Connect the connector to ECM. 2) Measure the resistance between accelerator pedal position sensor connector and chassis ground.</p> <p>Connector & terminal (B315) No. 3 — Chassis ground:</p>	<p>Is the resistance 1 MΩ or more?</p>	<p>Replace the accelerator pedal. <Ref. to SP(w/o STI)-4, Accelerator Pedal.></p>	<p>Repair the short circuit to ground in harness between ECM connector and accelerator pedal position sensor connector. Replace the ECM if defective. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).></p>

FU:DTC P2128 THROTTLE/PEDAL POSITION SENSOR/SWITCH “E” CIRCUIT HIGH INPUT

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-205, DTC P2128 THROTTLE/PEDAL POSITION SENSOR/SWITCH “E” CIRCUIT HIGH INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

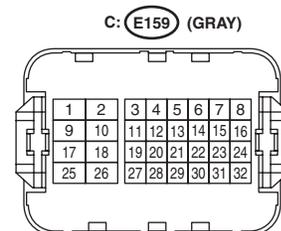
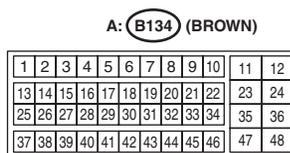
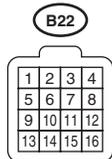
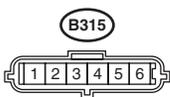
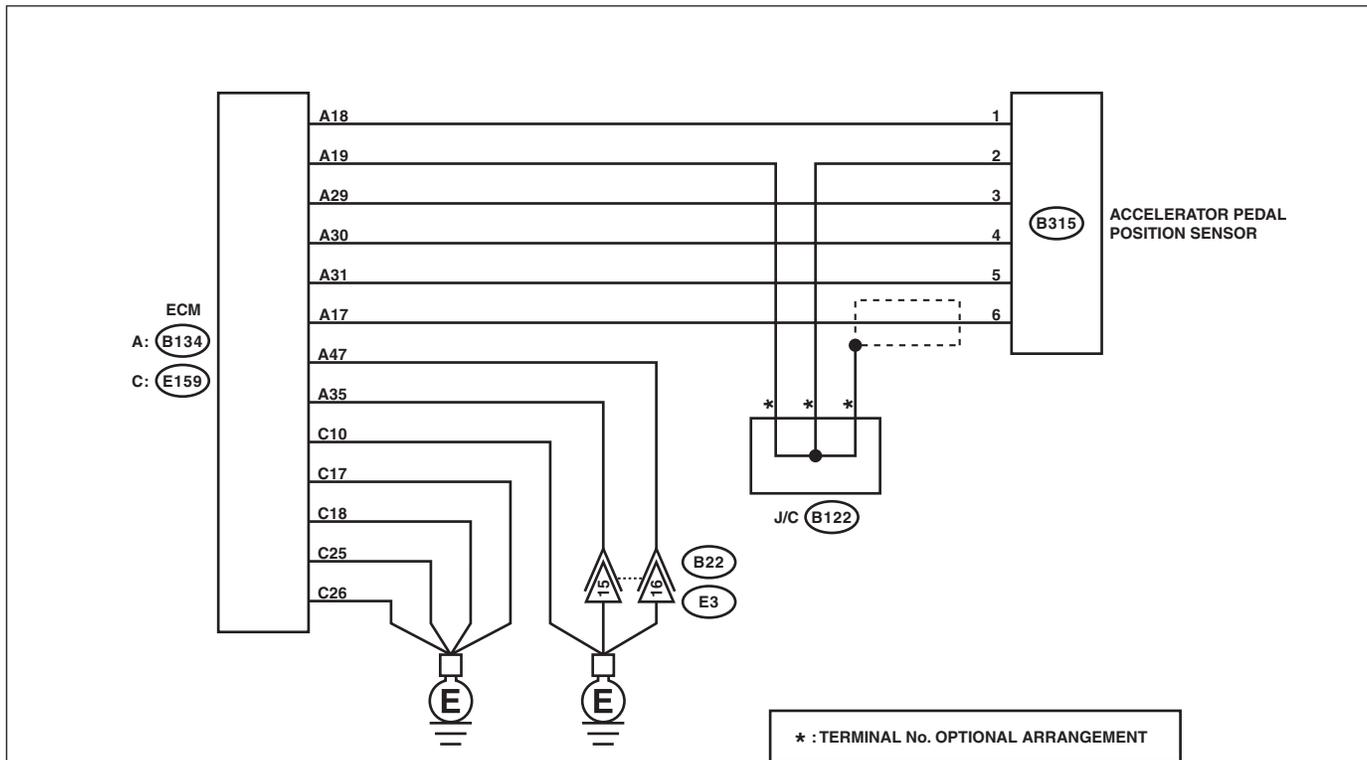
- Improper idling
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1 CHECK HARNESS BETWEEN ECM AND ACCELERATOR PEDAL POSITION SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and accelerator pedal position sensor. 3) Measure the resistance of harness between ECM connector and accelerator pedal position sensor connector.</p> <p>Connector & terminal (B134) No. 29 — (B315) No. 3: (B134) No. 19 — (B315) No. 2:</p>	Is the resistance less than 1 Ω?	Go to step 2.	Repair the harness and connector. NOTE: In this case, repair the following item: <ul style="list-style-type: none"> • Open circuit of harness between ECM connector and accelerator pedal position sensor connector • Poor contact of joint connector
<p>2 CHECK HARNESS BETWEEN ECM AND ACCELERATOR PEDAL POSITION SENSOR CONNECTOR.</p> <p>1) Connect the connector to ECM. 2) Measure the resistance between accelerator pedal position sensor connector and chassis ground.</p> <p>Connector & terminal (B315) No. 2 — Chassis ground:</p>	Is the resistance less than 1 Ω?	Go to step 3.	Repair the harness and connector. NOTE: In this case, repair the following item: <ul style="list-style-type: none"> • Open circuit of harness between ECM connector and engine ground • Poor contact of ECM connector • Poor contact of coupling connector
<p>3 CHECK HARNESS BETWEEN ECM AND ACCELERATOR PEDAL POSITION SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to ON. 2) Measure the voltage between accelerator pedal position sensor connector and chassis ground.</p> <p>Connector & terminal (B315) No. 3 (+) — Chassis ground (-):</p>	Is the voltage 5 V or more?	Repair the short circuit to power supply in harness between ECM connector and accelerator pedal position sensor connector.	Go to step 4.
<p>4 CHECK HARNESS BETWEEN ECM AND ACCELERATOR PEDAL POSITION SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connectors.</p> <p>Connector & terminal (B134) No. 18 — (B134) No. 29:</p>	Is the resistance 1 MΩ or more?	Repair the poor contact of accelerator pedal position sensor connector. Replace the accelerator pedal if defective. <Ref. to SP(w/o STI)-4, Accelerator Pedal.>	Repair the short circuit to power supply in harness between ECM connector and accelerator pedal position sensor connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

FV:DTC P2135 THROTTLE/PEDAL POSITION SENSOR/SWITCH "A"/"B" VOLTAGE CORRELATION

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-206, DTC P2135 THROTTLE/PEDAL POSITION SENSOR/SWITCH "A"/"B" VOLTAGE CORRELATION, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

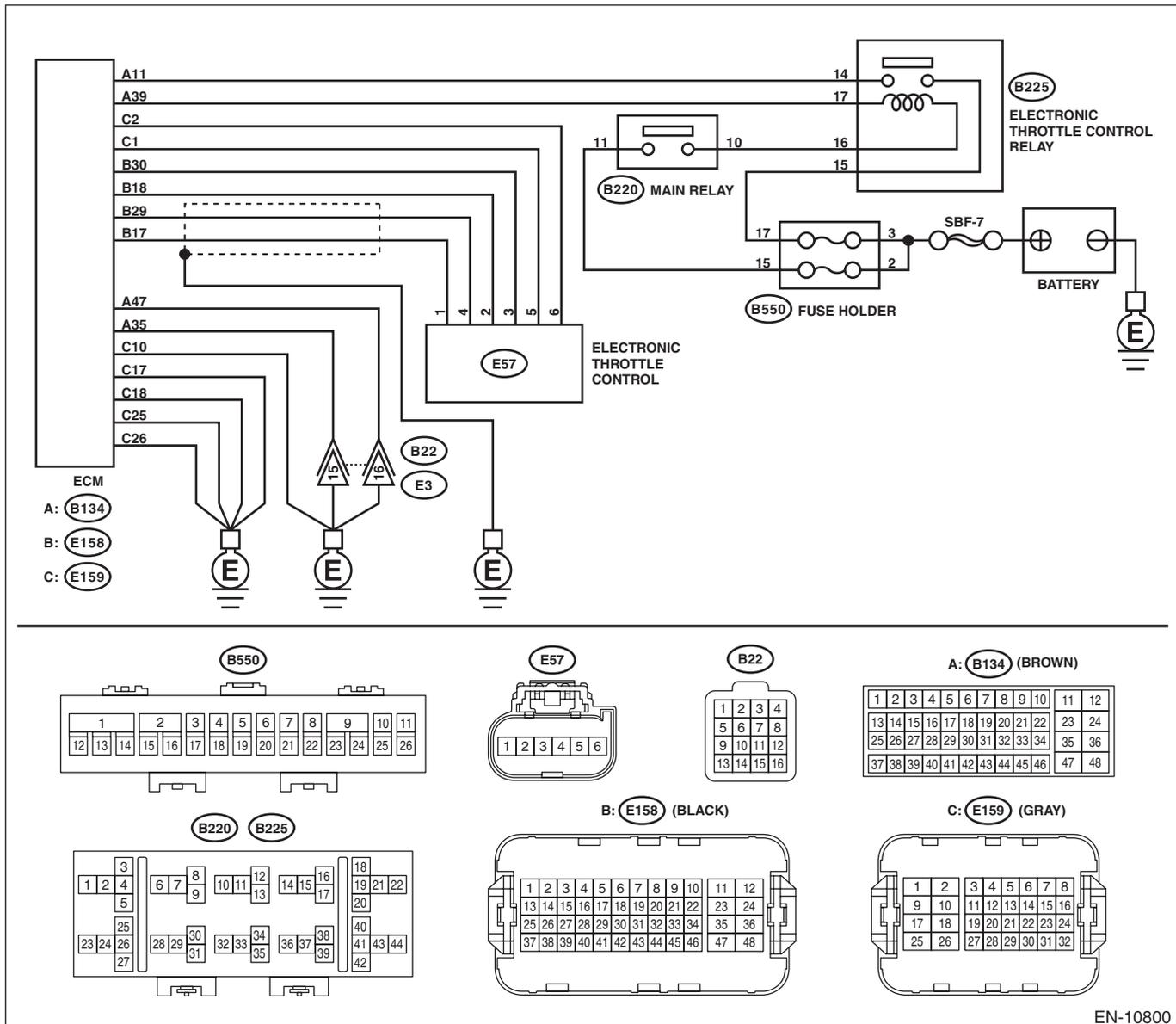
- Improper idling
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10800

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and electronic throttle control. 3) Measure the resistance between the ECM connector and engine ground.</p> <p>Connector & terminal (E158) No. 18 — Engine ground: (E158) No. 17 — Engine ground: (E158) No. 29 — Engine ground:</p>	Is the resistance 1 M Ω or more?	Go to step 2.	Repair the ground short circuit of harness between ECM connector and electronic throttle control connector.
<p>2 CHECK SHORT CIRCUIT INSIDE THE ECM.</p> <p>1) Connect the connector to ECM. 2) Measure the resistance between electronic throttle control connector and engine ground.</p> <p>Connector & terminal (E57) No. 1 — Engine ground: (E57) No. 4 — Engine ground:</p>	Is the resistance 1 M Ω or more?	Go to step 3.	Repair the ground short circuit of harness between ECM connector and electronic throttle control connector. Replace the ECM if defective. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).>
<p>3 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL CONNECTOR.</p> <p>1) Disconnect the connector from ECM. 2) Measure the resistance of harness between ECM connector and electronic throttle control connector.</p> <p>Connector & terminal (E158) No. 17 — (E57) No. 1: (E158) No. 30 — (E57) No. 3: (E158) No. 29 — (E57) No. 4:</p>	Is the resistance less than 1 Ω ?	Go to step 4.	Repair the open circuit of harness between ECM connector and electronic throttle control connector.
<p>4 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL CONNECTOR.</p> <p>1) Connect the connector to ECM. 2) Measure the resistance between electronic throttle control connector and engine ground.</p> <p>Connector & terminal (E57) No. 3 — Engine ground:</p>	Is the resistance less than 5 Ω ?	Go to step 5.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit of harness between ECM connector and engine ground • Poor contact of ECM connector • Poor contact of coupling connector
<p>5 CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL CONNECTOR.</p> <p>1) Turn the ignition switch to ON. 2) Measure the voltage between electronic throttle control connector and engine ground.</p> <p>Connector & terminal (E57) No. 1 (+) — Engine ground (-): (E57) No. 4 (+) — Engine ground (-):</p>	Is the voltage 5 V or more?	Repair the short circuit to power in the harness between ECM connector and electronic throttle control connector.	Go to step 6.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>6</p> <p>CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connectors.</p> <p>Connector & terminal (E158) No. 18 — (E158) No. 17: (E158) No. 18 — (E158) No. 29:</p>	<p>Is the resistance 1 MΩ or more?</p>	<p>Repair the poor contact of electronic throttle control connector. Replace the electronic throttle control if defective. <Ref. to FU(w/o STI)-15, Throttle Body.></p>	<p>Repair the short circuit to power in the harness between ECM connector and electronic throttle control connector.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

FW:DTC P2138 THROTTLE/PEDAL POSITION SENSOR/SWITCH “D”/“E” VOLTAGE CORRELATION

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-207, DTC P2138 THROTTLE/PEDAL POSITION SENSOR/SWITCH “D”/“E” VOLTAGE CORRELATION, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

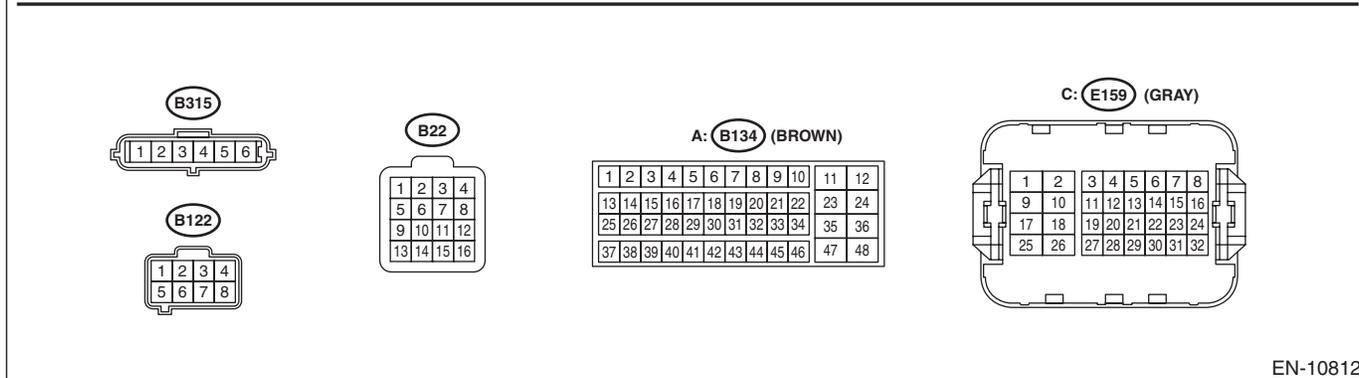
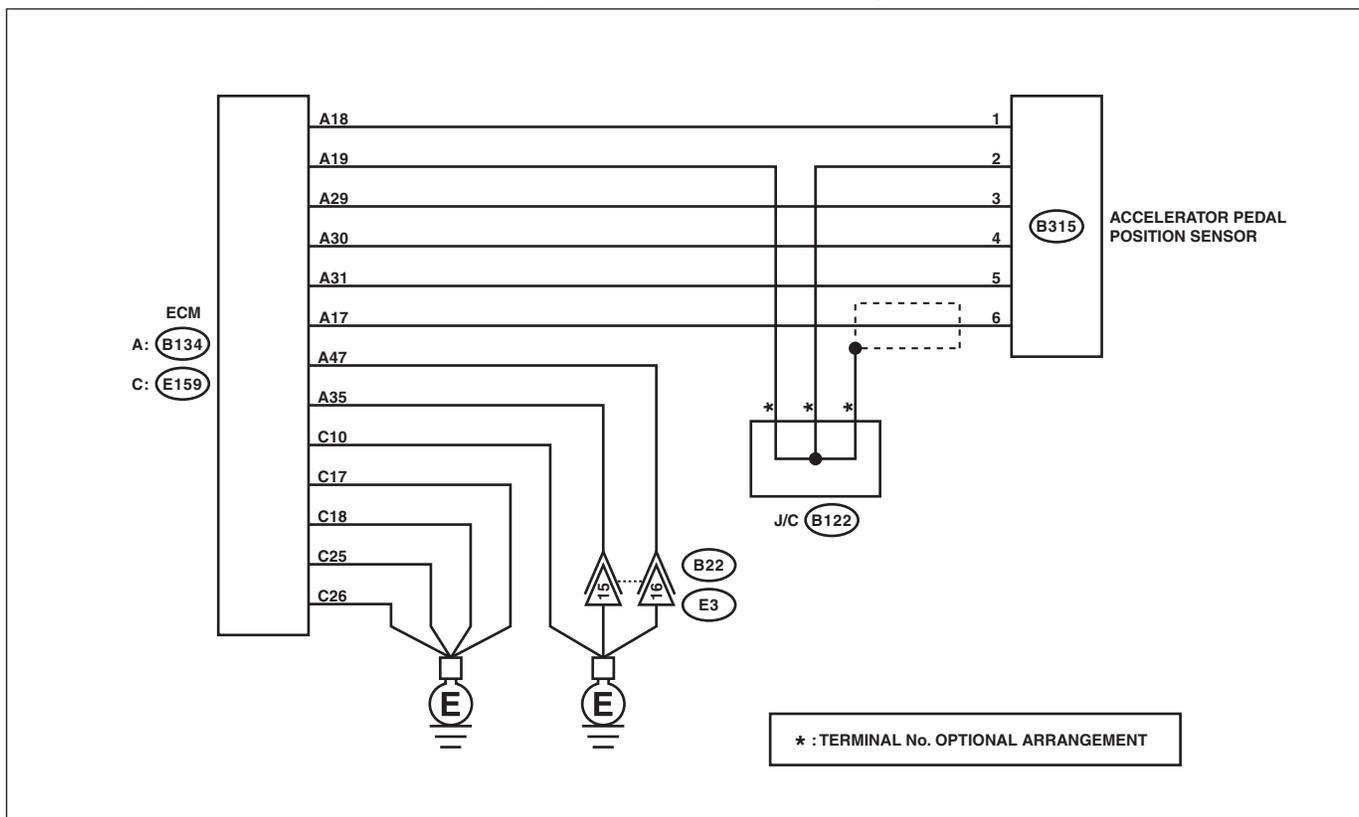
- Improper idling
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10812

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1 CHECK ACCELERATOR PEDAL POSITION SENSOR OUTPUT. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM connector and engine ground. Connector & terminal Main accelerator pedal position sensor signal (B134) No. 17 (+) — Engine ground (-): Sub accelerator pedal position sensor signal (B134) No. 29 (+) — Engine ground (-):</p>	<p>Is the difference in measured values for the main accelerator pedal position sensor signal and the sub accelerator pedal position sensor signal 0 V?</p>	<p>Go to step 3.</p>	<p>Go to step 2.</p>
<p>2 CHECK ACCELERATOR PEDAL POSITION SENSOR OUTPUT. 1) Measure the voltage between accelerator pedal position sensor connector and chassis ground. Connector & terminal (B315) No. 6 (+) — Chassis ground (-): (B315) No. 3 (+) — Chassis ground (-):</p>	<p>Is the difference in measured values for the main accelerator pedal position sensor signal and the sub accelerator pedal position sensor signal 0 V?</p>	<p>Replace the accelerator pedal. <Ref. to SP(w/o STI)-4, Accelerator Pedal.></p>	<p>Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit of harness between ECM connector and accelerator pedal position sensor connector • Short circuit to ground in harness between ECM connector and accelerator pedal position sensor connector</p>
<p>3 CHECK HARNESS BETWEEN ECM AND ACCELERATOR PEDAL POSITION SENSOR CONNECTOR. Measure the resistance of harness between the accelerator pedal position sensor connector and chassis ground. Connector & terminal (B315) No. 5 — Chassis ground: (B315) No. 2 — Chassis ground:</p>	<p>Is the resistance less than 5 Ω?</p>	<p>Repair the poor contact of ECM connector.</p>	<p>Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit of harness between ECM connector and accelerator pedal position sensor connector • Open circuit of harness between ECM connector and engine ground • Poor contact of coupling connector</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

FX:DTC P2146 FUEL INJECTOR POWER SUPPLY A OPEN CIRCUIT

DTC DETECTING CONDITION:

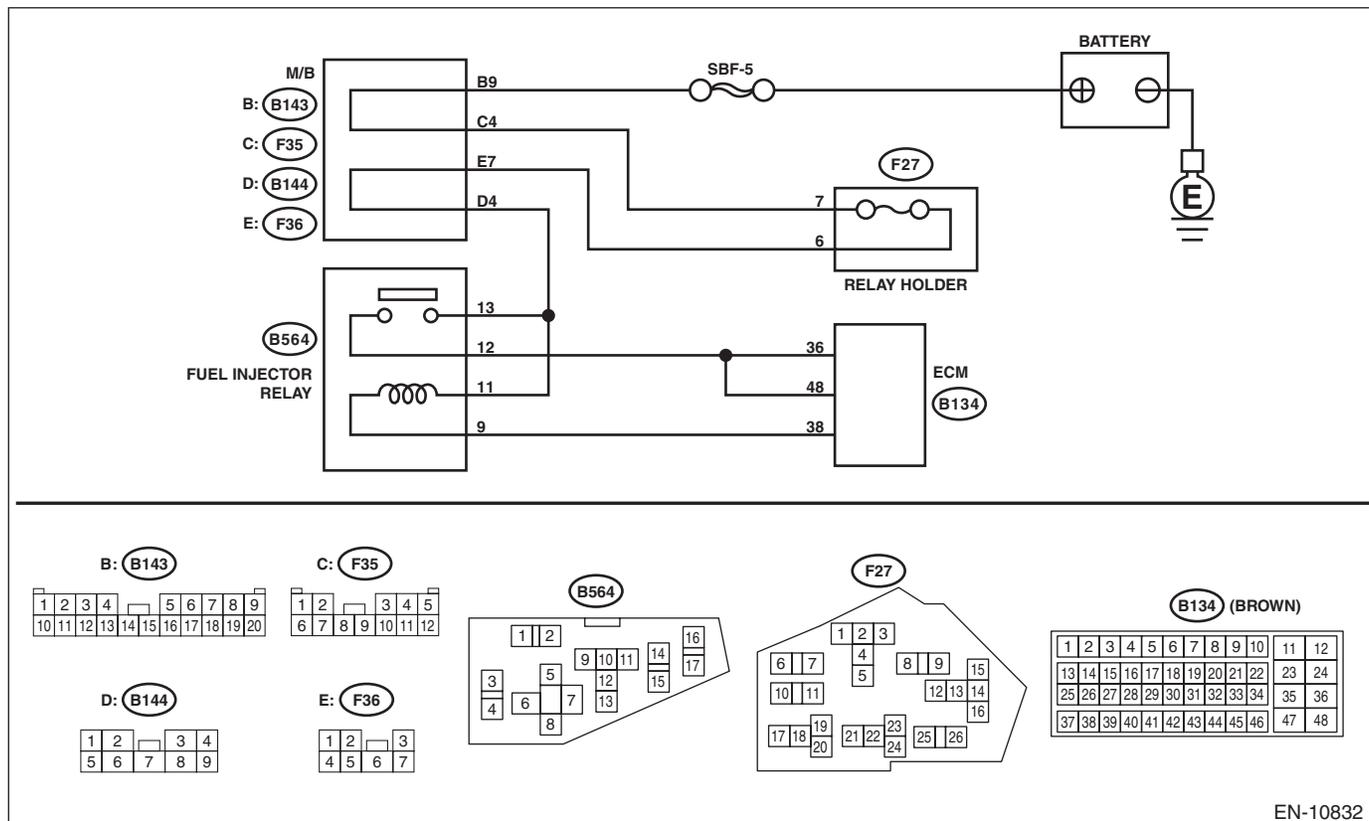
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-209, DTC P2146 FUEL INJECTOR POWER SUPPLY A OPEN CIRCUIT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



Step	Check	Yes	No
1 CHECK INPUT VOLTAGE OF ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM connector and engine ground. Connector & terminal (B134) No. 36 (+) — Engine ground (—): (B134) No. 48 (+) — Engine ground (—):	Is the voltage 10 V or more?	Repair the poor contact of ECM connector.	Go to step 2.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>2 CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR RELAY CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Remove the fuel injector relay. 4) Measure the resistance between fuel injector relay connector and engine ground. <i>Connector & terminal</i> <i>(B564) No. 12 — Engine ground:</i></p>	<p>Is the resistance 1 MΩ or more?</p>	<p>Go to step 3.</p>	<p>Repair the short circuit to ground in harness between ECM connector and fuel injector relay connector.</p>
<p>3 CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR RELAY CONNECTOR. Measure the resistance of harness between ECM connector and fuel injector relay connector. <i>Connector & terminal</i> <i>(B134) No. 36 — (B564) No. 12:</i> <i>(B134) No. 48 — (B564) No. 12:</i> <i>(B134) No. 38 — (B564) No. 9:</i></p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 4.</p>	<p>Repair the open circuit in harness between ECM connector and fuel injector relay connector.</p>
<p>4 CHECK INPUT VOLTAGE OF FUEL INJECTOR RELAY. Measure the voltage between fuel injector relay connector and the engine ground. <i>Connector & terminal</i> <i>(B564) No. 13 (+) — Engine ground (-):</i> <i>(B564) No. 11 (+) — Engine ground (-):</i></p>	<p>Is the voltage 10 V or more?</p>	<p>Replace the fuel injector relay. <Ref. to FU(w/o STI)-143, Fuel Injector Relay.></p>	<p>Repair the open or ground short circuit of harness of power supply circuit.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

FY:DTC P2158 VEHICLE SPEED SENSOR "B"

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-210, DTC P2158 VEHICLE SPEED SENSOR "B", Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

	Step	Check	Yes	No
1	CHECK DTC OF VDC. Check DTC of VDC.	Is DTC of VDC displayed?	Perform the diagnosis according to DTC. <Ref. to VDC(diag)-42, List of Diagnostic Trouble Code (DTC).>	Repair the poor contact of ECM connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

FZ: DTC P2195 O2 SENSOR SIGNAL BIASED/STUCK LEAN (BANK 1 SENSOR 1)

DTC DETECTING CONDITION:

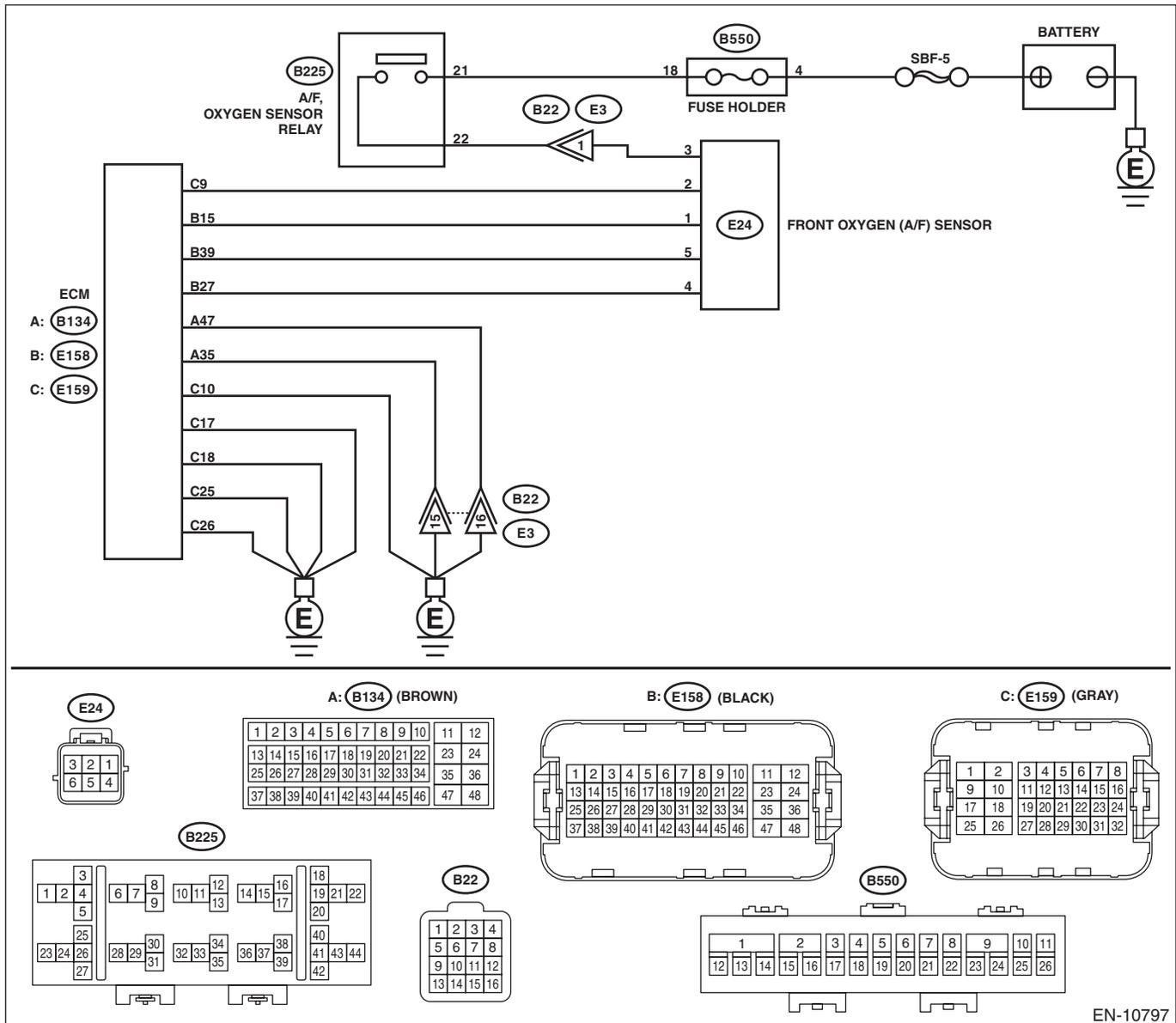
- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-211, DTC P2195 O2 SENSOR SIGNAL BIASED/STUCK LEAN (BANK 1 SENSOR 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10797

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK FRONT OXYGEN (A/F) SENSOR CONNECTOR AND COUPLING CONNECTOR.	Has water entered the connector?	Completely remove any water inside.	Go to step 2.
2 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and front oxygen (A/F) sensor. 3) Measure the resistance of harness between ECM connector and front oxygen (A/F) sensor connector. Connector & terminal (E158) No. 15 — (E24) No. 1: (E158) No. 27 — (E24) No. 4: (E158) No. 39 — (E24) No. 5:	Is the resistance less than 1 Ω?	Go to step 3.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and front oxygen (A/F) sensor connector • Poor contact of coupling connector
3 CHECK FOR POOR CONTACT. Check for poor contact of the front oxygen (A/F) sensor connector.	Is there poor contact of front oxygen (A/F) sensor connector?	Repair the poor contact of front oxygen (A/F) sensor connector.	Replace the front oxygen (A/F) sensor. <Ref. to FU(w/o STI)-126, Front Oxygen (A/F) Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

GA:DTC P2196 O2 SENSOR SIGNAL BIASED/STUCK RICH (BANK 1 SENSOR 1)

DTC DETECTING CONDITION:

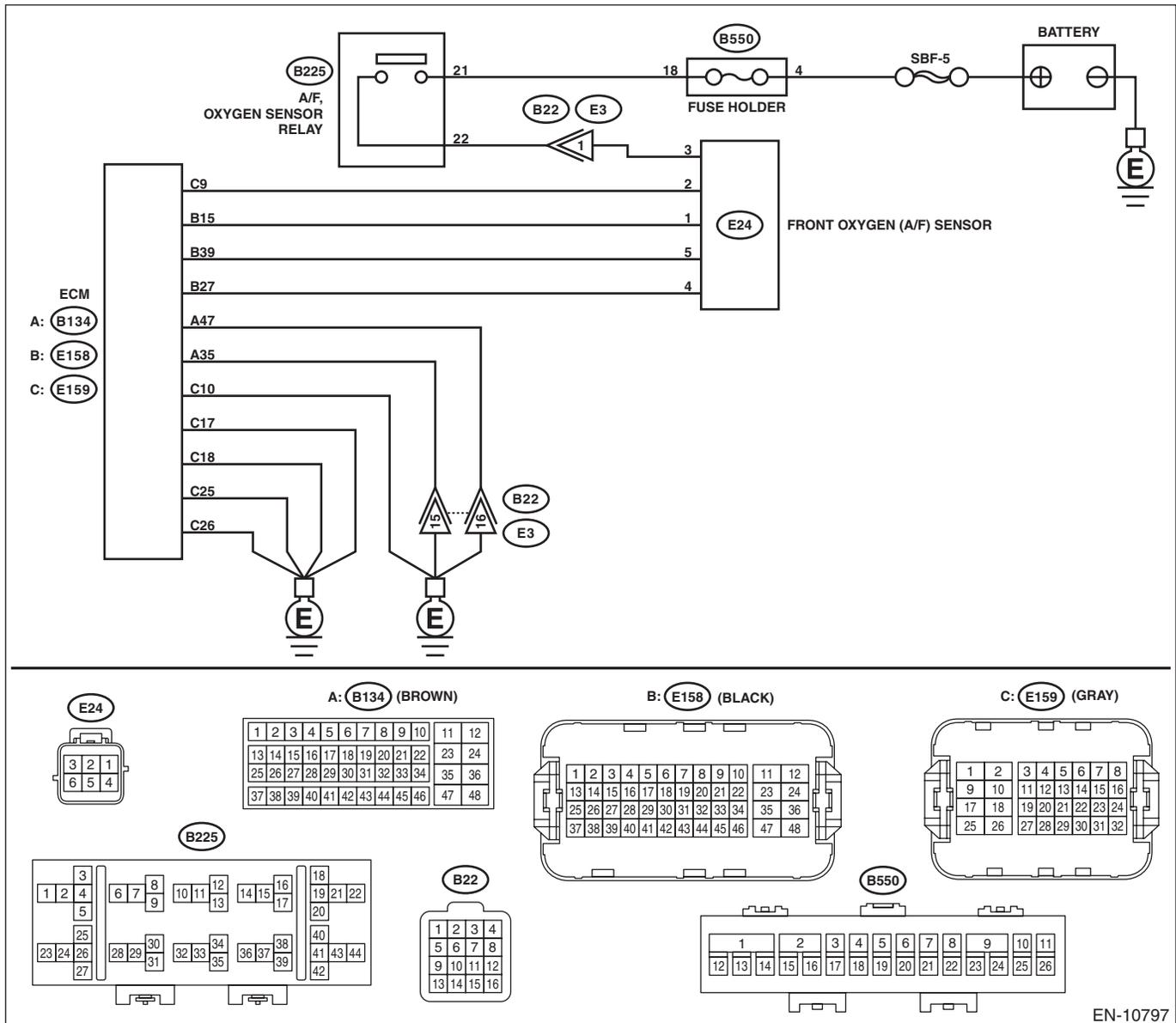
- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-213, DTC P2196 O2 SENSOR SIGNAL BIASED/STUCK RICH (BANK 1 SENSOR 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	CHECK FRONT OXYGEN (A/F) SENSOR CONNECTOR AND COUPLING CONNECTOR.	Has water entered the connector?	Completely remove any water inside.	Go to step 2.
2	CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connector and chassis ground. Connector & terminal (E158) No. 15 — Chassis ground: (E158) No. 27 — Chassis ground: (E158) No. 39 — Chassis ground:	Is the resistance 1 MΩ or more?	Go to step 3.	Repair the short circuit to ground in harness between ECM connector and front oxygen (A/F) sensor connector.
3	CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR. 1) Connect the connector to ECM. 2) Disconnect the connectors from front oxygen (A/F) sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between ECM connector and chassis ground. Connector & terminal (E158) No. 15 (+) — Chassis ground (-): (E158) No. 27 (+) — Chassis ground (-): (E158) No. 39 (+) — Chassis ground (-):	Is the voltage 8 V or more?	Repair the short circuit to power in the harness between ECM connector and front oxygen (A/F) sensor connector.	Repair the poor contact of ECM connector.

GB:DTC P219A BANK 1 AIR-FUEL RATIO IMBALANCE

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-215, DTC P219A BANK 1 AIR-FUEL RATIO IMBALANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

- Engine stalls.
- Improper idling

CAUTION:

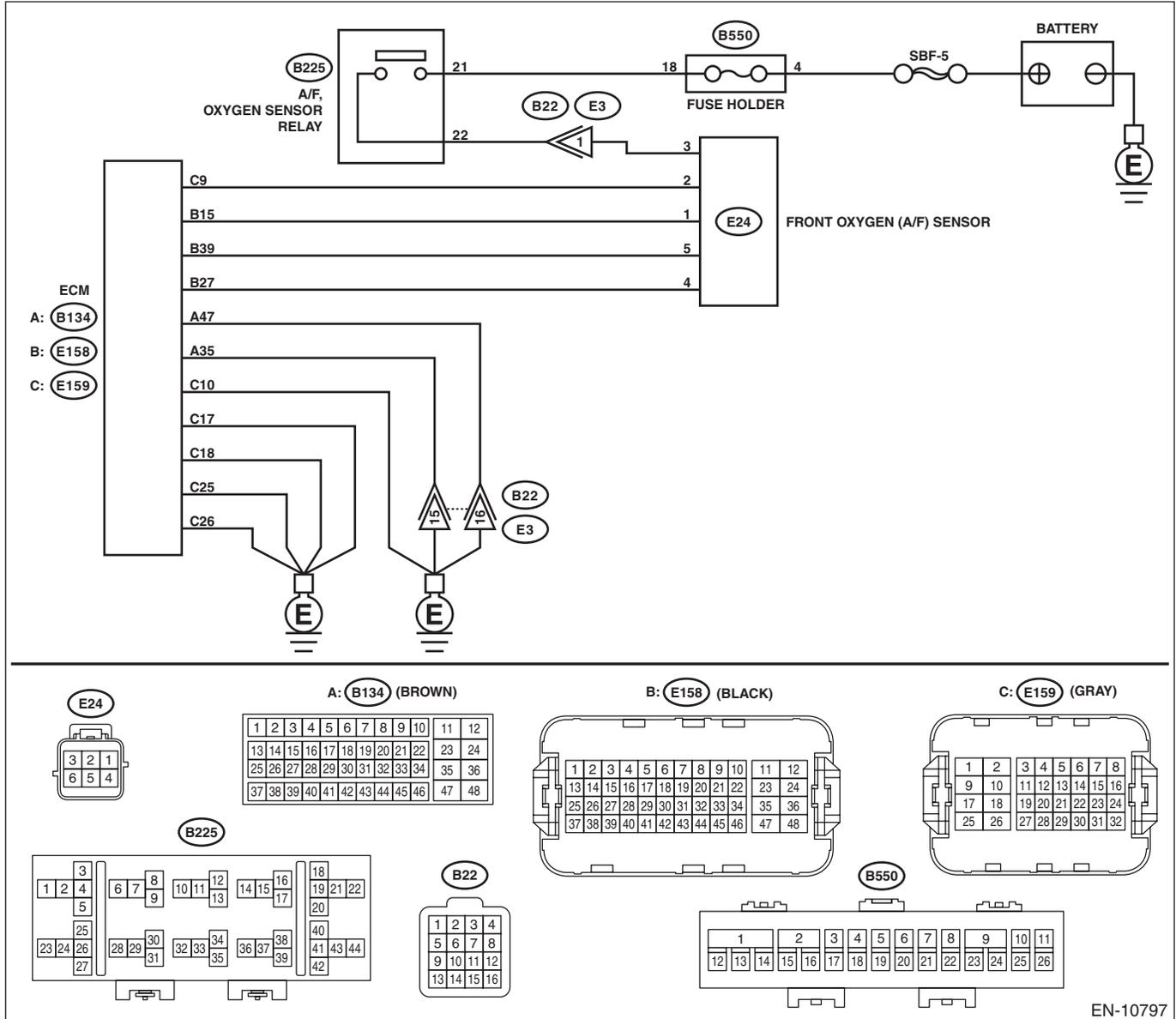
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

WIRING DIAGRAM:

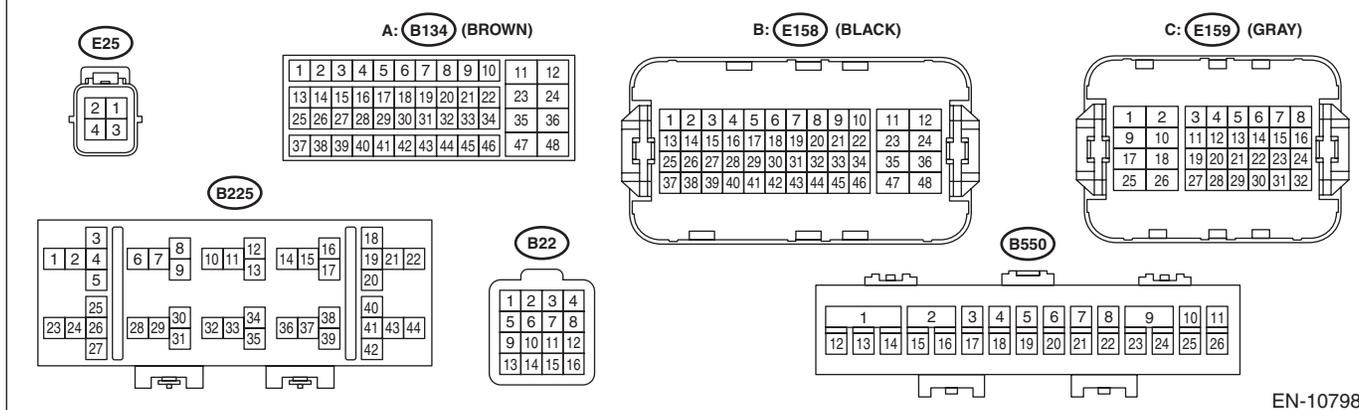
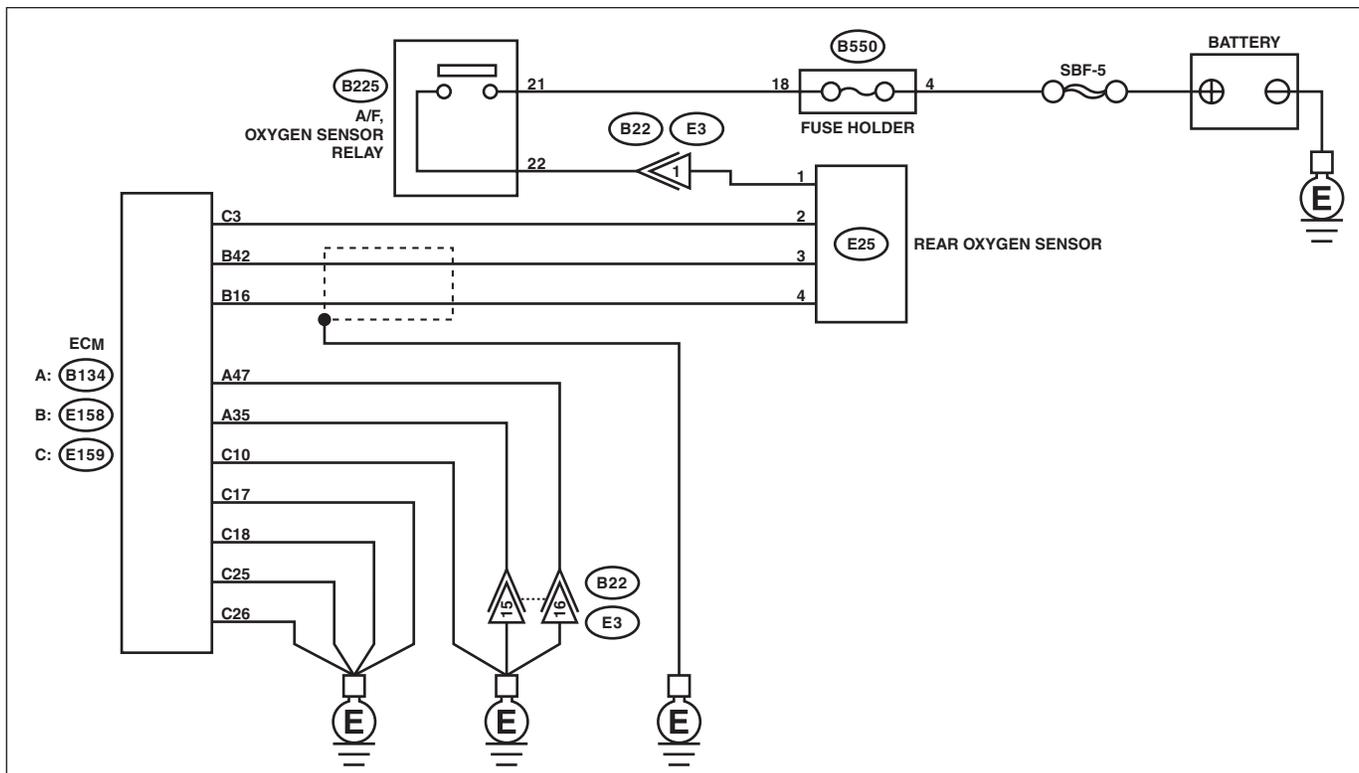
- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10797

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

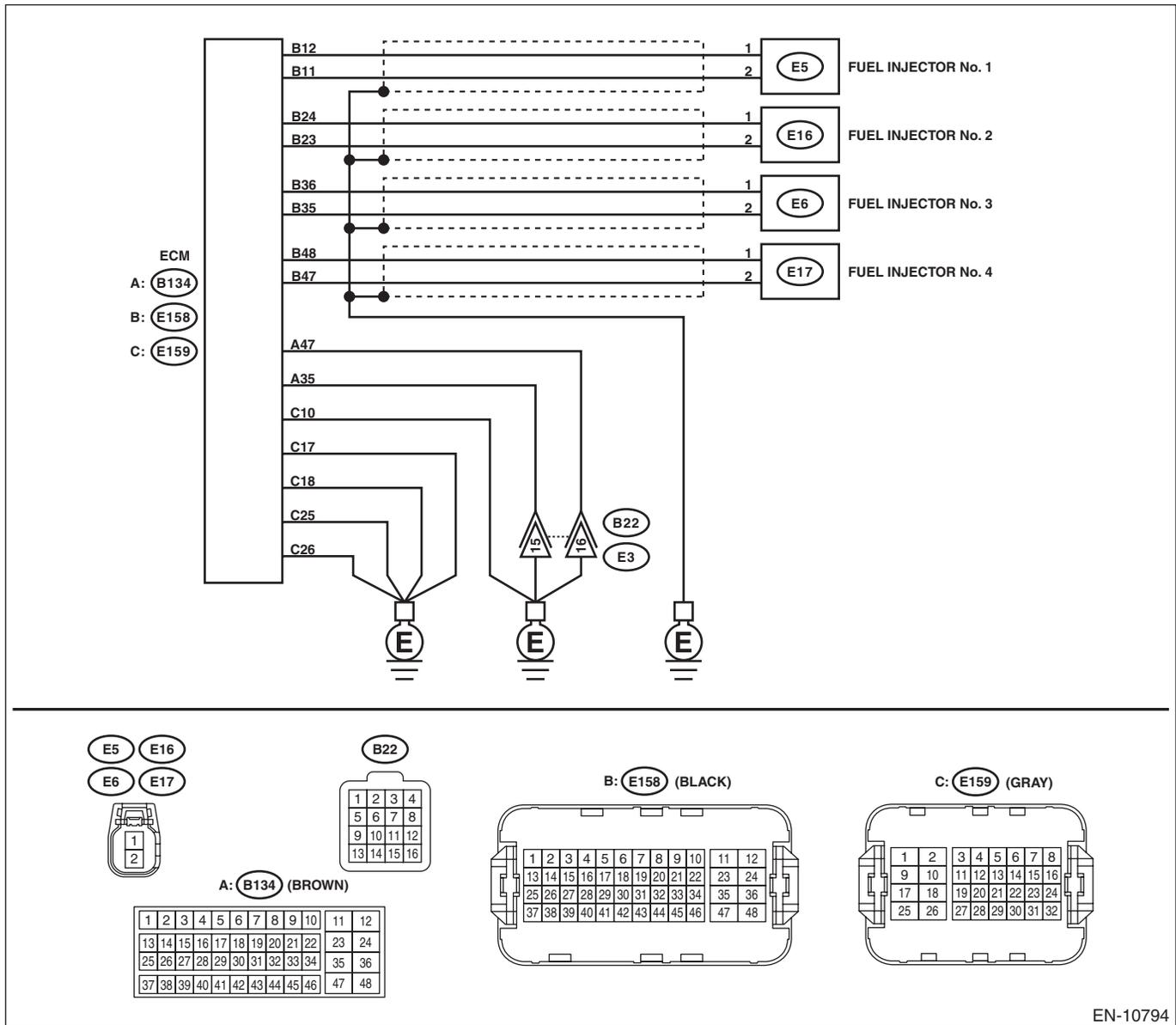
ENGINE (DIAGNOSTICS)



EN-10798

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)



EN-10794

Step	Check	Yes	No
1	CHECK FRONT OXYGEN (A/F) SENSOR CONNECTOR AND COUPLING CONNECTOR.	Completely remove any water inside.	Go to step 2.
2	CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and front oxygen (A/F) sensor. 3) Measure the resistance of harness between ECM connector and front oxygen (A/F) sensor connector. Connector & terminal (E158) No. 15 — (E24) No. 1: (E158) No. 27 — (E24) No. 4: (E158) No. 39 — (E24) No. 5:	Is the resistance less than 1 Ω? Go to step 3.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and front oxygen (A/F) sensor connector • Poor contact of coupling connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
3 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR. Measure the resistance between ECM connector and chassis ground. Connector & terminal <i>(E158) No. 15 — Chassis ground:</i> <i>(E158) No. 27 — Chassis ground:</i> <i>(E158) No. 39 — Chassis ground:</i>	Is the resistance 1 MΩ or more?	Go to step 4.	Repair the short circuit to ground in harness between ECM connector and front oxygen (A/F) sensor connector.
4 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR. 1) Connect the connector to ECM. 2) Turn the ignition switch to ON. 3) Measure the voltage between front oxygen (A/F) sensor connector and chassis ground. Connector & terminal <i>(E24) No. 1 (+) — Chassis ground (-):</i> <i>(E24) No. 4 (+) — Chassis ground (-):</i> <i>(E24) No. 5 (+) — Chassis ground (-):</i>	Is the voltage 8 V or more?	Repair the short circuit to power in the harness between ECM connector and front oxygen (A/F) sensor connector.	Go to step 5.
5 CHECK EXHAUST SYSTEM.	Are there holes or loose bolts on exhaust system?	Repair the exhaust system.	Go to step 6.
6 CHECK AIR INTAKE SYSTEM.	Are there holes, loose bolts or disconnection of hose on air intake system?	Repair the air intake system.	Go to step 7.
7 CHECK FUEL PRESSURE. WARNING: Place “NO OPEN FLAMES” signs near the working area. CAUTION: Be careful not to spill fuel. 1) Connect the front oxygen (A/F) sensor connector. 2) Measure the fuel pressure. <Ref. to ME(w/o STI)-31, INSPECTION, Fuel Pressure.> CAUTION: Release fuel pressure before removing the fuel pressure gauge.	Is the measured value 328 — 358 kPa (3.3 — 3.7 kgf/cm ² , 48 — 52 psi)?	Go to step 8.	Check the fuel pump and fuel delivery line. <Ref. to FU(w/o STI)-172, INSPECTION, Fuel Pump.> <Ref. to FU(w/o STI)-201, INSPECTION, Fuel Delivery and Evaporation Lines.>
8 CHECK ENGINE COOLANT TEMPERATURE SENSOR. 1) Start the engine and warm up completely. 2) Read the value of «Coolant Temp.» using the Subaru Select Monitor or a general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedures, refer to “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value of «Coolant Temp.» 75°C (167°F) or more?	Go to step 9.	Replace the engine coolant temperature sensor. <Ref. to FU(w/o STI)-93, Engine Coolant Temperature Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>9</p> <p>CHECK MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR.</p> <p>1) Start the engine and warm up engine until coolant temperature is higher than 75°C (167°F).</p> <p>2) For CVT models, set the select lever to “P” range or “N” range, and for MT models, place the shift lever in the neutral position.</p> <p>3) Turn the A/C switch to OFF.</p> <p>4) Turn all the accessory switches to OFF.</p> <p>5) Read the value of «Mass Air Flow» using the Subaru Select Monitor or a general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedures, refer to “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • General scan tool <p>For detailed operation procedures, refer to the general scan tool operation manual.</p>	<p>Is the value of «Mass Air Flow» 2.0 — 5.0 g/s (0.26 — 0.66 lb/m)?</p>	<p>Go to step 10.</p>	<p>Replace the mass air flow and intake air temperature sensor. <Ref. to FU(w/o STI)-118, Mass Air Flow and Intake Air Temperature Sensor.></p>
<p>10</p> <p>CHECK MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR.</p> <p>1) Start the engine and warm up engine until coolant temperature is higher than 75°C (167°F).</p> <p>2) For CVT models, set the select lever to “P” range or “N” range, and for MT models, place the shift lever in the neutral position.</p> <p>3) Turn the A/C switch to OFF.</p> <p>4) Turn all the accessory switches to OFF.</p> <p>5) Open the front hood.</p> <p>6) Measure the ambient temperature.</p> <p>7) Read the value of «IAT Sensor #11» using the Subaru Select Monitor or a general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedures, refer to “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • General scan tool <p>For detailed operation procedures, refer to the general scan tool operation manual.</p>	<p>Subtract ambient temperature value from the value of «IAT Sensor #11». Is the obtained value -10 — 50°C (-18 — 90°F)?</p>	<p>Go to step 11.</p>	<p>Check the mass air flow and intake air temperature sensor. <Ref. to FU(w/o STI)-118, Mass Air Flow and Intake Air Temperature Sensor.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>11 CHECK REAR OXYGEN SENSOR DATA. 1) Warm up the engine until engine coolant temperature is higher than 75°C (167°F), and keep the engine speed at 3,000 rpm. (2 minutes maximum) 2) Read the value of «Oxygen sensor #12» using the Subaru Select Monitor or a general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedures, refer to “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.</p>	<p>Is the value of «Oxygen sensor #12» 0.490 V or more?</p>	<p>Go to step 12.</p>	<p>Go to step 13.</p>
<p>12 CHECK REAR OXYGEN SENSOR DATA. 1) Warm up the engine until engine coolant temperature is higher than 75°C (167°F), and rapidly reduce the engine speed from 3,000 rpm. 2) Read the value of «Oxygen sensor #12» using the Subaru Select Monitor or a general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedures, refer to “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.</p>	<p>Is the value of «Oxygen sensor #12» 0.250 V or less?</p>	<p>Go to step 14.</p>	<p>Go to step 13.</p>
<p>13 CHECK REAR OXYGEN SENSOR CONNECTOR AND COUPLING CONNECTOR.</p>	<p>Has water entered the connector?</p>	<p>Completely remove any water inside.</p>	<p>Go to step 15.</p>
<p>14 CHECK FRONT OXYGEN (A/F) SENSOR USING REAR OXYGEN SENSOR SIGNAL. 1) Warm up the engine until engine coolant temperature is higher than 75°C (167°F), then keep the engine idling for 5 minutes or more. 2) Read the value of «Oxygen sensor #12» using the Subaru Select Monitor or a general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedures, refer to “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(w/o STI)(diag)-37, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.</p>	<p>Is the value of «Oxygen sensor #12» kept at 0.250 V or less for 5 minutes or more?</p>	<p>Replace the front oxygen (A/F) sensor. <Ref. to FU(w/o STI)-126, Front Oxygen (A/F) Sensor.></p>	<p>Go to step 15.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
15 CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and rear oxygen sensor. 3) Measure the resistance of harness between ECM connector and rear oxygen sensor connector. Connector & terminal (E158) No. 42 — (E25) No. 3: (E158) No. 16 — (E25) No. 4:	Is the resistance less than 1 Ω?	Go to step 16.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and rear oxygen sensor connector • Poor contact of coupling connector
16 CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR. 1) Connect the connector to ECM. 2) Turn the ignition switch to ON. 3) Measure the voltage between rear oxygen sensor connector and chassis ground. Connector & terminal (E25) No. 4 (+) — Chassis ground (-):	Is the voltage 0.2 — 0.5 V?	Replace the rear oxygen sensor. <Ref. to FU(w/o STI)-128, Rear Oxygen Sensor.>	Go to step 17.
17 CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from fuel injector on faulty cylinders. 3) Measure the resistance between fuel injector connector and engine ground on faulty cylinders. Connector & terminal #1 (E5) No. 1 — Engine ground: #1 (E5) No. 2 — Engine ground: #2 (E16) No. 1 — Engine ground: #2 (E16) No. 2 — Engine ground: #3 (E6) No. 1 — Engine ground: #3 (E6) No. 2 — Engine ground: #4 (E17) No. 1 — Engine ground: #4 (E17) No. 2 — Engine ground:	Is the resistance 1 MΩ or more?	Go to step 18.	Repair the short circuit to ground in harness between ECM connector and fuel injector connector.
18 CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR. Measure the resistance of harness between ECM and fuel injector connector on faulty cylinders. Connector & terminal #1 (E158) No. 12 — (E5) No. 1: #1 (E158) No. 11 — (E5) No. 2: #2 (E158) No. 24 — (E16) No. 1: #2 (E158) No. 23 — (E16) No. 2: #3 (E158) No. 36 — (E6) No. 1: #3 (E158) No. 35 — (E6) No. 2: #4 (E158) No. 48 — (E17) No. 1: #4 (E158) No. 47 — (E17) No. 2:	Is the resistance less than 1 Ω?	Go to step 19.	Repair the open circuit of the harness between the ECM connector and fuel injector connector.
19 CHECK FUEL INJECTOR. Check the fuel injector on faulty cylinder. <Ref. to FU(w/o STI)-70, INSPECTION, Fuel Injector.>	Are fuel injectors OK?	Go to step 20.	Replace the faulty fuel injector. <Ref. to FU(w/o STI)-51, Fuel Injector.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No	
20	CHECK INSTALLATION CONDITION OF CAMSHAFT POSITION SENSOR/CRANKSHAFT POSITION SENSOR.	Is the camshaft position sensor or crankshaft position sensor loosely installed?	Tighten the camshaft position sensor or crankshaft position sensor. <Ref. to FU(w/o STI)-104, INSTALLATION, Camshaft Position Sensor.> <Ref. to FU(w/o STI)-99, INSTALLATION, Crankshaft Position Sensor.>	Go to step 21.
21	CHECK CRANKSHAFT POSITION SENSOR PLATE.	Is the crankshaft position sensor plate rusted or does it have broken teeth?	Replace the crankshaft position sensor plate. <Ref. to ME(w/o STI)-260, Cylinder Block.>	Go to step 22.
22	CHECK INSTALLATION CONDITION OF TIMING CHAIN. Turn the crankshaft using ST, and align the alignment mark on crank sprocket with alignment mark on cylinder block. ST 18252AA000 CRANKSHAFT SOCKET	Is the timing chain dislocated from its proper position?	Correct the installation condition of timing chain. <Ref. to ME(w/o STI)-116, Timing Chain Assembly.>	Go to step 23.
23	CHECK FUEL LEVEL.	Is the fuel meter indication higher than the "Lower" level?	Go to step 24.	Refill the fuel so that the fuel meter indication is higher than the "Lower" level, and proceed to the next step. Go to step 24.
24	CHECK STATUS OF MALFUNCTION INDICATOR LIGHT. 1) Clear the memory using the Subaru Select Monitor or general scan tool. <Ref. to EN(w/o STI)(diag)-61, Clear Memory Mode.> 2) Start the engine, and drive the vehicle 10 minutes or more.	Does the malfunction indicator light illuminate or blink?	Go to step 26.	Go to step 25.
25	CHECK CAUSE OF MISFIRE.	Was the cause of misfire identified when the engine is running?	Finish diagnostics operation, if the engine has no abnormality.	Repair the poor contact of connector. NOTE: In this case, repair the following item: • Poor contact of ignition coil connector • Poor contact of fuel injector connector on faulty cylinders • Poor contact of ECM connector • Poor contact of coupling connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No	
26	CHECK AIR INTAKE SYSTEM.	Is there any fault in air intake system?	Repair the air intake system. NOTE: Check the following items. • Are there air leaks or air suction caused by loose or dislocated nuts and bolts? • Are there cracks or any disconnection of hoses?	Go to step 27 .
27	CHECK MISFIRE SYMPTOM. 1) Turn the ignition switch to ON. 2) Check for DTC. <Ref. to EN(w/o STI)(diag)-46, Read Diagnostic Trouble Code (DTC).>	Does the Subaru Select Monitor or general scan tool indicate only one DTC?	Go to step 30 .	Go to step 28 .
28	CHECK DTC.	Is DTC P0301 and P0303 displayed on the Subaru Select Monitor or general scan tool?	Go to step 31 .	Go to step 29 .
29	CHECK DTC.	Is DTC P0302 and P0304 displayed on the Subaru Select Monitor or general scan tool?	Go to step 32 .	Go to step 33 .
30	ONLY ONE CYLINDER.	Is there any fault in the cylinder?	Repair or replace faulty parts. NOTE: Check the following items. • Spark plug • Ignition coil • Fuel injector • Compression ratio	Go to DTC P0171. <Ref. to EN(w/o STI)(diag)-185, DTC P0171 SYSTEM TOO LEAN (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
31	GROUP OF #1 AND #3 CYLINDERS.	Are there any faults in #1 and #3 cylinders?	Repair or replace faulty parts. NOTE: Check the following items. • Spark plug • Ignition coil • Fuel injector • Compression ratio • Skipping timing chain teeth	Go to DTC P0171. <Ref. to EN(w/o STI)(diag)-185, DTC P0171 SYSTEM TOO LEAN (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
32	GROUP OF #2 AND #4 CYLINDERS.	Are there any faults in #2 and #4 cylinders?	Repair or replace faulty parts. NOTE: Check the following items. • Spark plug • Ignition coil • Fuel injector • Compression ratio • Skipping timing chain teeth	Go to DTC P0171. <Ref. to EN(w/o STI)(diag)-185, DTC P0171 SYSTEM TOO LEAN (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
33 CYLINDER AT RANDOM.	Is the engine idle rough?	Go to DTC P0171. <Ref. to EN(w/o STI)(diag)-185, DTC P0171 SYS- TEM TOO LEAN (BANK 1), Diag- nostic Procedure with Diagnostic Trouble Code (DTC).>	Repair or replace faulty parts. NOTE: Check the follow- ing items. <ul style="list-style-type: none">• Spark plug• Ignition coil• Fuel injector• Compression ra- tio

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

GC:DTC P2227 BAROMETRIC PRESSURE CIRCUIT RANGE/PERFORMANCE

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-220, DTC P2227 BAROMETRIC PRESSURE CIRCUIT RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Replace the ECM. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).> NOTE: The barometric pressure sensor is built into the ECM.

GD:DTC P2228 BAROMETRIC PRESSURE CIRCUIT LOW

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-221, DTC P2228 BAROMETRIC PRESSURE CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Replace the ECM. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).> NOTE: The barometric pressure sensor is built into the ECM.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

GE:DTC P2229 BAROMETRIC PRESSURE CIRCUIT HIGH

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-222, DTC P2229 BAROMETRIC PRESSURE CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Replace the ECM. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).> NOTE: The barometric pressure sensor is built into the ECM.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

GF:DTC P2270 O2 SENSOR SIGNAL BIASED/STUCK LEAN (BANK 1 SENSOR 2)

DTC DETECTING CONDITION:

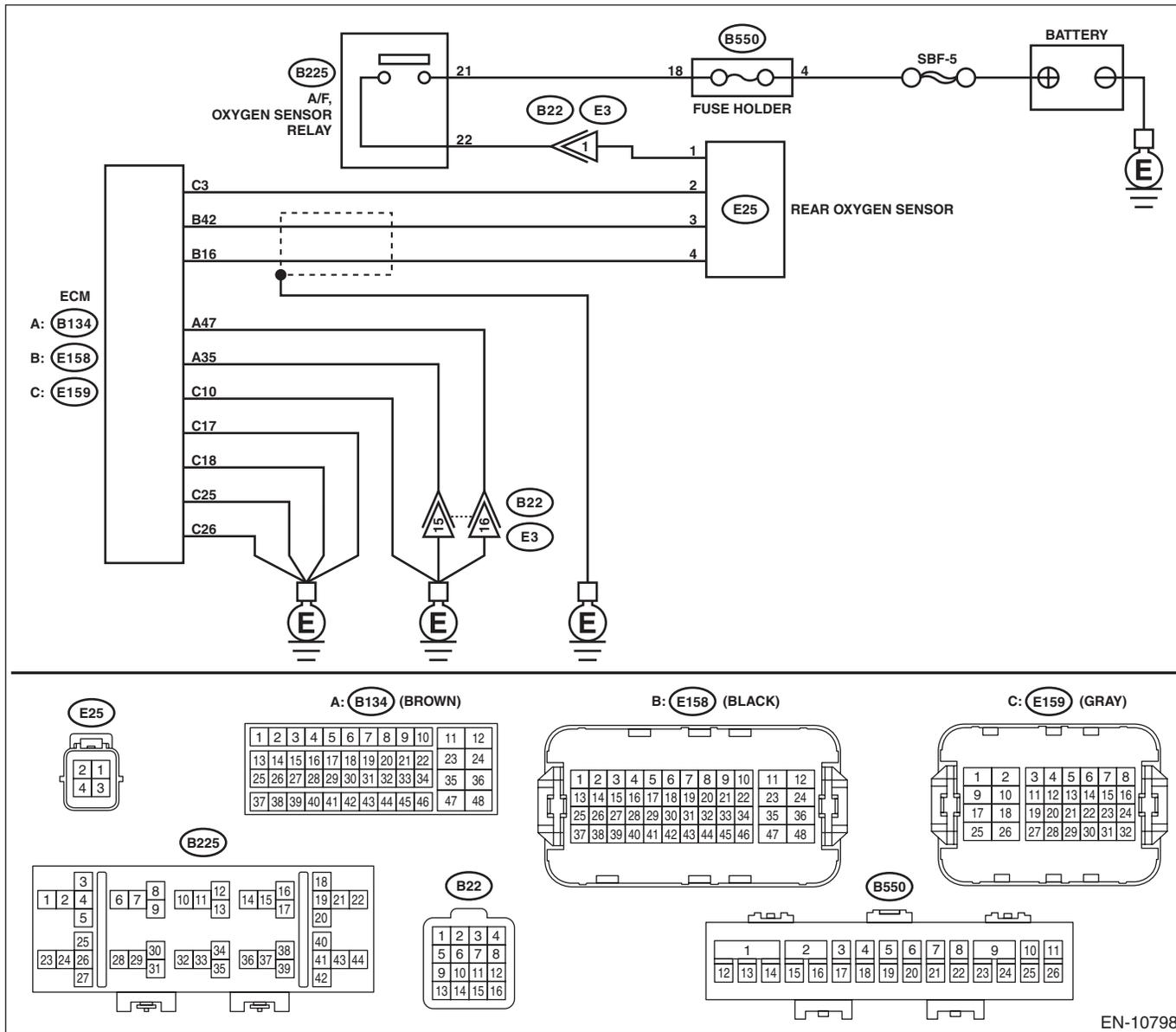
- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-223, DTC P2270 O2 SENSOR SIGNAL BIASED/STUCK LEAN (BANK 1 SENSOR 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10798

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK REAR OXYGEN SENSOR CONNECTOR.	Has water entered the connector?	Completely remove any water inside.	Go to step 2.
2 CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and rear oxygen sensor. 3) Measure the resistance of harness between ECM connector and rear oxygen sensor connector. Connector & terminal (E158) No. 42 — (E25) No. 3: (E158) No. 16 — (E25) No. 4:	Is the resistance less than 1 Ω ?	Go to step 3.	Repair the open circuit of harness between ECM connector and rear oxygen sensor connector.
3 CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR. 1) Connect the connector to ECM. 2) Turn the ignition switch to ON. 3) Measure the voltage between rear oxygen sensor connector and engine ground. Connector & terminal (E25) No. 3 (+) — Engine ground (-):	Is the voltage 0.15 V or more?	Repair the short circuit to power in the harness between ECM connector and rear oxygen sensor connector.	Go to step 4.
4 CHECK EXHAUST SYSTEM. Check exhaust system parts. NOTE: Check the following items. <ul style="list-style-type: none"> • Looseness and improper fitting of exhaust system parts • Damage (crack, hole etc.) of parts • Damage (crack, hole etc.) between front oxygen (A/F) sensor and rear oxygen sensor 	Is there any fault in exhaust system?	Repair or replace faulty parts.	Replace the rear oxygen sensor. <Ref. to FU(w/o STI)-128, Rear Oxygen Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

GG:DTC P2271 O2 SENSOR SIGNAL BIASED/STUCK RICH (BANK 1 SENSOR 2)

DTC DETECTING CONDITION:

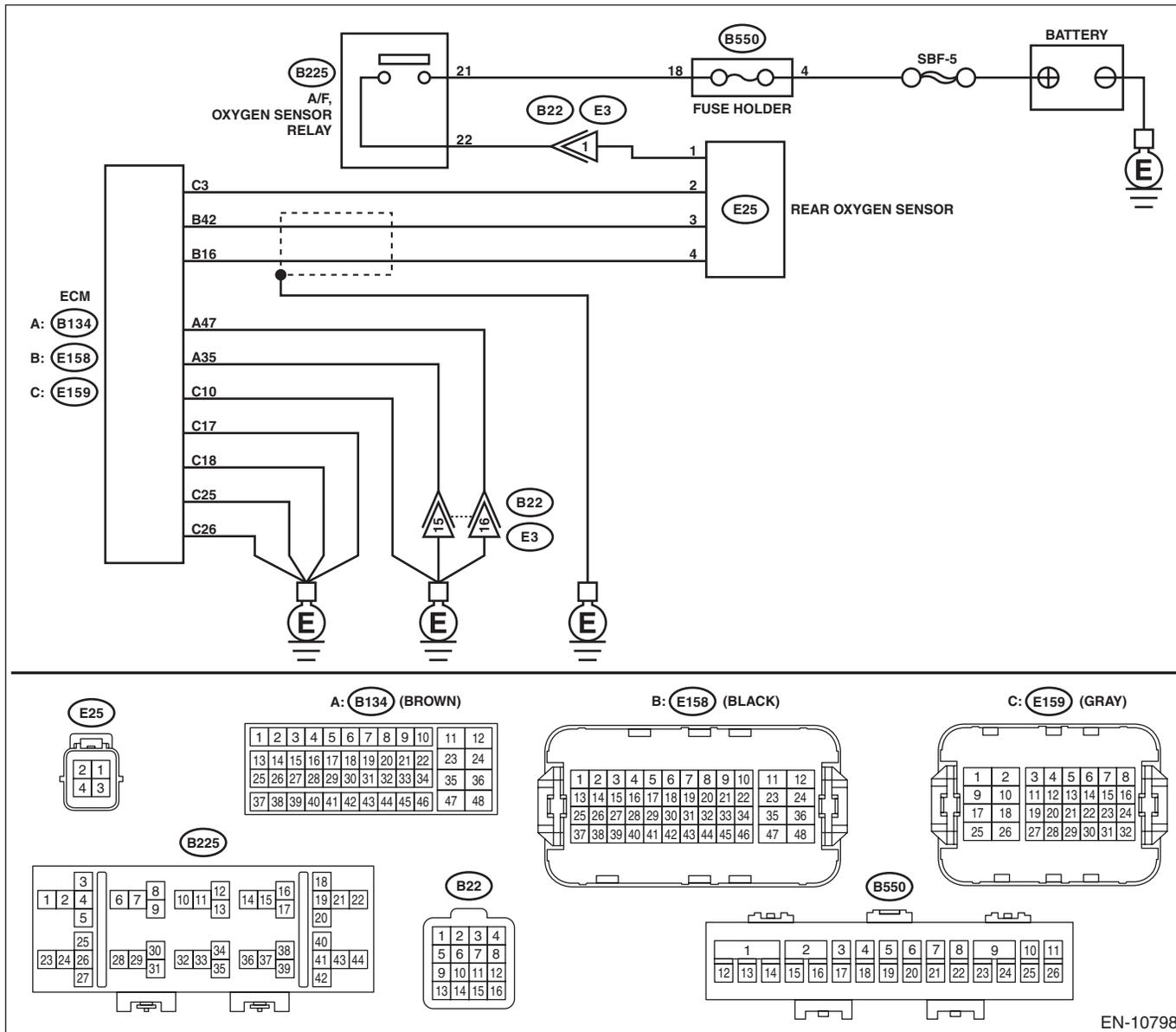
- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-225, DTC P2271 O2 SENSOR SIGNAL BIASED/STUCK RICH (BANK 1 SENSOR 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10798

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK REAR OXYGEN SENSOR CONNECTOR.	Has water entered the connector?	Completely remove any water inside.	Go to step 2.
2 CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and rear oxygen sensor. 3) Measure the resistance of harness between ECM connector and rear oxygen sensor connector. Connector & terminal (E158) No. 42 — (E25) No. 3: (E158) No. 16 — (E25) No. 4:	Is the resistance less than 1 Ω?	Go to step 3.	Repair the open circuit of harness between ECM connector and rear oxygen sensor connector.
3 CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR. Measure the resistance between the ECM connector and engine ground. Connector & terminal (E158) No. 42 — Engine ground:	Is the resistance 1 MΩ or more?	Go to step 4.	Repair the short circuit to ground in harness between ECM connector and rear oxygen sensor connector.
4 CHECK EXHAUST SYSTEM. Check exhaust system parts. NOTE: Check the following items. <ul style="list-style-type: none"> • Looseness and improper fitting of exhaust system parts • Damage (crack, hole etc.) of parts • Damage (crack, hole etc.) between front oxygen (A/F) sensor and rear oxygen sensor 	Is there any fault in exhaust system?	Repair or replace faulty parts.	Replace the rear oxygen sensor. <Ref. to FU(w/o STI)-128, Rear Oxygen Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

GH:DTC P2401 EVAPORATIVE EMISSION SYSTEM LEAK DETECTION PUMP CONTROL CIRCUIT LOW

DTC DETECTING CONDITION:

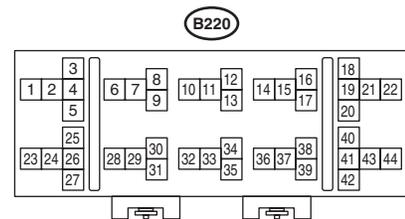
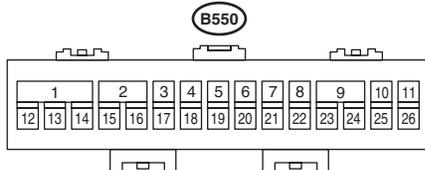
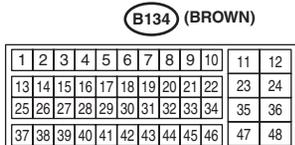
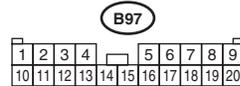
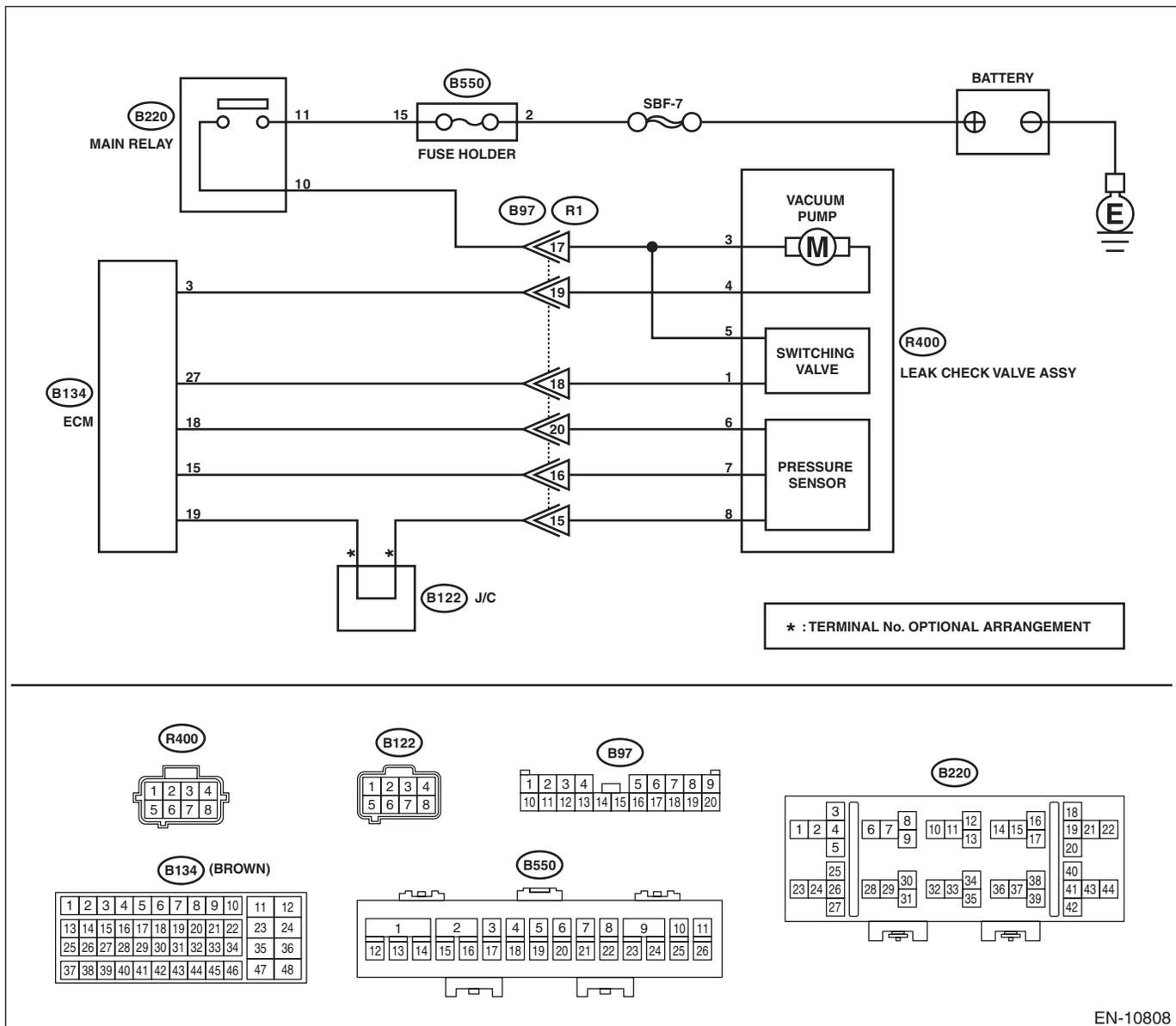
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-226, DTC P2401 EVAPORATIVE EMISSION SYSTEM LEAK DETECTION PUMP CONTROL CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10808

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1</p> <p>CHECK HARNESS BETWEEN ECM AND LEAK CHECK VALVE ASSEMBLY CONNECTOR.</p> <p>1) Turn the ignition switch to ON. 2) Measure the voltage between ECM connector and chassis ground.</p> <p>Connector & terminal (B134) No. 3 (+) — Chassis ground (-):</p>	Is the voltage 10 V or more?	Go to step 2.	Go to step 3.
<p>2</p> <p>CHECK FOR POOR CONTACT.</p> <p>Check for poor contact of ECM connector.</p>	Is there poor contact of ECM connector?	Repair the poor contact of ECM connector.	<p>Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again.</p> <p>NOTE: In this case, temporary open or short circuit of harness or temporary poor contact of connector may be the cause.</p>
<p>3</p> <p>CHECK POWER SUPPLY TO LEAK CHECK VALVE ASSEMBLY.</p> <p>Measure the voltage between the leak check valve assembly connector and engine ground.</p> <p>Connector & terminal (R400) No. 3 (+) — Engine ground (-):</p>	Is the voltage 10 V or more?	Go to step 4.	Repair the power supply circuit.
<p>4</p> <p>CHECK HARNESS BETWEEN ECM AND LEAK CHECK VALVE ASSEMBLY CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and the leak check valve assembly. 3) Measure the resistance between leak check valve assembly and chassis ground.</p> <p>Connector & terminal (R400) No. 4 — Chassis ground:</p>	Is the resistance 1 M Ω or more?	Go to step 5.	Repair the short circuit to ground in harness between ECM connector and leak check valve assembly connector.
<p>5</p> <p>CHECK HARNESS BETWEEN ECM AND LEAK CHECK VALVE ASSEMBLY CONNECTOR.</p> <p>Measure the resistance of harness between ECM connector and the leak check valve assembly connector.</p> <p>Connector & terminal (B134) No. 3 — (R400) No. 4:</p>	Is the resistance less than 1 Ω ?	Go to step 6.	<p>Repair the harness and connector.</p> <p>NOTE: In this case, repair the following item:</p> <ul style="list-style-type: none"> • Open circuit in harness between ECM connector and the leak check valve assembly connector • Poor contact of coupling connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
6 CHECK LEAK CHECK VALVE ASSEMBLY. Check the vacuum pump of the leak check valve assembly. <Ref. to EC(w/o STI)-70, CHECK VACUUM PUMP, INSPECTION, Leak Check Valve Assembly.>	Is the vacuum pump of the leak check valve assembly OK?	Repair the poor contact in the leak check valve assembly connector.	Replace the leak check valve assembly. <Ref. to EC(w/o STI)-54, Leak Check Valve Assembly.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

GI: DTC P2402 EVAPORATIVE EMISSION SYSTEM LEAK DETECTION PUMP CONTROL CIRCUIT HIGH

DTC DETECTING CONDITION:

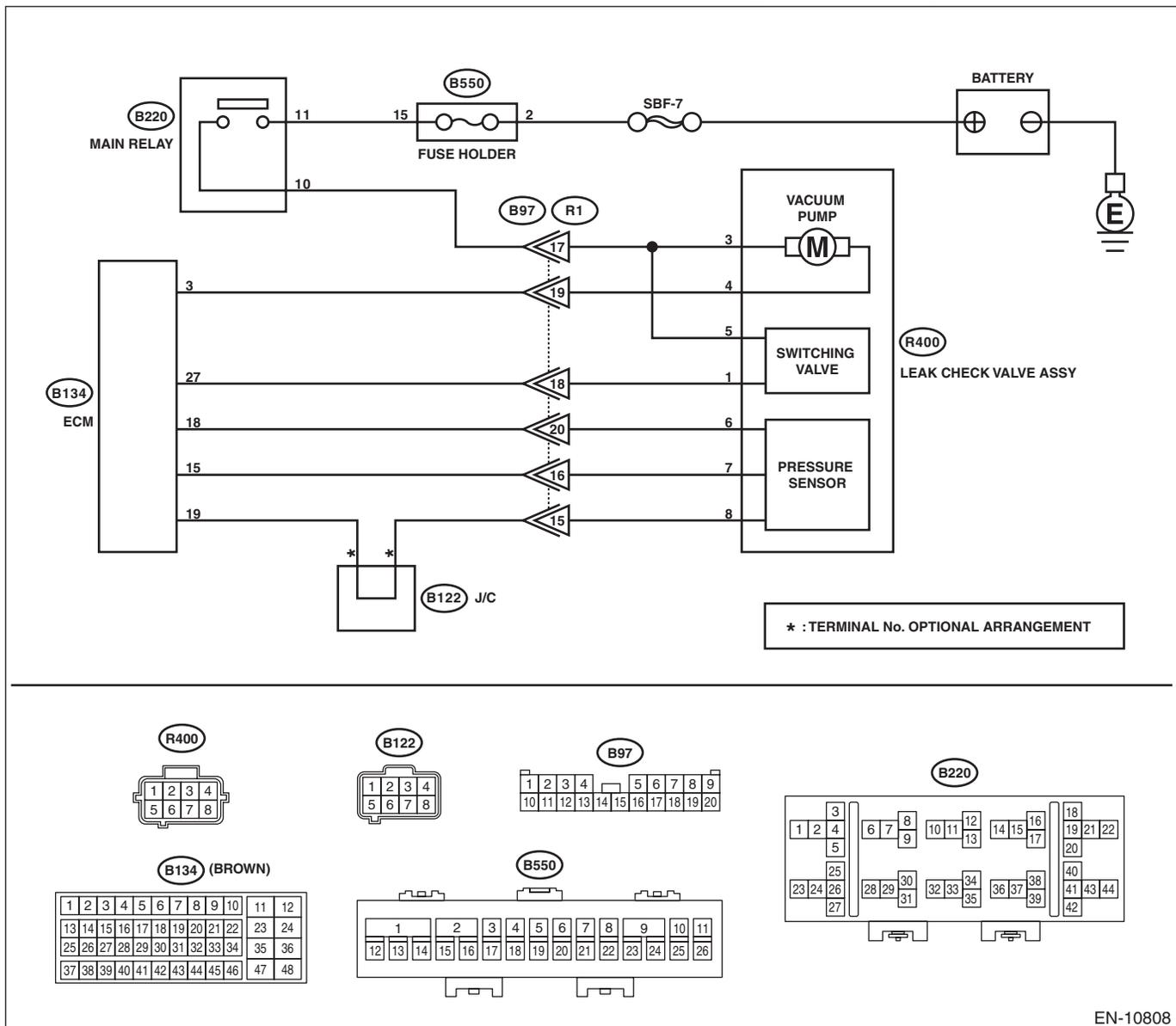
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-227, DTC P2402 EVAPORATIVE EMISSION SYSTEM LEAK DETECTION PUMP CONTROL CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10808

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1 CHECK HARNESS BETWEEN ECM AND LEAK CHECK VALVE ASSEMBLY CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from the leak check valve assembly. 3) Turn the ignition switch to ON. 4) Measure the voltage between leak check valve assembly and chassis ground.</p> <p>Connector & terminal (R400) No. 4 (+) — Chassis ground (-):</p>	<p>Is the voltage 10 V or more?</p>	<p>Repair the short circuit to power in harness between ECM connector and leak check valve assembly connector.</p>	<p>Go to step 2.</p>
<p>2 CHECK LEAK CHECK VALVE ASSEMBLY.</p> <p>1) Turn the ignition switch to OFF. 2) Check the vacuum pump of the leak check valve assembly. <Ref. to EC(w/o STI)-70, CHECK VACUUM PUMP, INSPECTION, Leak Check Valve Assembly.></p>	<p>Is the vacuum pump of the leak check valve assembly OK?</p>	<p>Repair the poor contact in the leak check valve assembly connector.</p>	<p>Replace the leak check valve assembly. <Ref. to EC(w/o STI)-54, Leak Check Valve Assembly.></p>

GJ:DTC P2404 EVAPORATIVE EMISSION SYSTEM LEAK DETECTION PUMP SENSE CIRCUIT RANGE/PERFORMANCE

DTC DETECTING CONDITION:

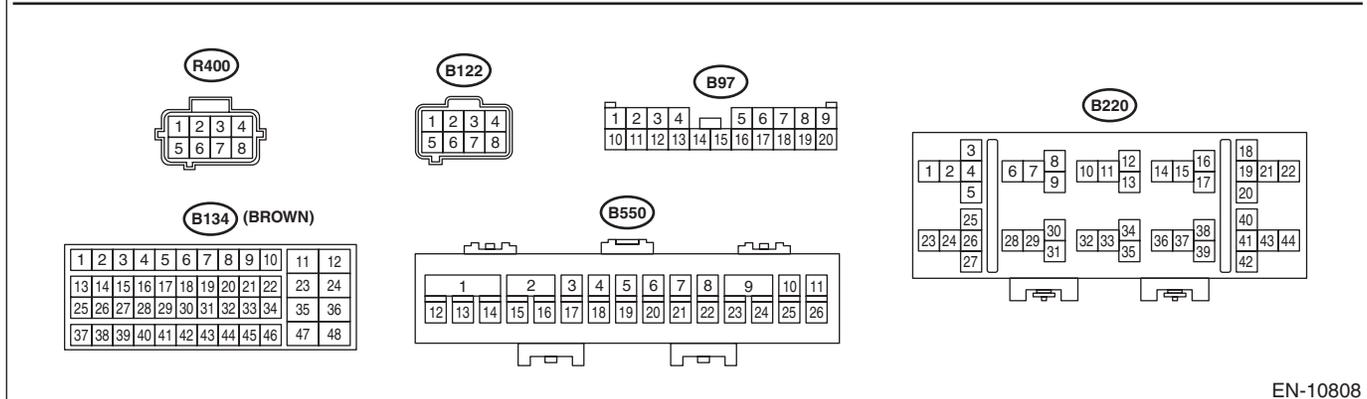
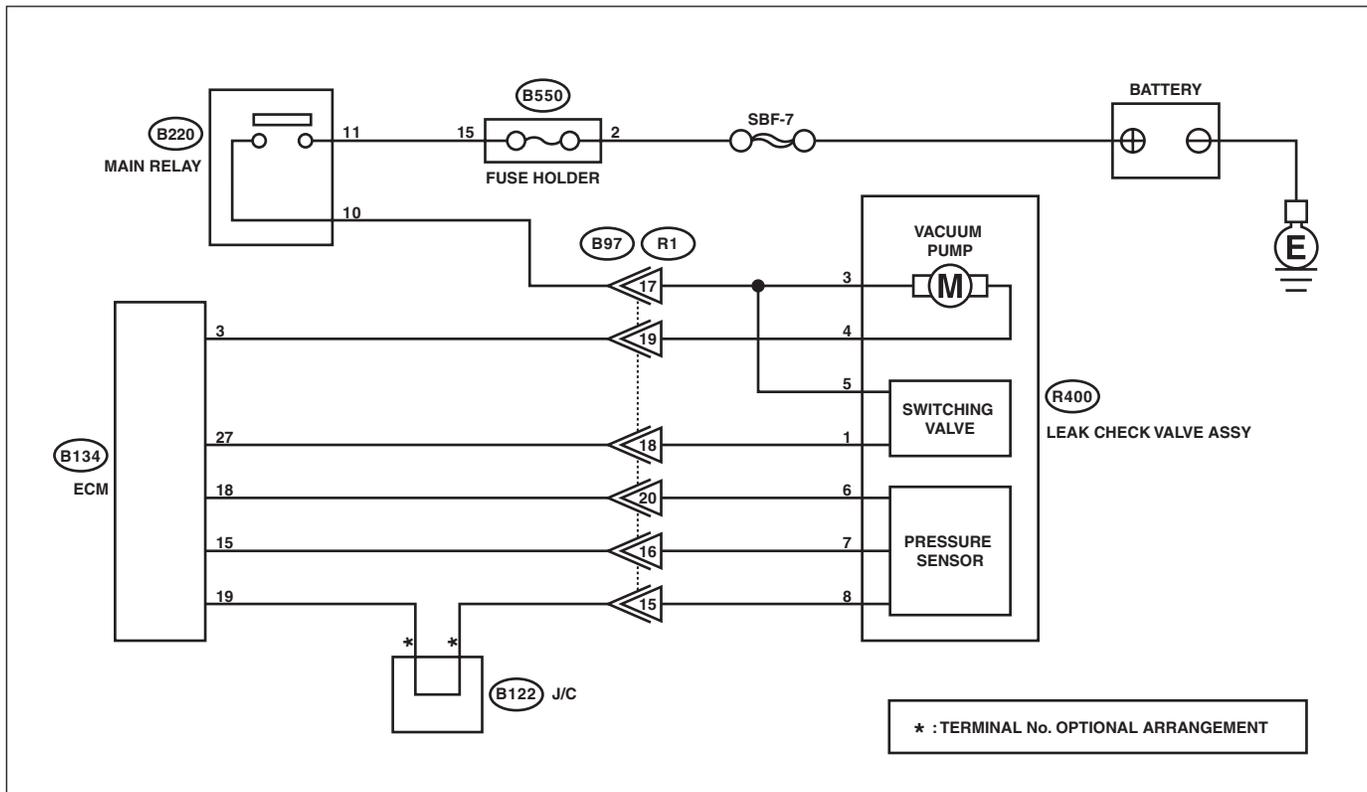
- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-228, DTC P2404 EVAPORATIVE EMISSION SYSTEM LEAK DETECTION PUMP SENSE CIRCUIT RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check the appropriate DTC using the "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK ELCM PUMP. Operate the ELCM pump using the Subaru Select Monitor. NOTE: For detailed procedures, refer to "System Operation Check Mode". <Ref. to EN(w/o STI)(diag)-62, System Operation Check Mode.>	Does the ELCM pump operate?	Go to step 6.	Go to step 3.
3 CHECK POWER SUPPLY OF LEAK CHECK VALVE ASSEMBLY. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the leak check valve assembly. 3) Turn the ignition switch to ON. 4) Measure the voltage between the leak check valve assembly connector and chassis ground. Connector & terminal (R400) No. 3 (+) — Chassis ground (-):	Is the voltage 10 V or more?	Go to step 4.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between the main relay and the leak check valve assembly connector • Poor contact of main relay connector • Poor contact of coupling connector
4 CHECK HARNESS BETWEEN ECM AND LEAK CHECK VALVE ASSEMBLY CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM connector and the leak check valve assembly connector. Connector & terminal (B134) No. 3 — (R400) No. 4:	Is the resistance less than 1 Ω?	Go to step 5.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and the leak check valve assembly connector • Poor contact of coupling connector
5 CHECK HARNESS BETWEEN ECM AND LEAK CHECK VALVE ASSEMBLY CONNECTOR. 1) Measure the resistance of harness between ECM connector and chassis ground. Connector & terminal (B134) No. 3 — Chassis ground:	Is the resistance 1 MΩ or more?	Replace the leak check valve assembly. <Ref. to EC(w/o STI)-54, Leak Check Valve Assembly.>	Repair the short circuit to ground in harness between ECM connector and leak check valve assembly connector.
6 CHECK ELCM SWITCHING VALVE. Operate the ELCM switching valve using the Subaru Select Monitor. NOTE: For detailed procedures, refer to "System Operation Check Mode". <Ref. to EN(w/o STI)(diag)-62, System Operation Check Mode.>	Does the ELCM switching valve operate?	Go to step 10.	Go to step 7.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>7 CHECK POWER SUPPLY OF LEAK CHECK VALVE ASSEMBLY. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the leak check valve assembly. 3) Turn the ignition switch to ON. 4) Measure the voltage between the leak check valve assembly connector and chassis ground. Connector & terminal (R400) No. 5 (+) — Chassis ground (-):</p>	<p>Is the voltage 10 V or more?</p>	<p>Go to step 8.</p>	<p>Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between the main relay and the leak check valve assembly connector • Poor contact of main relay connector • Poor contact of coupling connector</p>
<p>8 CHECK HARNESS BETWEEN ECM AND LEAK CHECK VALVE ASSEMBLY CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM connector and the leak check valve assembly connector. Connector & terminal (B134) No. 27 — (R400) No. 1:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 9.</p>	<p>Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and the leak check valve assembly connector • Poor contact of coupling connector</p>
<p>9 CHECK HARNESS BETWEEN ECM AND LEAK CHECK VALVE ASSEMBLY CONNECTOR. 1) Measure the resistance of harness between ECM connector and chassis ground. Connector & terminal (B134) No. 27 — Chassis ground:</p>	<p>Is the resistance 1 MΩ or more?</p>	<p>Replace the leak check valve assembly. <Ref. to EC(w/o STI)-54, Leak Check Valve Assembly.></p>	<p>Repair the short circuit to ground in harness between ECM connector and leak check valve assembly connector.</p>
<p>10 CHECK EVAPORATIVE EMISSION CONTROL SYSTEM. Perform drive cycle I. <Ref. to EN(w/o STI)(diag)-56, DRIVE CYCLE I, PROCEDURE, Drive Cycle.></p>	<p>Is DTC P2404 displayed on the display?</p>	<p>Replace the leak check valve assembly. <Ref. to EC(w/o STI)-54, Leak Check Valve Assembly.></p>	<p>Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again. NOTE: In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

GK:DTC P2419 EVAPORATIVE EMISSION SYSTEM SWITCHING VALVE CONTROL CIRCUIT LOW

DTC DETECTING CONDITION:

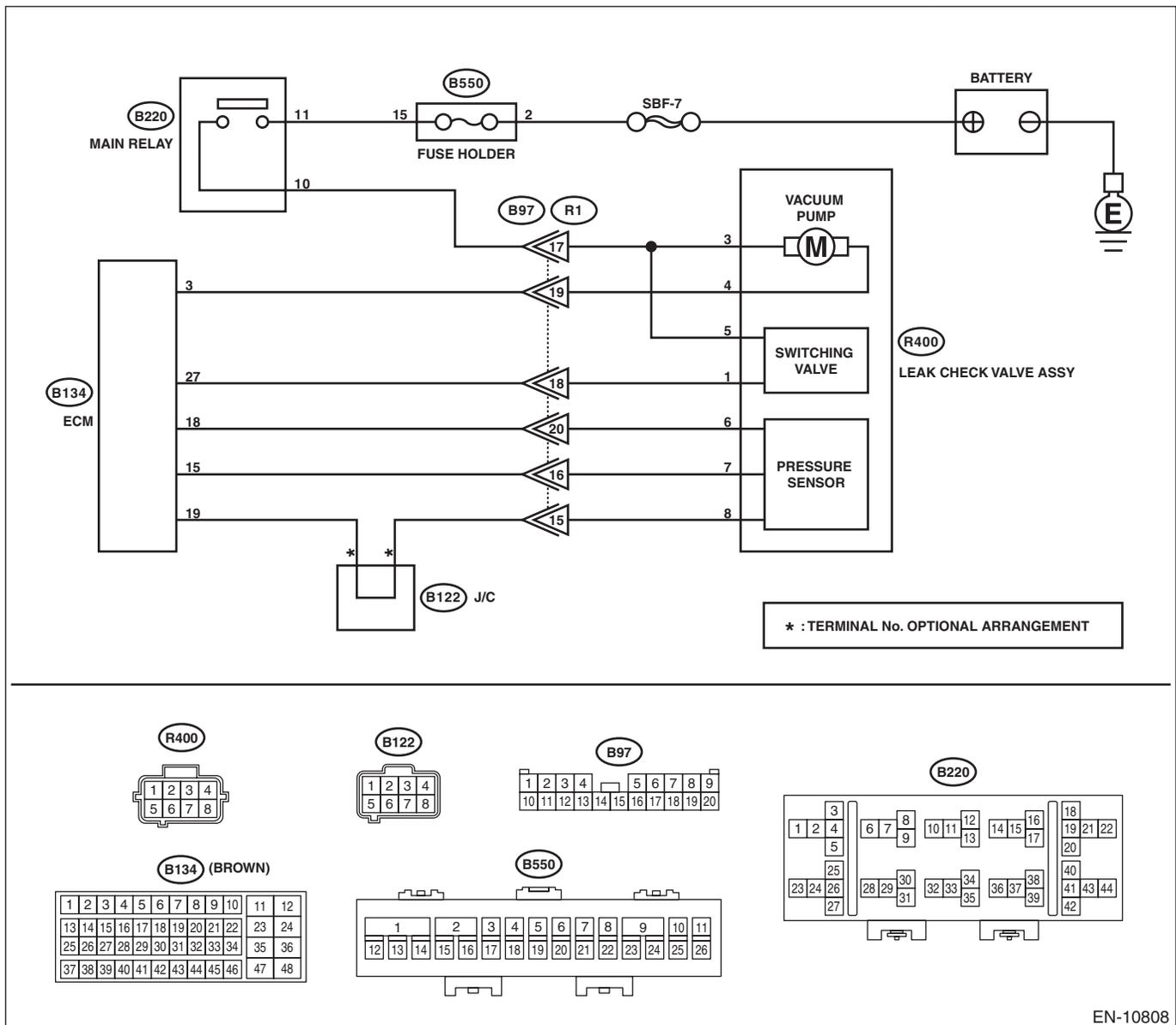
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-229, DTC P2419 EVAPORATIVE EMISSION SYSTEM SWITCHING VALVE CONTROL CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1</p> <p>CHECK HARNESS BETWEEN ECM AND LEAK CHECK VALVE ASSEMBLY CONNECTOR.</p> <p>1) Turn the ignition switch to ON. 2) Measure the voltage between ECM connector and chassis ground.</p> <p>Connector & terminal (B134) No. 27 (+) — Chassis ground (-):</p>	Is the voltage 10 V or more?	Go to step 2.	Go to step 3.
<p>2</p> <p>CHECK FOR POOR CONTACT.</p> <p>Check for poor contact of ECM connector.</p>	Is there poor contact of ECM connector?	Repair the poor contact of ECM connector.	<p>Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again.</p> <p>NOTE: In this case, temporary open or short circuit of harness or temporary poor contact of connector may be the cause.</p>
<p>3</p> <p>CHECK POWER SUPPLY TO LEAK CHECK VALVE ASSEMBLY.</p> <p>Measure the voltage between the leak check valve assembly connector and engine ground.</p> <p>Connector & terminal (R400) No. 5 (+) — Engine ground (-):</p>	Is the voltage 10 V or more?	Go to step 4.	Repair the power supply circuit.
<p>4</p> <p>CHECK HARNESS BETWEEN ECM AND LEAK CHECK VALVE ASSEMBLY CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and the leak check valve assembly. 3) Measure the resistance between leak check valve assembly and chassis ground.</p> <p>Connector & terminal (R400) No. 1 — Chassis ground:</p>	Is the resistance 1 M Ω or more?	Go to step 5.	Repair the short circuit to ground in harness between ECM connector and leak check valve assembly connector.
<p>5</p> <p>CHECK HARNESS BETWEEN ECM AND LEAK CHECK VALVE ASSEMBLY CONNECTOR.</p> <p>Measure the resistance of harness between ECM connector and the leak check valve assembly connector.</p> <p>Connector & terminal (B134) No. 27 — (R400) No. 1:</p>	Is the resistance less than 1 Ω ?	Go to step 6.	<p>Repair the harness and connector.</p> <p>NOTE: In this case, repair the following item:</p> <ul style="list-style-type: none"> • Open circuit in harness between ECM connector and the leak check valve assembly connector • Poor contact of coupling connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
6 CHECK LEAK CHECK VALVE ASSEMBLY. Check the switching valve of the leak check valve assembly. <Ref. to EC(w/o STI)-68, CHECK SWITCHING VALVE, INSPECTION, Leak Check Valve Assembly.>	Is the switching valve of the leak check valve assembly OK?	Repair the poor contact in the leak check valve assembly connector.	Replace the leak check valve assembly. <Ref. to EC(w/o STI)-54, Leak Check Valve Assembly.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

GL:DTC P2420 EVAPORATIVE EMISSION SYSTEM SWITCHING VALVE CONTROL CIRCUIT HIGH

DTC DETECTING CONDITION:

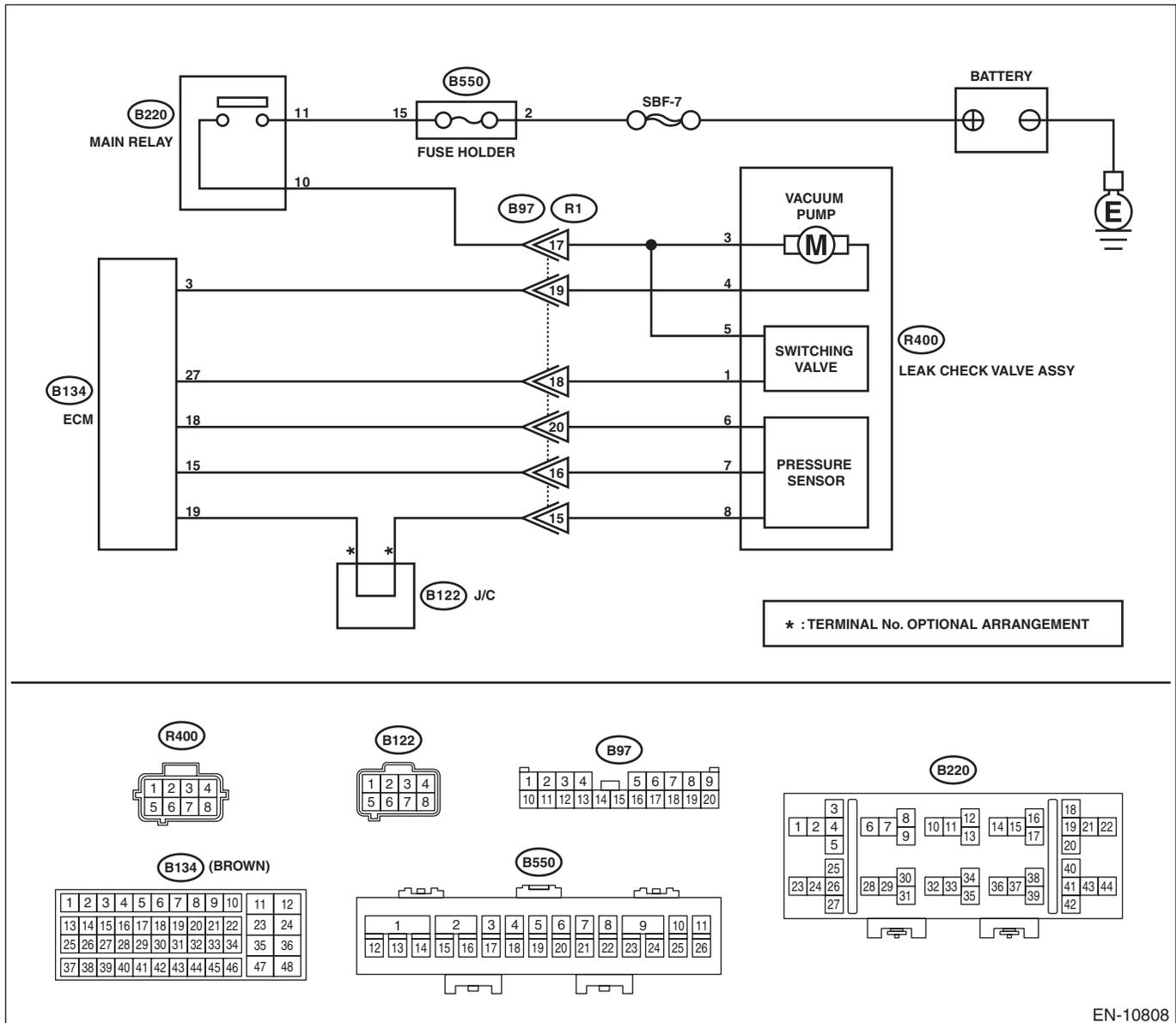
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-230, DTC P2420 EVAPORATIVE EMISSION SYSTEM SWITCHING VALVE CONTROL CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10808

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>1 CHECK HARNESS BETWEEN ECM AND LEAK CHECK VALVE ASSEMBLY CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from the leak check valve assembly. 3) Turn the ignition switch to ON. 4) Measure the voltage between leak check valve assembly and chassis ground.</p> <p>Connector & terminal (R400) No. 1 (+) — Chassis ground (-):</p>	<p>Is the voltage 10 V or more?</p>	<p>Repair the short circuit to power in harness between ECM connector and leak check valve assembly connector.</p>	<p>Go to step 2.</p>
<p>2 CHECK LEAK CHECK VALVE ASSEMBLY.</p> <p>1) Turn the ignition switch to OFF. 2) Check the switching valve of the leak check valve assembly. <Ref. to EC(w/o STI)-68, CHECK SWITCHING VALVE, INSPECTION, Leak Check Valve Assembly.></p>	<p>Is the switching valve of the leak check valve assembly OK?</p>	<p>Repair the poor contact in the leak check valve assembly connector.</p>	<p>Replace the leak check valve assembly. <Ref. to EC(w/o STI)-54, Leak Check Valve Assembly.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

GM:DTC P2530 IGNITION SWITCH RUN POSITION CIRCUIT

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-231, DTC P2530 IGNITION SWITCH RUN POSITION CIRCUIT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

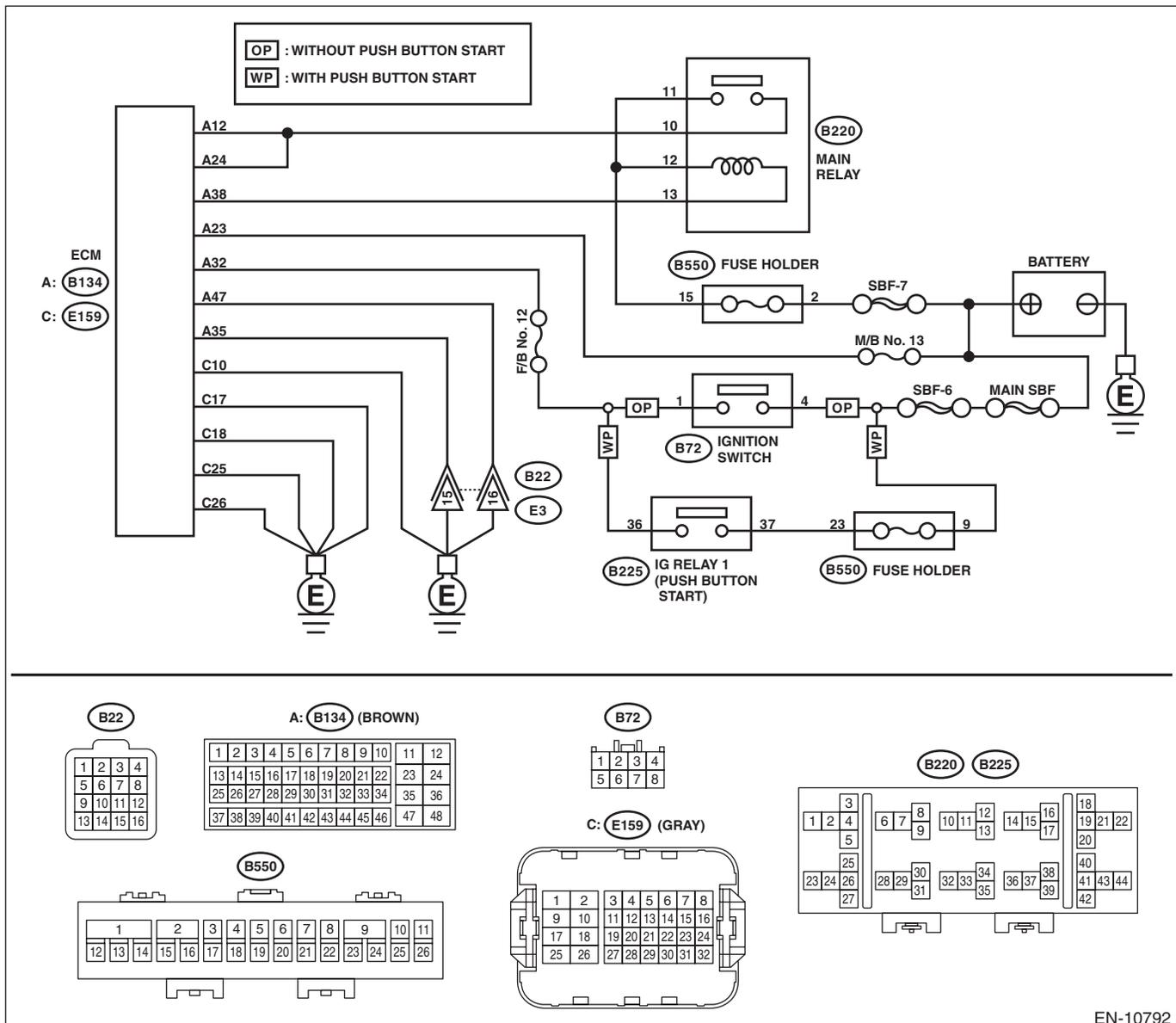
Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10792

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK ECM CONNECTOR. Check the connecting condition of ECM connector.	Is the ECM connector correctly connected?	Go to step 2.	Connect the ECM connector correctly.
2 CHECK INPUT VOLTAGE OF ECM. 1) Turn the ignition switch to ON. 2) Connect the check board. ST 18460AA030 CHECK BOARD 3) Measure the voltage between ECM connector and engine ground while wiggling the harness between ECM connector and ignition switch connector (for models without push button start), or between ECM connector and IG relay 1 (push button start) connector (for models with push button start). Connector & terminal (B134) No. 32 (+) — Engine ground (-):	Is the voltage 8 V or more all the time?	Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again. NOTE: In this case, the following items may be the cause of fault. Model without push button start <ul style="list-style-type: none"> • Open or short circuit to ground in harness between ECM connector and ignition switch connector • Poor contact of ignition switch connector • Poor contact of ignition switch • Faulty fuse (F/B No. 12) Model with push button start <ul style="list-style-type: none"> • Open circuit or short circuit to ground in harness between ECM connector and IG relay 1 (push button start) connector • Poor contact in IG relay 1 (push button start) connector • Poor contact in IG relay 1 (push button start) connector • Faulty fuse (F/B No. 12) 	Repair the harness and connector. NOTE: In this case, repair the following item: Model without push button start <ul style="list-style-type: none"> • Open or short circuit to ground in harness between ECM connector and ignition switch connector • Poor contact of ignition switch connector • Poor contact of ignition switch • Faulty fuse (F/B No. 12) Model with push button start <ul style="list-style-type: none"> • Open circuit or short circuit to ground in harness between ECM connector and IG relay 1 (push button start) connector • Poor contact in IG relay 1 (push button start) connector • Poor contact in IG relay 1 (push button start) • Faulty fuse (F/B No. 12)

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

GN:DTC P2610 ECM/PCM INTERNAL ENGINE OFF TIMER PERFORMANCE

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-232, DTC P2610 ECM/PCM INTERNAL ENGINE OFF TIMER PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK FOR ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(w/o STI)(diag)-85, List of Diagnostic Trouble Code (DTC).>	Replace the ECM. <Ref. to FU(w/o STI)-132, Engine Control Module (ECM).> NOTE: The soak timer IC is built into the ECM.

GO:DTC U0073 CONTROL MODULE COMMUNICATION BUS OFF

NOTE:

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

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

GP:DTC U0077 LIN COMMUNICATION BUS "ECM/PCM" OFF

DTC DETECTING CONDITION:

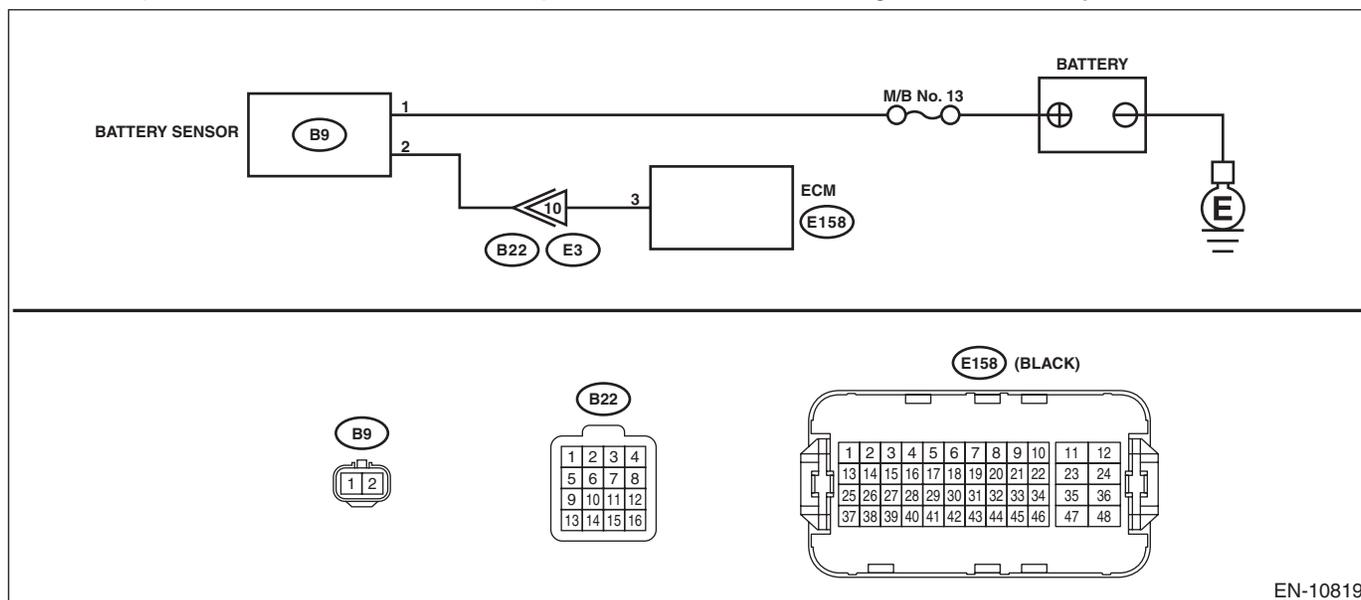
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(w/o STI)-241, DTC U0077 LIN COMMUNICATION BUS "ECM/PCM" OFF, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(w/o STI)(diag)-61, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(w/o STI)(diag)-47, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine Electrical System ENGINE TYPE FA (WITHOUT PUSH BUTTON START) <Ref. to WI-162, ENGINE TYPE FA (WITHOUT PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>
- Engine Electrical System ENGINE TYPE FA (WITH PUSH BUTTON START) <Ref. to WI-180, ENGINE TYPE FA (WITH PUSH BUTTON START), WIRING DIAGRAM, Engine Electrical System.>



EN-10819

Step	Check	Yes	No	
1	CHECK DTC. Check for DTC. <Ref. to EN(w/o STI)(diag)-46, Read Diagnostic Trouble Code (DTC).>	Is U0077 displayed in «Present fault»?	Go to step 2.	Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again.
2	CHECK ECM CONNECTOR. Check the connecting condition of ECM connector.	Is the ECM connector correctly connected?	Go to step 3.	Connect the ECM connector correctly.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>3</p> <p>CHECK HARNESS BETWEEN BATTERY AND BATTERY SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the ground terminal from battery sensor. <Ref. to NT-5, BATTERY, NOTE, Note.> 3) Disconnect the connector from battery sensor. 4) Disconnect the positive terminal of battery. 5) Measure the resistance of the harness between battery positive cable terminal and battery sensor connector.</p> <p>Connector & terminal Positive cable terminal — (B9) No. 1:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 4.</p>	<p>Repair the open circuit in harness between battery positive cable terminal and battery sensor connector.</p>
<p>4</p> <p>CHECK HARNESS BETWEEN ECM AND BATTERY SENSOR CONNECTOR.</p> <p>1) Disconnect the connector from ECM. 2) Measure the resistance of harness between ECM connector and battery sensor connector.</p> <p>Connector & terminal (E158) No. 3 — (B9) No. 2:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Repair the poor contact of ECM connector or battery sensor connector.</p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case, repair the following item:</p> <ul style="list-style-type: none"> • Open circuit in harness between ECM connector and battery sensor connector • Poor contact of coupling connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTICS)

GQ:DTC U0101 LOST COMMUNICATION WITH TCM

NOTE:

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

GR:DTC U0122 LOST COMMUNICATION WITH VEHICLE DYNAMICS CONTROL MODULE

NOTE:

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

GS:DTC U0155 LOST COMMUNICATION WITH INSTRUMENT PANEL CLUSTER (IPC) CONTROL MODULE

NOTE:

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

GT:DTC U0402 INVALID DATA RECEIVED FROM TCM

NOTE:

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

GU:DTC U0416 INVALID DATA RECEIVED FROM VEHICLE DYNAMICS CONTROL MODULE

NOTE:

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

GV:DTC U0423 INVALID DATA RECEIVED FROM INSTRUMENT PANEL CLUSTER CONTROL MODULE

NOTE:

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

GW:DTC U1712 LOST LIN COMMUNICATION WITH BATTERY "1" MONITOR MODULE

NOTE:

For the diagnostic procedure, refer to DTC U0077. <Ref. to EN(w/o STI)(diag)-486, DTC U0077 LIN COMMUNICATION BUS "ECM/PCM" OFF, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>