20.Diagnostic Procedure with Diagnostic Trouble Code (DTC)

A: 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(H4DOTC)-13, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

	Step	Check	Yes	No
1	**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(H4DOTC)(diag)-40, Subaru Select Monitor.>	Is the value of «VVT Adv. Ang. Amount R» approx. 0 deg?	Go to step **2**.	Check the following item and repair or replace if necessary. • Oil pipe (clog) • Oil flow control solenoid valve (clog or dirt of oil routing, setting of spring) • Intake camshaft (dirt, damage of camshaft)
2	**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(H4DOTC)(diag)-40, 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. • Oil pipe (clog) • Oil flow control solenoid valve (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(STI)-11, REPLACEMENT, Engine Oil.> <Ref. to LU(STI)-31, Engine Oil Filter.>

B: 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(H4DOTC)-15, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

	Step	Check	Yes	No
1	**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(H4DOTC)(diag)-40, Subaru Select Monitor.>	Is the value of «Exh. VVT Retard Ang. R» approx. 0 deg?	Go to step **2**.	Check the following item and repair or replace if necessary. • Oil pipe (clog) • Oil flow control solenoid valve (clog or dirt of oil routing, setting of spring) • Exhaust camshaft (dirt, damage of camshaft)
2	**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(H4DOTC)(diag)-40, 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. • Oil pipe (clog) • Oil flow control solenoid valve (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(STI)-11, REPLACEMENT, Engine Oil.> <Ref. to LU(STI)-31, Engine Oil Filter.>

C: 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(H4DOTC)-17, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

	Step	Check	Yes	No
1	**CHECK CURRENT DATA.** 1) Start the engine and let it idle. 2) Read the values of «VVT Adv. Ang. Amount R» and «OCV Duty R» using the Subaru Select Monitor. NOTE: For detailed operation procedures, refer to “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.>	Is the value of «VVT Adv. Ang. Amount R» approx. 0 deg, and the value of «OCV Duty R» approx. 10%?	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(STI)-11, REPLACEMENT, Engine Oil.> <Ref. to LU(STI)-31, Engine Oil Filter.>	Check the following item and repair or replace if necessary. • Oil pipe (clog) • Oil flow control solenoid valve (clog or dirt of oil routing, setting of spring) • Intake camshaft (dirt, damage of camshaft) • Timing belt (matching of timing mark)

D: 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(H4DOTC)-19, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

	Step	Check	Yes	No
1	**CHECK CURRENT DATA.** 1) Start the engine and let it idle. 2) Read the values of «Exh. VVT Retard Ang. R» and «Exh. OCV Duty R» using the Subaru Select Monitor. NOTE: For detailed operation procedures, refer to “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.>	Is the value of «Exh. VVT Retard Ang. R» approx. 0 deg, and the value of «Exh. OCV Duty R» approx. 10%?	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(STI)-11, REPLACEMENT, Engine Oil.> <Ref. to LU(STI)-31, Engine Oil Filter.>	Check the following item and repair or replace if necessary. • Oil pipe (clog) • Oil flow control solenoid valve (clog or dirt of oil routing, setting of spring) • Exhaust camshaft (dirt, damage of camshaft) • Timing belt (matching of timing mark)

E: 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(H4DOTC)-21, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

	Step	Check	Yes	No
1	**CHECK CURRENT DATA.** 1) Start the engine and let it idle. 2) Read the values of «VVT Adv. Ang. Amount L» and «OCV Duty L» using the Subaru Select Monitor. NOTE: For detailed operation procedures, refer to “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.>	Is the value of «VVT Adv. Ang. Amount L» approx. 0 deg, and the value of «OCV Duty L» approx. 10%?	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(STI)-11, REPLACEMENT, Engine Oil.> <Ref. to LU(STI)-31, Engine Oil Filter.>	Check the following item and repair or replace if necessary. • Oil pipe (clog) • Oil flow control solenoid valve (clog or dirt of oil routing, setting of spring) • Intake camshaft (dirt, damage of camshaft) • Timing belt (matching of timing mark)

F: 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(H4DOTC)-21, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

	Step	Check	Yes	No
1	**CHECK CURRENT DATA.** 1) Start the engine and let it idle. 2) Read the values of «Exh. VVT Retard Ang. L» and «Exh. OCV Duty L» using the Subaru Select Monitor. NOTE: For detailed operation procedures, refer to “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.>	Is the value of «Exh. VVT Retard Ang. L» approx. 0 deg, and the value of «Exh. OCV Duty L» approx. 10%?	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(STI)-11, REPLACEMENT, Engine Oil.> <Ref. to LU(STI)-31, Engine Oil Filter.>	Check the following item and repair or replace if necessary. • Oil pipe (clog) • Oil flow control solenoid valve (clog or dirt of oil routing, setting of spring) • Exhaust camshaft (dirt, damage of camshaft) • Timing belt (matching of timing mark)

G: 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(H4DOTC)-21, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

	Step	Check	Yes	No
1	**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(H4DOTC)(diag)-40, Subaru Select Monitor.>	Is the value of «VVT Adv. Ang. Amount L» approx. 0 deg?	Go to step **2**.	Check the following item and repair or replace if necessary. • Oil pipe (clog) • Oil flow control solenoid valve (clog or dirt of oil routing, setting of spring) • Intake camshaft (dirt, damage of camshaft)
2	**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(H4DOTC)(diag)-40, 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. • Oil pipe (clog) • Oil flow control solenoid valve (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(STI)-11, REPLACEMENT, Engine Oil.> <Ref. to LU(STI)-31, Engine Oil Filter.>

H: 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(H4DOTC)-21, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

	Step	Check	Yes	No
1	**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(H4DOTC)(diag)-40, Subaru Select Monitor.>	Is the value of «Exh. VVT Retard Ang. L» approx. 0 deg?	Go to step **2**.	Check the following item and repair or replace if necessary. • Oil pipe (clog) • Oil flow control solenoid valve (clog or dirt of oil routing, setting of spring) • Exhaust camshaft (dirt, damage of camshaft)
2	**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(H4DOTC)(diag)-40, 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. • Oil pipe (clog) • Oil flow control solenoid valve (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(STI)-11, REPLACEMENT, Engine Oil.> <Ref. to LU(STI)-31, Engine Oil Filter.>

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

DTC DETECTING CONDITION:

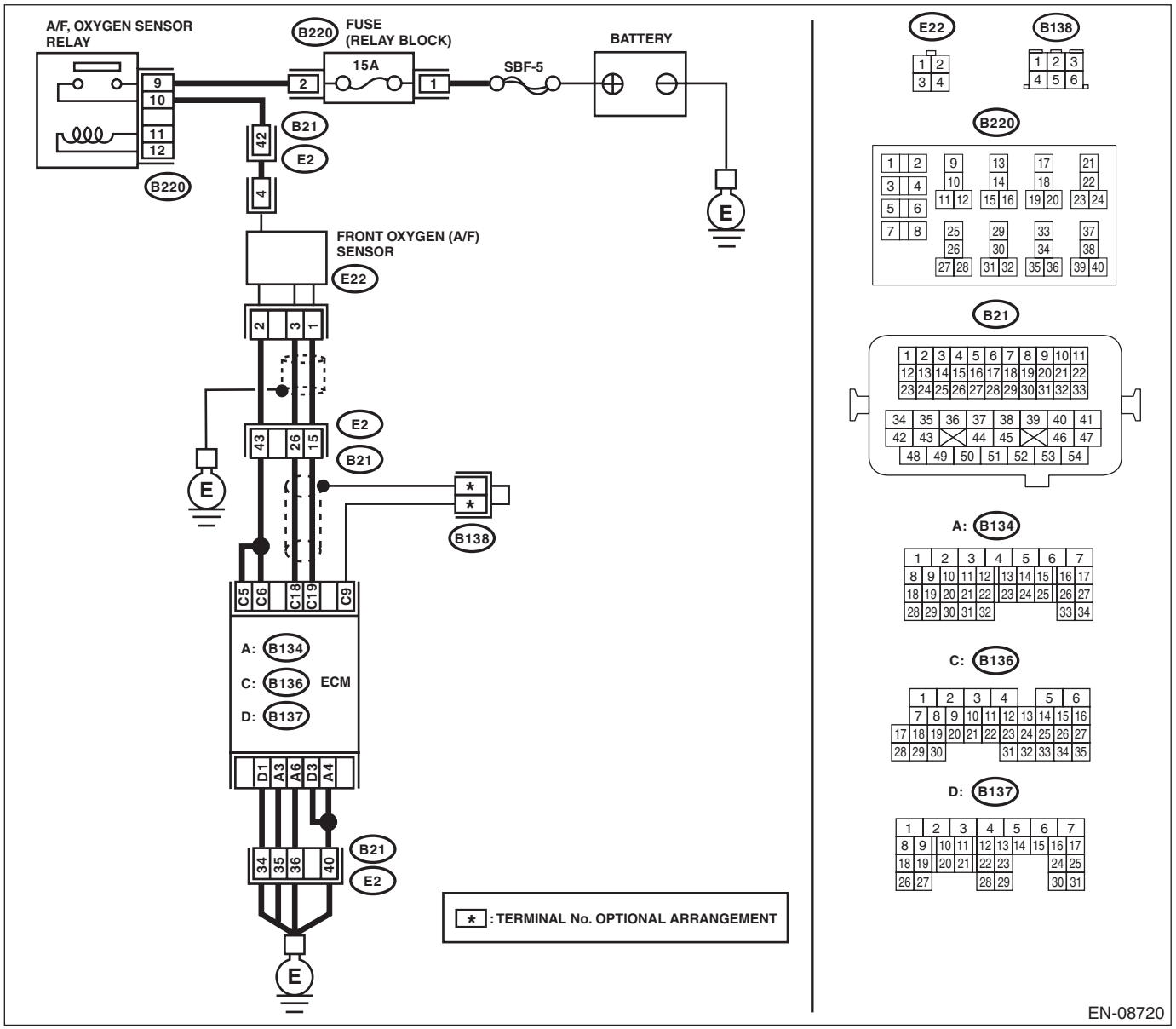
- Detected when 2 consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-22, DTC P0030 HO2S HEATER CONTROL CIRCUIT (BANK 1 SENSOR 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

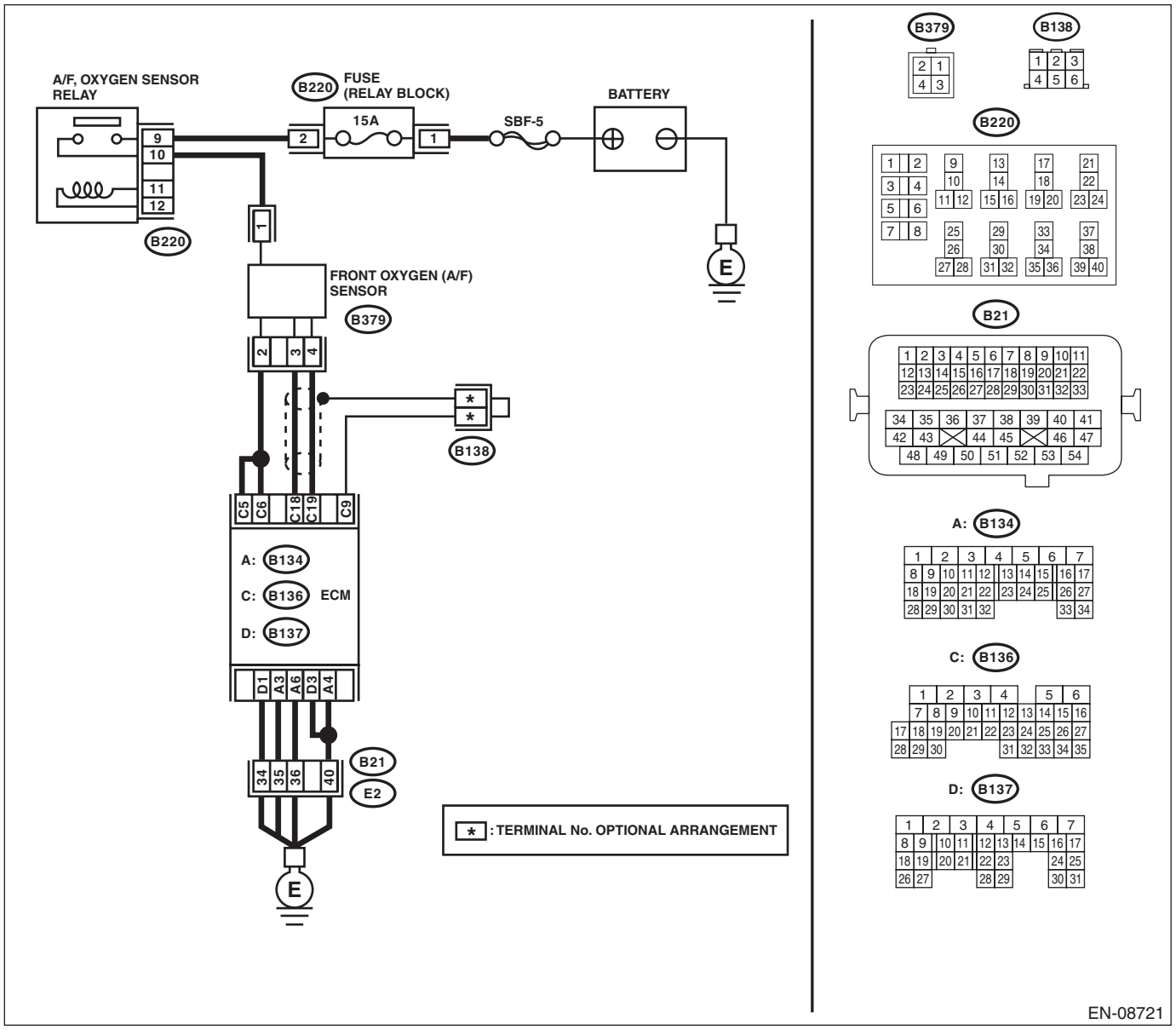
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Models without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



- Models with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.** 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. ***Connector & terminal*** ***Models without SI-DRIVE*** ***(B136) No. 6 — (E22) No. 2:*** ***(B136) No. 5 — (E22) No. 2:*** ***(B136) No. 19 — (E22) No. 1:*** ***(B136) No. 18 — (E22) No. 3:*** ***Models with SI-DRIVE*** ***(B136) No. 6 — (B379) No. 2:*** ***(B136) No. 5 — (B379) No. 2:*** ***(B136) No. 19 — (B379) No. 4:*** ***(B136) No. 18 — (B379) No. 3:***	Is the resistance less than 1 Ω?	Go to step **2**.	Repair the open circuit of harness between ECM connector and front oxygen (A/F) sensor connector.
2	**CHECK FRONT OXYGEN (A/F) SENSOR.** Measure the resistance between front oxygen (A/F) sensor terminals. ***Terminals*** ***Models without SI-DRIVE*** ***No. 4 — No. 2:*** ***Models with SI-DRIVE*** ***No. 2 — No. 1:***	Is the resistance less than 2 — 3 Ω?	Go to step **3**.	Replace the front oxygen (A/F) sensor. <Ref. to FU(STI)-54, Front Oxygen (A/F) Sensor.> <Ref. to FU(w/o STI)-53, Front Oxygen (A/F) Sensor.>
3	**CHECK FOR POOR CONTACT.** Check for poor contact of ECM and front oxygen (A/F) sensor connector.	Is there poor contact of ECM or front oxygen (A/F) sensor connector?	Repair the poor contact of ECM or front oxygen (A/F) sensor connector.	Replace the front oxygen (A/F) sensor. <Ref. to FU(STI)-54, Front Oxygen (A/F) Sensor.> <Ref. to FU(w/o STI)-53, Front Oxygen (A/F) Sensor.>

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

DTC DETECTING CONDITION:

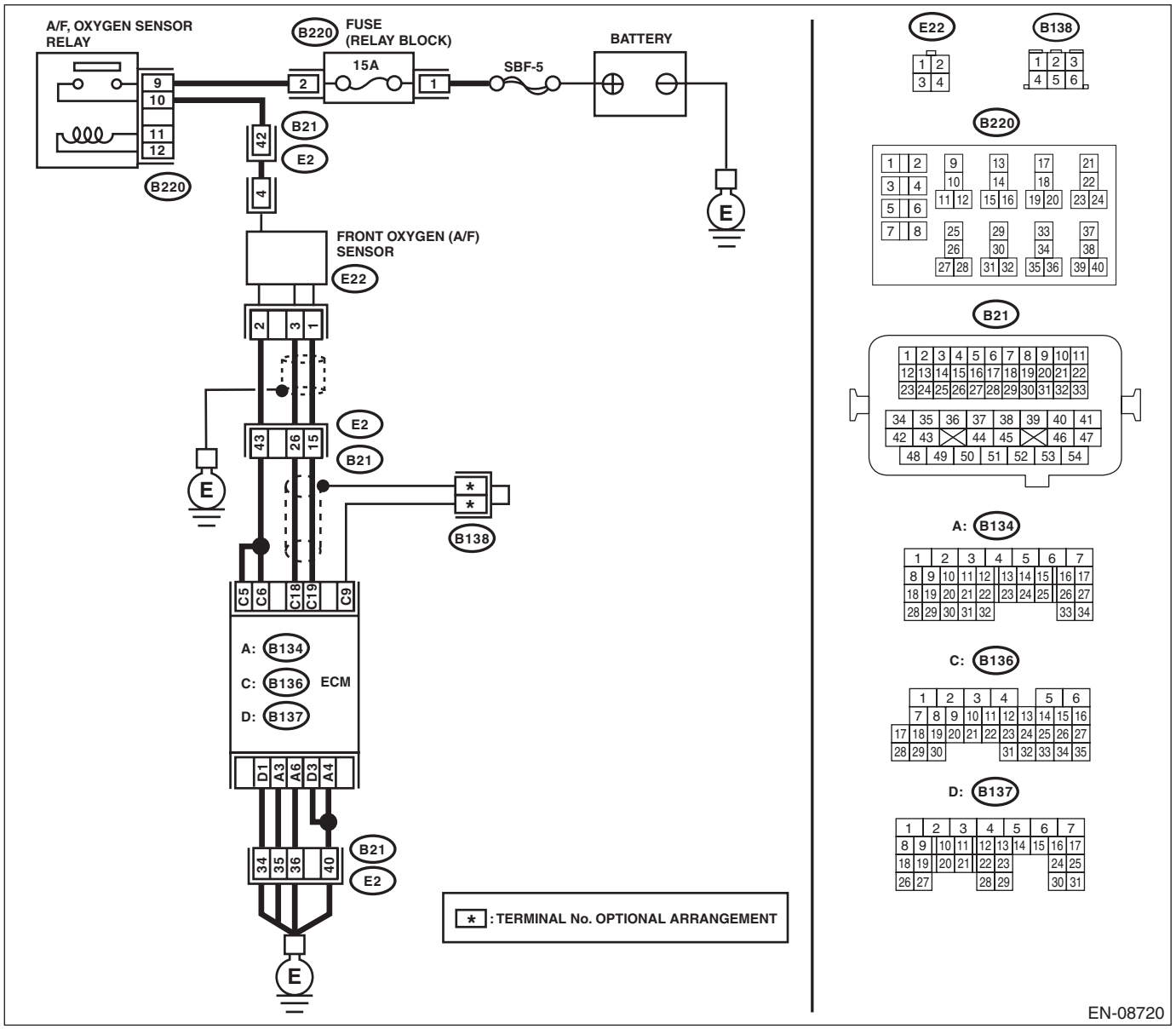
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-24, DTC P0031 HO2S HEATER CONTROL CIRCUIT LOW (BANK 1 SENSOR 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

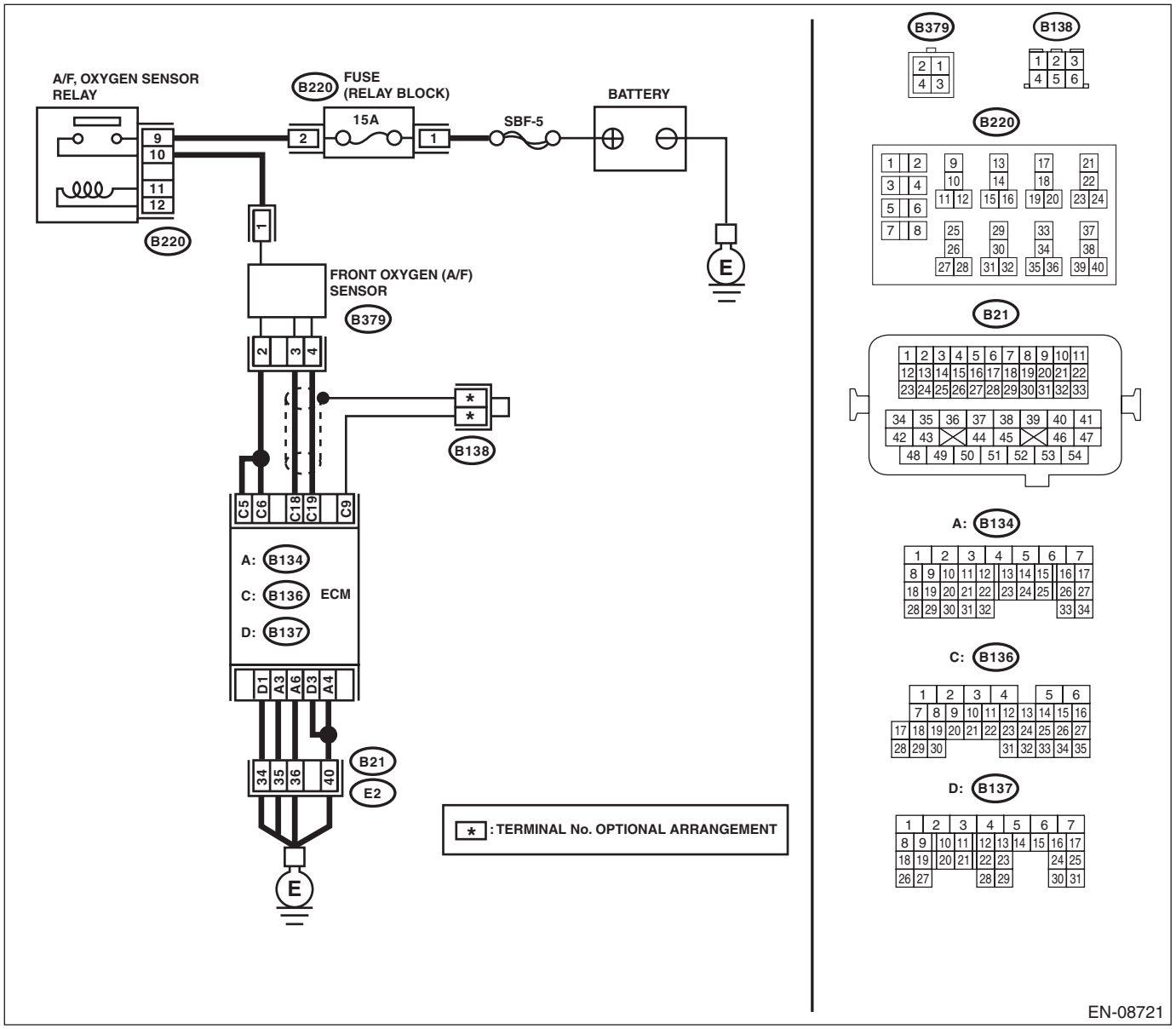
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Models without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



- Models with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



Step		Check	Yes	No
1	**CHECK POWER SUPPLY TO FRONT OXYGEN (A/F) SENSOR.** 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. ***Connector & terminal*** ***Models without SI-DRIVE*** ***(E22) No. 4 (+) — Engine ground (–):*** ***Models with SI-DRIVE*** ***(B379) 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 front oxygen (A/F) sensor connector • Poor contact of A/F, oxygen sensor relay connector • Malfunction of A/F, oxygen sensor relay

	Step	Check	Yes	No
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 front oxygen (A/F) sensor connector. ***Connector & terminal*** ***Models without SI-DRIVE*** ***(B136) No. 6 — (E22) No. 2:*** ***(B136) No. 5 — (E22) No. 2:*** ***Models with SI-DRIVE*** ***(B136) No. 6 — (B379) No. 2:*** ***(B136) No. 5 — (B379) No. 2:***	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.
3	**CHECK GROUND CIRCUIT FOR ECM.** Measure the resistance of harness between ECM connector and chassis ground. ***Connector & terminal*** ***(B134) No. 3 — Chassis ground:*** ***(B134) No. 4 — Chassis ground:*** ***(B134) No. 6 — Chassis ground:*** ***(B137) No. 1 — Chassis ground:*** ***(B137) No. 3 — Chassis 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 FRONT OXYGEN (A/F) SENSOR.** Measure the resistance between front oxygen (A/F) sensor terminals. ***Terminals*** ***Models without SI-DRIVE*** ***No. 4 — No. 2:*** ***Models with SI-DRIVE*** ***No. 2 — No. 1:***	Is the resistance 2 — 3 Ω?	Repair the poor contact of ECM connector.	Replace the front oxygen (A/F) sensor. <Ref. to FU(STI)-54, Front Oxygen (A/F) Sensor.> <Ref. to FU(w/o STI)-53, Front Oxygen (A/F) Sensor.>

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

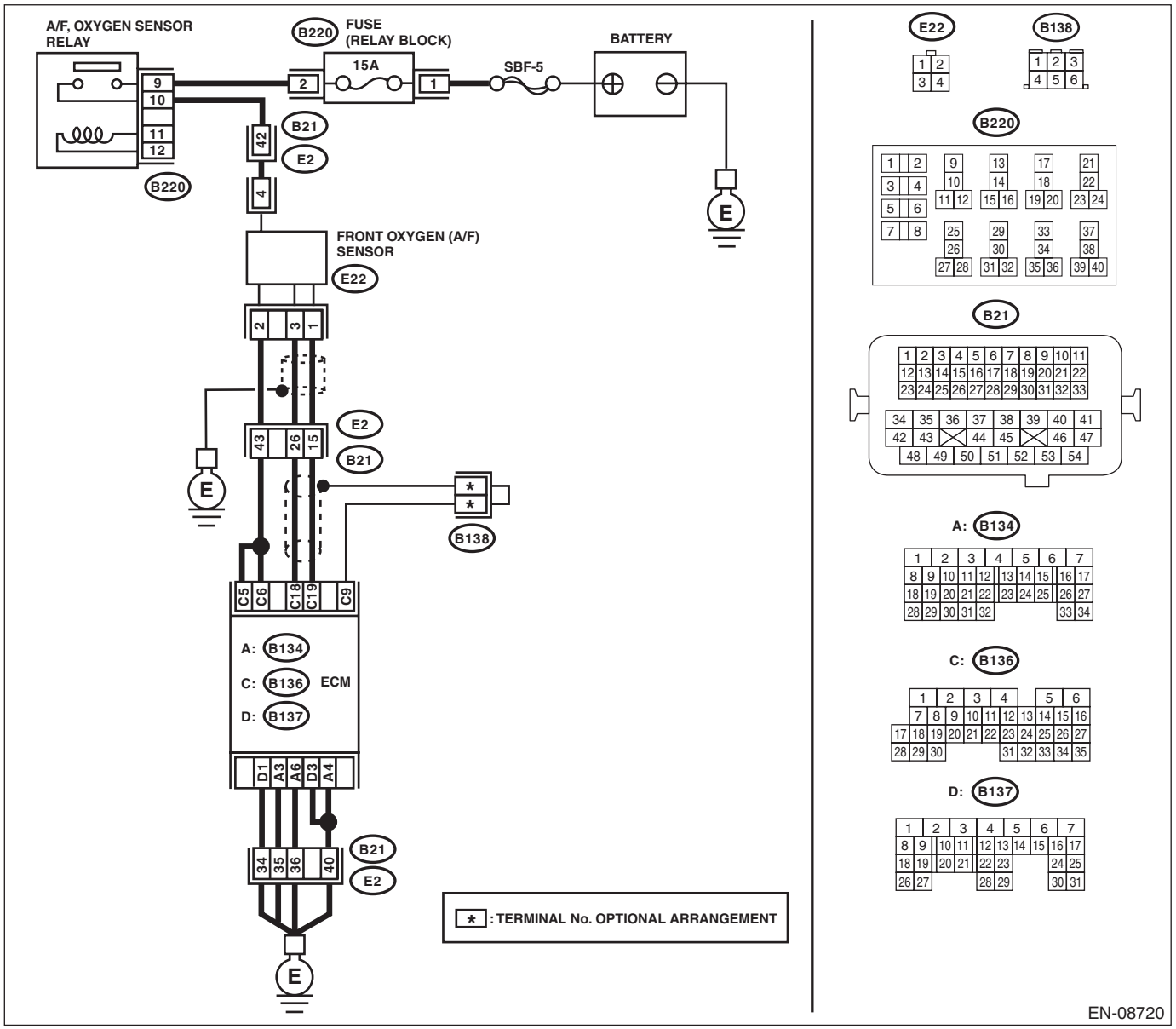
DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-26, DTC P0032 HO2S HEATER CONTROL CIRCUIT HIGH (BANK 1 SENSOR 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

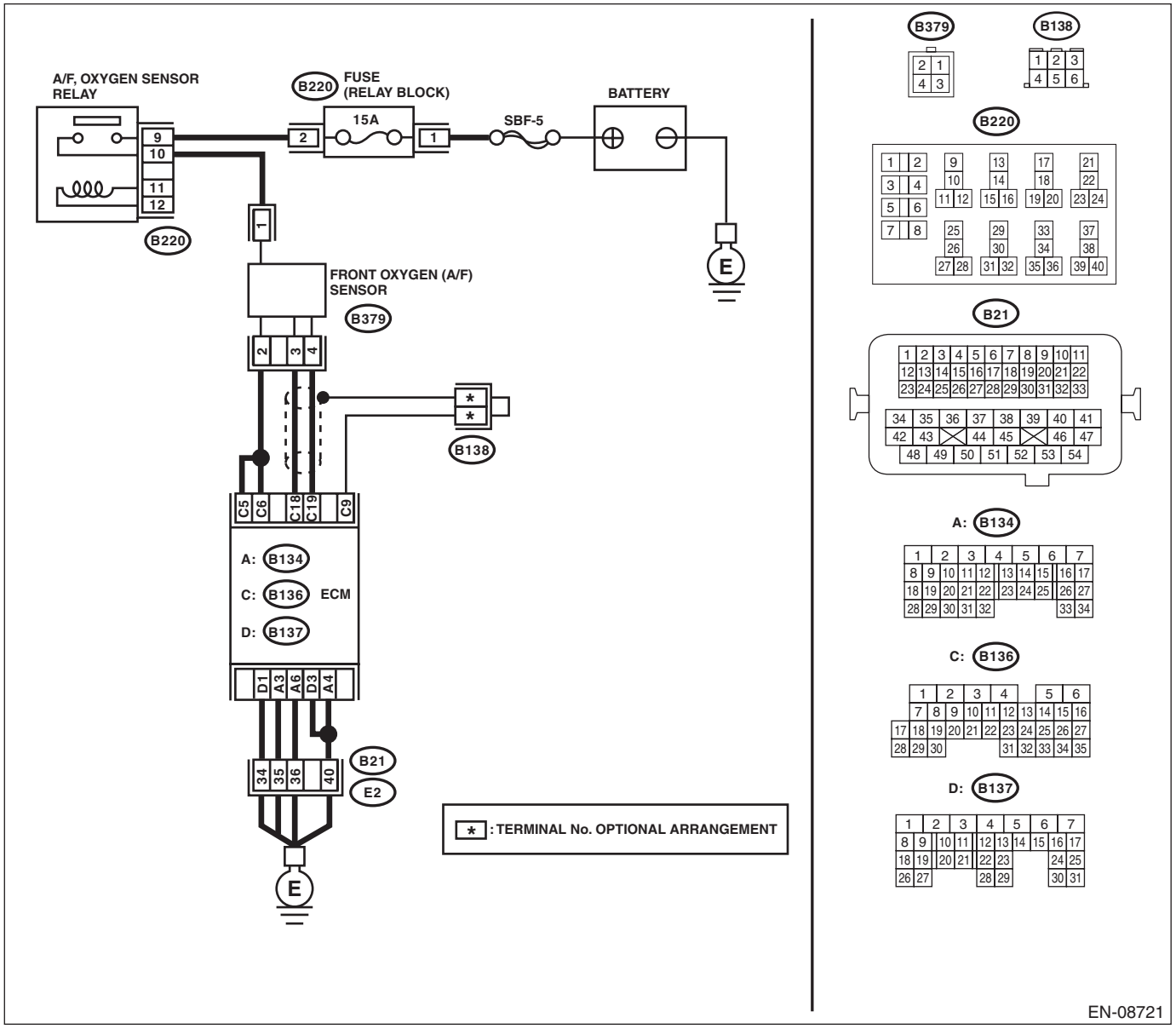
CAUTION:
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Models without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



- Models with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



Step		Check	Yes	No
1	**CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Measure the voltage between ECM connector and chassis ground. ***Connector & terminal*** ***(B136) No. 6 (+) — Chassis ground (–):*** ***(B136) No. 5 (+) — Chassis ground (–):***	Is the voltage 10 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 **2**.

Step		Check	Yes	No
2	**CHECK GROUND CIRCUIT FOR ECM.** 1) Disconnect the connector from ECM. 2) Measure the resistance between ECM connector and chassis ground. ***Connector & terminal*** ***(B134) No. 3 — Chassis ground:*** ***(B134) No. 4 — Chassis ground:*** ***(B134) No. 6 — Chassis ground:*** ***(B137) No. 1 — Chassis ground:*** ***(B137) No. 3 — Chassis 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

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

DTC DETECTING CONDITION:

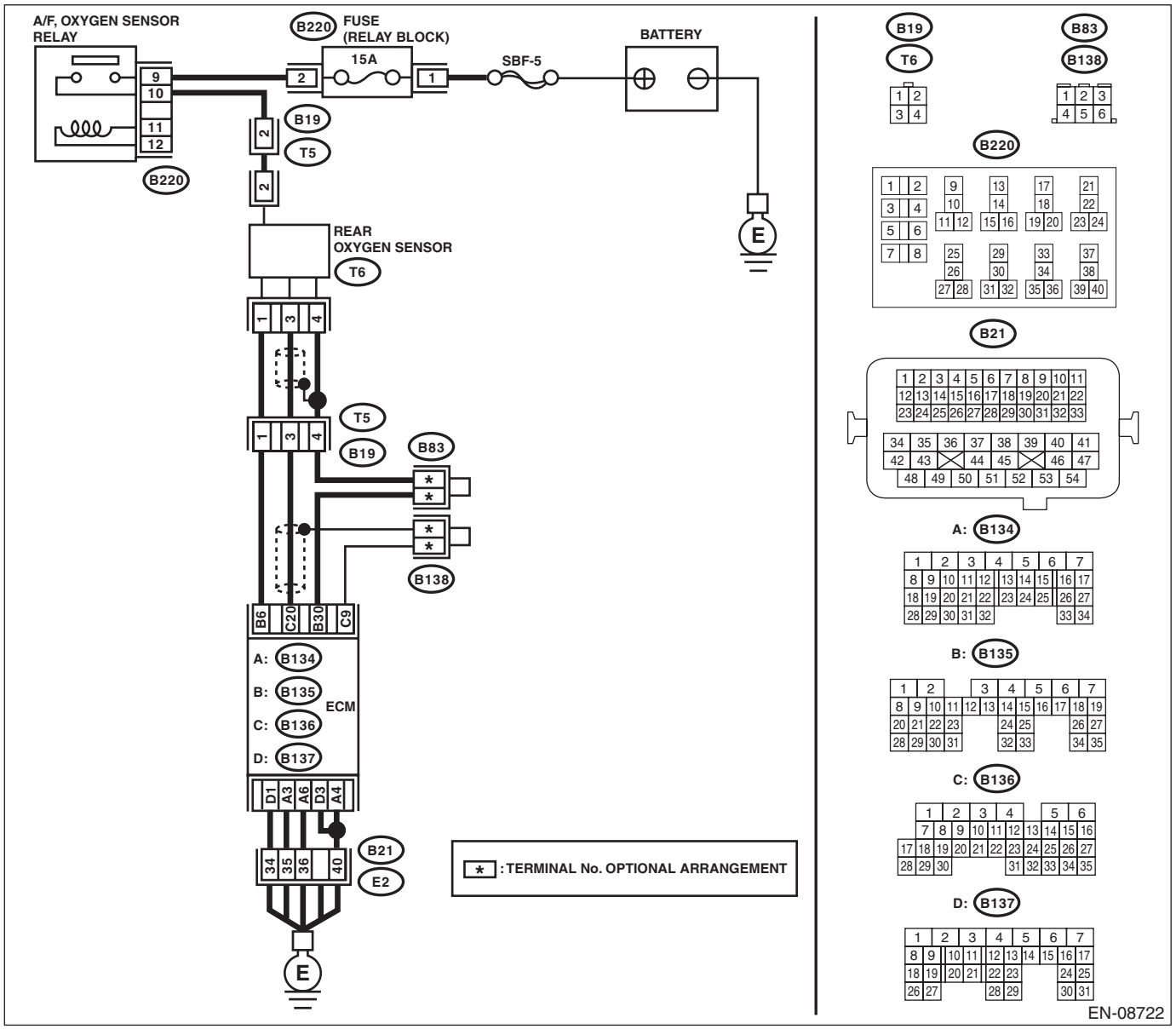
- Detected when 2 consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-28, DTC P0037 HO2S HEATER CONTROL CIRCUIT LOW (BANK 1 SENSOR 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

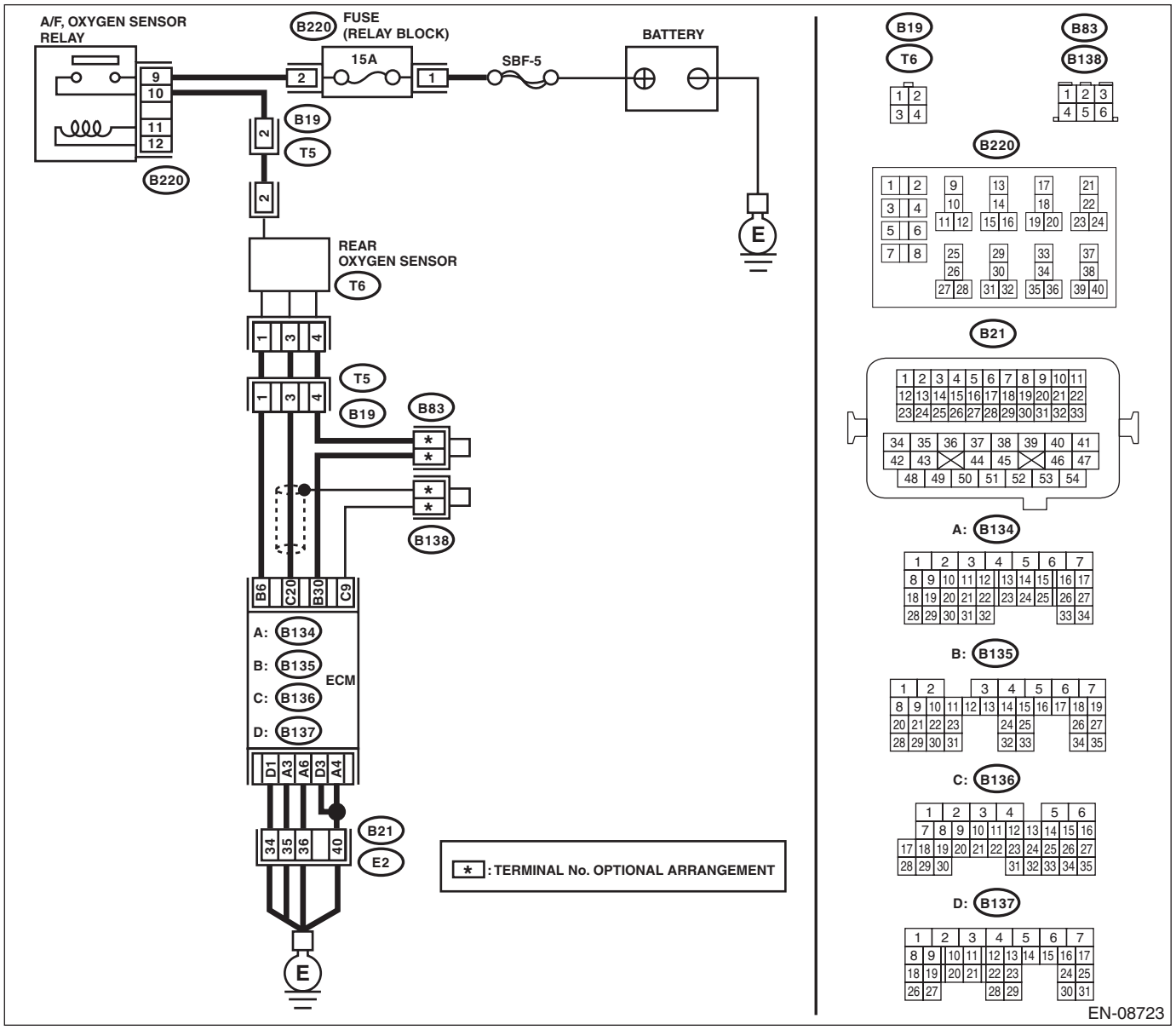
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Models without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



- Models with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	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*** ***(T6) No. 2 (+) — 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*** ***(B135) No. 6 — (T6) No. 1:***	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 rear oxygen sensor connector • Poor contact of coupling connector
3	**CHECK GROUND CIRCUIT FOR ECM.** Measure the resistance of harness between ECM connector and chassis ground. ***Connector & terminal*** ***(B134) No. 3 — Chassis ground:*** ***(B134) No. 4 — Chassis ground:*** ***(B134) No. 6 — Chassis ground:*** ***(B137) No. 1 — Chassis ground:*** ***(B137) No. 3 — Chassis 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 ECM connector • Poor contact of coupling connector
4	**CHECK REAR OXYGEN SENSOR.** Measure the resistance between rear oxygen sensor terminals. ***Terminals*** ***No. 1 — No. 2:***	Is the resistance 5 — 6.4 Ω?	Repair the poor contact of ECM connector.	Replace the rear oxygen sensor. <Ref. to FU(STI)-56, Rear Oxygen Sensor.> <Ref. to FU(w/o STI)-55, Rear Oxygen Sensor.>

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

DTC DETECTING CONDITION:

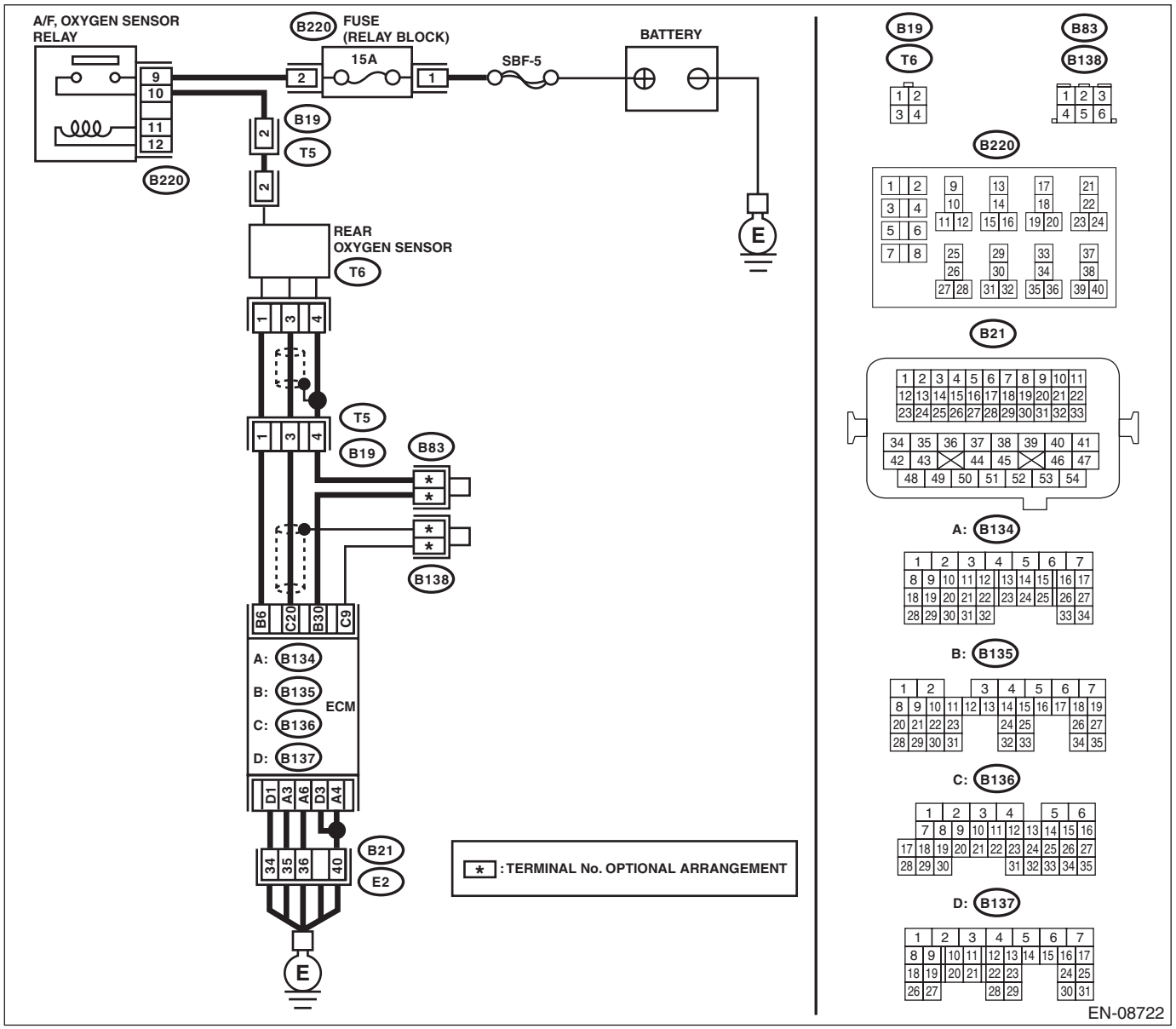
- Detected when 2 consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-30, DTC P0038 HO2S HEATER CONTROL CIRCUIT HIGH (BANK 1 SENSOR 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

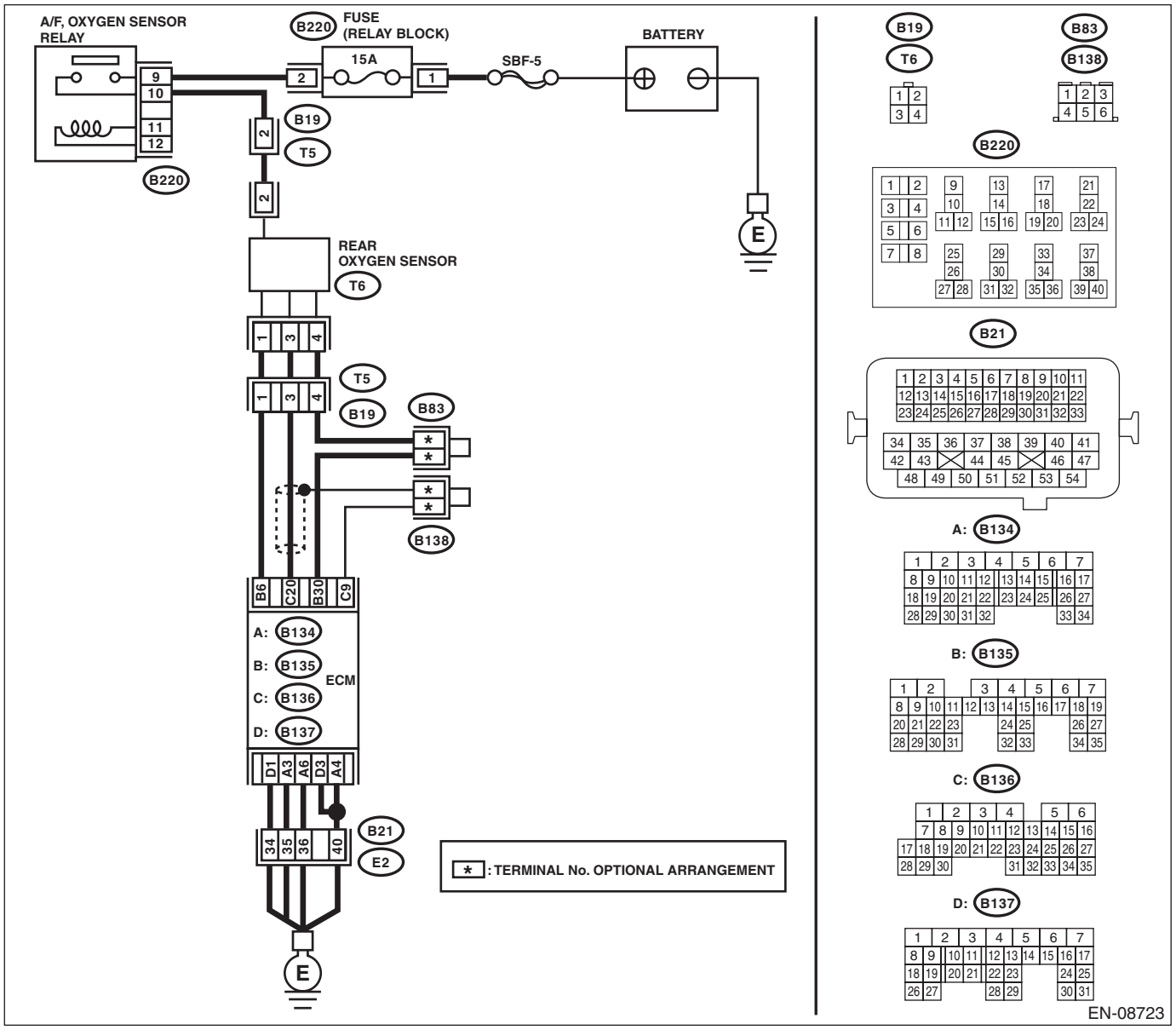
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Models without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



- Models with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



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 chassis ground. ***Connector & terminal*** ***(B135) No. 6 (+) — Chassis 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**.

Step		Check	Yes	No
2	**CHECK GROUND CIRCUIT FOR ECM.** 1) Disconnect the connector from ECM. 2) Measure the resistance between ECM connector and chassis ground. ***Connector & terminal*** ***(B134) No. 3 — Chassis ground:*** ***(B134) No. 4 — Chassis ground:*** ***(B134) No. 6 — Chassis ground:*** ***(B137) No. 1 — Chassis ground:*** ***(B137) No. 3 — Chassis 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

N: DTC P0068 MAP/MAF - THROTTLE POSITION CORRELATION

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-32, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, 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 SENSOR.** 1) Start the engine and warm up engine until coolant temperature is higher than 75°C (167°F). 2) Place the shift lever in neutral position. 3) Turn the A/C switch to OFF. 4) Turn all the accessory switches to OFF. 5) Read the value of «Mani. Absolute Pressure» 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(H4DOTC)(diag)-40, 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 sensor. <Ref. to FU(STI)-43, Manifold Absolute Pressure Sensor.> <Ref. to FU(w/o STI)-43, Manifold Absolute Pressure 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(H4DOTC)(diag)-40, 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(STI)-15, Throttle Body.> <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 sensor. <Ref. to FU(STI)-43, Manifold Absolute Pressure Sensor.> <Ref. to FU(w/o STI)-43, Manifold Absolute Pressure Sensor.>	Replace the electronic throttle control. <Ref. to FU(STI)-15, Throttle Body.> <Ref. to FU(w/o STI)-15, Throttle Body.>

O: 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(H4DOTC)-34, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, 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(H4DOTC)(diag)-87, List of Diagnostic Trouble Code (DTC).>	Replace the mass air flow and intake air temperature sensor. <Ref. to FU(STI)-42, Mass Air Flow and Intake Air Temperature Sensor.> <Ref. to FU(w/o STI)-42, Mass Air Flow and Intake Air Temperature Sensor.>

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-36, DTC P0102 MASS OR VOLUME AIR FLOW CIRCUIT LOW INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

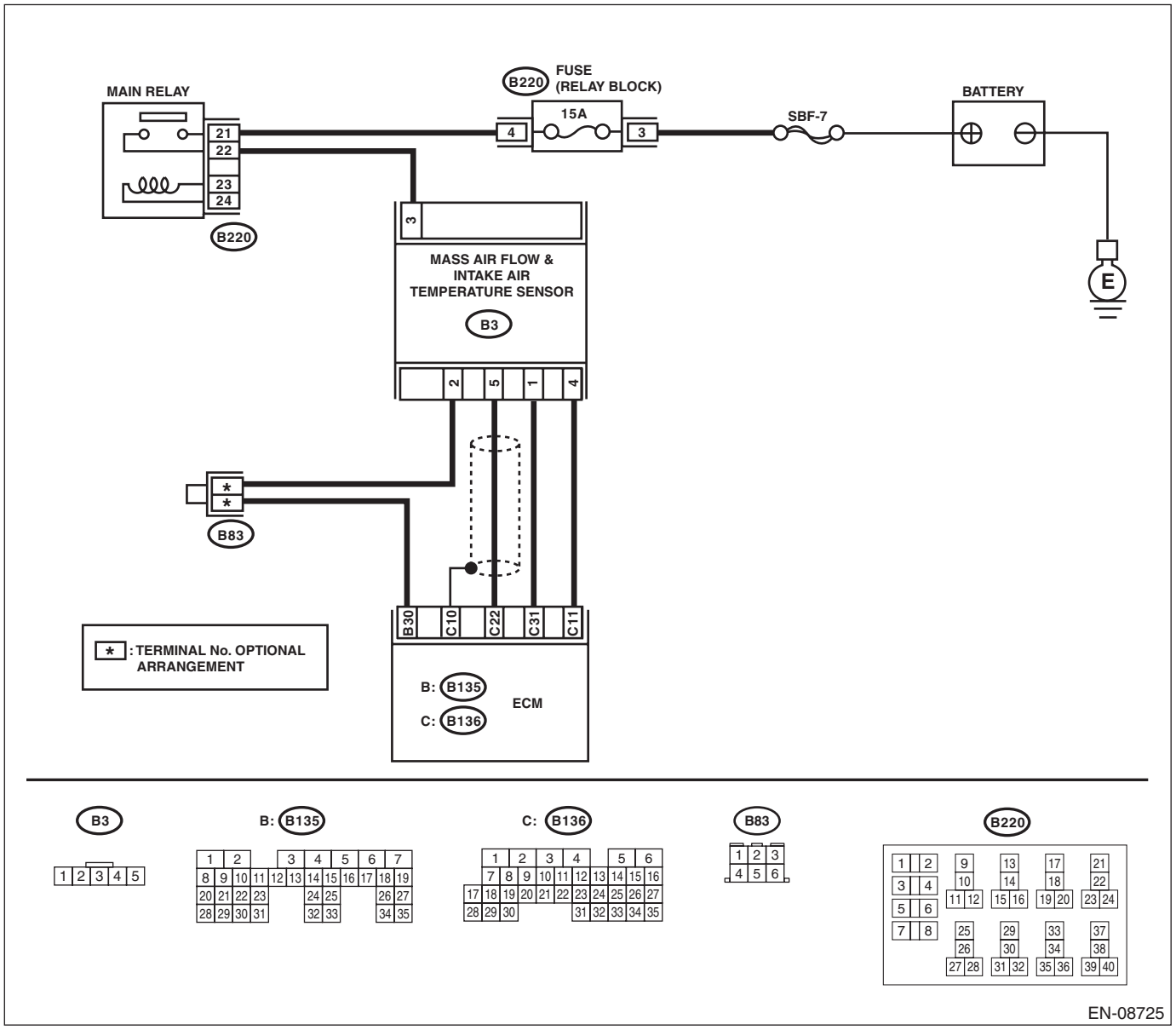
- Improper idling
- Engine stalls.
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



EN-08725

	Step	Check	Yes	No
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 "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.>	Is the value of «Air Flow Sensor Voltage» less than 0.2 V?	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 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. ***Connector & terminal*** ***(B3) No. 3 (+) — Engine ground (–):***	Is the voltage 10 V or more?	Go to step **3**.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between main relay connector and mass air flow and intake air temperature sensor connector • Poor contact of main relay connector
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. ***Connector & terminal*** ***(B136) No. 22 — (B3) No. 5:***	Is the resistance less than 1 Ω?	Go to step **4**.	Repair the open circuit of harness between ECM connector and the mass air flow and intake air temperature sensor connector.
4	**CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR CONNECTOR.** Measure the resistance between ECM connector and chassis ground. ***Connector & terminal*** ***(B136) No. 22 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **5**.	Repair the ground short circuit of harness between ECM connector and the mass air flow and intake air temperature sensor connector.

	Step	Check	Yes	No
5	**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.	Replace the mass air flow and intake air temperature sensor. <Ref. to FU(STI)-42, Mass Air Flow and Intake Air Temperature Sensor.> <Ref. to FU(w/o STI)-42, Mass Air Flow and Intake Air Temperature Sensor.>

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-38, DTC P0103 MASS OR VOLUME AIR FLOW CIRCUIT HIGH INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

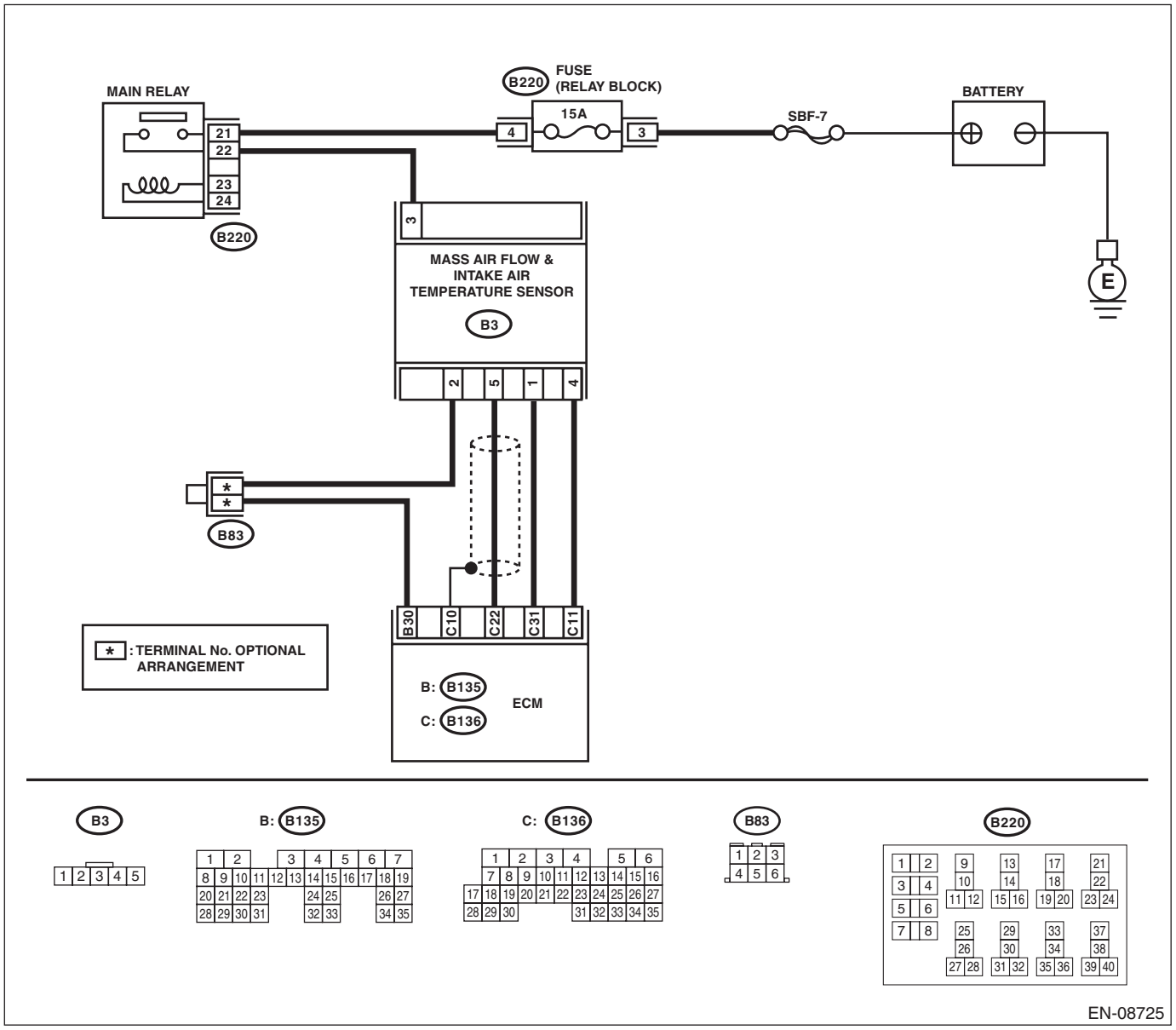
- Improper idling
- Engine stalls.
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



EN-08725

	Step	Check	Yes	No
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 "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.>	Is the value of «Air Flow Sensor Voltage» 5 V 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 HARNESS BETWEEN ECM AND MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from the mass air flow and intake air temperature sensor. 3) Start the engine. 4) Read the value of «Air Flow Sensor Voltage» using Subaru Select Monitor. NOTE: For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.>	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	**CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Measure the resistance of harness between mass air flow and intake air temperature sensor connector and engine ground. ***Connector & terminal*** ***(B3) No. 4 — 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 in harness between ECM connector and the mass air flow and intake air temperature sensor connector • Poor contact of ECM connector
4	**CHECK FOR POOR CONTACT.** Check for poor contact of mass air flow and intake air temperature sensor connector.	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(STI)-42, Mass Air Flow and Intake Air Temperature Sensor.> <Ref. to FU(w/o STI)-42, Mass Air Flow and Intake Air Temperature Sensor.>

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

DTC DETECTING CONDITION:

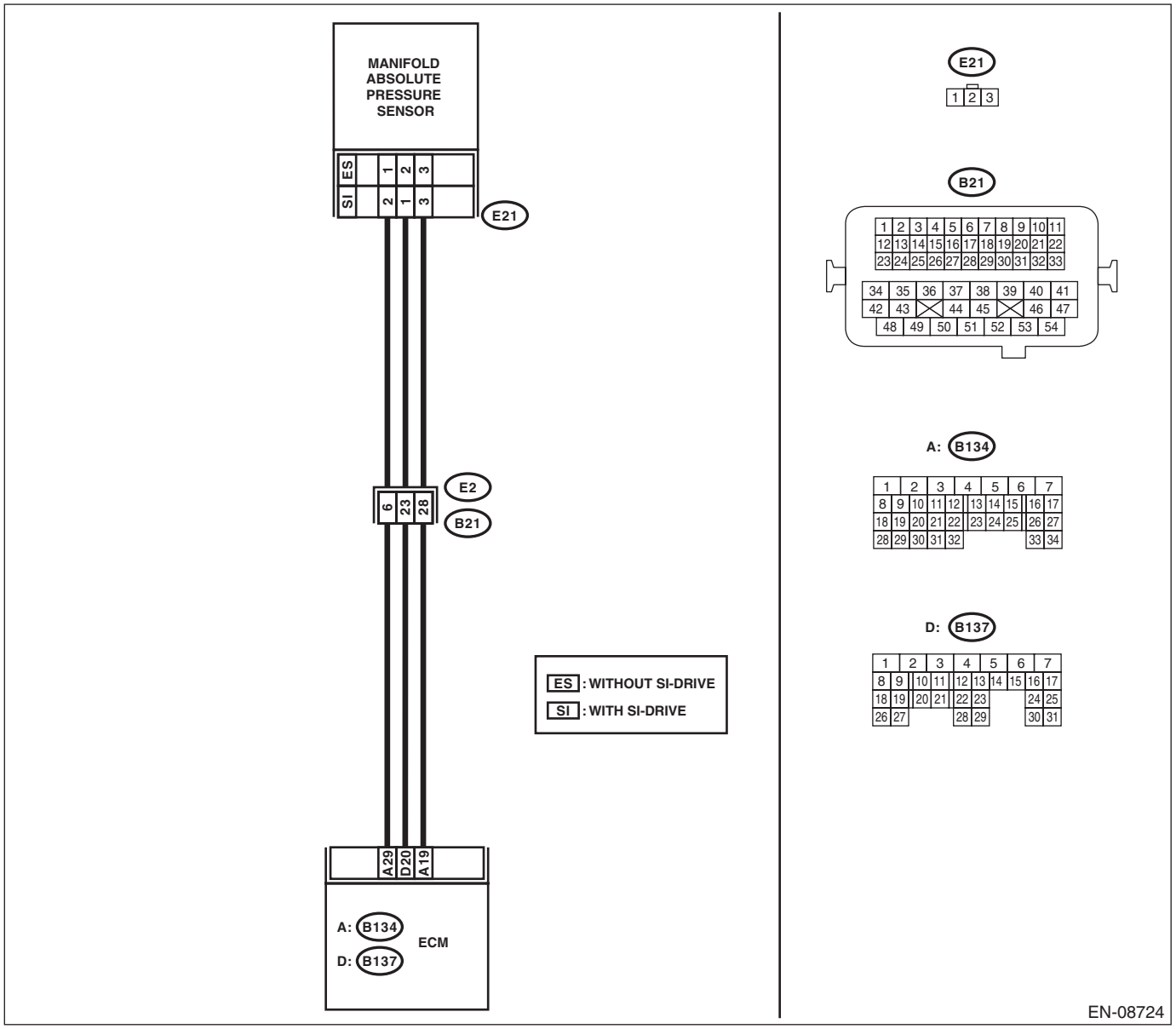
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-40, DTC P0107 MANIFOLD ABSOLUTE PRESSURE/ BAROMETRIC PRESSURE CIRCUIT LOW INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	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: • Subaru Select Monitor For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value of «Mani. Absolute Pressure» less than 13.3 kPa (100 mmHg, 3.94 inHg)?	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 POWER SUPPLY OF MANIFOLD ABSOLUTE PRESSURE SENSOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from manifold absolute pressure sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between manifold absolute pressure sensor connector and engine ground. ***Connector & terminal*** ***(E21) No. 3 (+) — Engine ground (–):***	Is the voltage 4.5 V or more?	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 manifold absolute pressure sensor connector • Poor contact of ECM connector • Poor contact of coupling connector
3	**CHECK HARNESS BETWEEN ECM AND MANIFOLD ABSOLUTE 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 manifold absolute pressure sensor connector. ***Connector & terminal*** ***Models without SI-DRIVE*** ***(B137) No. 20 — (E21) No. 2:*** ***Models with SI-DRIVE*** ***(B137) No. 20 — (E21) No. 1:***	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 of harness between ECM connector and manifold absolute pressure sensor connector • Poor contact of coupling connector
4	**CHECK HARNESS BETWEEN ECM AND MANIFOLD ABSOLUTE PRESSURE SENSOR CONNECTOR.** Measure the resistance between ECM connector and chassis ground. ***Connector & terminal*** ***(B137) No. 20 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **5**.	Repair short circuit to ground in harness between ECM connector and manifold absolute pressure sensor connector.

Step		Check	Yes	No
5	**CHECK FOR POOR CONTACT.** Check for poor contact of ECM and manifold absolute pressure sensor connector.	Is there poor contact of ECM or manifold absolute pressure sensor connector?	Repair the poor contact of ECM or manifold absolute pressure sensor connector.	Replace the manifold absolute pressure sensor. <Ref. to FU(STI)-43, Manifold Absolute Pressure Sensor.> <Ref. to FU(w/o STI)-43, Manifold Absolute Pressure Sensor.>

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

DTC DETECTING CONDITION:

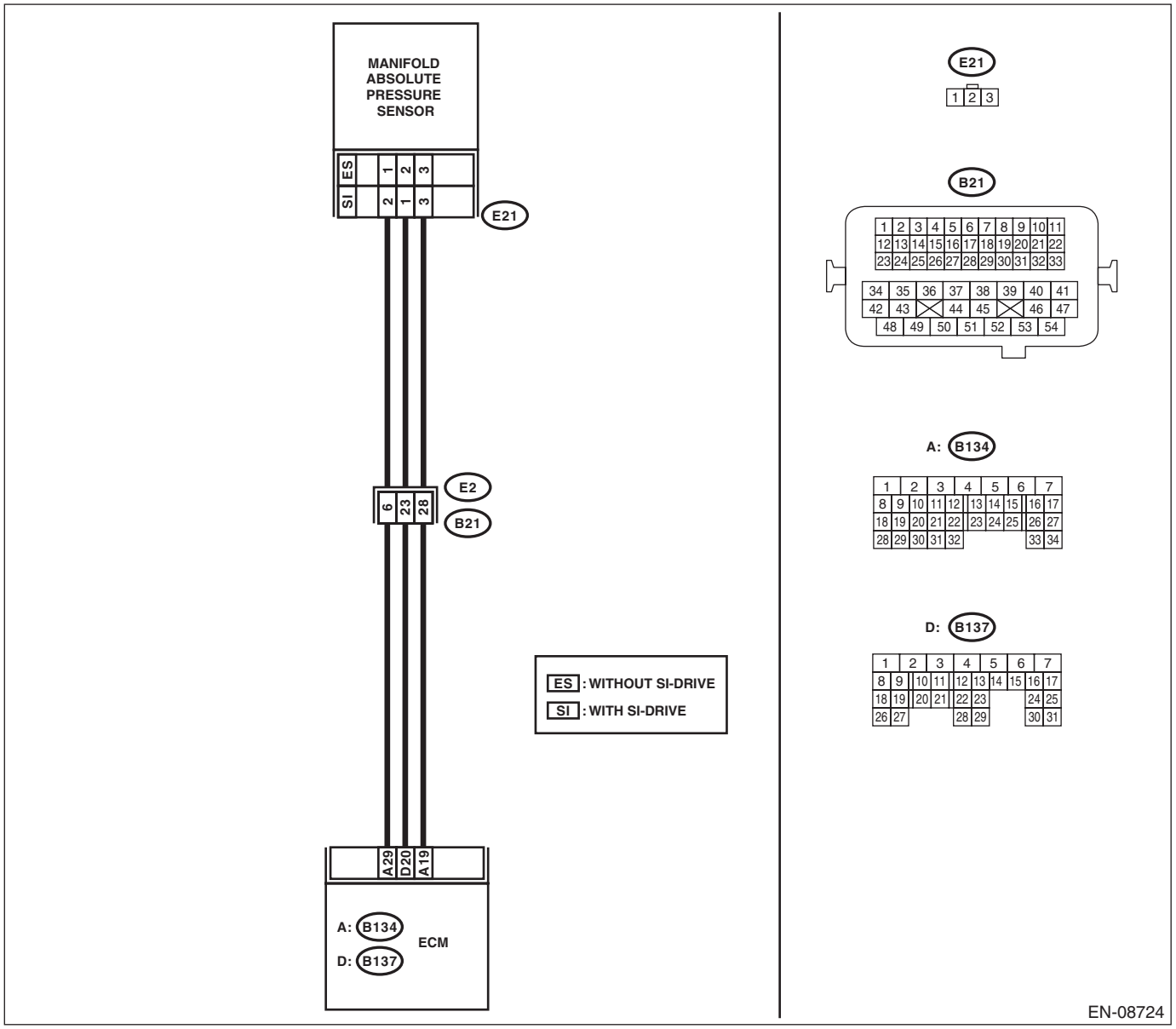
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-42, DTC P0108 MANIFOLD ABSOLUTE PRESSURE/ BAROMETRIC PRESSURE CIRCUIT HIGH INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	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: • Subaru Select Monitor For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value of «Mani. Absolute Pressure» 119.5 kPa (896.5 mmHg, 35.29 inHg) 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 HARNESS BETWEEN ECM AND MANIFOLD ABSOLUTE PRESSURE SENSOR CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from manifold absolute pressure sensor. 3) Start the engine. 4) Read the value of «Mani. Absolute Pressure» 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(H4DOTC)(diag)-40, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value of «Mani. Absolute Pressure» 119.5 kPa (896.5 mmHg, 35.29 inHg) or more?	Repair the short circuit to power in harness between ECM connector and manifold absolute pressure sensor connector.	Go to step **3**.
3	**CHECK HARNESS BETWEEN ECM AND MANIFOLD ABSOLUTE PRESSURE SENSOR CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Measure the resistance of harness between manifold absolute pressure sensor connector and engine ground. ***Connector & terminal*** ***Models without SI-DRIVE*** ***(E21) No. 1 — Engine ground:*** ***Models with SI-DRIVE*** ***(E21) No. 2 — 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 manifold absolute pressure sensor connector • Poor contact of ECM connector • Poor contact of coupling connector

	Step	Check	Yes	No
4	**CHECK FOR POOR CONTACT.** Check for poor contact of manifold absolute pressure sensor connector.	Is there poor contact of manifold absolute pressure sensor connector?	Repair the poor contact of manifold absolute pressure sensor connector.	Replace the manifold absolute pressure sensor. <Ref. to FU(STI)-43, Manifold Absolute Pressure Sensor.> <Ref. to FU(w/o STI)-43, Manifold Absolute Pressure Sensor.>

T: 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(H4DOTC)-44, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

	Step	Check	Yes	No
1	**CHECK ENGINE COOLANT TEMPERATURE.** 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(H4DOTC)(diag)-40, 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?	Replace the mass air flow and intake air temperature sensor. <Ref. to FU(STI)-42, Mass Air Flow and Intake Air Temperature Sensor.> <Ref. to FU(w/o STI)-42, Mass Air Flow and Intake Air Temperature Sensor.>	Check for DTC P0125. <Ref. to EN(H4DOTC)(diag)-148, DTC P0125 INSUFFICIENT COOLANT TEMPERATURE FOR CLOSED LOOP FUEL CONTROL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

U: DTC P0112 INTAKE AIR TEMPERATURE SENSOR 1 CIRCUIT LOW

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-47, DTC P0112 INTAKE AIR TEMPERATURE SENSOR 1 CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

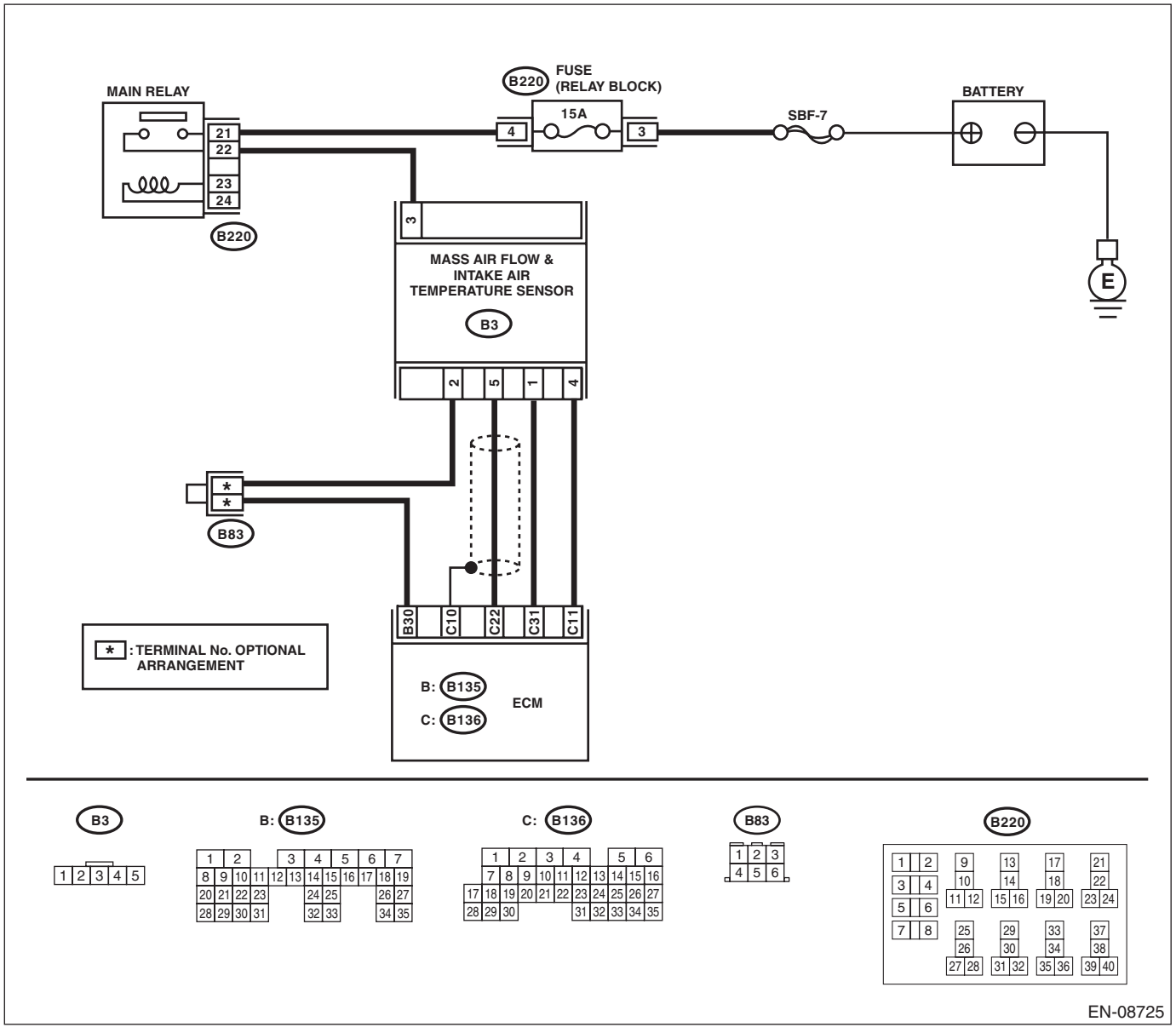
- Improper idling
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK CURRENT DATA.** 1) Start the engine. 2) Read the value of «Intake Air 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(H4DOTC)(diag)-40, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value of «Intake Air Temp.» 120°C (248°F) 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 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 between ECM connector and chassis ground. ***Connector & terminal*** ***(B136) No. 31 — Chassis ground:***	Is the resistance 1 MΩ or more?	Replace the mass air flow and intake air temperature sensor. <Ref. to FU(STI)-42, Mass Air Flow and Intake Air Temperature Sensor.> <Ref. to FU(w/o STI)-42, 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.

V: DTC P0113 INTAKE AIR TEMPERATURE SENSOR 1 CIRCUIT HIGH

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-49, DTC P0113 INTAKE AIR TEMPERATURE SENSOR 1 CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

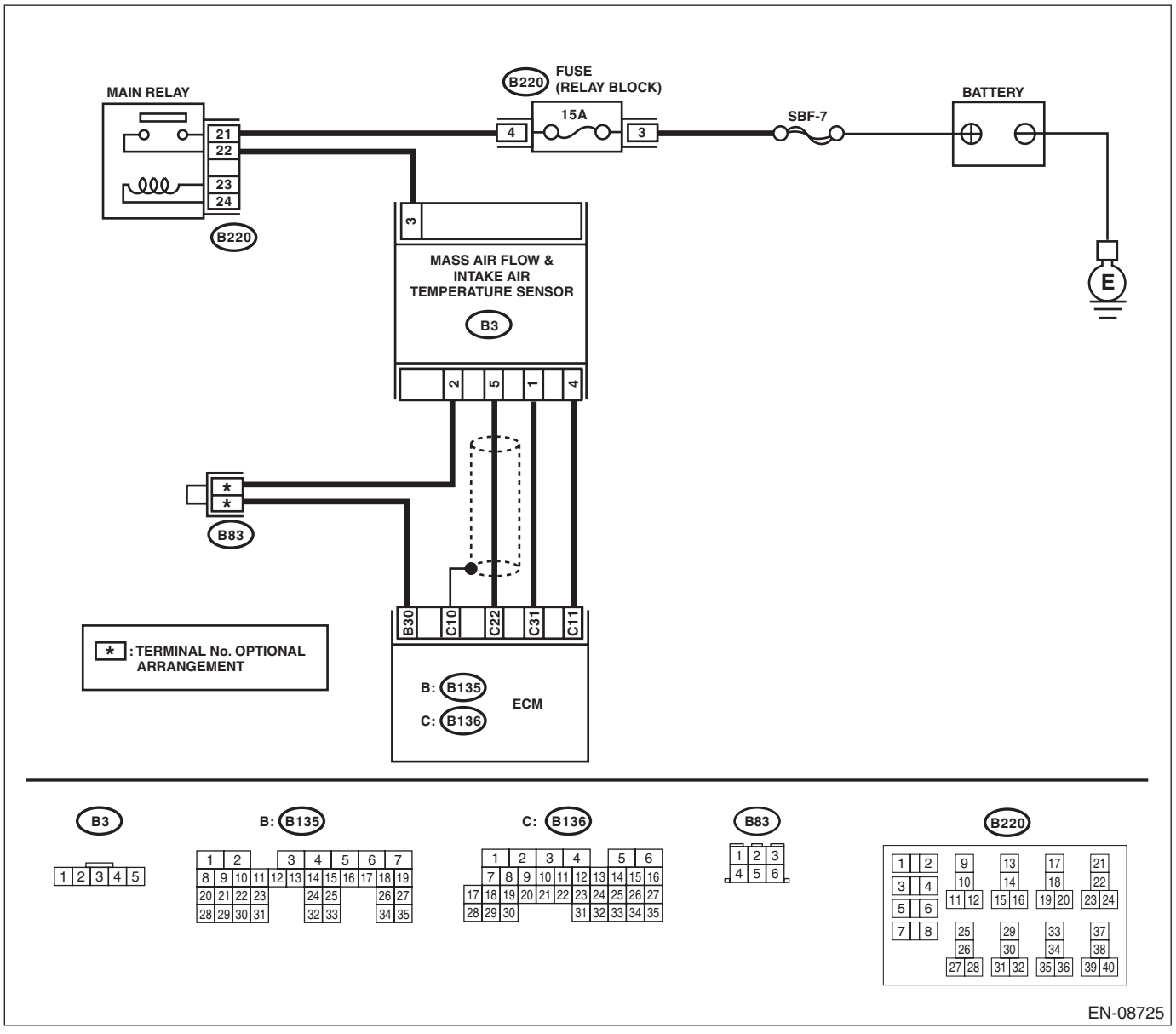
- Improper idling
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



EN-08725

	Step	Check	Yes	No
1	**CHECK CURRENT DATA.** 1) Start the engine. 2) Read the value of «Intake Air 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(H4DOTC)(diag)-40, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value of «Intake Air Temp.» 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*** ***(B136) No. 31 — (B3) No. 1:*** ***(B135) No. 30 — (B3) No. 2:***	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 the mass air flow and intake air temperature sensor connector • Poor contact of joint 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 chassis ground. ***Connector & terminal*** ***(B136) No. 31 (+) — Chassis 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(STI)-42, Mass Air Flow and Intake Air Temperature Sensor.> <Ref. to FU(w/o STI)-42, Mass Air Flow and Intake Air Temperature Sensor.>

W: 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(H4DOTC)-51, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, 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(H4DOTC)(diag)-87, 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(STI)-34, Engine Coolant Temperature Sensor.> <Ref. to FU(w/o STI)-34, Engine Coolant Temperature Sensor.>

X: DTC P0117 ENGINE COOLANT TEMPERATURE CIRCUIT LOW

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-53, DTC P0117 ENGINE COOLANT TEMPERATURE CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

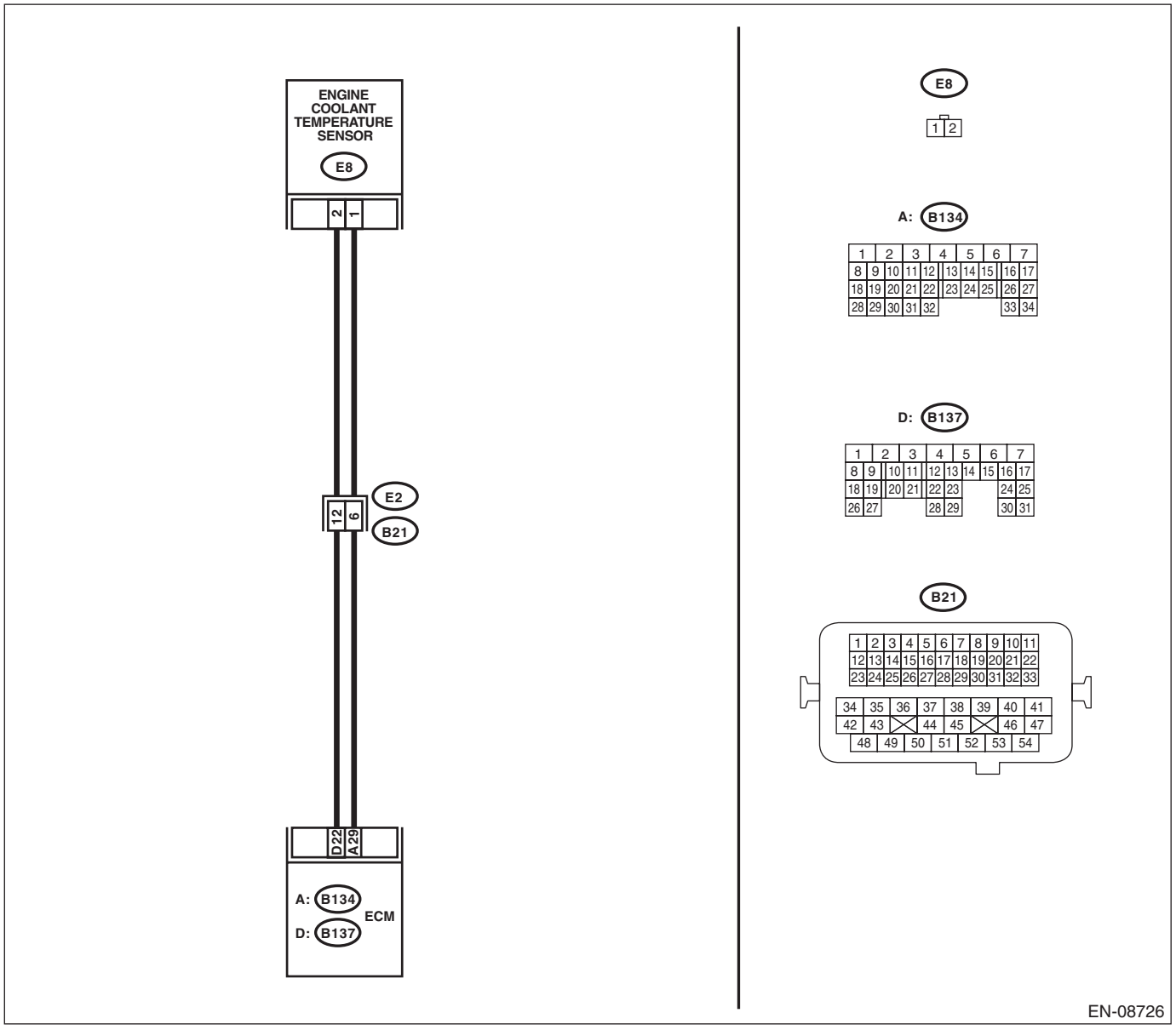
TROUBLE SYMPTOM:

- Hard to start
- Improper idling
- Poor driving performance

CAUTION:
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK CURRENT DATA.** 1) Start the engine. 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(H4DOTC)(diag)-40, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value of «Coolant Temp.» 150°C (302°F) 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 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 between ECM connector and chassis ground. ***Connector & terminal*** ***(B137) No. 22 — Chassis ground:***	Is the resistance 1 MΩ or more?	Replace the engine coolant temperature sensor. <Ref. to FU(STI)-34, Engine Coolant Temperature Sensor.> <Ref. to FU(w/o STI)-34, Engine Coolant Temperature Sensor.>	Repair the short circuit to ground in harness between ECM connector and engine coolant temperature sensor connector.

Y: DTC P0118 ENGINE COOLANT TEMPERATURE CIRCUIT HIGH

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-55, DTC P0118 ENGINE COOLANT TEMPERATURE CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

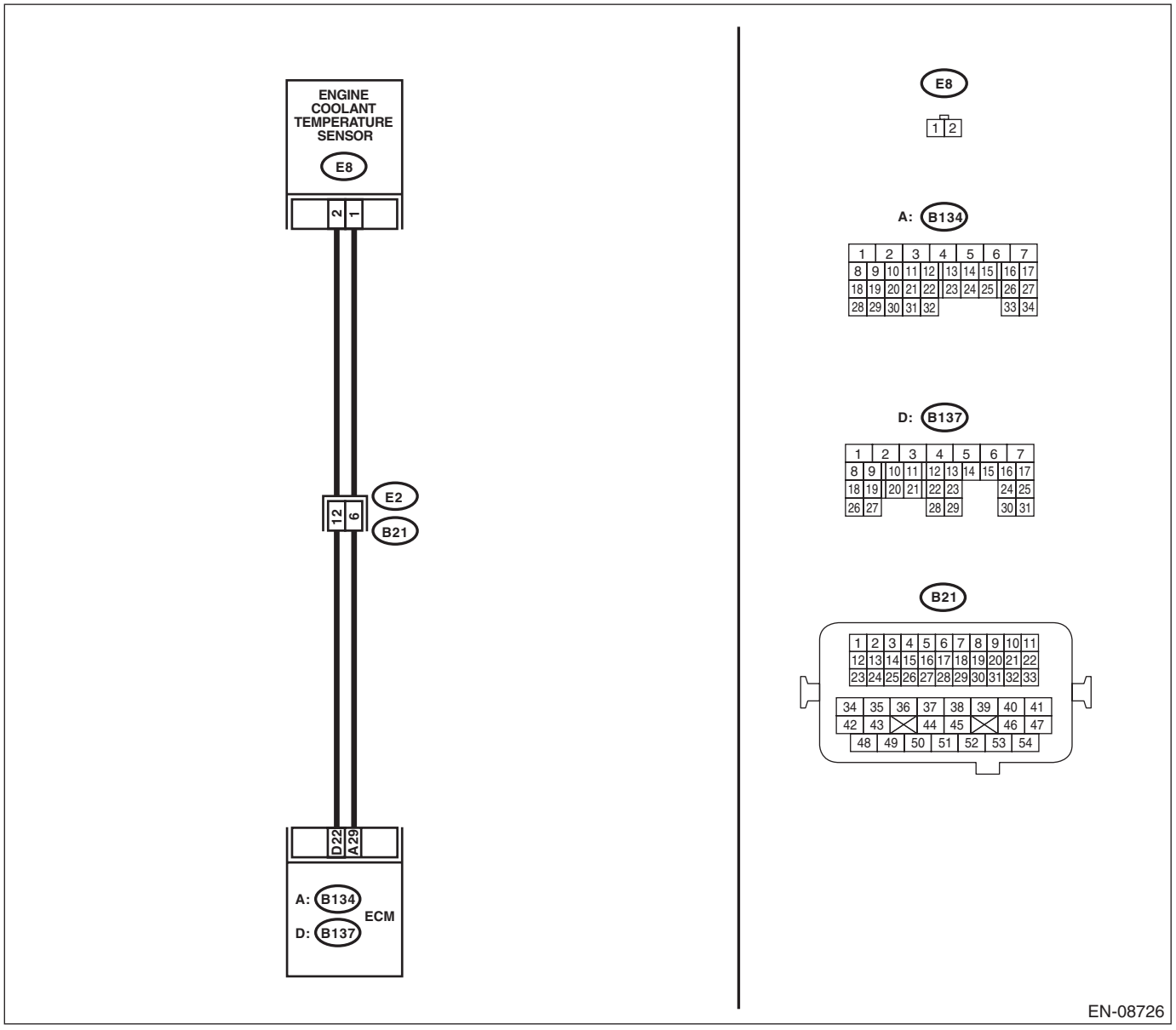
TROUBLE SYMPTOM:

- Hard to start
- Improper idling
- Poor driving performance

CAUTION:
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK CURRENT DATA.** 1) Start the engine. 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(H4DOTC)(diag)-40, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value of «Coolant Temp.» 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 engine coolant temperature sensor connector.	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	**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*** ***(B137) No. 22 — (E8) No. 2:*** ***(B134) No. 29 — (E8) No. 1:***	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 engine coolant temperature sensor connector • Poor contact of coupling connector
4	**CHECK HARNESS BETWEEN ECM AND ENGINE COOLANT TEMPERATURE SENSOR CONNECTOR.** 1) Connect all connectors. 2) Turn the ignition switch to ON. 3) Measure the voltage between ECM connector and chassis ground. ***Connector & terminal*** ***(B137) No. 22 (+) — Chassis ground (–):***	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(STI)-34, Engine Coolant Temperature Sensor.> <Ref. to FU(w/o STI)-34, Engine Coolant Temperature Sensor.>

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-57, 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

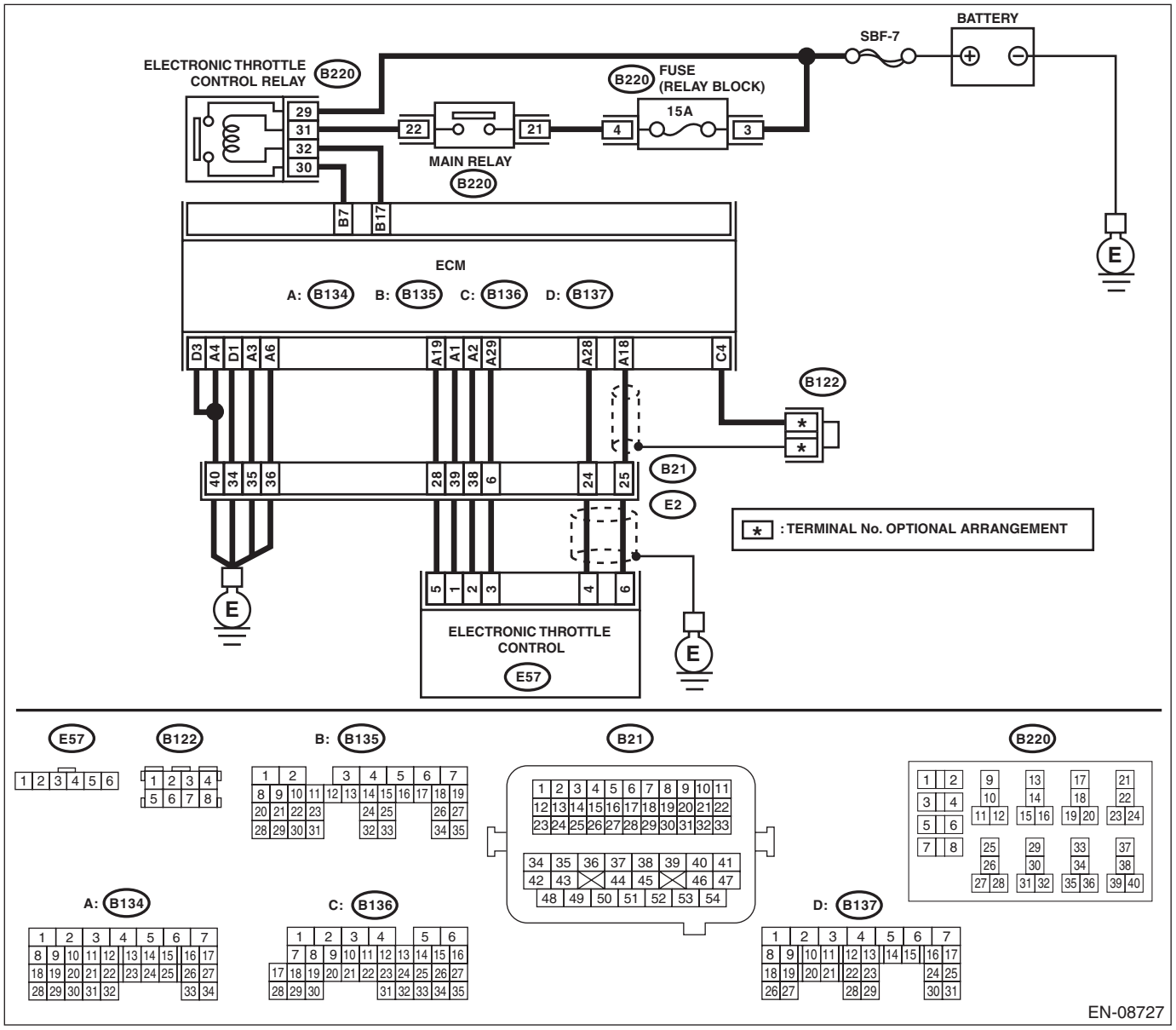
CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

• Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>

• Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



Step		Check	Yes	No
1	**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 between ECM connector and chassis ground. ***Connector & terminal*** ***(B134) No. 19 — Chassis ground:*** ***(B134) No. 18 — Chassis ground:*** ***(B134) No. 18 — (B136) No. 4:***	Is the resistance 1 MΩ or more?	Go to step **2**.	Repair the ground short circuit of harness between ECM connector and electronic throttle control connector.

	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. 6 — Engine ground:***	Is the resistance 1 MΩ or more?	Replace the electronic throttle control. <Ref. to FU(STI)-15, Throttle Body.> <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(STI)-59, Engine Control Module (ECM).> <Ref. to FU(w/o STI)-57, Engine Control Module (ECM).>

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-59, 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

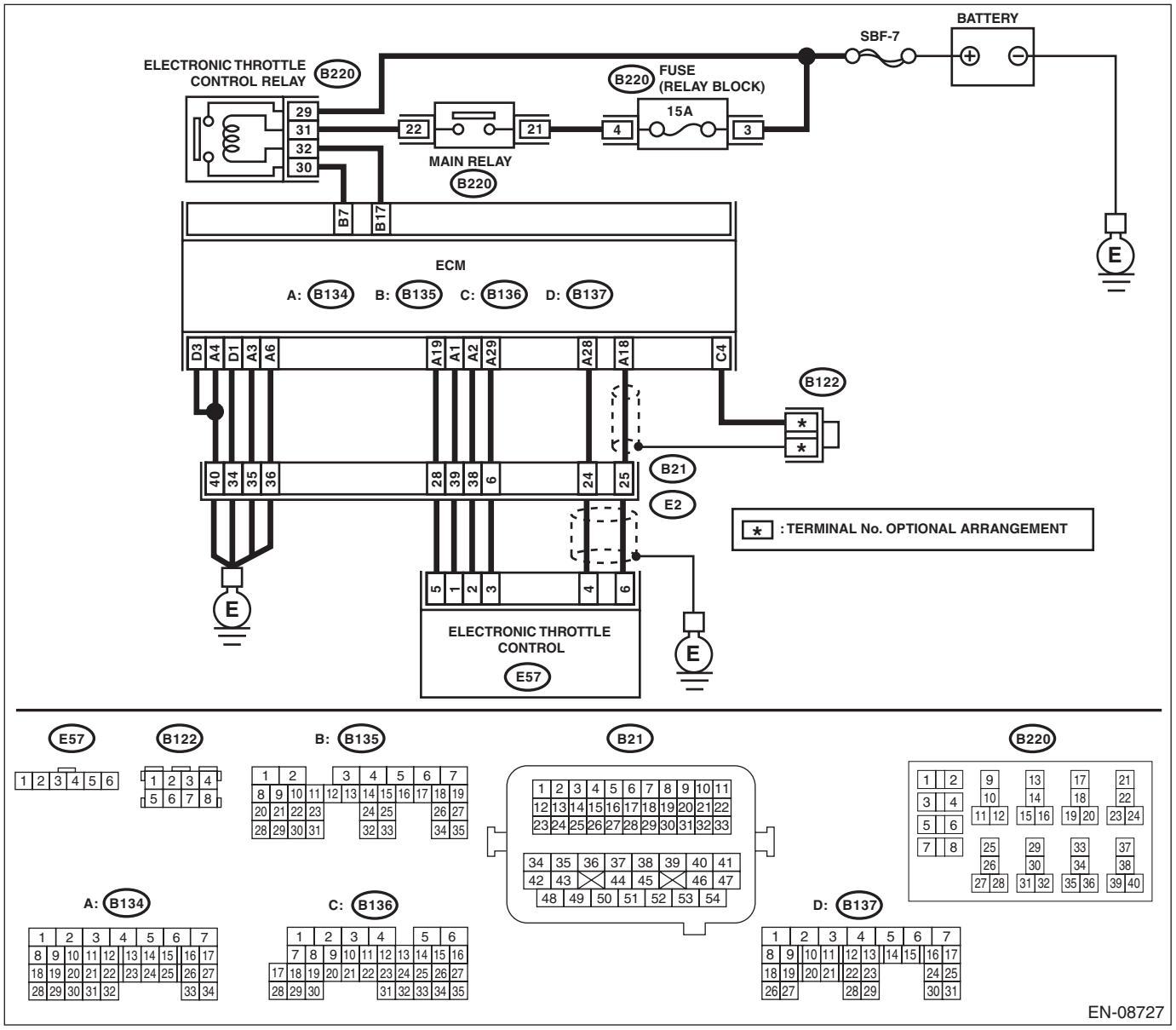
CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

• Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>

• Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



Step		Check	Yes	No
1	**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*** ***(B134) No. 18 — (E57) No. 6:*** ***(B134) No. 29 — (E57) No. 3:***	Is the resistance less than 1 Ω?	Go to step **2**.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and electronic throttle control connector • Poor contact of coupling connector

	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. 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 **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*** ***(B134) No. 19 — (B134) No. 18:***	Is the resistance 1 MΩ or more?	Repair the poor contact of electronic throttle control connector. Replace the electronic throttle control if defective. <Ref. to FU(STI)-15, Throttle Body.> <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.

AB: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(H4DOTC)-61, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, 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: • 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(STI)-13, Engine Coolant.> <Ref. to CO(w/o STI)-13, Engine Coolant.>
3	**CHECK THERMOSTAT.**	Does the thermostat remain opened?	Replace the thermostat. <Ref. to CO(STI)-17, Thermostat.> <Ref. to CO(w/o STI)-17, Thermostat.>	Replace the engine coolant temperature sensor. <Ref. to FU(STI)-34, Engine Coolant Temperature Sensor.> <Ref. to FU(w/o STI)-34, Engine Coolant Temperature Sensor.>

AC: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(H4DOTC)-63, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, 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(H4DOTC)(diag)-87, 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(STI)-13, 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(STI)-23, Radiator Main Fan and Fan Motor.> <Ref. to CO(w/o STI)-23, Radiator Main Fan and Fan Motor.> <Ref. to CO(STI)-25, Radiator Sub Fan and Fan Motor.> <Ref. to CO(w/o STI)-25, Radiator Sub Fan and Fan Motor.>	Replace the thermostat. <Ref. to CO(STI)-17, Thermostat.> <Ref. to CO(w/o STI)-17, Thermostat.>

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

DTC DETECTING CONDITION:

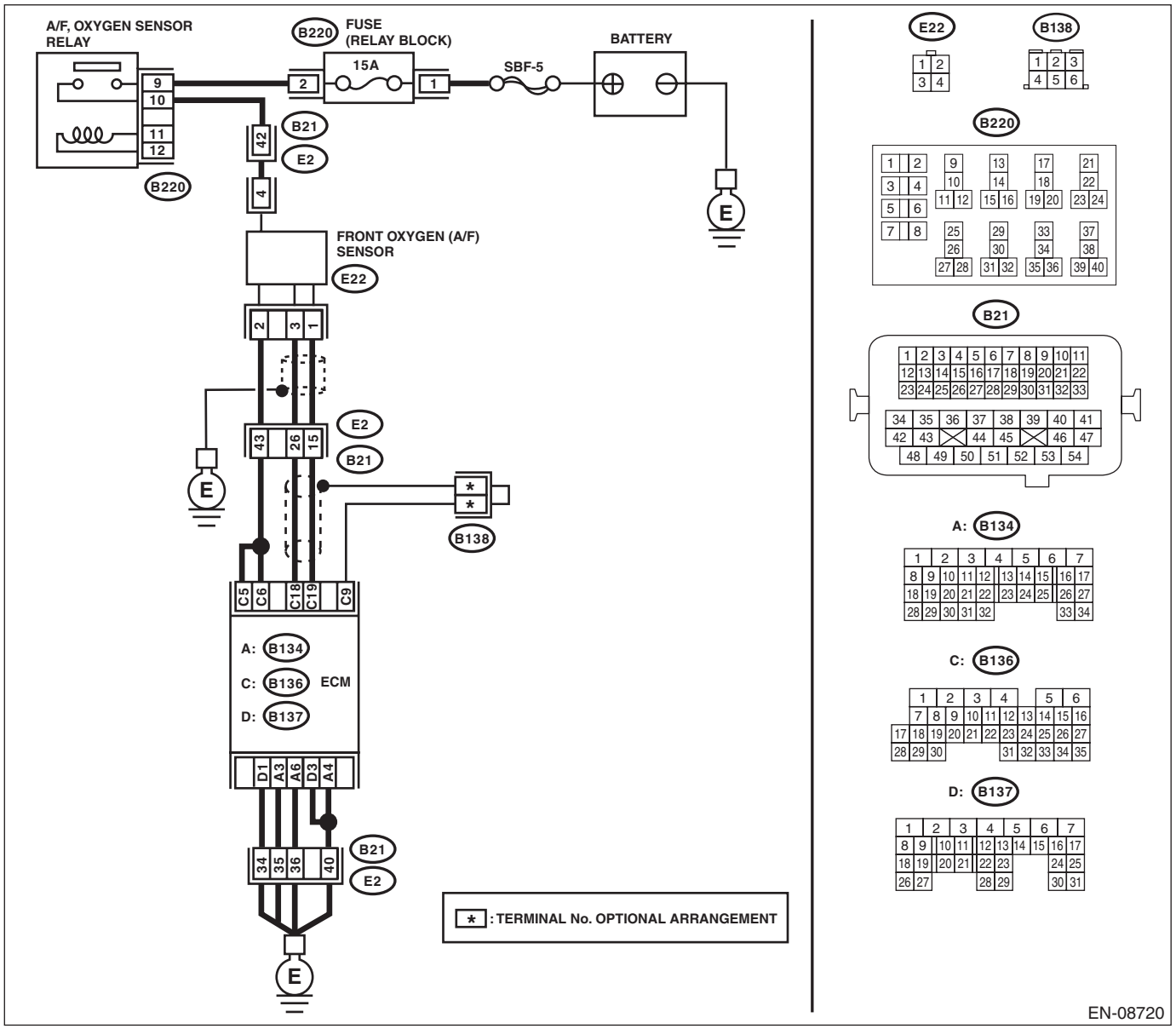
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-67, DTC P0131 O2 SENSOR CIRCUIT LOW VOLTAGE (BANK 1 SENSOR 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

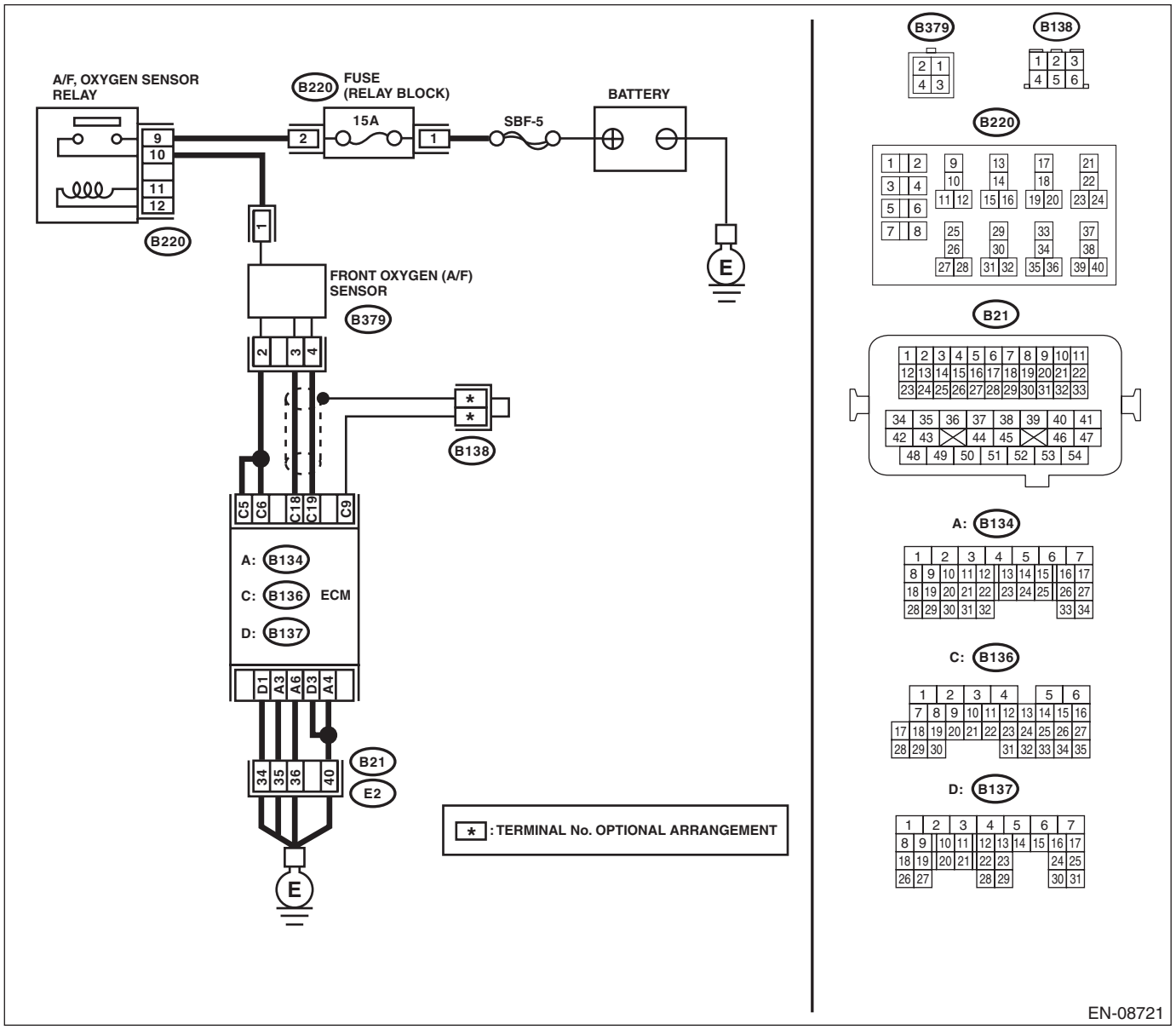
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Models without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



- Models with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



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 connector. 3) Measure the resistance between ECM connector and chassis ground. ***Connector & terminal*** ***(B136) No. 19 — Chassis ground:*** ***(B136) No. 18 — 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.

Step		Check	Yes	No
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(STI)-54, Front Oxygen (A/F) Sensor.> <Ref. to FU(w/o STI)-53, Front Oxygen (A/F) Sensor.>

AE:DTC P0132 O2 SENSOR CIRCUIT HIGH VOLTAGE (BANK 1 SENSOR 1)

DTC DETECTING CONDITION:

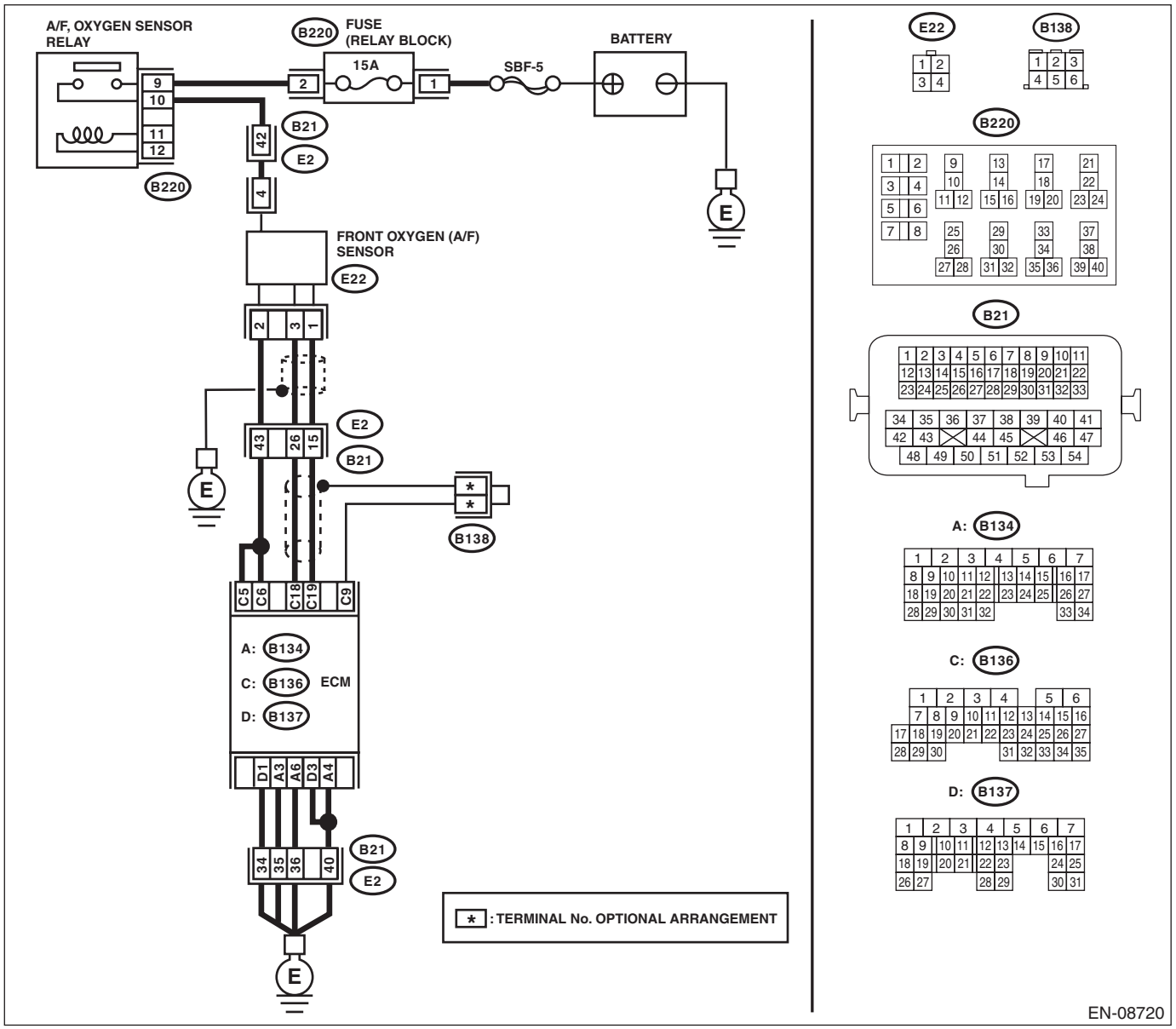
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-69, DTC P0132 O2 SENSOR CIRCUIT HIGH VOLTAGE (BANK 1 SENSOR 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

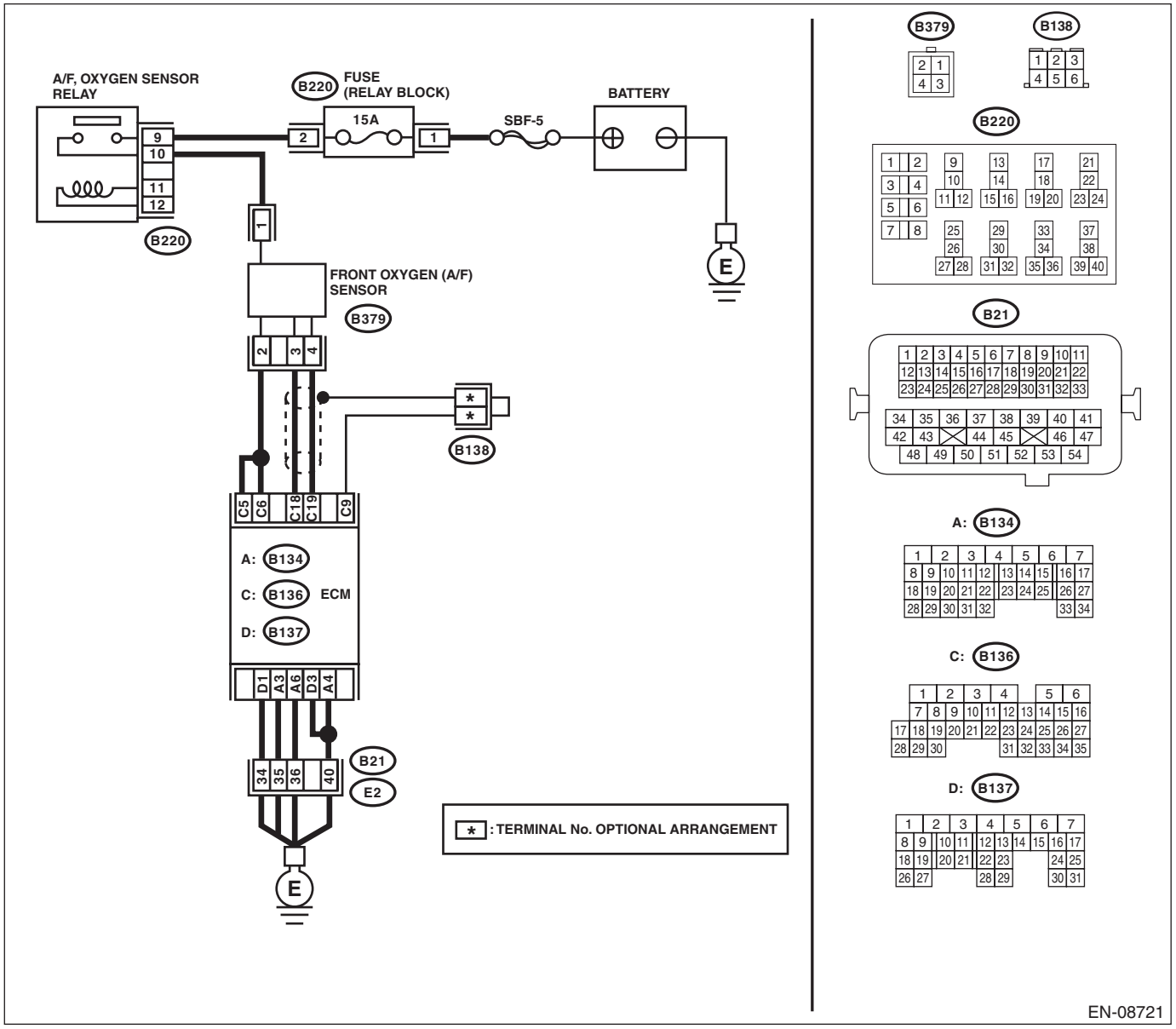
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Models without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



- Models with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



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 front oxygen (A/F) sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between ECM connector and chassis ground. ***Connector & terminal*** ***(B136) No. 19 (+) — Chassis ground (–):*** ***(B136) No. 18 (+) — 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.	Replace the front oxygen (A/F) sensor. <Ref. to FU(STI)-54, Front Oxygen (A/F) Sensor.> <Ref. to FU(w/o STI)-53, Front Oxygen (A/F) Sensor.>

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

DTC DETECTING CONDITION:

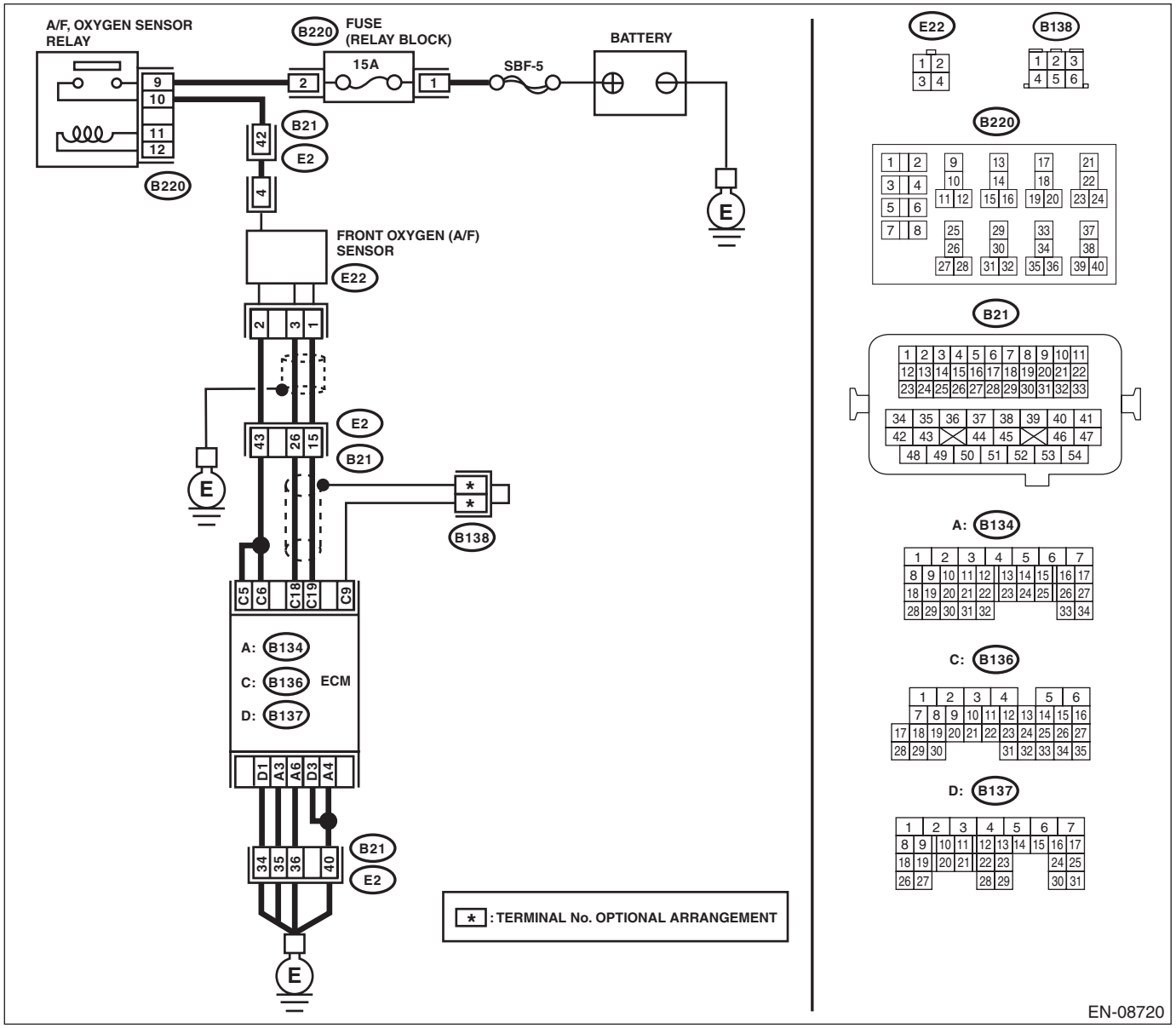
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-71, DTC P0134 O2 SENSOR CIRCUIT NO ACTIVITY DETECTED (BANK 1 SENSOR 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

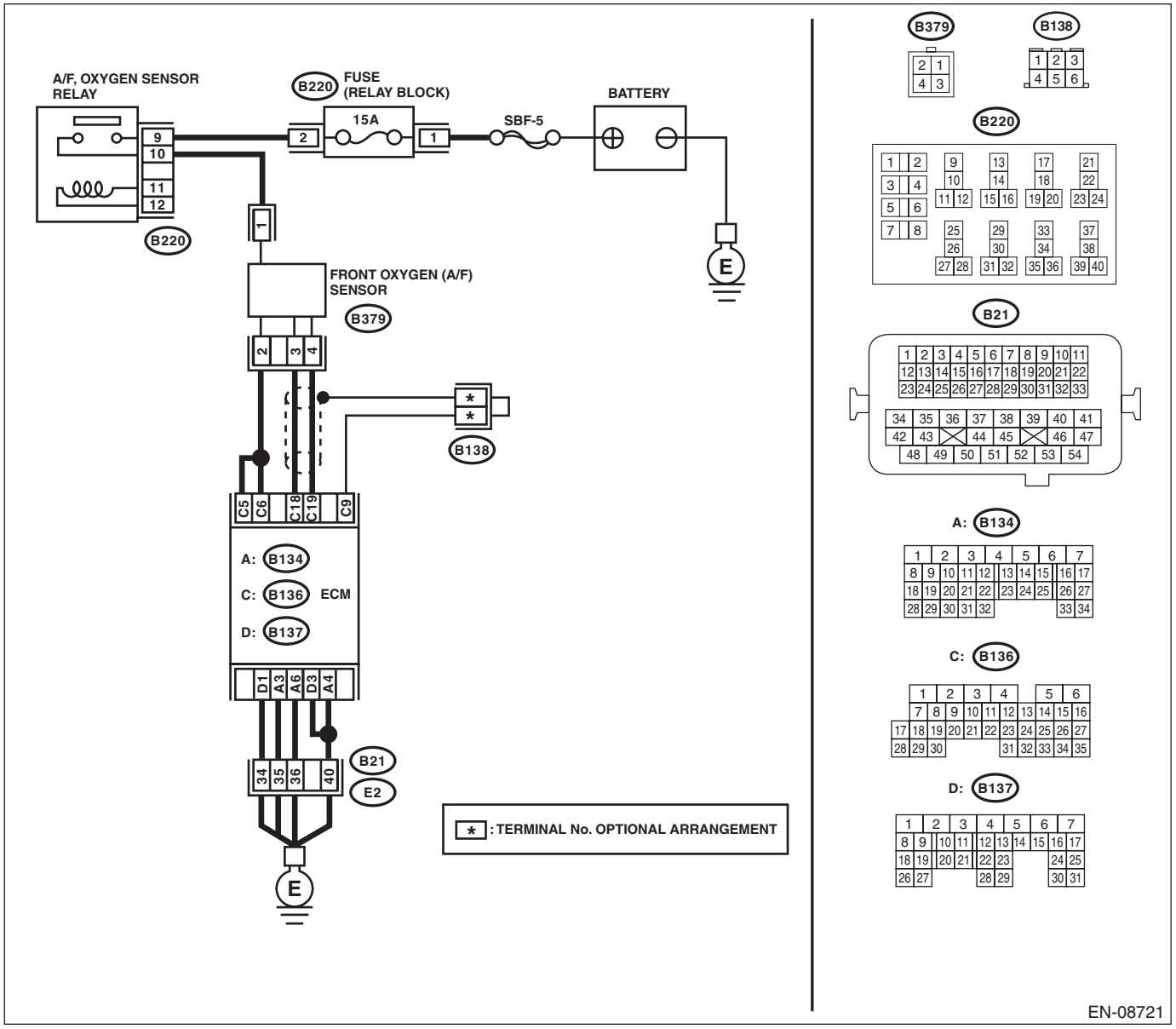
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Models without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



- Models with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



Step		Check	Yes	No
1	**CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and front oxygen (A/F) sensor connector. 3) Measure the resistance of harness between ECM connector and front oxygen (A/F) sensor connector. ***Connector & terminal*** ***Models without SI-DRIVE*** ***(B136) No. 19 — (E22) No. 1:*** ***(B136) No. 18 — (E22) No. 3:*** ***Models with SI-DRIVE*** ***(B136) No. 19 — (B379) No. 4:*** ***(B136) No. 18 — (B379) No. 3:***	Is the resistance less than 1 Ω?	Go to step **2**.	Repair the open circuit of harness between ECM connector and front oxygen (A/F) sensor connector.

	Step	Check	Yes	No
2	**CHECK FOR POOR CONTACT.** Check for poor contact of ECM and front oxygen (A/F) sensor connector.	Is there poor contact of ECM or front oxygen (A/F) sensor connector?	Repair the poor contact of ECM or front oxygen (A/F) sensor connector.	Replace the front oxygen (A/F) sensor. <Ref. to FU(STI)-54, Front Oxygen (A/F) Sensor.> <Ref. to FU(w/o STI)-53, Front Oxygen (A/F) Sensor.>

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

DTC DETECTING CONDITION:

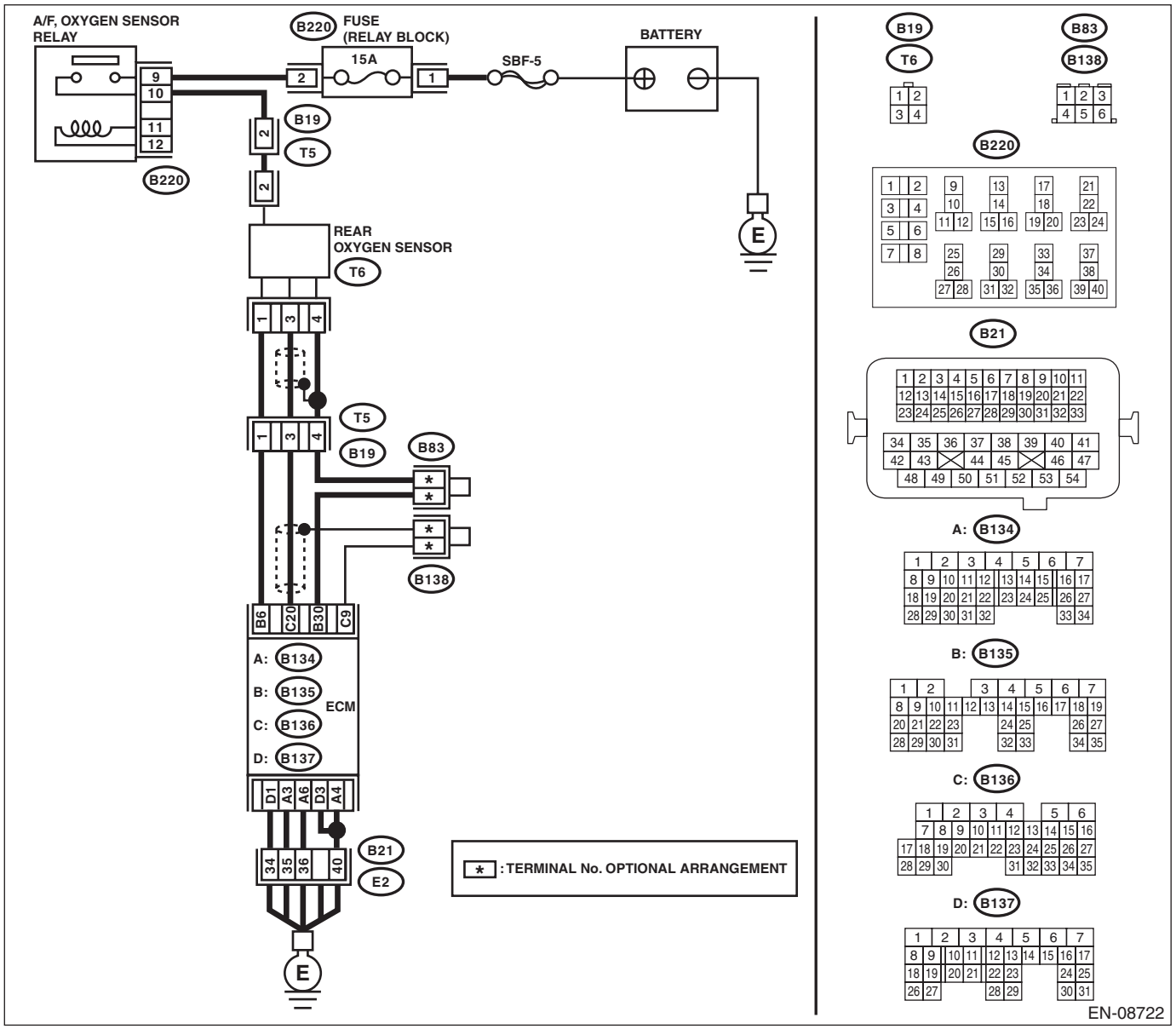
- Detected when 2 consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-73, DTC P0137 O2 SENSOR CIRCUIT LOW VOLTAGE (BANK 1 SENSOR 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

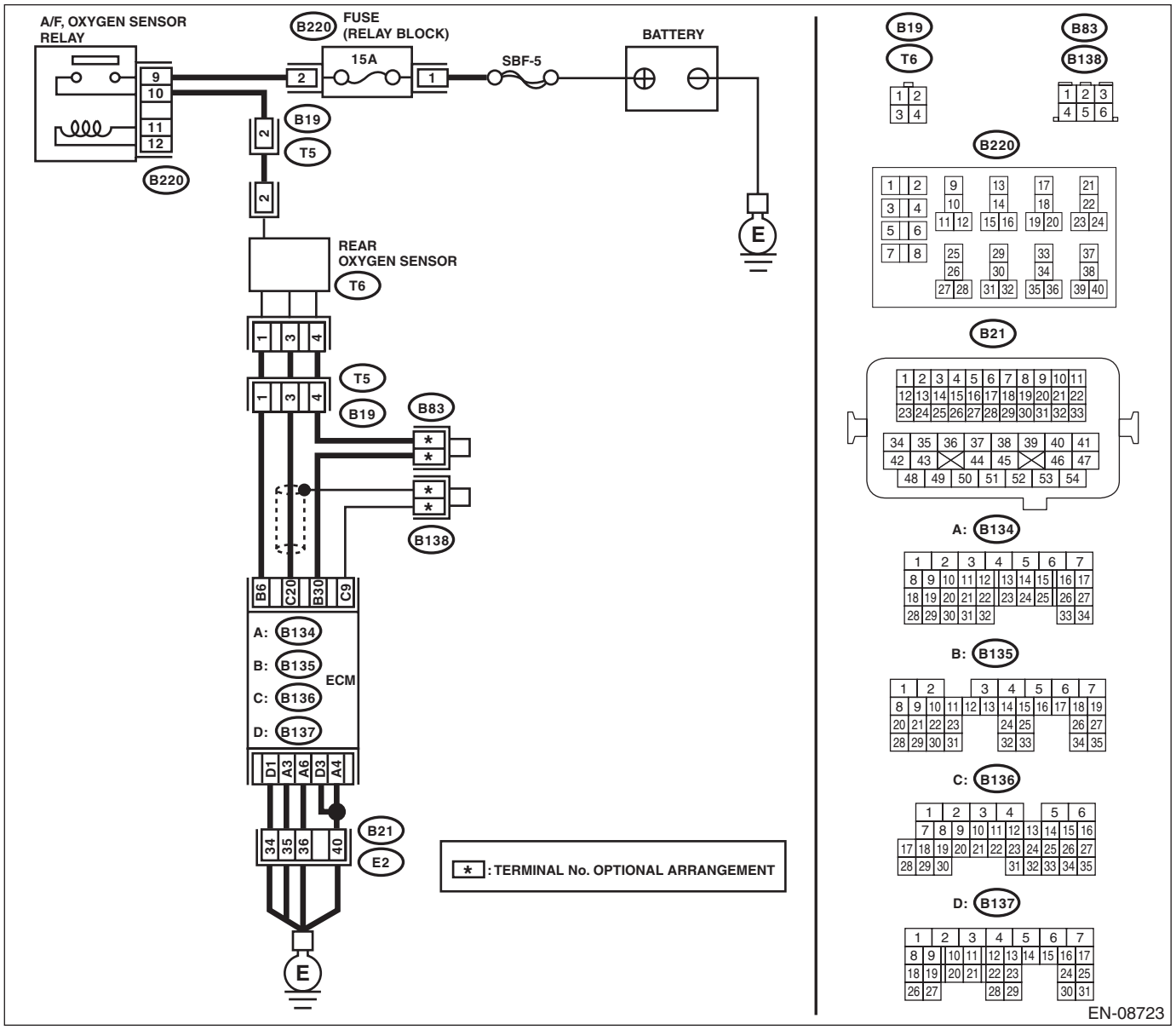
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Models without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



- Models with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



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 keep the engine speed at 3,000 rpm. (2 minutes maximum) 2) Read the value of «Rear O2 Sensor» 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(H4DOTC)(diag)-40, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value of «Rear O2 Sensor» 0.490 V or more?	Go to step **5**.	Go to step **2**.

	Step	Check	Yes	No
2	**CHECK REAR OXYGEN SENSOR CONNECTOR AND COUPLING 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. ***Connector & terminal*** ***(B136) No. 20 — (T6) No. 3:*** ***(B135) No. 30 — (T6) No. 4:***	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 rear oxygen sensor connector • Poor contact of coupling 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 chassis ground. ***Connector & terminal*** ***(T6) No. 3 (+) — Chassis ground (–):***	Is the voltage 0.2 — 0.5 V?	Replace the rear oxygen sensor. <Ref. to FU(STI)-56, Rear Oxygen Sensor.> <Ref. to FU(w/o STI)-55, 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
5	**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(STI)-56, Rear Oxygen Sensor.> <Ref. to FU(w/o STI)-55, Rear Oxygen Sensor.>

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

DTC DETECTING CONDITION:

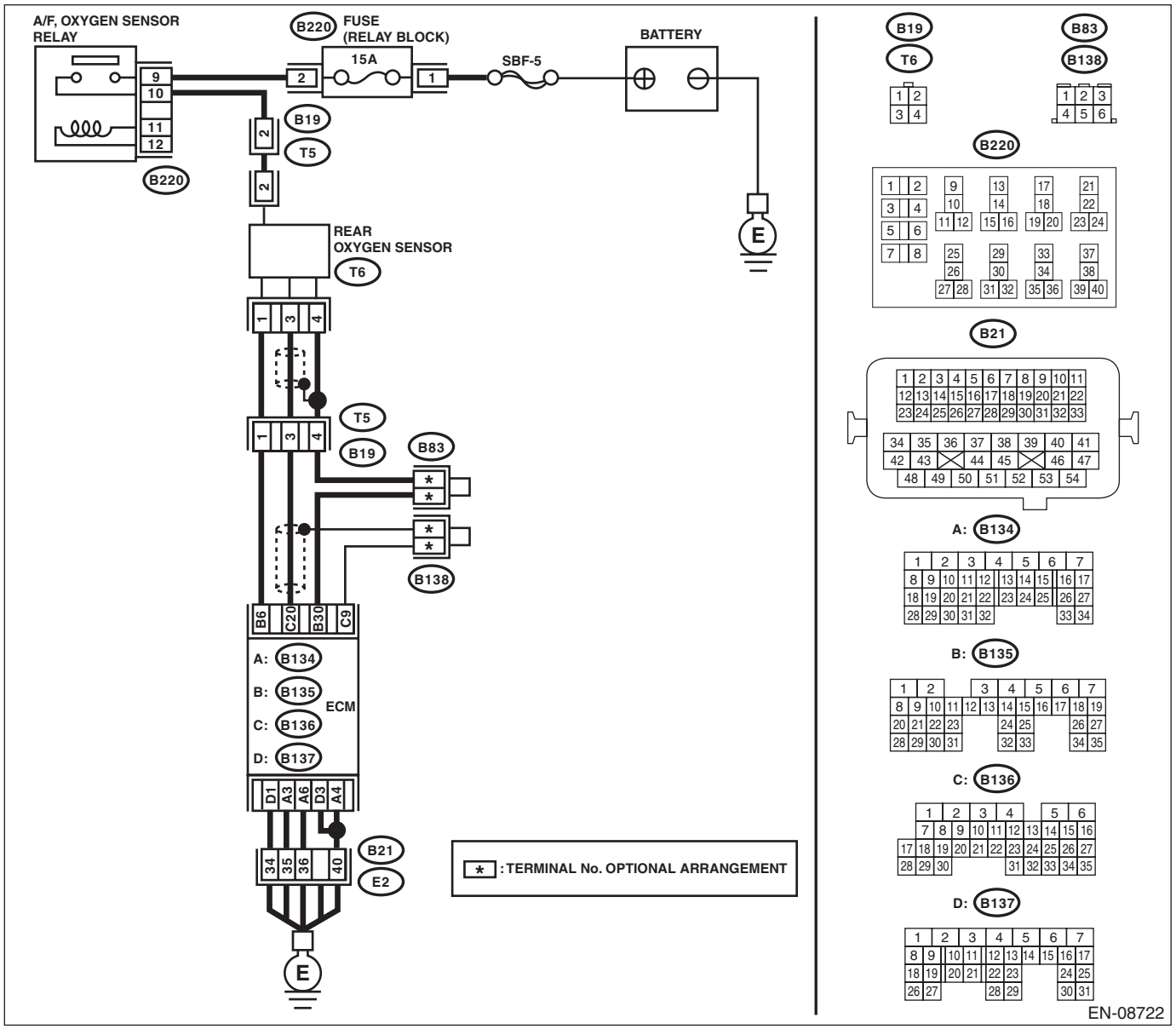
- Detected when 2 consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-75, DTC P0138 O2 SENSOR CIRCUIT HIGH VOLTAGE (BANK 1 SENSOR 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

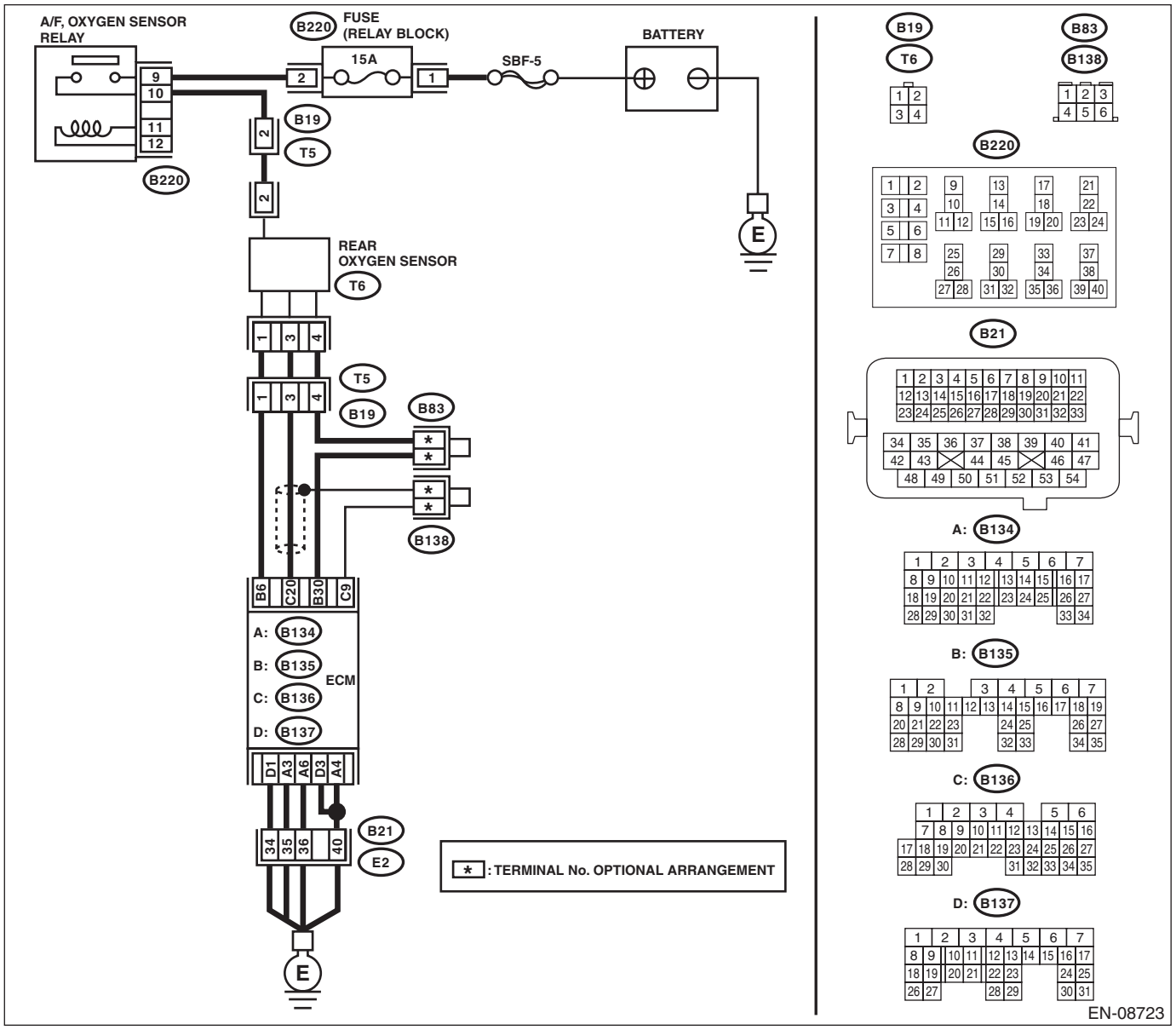
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Models without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



- Models with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



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 «Rear O2 Sensor» 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(H4DOTC)(diag)-40, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value of «Rear O2 Sensor» 0.250 V or less?	Go to step **5**.	Go to step **2**.

	Step	Check	Yes	No
2	**CHECK REAR OXYGEN SENSOR CONNECTOR AND COUPLING 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. ***Connector & terminal*** ***(B136) No. 20 — (T6) No. 3:*** ***(B135) No. 30 — (T6) No. 4:***	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 rear oxygen sensor connector • Poor contact of coupling 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 chassis ground. ***Connector & terminal*** ***(T6) No. 3 (+) — Chassis ground (–):***	Is the voltage 0.2 — 0.5 V?	Replace the rear oxygen sensor. <Ref. to FU(STI)-56, Rear Oxygen Sensor.> <Ref. to FU(w/o STI)-55, 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
5	**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(STI)-56, Rear Oxygen Sensor.> <Ref. to FU(w/o STI)-55, Rear Oxygen Sensor.>

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

DTC DETECTING CONDITION:

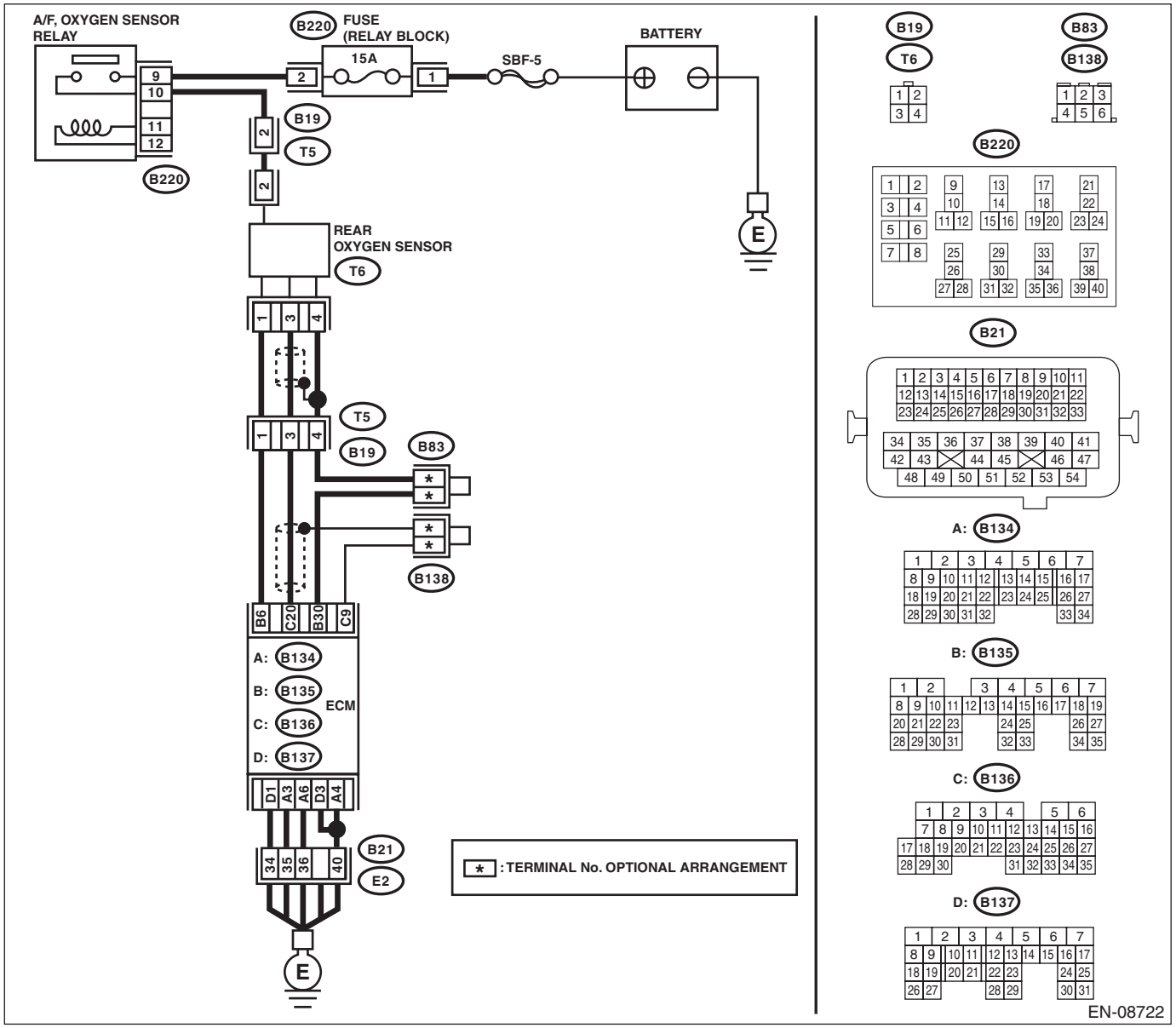
- Detected when 2 consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-76, DTC P013A O2 SENSOR SLOW RESPONSE - RICH TO LEAN (BANK 1 SENSOR 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

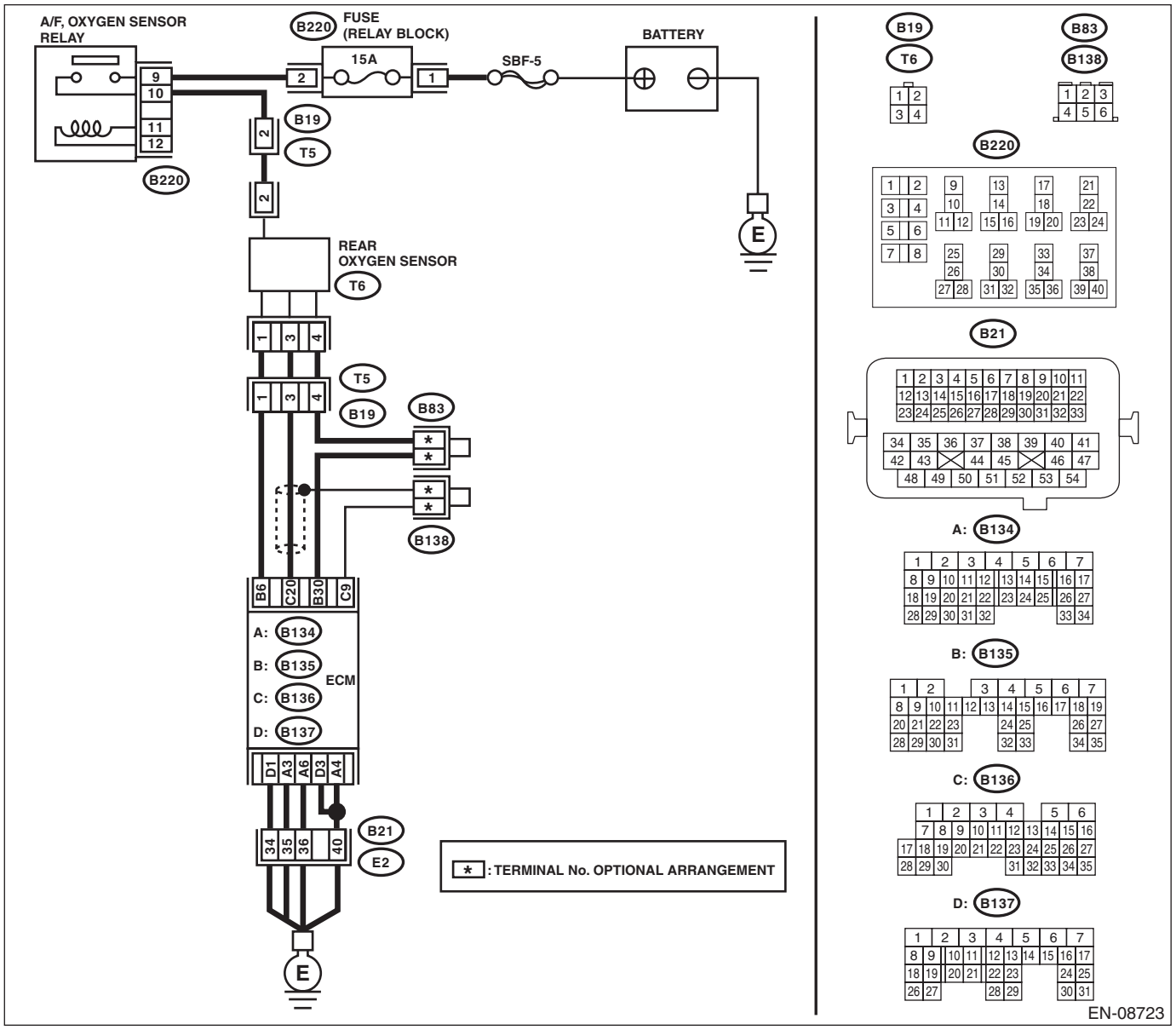
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Models without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



- Models with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



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. ***Connector & terminal*** ***(B136) No. 20 — (T6) No. 3:***	Is the resistance less than 1 Ω?	Go to step **2**.	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

	Step	Check	Yes	No
2	**CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR.** Measure the resistance between rear oxygen sensor connector and chassis ground. ***Connector & terminal*** ***(T6) No. 3 — 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 rear oxygen sensor connector.
3	**CHECK REAR OXYGEN SENSOR.** Measure the resistance between rear oxygen sensor terminals. ***Terminals*** ***No. 3 — No. 4***	Is the resistance less than 1 Ω?	Replace the rear oxygen sensor. <Ref. to FU(STI)-56, Rear Oxygen Sensor.> <Ref. to FU(w/o STI)-55, 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.

AJ: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(H4DOTC)(diag)-164, DTC P013A O2 SENSOR SLOW RESPONSE - RICH TO LEAN (BANK 1 SENSOR 2), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

AK: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(H4DOTC)(diag)-164, DTC P013A O2 SENSOR SLOW RESPONSE - RICH TO LEAN (BANK 1 SENSOR 2), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

AL: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(H4DOTC)(diag)-164, DTC P013A O2 SENSOR SLOW RESPONSE - RICH TO LEAN (BANK 1 SENSOR 2), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

AM:DTC P0140 O2 SENSOR CIRCUIT NO ACTIVITY DETECTED (BANK1 SENSOR2)

DTC DETECTING CONDITION:

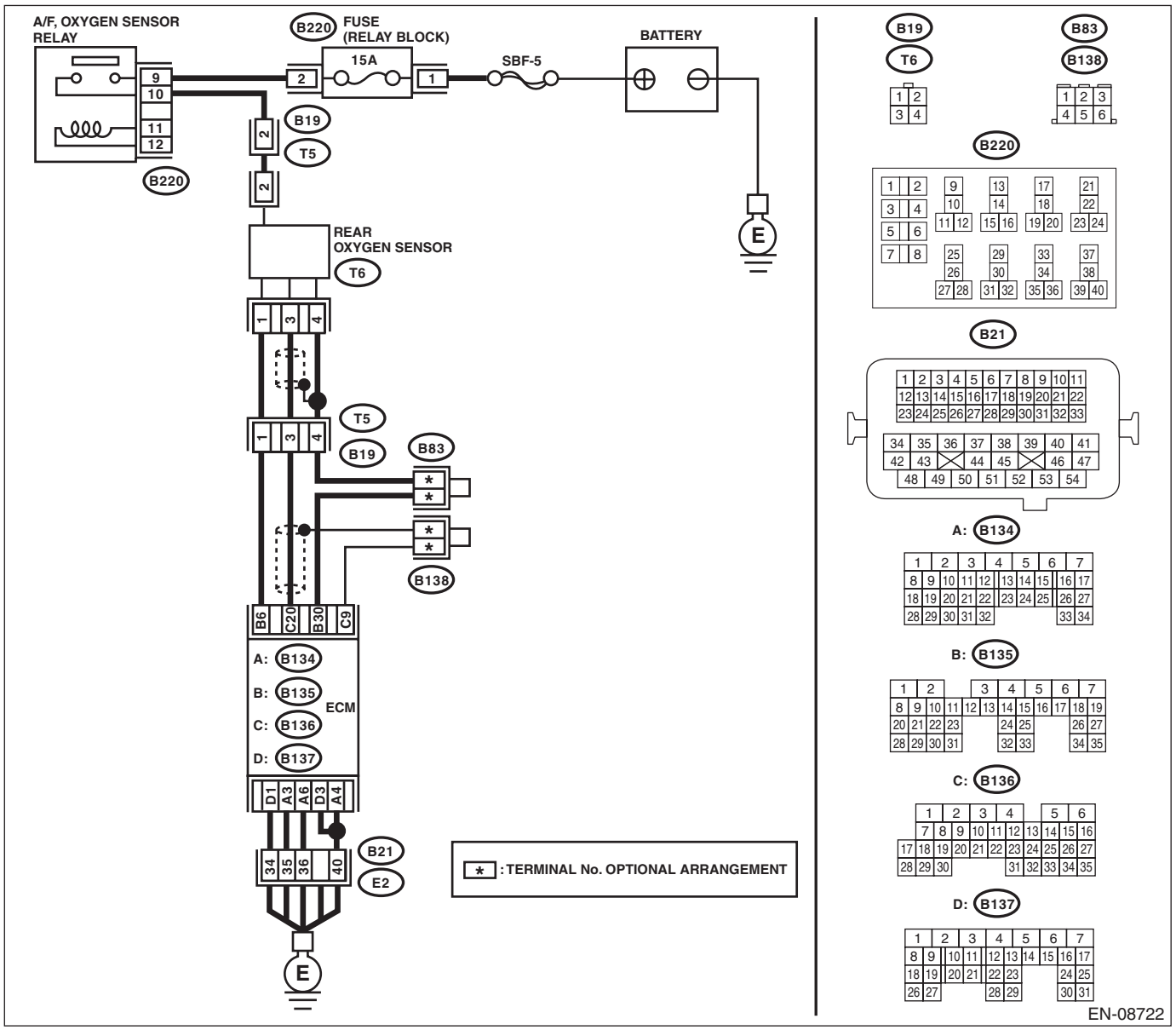
- Detected when 2 consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-84, DTC P0140 O2 SENSOR CIRCUIT NO ACTIVITY DETECTED (BANK1 SENSOR2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

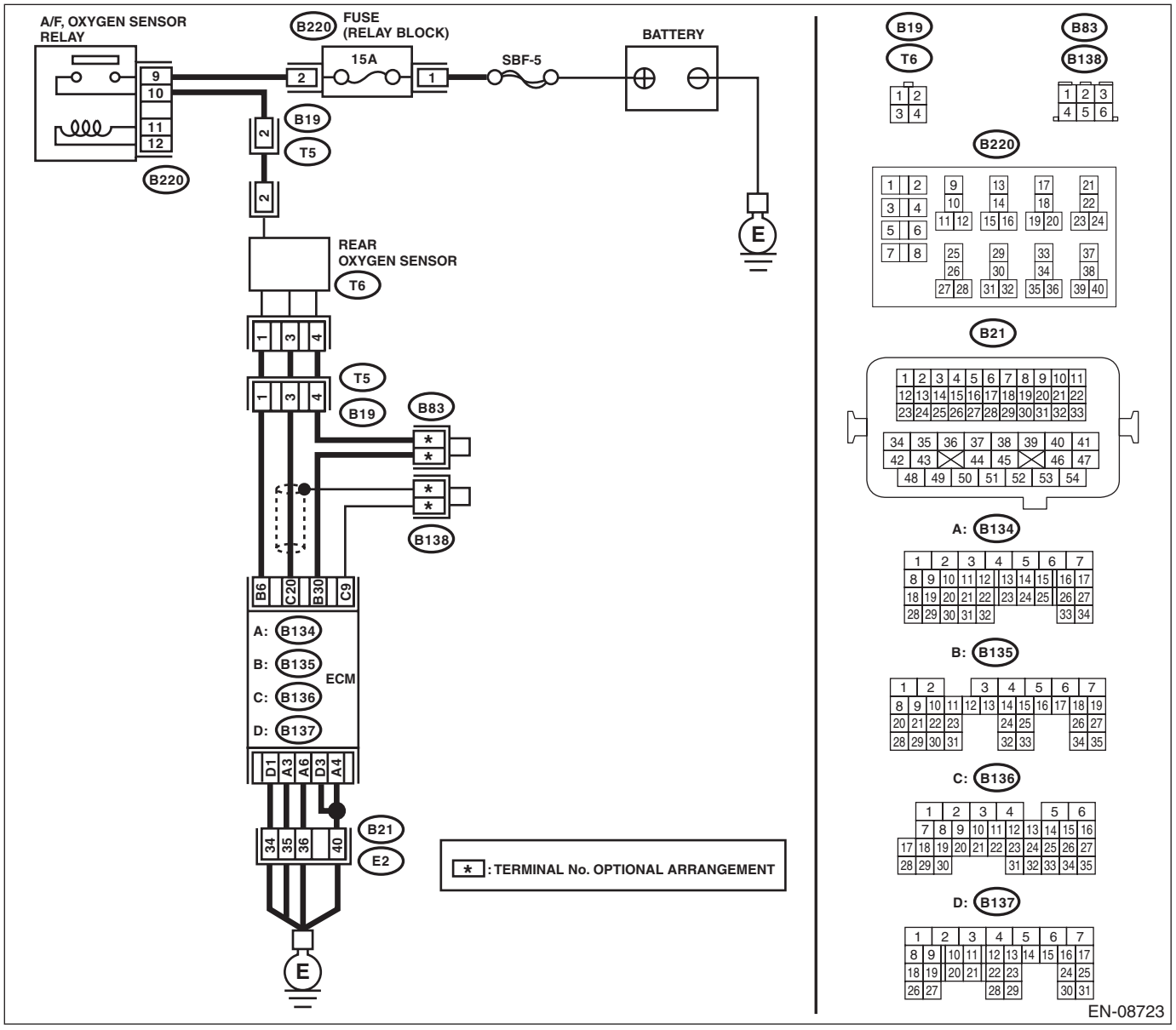
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Models without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



- Models with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



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 keep the engine speed at 3,000 rpm. (2 minutes maximum) 2) Read the value of «Rear O2 Sensor» 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(H4DOTC)(diag)-40, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value of «Rear O2 Sensor» 0.490 V or more?	Go to step **6**.	Go to step **2**.

	Step	Check	Yes	No
2	**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 «Rear O2 Sensor» 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(H4DOTC)(diag)-40, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value of «Rear O2 Sensor» 0.250 V or less?	Go to step **6**.	Go to step **3**.
3	**CHECK REAR OXYGEN SENSOR CONNECTOR AND COUPLING 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*** ***(B136) No. 20 — (T6) No. 3:*** ***(B135) No. 30 — (T6) 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 rear oxygen sensor connector • Poor contact of coupling connector
5	**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*** ***(T6) No. 3 (+) — Chassis ground (–):***	Is the voltage 0.2 — 0.5 V?	Replace the rear oxygen sensor. <Ref. to FU(STI)-56, Rear Oxygen Sensor.> <Ref. to FU(w/o STI)-55, 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
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(STI)-56, Rear Oxygen Sensor.> <Ref. to FU(w/o STI)-55, Rear Oxygen Sensor.>

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

For the diagnostic procedure, refer to DTC P0037. <Ref. to EN(H4DOTC)(diag)-113, DTC P0037 HO2S HEATER CONTROL CIRCUIT LOW (BANK 1 SENSOR 2), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

AO: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(H4DOTC)-88, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

	Step	Check	Yes	No
1	**CHECK EXHAUST SYSTEM.** NOTE: Check the following items. • Loose installation of front portion of exhaust pipe onto cylinder heads • Loose connection between front exhaust pipe and front catalytic converter • Damage of exhaust pipe resulting in a hole	Is there any fault in exhaust system?	Repair the exhaust system.	Replace the front oxygen (A/F) sensor. <Ref. to FU(STI)-54, Front Oxygen (A/F) Sensor.> <Ref. to FU(w/o STI)-53, Front Oxygen (A/F) Sensor.>

AP: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(H4DOTC)(diag)-170, DTC P014C O2 SENSOR SLOW RESPONSE - RICH TO LEAN (BANK 1 SENSOR 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

AQ: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(H4DOTC)(diag)-170, DTC P014C O2 SENSOR SLOW RESPONSE - RICH TO LEAN (BANK 1 SENSOR 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

AR: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(H4DOTC)(diag)-170, DTC P014C O2 SENSOR SLOW RESPONSE - RICH TO LEAN (BANK 1 SENSOR 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

AS:DTC P0171 SYSTEM TOO LEAN (BANK 1)

For the diagnostic procedure, refer to DTC P0172. <Ref. to EN(H4DOTC)(diag)-171, DTC P0172 SYSTEM TOO RICH (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

AT:DTC P0172 SYSTEM TOO RICH (BANK 1)

DTC DETECTING CONDITION:

- Detected when 2 consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-99, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

	Step	Check	Yes	No
1	**CHECK EXHAUST SYSTEM.**	Are there holes or loose bolts on exhaust system?	Repair the exhaust system.	Go to step **2**.
2	**CHECK AIR INTAKE SYSTEM.**	Are there holes, loose bolts or disconnection of hose on air intake system?	Repair the air intake system.	Go to step **3**.
3	**CHECK FUEL PRESSURE.** **WARNING:** **Place "NO OPEN FLAMES" signs near the working area.** **CAUTION:** **Be careful not to spill fuel.** Measure the fuel pressure while disconnecting pressure regulator vacuum hose from intake manifold. <Ref. to ME(STI)-25, INSPECTION, Fuel Pressure.> <Ref. to ME(w/o STI)-24, INSPECTION, Fuel Pressure.> **CAUTION:** **Release fuel pressure before removing the fuel pressure gauge.** NOTE: If fuel pressure does not increase, squeeze the fuel return hose 2 to 3 times, then measure fuel pressure again.	Is the measured value 284 — 314 kPa (2.9 — 3.2 kg/cm^2, 41 — 46 psi)?	Go to step **4**.	Check the fuel pump and fuel delivery line. • Models without SI-DRIVE <Ref. to FU(w/o STI)-79, INSPECTION, Fuel Pump.> <Ref. to FU(w/o STI)-93, INSPECTION, Fuel Delivery, Return and Evaporation Lines.> • Models with SI-DRIVE <Ref. to FU(STI)-81, INSPECTION, Fuel Pump.> <Ref. to FU(STI)-97, INSPECTION, Fuel Delivery, Return and Evaporation Lines.>

	Step	Check	Yes	No
4	**CHECK FUEL PRESSURE.** After connecting the pressure regulator vacuum hose, measure fuel pressure. <Ref. to ME(STI)-25, INSPECTION, Fuel Pressure.> <Ref. to ME(w/o STI)-24, INSPECTION, Fuel Pressure.> **CAUTION:** **Release fuel pressure before removing the fuel pressure gauge.** NOTE: • If fuel pressure does not increase, squeeze fuel return hose 2 to 3 times, then measure fuel pressure again. • If the measured value at this step is out of specification, check or replace pressure regulator and pressure regulator vacuum hose.	Is the measured value 230 — 260 kPa (2.4 — 2.7 kg/cm^2, 33 — 38 psi)?	Go to step **5**.	Check the fuel pump and fuel delivery line. • Models without SI-DRIVE <Ref. to FU(w/o STI)-79, INSPECTION, Fuel Pump.> <Ref. to FU(w/o STI)-93, INSPECTION, Fuel Delivery, Return and Evaporation Lines.> • Models with SI-DRIVE <Ref. to FU(STI)-81, INSPECTION, Fuel Pump.> <Ref. to FU(STI)-97, INSPECTION, Fuel Delivery, Return and Evaporation Lines.>
5	**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(H4DOTC)(diag)-40, 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 **6**.	Replace the engine coolant temperature sensor. <Ref. to FU(STI)-34, Engine Coolant Temperature Sensor.> <Ref. to FU(w/o STI)-34, Engine Coolant Temperature Sensor.>
6	**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) Place the shift lever in 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: • Subaru Select Monitor For detailed operation procedures, refer to “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.> • 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 **7**.	Replace the mass air flow and intake air temperature sensor. <Ref. to FU(STI)-42, Mass Air Flow and Intake Air Temperature Sensor.> <Ref. to FU(w/o STI)-42, Mass Air Flow and Intake Air Temperature Sensor.>

	Step	Check	Yes	No
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) Place the shift lever in neutral position. 3) Turn the A/C switch to OFF. 4) Turn all the accessory switches to OFF. 5) Open the front hood. 6) Measure the ambient temperature. 7) Read the value of «Intake Air 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(H4DOTC)(diag)-40, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Subtract ambient temperature from «Intake Air Temp.». Is the obtained value –10 — 50°C (–18 — 90°F)?	Repair the poor contact of ECM connector.	Check the mass air flow and intake air temperature sensor. <Ref. to FU(STI)-42, Mass Air Flow and Intake Air Temperature Sensor.> <Ref. to FU(w/o STI)-42, Mass Air Flow and Intake Air Temperature Sensor.>

AU:DTC P0201 INJECTOR #1

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-100, DTC P0201 INJECTOR #1, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

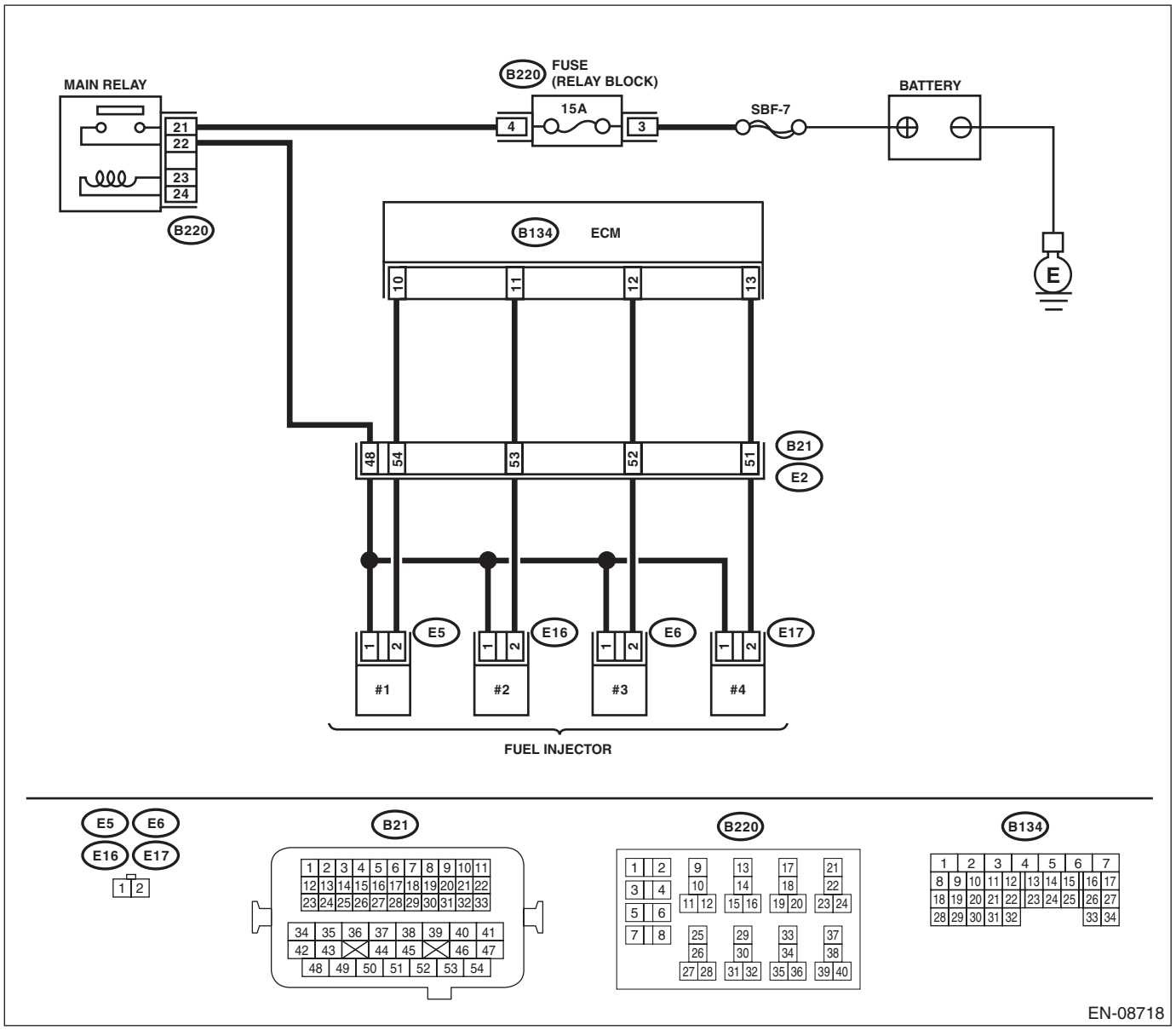
- Improper idling
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK POWER SUPPLY TO FUEL INJECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from fuel injector. 3) Turn the ignition switch to ON. 4) Measure the voltage between fuel injector connector and the engine ground. ***Connector & terminal*** ***DTC P0201; (E5) No. 1 (+) — Engine ground (–):*** ***DTC P0202; (E16) No. 1 (+) — Engine ground (–):*** ***DTC P0203; (E6) No. 1 (+) — Engine ground (–):*** ***DTC P0204; (E17) 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 fuel injector connector • Poor contact of main relay connector • Poor contact of coupling connector
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 fuel injector connector and engine ground. ***Connector & terminal*** ***DTC P0201; (E5) No. 2 — Engine ground:*** ***DTC P0202; (E16) No. 2 — Engine ground:*** ***DTC P0203; (E6) No. 2 — Engine ground:*** ***DTC P0204; (E17) No. 2 — 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 fuel injector connector.
3	**CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR.** Measure the resistance of harness between ECM connector and fuel injector connector. ***Connector & terminal*** ***DTC P0201; (B134) No. 10 — (E5) No. 2:*** ***DTC P0202; (B134) No. 11 — (E16) No. 2:*** ***DTC P0203; (B134) No. 12 — (E6) No. 2:*** ***DTC P0204; (B134) No. 13 — (E17) No. 2:***	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 fuel injector connector • Poor contact of coupling connector
4	**CHECK FUEL INJECTOR.** Measure the resistance between fuel injector terminals on the corresponding cylinder. ***Terminals*** ***No. 1 — No. 2:***	Is the resistance 5 — 20 Ω?	Go to step **5**.	Replace the fuel injector. <Ref. to FU(STI)-45, Fuel Injector.> <Ref. to FU(w/o STI)-45, Fuel Injector.>
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**.

	Step	Check	Yes	No
6	**CHECK FUEL INJECTOR OPERATION.** 1) Connect all connectors. 2) Start the engine. 3) Check if the corresponding fuel injector emits operating sound. NOTE: Use a sound scope to check the operating sound.	Does the fuel injector emit operating sound?	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.	Repair the poor contact of fuel injector connector.

AV:DTC P0202 INJECTOR #2

NOTE:
For the diagnostic procedure, refer to DTC P0201. <Ref. to EN(H4DOTC)(diag)-174, DTC P0201 INJECTOR #1, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

AW:DTC P0203 INJECTOR #3

NOTE:
For the diagnostic procedure, refer to DTC P0201. <Ref. to EN(H4DOTC)(diag)-174, DTC P0201 INJECTOR #1, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

AX:DTC P0204 INJECTOR #4

NOTE:
For the diagnostic procedure, refer to DTC P0201. <Ref. to EN(H4DOTC)(diag)-174, DTC P0201 INJECTOR #1, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-102, DTC P0222 THROTTLE/PEDAL POSITION SENSOR/SWITCH “B” CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

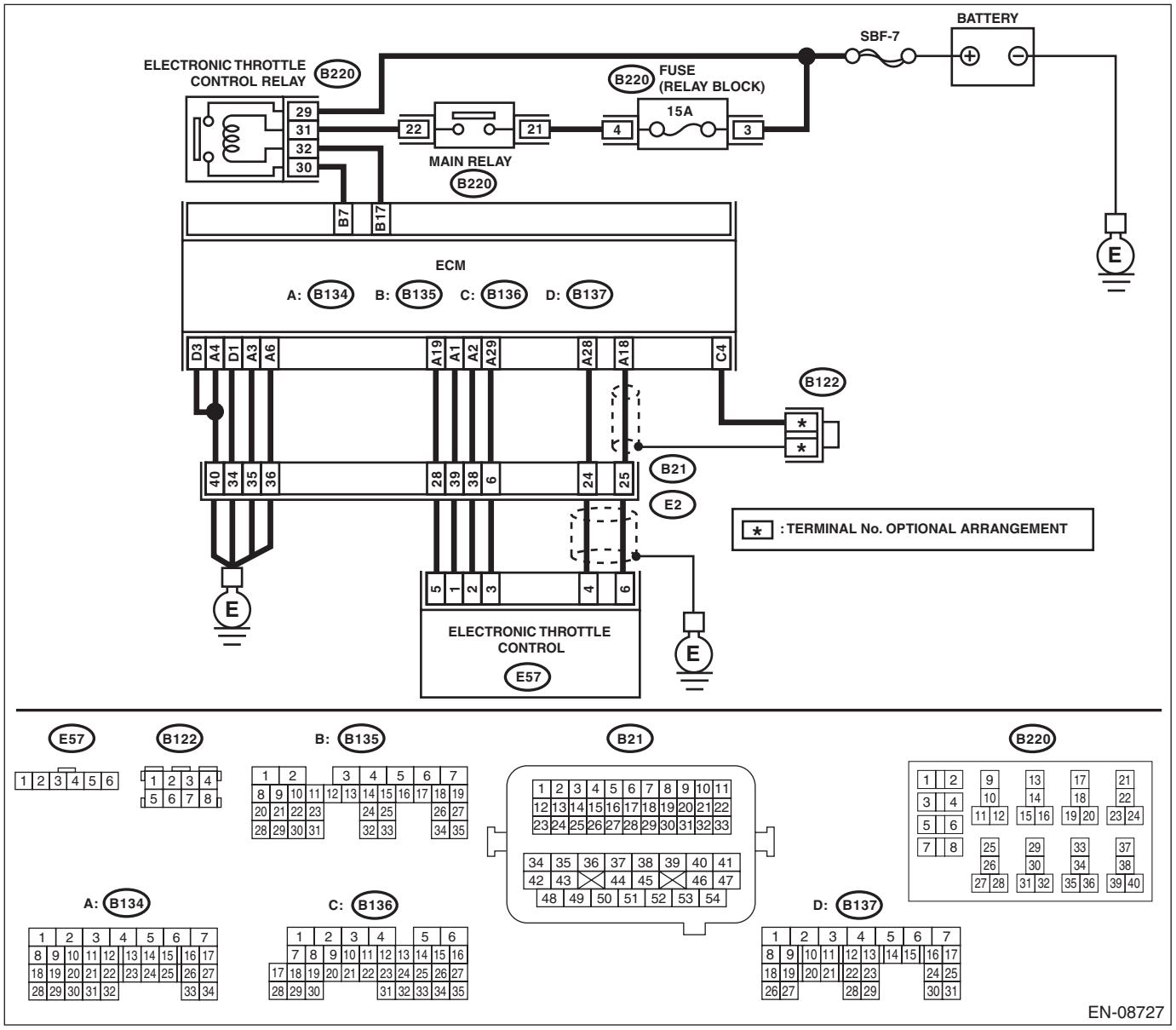
- Improper idling
- Poor driving performance
- Engine stalls.

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



Step		Check	Yes	No
1	**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 between ECM connector and chassis ground. ***Connector & terminal*** ***(B134) No. 19 — Chassis ground:*** ***(B134) No. 28 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **2**.	Repair the ground short circuit of harness between ECM connector and electronic throttle control connector.

	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 MΩ or more?	Replace the electronic throttle control. <Ref. to FU(STI)-15, Throttle Body.> <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(STI)-59, Engine Control Module (ECM).> <Ref. to FU(w/o STI)-57, Engine Control Module (ECM).>

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-104, 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.

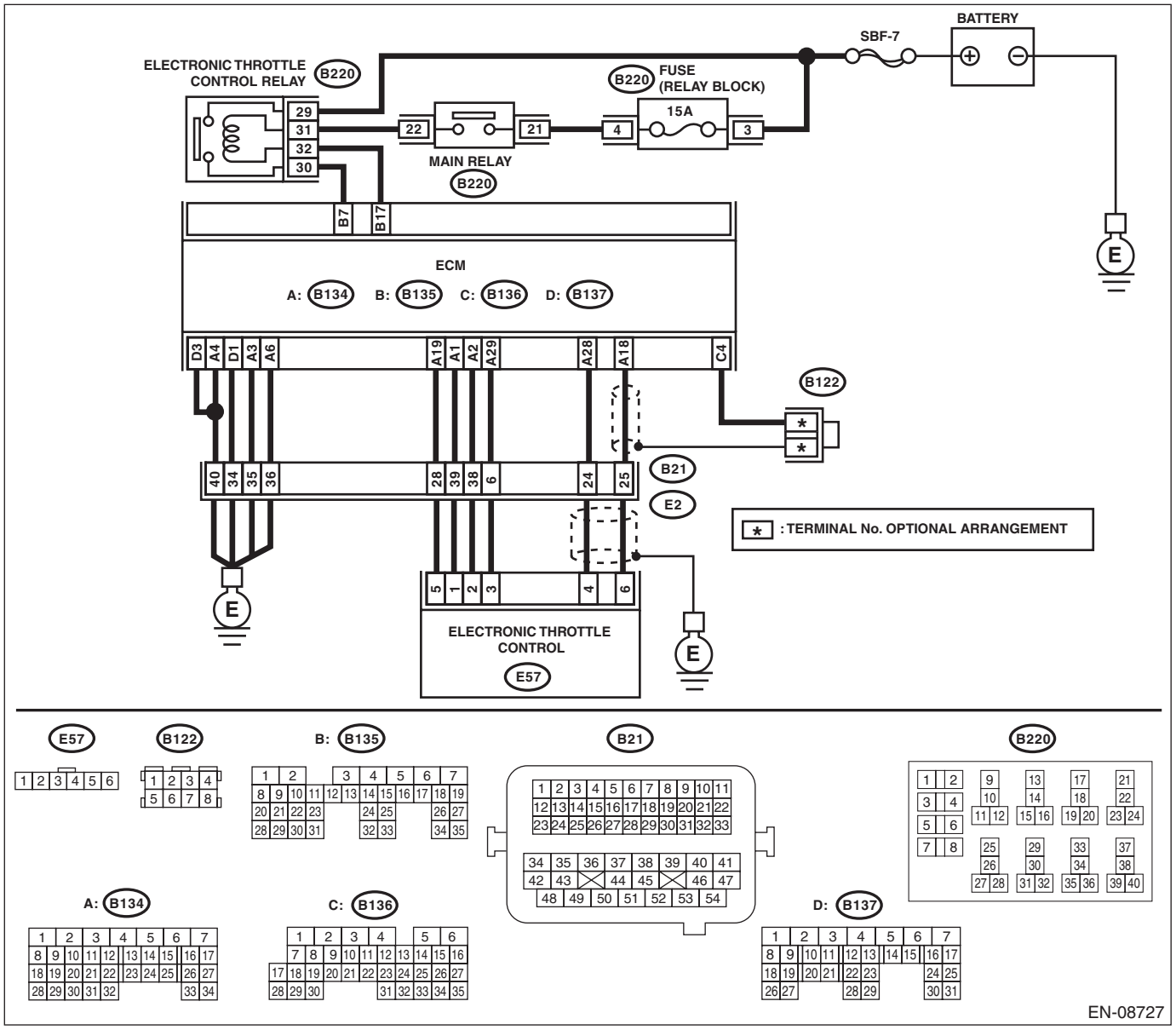
CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

• Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>

• Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



Step		Check	Yes	No
1	**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*** ***(B134) No. 28 — (E57) No. 4:*** ***(B134) No. 29 — (E57) No. 3:***	Is the resistance less than 1 Ω?	Go to step **2**.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and electronic throttle control connector • Poor contact of coupling connector

	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*** ***(B134) No. 19 — (B134) No. 28:***	Is the resistance 1 MΩ or more?	Repair the poor contact of electronic throttle control connector. Replace the electronic throttle control if defective. <Ref. to FU(STI)-15, Throttle Body.> <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.

BA:DTC P0230 FUEL PUMP PRIMARY CIRCUIT

DTC DETECTING CONDITION:

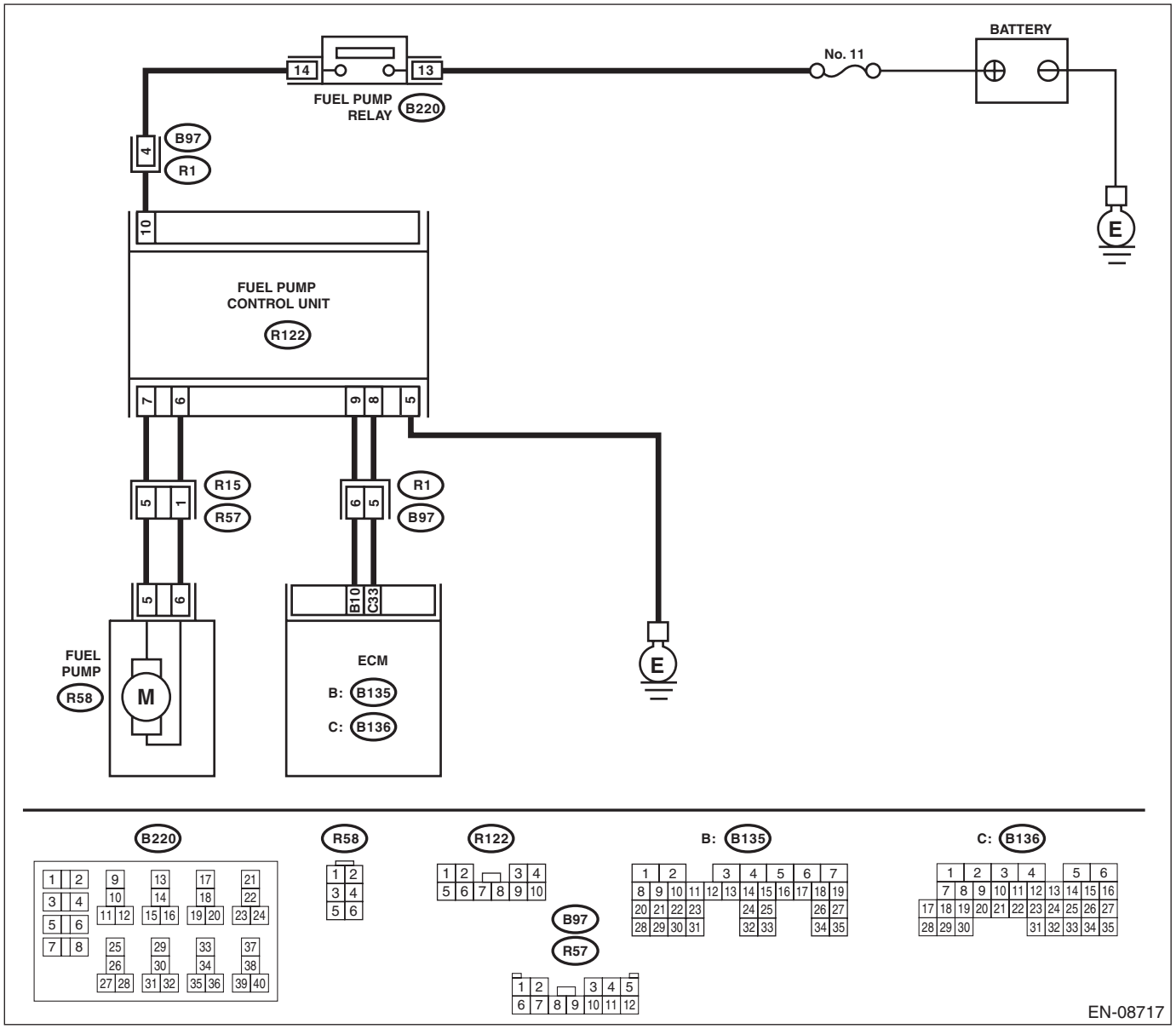
- Detected when 2 consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-106, DTC P0230 FUEL PUMP PRIMARY CIRCUIT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK POWER SUPPLY CIRCUIT TO FUEL PUMP CONTROL UNIT.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from fuel pump control unit. 3) Turn the ignition switch to ON. 4) Measure the voltage between fuel pump control unit connector and chassis ground. ***Connector & terminal*** ***(R122) No. 10 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **2**.	Repair the power supply circuit. NOTE: In this case, repair the following item: • 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 relay connector • Poor contact of coupling connector
2	**CHECK GROUND CIRCUIT OF FUEL PUMP CONTROL UNIT.** 1) Turn the ignition switch to OFF. 2) Measure the resistance of harness between fuel pump control unit connector and chassis ground. ***Connector & terminal*** ***(R122) No. 5 — Chassis ground:***	Is the resistance less than 5 Ω?	Go to step **3**.	Repair the open circuit in harness between fuel pump control unit connector and chassis ground.
3	**CHECK HARNESS BETWEEN FUEL PUMP CONTROL UNIT AND FUEL PUMP CONNECTOR.** 1) Disconnect the connector from fuel pump. 2) Measure the resistance of harness between fuel pump control unit and fuel pump connector. ***Connector & terminal*** ***(R122) No. 7 — (R58) No. 5:*** ***(R122) No. 6 — (R58) No. 6:***	Is the resistance less than 1 Ω?	Go to step **4**.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between fuel pump control unit connector and fuel pump connector • Poor contact of coupling connector
4	**CHECK HARNESS BETWEEN FUEL PUMP CONTROL UNIT AND FUEL PUMP CONNECTOR.** Measure the resistance between fuel pump control unit connector and chassis ground. ***Connector & terminal*** ***(R122) No. 7 — Chassis ground:*** ***(R122) No. 6 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **5**.	Repair the short circuit to ground in harness between fuel pump control unit connector and fuel pump connector.
5	**CHECK HARNESS BETWEEN ECM AND FUEL PUMP CONTROL UNIT CONNECTOR.** 1) Disconnect the connector from ECM. 2) Measure the resistance of harness between ECM connector and fuel pump control unit connector. ***Connector & terminal*** ***(B135) No. 10 — (R122) No. 9:*** ***(B136) No. 33 — (R122) No. 8:***	Is the resistance less than 1 Ω?	Go to step **6**.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and fuel pump control unit connector • Poor contact of coupling connector

	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 chassis ground. ***Connector & terminal*** ***(R122) No. 9 — Chassis ground:*** ***(R122) No. 8 — Chassis ground:***	Is the resistance 1 MΩ 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(STI)-66, Fuel Pump Control Unit.> <Ref. to FU(w/o STI)-64, Fuel Pump Control Unit.>

BB:DTC P0244 TURBO/SUPER CHARGER WASTEGATE SOLENOID “A” RANGE/PERFORMANCE

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-108, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, 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(H4DOTC)(diag)-87, 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(STI)-52, Wastegate Control Solenoid Valve.> <Ref. to FU(w/o STI)-51, Wastegate Control Solenoid Valve.>

BC:DTC P0245 TURBO/SUPER CHARGER WASTEGATE SOLENOID “A” LOW

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-110, DTC P0245 TURBO/SUPER CHARGER WASTEGATE SOLENOID “A” LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

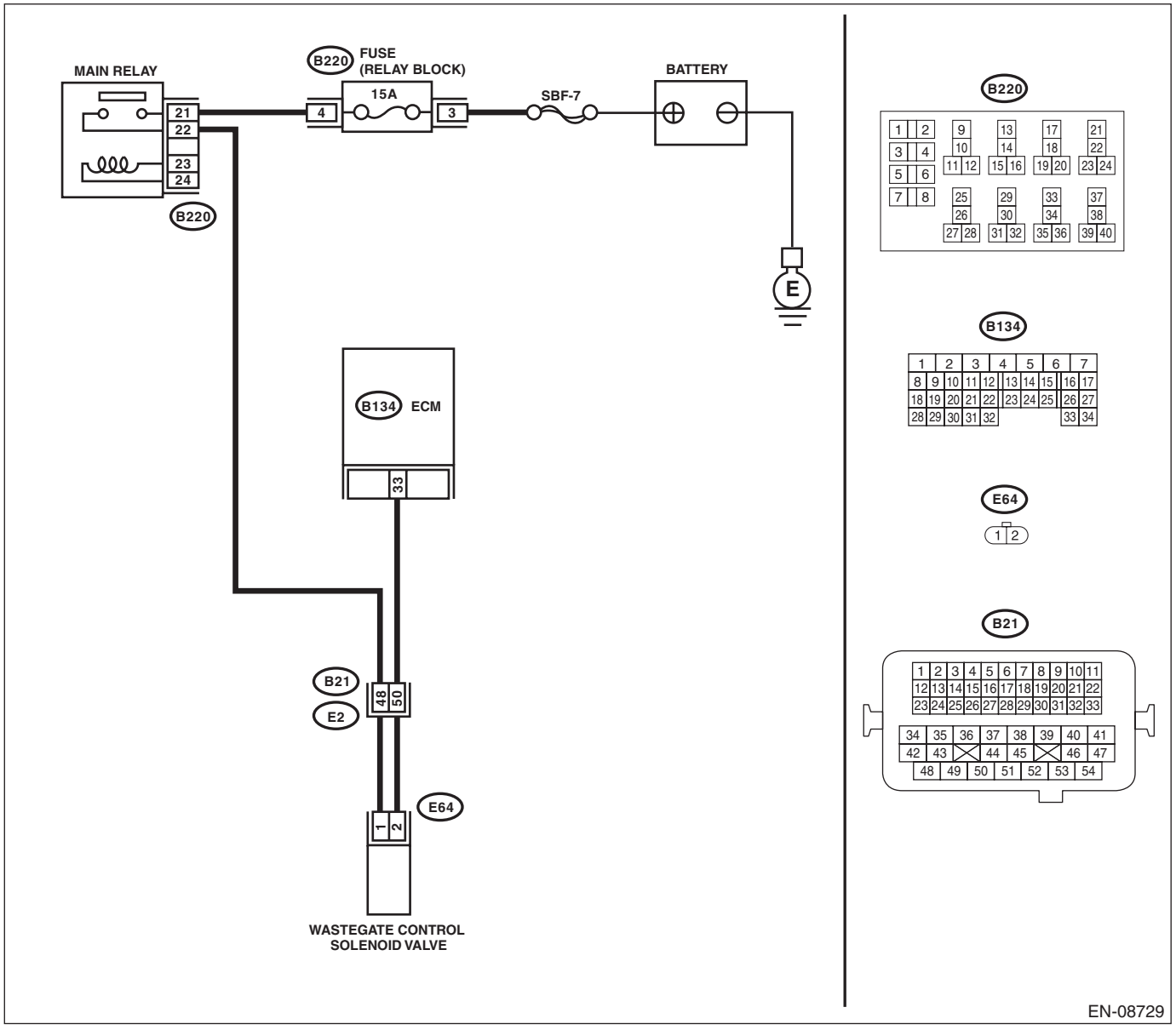
Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	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 chassis ground. ***Connector & terminal*** ***(B134) No. 33 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **2**.	Go to step **3**.
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 open or short circuit of harness or temporary poor contact of connector 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. ***Connector & terminal*** ***(E64) 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 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. ***Connector & terminal*** ***(E64) No. 2 — Engine ground:***	Is the resistance 1 MΩ 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. ***Connector & terminal*** ***(B134) No. 33 — (E64) 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: • Open circuit of harness between ECM connector and wastegate control solenoid valve connector • Poor contact of coupling connector

	Step	Check	Yes	No
6	**CHECK WASTEGATE CONTROL SOLENOID VALVE.** 1) Remove the wastegate control solenoid valve. 2) Measure the resistance between wastegate control solenoid valve terminals. ***Terminals*** ***No. 1 — No. 2:***	Is the resistance 10 — 100 Ω?	Repair poor contact of wastegate control solenoid valve connector.	Replace the wastegate control solenoid valve. <Ref. to FU(STI)-52, Wastegate Control Solenoid Valve.> <Ref. to FU(w/o STI)-51, Wastegate Control Solenoid Valve.>

BD:DTC P0246 TURBO/SUPER CHARGER WASTEGATE SOLENOID “A” HIGH

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-112, DTC P0246 TURBO/SUPER CHARGER WASTEGATE SOLENOID “A” HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

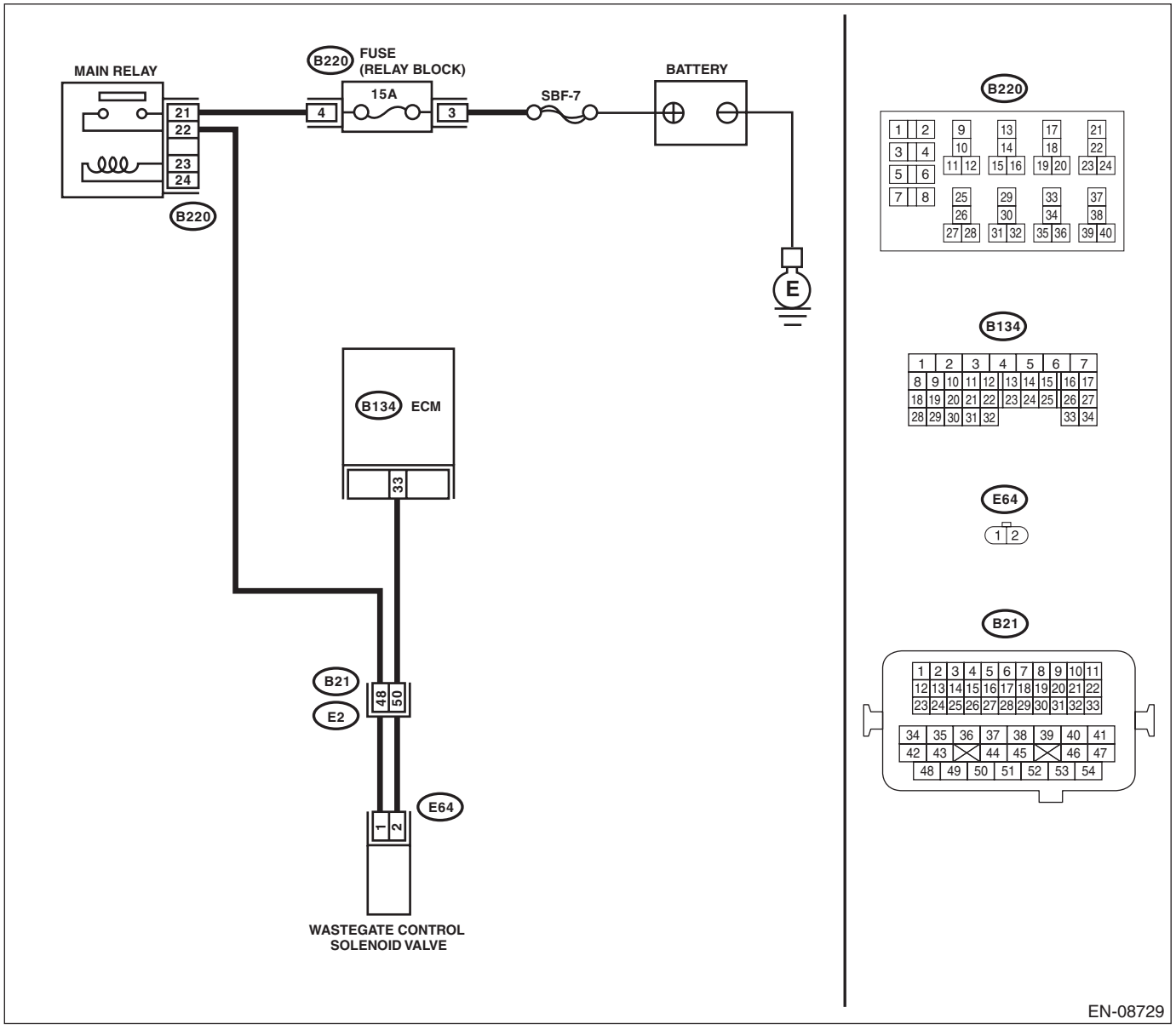
Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**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) Turn the ignition switch to ON. 4) Measure the voltage between ECM connector and chassis ground. ***Connector & terminal*** ***(B134) No. 33 (+) — Chassis ground (–):***	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**.
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(STI)-52, Wastegate Control Solenoid Valve.> <Ref. to FU(w/o STI)-51, Wastegate Control Solenoid Valve.>	Repair the poor contact of ECM connector.

BE:DTC P0300 RANDOM/MULTIPLE CYLINDER MISFIRE DETECTED

DTC DETECTING CONDITION:

- Detected when 2 consecutive driving cycles with fault occur.
- Immediately at fault recognition (A misfire which could damage catalyst occurs.)
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-113, DTC P0300 RANDOM/MULTIPLE CYLINDER MISFIRE DETECTED, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

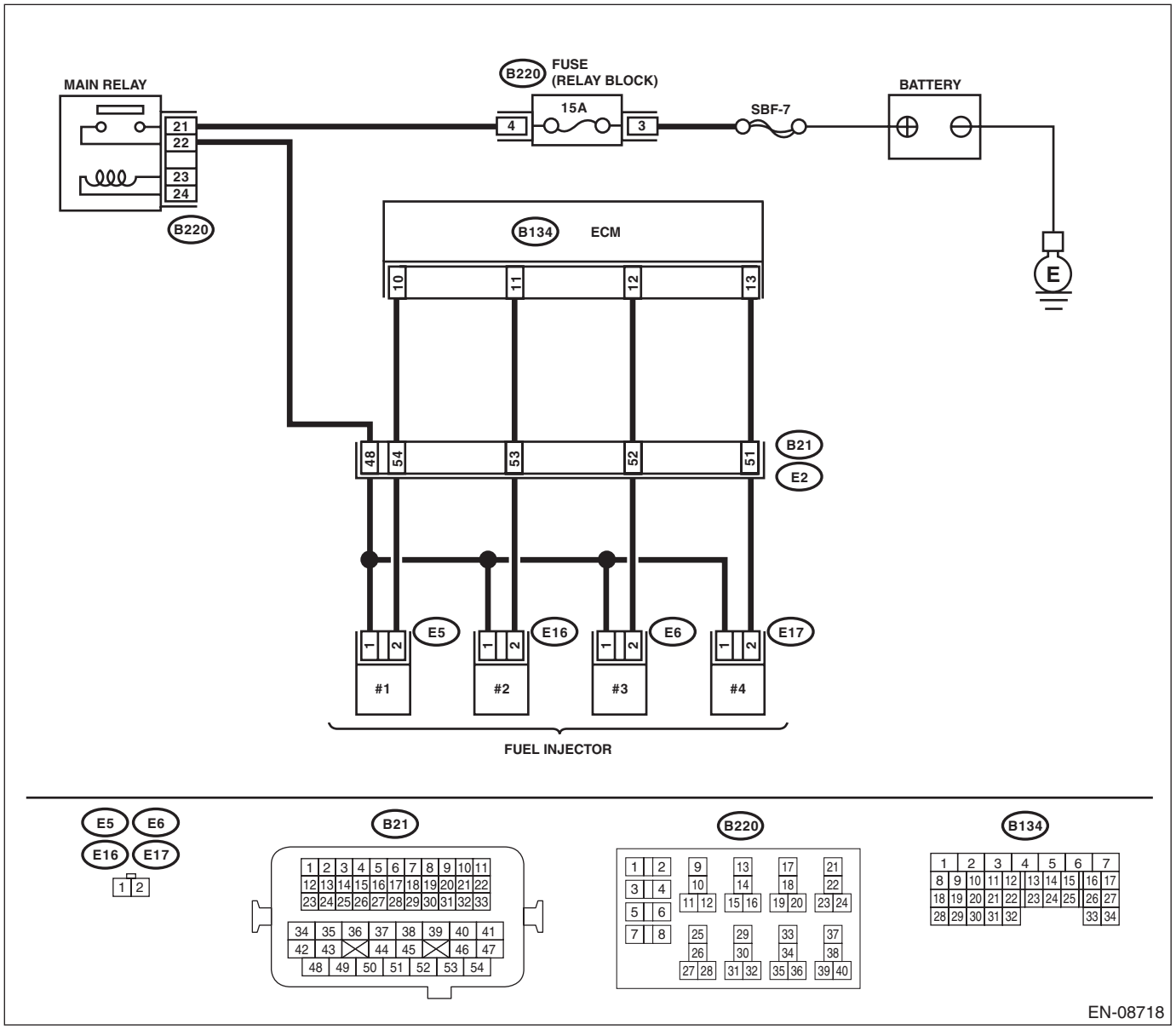
- Engine stalls.
- Improper idling
- Rough driving

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



Step		Check	Yes	No
1	**CHECK OUTPUT SIGNAL OF ECM.** 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground on all cylinders. ***Connector & terminal*** ***#1 (B137) No. 8 (+) — Chassis ground (–):*** ***#2 (B137) No. 9 (+) — Chassis ground (–):*** ***#3 (B137) No. 10 (+) — Chassis ground (–):*** ***#4 (B137) No. 11 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **6**.	Go to step **2**.

	Step	Check	Yes	No
2	**CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR.** 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. ***Connector & terminal*** ***#1 (E5) No. 1 — Engine ground:*** ***#2 (E16) No. 1 — Engine ground:*** ***#3 (E6) No. 1 — Engine ground:*** ***#4 (E17) No. 1 — Engine ground:***	Is the resistance 1 MΩ or more?	Go to step **3**.	Repair the short circuit to ground in harness between ECM connector and fuel injector connector.
3	**CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR.** Measure the resistance of harness between ECM and fuel injector connector on all cylinders. ***Connector & terminal*** ***#1 (B137) No. 8 — (E5) No. 1:*** ***#2 (B137) No. 9 — (E16) No. 1:*** ***#3 (B137) No. 10 — (E6) No. 1:*** ***#4 (B137) No. 11 — (E17) No. 1:***	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 fuel injector connector • Poor contact of coupling connector
4	**CHECK FUEL INJECTOR.** Measure the resistance between all fuel injector terminals. ***Terminals*** ***No. 1 — No. 2:***	Is the resistance 5 — 20 Ω?	Go to step **5**.	Replace the faulty fuel injector. <Ref. to FU(STI)-45, Fuel Injector.> <Ref. to FU(w/o STI)-45, Fuel Injector.>
5	**CHECK POWER SUPPLY LINE.** 1) Turn the ignition switch to ON. 2) Measure the voltage between all fuel injector connectors and the engine ground. ***Connector & terminal*** ***#1 (E5) No. 2 (+) — Engine ground (–):*** ***#2 (E16) No. 2 (+) — Engine ground (–):*** ***#3 (E6) No. 2 (+) — Engine ground (–):*** ***#4 (E17) No. 2 (+) — Engine ground (–):***	Is the voltage 10 V or more?	Repair the poor contact of all connectors in fuel injector circuit.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between the main relay connector and fuel injector connector on faulty cylinders • Poor contact of coupling connector • Poor contact of main relay connector
6	**CHECK HARNESS BETWEEN ECM AND FUEL INJECTOR CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from all fuel injectors. 3) Turn the ignition switch to ON. 4) Measure the voltage between ECM and chassis ground on all cylinders. ***Connector & terminal*** ***#1 (B137) No. 8 (+) — Chassis ground (–):*** ***#2 (B137) No. 9 (+) — Chassis ground (–):*** ***#3 (B137) No. 10 (+) — Chassis ground (–):*** ***#4 (B137) No. 11 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Repair the short circuit to power in harness between ECM connector and fuel injector connectors.	Go to step **7**.

	Step	Check	Yes	No
7	**CHECK FUEL INJECTOR.** 1) Turn the ignition switch to OFF. 2) Measure the resistance between all fuel injector terminals. ***Terminals*** ***No. 1 — No. 2:***	Is the resistance 5 — 20 Ω?	Go to step **8**.	Replace the faulty fuel injector. <Ref. to FU(STI)-45, Fuel Injector.> <Ref. to FU(w/o STI)-45, Fuel Injector.>
8	**CHECK INSTALLATION 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(STI)-37, Camshaft Position Sensor.> <Ref. to FU(STI)-35, Crankshaft Position Sensor.> <Ref. to FU(w/o STI)-37, Camshaft Position Sensor.> <Ref. to FU(w/o STI)-35, Crankshaft Position Sensor.>	Go to step **9**.
9	**CHECK CRANK SPROCKET.** Remove the timing belt cover.	Is the crank sprocket rusted or does it have broken teeth?	Replace the crank sprocket. <Ref. to ME(STI)-60, Crank Sprocket.><Ref. to ME(w/o STI)-58, Crank Sprocket.>	Go to step **10**.
10	**CHECK INSTALLATION CONDITION OF TIMING BELT.** Turn the crankshaft, and align alignment mark on crank sprocket with alignment mark on cylinder block. ST 499987500 CRANKSHAFT SOCKET	Is the timing belt dislocated from its proper position?	Repair the installation condition of timing belt. <Ref. to ME(STI)-50, Timing Belt.><Ref. to ME(w/o STI)-48, Timing Belt.>	Go to step **11**.
11	**CHECK FUEL LEVEL.**	Is the fuel meter indication higher than the “Lower” level?	Go to step **12**.	Refill the fuel so that the fuel meter indication is higher than the “Lower” level, and proceed to the next step. Go to step **12**.
12	**CHECK STATUS OF MALFUNCTION INDICATOR LIGHT.** 1) Clear the memory using the Subaru Select Monitor or general scan tool. <Ref. to EN(H4DOTC)(diag)-63, 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 **14**.	Go to step **13**.

Step		Check	Yes	No
13	**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
14	**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 **15**.
15	**CHECK ALL CYLINDERS.**	Is there a fault in any cylinder?	Repair or replace the faulty part of the faulty cylinder. NOTE: Check the following items. • Spark plug • Fuel injector • Ignition coil • Compression ratio • Skipping timing belt teeth	Go to DTC P0171. <Ref. to EN(H4DOTC)(diag)-170, DTC P0171 SYSTEM TOO LEAN (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BF:DTC P0301 CYLINDER 1 MISFIRE DETECTED

NOTE:
For the diagnostic procedure, refer to DTC P0304. <Ref. to EN(H4DOTC)(diag)-198, DTC P0304 CYLINDER 4 MISFIRE DETECTED, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BG:DTC P0302 CYLINDER 2 MISFIRE DETECTED

NOTE:
For the diagnostic procedure, refer to DTC P0304. <Ref. to EN(H4DOTC)(diag)-198, DTC P0304 CYLINDER 4 MISFIRE DETECTED, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BH:DTC P0303 CYLINDER 3 MISFIRE DETECTED

NOTE:
For the diagnostic procedure, refer to DTC P0304. <Ref. to EN(H4DOTC)(diag)-198, DTC P0304 CYLINDER 4 MISFIRE DETECTED, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BI: DTC P0304 CYLINDER 4 MISFIRE DETECTED

DTC DETECTING CONDITION:

- Detected when 2 consecutive driving cycles with fault occur.
- Immediately at fault recognition (A misfire which could damage catalyst occurs.)
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-123, DTC P0304 CYLINDER 4 MISFIRE DETECTED, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

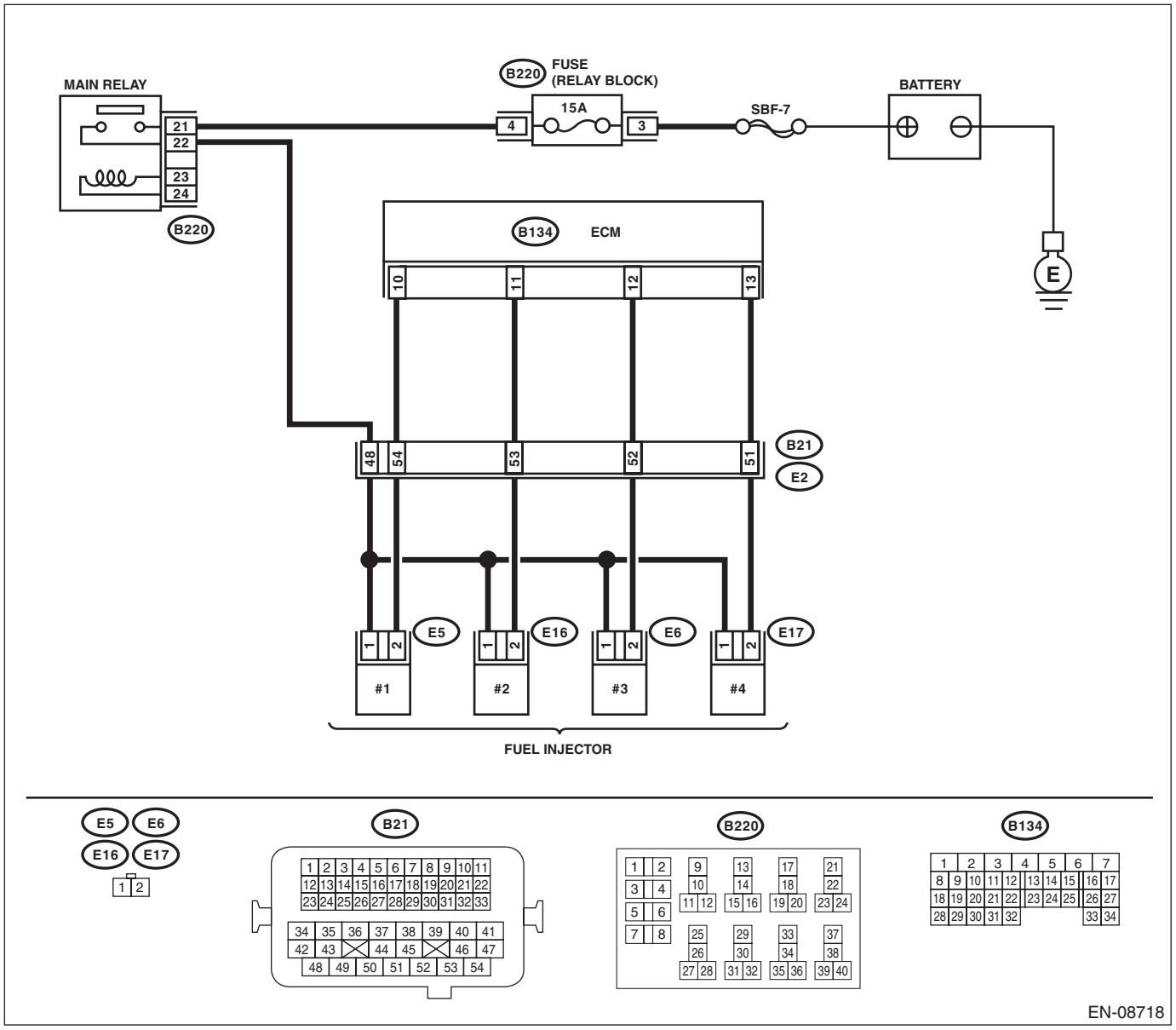
- Engine stalls.
- Improper idling
- Rough driving

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



Step		Check	Yes	No
1	**CHECK OUTPUT SIGNAL OF ECM.** 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground on faulty cylinders. ***Connector & terminal*** ***#1 (B134) No. 10 (+) — Chassis ground (–):*** ***#2 (B134) No. 11 (+) — Chassis ground (–):*** ***#3 (B134) No. 12 (+) — Chassis ground (–):*** ***#4 (B134) No. 13 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **6**.	Go to step **2**.

	Step	Check	Yes	No
2	**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. 2 — Engine ground:*** ***#2 (E16) No. 2 — Engine ground:*** ***#3 (E6) No. 2 — Engine ground:*** ***#4 (E17) No. 2 — 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 fuel injector connector.
3	**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 (B134) No. 10 — (E5) No. 2:*** ***#2 (B134) No. 11 — (E16) No. 2:*** ***#3 (B134) No. 12 — (E6) No. 2:*** ***#4 (B134) No. 13 — (E17) No. 2:***	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 fuel injector connector • Poor contact of coupling connector
4	**CHECK FUEL INJECTOR.** Measure the resistance between fuel injector terminals on faulty cylinder. ***Terminals*** ***No. 1 — No. 2:***	Is the resistance 5 — 20 Ω?	Go to step **5**.	Replace the faulty fuel injector. <Ref. to FU(STI)-45, Fuel Injector.> <Ref. to FU(w/o STI)-45, Fuel Injector.>
5	**CHECK POWER SUPPLY LINE.** 1) Turn the ignition switch to ON. 2) Measure the voltage between fuel injector connector of faulty cylinders and engine ground. ***Connector & terminal*** ***#1 (E5) No. 1 (+) — Engine ground (–):*** ***#2 (E16) No. 1 (+) — Engine ground (–):*** ***#3 (E6) No. 1 (+) — Engine ground (–):*** ***#4 (E17) No. 1 (+) — Engine ground (–):***	Is the voltage 10 V or more?	Repair the poor contact of all connectors in fuel injector circuit.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between the main relay connector and fuel injector connector on faulty cylinders • Poor contact of coupling connector • Poor contact of main relay connector

	Step	Check	Yes	No
6	**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) Turn the ignition switch to ON. 4) Measure the voltage between ECM and chassis ground on faulty cylinders. ***Connector & terminal*** ***#1 (B134) No. 10 (+) — Chassis ground (–):*** ***#2 (B134) No. 11 (+) — Chassis ground (–):*** ***#3 (B134) No. 12 (+) — Chassis ground (–):*** ***#4 (B134) No. 13 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Repair the short circuit to power in harness between ECM connector and fuel injector connectors.	Go to step **7**.
7	**CHECK FUEL INJECTOR.** 1) Turn the ignition switch to OFF. 2) Measure the resistance between fuel injector terminals on faulty cylinder. ***Terminals*** ***No. 1 — No. 2:***	Is the resistance 5 — 20 Ω?	Go to step **8**.	Replace the faulty fuel injector. <Ref. to FU(STI)-45, Fuel Injector.> <Ref. to FU(w/o STI)-45, Fuel Injector.>
8	**CHECK INSTALLATION 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(STI)-37, Camshaft Position Sensor.> <Ref. to FU(STI)-35, Crankshaft Position Sensor.> <Ref. to FU(w/o STI)-37, Camshaft Position Sensor.> <Ref. to FU(w/o STI)-35, Crankshaft Position Sensor.>	Go to step **9**.
9	**CHECK CRANK SPROCKET.** Remove the timing belt cover.	Is the crank sprocket rusted or does it have broken teeth?	Replace the crank sprocket. <Ref. to ME(STI)-60, Crank Sprocket.><Ref. to ME(w/o STI)-58, Crank Sprocket.>	Go to step **10**.
10	**CHECK INSTALLATION CONDITION OF TIMING BELT.** Turn the crankshaft, and align alignment mark on crank sprocket with alignment mark on cylinder block. ST 499987500 CRANKSHAFT SOCKET	Is the timing belt dislocated from its proper position?	Repair the installation condition of timing belt. <Ref. to ME(STI)-50, Timing Belt.><Ref. to ME(w/o STI)-48, Timing Belt.>	Go to step **11**.
11	**CHECK FUEL LEVEL.**	Is the fuel meter indication higher than the “Lower” level?	Go to step **12**.	Refill the fuel so that the fuel meter indication is higher than the “Lower” level, and proceed to the next step. Go to step **12**.

	Step	Check	Yes	No
12	**CHECK STATUS OF MALFUNCTION INDICATOR LIGHT.** 1) Clear the memory using the Subaru Select Monitor or general scan tool. <Ref. to EN(H4DOTC)(diag)-63, 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 **14**.	Go to step **13**.
13	**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
14	**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 **15**.
15	**CHECK MISFIRE SYMPTOM.** 1) Turn the ignition switch to ON. 2) Check for DTC. <Ref. to EN(H4DOTC)(diag)-48, Read Diagnostic Trouble Code (DTC).>	Does the Subaru Select Monitor or general scan tool indicate only one DTC?	Go to step **18**.	Go to step **16**.
16	**CHECK DTC.**	Is DTC P0301 and P0303 displayed on the Subaru Select Monitor or general scan tool?	Go to step **19**.	Go to step **17**.
17	**CHECK DTC.**	Is DTC P0302 and P0304 displayed on the Subaru Select Monitor or general scan tool?	Go to step **20**.	Go to step **21**.
18	**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(H4DOTC)(diag)-170, DTC P0171 SYSTEM TOO LEAN (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Step		Check	Yes	No
19	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 belt teeth	Go to DTC P0171. <Ref. to EN(H4DOTC)(diag)-170, DTC P0171 SYSTEM TOO LEAN (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
20	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 belt teeth	Go to DTC P0171. <Ref. to EN(H4DOTC)(diag)-170, DTC P0171 SYSTEM TOO LEAN (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
21	CYLINDER AT RANDOM.	Is the engine idle rough?	Go to DTC P0171. <Ref. to EN(H4DOTC)(diag)-170, DTC P0171 SYSTEM TOO LEAN (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>	Repair or replace faulty parts. NOTE: Check the following items. • Spark plug • Ignition coil • Fuel injector • Compression ratio

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-124, DTC P0327 KNOCK SENSOR 1 CIRCUIT LOW (BANK 1 OR SINGLE SENSOR), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

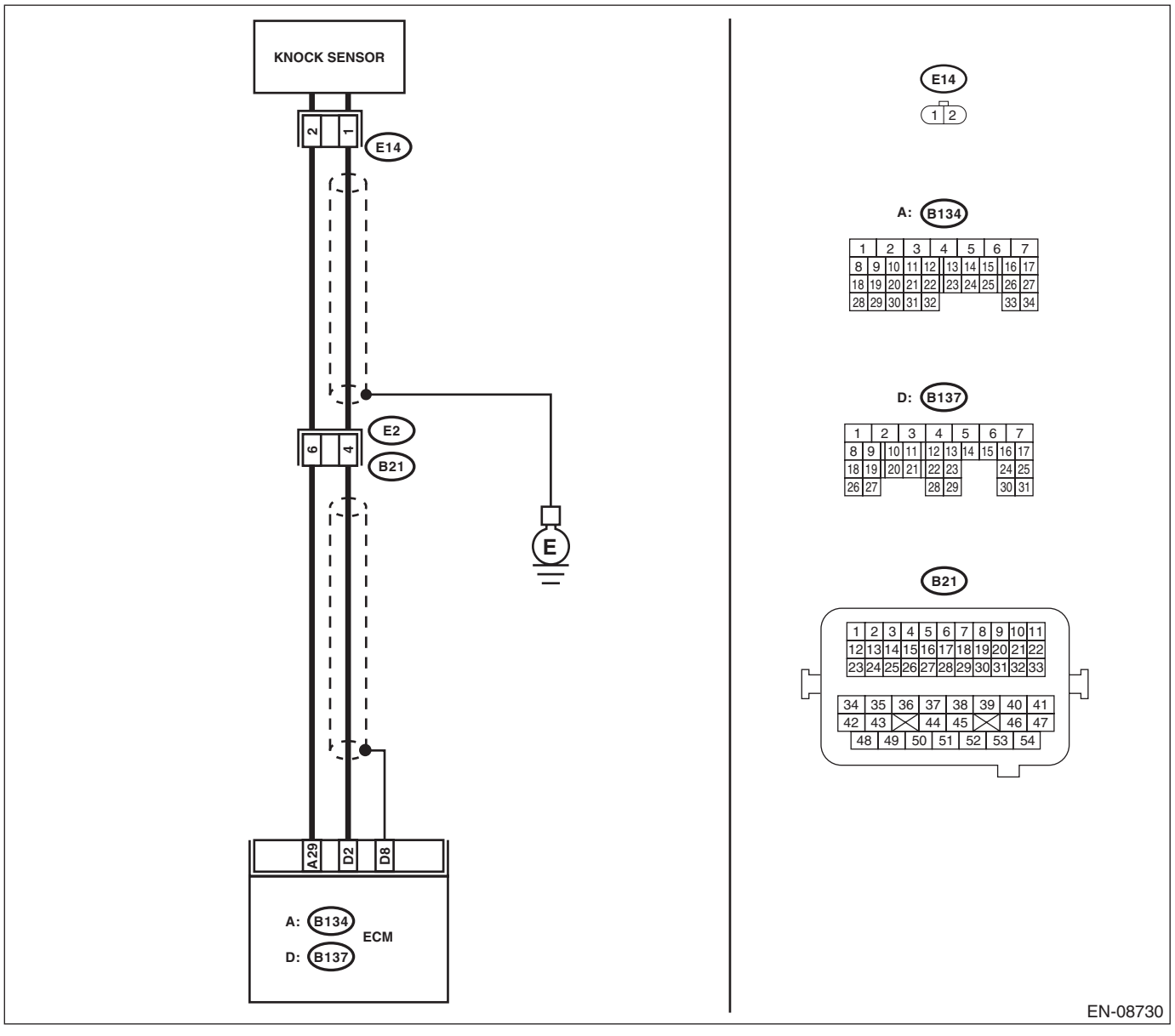
- Poor driving performance
- Knocking occurs

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, 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. ***Connector & terminal*** ***(B137) No. 2 — (B134) No. 29:***	Is the resistance less than 500 kΩ?	Go to step **2**.	Go to step **3**.
2	**CHECK KNOCK SENSOR.** 1) Disconnect the connector from the knock sensor. 2) Measure the resistance between knock sensor connectors. ***Terminals*** ***No. 1 — No. 2:***	Is the resistance less than 500 kΩ?	Replace the knock sensor. <Ref. to FU(STI)-40, Knock Sensor.> <Ref. to FU(w/o STI)-39, Knock Sensor.>	Repair the short circuit to ground in harness between ECM connector and knock sensor connector. NOTE: The harness between both connectors are shielded. Remove the shield and repair the short circuit of harness.
3	**CHECK INPUT SIGNAL OF ECM.** 1) Connect the connector to ECM. 2) Turn the ignition switch to ON. 3) Measure the voltage between ECM connector and chassis ground. ***Connector & terminal*** ***(B137) No. 2 (+) — Chassis ground (–):***	Is the voltage 2 V or more?	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.	Repair the short circuit to ground in harness between ECM connector and knock sensor connector. NOTE: The harness between both connectors are shielded. Remove the shield and repair the short circuit of harness.

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-126, DTC P0328 KNOCK SENSOR 1 CIRCUIT HIGH (BANK 1 OR SINGLE SENSOR), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

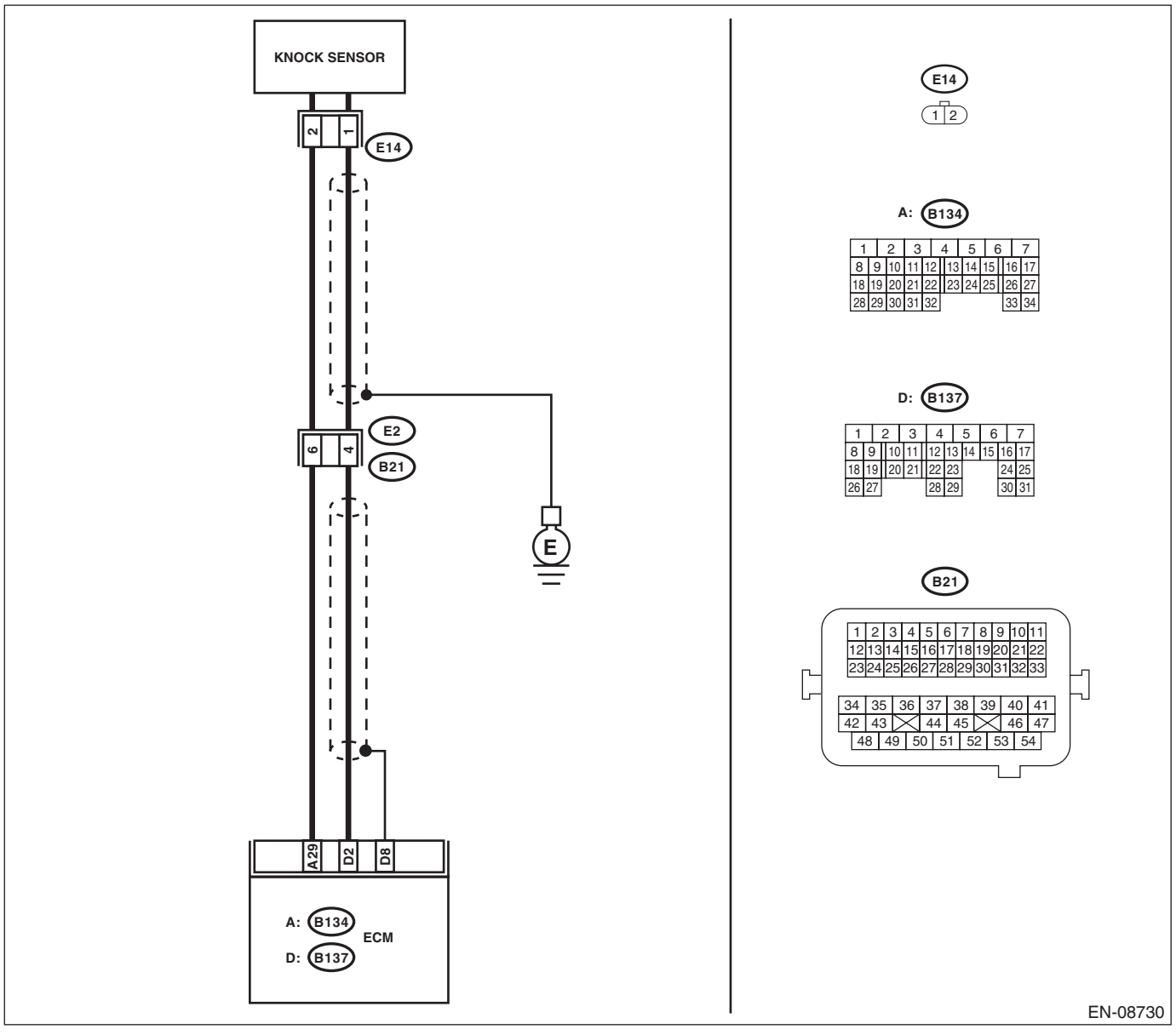
- Poor driving performance
- Knocking occurs

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, 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. ***Connector & terminal*** ***(B137) No. 2 — (B134) No. 29:***	Is the resistance 600 kΩ or more?	Go to step **2**.	Repair the poor contact of ECM connector.
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(STI)-40, Knock Sensor.> <Ref. to FU(w/o STI)-39, Knock Sensor.>	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and knock sensor connector • Poor contact of knock sensor connector • Poor contact of coupling connector

BL:DTC P0335 CRANKSHAFT POSITION SENSOR “A” CIRCUIT

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-128, DTC P0335 CRANKSHAFT POSITION SENSOR “A” CIRCUIT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

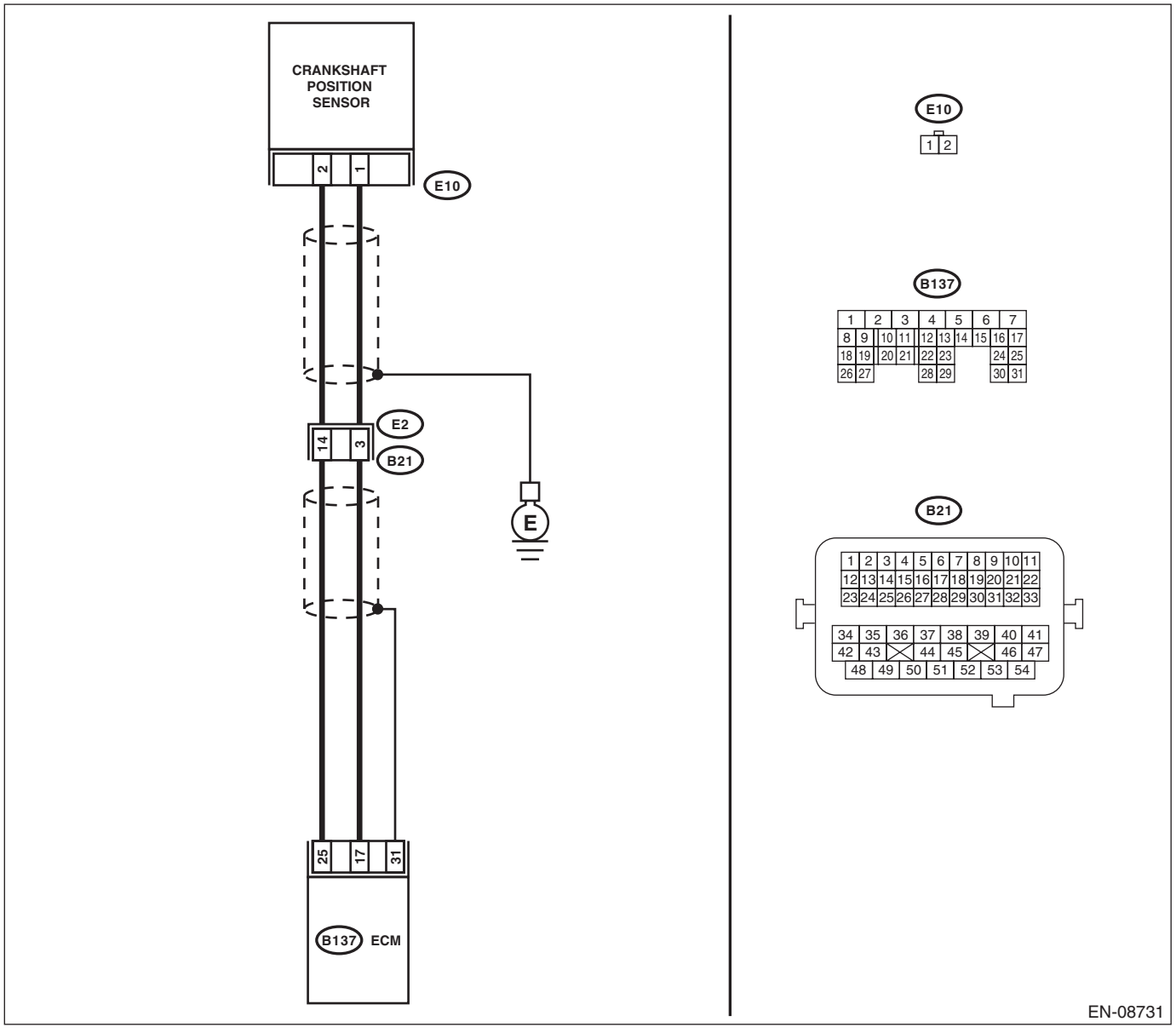
- Engine stalls.
- Failure of engine to start

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK CONDITION OF CRANKSHAFT POSITION SENSOR.**	Is the crankshaft position sensor installation bolt tightened securely?	Go to step **2**.	Tighten the crankshaft position sensor installation bolt securely. <Ref. to FU(STI)-35, Crankshaft Position Sensor.><Ref. to FU(w/o STI)-35, Crankshaft Position Sensor.>
2	**CHECK CRANKSHAFT POSITION SENSOR.** 1) Turn the ignition switch to OFF. 2) Remove the crankshaft position sensor. 3) Measure the resistance between terminals of crankshaft position sensor. ***Terminals*** ***No. 1 — No. 2:***	Is the resistance between 1 and 4 kΩ?	Go to step **3**.	Replace the crankshaft position sensor. <Ref. to FU(STI)-35, Crankshaft Position Sensor.><Ref. to FU(w/o STI)-35, Crankshaft Position Sensor.>
3	**CHECK HARNESS BETWEEN ECM AND CRANKSHAFT POSITION SENSOR CONNECTOR.** 1) Disconnect the connector from ECM. 2) Measure the resistance of harness between ECM connector and crankshaft position sensor connector. ***Connector & terminal*** ***(B137) No. 17 — (E10) No. 1:*** ***(B137) No. 25 — (E10) No. 2:***	Is the resistance less than 1 Ω?	Repair the poor contact of ECM and crankshaft position sensor connector.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and crankshaft position sensor connector • Poor contact of coupling connector

BM: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(H4DOTC)-130, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, 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(STI)-35, Crankshaft Position Sensor.><Ref. to FU(w/o STI)-35, Crankshaft Position Sensor.>
2	**CHECK CRANK SPROCKET.** Remove the timing belt cover.	Are crank sprocket teeth cracked or damaged?	Replace the crank sprocket. <Ref. to ME(STI)-60, Crank Sprocket.><Ref. to ME(w/o STI)-58, Crank Sprocket.>	Go to step **3**.
3	**CHECK INSTALLATION CONDITION OF TIMING BELT.** Turn the crankshaft, and align alignment mark on crank sprocket with alignment mark on cylinder block. ST 499987500 CRANKSHAFT SOCKET	Is the timing belt dislocated from its proper position?	Repair the installation condition of timing belt. <Ref. to ME(STI)-50, Timing Belt.><Ref. to ME(w/o STI)-48, Timing Belt.>	Replace the crankshaft position sensor. <Ref. to FU(STI)-35, Crankshaft Position Sensor.><Ref. to FU(w/o STI)-35, Crankshaft Position Sensor.>

BN:DTC P0340 CAMSHAFT POSITION SENSOR “A” CIRCUIT (BANK 1 OR SINGLE SENSOR)

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-132, DTC P0340 CAMSHAFT POSITION SENSOR “A” CIRCUIT (BANK 1 OR SINGLE SENSOR), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

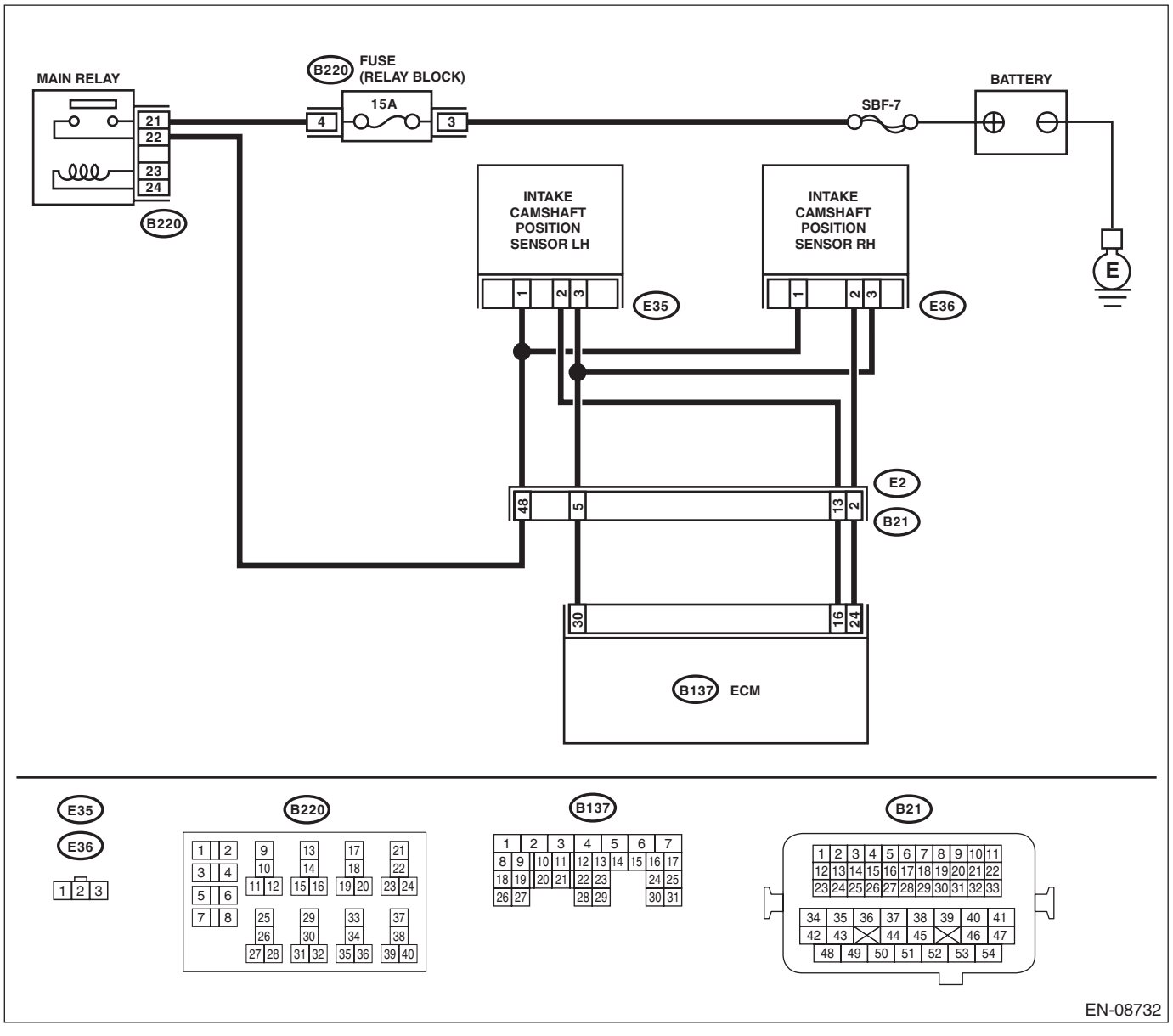
- Engine stalls.
- Failure of engine to start

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	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*** ***(E36) 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*** ***(B137) No. 24 — (E36) No. 2:*** ***(B137) No. 30 — (E36) No. 3:***	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
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:***	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*** ***(E36) 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(STI)-37, Camshaft Position Sensor.> <Ref. to FU(w/o STI)-37, Camshaft Position Sensor.>

	Step	Check	Yes	No
6	**CHECK CAMSHAFT POSITION SENSOR.** Check the waveform of the camshaft position sensor. <Ref. to EN(H4DOTC)(diag)-23, Engine Control Module (ECM) I/O Signal.>	Is there any abnormality in waveform?	Replace the camshaft position sensor. <Ref. to FU(STI)-37, Camshaft Position Sensor.> <Ref. to FU(w/o STI)-37, Camshaft Position Sensor.>	Repair the following item. • Poor contact of ECM connector • Poor contact of camshaft position sensor connector • Poor contact of coupling connector

BO: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(H4DOTC)(diag)-211, DTC P0340 CAMSHAFT POSITION SENSOR “A” CIRCUIT (BANK 1 OR SINGLE SENSOR), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BP:DTC P0345 CAMSHAFT POSITION SENSOR “A” CIRCUIT (BANK 2)

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-135, DTC P0345 CAMSHAFT POSITION SENSOR “A” CIRCUIT (BANK 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

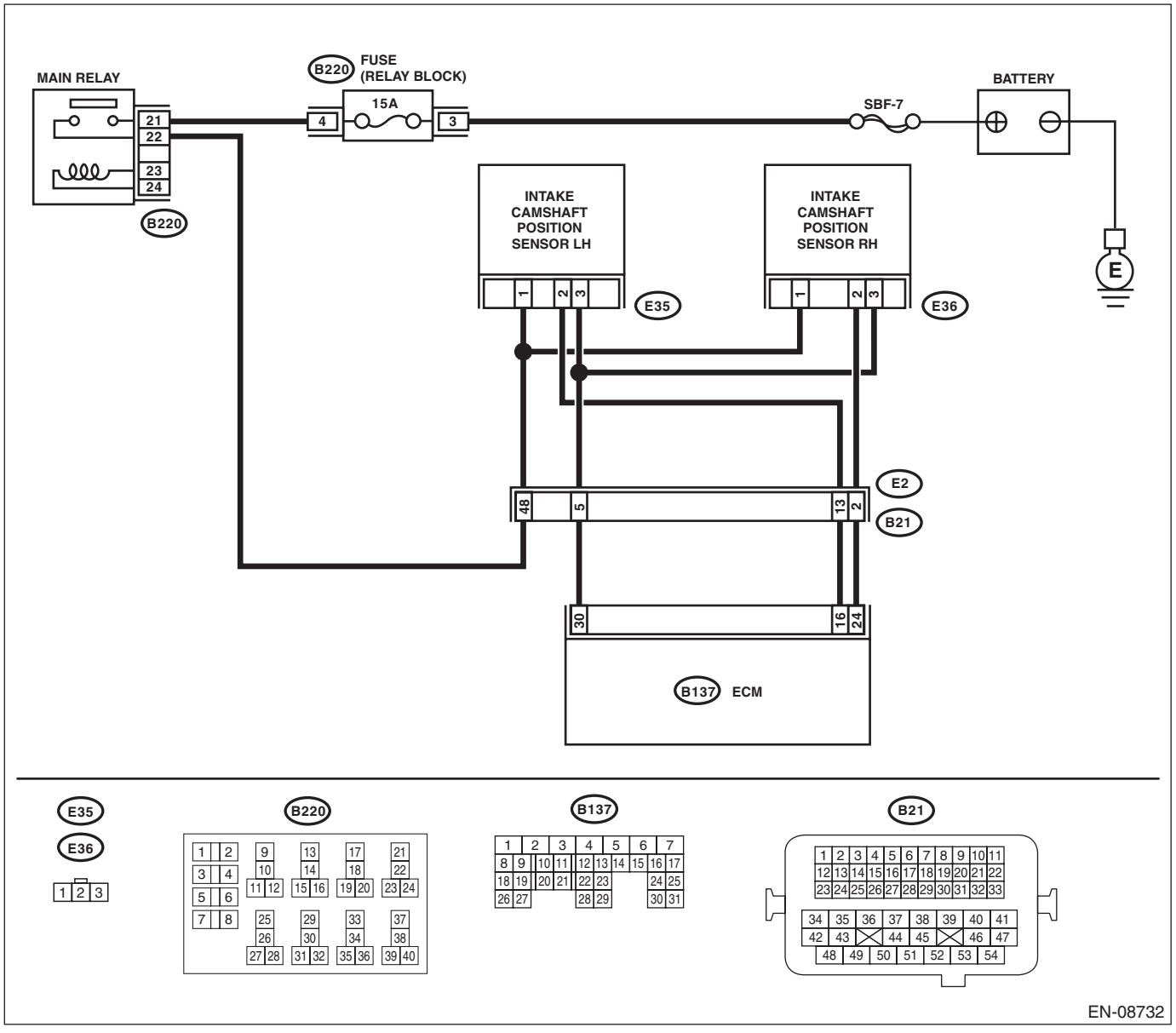
- Engine stalls.
- Failure of engine to start

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	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*** ***(B137) No. 16 — (E35) No. 2:*** ***(B137) No. 22 — (E35) No. 3:***	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
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(STI)-37, Camshaft Position Sensor.> <Ref. to FU(w/o STI)-37, Camshaft Position Sensor.>

	Step	Check	Yes	No
6	**CHECK CAMSHAFT POSITION SENSOR.** Check the waveform of the camshaft position sensor. <Ref. to EN(H4DOTC)(diag)-23, Engine Control Module (ECM) I/O Signal.>	Is there any abnormality in waveform?	Replace the camshaft position sensor. <Ref. to FU(STI)-37, Camshaft Position Sensor.> <Ref. to FU(w/o STI)-37, Camshaft Position Sensor.>	Repair the following item. • Poor contact of ECM connector • Poor contact of camshaft position sensor connector • Poor contact of coupling connector

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

NOTE:
For the diagnostic procedure, refer to DTC P0345. <Ref. to EN(H4DOTC)(diag)-214, DTC P0345 CAMSHAFT POSITION SENSOR “A” CIRCUIT (BANK 2), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BR:DTC P0351 IGNITION COIL A PRIMARY/SECONDARY CIRCUIT

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-136, DTC P0351 IGNITION COIL A PRIMARY/SECONDARY CIRCUIT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

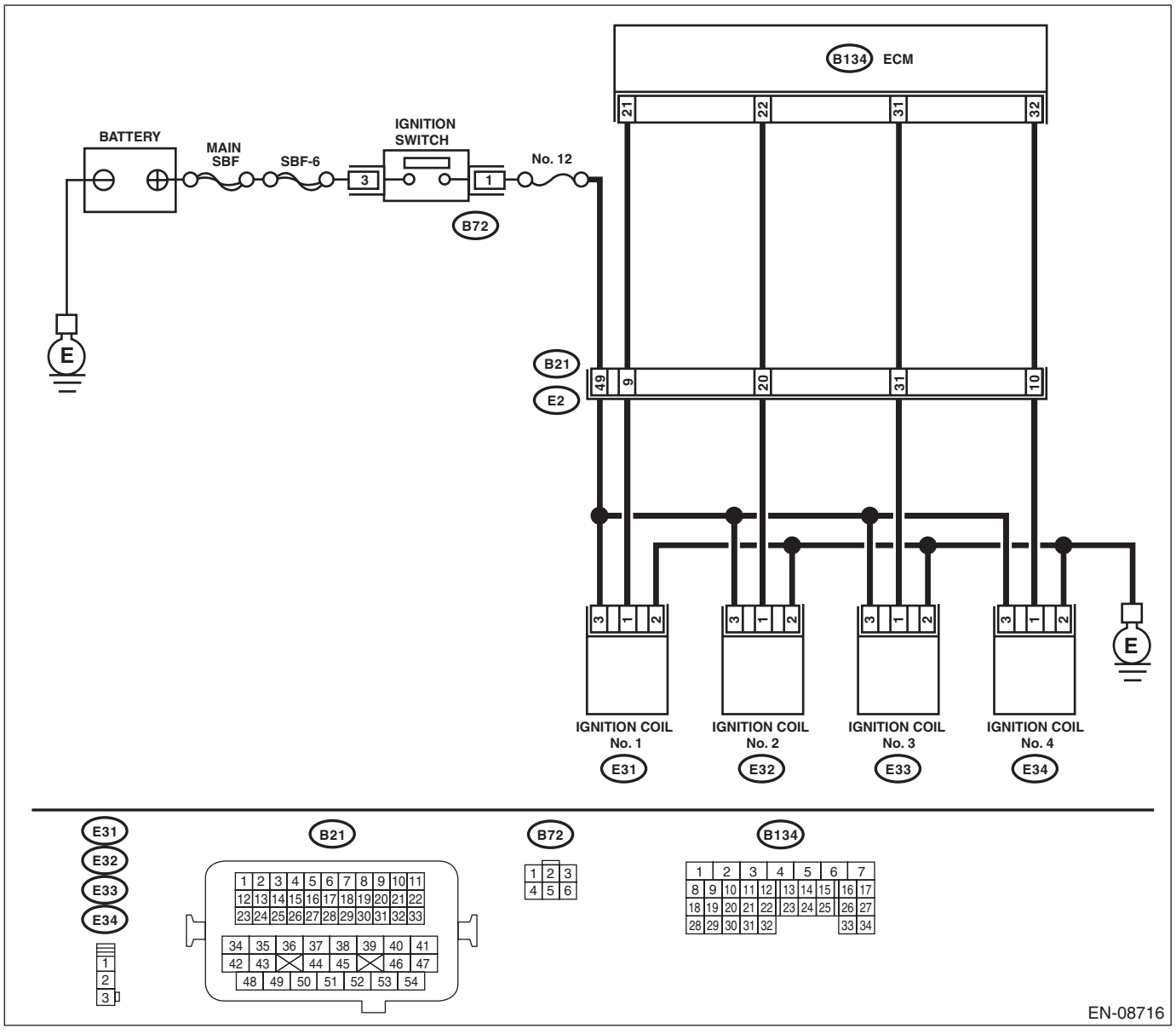
- Improper idling
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	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*** ***DTC P0351; (E31) No. 3 (+) — Engine ground (–):*** ***DTC P0352; (E32) No. 3 (+) — Engine ground (–):*** ***DTC P0353; (E33) No. 3 (+) — Engine ground (–):*** ***DTC P0354; (E34) No. 3 (+) — 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 of power supply circuit • Blown out of fuse • Poor contact of coupling connector
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*** ***DTC P0351; (E31) No. 2 — Engine ground:*** ***DTC P0352; (E32) No. 2 — Engine ground:*** ***DTC P0353; (E33) No. 2 — Engine ground:*** ***DTC P0354; (E34) No. 2 — Engine ground:***	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*** ***DTC P0351; (E31) No. 1 — Engine ground:*** ***DTC P0352; (E32) No. 1 — Engine ground:*** ***DTC P0353; (E33) No. 1 — Engine ground:*** ***DTC P0354; (E34) No. 1 — Engine ground:***	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*** ***DTC P0351; (B134) No. 21 — (E31) No. 1:*** ***DTC P0352; (B134) No. 22 — (E32) No. 1:*** ***DTC P0353; (B134) No. 31 — (E33) No. 1:*** ***DTC P0354; (B134) No. 32 — (E34) No. 1:***	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 of harness between ECM connector and the ignition coil connector • Poor contact of coupling 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**.

	Step	Check	Yes	No
6	**CHECK SPARK PLUG CONDITION.** 1) Remove the spark plug of the corresponding cylinder. <Ref. to IG(STI)-4, REMOVAL, Spark Plug.> <Ref. to IG(w/o STI)-5, REMOVAL, Spark Plug.> 2) Check the spark plug condition. <Ref. to IG(STI)-5, INSPECTION, Spark Plug.> <Ref. to IG(w/o STI)-6, INSPECTION, Spark Plug.>	Is the spark plug condition normal?	Replace the ignition coil. <Ref. to IG(STI)-7, Ignition Coil.> <Ref. to IG(w/o STI)-8, Ignition Coil.>	Replace the spark plug. <Ref. to IG(STI)-4, Spark Plug.> <Ref. to IG(w/o STI)-5, Spark Plug.>

BS:DTC P0352 IGNITION COIL B PRIMARY/SECONDARY CIRCUIT

NOTE:
For the diagnostic procedure, refer to DTC P0351. <Ref. to EN(H4DOTC)(diag)-217, DTC P0351 IGNITION COIL A PRIMARY/SECONDARY CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BT:DTC P0353 IGNITION COIL C PRIMARY/SECONDARY CIRCUIT

NOTE:
For the diagnostic procedure, refer to DTC P0351. <Ref. to EN(H4DOTC)(diag)-217, DTC P0351 IGNITION COIL A PRIMARY/SECONDARY CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BU:DTC P0354 IGNITION COIL D PRIMARY/SECONDARY CIRCUIT

NOTE:
For the diagnostic procedure, refer to DTC P0351. <Ref. to EN(H4DOTC)(diag)-217, DTC P0351 IGNITION COIL A PRIMARY/SECONDARY CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BV:DTC P0365 CAMSHAFT POSITION SENSOR “B” CIRCUIT (BANK 1)

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-137, DTC P0365 CAMSHAFT POSITION SENSOR “B” CIRCUIT (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

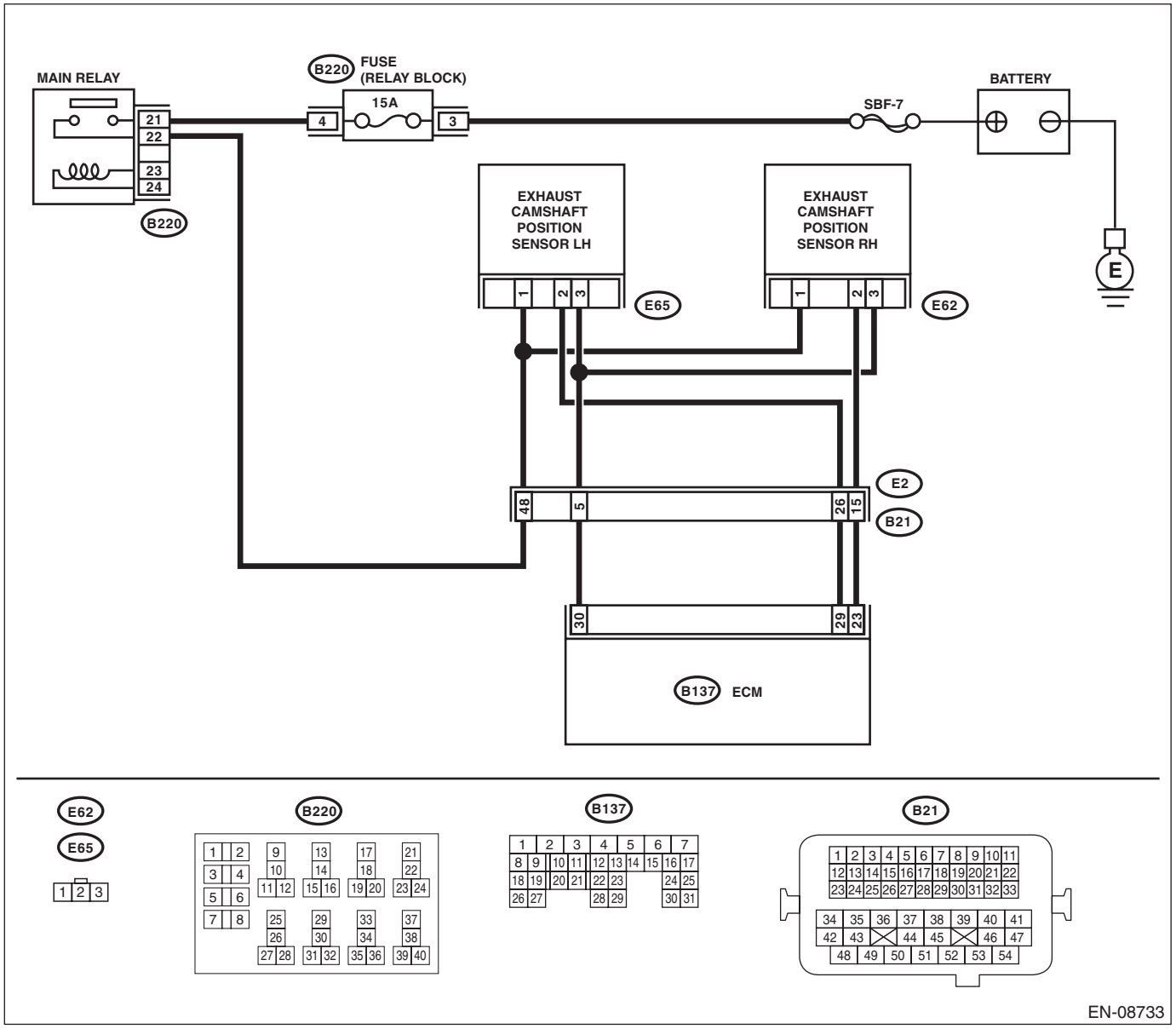
- Engine stalls.
- Failure of engine to start

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	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 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*** ***(B137) No. 23 — (E62) No. 2:*** ***(B137) No. 30 — (E62) No. 3:***	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
3	**CHECK HARNESS BETWEEN ECM AND CAMSHAFT POSITION SENSOR CONNECTOR.** Measure the resistance between camshaft position sensor connector and engine ground. ***Connector & terminal*** ***(E62) 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*** ***(E62) 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(STI)-37, Camshaft Position Sensor.>
6	**CHECK CAMSHAFT POSITION SENSOR.** Check the waveform of the camshaft position sensor. <Ref. to EN(H4DOTC)(diag)-23, Engine Control Module (ECM) I/O Signal.>	Is there any abnormality in waveform?	Replace the camshaft position sensor. <Ref. to FU(STI)-37, Camshaft Position Sensor.>	Repair the following item. • Poor contact of ECM connector • Poor contact of camshaft position sensor connector • Poor contact of coupling connector

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

NOTE:
For the diagnostic procedure, refer to DTC P0365. <Ref. to EN(H4DOTC)(diag)-220, DTC P0365 CAMSHAFT POSITION SENSOR “B” CIRCUIT (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BX:DTC P0390 CAMSHAFT POSITION SENSOR “B” CIRCUIT (BANK 2)

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-138, DTC P0390 CAMSHAFT POSITION SENSOR “B” CIRCUIT (BANK 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

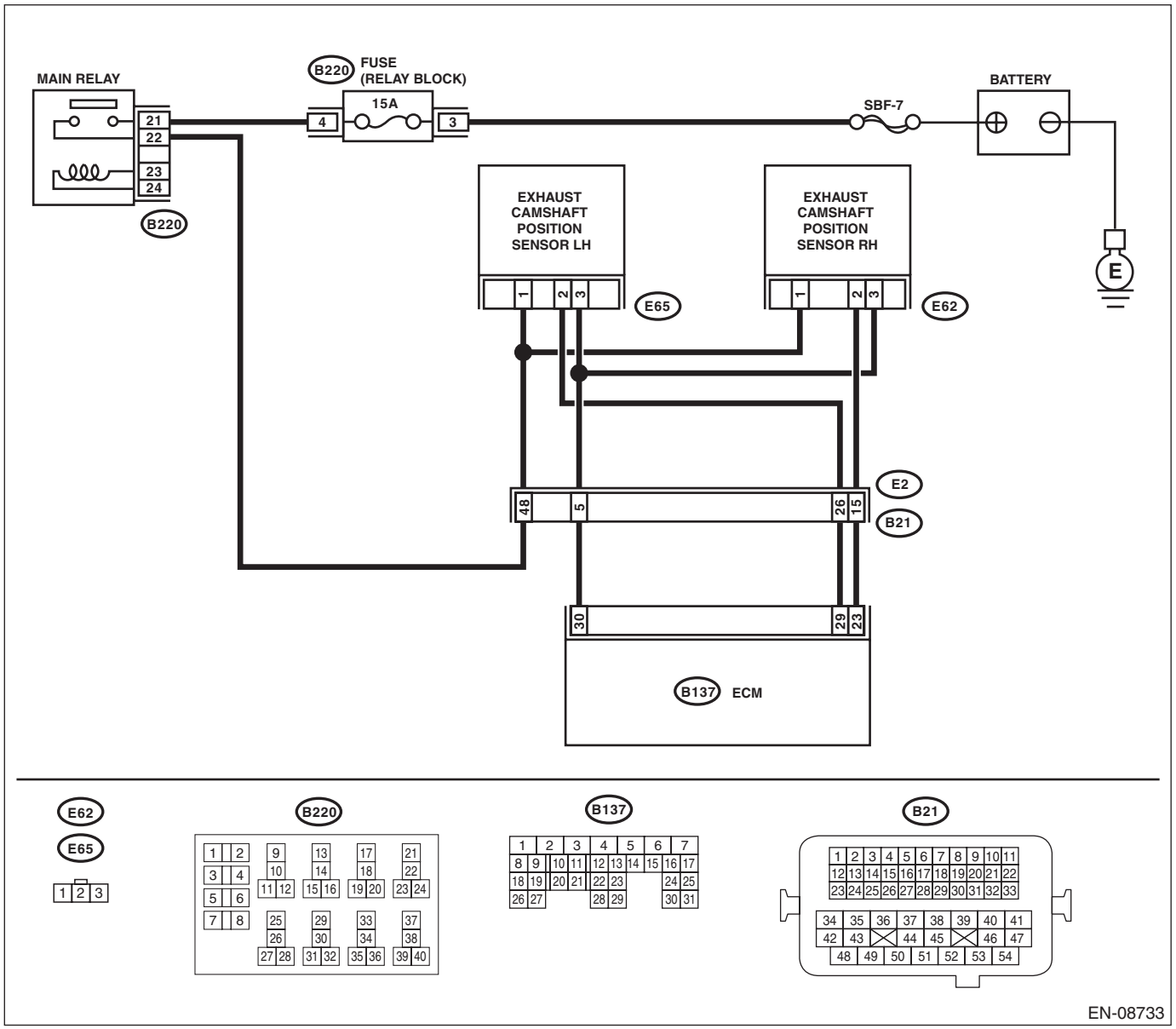
- Engine stalls.
- Failure of engine to start

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	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*** ***(E65) 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*** ***(B137) No. 29 — (E65) No. 2:*** ***(B137) No. 30 — (E65) No. 3:***	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
3	**CHECK HARNESS BETWEEN ECM AND CAMSHAFT POSITION SENSOR CONNECTOR.** Measure the resistance between camshaft position sensor connector and engine ground. ***Connector & terminal*** ***(E65) 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*** ***(E65) 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(STI)-37, Camshaft Position Sensor.>
6	**CHECK CAMSHAFT POSITION SENSOR.** Check the waveform of the camshaft position sensor. <Ref. to EN(H4DOTC)(diag)-23, Engine Control Module (ECM) I/O Signal.>	Is there any abnormality in waveform?	Replace the camshaft position sensor. <Ref. to FU(STI)-37, Camshaft Position Sensor.>	Repair the following item. • Poor contact of ECM connector • Poor contact of camshaft position sensor connector • Poor contact of coupling connector

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

NOTE:
For the diagnostic procedure, refer to DTC P0390. <Ref. to EN(H4DOTC)(diag)-223, DTC P0390 CAMSHAFT POSITION SENSOR “B” CIRCUIT (BANK 2), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BZ:DTC P0410 SECONDARY AIR INJECTION SYSTEM

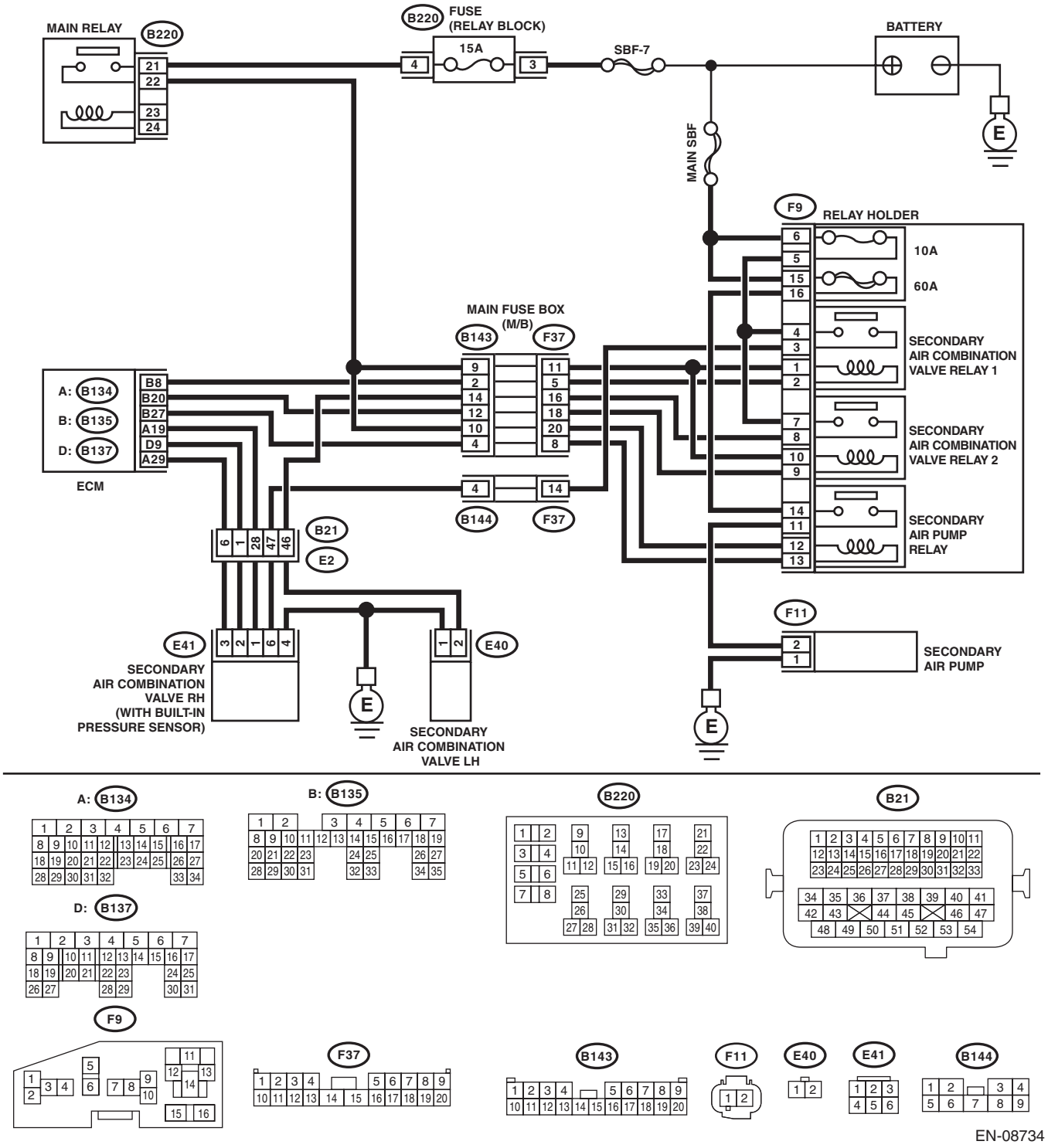
DTC DETECTING CONDITION:

- Detected when 2 consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-139, DTC P0410 SECONDARY AIR INJECTION SYSTEM, Diagnostic Trouble Code (DTC) Detecting Criteria.>

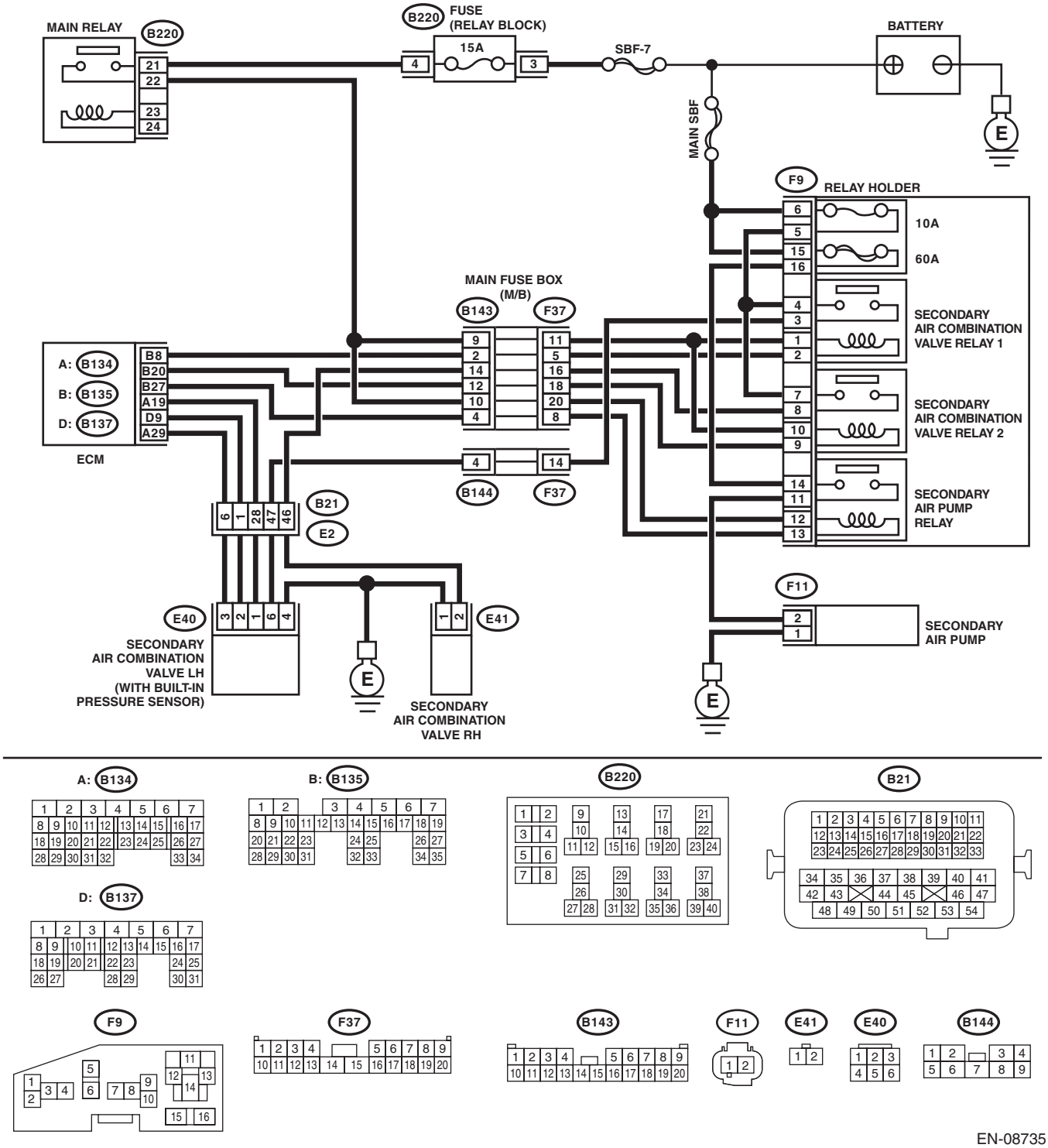
CAUTION:
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

• Models without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



- Models with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



EN-08735

Step		Check	Yes	No
1	**CHECK SECONDARY AIR PUMP FUSE.** Check if the secondary air pump fuse (60 A) is blown out.	Is the fuse blown out?	Go to step **2**.	Go to step **3**.

	Step	Check	Yes	No
2	**CHECK HARNESS BETWEEN FUSE BOX AND SECONDARY AIR PUMP CONNECTOR.** 1) Remove the secondary air pump fuse from the fuse box. 2) Disconnect the secondary air pump connector. 3) Measure the resistance between the secondary air pump fuse and secondary air pump connector, and chassis ground. ***Connector & terminal*** ***(F9) No. 16 — Chassis ground:*** ***(F11) No. 2 — Chassis ground:***	Is the resistance 1 MΩ or more?	Replace the fuse with a new part, and connect the secondary air pump connector. Go to step **3**.	Repair ground short of the harness between the fuse box and the secondary air pump connector.
3	**CHECK SECONDARY AIR PUMP OPERATION.** **CAUTION:** **Try your best to complete the confirmation process of this inspection in one try. This inspection will put a heavy workload on the secondary air pump, so the continuous operation may cause damage to the pump. Do not operate the pump continuously for more than three times. If you need to operate the pump further, turn the ignition switch to OFF and wait for at least two hours.** 1) Connect the delivery (test) mode connector. 2) Turn the ignition switch to ON. 3) Perform operation check for the secondary air pump using the Subaru Select Monitor. NOTE: • The compulsory operation using the Subaru Select Monitor is performed only for 10 seconds in order to protect the secondary air pump. When you want to operate the pump again, disconnect the ground cable from battery, wait at least one minute, and perform the clear memory operation of ECM. Then, perform the forced operation using the Subaru Select Monitor. • Refer to “Compulsory Valve Operation Check Mode” for detailed procedures. <Ref. to EN(H4DOTC)(diag)-64, Compulsory Valve Operation Check Mode.>	Does the secondary air pump operate?	Go to step **4**.	Go to step **5**.
4	**CHECK DUCT BETWEEN SECONDARY AIR PUMP AND COMBINATION VALVE.** Check the duct between secondary air pump and combination valve.	Is there damage, clog or disconnection of the duct?	Replace, clean or connect the duct.	Replace the secondary air combination valve LH (models with SI-DRIVE) or RH (models without SI-DRIVE). <Ref. to EC(STI)-29, Secondary Air Combination Valve.> <Ref. to EC(w/o STI)-30, Secondary Air Combination Valve.>

	Step	Check	Yes	No
5	**CHECK POWER SUPPLY TO SECONDARY AIR PUMP.** 1) Turn the ignition switch to OFF. 2) Disconnect the battery negative terminal, wait for 1 minute, and connect it again. 3) Disconnect the secondary air pump connector. 4) Connect the delivery (test) mode connector. 5) Turn the ignition switch to ON. 6) Using the Subaru Select Monitor, measure the voltage between the secondary air pump connector and chassis ground while the secondary air pump is operating. NOTE: • The compulsory operation using the Subaru Select Monitor is performed only for 10 seconds in order to protect the secondary air pump. When you want to operate the pump again, disconnect the ground cable from battery, wait at least one minute, and perform the clear memory operation of ECM. Then, perform the forced operation using the Subaru Select Monitor. • Refer to "Compulsory Valve Operation Check Mode" for detailed procedures. <Ref. to EN(H4DOTC)(diag)-64, Compulsory Valve Operation Check Mode.> ***Connector & terminal*** ***(F11) No. 2 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Replace the secondary air pump. <Ref. to EC(STI)-27, Secondary Air Pump.> <Ref. to EC(w/o STI)-29, Secondary Air Pump.>	Go to step **6**.
6	**CHECK HARNESS BETWEEN SECONDARY AIR PUMP RELAY AND SECONDARY AIR PUMP CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Remove the secondary air pump relay. 3) Measure the resistance of harness between secondary air pump relay connector and secondary air pump connector. ***Connector & terminal*** ***(F9) No. 11 — (F11) No. 2:***	Is the resistance less than 1 Ω?	Go to step **7**.	Repair the open circuit in harness between secondary air pump relay connector and secondary air pump connector.
7	**CHECK HARNESS BETWEEN SECONDARY AIR PUMP CONNECTOR AND CHASSIS GROUND.** Measure the resistance of the harness between secondary air pump connector and chassis ground. ***Connector & terminal*** ***(F11) No. 1 — Chassis ground:***	Is the resistance less than 5 Ω?	Go to step **8**.	Repair the open circuit of the harness between secondary air pump connector and chassis ground.
8	**CHECK SECONDARY AIR PUMP RELAY.** 1) Connect the battery to terminals No. 12 and No. 13 of the secondary air pump relay. 2) Measure the resistance between secondary air pump relay terminals. ***Terminals*** ***No. 14 — No. 11:***	Is the resistance less than 1 Ω?	Go to step **9**.	Replace the secondary air pump relay. <Ref. to EN(H4DOTC)(diag)-9, Electrical Component Location.>

	Step	Check	Yes	No
9	**CHECK SECONDARY AIR PUMP RELAY POWER SUPPLY.** 1) Turn the ignition switch to ON. 2) Measure the voltage between the secondary air pump relay connector and chassis ground. ***Connector & terminal*** ***(F9) No. 14 (+) — Chassis ground (–):*** ***(F9) No. 12 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **10**.	Repair the open or ground short circuit of power supply circuit.
10	**CHECK HARNESS BETWEEN ECM AND SECONDARY AIR PUMP RELAY CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the ECM connector. 3) Measure the resistance of harness between ECM connector and secondary air pump relay connector. ***Connector & terminal*** ***(B135) No. 27 — (F9) No. 13:***	Is the resistance less than 1 Ω?	Repair the poor contact of ECM connector.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and secondary air pump relay connector • Poor contact of coupling connector

CA:DTC P0411 SECONDARY AIR INJECTION SYSTEM INCORRECT FLOW DETECTED

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-147, DTC P0411 SECONDARY AIR INJECTION SYSTEM INCORRECT FLOW DETECTED, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

	Step	Check	Yes	No
1	**CHECK SECONDARY AIR COMBINATION VALVE.** Check the pipe between the secondary air combination valve and cylinder head.	Is there damage or disconnection of the pipe?	Replace the pipe between secondary air combination valve and cylinder head. <Ref. to EC(STI)-29, Secondary Air Combination Valve.> <Ref. to EC(w/o STI)-30, Secondary Air Combination Valve.>	Go to step **2**.
2	**CHECK SECONDARY AIR COMBINATION VALVE.** Race the engine at 2,000 rpm to check whether or not the exhaust leak is heard.	Is there any exhaust leak?	Replace the pipe between secondary air combination valve and cylinder head. <Ref. to EC(STI)-29, Secondary Air Combination Valve.> <Ref. to EC(w/o STI)-30, Secondary Air Combination Valve.>	Repair the poor contact of ECM connector.

CB:DTC P0413 SECONDARY AIR INJECTION SYSTEM SWITCHING VALVE “A” CIRCUIT OPEN

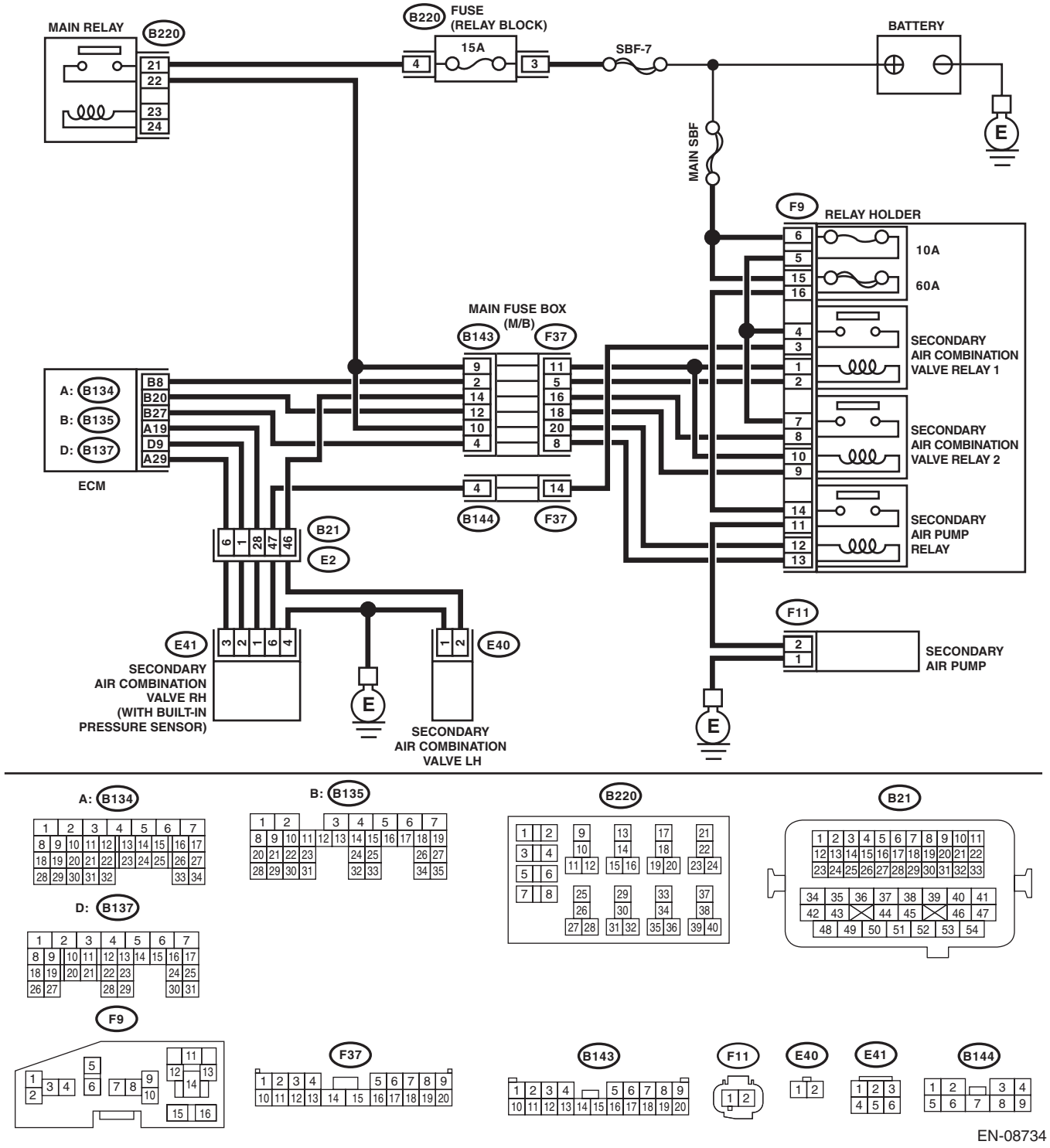
DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-148, DTC P0413 SECONDARY AIR INJECTION SYSTEM SWITCHING VALVE “A” CIRCUIT OPEN, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

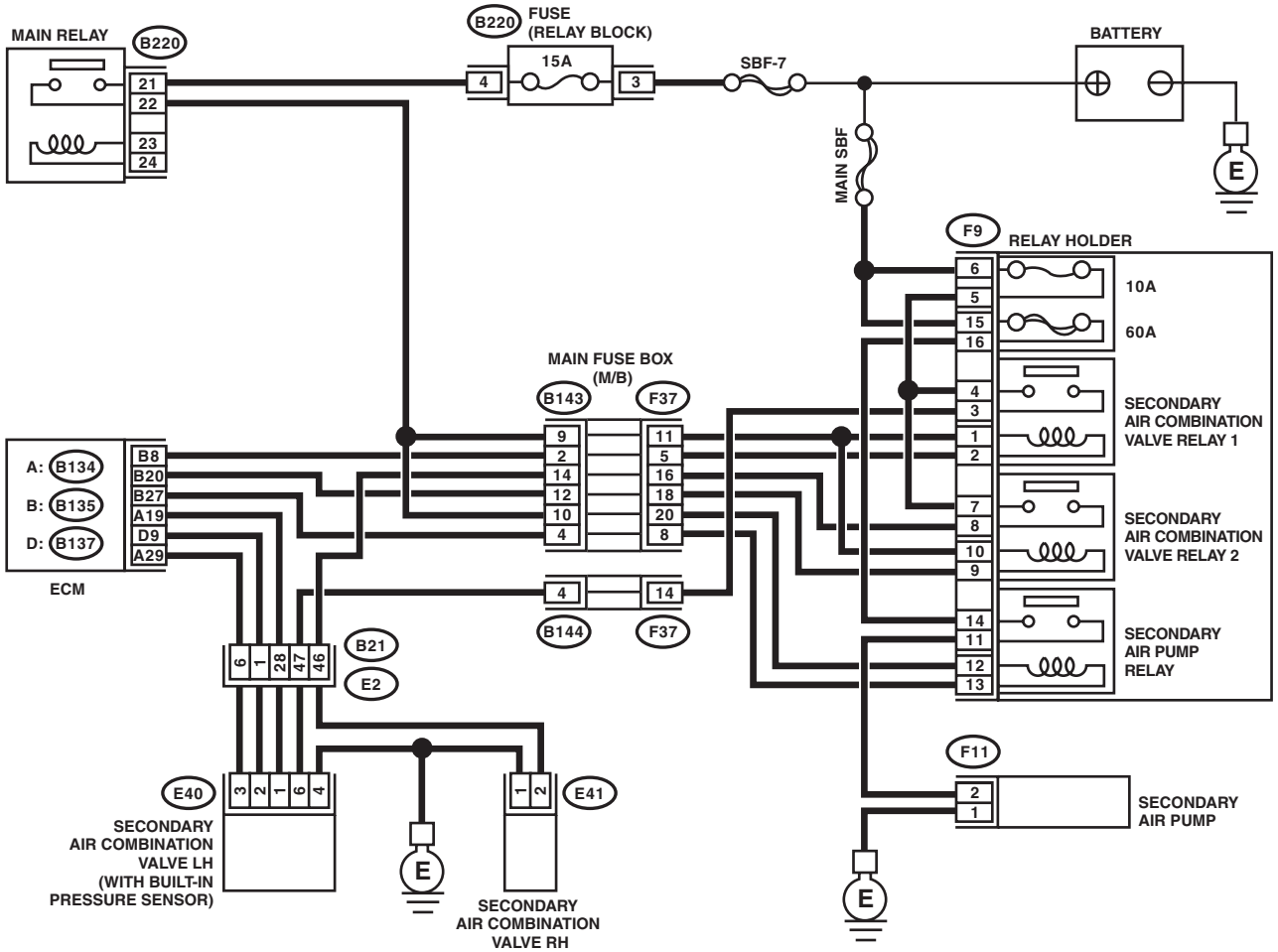
WIRING DIAGRAM:

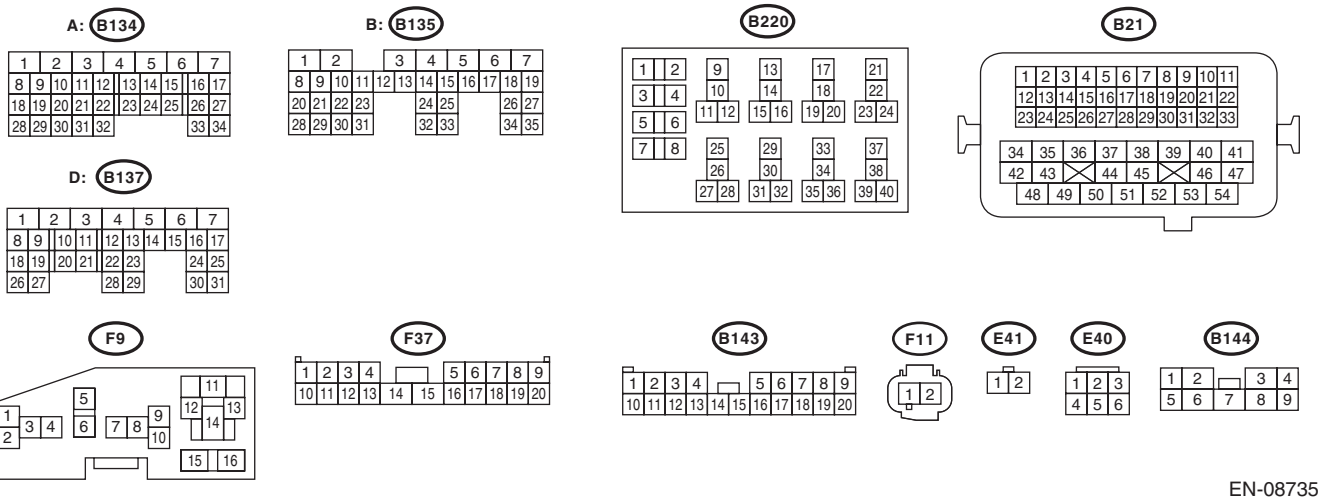
• Models without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



EN-08734

- Models with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>





EN-08735

	Step	Check	Yes	No
1	**CHECK HARNESS BETWEEN ECM AND SECONDARY AIR COMBINATION VALVE RELAY 1 CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Remove the secondary air combination valve relay 1. 4) Measure the resistance of harness between ECM connector and secondary air combination valve relay 1 connector. ***Connector & terminal*** ***(B135) No. 8 — (F9) No. 2:***	Is the resistance less than 1 Ω?	Go to step **2**.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and secondary air combination valve relay 1 connector • Poor contact of coupling connector
2	**CHECK HARNESS BETWEEN ECM AND SECONDARY AIR COMBINATION VALVE RELAY 1 CONNECTOR.** Measure the resistance between ECM connector and chassis ground. ***Connector & terminal*** ***(B135) No. 8 — Chassis ground:***	Is the resistance 1 MΩ or more?	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.	Repair the short circuit to ground in harness between ECM connector and secondary air combination valve relay 1 connector.

CC:DTC P0414 SECONDARY AIR INJECTION SYSTEM SWITCHING VALVE “A” CIRCUIT SHORTED

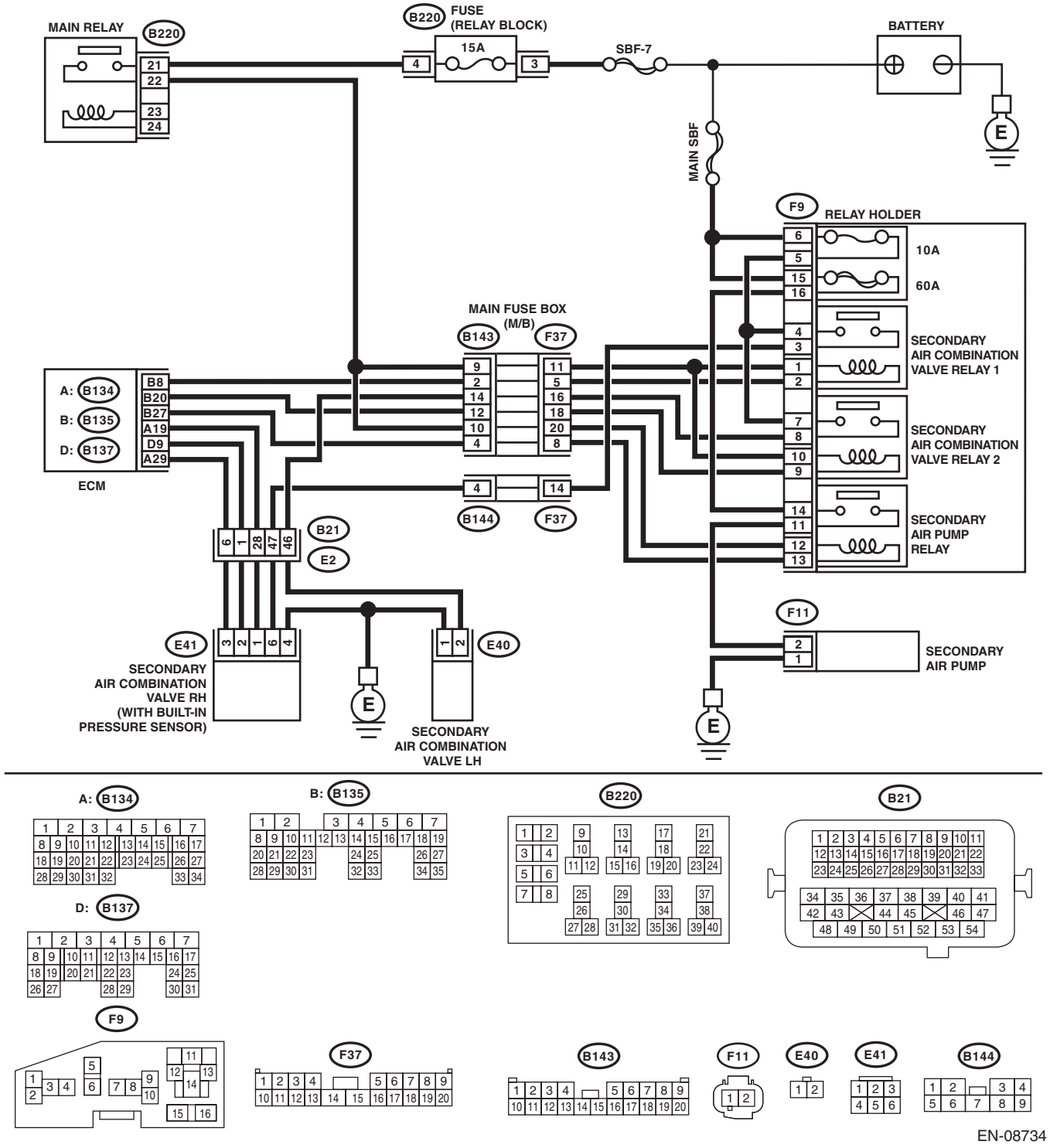
DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-149, DTC P0414 SECONDARY AIR INJECTION SYSTEM SWITCHING VALVE “A” CIRCUIT SHORTED, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

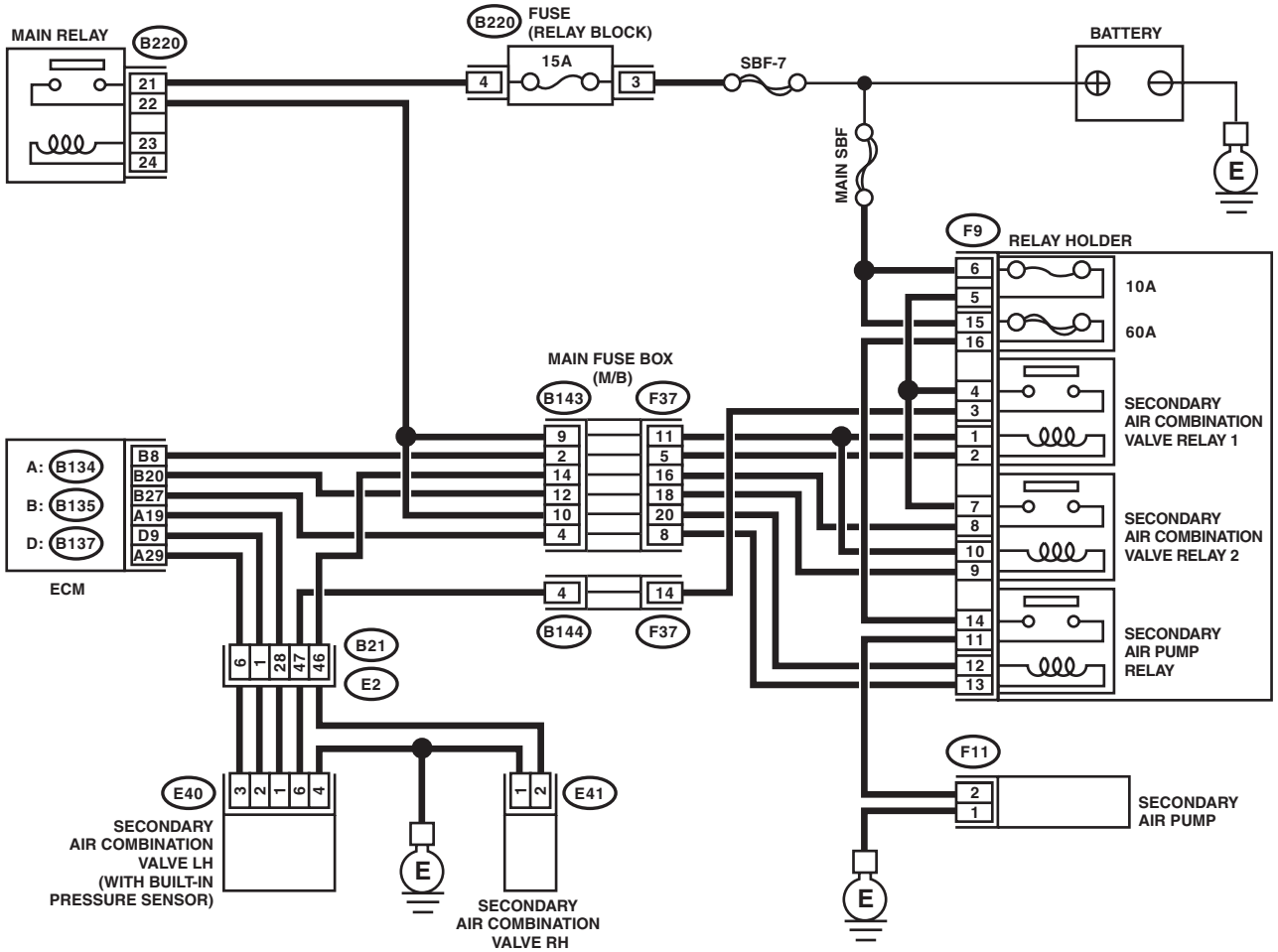
WIRING DIAGRAM:

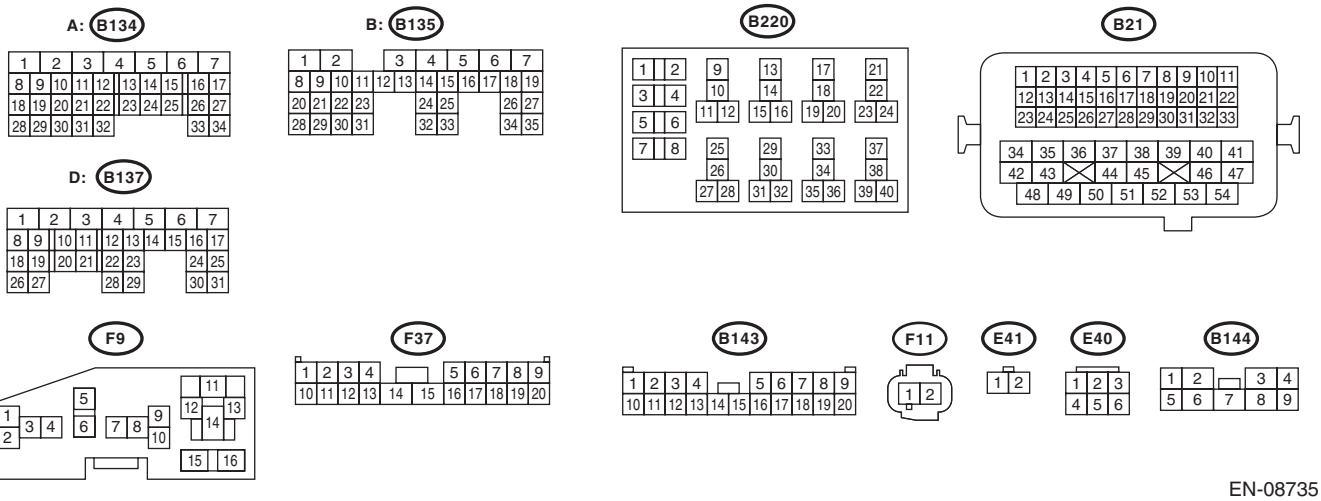
• Models without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



EN-08734

- Models with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>





EN-08735

	Step	Check	Yes	No
1	**CHECK HARNESS BETWEEN ECM AND SECONDARY AIR COMBINATION VALVE RELAY 1 CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Remove the secondary air combination valve relay 1. 4) Measure the voltage between ECM connector and chassis ground. ***Connector & terminal*** ***(B135) No. 8 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Repair the short circuit to power in harness between ECM connector and secondary air combination valve relay 1 connector.	Repair the poor contact of ECM connector.

CD:DTC P0416 SECONDARY AIR INJECTION SYSTEM SWITCHING VALVE “B” CIRCUIT OPEN

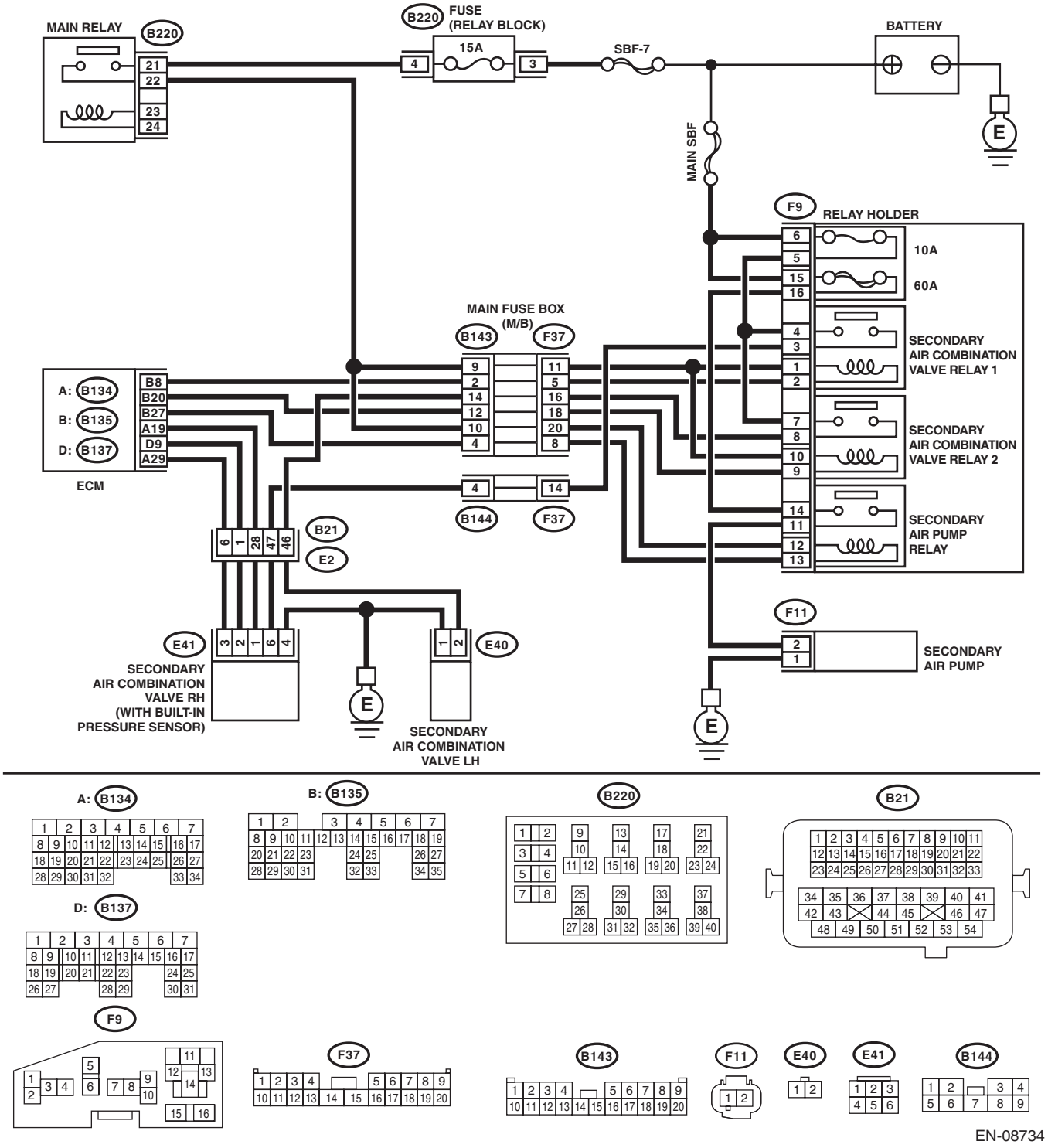
DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-149, DTC P0416 SECONDARY AIR INJECTION SYSTEM SWITCHING VALVE “B” CIRCUIT OPEN, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

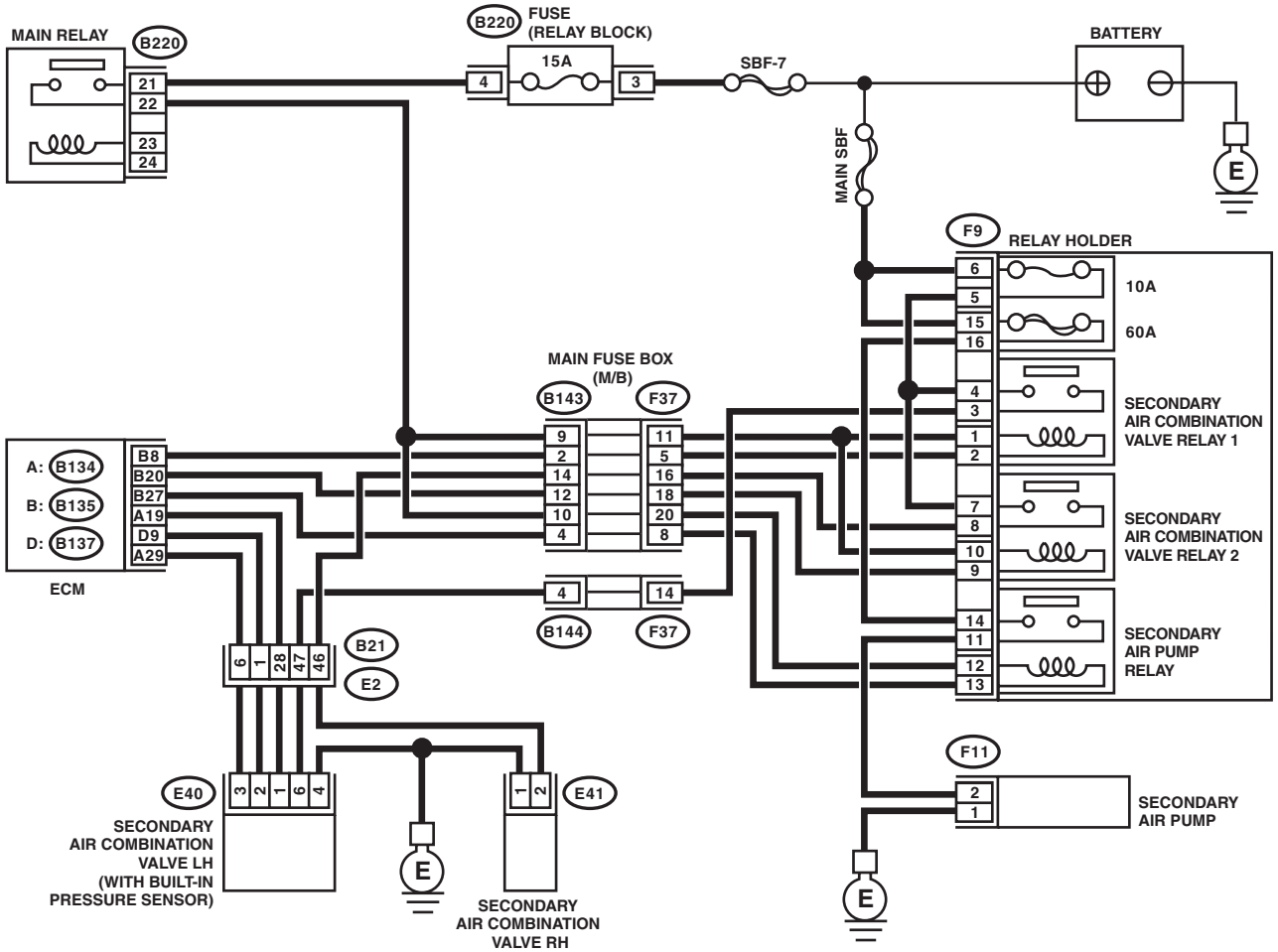
WIRING DIAGRAM:

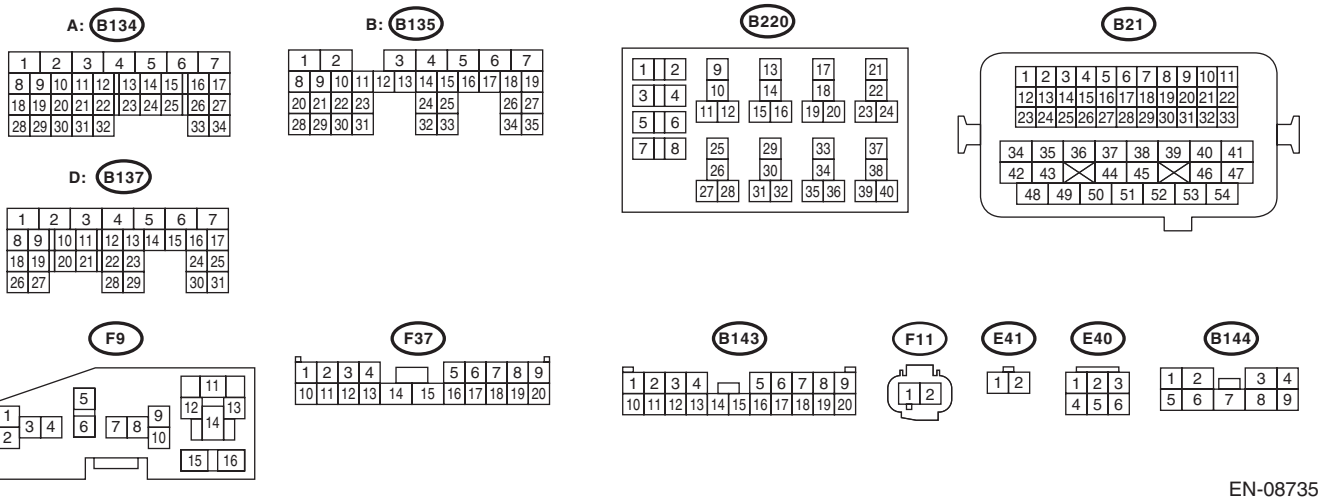
• Models without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



EN-08734

- Models with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>





EN-08735

	Step	Check	Yes	No
1	**CHECK HARNESS BETWEEN ECM AND SECONDARY AIR COMBINATION VALVE RELAY 2 CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Remove the secondary air combination valve relay 2. 4) Measure the resistance of harness between ECM connector and secondary air combination valve relay 2 connector. ***Connector & terminal*** ***(B135) No. 20 — (F9) No. 9:***	Is the resistance less than 1 Ω?	Go to step **2**.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and secondary air combination valve relay 2 connector • Poor contact of coupling connector
2	**CHECK HARNESS BETWEEN ECM AND SECONDARY AIR COMBINATION VALVE RELAY 2 CONNECTOR.** Measure the resistance between ECM connector and chassis ground. ***Connector & terminal*** ***(B135) No. 20 — Chassis ground:***	Is the resistance 1 MΩ or more?	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.	Repair the short circuit to ground in harness between ECM connector and secondary air combination valve relay 2 connector.

CE:DTC P0417 SECONDARY AIR INJECTION SYSTEM SWITCHING VALVE “B” CIRCUIT SHORTED

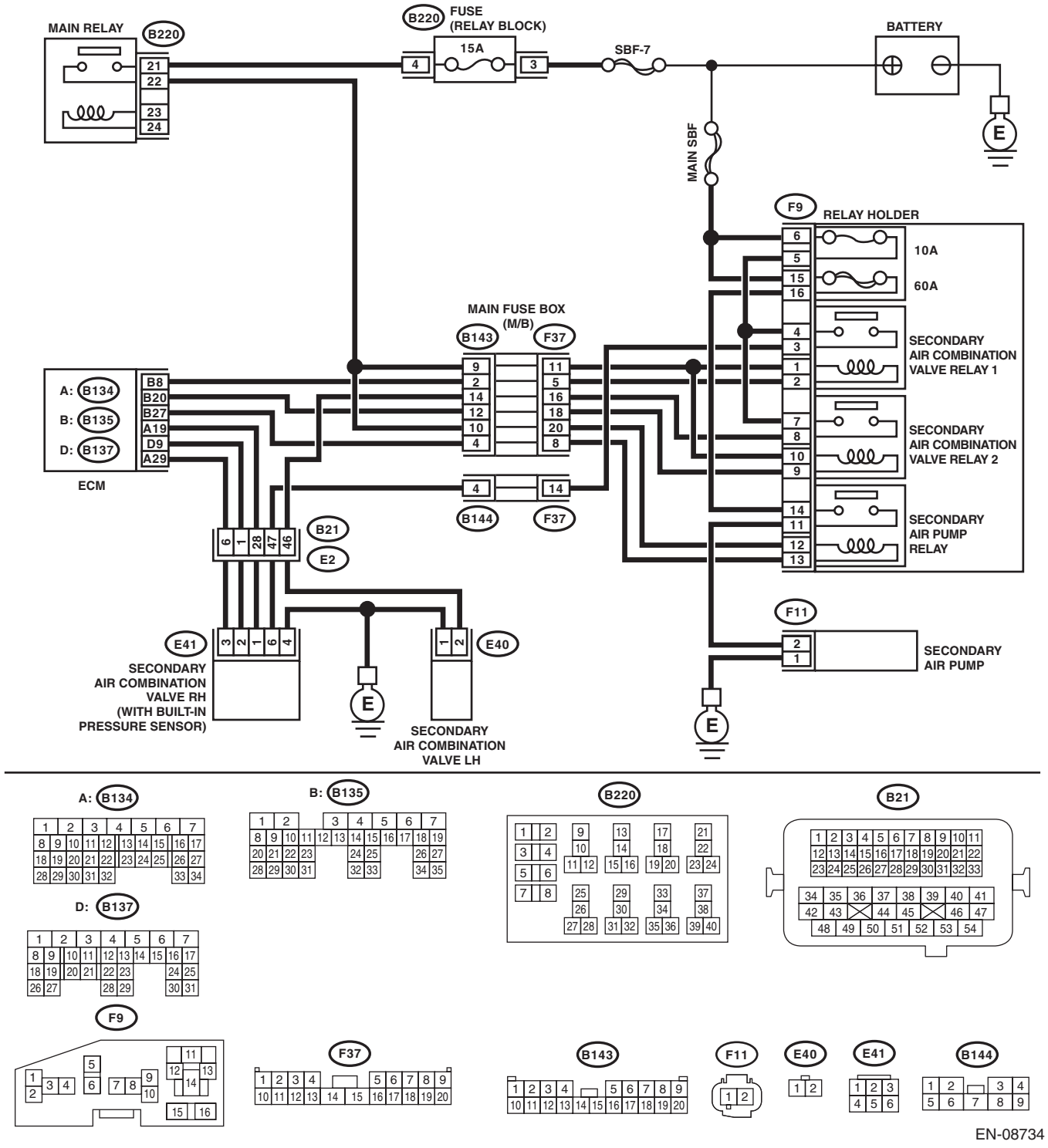
DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-149, DTC P0417 SECONDARY AIR INJECTION SYSTEM SWITCHING VALVE “B” CIRCUIT SHORTED, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

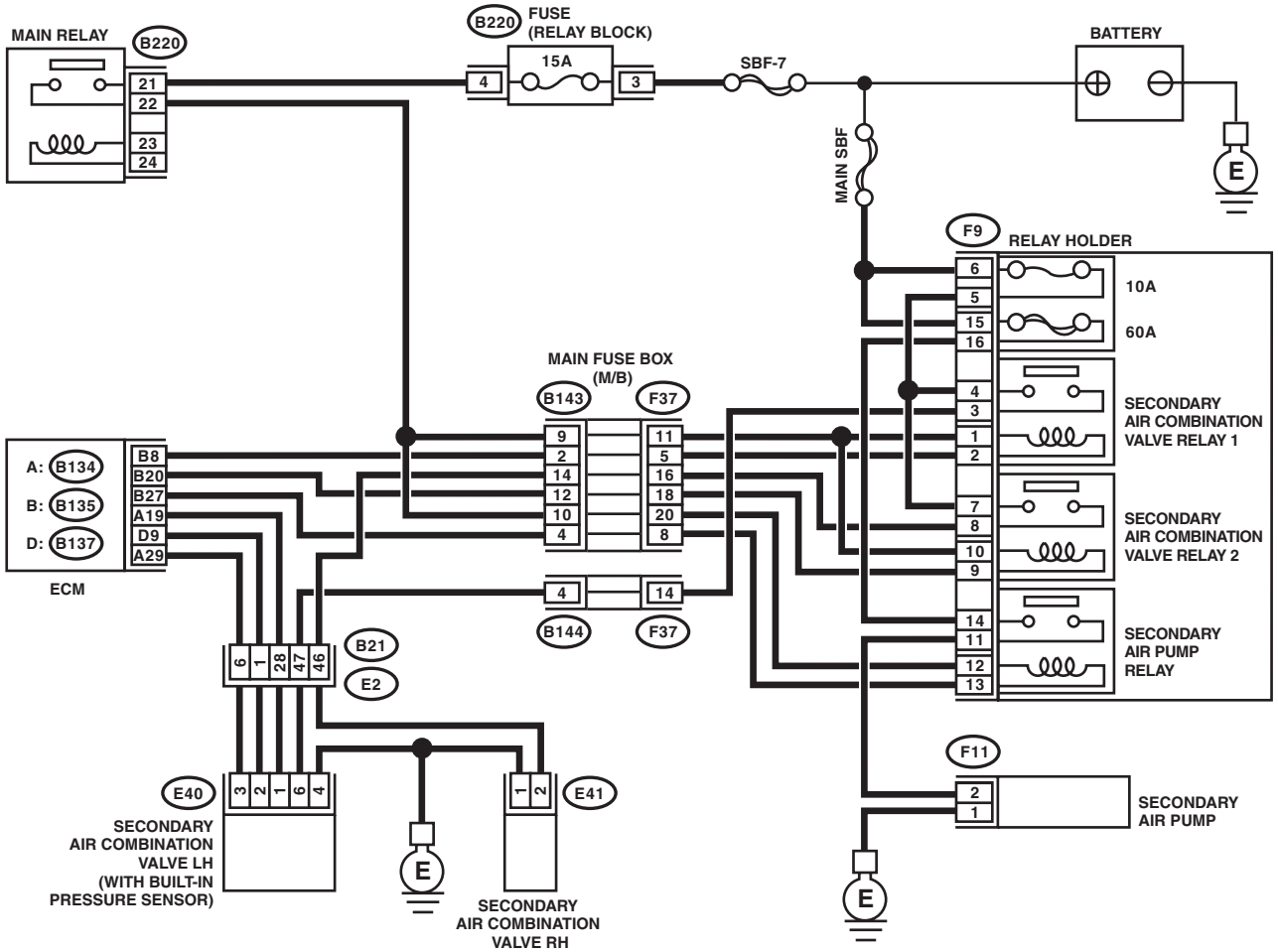
WIRING DIAGRAM:

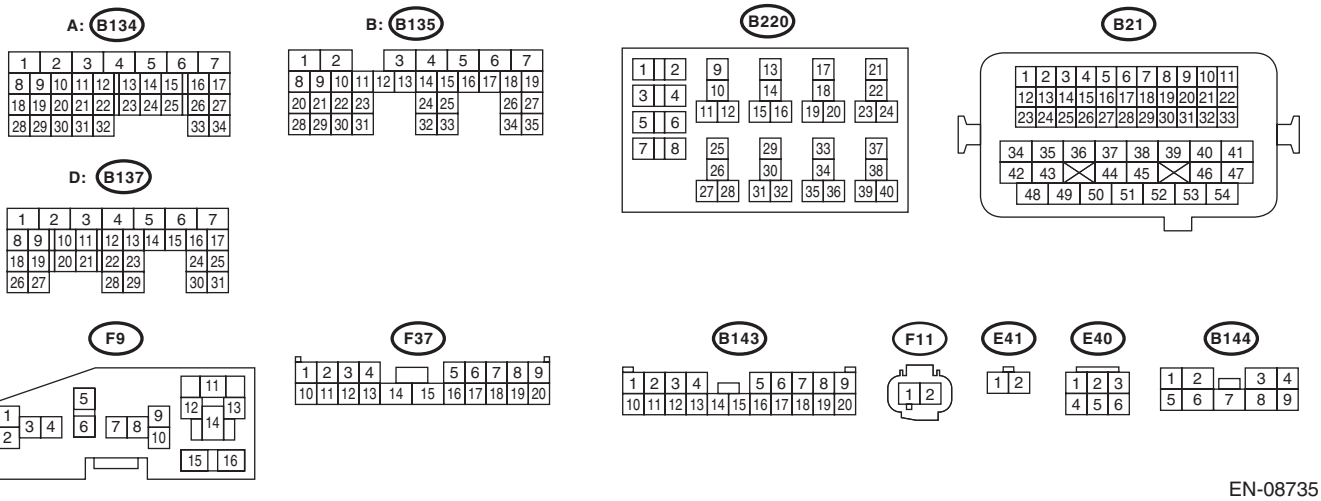
• Models without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



EN-08734

- Models with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>





EN-08735

Step		Check	Yes	No
1	**CHECK HARNESS BETWEEN ECM AND SECONDARY AIR COMBINATION VALVE RELAY 2 CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Remove the secondary air combination valve relay 2. 4) Measure the voltage between ECM connector and chassis ground. ***Connector & terminal*** ***(B135) No. 20 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Repair the short circuit to power in harness between ECM connector and secondary air combination valve relay 2 connector.	Repair the poor contact of ECM connector.

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

DTC DETECTING CONDITION:

- Detected when 2 consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-150, DTC P0420 CATALYST SYSTEM EFFICIENCY BELOW THRESHOLD (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

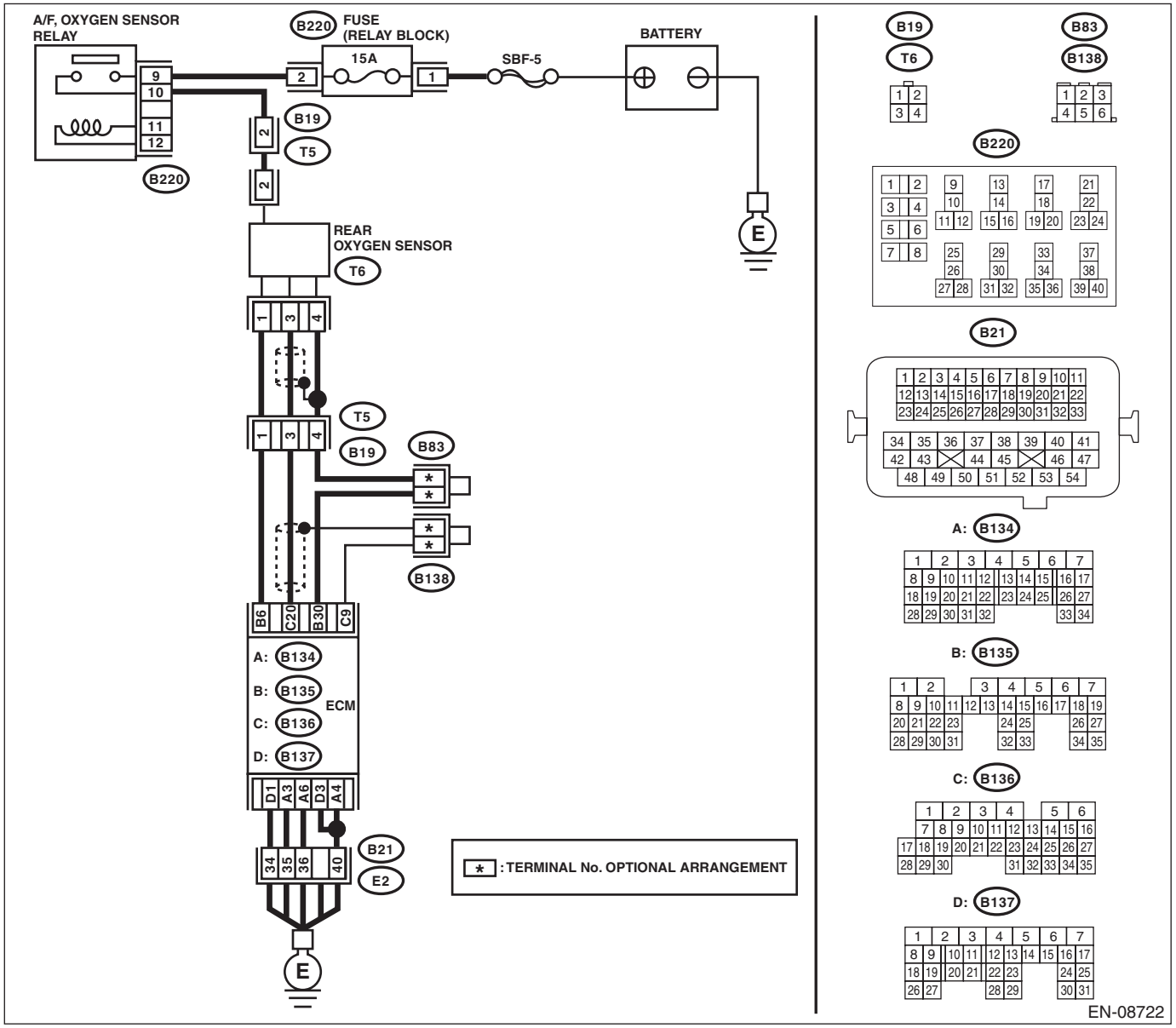
- Engine stalls.
- Idle mixture is out of specifications.

CAUTION:

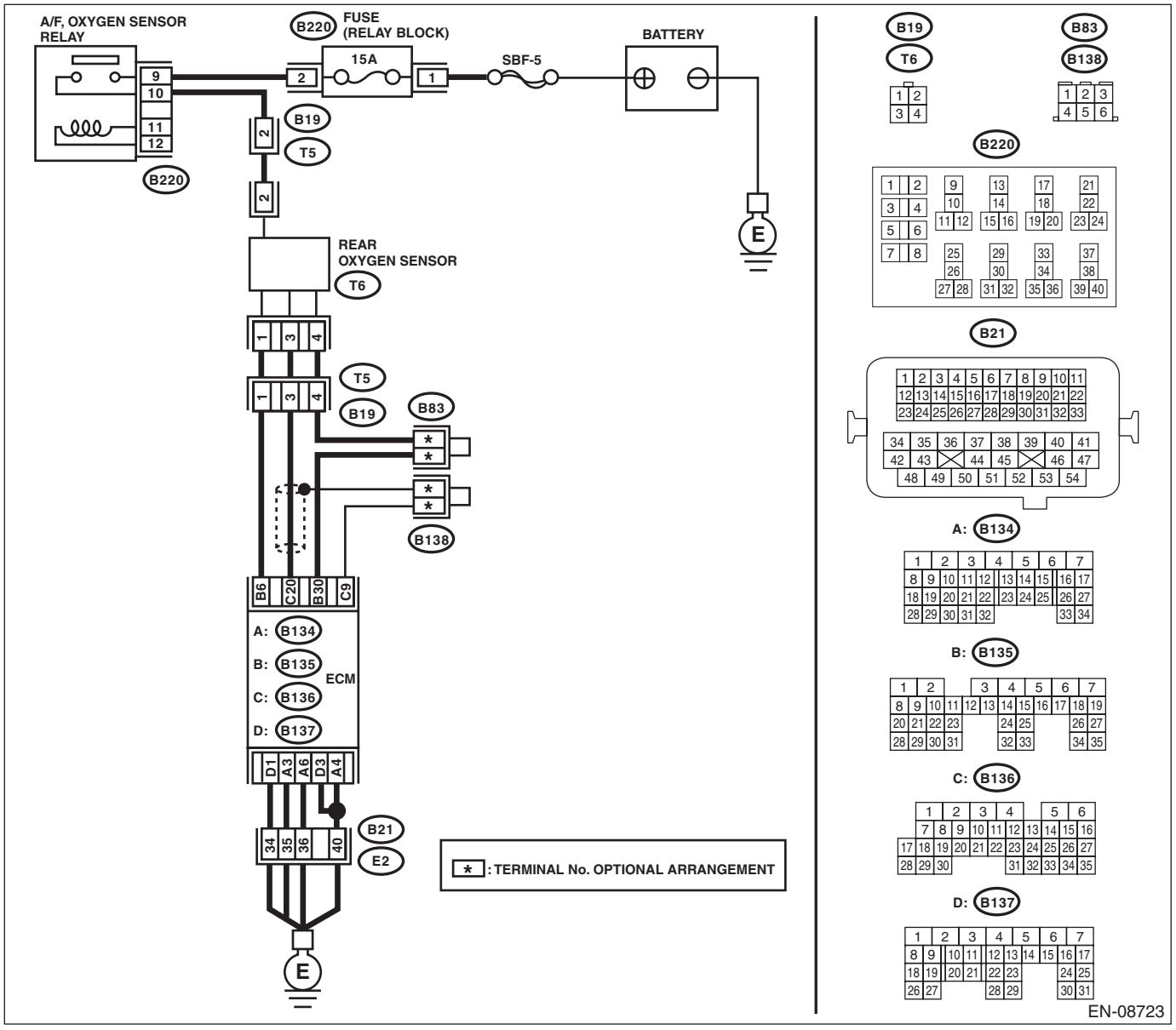
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

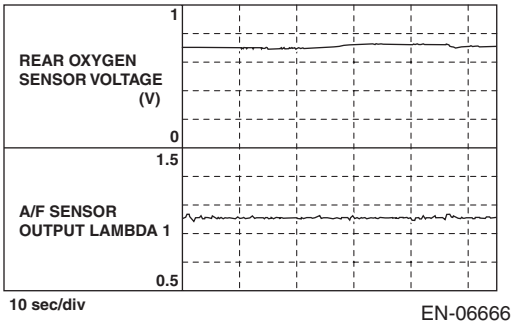
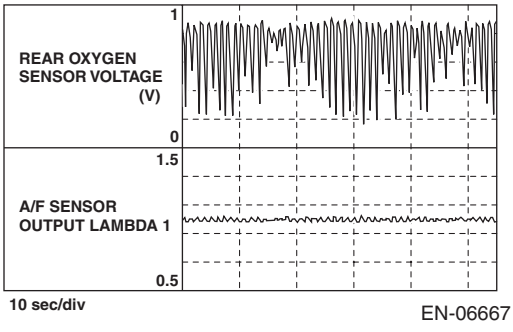
- Models without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>

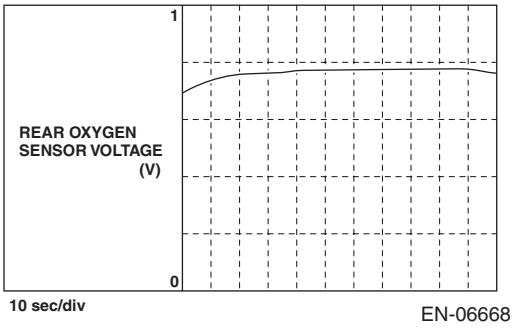
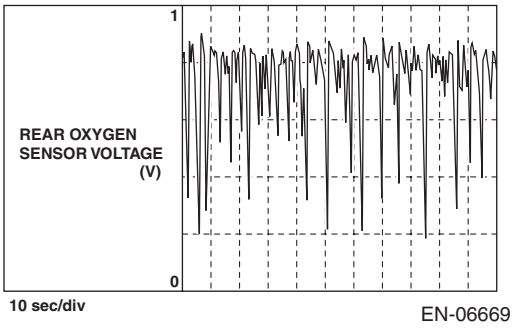
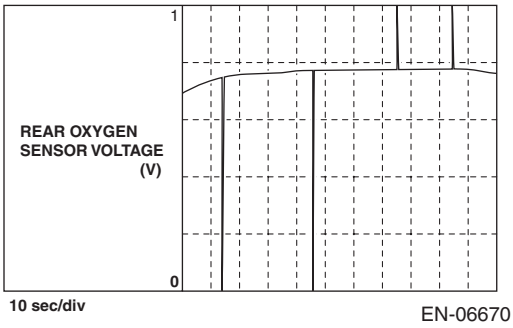


- Models with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



Step		Check	Yes	No
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. NOTE: Check the following positions. • Between cylinder head and front exhaust pipe • Between front exhaust pipe and front catalytic converter • Between front catalytic converter and rear catalytic converter • Loose or improperly attached front oxygen (A/F) sensor or rear oxygen sensor	Is there any fault in exhaust system?	Repair or replace the exhaust system. <Ref. to EX(STI)-2, General Description.>	Go to step **2**.

	Step	Check	Yes	No
2	**CHECK WAVEFORM DATA ON THE SUBARU SELECT MONITOR (WHILE DRIVING).** 1) Drive at a constant speed between 80 — 112 km/h (50 — 70 MPH). 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. • At normal condition  EN-06666 • At abnormal condition (numerous inversion)  EN-06667	Is a normal waveform displayed?	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.	Go to step **3**.

	Step	Check	Yes	No
3	**CHECK WAVEFORM DATA ON THE SUBARU SELECT MONITOR (WHILE IDLING).** 1) Run the engine at idle. 2) In the condition of step 1), use the Subaru Select Monitor to read the waveform data. • At normal condition  EN-06668 • At abnormal condition 1 (numerous inversion)  EN-06669 • At abnormal condition 2 (noise input)  EN-06670	Is a normal waveform displayed?	Go to step **4**.	• The waveform is displayed at abnormal condition 1: Go to step **4**. • The waveform is displayed at abnormal condition 2: Go to step **5**.
4	**CHECK CATALYTIC CONVERTER.**	Is the catalytic converter damaged?	Replace the catalytic converter. <Ref. to EC(STI)-5, Front Catalytic Converter.> <Ref. to EC(w/o STI)-5, Front Catalytic Converter.>	Go to step **5**.
5	**CHECK REAR OXYGEN SENSOR CONNECTOR AND COUPLING CONNECTOR.**	Has water entered the connector?	Completely remove any water inside.	Go to step **6**.

	Step	Check	Yes	No
6	**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*** ***(B136) No. 20 — (T6) No. 3:*** ***(B135) No. 30 — (T6) No. 4:***	Is the resistance less than 1 Ω?	Go to step **7**.	Repair the harness and connector. NOTE: Repair the following locations. • Open circuit in harness between ECM connector and rear oxygen sensor connector • Poor contact of coupling connector
7	**CHECK REAR OXYGEN SENSOR SHIELD.** 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 chassis ground.	Is the resistance less than 1 Ω?	Go to step **8**.	Repair the open circuit of rear oxygen sensor harness.
8	**CHECK ENGINE OIL AMOUNT AND EXHAUST GAS.** 1) Check the engine oil amount. <Ref. to LU(STI)-11, INSPECTION, Engine Oil.> 2) Check exhaust gas during idling.	Does the engine oil amount drop or white smoke emit from the muffler?	Check the engine, and repair the defective part. <Ref. to ME(STI)-107, INSPECTION, Engine Trouble in General.> <Ref. to ME(w/o STI)-103, INSPECTION, Engine Trouble in General.> After repairing the engine, replace the catalytic converter. <Ref. to EX(STI)-8, 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**.
9	**CHECK IGNITION SYSTEM.** 1) Check the spark plug. <Ref. to IG(STI)-5, INSPECTION, Spark Plug.> <Ref. to IG(w/o STI)-6, INSPECTION, Spark Plug.> 2) Check the status of the ignition coil connector and the spark plug terminal.	Is there any fault in the ignition system?	After repairing the ignition system, replace the catalytic converter. <Ref. to EX(STI)-8, 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**.

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(STI)-98, INSPECTION, Fuel System Trouble in General.> <Ref. to FU(w/o STI)-94, INSPECTION, Fuel System Trouble in General.> 2) Check throttle body. <Ref. to FU(STI)-15, INSPECTION, Throttle Body.> <Ref. to FU(w/o STI)-16, INSPECTION, Throttle Body.> 3) Check intake manifold. <Ref. to FU(STI)-33, INSPECTION, Intake Manifold.> <Ref. to FU(w/o STI)-33, INSPECTION, Intake Manifold.>	Is there any fault in the fuel system?	After repairing the fuel system, replace the catalytic converter. <Ref. to EX(STI)-8, 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(H4DOTC)(diag)-87, List of Diagnostic Trouble Code (DTC).> After checking the DTC, replace the catalytic converter. <Ref. to EX(STI)-8, 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(STI)-56, Rear Oxygen Sensor.> <Ref. to FU(w/o STI)-55, Rear Oxygen Sensor.>

CG: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(H4DOTC)-152, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, 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(H4DOTC)(diag)-87, 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: Refer to "Compulsory Valve Operation Check Mode" for more operation procedures. <Ref. to EN(H4DOTC)(diag)-64, Compulsory Valve Operation Check Mode.>	Does the purge control solenoid valve operate?	Go to step **3**.	Replace the purge control solenoid valve. <Ref. to EC(STI)-11, Purge Control Solenoid Valve.> <Ref. to EC(w/o STI)-11, Purge Control Solenoid Valve.>
3	**CHECK EVAPORATIVE EMISSION CONTROL SYSTEM LINE.** 1) Turn the ignition switch to OFF. 2) Check the delivery (test) mode connector is disconnected.	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.

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

DTC DETECTING CONDITION:

- Detected when 2 consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-155, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, 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(H4DOTC)(diag)-87, 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 «Atmosphere 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(H4DOTC)(diag)-40, 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 3.3 kPa (24.5 mmHg, 1 inHg) or more?	Replace the part that showed larger deviation from the actual atmospheric pressure than the other. • If deviations in value for «Atmosphere Pressure» is larger: Replace the leak check valve assembly. <Ref. to EC(STI)-19, Leak Check Valve Assembly.> <Ref. to EC(w/o STI)-20, Leak Check Valve Assembly.> • If deviations in value for «Mani. Absolute Pressure» is larger: Replace the manifold absolute pressure sensor. <Ref. to FU(STI)-43, Manifold Absolute Pressure Sensor.> <Ref. to FU(w/o STI)-43, Manifold Absolute Pressure 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.

CI: DTC P0452 EVAPORATIVE EMISSION SYSTEM PRESSURE SENSOR/ SWITCH LOW

DTC DETECTING CONDITION:

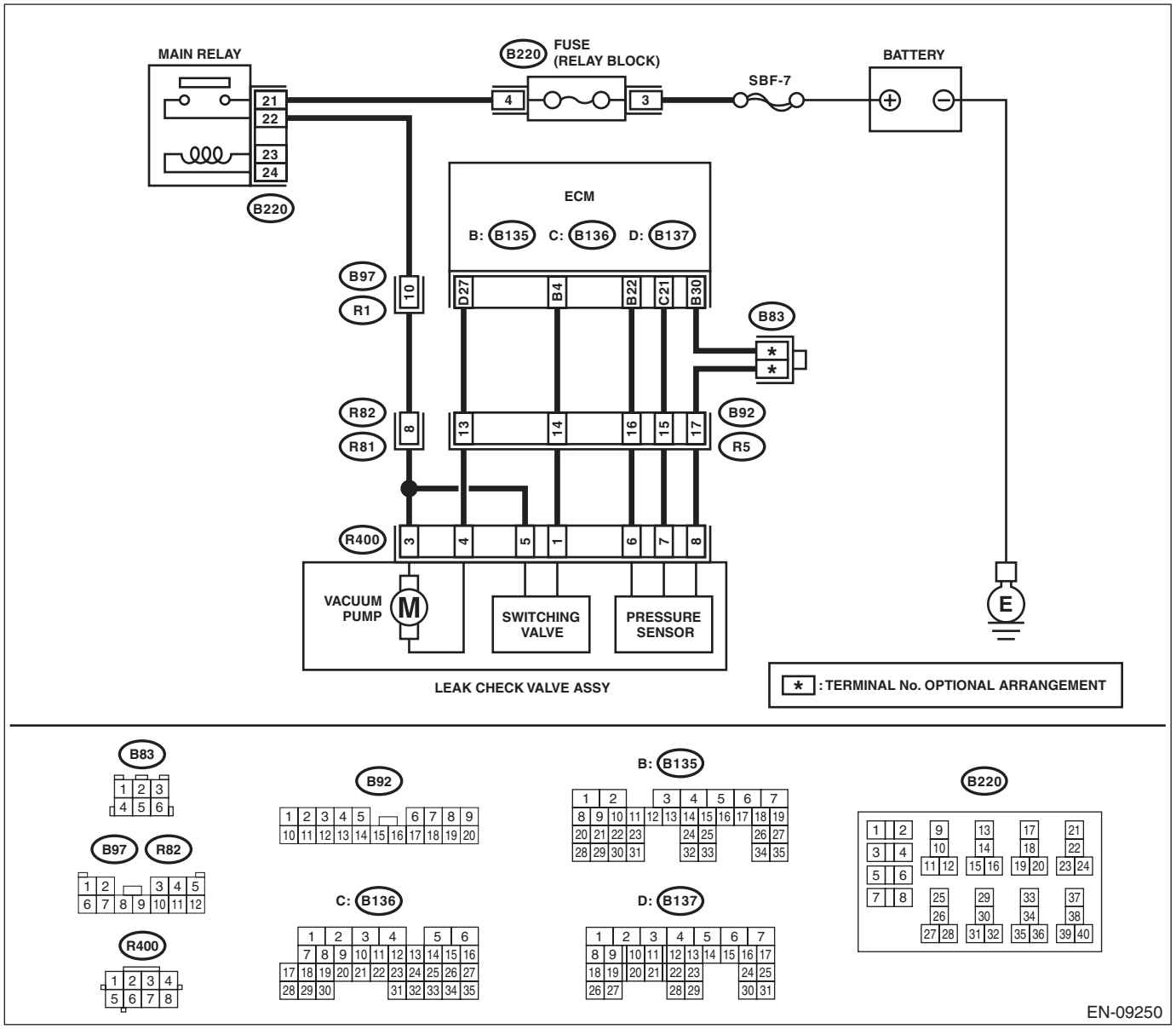
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-157, DTC P0452 EVAPORATIVE EMISSION SYSTEM PRESSURE SENSOR/SWITCH LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK CURRENT DATA.** 1) Turn the ignition switch to ON. 2) Read the value of «Atmosphere Pressure» 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(H4DOTC)(diag)-40, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value in «Atmosphere Pressure» 34 kPa (255 mmHg, 10 inHg) or less?	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 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. 6 (+) — Chassis ground (–):***	Is the voltage 4.5 V or more?	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 the leak check valve assembly connector • Poor contact of ECM connector • Poor contact of coupling connector
3	**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 between ECM connector and chassis ground. ***Connector & terminal*** ***(B136) No. 21 — Chassis ground:***	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	**CHECK FOR POOR CONTACT.** Check for poor contact of leak check valve assembly connector.	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(STI)-19, Leak Check Valve Assembly.> <Ref. to EC(w/o STI)-20, Leak Check Valve Assembly.>

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

DTC DETECTING CONDITION:

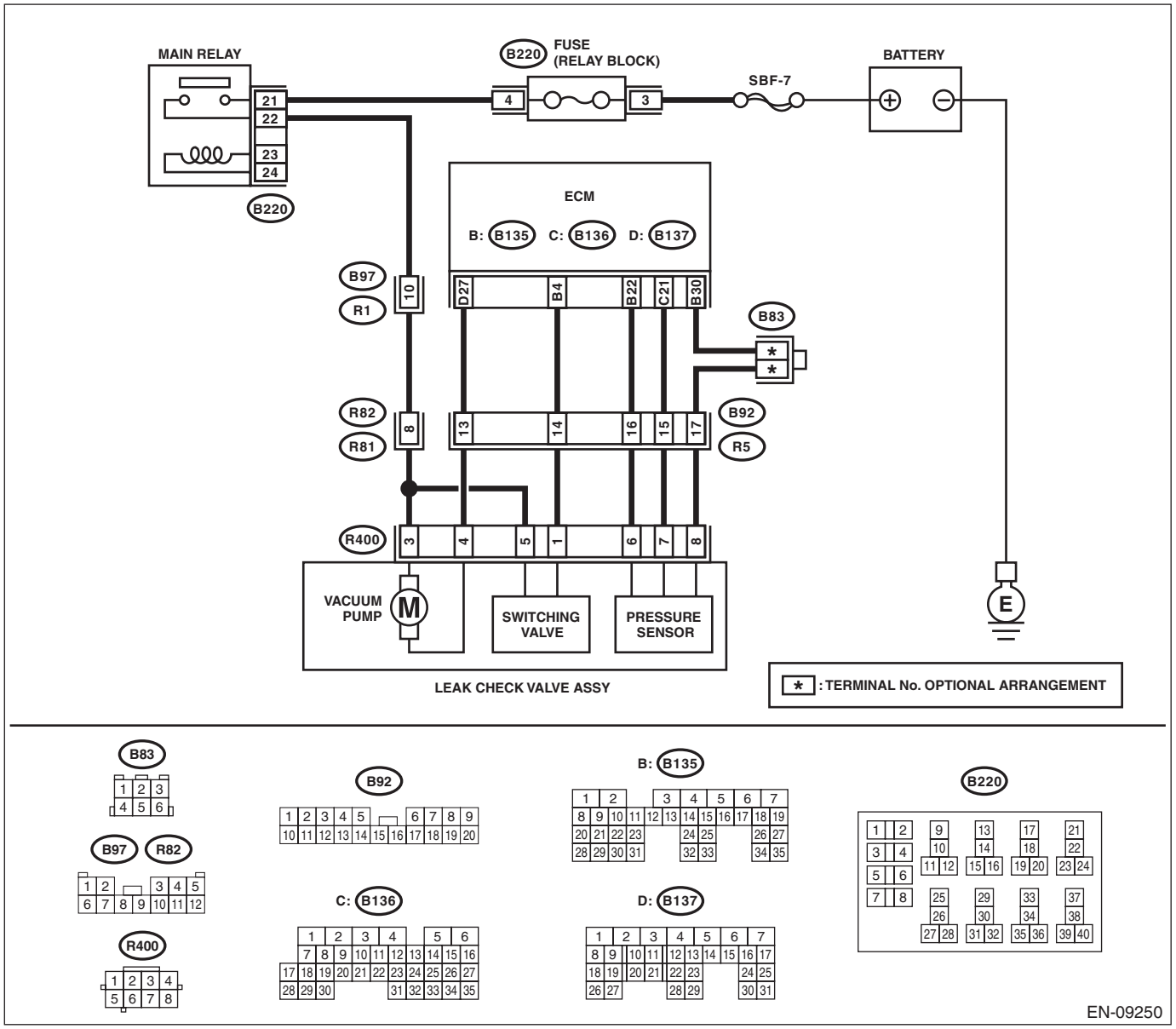
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-159, DTC P0453 EVAPORATIVE EMISSION SYSTEM PRESSURE SENSOR/SWITCH HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK CURRENT DATA.** 1) Turn the ignition switch to ON. 2) Read the value of «Atmosphere Pressure» 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(H4DOTC)(diag)-40, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value in «Atmosphere Pressure» 125 kPa (938 mmHg, 36.9 inHg) 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 HARNESS BETWEEN ECM AND LEAK CHECK VALVE ASSEMBLY CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and the leak check valve assembly. 3) Measure the resistance of harness between ECM connector and the leak check valve assembly connector. ***Connector & terminal*** ***(B136) No. 21 — (R400) No. 7:*** ***(B135) No. 30 — (R400) No. 8:***	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 the leak check valve assembly connector • Poor contact of coupling connector • Poor contact of joint connector
3	**CHECK FOR POOR CONTACT.** Check for poor contact of ECM and the leak check valve assembly connector.	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	**CHECK LEAK CHECK VALVE ASSEMBLY.** Check the pressure sensor of the leak check valve assembly. <Ref. to EC(STI)-21, CHECK PRESSURE SENSOR, INSPECTION, Leak Check Valve Assembly.> <Ref. to EC(w/o STI)-22, CHECK PRESSURE SENSOR, INSPECTION, Leak Check Valve Assembly.>	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(STI)-19, Leak Check Valve Assembly.> <Ref. to EC(w/o STI)-20, Leak Check Valve Assembly.>

CK: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(H4DOTC)-161, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, 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(STI)-77, Fuel Filler Pipe.> <Ref. to FU(w/o STI)-75, 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(STI)-12, INSPECTION, Purge Control Solenoid Valve.> <Ref. to EC(w/o STI)-13, 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(STI)-11, Purge Control Solenoid Valve.> <Ref. to EC(w/o STI)-11, 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(STI)-93, Fuel Delivery, Return and Evaporation Lines.> <Ref. to FU(w/o STI)-89, Fuel Delivery, Return and Evaporation Lines.>	Go to step **6**.

	Step	Check	Yes	No
6	**CHECK CANISTER.**	Are there holes on the canister?	Replace the canister. <Ref. to EC(STI)-7, Canister.> <Ref. to EC(w/o STI)-7, 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(STI)-19, Leak Check Valve Assembly.> <Ref. to EC(w/o STI)-20, Leak Check Valve Assembly.>	Go to step **8**.
8	**CHECK FUEL TANK.** Remove the fuel tank. <Ref. to FU(STI)-70, Fuel Tank.> <Ref. to FU(w/o STI)-68, Fuel Tank.>	Are there damage or holes on the fuel tank?	Repair or replace the fuel tank. <Ref. to FU(STI)-70, Fuel Tank.> <Ref. to FU(w/o STI)-68, Fuel Tank.>	Go to step **9**.
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.

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

NOTE:
For the diagnostic procedure, refer to DTC P0455. <Ref. to EN(H4DOTC)(diag)-261, DTC P0455 EVAPORATIVE EMISSION SYSTEM LEAK DETECTED (LARGE LEAK), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

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

DTC DETECTING CONDITION:

- Detected when 2 consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-168, DTC P0458 EVAPORATIVE EMISSION SYSTEM PURGE CONTROL VALVE CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

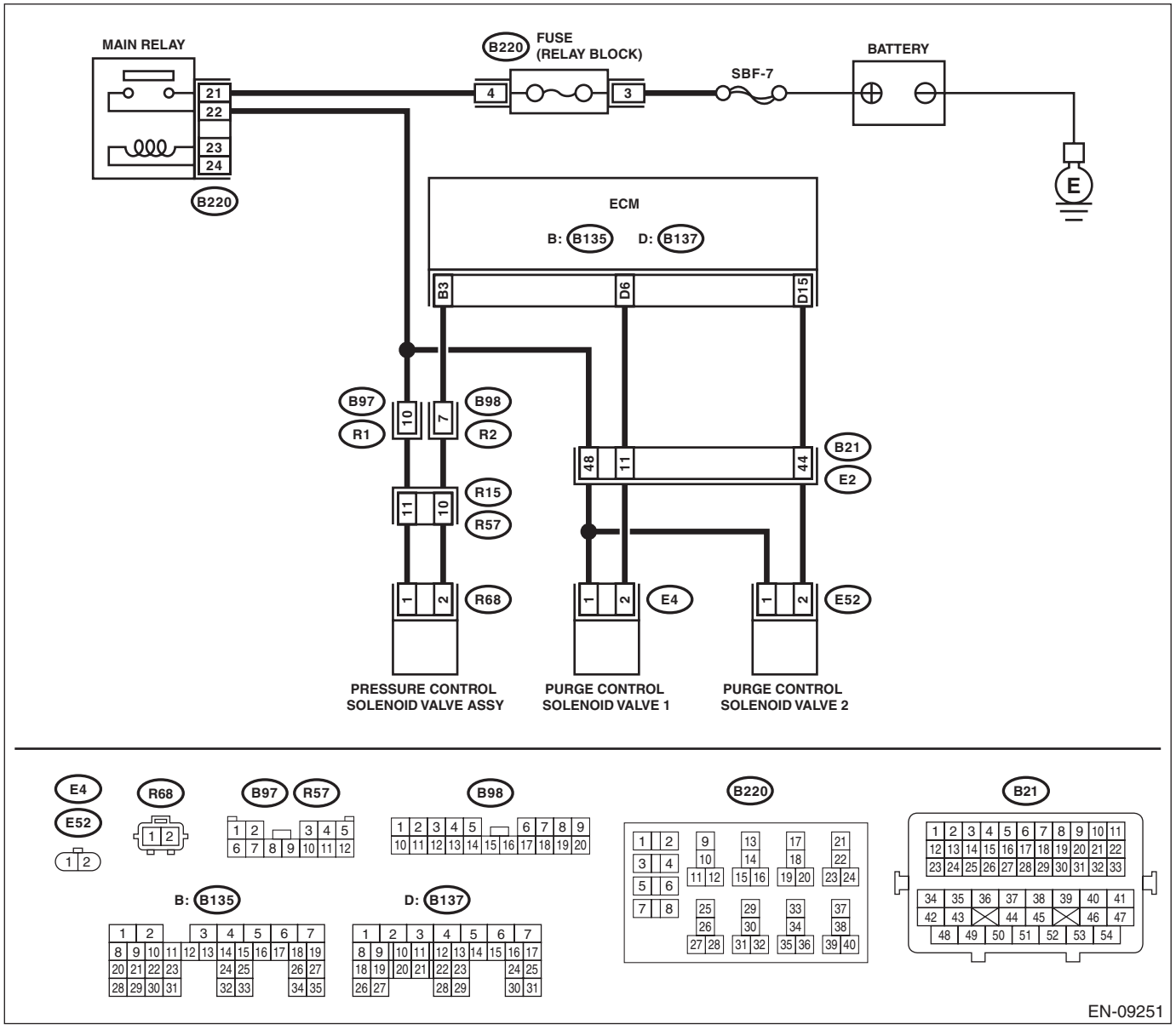
Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	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 chassis ground. ***Connector & terminal*** ***(B137) No. 6 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **2**.	Go to step **3**.
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 open or short circuit of harness or temporary poor contact of connector may be the cause.
3	**CHECK POWER SUPPLY TO PURGE CONTROL SOLENOID VALVE CONNECTOR.** Measure the voltage between purge control solenoid valve 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 CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and purge control solenoid valve. 3) Measure the resistance between the purge control solenoid valve connector and engine ground. ***Connector & terminal*** ***(E4) No. 2 — Engine ground:***	Is the resistance 1 MΩ or more?	Go to step **5**.	Repair the short circuit to ground in harness between ECM connector and purge control solenoid valve connector.
5	**CHECK HARNESS BETWEEN ECM AND PURGE CONTROL SOLENOID VALVE CONNECTOR.** Measure the resistance of harness between ECM connector and purge control solenoid valve connector. ***Connector & terminal*** ***(B137) No. 6 — (E4) 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: • Open circuit in harness between ECM connector and purge control solenoid valve connector • Poor contact of coupling connector

	Step	Check	Yes	No
6	**CHECK PURGE CONTROL SOLENOID VALVE.** 1) Remove the purge control solenoid valve. 2) Measure the resistance between purge control solenoid valve terminals. ***Terminals*** ***No. 1 — No. 2:***	Is the resistance 10 — 100 Ω?	Repair the poor contact of purge control solenoid valve connector.	Replace the purge control solenoid valve. <Ref. to EC(STI)-11, Purge Control Solenoid Valve.> <Ref. to EC(w/o STI)-11, Purge Control Solenoid Valve.>

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

DTC DETECTING CONDITION:

- Detected when 2 consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-170, DTC P0459 EVAPORATIVE EMISSION SYSTEM PURGE CONTROL VALVE CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

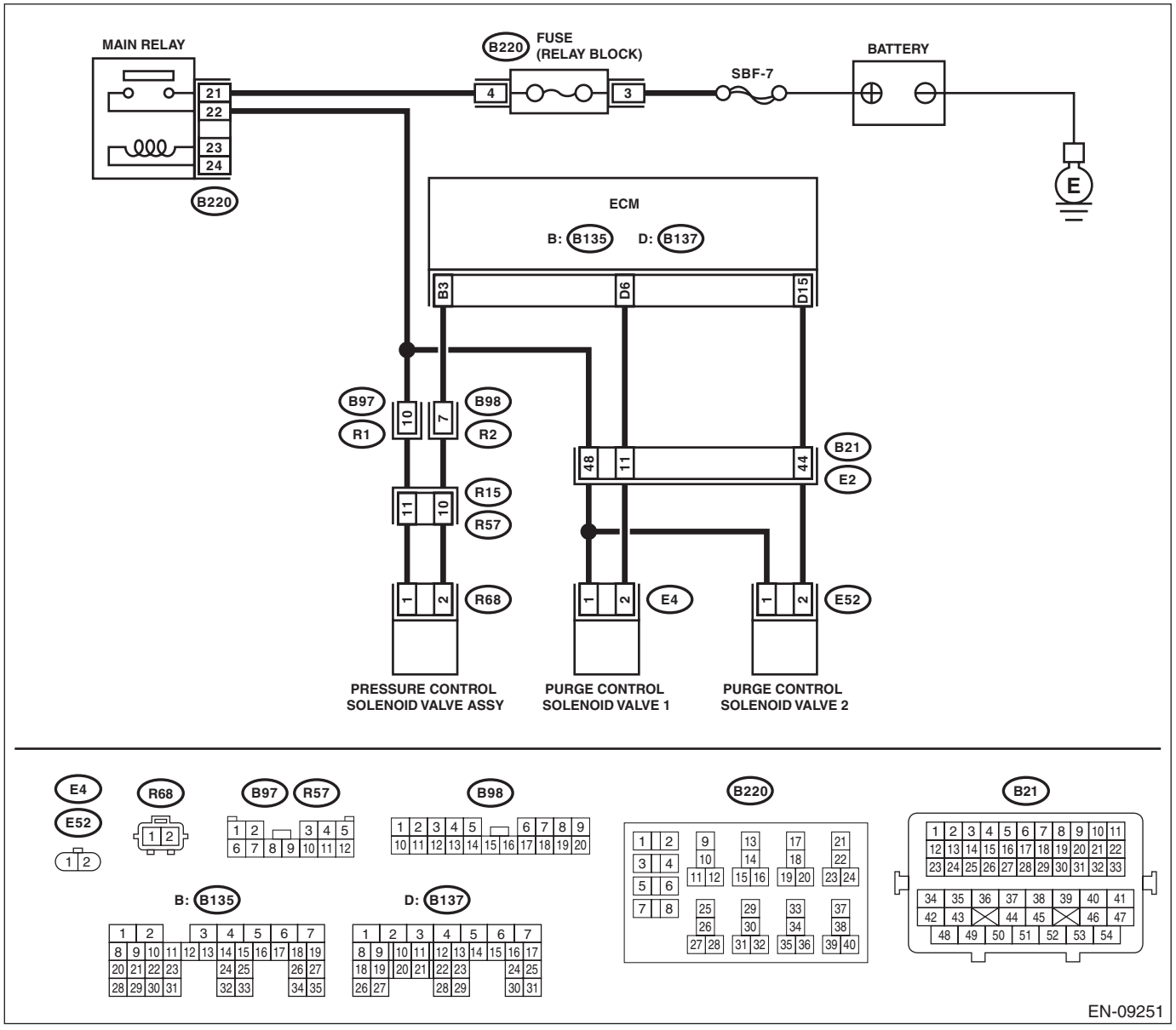
Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK HARNESS BETWEEN ECM AND PURGE CONTROL SOLENOID VALVE CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and purge control solenoid valve. 3) Turn the ignition switch to ON. 4) Measure the voltage between ECM connector and chassis ground. ***Connector & terminal*** ***(B137) No. 6 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Repair the short circuit to power in the harness between ECM connector and purge control solenoid valve connector.	Go to step **2**.
2	**CHECK PURGE CONTROL SOLENOID VALVE.** 1) Turn the ignition switch to OFF. 2) Measure the resistance between purge control solenoid valve terminals. ***Terminals*** ***No. 1 — No. 2:***	Is the resistance less than 1 Ω?	Replace the purge control solenoid valve. <Ref. to EC(STI)-11, Purge Control Solenoid Valve.> <Ref. to EC(w/o STI)-11, Purge Control Solenoid Valve.>	Repair the poor contact of ECM connector.

CO: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(H4DOTC)-172, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, 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(H4DOTC)(diag)-87, List of Diagnostic Trouble Code (DTC).>	Replace the fuel level sensor and fuel sub level sensor. <Ref. to FU(STI)-82, Fuel Level Sensor.> <Ref. to FU(STI)-83, Fuel Sub Level Sensor.> <Ref. to FU(w/o STI)-80, Fuel Level Sensor.> <Ref. to FU(w/o STI)-81, Fuel Sub Level Sensor.>

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

NOTE:
For the diagnostic procedure, refer to DTC P0463. <Ref. to EN(H4DOTC)(diag)-269, DTC P0463 FUEL LEVEL SENSOR “A” CIRCUIT HIGH, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

CQ: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(H4DOTC)-176, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, 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-8, CHECK FUEL LEVEL SENSOR, INSPECTION, Combination Meter System.>	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.

CR:DTC P04AC EVAP SYSTEM PURGE CONTROL VALVE "B" CIRCUIT LOW

DTC DETECTING CONDITION:

- Detected when 2 consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-178, DTC P04AC EVAP SYSTEM PURGE CONTROL VALVE "B" CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

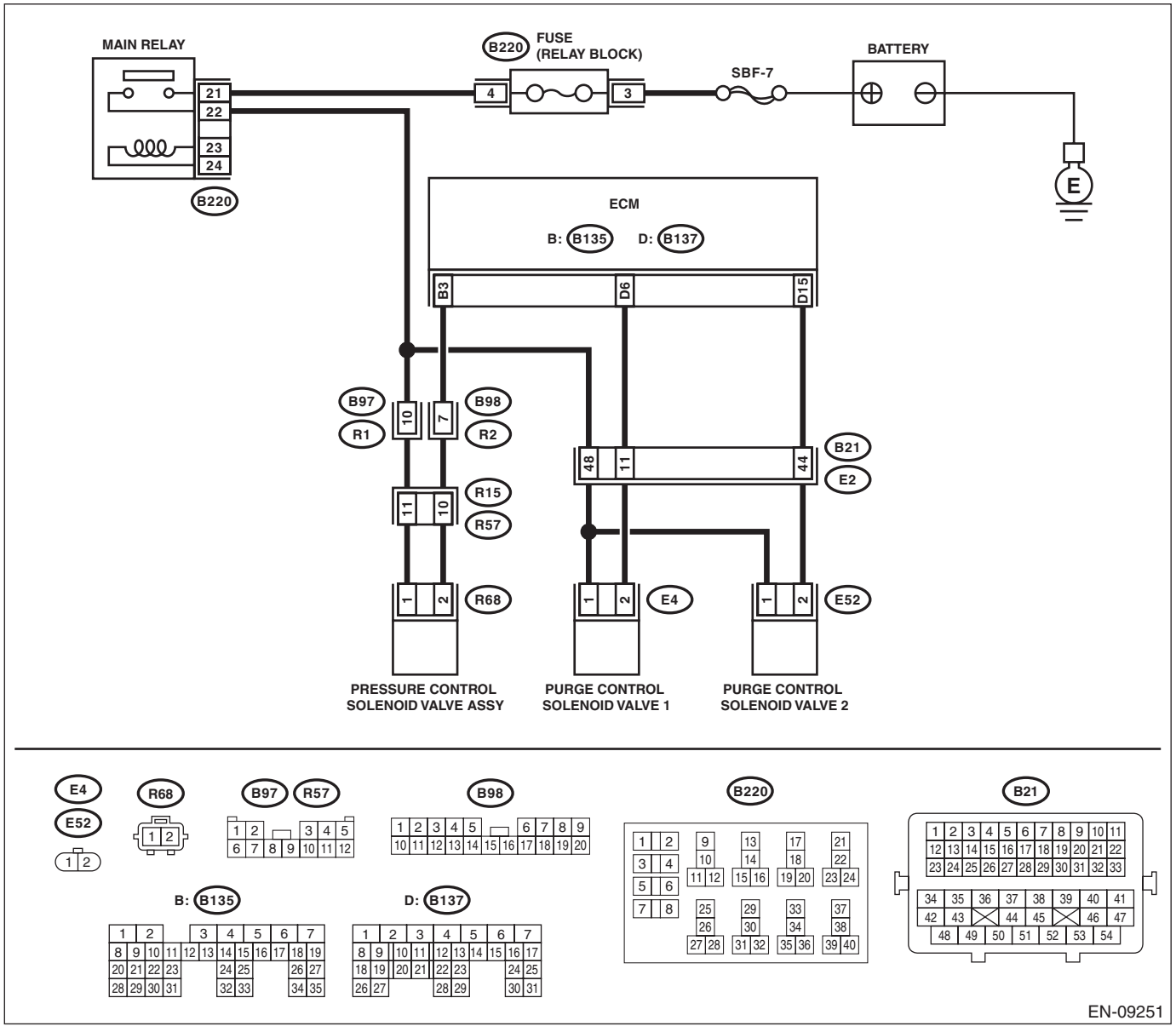
Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	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 chassis ground. ***Connector & terminal*** ***(B137) No. 15 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **2**.	Go to step **3**.
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 open or short circuit of harness or temporary poor contact of connector may be the cause.
3	**CHECK POWER SUPPLY TO PURGE CONTROL SOLENOID VALVE 2 CONNECTOR.** 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 MΩ 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*** ***(B137) No. 15 — (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: • Open circuit of harness between ECM connector and purge control solenoid valve 2 connector • Poor contact of coupling connector

	Step	Check	Yes	No
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(STI)-11, Purge Control Solenoid Valve.> <Ref. to EC(w/o STI)-11, Purge Control Solenoid Valve.>

CS:DTC P04AD EVAP SYSTEM PURGE CONTROL VALVE "B" CIRCUIT HIGH

DTC DETECTING CONDITION:

- Detected when 2 consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-179, DTC P04AD EVAP SYSTEM PURGE CONTROL VALVE "B" CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

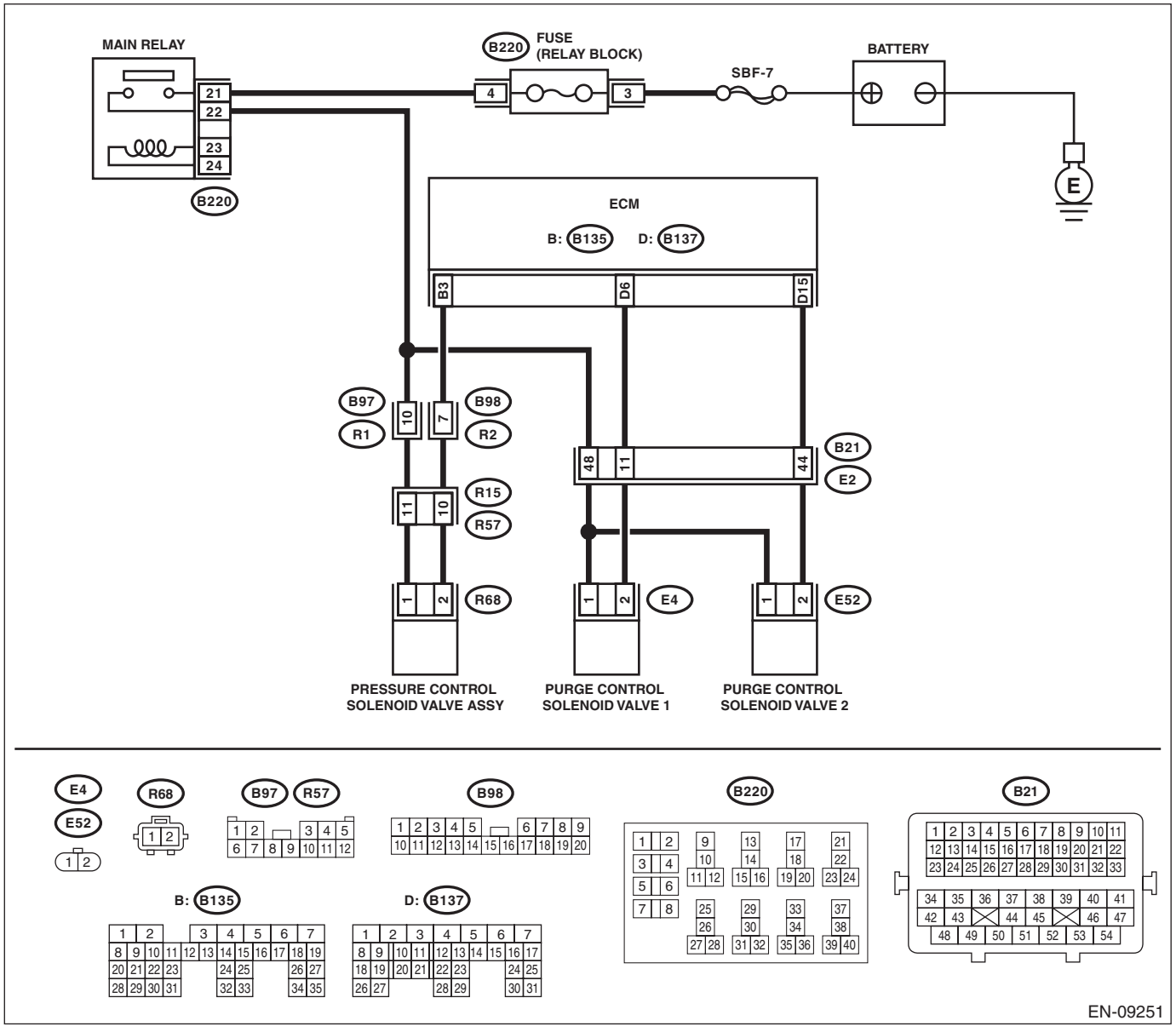
Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**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) Turn the ignition switch to ON. 4) Measure the voltage between ECM connector and chassis ground. ***Connector & terminal*** ***(B137) No. 15 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Repair the short circuit to power in harness between ECM connector and purge control solenoid valve 2 connector.	Go to step **2**.
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. ***Terminals*** ***No. 1 — No. 2:***	Is the resistance less than 1 Ω?	Replace the purge control solenoid valve 2. <Ref. to EC(STI)-11, Purge Control Solenoid Valve.> <Ref. to EC(w/o STI)-11, Purge Control Solenoid Valve.>	Repair the poor contact of ECM connector.

CT:DTC P04DB CRANKCASE VENTILATION SYSTEM DISCONNECTED

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-180, DTC P04DB CRANKCASE VENTILATION SYSTEM DISCONNECTED, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

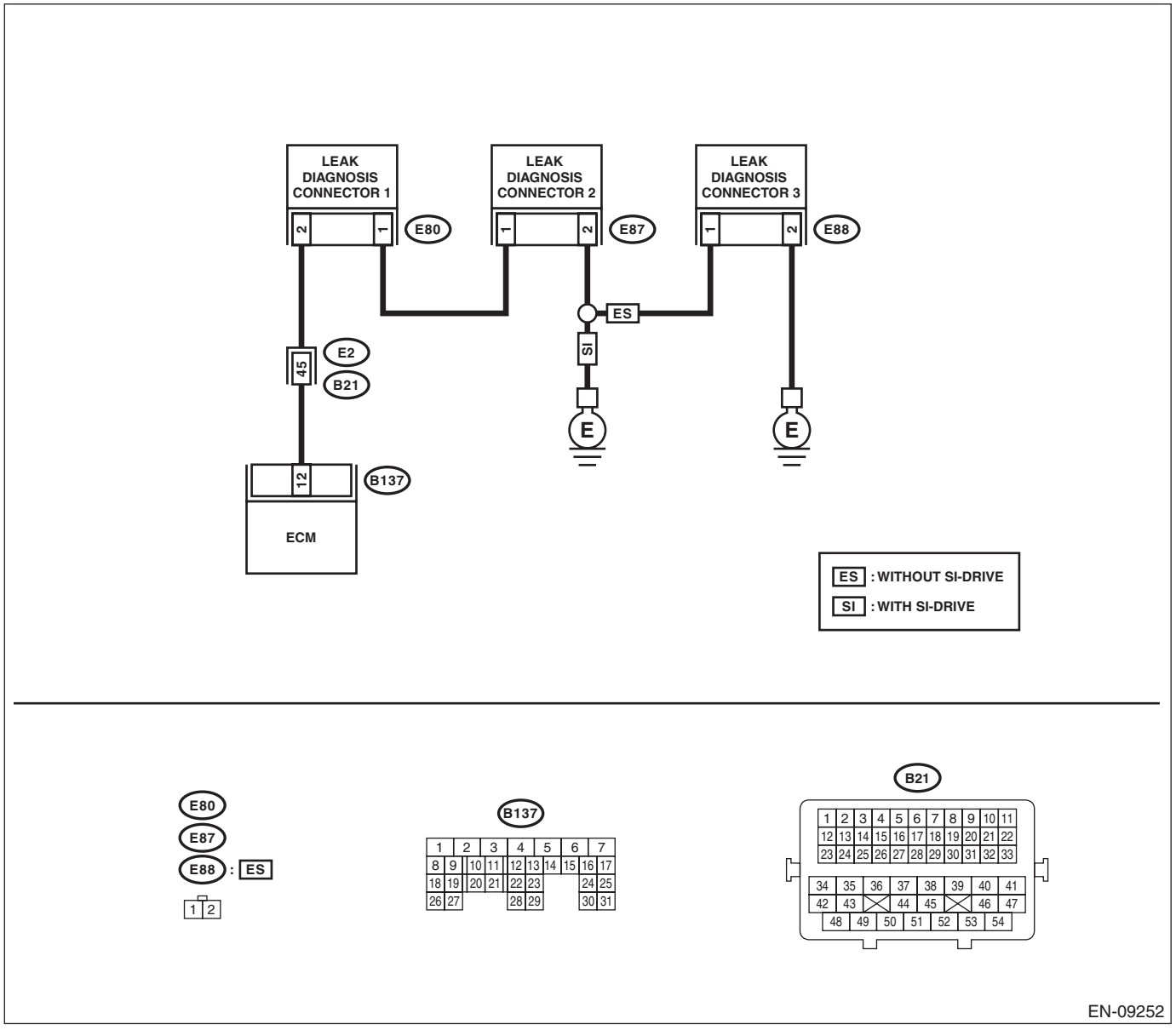
Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK BLOW-BY HOSE.** Check the blow-by hose condition.	Is there any disconnection or crack in blow-by hose?	Install or replace the blow-by hose.	Go to step **2**.
2	**CHECK HARNESS BETWEEN ECM AND PCV HOSE ASSEMBLY CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from the ECM and PCV hose assembly. 3) Measure the resistance of harness between ECM connector and PCV hose assembly connector. ***Connector & terminal*** ***(B137) No. 12 — (E80) No. 2:***	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 PCV hose assembly connector • Poor contact of coupling connector
3	**CHECK HARNESS BETWEEN ECM AND PCV HOSE ASSEMBLY CONNECTOR.** Measure the resistance between PCV hose assembly connector and chassis ground. ***Connector & terminal*** ***(B137) No. 12 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **4**.	Repair the short circuit to ground in harness between ECM connector and PCV hose assembly connector.
4	**CHECK HARNESS BETWEEN LEAK DIAGNOSIS CONNECTORS.** Measure the resistance of harness between leak diagnosis connectors. ***Connector & terminal*** ***Models without SI-DRIVE*** ***(B80) No. 1 — (B87) No. 1:*** ***(B87) No. 2 — (B88) No. 1:*** ***Models with SI-DRIVE*** ***(B80) No. 1 — (B87) No. 1:***	Is the resistance less than 1 Ω?	Go to step **5**.	Repair the open circuit in the wiring harness between leak diagnosis connectors.
5	**CHECK GROUND CIRCUIT OF PCV HOSE ASSEMBLY.** Measure the resistance of harness between PCV hose assembly connector and engine ground. ***Connector & terminal*** ***Models without SI-DRIVE*** ***(B88) No. 2 — Engine ground:*** ***Models with SI-DRIVE*** ***(B87) No. 2 — Engine ground:***	Is the resistance less than 5 Ω?	Go to step **6**.	Repair the open circuit in harness between PCV hose assembly connector and engine ground.
6	**CHECK PCV HOSE ASSEMBLY.** Measure the resistance between terminals of each leak diagnosis connector. ***Terminals*** ***No. 1 — No. 2:***	Is the resistance less than 1 Ω at all measurement?	Repair the poor contact of ECM and PCV hose assembly connector.	Replace the PCV hose assembly. <Ref. to EC(STI)-24, PCV Hose Assembly.> <Ref. to EC(w/o STI)-25, PCV Hose Assembly.>

CU:DTC P0500 VEHICLE SPEED SENSOR “A”

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-182, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, 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)-48, List of Diagnostic Trouble Code (DTC).>	Repair the poor contact of ECM connector.

CV: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(H4DOTC)-183, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, 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(H4DOTC)(diag)-87, 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(STI)-7, 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(STI)-15, REMOVAL, Throttle Body.> <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(H4DOTC)(diag)-371, DTC P2101 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

CW: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(H4DOTC)-184, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, 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(H4DOTC)(diag)-87, 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(STI)-15, REMOVAL, Throttle Body.> <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(H4DOTC)(diag)-371, DTC P2101 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

CX:DTC P050A COLD START IDLE AIR CONTROL SYSTEM PERFORMANCE

DTC DETECTING CONDITION:

- Detected when 2 consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-185, DTC P050A COLD START IDLE AIR CONTROL SYSTEM PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

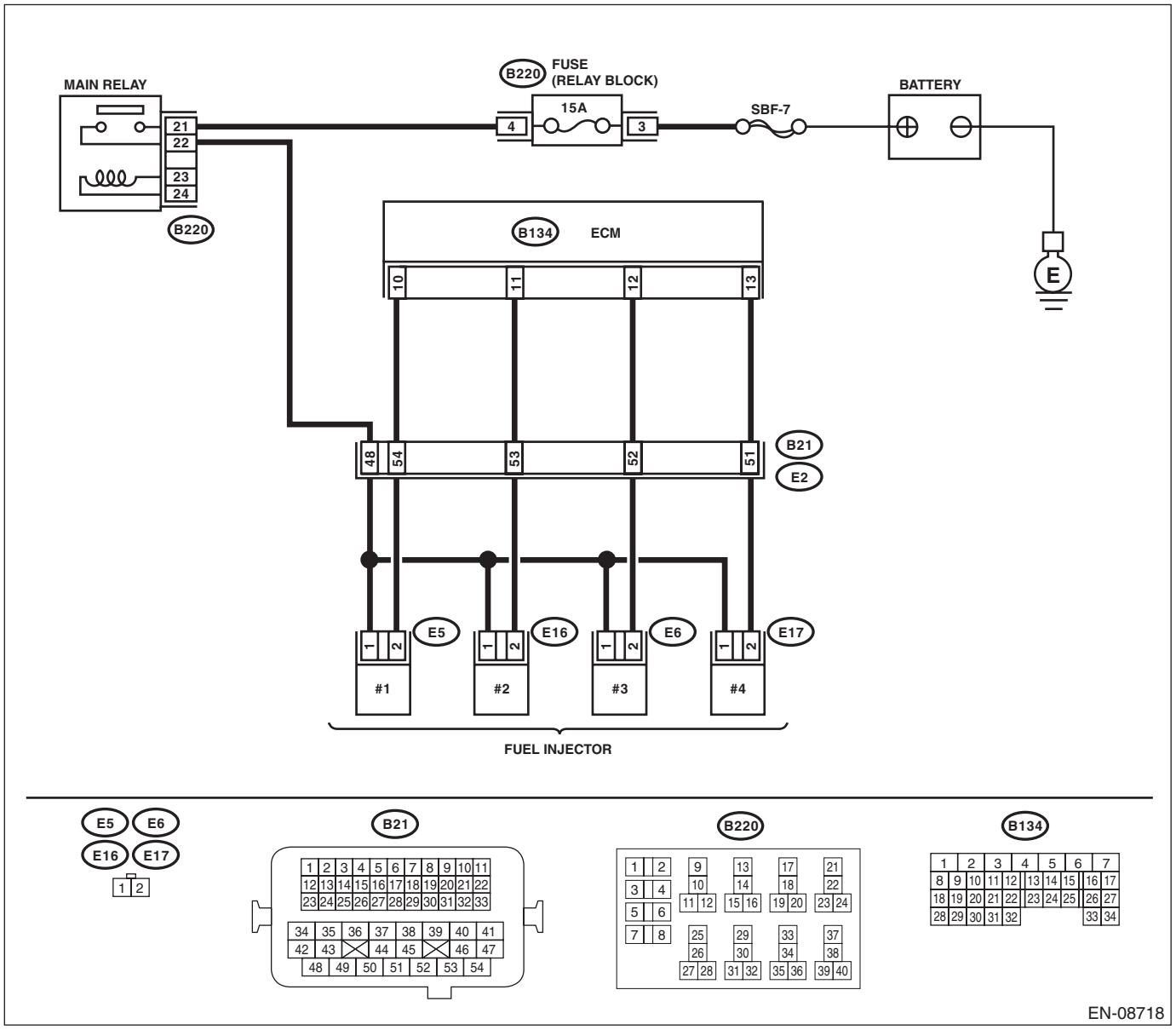
- Engine keeps running at higher speed than specified idle speed.
- Engine keeps running at a lower speed than the specified idle speed.
- Engine stalls.

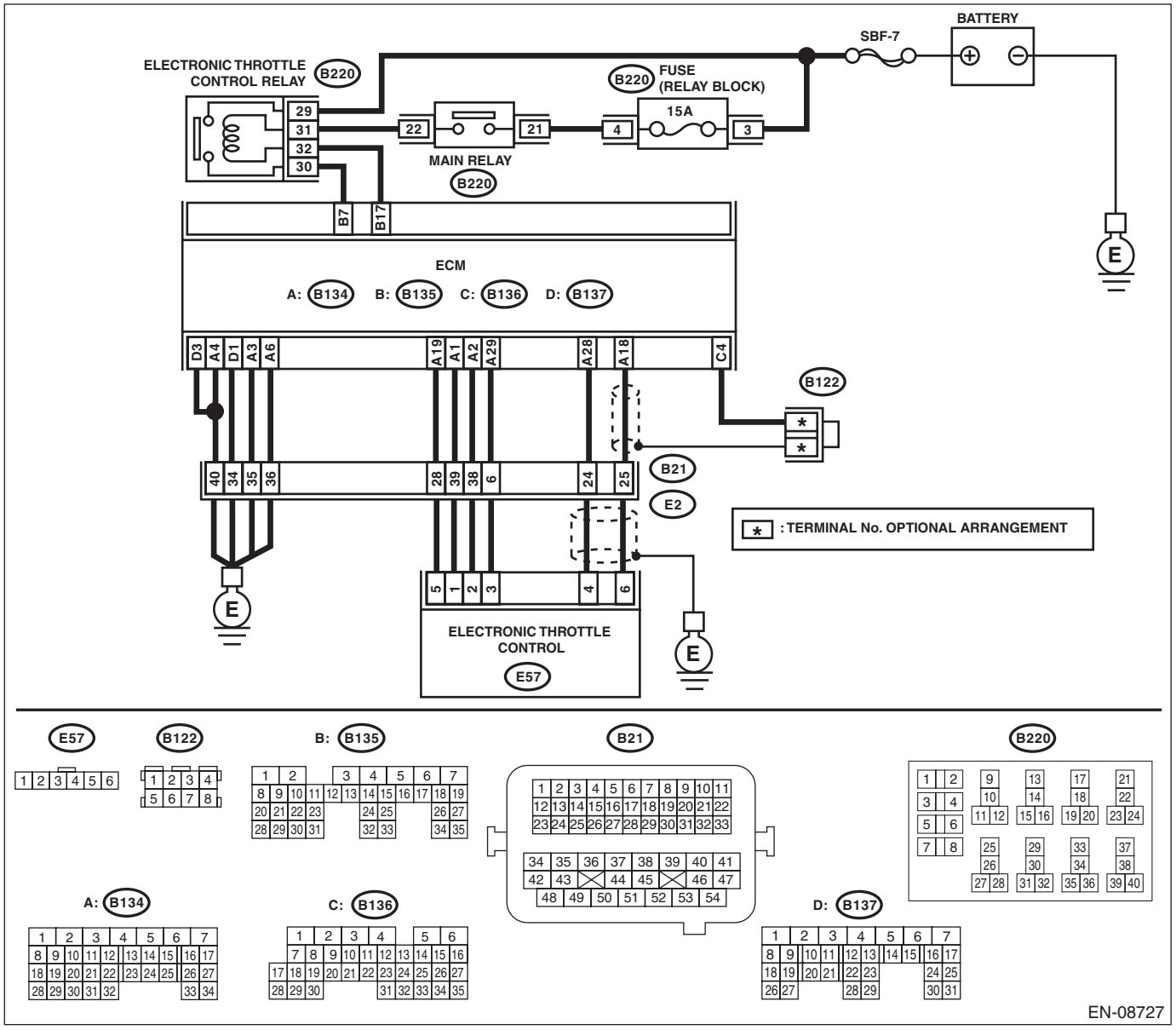
CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>





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(H4DOTC)(diag)-87, List of Diagnostic Trouble Code (DTC).>	Go to step **2**.
2	**CHECK ENGINE OIL.**	Is there a proper amount of engine oil?	Go to step **3**.	Replace engine oil. <Ref. to LU(STI)-11, REPLACEMENT, Engine Oil.>
3	**CHECK EXHAUST SYSTEM.**	Are there holes or loose bolts on exhaust system?	Repair the exhaust system.	Go to step **4**.

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 while disconnecting pressure regulator vacuum hose from intake manifold. <Ref. to ME(STI)-25, INSPECTION, Fuel Pressure.> <Ref. to ME(w/o STI)-24, INSPECTION, Fuel Pressure.> **CAUTION:** **Release fuel pressure before removing the fuel pressure gauge.** NOTE: If fuel pressure does not increase, squeeze the fuel return hose 2 to 3 times, then measure fuel pressure again.	Is the measured value 284 — 314 kPa (2.9 — 3.2 kg/cm^2, 41 — 46 psi)?	Go to step **6**.	Check the fuel pump and fuel delivery line. • Models without SI-DRIVE <Ref. to FU(w/o STI)-79, INSPECTION, Fuel Pump.> <Ref. to FU(w/o STI)-93, INSPECTION, Fuel Delivery, Return and Evaporation Lines.> • Models with SI-DRIVE <Ref. to FU(STI)-81, INSPECTION, Fuel Pump.> <Ref. to FU(STI)-97, INSPECTION, Fuel Delivery, Return and Evaporation Lines.>
6	**CHECK FUEL PRESSURE.** After connecting the pressure regulator vacuum hose, measure fuel pressure. <Ref. to ME(STI)-25, INSPECTION, Fuel Pressure.> <Ref. to ME(w/o STI)-24, INSPECTION, Fuel Pressure.> **CAUTION:** **Release fuel pressure before removing the fuel pressure gauge.** NOTE: • If fuel pressure does not increase, squeeze fuel return hose 2 to 3 times, then measure fuel pressure again. • If the measured value at this step is out of specification, check or replace pressure regulator and pressure regulator vacuum hose.	Is the measured value 230 — 260 kPa (2.4 — 2.7 kg/cm^2, 33 — 38 psi)?	Go to step **7**.	Check the fuel pump and fuel delivery line. • Models without SI-DRIVE <Ref. to FU(w/o STI)-79, INSPECTION, Fuel Pump.> <Ref. to FU(w/o STI)-93, INSPECTION, Fuel Delivery, Return and Evaporation Lines.> • Models with SI-DRIVE <Ref. to FU(STI)-81, INSPECTION, Fuel Pump.> <Ref. to FU(STI)-97, INSPECTION, Fuel Delivery, Return and Evaporation Lines.>

	Step	Check	Yes	No
7	**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(H4DOTC)(diag)-40, 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 **8**.	Replace the engine coolant temperature sensor. <Ref. to FU(STI)-34, Engine Coolant Temperature Sensor.> <Ref. to FU(w/o STI)-34, Engine Coolant Temperature Sensor.>
8	**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) Place the shift lever in 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: • Subaru Select Monitor For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.> • 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 **9**.	Replace the mass air flow and intake air temperature sensor. <Ref. to FU(STI)-42, Mass Air Flow and Intake Air Temperature Sensor.> <Ref. to FU(w/o STI)-42, Mass Air Flow and Intake Air Temperature Sensor.>
9	**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) Place the shift lever in neutral position. 3) Turn the A/C switch to OFF. 4) Turn all the accessory switches to OFF. 5) Open the front hood. 6) Measure the ambient temperature. 7) Read the value of «Intake Air 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(H4DOTC)(diag)-40, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Subtract ambient temperature from «Intake Air Temp.». Is the obtained value –10 — 50°C (–18 — 90°F)?	Go to step **10**.	Check the mass air flow and intake air temperature sensor. <Ref. to FU(STI)-42, Mass Air Flow and Intake Air Temperature Sensor.> <Ref. to FU(w/o STI)-42, Mass Air Flow and Intake Air Temperature Sensor.>

	Step	Check	Yes	No
10	**CHECK OUTPUT SIGNAL OF ECM.** 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground on faulty cylinders. ***Connector & terminal*** ***#1 (B134) No. 10 (+) — Chassis ground (–):*** ***#2 (B134) No. 11 (+) — Chassis ground (–):*** ***#3 (B134) No. 12 (+) — Chassis ground (–):*** ***#4 (B134) No. 13 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **15**.	Go to step **11**.
11	**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. 2 — Engine ground:*** ***#2 (E16) No. 2 — Engine ground:*** ***#3 (E6) No. 2 — Engine ground:*** ***#4 (E17) No. 2 — Engine ground:***	Is the resistance 1 MΩ or more?	Go to step **12**.	Repair the short circuit to ground in harness between ECM connector and fuel injector connector.
12	**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 (B134) No. 10 — (E5) No. 2:*** ***#2 (B134) No. 11 — (E16) No. 2:*** ***#3 (B134) No. 12 — (E6) No. 2:*** ***#4 (B134) No. 13 — (E17) No. 2:***	Is the resistance less than 1 Ω?	Go to step **13**.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and fuel injector connector • Poor contact of coupling connector
13	**CHECK FUEL INJECTOR.** Measure the resistance between fuel injector terminals on faulty cylinder. ***Terminals*** ***No. 1 — No. 2:***	Is the resistance 5 — 20 Ω?	Go to step **14**.	Replace the faulty fuel injector. <Ref. to FU(STI)-45, Fuel Injector.> <Ref. to FU(w/o STI)-45, Fuel Injector.>
14	**CHECK POWER SUPPLY LINE.** 1) Turn the ignition switch to ON. 2) Measure the voltage between fuel injector and engine ground on faulty cylinders. ***Connector & terminal*** ***#1 (E5) No. 1 (+) — Engine ground (–):*** ***#2 (E16) No. 1 (+) — Engine ground (–):*** ***#3 (E6) No. 1 (+) — Engine ground (–):*** ***#4 (E17) No. 1 (+) — Engine ground (–):***	Is the voltage 10 V or more?	Repair the poor contact of all connectors in fuel injector circuit.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between the main relay connector and fuel injector connector on faulty cylinders • Poor contact of coupling connector • Poor contact of main relay connector

	Step	Check	Yes	No
15	**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) Turn the ignition switch to ON. 4) Measure the voltage between ECM and chassis ground on faulty cylinders. ***Connector & terminal*** ***#1 (B134) No. 10 (+) — Chassis ground (–):*** ***#2 (B134) No. 11 (+) — Chassis ground (–):*** ***#3 (B134) No. 12 (+) — Chassis ground (–):*** ***#4 (B134) No. 13 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Repair the short circuit to power in harness between ECM connector and fuel injector connectors.	Go to step **16**.
16	**CHECK FUEL INJECTOR.** 1) Turn the ignition switch to OFF. 2) Measure the resistance between fuel injector terminals on faulty cylinder. ***Terminals*** ***No. 1 — No. 2:***	Is the resistance 5 — 20 Ω?	Go to step **17**.	Replace the faulty fuel injector. <Ref. to FU(STI)-45, Fuel Injector.> <Ref. to FU(w/o STI)-45, Fuel Injector.>
17	**CHECK INSTALLATION 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(STI)-37, Camshaft Position Sensor.> <Ref. to FU(STI)-35, Crankshaft Position Sensor.> <Ref. to FU(w/o STI)-37, Camshaft Position Sensor.> <Ref. to FU(w/o STI)-35, Crankshaft Position Sensor.>	Go to step **18**.
18	**CHECK CRANK SPROCKET.** Remove the timing belt cover. <Ref. to ME(STI)-49, REMOVAL, Timing Belt Cover.> <Ref. to ME(w/o STI)-47, REMOVAL, Timing Belt Cover.>	Is the crank sprocket rusted or does it have broken teeth?	Replace the crank sprocket. <Ref. to ME(STI)-60, Crank Sprocket.> <Ref. to ME(w/o STI)-58, Crank Sprocket.>	Go to step **19**.
19	**CHECK INSTALLATION CONDITION OF TIMING BELT.** Turn the crankshaft, and align alignment mark on crank sprocket with alignment mark on cylinder block. ST 499987500 CRANKSHAFT SOCKET	Is the timing belt dislocated from its proper position?	Repair the installation condition of timing belt. <Ref. to ME(STI)-50, Timing Belt.> <Ref. to ME(w/o STI)-48, Timing Belt.>	Go to step **20**.
20	**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. 31 and No. 32 of electronic throttle control relay. 4) Measure the resistance between electronic throttle control relay terminals. ***Terminals*** ***No. 29 — No. 30:***	Is the resistance less than 1 Ω?	Go to step **21**.	Replace the electronic throttle control relay. <Ref. to FU(STI)-64, Electronic Throttle Control Relay.> <Ref. to FU(w/o STI)-62, Electronic Throttle Control Relay.>

	Step	Check	Yes	No
21	**CHECK POWER SUPPLY OF ELECTRONIC THROTTLE CONTROL RELAY.** Measure the voltage between electronic throttle control relay connector and chassis ground. ***Connector & terminal*** ***(B220) No. 29 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **22**.	Repair the open or ground short circuit of power supply circuit.
22	**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*** ***(B220) No. 32 (+) — 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 **23**.
23	**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. ***Connector & terminal*** ***(B220) No. 32 — Chassis ground:*** ***(B220) No. 30 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **24**.	Repair the short circuit to ground in harness between ECM connector and electronic throttle control relay connector.
24	**CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL RELAY CONNECTOR.** Measure the resistance between ECM connector and electronic throttle control relay connector. ***Connector & terminal*** ***(B135) No. 17 — (B220) No. 32:*** ***(B135) No. 7 — (B220) No. 30:***	Is the resistance less than 1 Ω?	Go to step **25**.	Repair the open circuit in harness between ECM connector and electronic throttle control relay connector.
25	**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 between ECM connector and chassis ground. ***Connector & terminal*** ***(B134) No. 19 — Chassis ground:*** ***(B134) No. 18 — Chassis ground:*** ***(B134) No. 18 — (B136) No. 4:*** ***(B134) No. 28 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **26**.	Repair the ground short circuit of harness between ECM connector and electronic throttle control connector.

	Step	Check	Yes	No
26	**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*** ***(B57) No. 6 — Engine ground:*** ***(B57) No. 4 — Engine ground:***	Is the resistance 1 MΩ or more?	Go to step **27**.	Repair the ground short circuit of harness between ECM connector and electronic throttle control connector. Replace the ECM if defective. <Ref. to FU(STI)-59, Engine Control Module (ECM).> <Ref. to FU(w/o STI)-57, Engine Control Module (ECM).>
27	**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. ***Connector & terminal*** ***(B134) No. 18 — (E57) No. 6:*** ***(B134) No. 28 — (E57) No. 4:*** ***(B134) No. 29 — (E57) No. 3:***	Is the resistance less than 1 Ω?	Go to step **28**.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and electronic throttle control connector • Poor contact of coupling connector
28	**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 **29**.	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
29	**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. 6 (+) — 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 **30**.

	Step	Check	Yes	No
30	**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*** ***(B134) No. 19 — (B134) No. 18:*** ***(B134) No. 19 — (B134) No. 28:***	Is the resistance 1 MΩ or more?	Go to step **31**.	Repair the short circuit to power in the harness between ECM connector and electronic throttle control connector.
31	**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 "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.>	Is the value of «Main-Throttle Sensor» 0.81 — 0.87 V?	Go to step **32**.	Repair the poor contact of electronic throttle control connector. Replace the electronic throttle control if defective. <Ref. to FU(STI)-15, Throttle Body.> <Ref. to FU(w/o STI)-15, Throttle Body.>
32	**CHECK SENSOR OUTPUT.** Read the value of «Sub-Throttle Sensor» using Subaru Select Monitor. NOTE: For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.>	Is the value of «Sub-Throttle Sensor» 1.64 — 1.70 V?	Go to step **33**.	Repair the poor contact of electronic throttle control connector. Replace the electronic throttle control if defective. <Ref. to FU(STI)-15, Throttle Body.> <Ref. to FU(w/o STI)-15, Throttle Body.>
33	**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*** ***(B134) No. 2 — (E57) No. 2:*** ***(B134) No. 1 — (E57) No. 1:***	Is the resistance less than 1 Ω?	Go to step **34**.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and electronic throttle control connector • Poor contact of coupling connector
34	**CHECK HARNESS BETWEEN ECM AND ELECTRONIC THROTTLE CONTROL MOTOR.** 1) Connect the connector to ECM. 2) Turn the ignition switch to ON. 3) Measure the voltage between electronic throttle control connector and engine ground. ***Connector & terminal*** ***(E57) No. 2 (+) — Engine ground (–):*** ***(E57) No. 1 (+) — Engine ground (–):***	Is the voltage 5 V or more?	Repair the short circuit to power in the harness between ECM connector and electronic throttle control connector.	Go to step **35**.

	Step	Check	Yes	No
35	**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. 2 — Engine ground:*** ***(E57) No. 1 — Engine ground:***	Is the resistance 1 MΩ or more?	Go to step **36**.	Repair the ground short circuit of harness between ECM connector and electronic throttle control connector.
36	**CHECK ELECTRONIC THROTTLE CONTROL MOTOR HARNESS.** Measure the resistance between electronic throttle control connectors. ***Connector & terminal*** ***(E57) No. 2 — (E57) No. 1:***	Is the resistance 1 MΩ or more?	Go to step **37**.	Repair the short circuit in harness between ECM connector and electronic throttle control connector.
37	**CHECK ELECTRONIC THROTTLE CONTROL GROUND CIRCUIT.** Measure the resistance between ECM connector and chassis ground. ***Connector & terminal*** ***(B134) No. 3 — Chassis ground:*** ***(B134) No. 4 — Chassis ground:*** ***(B134) No. 6 — Chassis ground:*** ***(B137) No. 1 — Chassis ground:*** ***(B137) No. 3 — Chassis ground:***	Is the resistance less than 5 Ω?	Go to step **38**.	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
38	**CHECK ELECTRONIC THROTTLE CONTROL.** Measure the resistance between electronic throttle control terminals. ***Terminals*** ***No. 1 — No. 2:***	Is the resistance 50 Ω or less?	Go to step **39**.	Replace the electronic throttle control. <Ref. to FU(STI)-15, Throttle Body.> <Ref. to FU(w/o STI)-15, Throttle Body.>
39	**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(STI)-15, Throttle Body.> <Ref. to FU(w/o STI)-15, Throttle Body.>

CY:DTC P050B COLD START IGNITION TIMING PERFORMANCE

NOTE:
For the diagnostic procedure, refer to DTC P050A. <Ref. to EN(H4DOTC)(diag)-280, DTC P050A COLD START IDLE AIR CONTROL SYSTEM PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

CZ:DTC P0560 SYSTEM VOLTAGE

DTC DETECTING CONDITION:

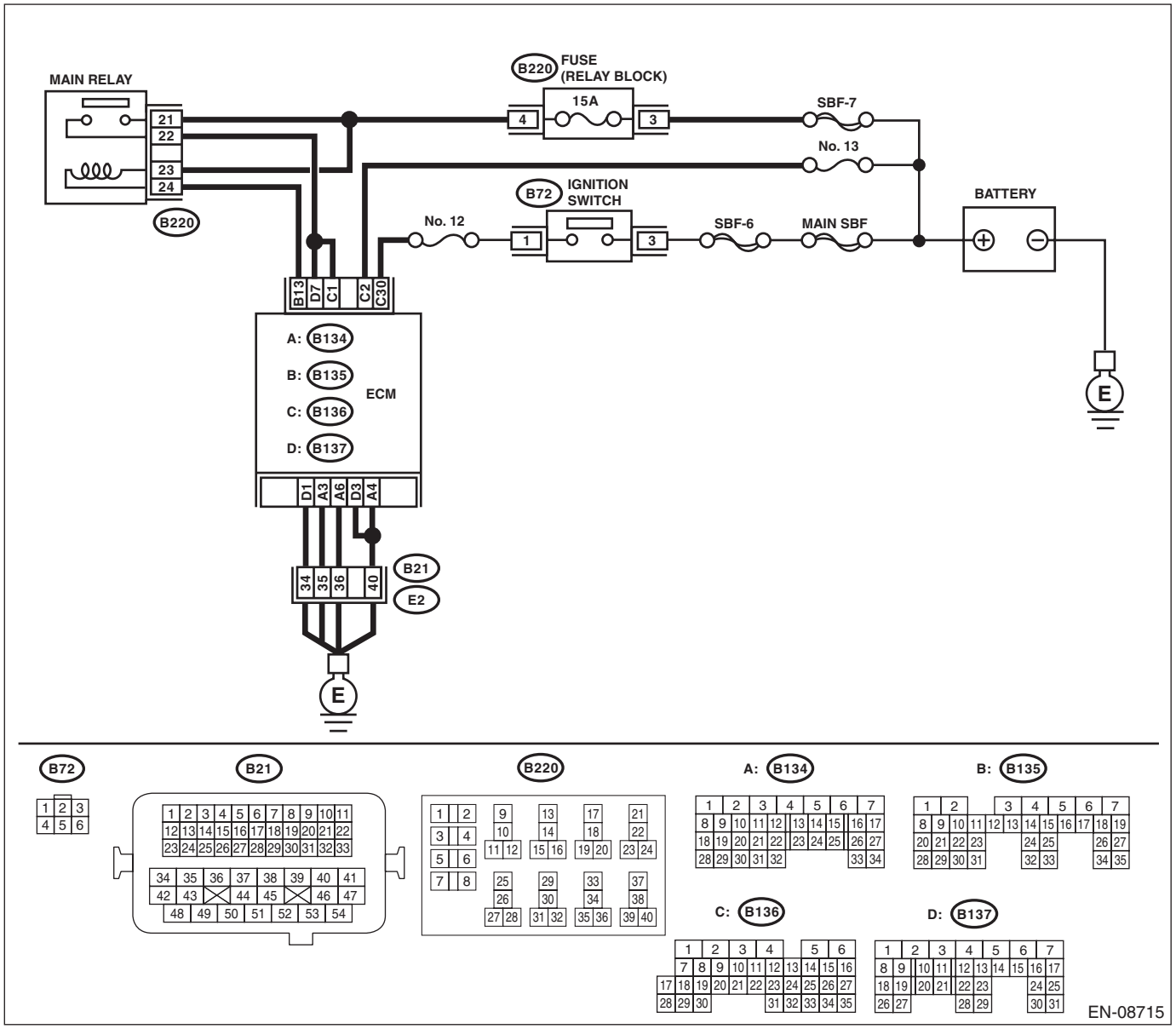
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-190, DTC P0560 SYSTEM VOLTAGE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	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*** ***(B136) No. 2 (+) — 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*** ***(B136) No. 2 — 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.**	Is the fuse blown out?	Replace the fuse.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and battery • Poor contact of ECM connector • Poor contact of battery terminal

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-191, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, 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(H4DOTC)(diag)-87, 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.

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

NOTE:
For the diagnostic procedure, refer to DTC P0606. <Ref. to EN(H4DOTC)(diag)-293, DTC P0606 CONTROL MODULE PROCESSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

DC:DTC P0606 CONTROL MODULE PROCESSOR

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-193, DTC P0606 CONTROL MODULE PROCESSOR, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

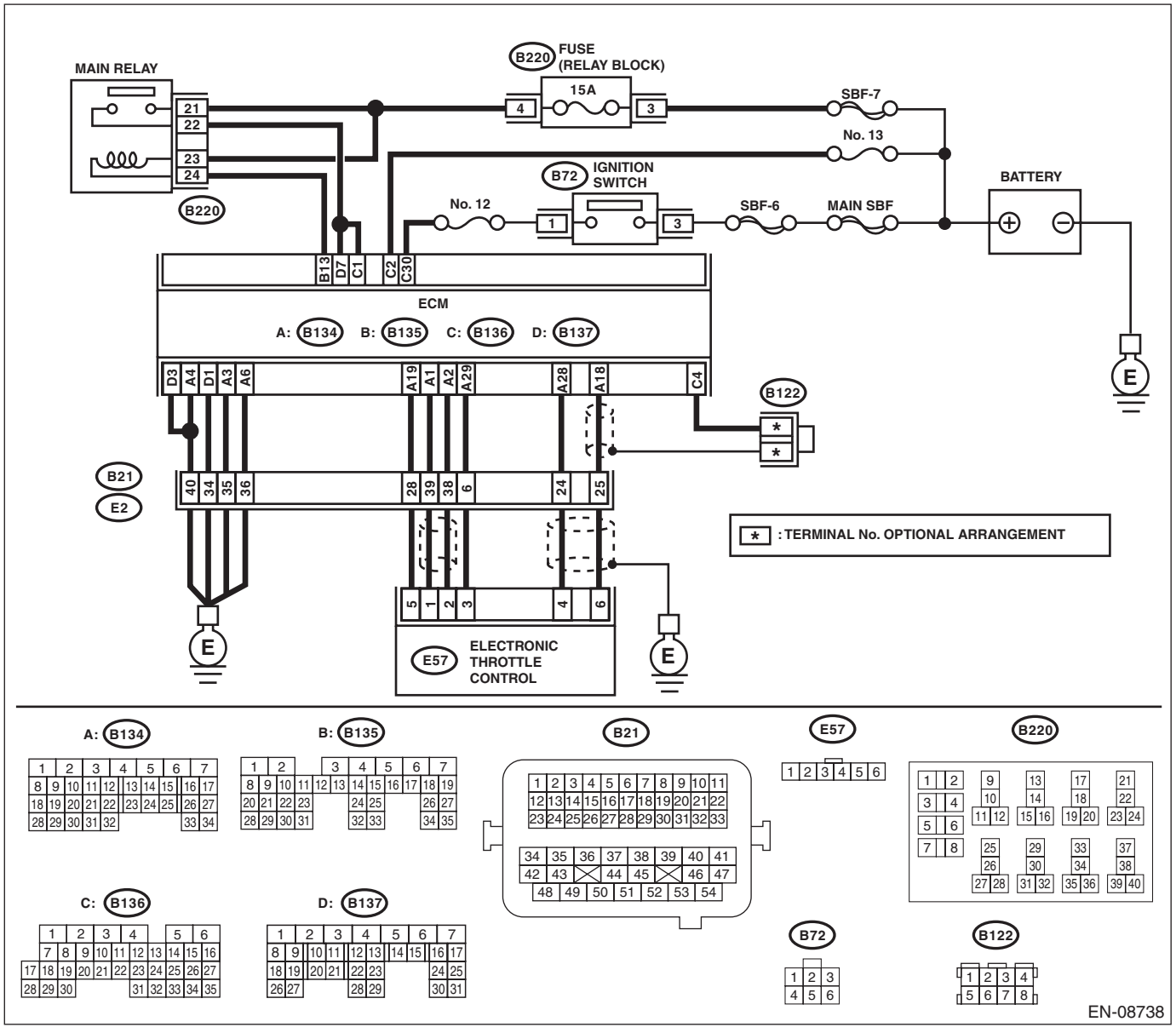
- Improper idling
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, 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 chassis ground. ***Connector & terminal*** ***(B136) No. 1 (+) — Chassis ground (–):*** ***(B137) No. 7 (+) — Chassis 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 chassis ground. ***Connector & terminal*** ***(B136) No. 1 (+) — Chassis ground (–):*** ***(B137) No. 7 (+) — Chassis 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*** ***(B134) No. 19 — (E57) No. 5:*** ***(B134) No. 29 — (E57) No. 3:***	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 electronic throttle control connector • Poor contact of coupling connector
4	**CHECK ECM GROUND HARNESS.** 1) Connect all connectors. 2) Turn the ignition switch to ON. 3) Measure the voltage between ECM connector and chassis ground. ***Connector & terminal*** ***(B134) No. 3 — Chassis ground:*** ***(B134) No. 4 — Chassis ground:*** ***(B134) No. 6 — Chassis ground:*** ***(B137) No. 1 — Chassis ground:*** ***(B137) No. 3 — Chassis ground:***	Is the voltage less than 1 V?	Repair the poor contact of ECM connector.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in ground circuit • Further tightening of the engine ground terminal • Poor contact of ECM connector • Poor contact of coupling connector

DD:DTC P060A INTERNAL CONTROL MODULE MONITORING PROCESSOR PERFORMANCE

NOTE:
For the diagnostic procedure, refer to DTC P0606. <Ref. to EN(H4DOTC)(diag)-293, DTC P0606 CONTROL MODULE PROCESSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

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

NOTE:
For the diagnostic procedure, refer to DTC P0606. <Ref. to EN(H4DOTC)(diag)-293, DTC P0606 CONTROL MODULE PROCESSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

DF:DTC P0616 STARTER RELAY CIRCUIT LOW

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-199, DTC P0616 STARTER RELAY CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

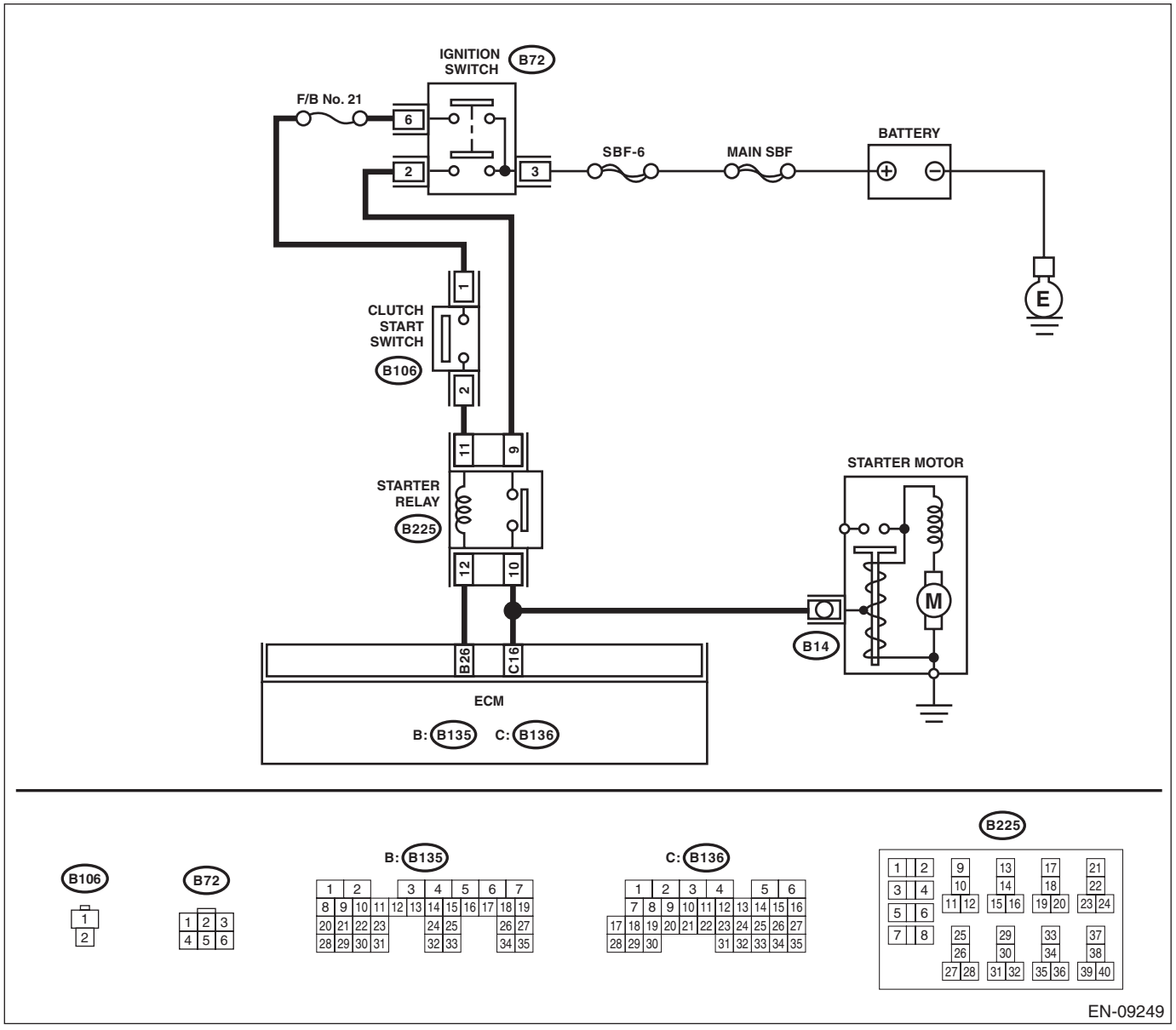
Failure of engine to start

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	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(H4DOTC)(diag)-87, 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 connectors from ECM and starter motor. 3) Remove the starter relay. 4) Measure the resistance of harness between ECM connector and starter relay connector. ***Connector & terminal*** ***(B136) No. 16 — (B225) No. 10:***	Is the resistance less than 1 Ω?	Go to step **3**.	Repair the open circuit of harness between ECM connector and starter relay connector.
3	**CHECK HARNESS BETWEEN ECM AND STARTER RELAY CONNECTOR.** Measure the resistance between ECM connector and chassis ground. ***Connector & terminal*** ***(B136) No. 16 — 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.

DG:DTC P0617 STARTER RELAY CIRCUIT HIGH

DTC DETECTING CONDITION:

- Detected when 2 consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-200, DTC P0617 STARTER RELAY CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

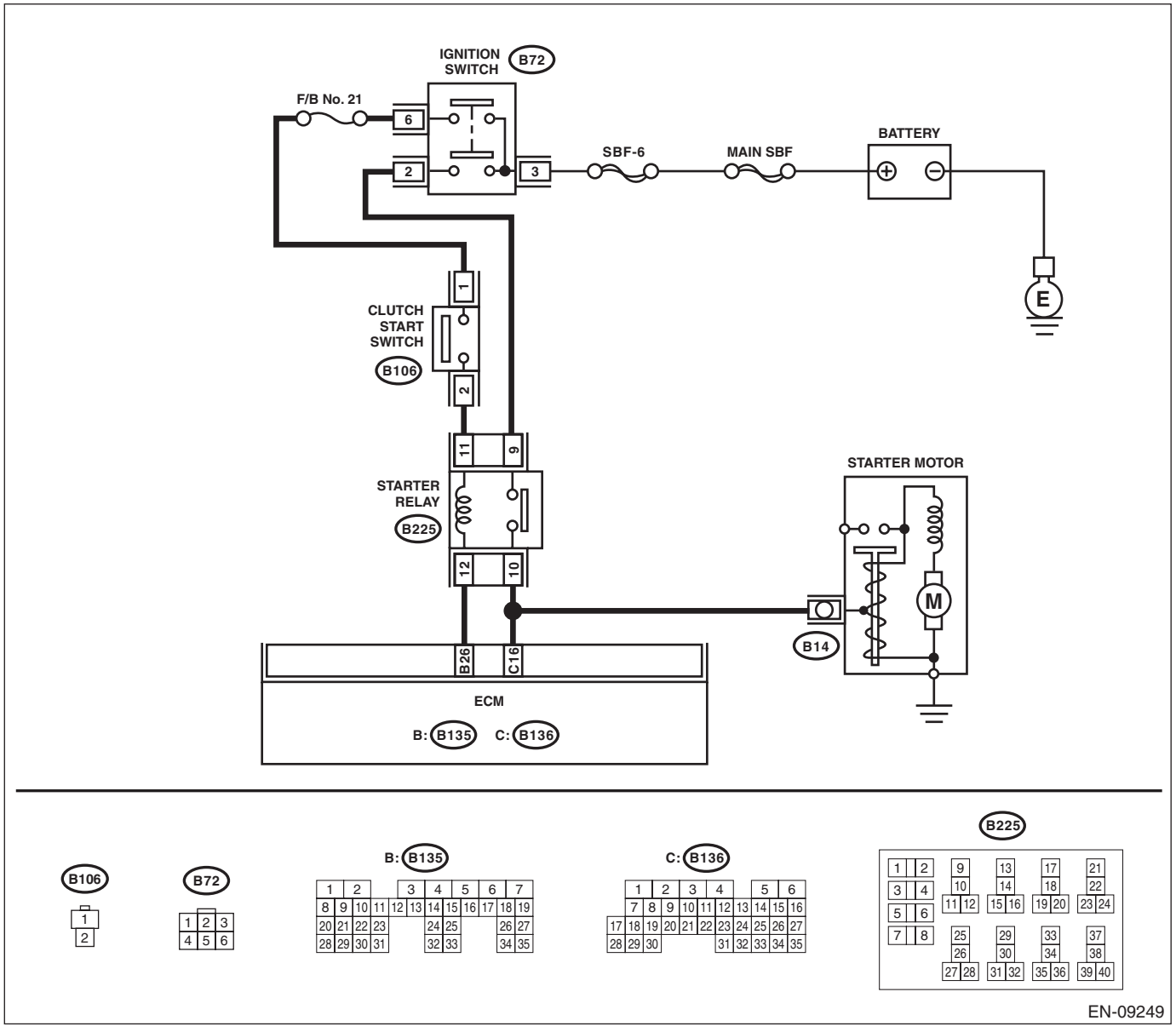
Failure of engine to start

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	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(H4DOTC)(diag)-87, List of Diagnostic Trouble Code (DTC).>	Go to step **2**.
2	**CHECK HARNESS BETWEEN ECM AND IGNITION SWITCH 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. ***Connector & terminal*** ***(B136) No. 16 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Repair the short circuit to power supply in harness between ECM connector and ignition switch connector.	Repair the poor contact of ECM connector.

DH:DTC P062F INTERNAL CONTROL MODULE EEPROM ERROR

NOTE:
For the diagnostic procedure, refer to DTC P0606. <Ref. to EN(H4DOTC)(diag)-293, DTC P0606 CONTROL MODULE PROCESSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

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

DTC DETECTING CONDITION:

- Detected when 2 consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-203, DTC P0851 NEUTRAL SWITCH INPUT CIRCUIT LOW (MT MODEL), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

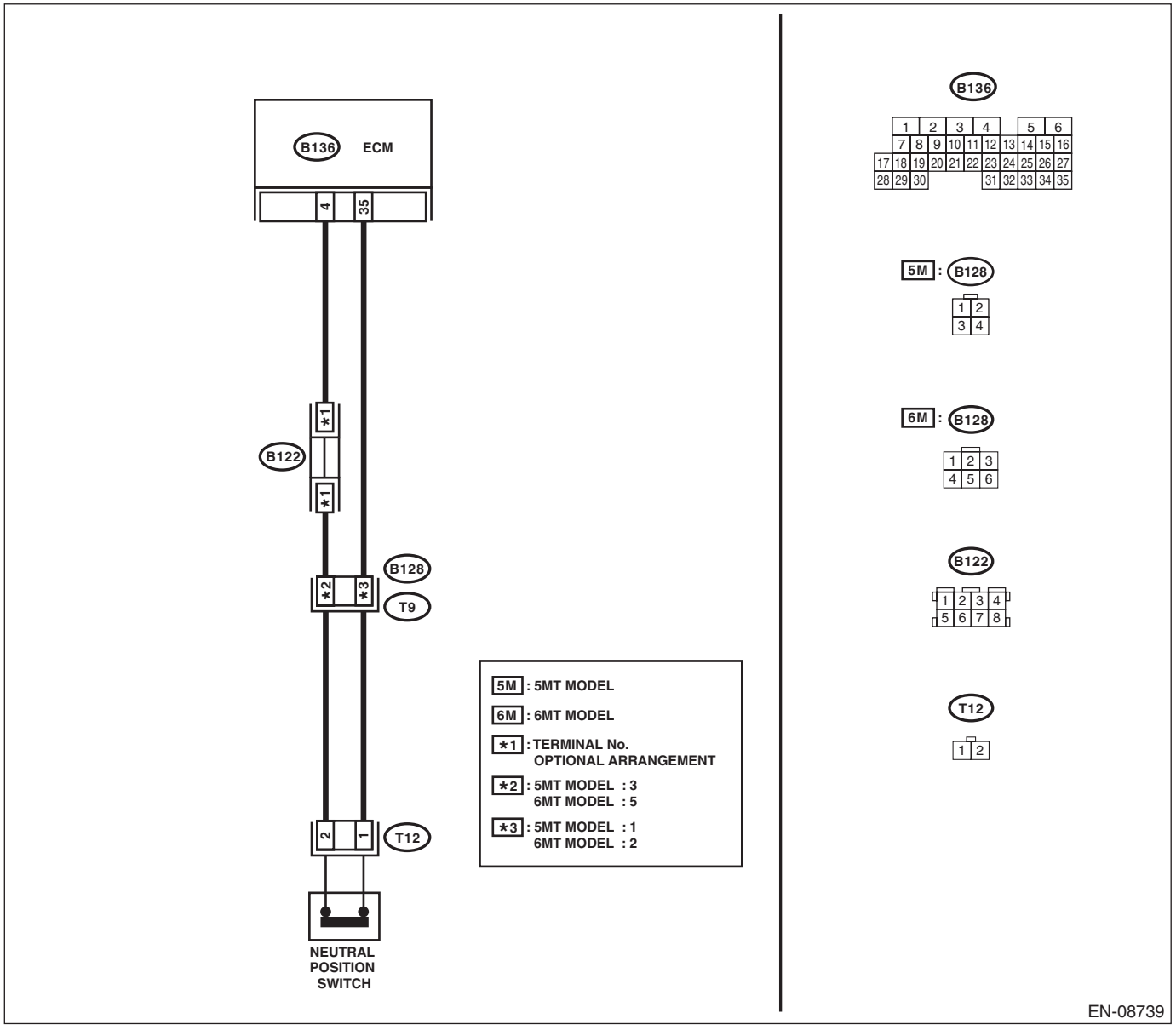
Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	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 chassis ground. ***Connector & terminal*** ***(B136) No. 35 (+) — 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 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 between ECM connector and chassis ground. ***Connector & terminal*** ***(B136) No. 35 — Chassis ground:***	Is the resistance 1 MΩ or more?	Replace the neutral position switch. <Ref. to 5MT-33, Switches and Harness.> <Ref. to 6MT-41, Neutral Position Switch.>	Repair the short circuit to ground harness between ECM connector and neutral position switch connector.

DJ:DTC P0852 NEUTRAL SWITCH INPUT CIRCUIT HIGH (MT MODEL)

DTC DETECTING CONDITION:

- Detected when 2 consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-204, DTC P0852 NEUTRAL SWITCH INPUT CIRCUIT HIGH (MT MODEL), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

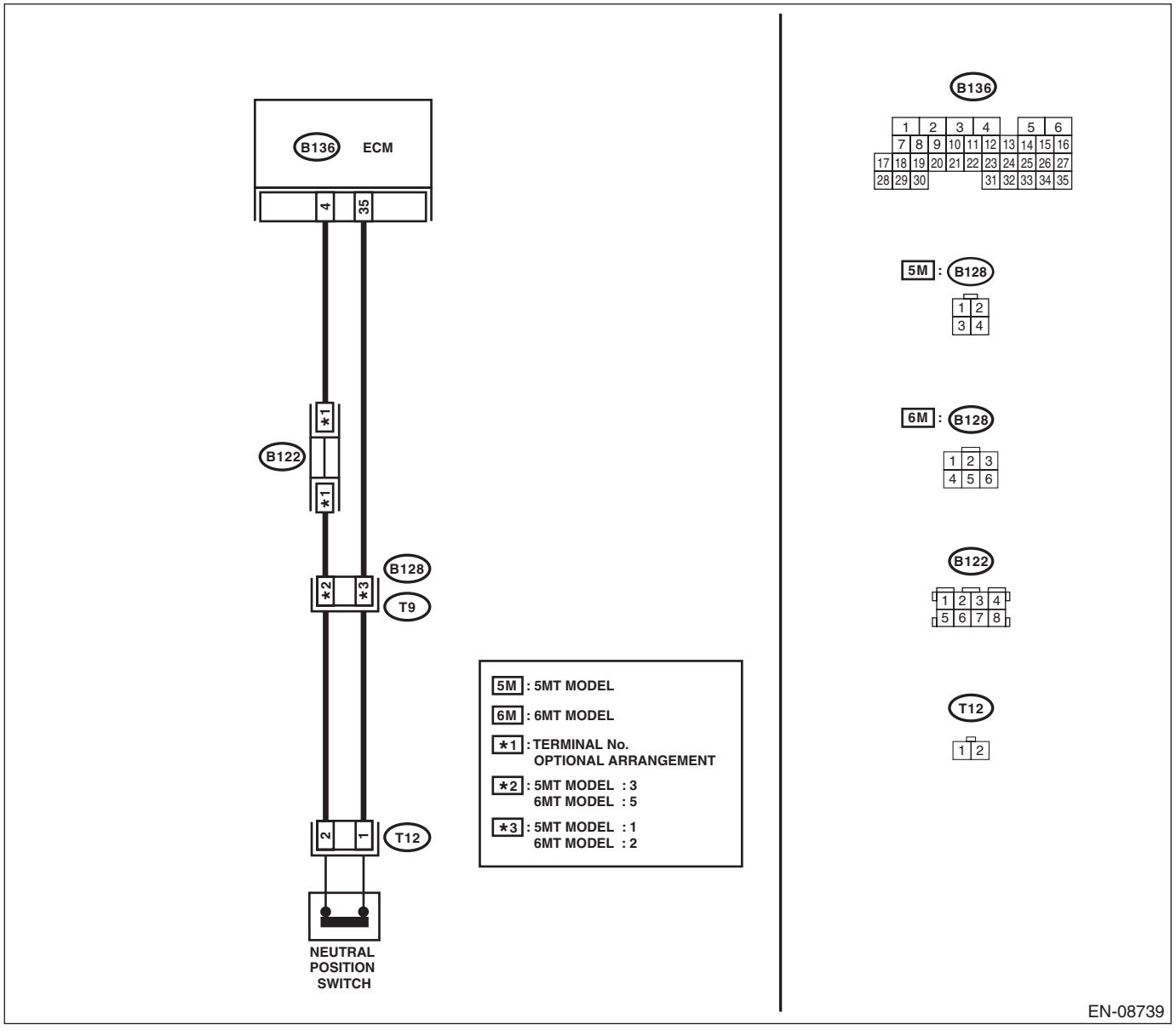
Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK INPUT SIGNAL OF ECM.** 1) Turn the ignition switch to ON. 2) Place the shift lever in neutral. 3) Measure the voltage between ECM connector and chassis ground. ***Connector & terminal*** ***(B136) No. 35 (+) — Chassis ground (–):***	Is the voltage less than 1 V?	Repair the poor contact of ECM connector. Replace the ECM if defective. <Ref. to FU(STI)-59, Engine Control Module (ECM).> <Ref. to FU(w/o STI)-57, Engine Control Module (ECM).>	Go to step **2**.
2	**CHECK HARNESS BETWEEN ECM AND NEUTRAL POSITION SWITCH CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and transmission harness connector (T9). 3) Measure the resistance of harness between ECM connector and transmission harness connector. ***Connector & terminal*** ***5MT model*** ***(B136) No. 35 — (B128) No. 1:*** ***6MT model*** ***(B136) No. 35 — (B128) No. 2:***	Is the resistance less than 1 Ω?	Go to step **3**.	Repair the open circuit in harness between ECM connector and transmission harness connector.
3	**CHECK HARNESS BETWEEN ECM AND NEUTRAL POSITION SWITCH CONNECTOR.** Measure the resistance of harness between ECM connector and transmission harness connector. ***Connector & terminal*** ***5MT model*** ***(B128) No. 3 — (B136) No. 4:*** ***6MT model*** ***(B128) No. 5 — (B136) No. 4:***	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 in harness between ECM connector and transmission harness connector • Poor contact of coupling connector
4	**CHECK NEUTRAL POSITION SWITCH.** 1) Place the shift lever in neutral. 2) Measure the resistance between transmission harness connector terminals. ***Connector & terminal*** ***5MT model*** ***(T9) No. 1 — No. 3:*** ***6MT model*** ***(T9) No. 2 — No. 5:***	Is the resistance less than 1 Ω?	Repair the poor contact of transmission harness connector.	Repair the open circuit of transmission harness, or replace the neutral position switch. <Ref. to 5MT-33, Switches and Harness.> <Ref. to 6MT-41, Neutral Position Switch.>

DK:DTC P1160 RETURN SPRING FAILURE

NOTE:
For the diagnostic procedure, refer to DTC P2101. <Ref. to EN(H4DOTC)(diag)-371, DTC P2101 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

DL:DTC P1400 FUEL TANK PRESSURE CONTROL SOLENOID VALVE CIRCUIT LOW

DTC DETECTING CONDITION:

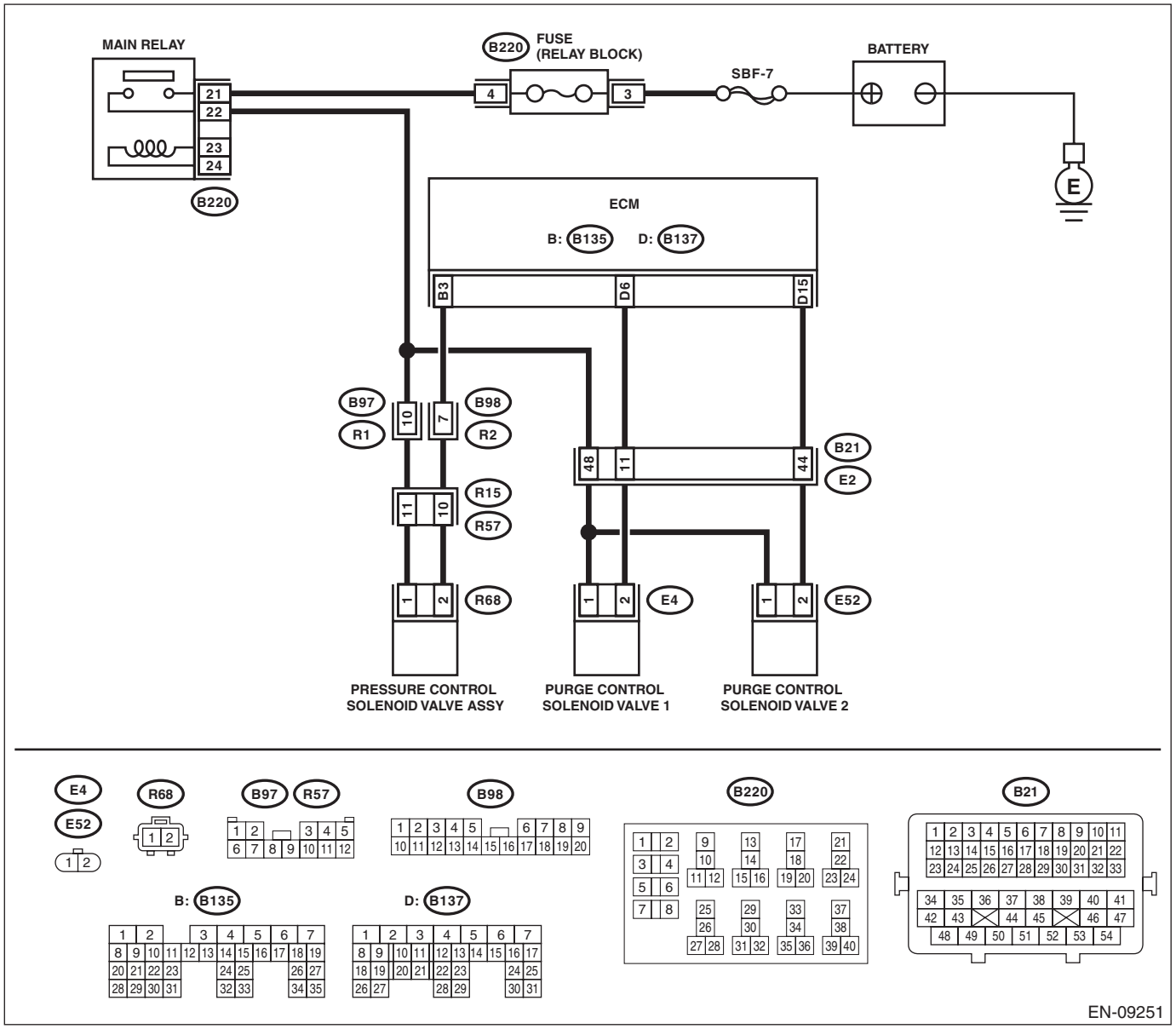
- Detected when 2 consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-207, DTC P1400 FUEL TANK PRESSURE CONTROL SOLENOID VALVE CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	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 chassis ground. ***Connector & terminal*** ***(B135) No. 3 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **2**.	Go to step **3**.
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 open or short circuit of harness or temporary poor contact of connector may be the cause.
3	**CHECK POWER SUPPLY TO PRESSURE CONTROL SOLENOID VALVE ASSEMBLY.** Measure the voltage between the pressure control solenoid valve assembly and chassis ground. ***Connector & terminal*** ***(R68) No. 1 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **4**.	Repair the power supply circuit.
4	**CHECK HARNESS BETWEEN ECM AND PRESSURE CONTROL SOLENOID VALVE ASSEMBLY CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from the ECM and pressure control solenoid valve assembly. 3) Measure the resistance between the pressure control solenoid valve assembly connector and chassis ground. ***Connector & terminal*** ***(R68) No. 2 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **5**.	Repair the short circuit to ground in harness between ECM connector and pressure control solenoid valve assembly connector.
5	**CHECK HARNESS BETWEEN ECM AND PRESSURE CONTROL SOLENOID VALVE ASSEMBLY CONNECTOR.** Measure the resistance of harness between ECM connector and pressure control solenoid valve assembly connector. ***Connector & terminal*** ***(B135) No. 3 — (R68) 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: • Open circuit in harness between ECM connector and pressure control solenoid valve assembly connector • Poor contact of coupling connector

Step		Check	Yes	No
6	**CHECK PRESSURE CONTROL SOLENOID VALVE ASSEMBLY.** Measure the resistance between terminals of pressure control solenoid valve assembly. ***Terminals*** ***No. 1 — No. 2:***	Is the resistance 10 — 100 Ω?	Repair the pressure control solenoid valve assembly connector for poor contact.	Replace the pressure control solenoid valve assembly. <Ref. to EC(STI)-16, Pressure Control Solenoid Valve Assembly.> <Ref. to EC(w/o STI)-17, Pressure Control Solenoid Valve Assembly.>

DM:DTC P1410 SECONDARY AIR INJECTION SYSTEM SWITCHING VALVE STUCK OPEN

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-209, DTC P1410 SECONDARY AIR INJECTION SYSTEM SWITCHING VALVE STUCK OPEN, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

	Step	Check	Yes	No
1	**CHECK SECONDARY AIR COMBINATION VALVE.** 1) Remove the secondary air combination valve. <Ref. to EC(STI)-29, Secondary Air Combination Valve.> <Ref. to EC(w/o STI)-30, Secondary Air Combination Valve.> 2) Blow in air from the secondary air combination valve air inlet, and check whether there are leaks at the pipe connections.	Are there air leaks from the pipe connections?	Replace the secondary air combination valve on the side with the air leak. <Ref. to EC(STI)-29, Secondary Air Combination Valve.> <Ref. to EC(w/o STI)-30, Secondary Air Combination Valve.>	Perform the diagnostic procedure of DTC P2440. <Ref. to EN(H4DOTC)(diag)-446, DTC P2440 SECONDARY AIR INJECTION SYSTEM SWITCHING VALVE STUCK OPEN (BANK1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

DN:DTC P1420 FUEL TANK PRESSURE CONTROL SOL. VALVE CIRCUIT HIGH

DTC DETECTING CONDITION:

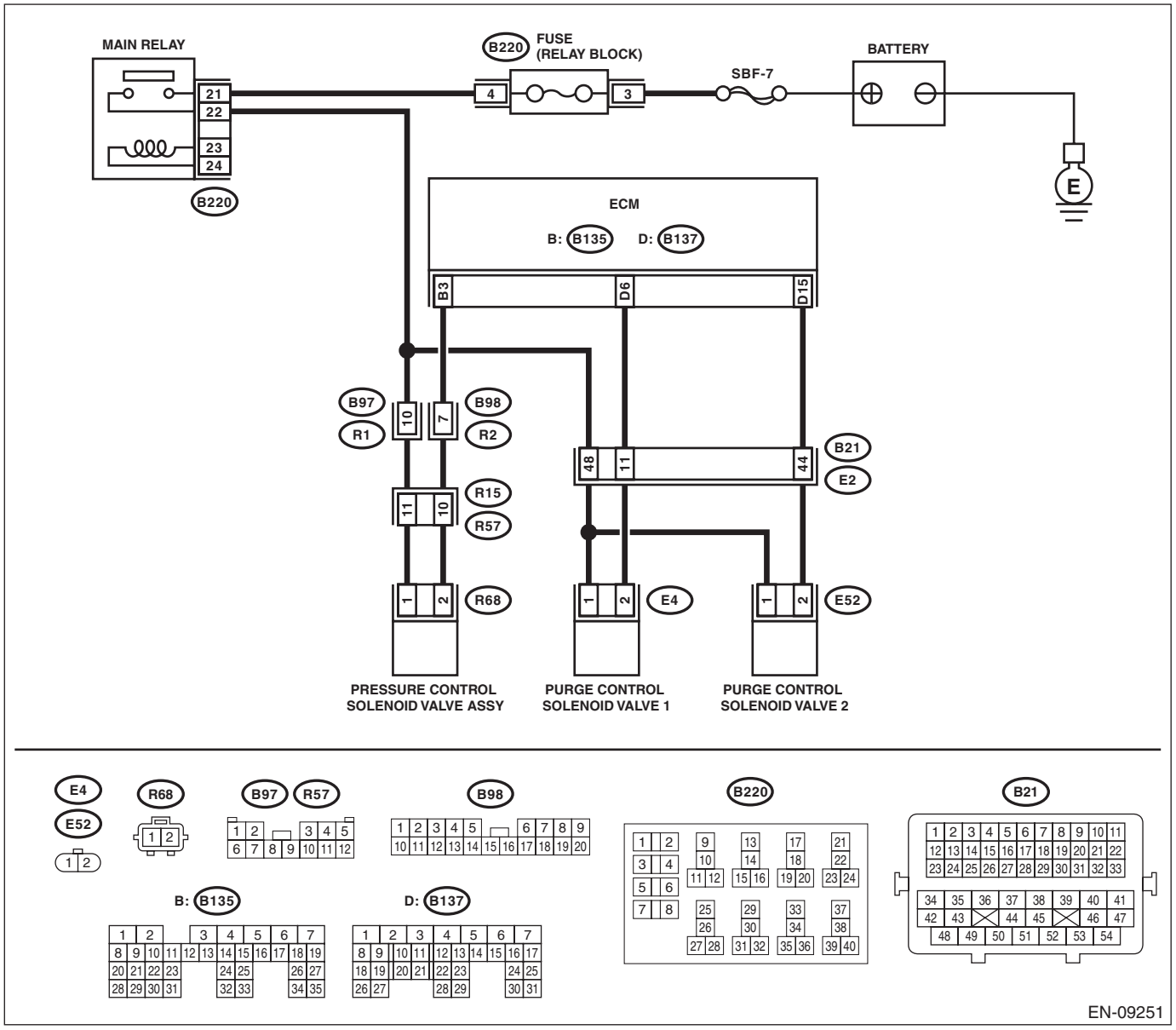
- Detected when 2 consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-211, DTC P1420 FUEL TANK PRESSURE CONTROL SOL. VALVE CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK HARNESS BETWEEN ECM AND PRESSURE CONTROL SOLENOID VALVE ASSEMBLY CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from the ECM and pressure control solenoid valve assembly. 3) Turn the ignition switch to ON. 4) Measure the voltage between ECM connector and chassis ground. ***Connector & terminal*** ***(B135) No. 3 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Repair the short circuit to power in harness between ECM connector and pressure control solenoid valve assembly connector.	Go to step **2**.
2	**CHECK PRESSURE CONTROL SOLENOID VALVE ASSEMBLY.** 1) Turn the ignition switch to OFF. 2) Measure the resistance between terminals of pressure control solenoid valve assembly. ***Terminals*** ***No. 1 — No. 2:***	Is the resistance less than 1 Ω?	Replace the pressure control solenoid valve assembly. <Ref. to EC(STI)-16, Pressure Control Solenoid Valve Assembly.> <Ref. to EC(w/o STI)-17, Pressure Control Solenoid Valve Assembly.>	Repair the poor contact of ECM connector.

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

DTC DETECTING CONDITION:

- Detected when 2 consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-213, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, 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(H4DOTC)(diag)-87, List of Diagnostic Trouble Code (DTC).>	Go to step **2**.
2	**CHECK DRAIN TUBE CONNECTED TO LEAK CHECK VALVE ASSEMBLY.**	Is the drain tube A or the drain tube B connected to the leak check valve assembly clogged?	Replace the drain tube A or the drain tube B connected to the leak check valve assembly. <Ref. to EC(STI)-19, Leak Check Valve Assembly.> <Ref. to EC(w/o STI)-20, Leak Check Valve Assembly.>	Go to step **3**.
3	**CHECK DRAIN HOSE AND HOSE CONNECTOR BETWEEN LEAK CHECK VALVE ASSEMBLY AND DRAIN SEPARATOR.**	Is the drain hose or the hose connector between leak check valve assembly and drain separator clogged?	Replace the drain hose or the hose connector between leak check valve assembly and drain separator. <Ref. to EC(STI)-7, Canister.> <Ref. to EC(w/o STI)-7, Canister.> <Ref. to EC(STI)-23, Drain Separator.> <Ref. to EC(w/o STI)-24, Drain Separator.>	Go to step **4**.
4	**CHECK DRAIN SEPARATOR.**	Is the drain separator clogged?	Replace the drain separator. <Ref. to EC(STI)-23, Drain Separator.> <Ref. to EC(w/o STI)-24, Drain Separator.>	Replace the leak check valve assembly. <Ref. to EC(STI)-19, Leak Check Valve Assembly.> <Ref. to EC(w/o STI)-20, Leak Check Valve Assembly.>

DP:DTC P1451 EVAPORATIVE EMISSION CONT. SYS.

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-215, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, 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(STI)-7, Canister.> <Ref. to EC(w/o STI)-7, Canister.>	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(STI)-7, Canister.> <Ref. to EC(w/o STI)-7, Canister.> <Ref. to FU(STI)-70, Fuel Tank.> <Ref. to FU(w/o STI)-68, Fuel Tank.>	Replace the canister. <Ref. to EC(STI)-7, Canister.> <Ref. to EC(w/o STI)-7, 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(H4DOTC)(diag)-59, DRIVE CYCLE H, PROCEDURE, Drive Cycle.>	Is DTC P1451 displayed on the display?	Replace the leak check valve assembly. <Ref. to EC(STI)-19, Leak Check Valve Assembly.> <Ref. to EC(w/o STI)-20, Leak Check Valve Assembly.>	End.

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-216, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, 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(H4DOTC)(diag)-87, 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 body.	Is there any dirt or clogging with foreign objects in the tumble generator valve?	Clean the tumble generator valve.	Replace the tumble generator valve assembly RH. <Ref. to FU(STI)-48, Tumble Generator Valve Assembly.> <Ref. to FU(w/o STI)-48, Tumble Generator Valve Assembly.>

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-217, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, 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(H4DOTC)(diag)-87, 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 body.	Is there any dirt or clogging with foreign objects in the tumble generator valve?	Clean the tumble generator valve.	Replace the tumble generator valve assembly LH. <Ref. to FU(STI)-48, Tumble Generator Valve Assembly.> <Ref. to FU(w/o STI)-48, Tumble Generator Valve Assembly.>

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-218, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, 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(H4DOTC)(diag)-87, 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 body.	Is there any dirt or clogging with foreign objects in the tumble generator valve?	Clean the tumble generator valve.	Replace the tumble generator valve assembly RH. <Ref. to FU(STI)-48, Tumble Generator Valve Assembly.> <Ref. to FU(w/o STI)-48, Tumble Generator Valve Assembly.>

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-219, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, 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(H4DOTC)(diag)-87, 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 body.	Is there any dirt or clogging with foreign objects in the tumble generator valve?	Clean the tumble generator valve.	Replace the tumble generator valve assembly LH. <Ref. to FU(STI)-48, Tumble Generator Valve Assembly.> <Ref. to FU(w/o STI)-48, Tumble Generator Valve Assembly.>

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

DTC DETECTING CONDITION:

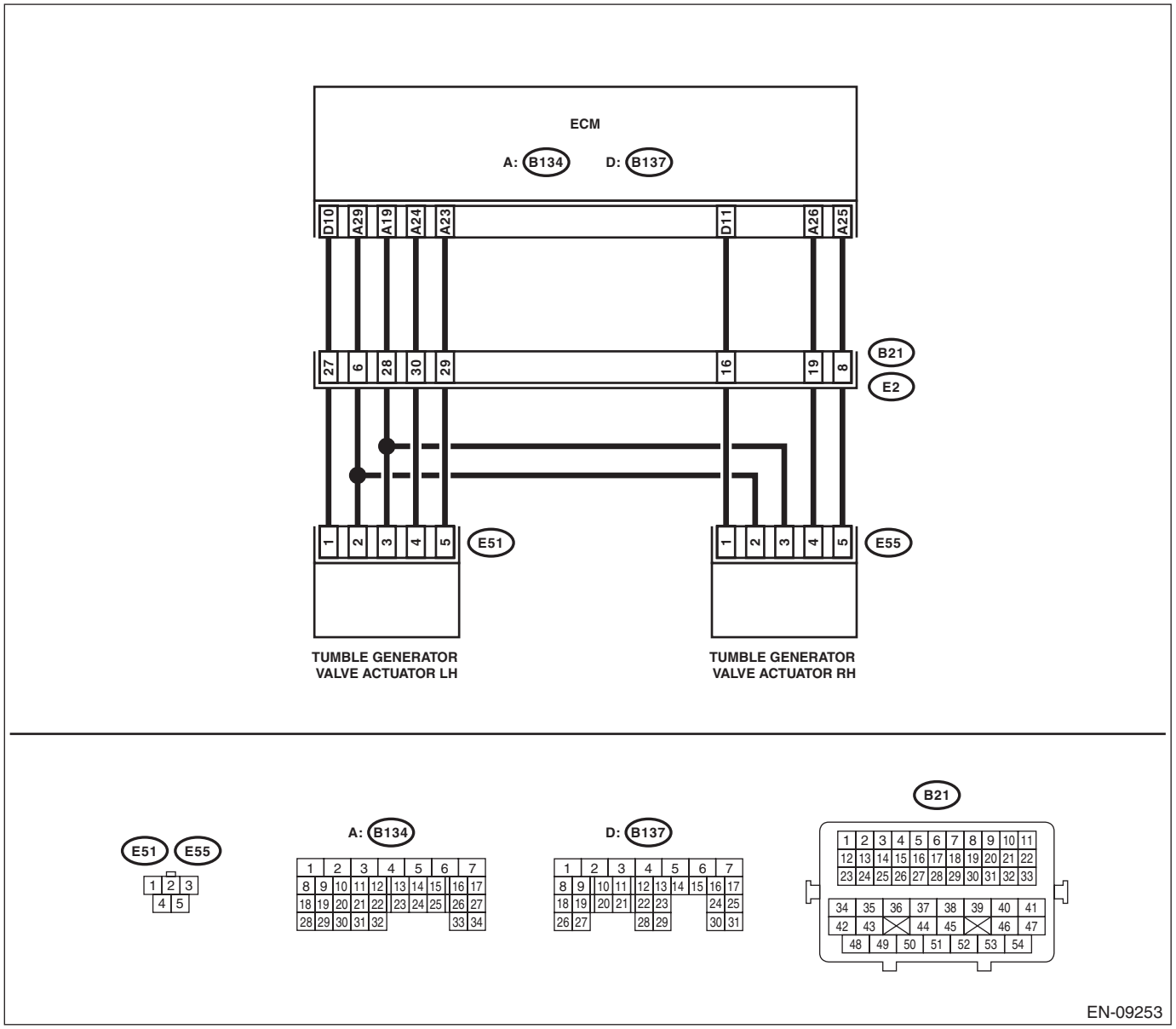
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-220, DTC P2008 INTAKE MANIFOLD RUNNER CONTROL CIRCUIT / OPEN (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ASSEMBLY RH CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from the ECM and tumble generator valve assembly RH. 3) Measure the resistance of harness between ECM connector and tumble generator valve assembly RH connector. ***Connector & terminal*** ***(B134) No. 25 — (E55) No. 5:*** ***(B134) No. 26 — (E55) No. 4:***	Is the resistance less than 1 Ω?	Go to step **2**.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and tumble generator valve assembly RH connector • Poor contact of coupling connector
2	**CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ASSEMBLY RH CONNECTOR.** Measure the resistance between ECM connector and chassis ground. ***Connector & terminal*** ***(B134) No. 25 — Chassis ground:*** ***(B134) No. 26 — 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 tumble generator valve assembly RH connector.
3	**CHECK FOR POOR CONTACT.** Check for poor contact of tumble generator valve assembly RH connector.	Is there poor contact of the tumble generator valve assembly RH connector?	Repair the poor contact of tumble generator valve assembly RH connector.	Replace the tumble generator valve assembly RH. <Ref. to FU(STI)-48, Tumble Generator Valve Assembly.> <Ref. to FU(w/o STI)-48, Tumble Generator Valve Assembly.>

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

DTC DETECTING CONDITION:

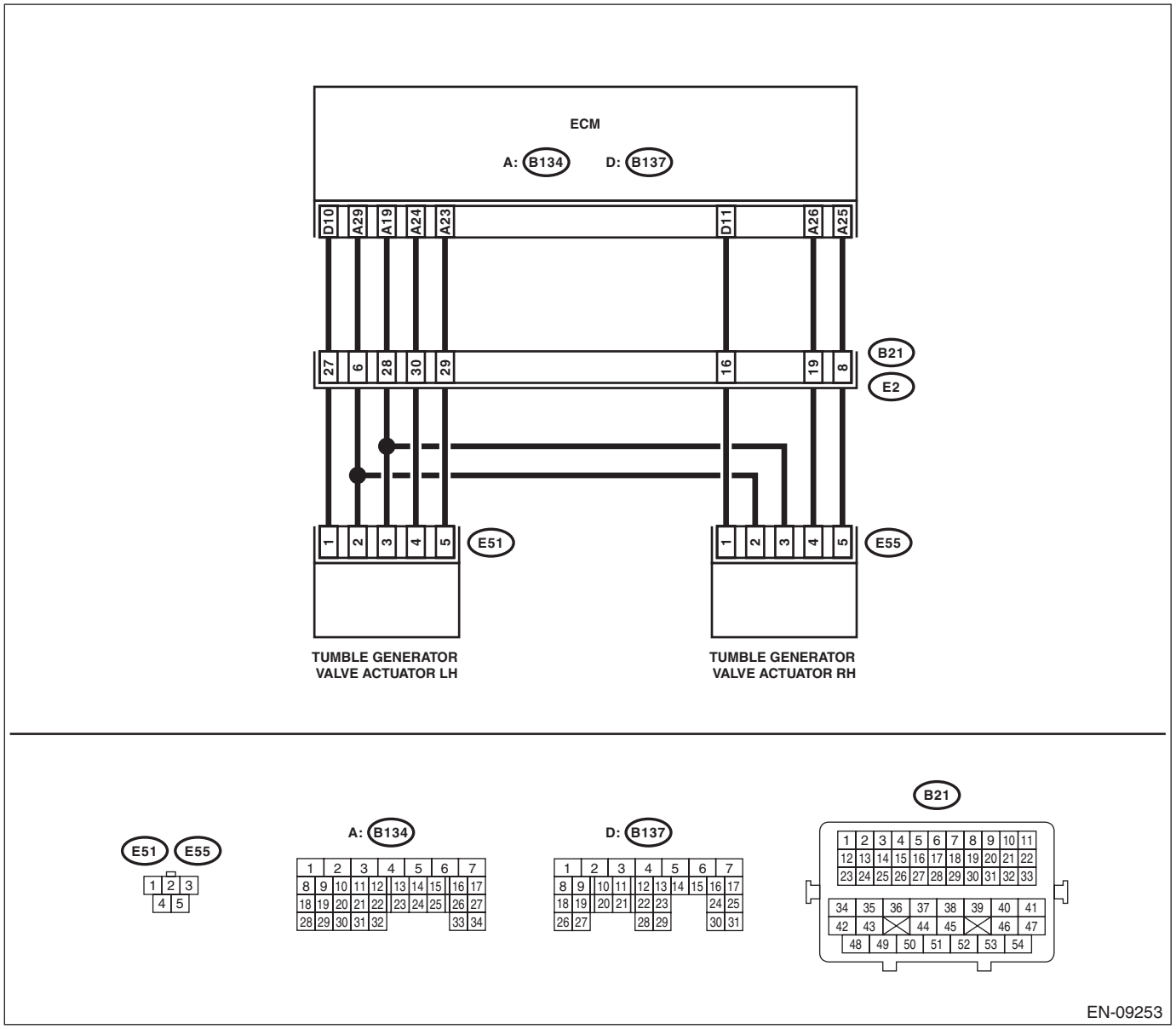
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-222, DTC P2009 INTAKE MANIFOLD RUNNER CONTROL CIRCUIT LOW (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ASSEMBLY RH CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the voltage between ECM connector and chassis ground. ***Connector & terminal*** ***(B134) No. 25 (+) — Chassis ground (–):*** ***(B134) No. 26 (+) — Chassis ground (–):***	Is the voltage 5 V or more?	Repair the short circuit to power in harness between ECM connector and tumble generator valve assembly RH connector.	Replace the tumble generator valve assembly RH. <Ref. to FU(STI)-48, Tumble Generator Valve Assembly.> <Ref. to FU(w/o STI)-48, Tumble Generator Valve Assembly.>

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

DTC DETECTING CONDITION:

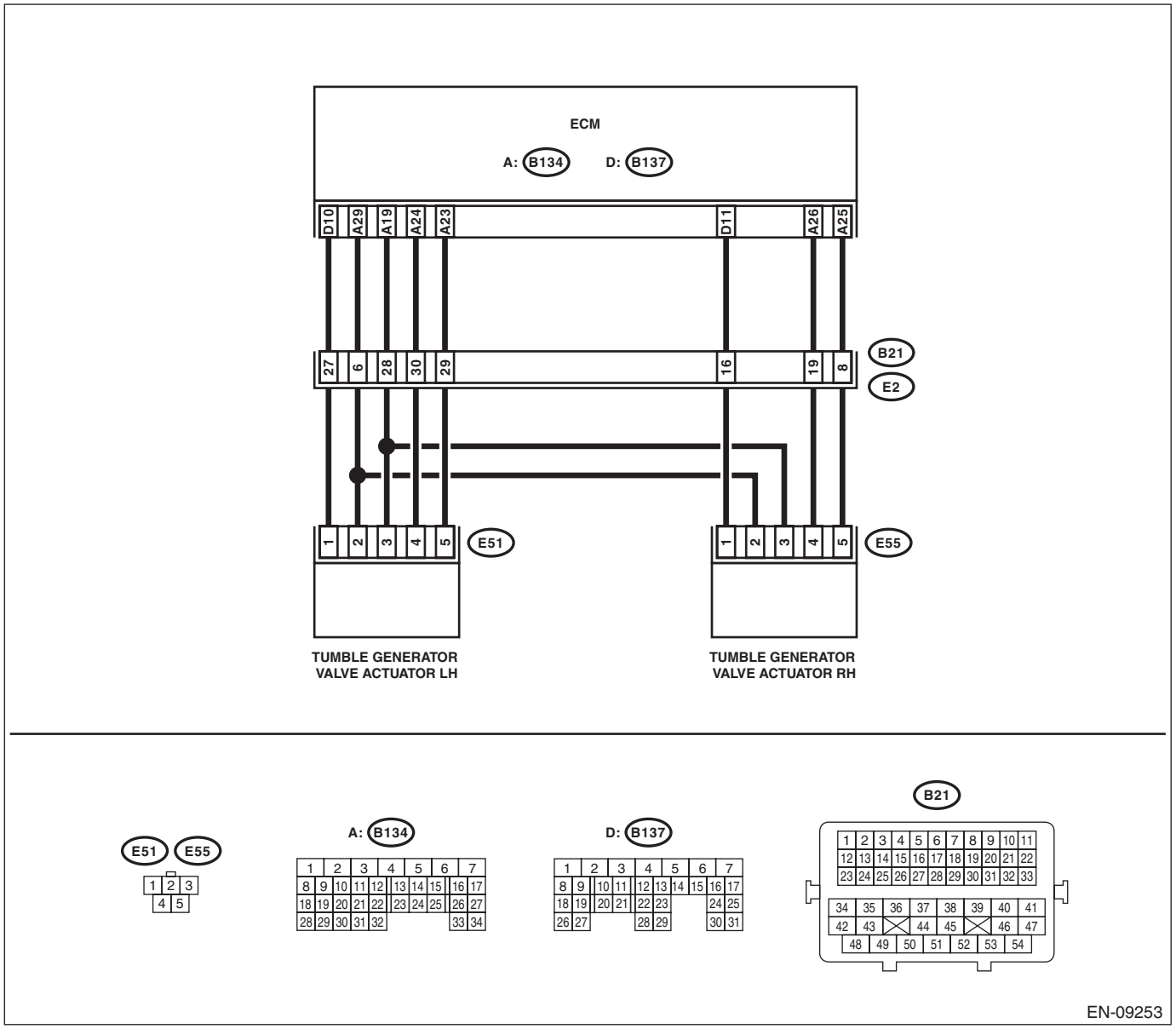
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-223, DTC P2011 INTAKE MANIFOLD RUNNER CONTROL CIRCUIT / OPEN (BANK 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ASSEMBLY LH CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and tumble generator valve assembly LH. 3) Measure the resistance of harness between ECM connector and tumble generator valve assembly LH connector. ***Connector & terminal*** ***(B134) No. 23 — (E51) No. 5:*** ***(B134) No. 24 — (E51) No. 4:***	Is the resistance less than 1 Ω?	Go to step **2**.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and tumble generator valve assembly LH connector • Poor contact of coupling connector
2	**CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ASSEMBLY LH CONNECTOR.** Measure the resistance between ECM connector and chassis ground. ***Connector & terminal*** ***(B134) No. 23 — Chassis ground:*** ***(B134) No. 24 — 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 tumble generator valve assembly LH connector.
3	**CHECK FOR POOR CONTACT.** Check for poor contact of tumble generator valve assembly LH connector.	Is there poor contact of the tumble generator valve assembly LH connector?	Repair the poor contact of tumble generator valve assembly LH connector.	Replace the tumble generator valve assembly LH. <Ref. to FU(STI)-48, Tumble Generator Valve Assembly.> <Ref. to FU(w/o STI)-48, Tumble Generator Valve Assembly.>

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

DTC DETECTING CONDITION:

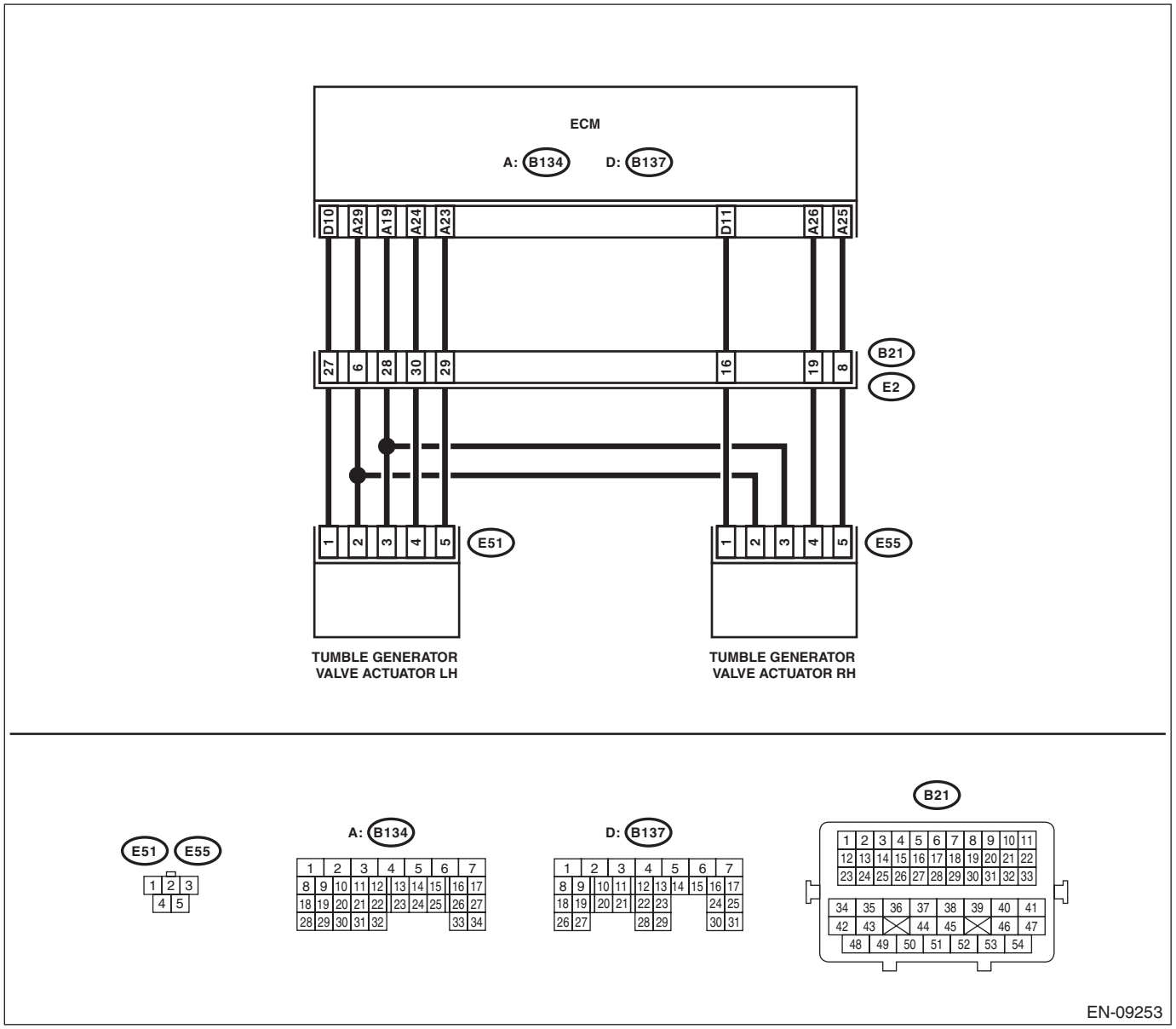
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-225, DTC P2012 INTAKE MANIFOLD RUNNER CONTROL CIRCUIT LOW (BANK 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ASSEMBLY LH CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the voltage between ECM connector and chassis ground. ***Connector & terminal*** ***(B134) No. 23 (+) — Chassis ground (–):*** ***(B134) No. 24 (+) — Chassis ground (–):***	Is the voltage 5 V or more?	Repair the short circuit to power in harness between ECM connector and tumble generator valve assembly LH connector.	Replace the tumble generator valve assembly LH. <Ref. to FU(STI)-48, Tumble Generator Valve Assembly.> <Ref. to FU(w/o STI)-48, Tumble Generator Valve Assembly.>

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-226, DTC P2016 TUMBLE GENERATED VALVE POSITION SENSOR 1 CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

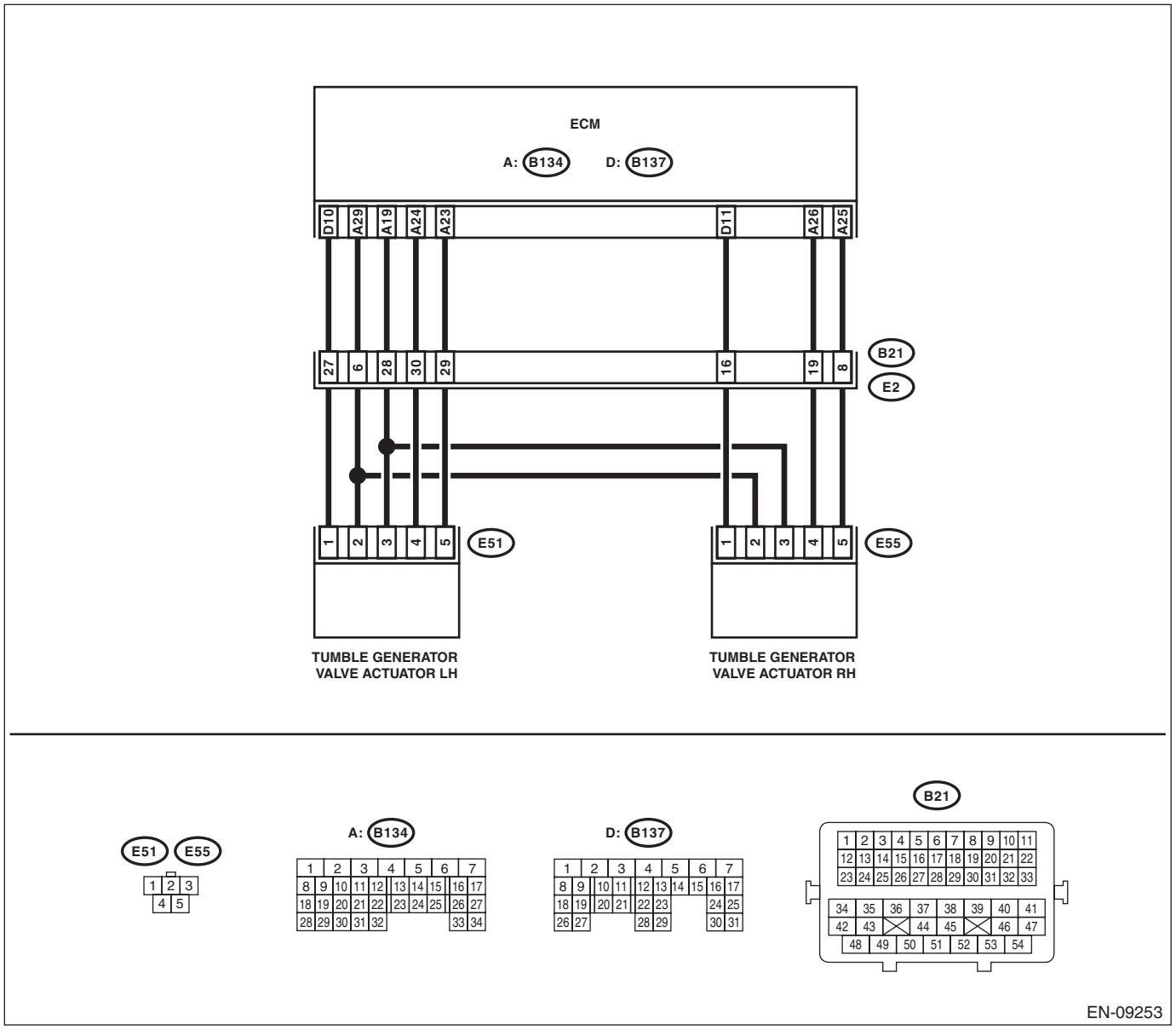
- Improper idling
- Engine stalls.
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK CURRENT DATA.** 1) Start the engine. 2) Read the value of «TGV Position Sensor R» using the Subaru Select Monitor. NOTE: For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.>	Is the value of «TGV Position Sensor R» less than 0.2 V?	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 POWER SUPPLY OF TUMBLE GENERATOR VALVE ASSEMBLY RH.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from tumble generator valve assembly RH. 3) Turn the ignition switch to ON. 4) Measure the voltage between tumble generator valve assembly RH connector and engine ground. ***Connector & terminal*** ***(E55) No. 3 (+) — Engine ground (–):***	Is the voltage 4.5 V or more?	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 tumble generator valve assembly RH connector • Poor contact of ECM connector • Poor contact of coupling connector
3	**CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ASSEMBLY 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 tumble generator valve assembly RH connector. ***Connector & terminal*** ***(B137) No. 11 — (E55) No. 1:***	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 tumble generator valve assembly RH connector • Poor contact of coupling connector
4	**CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ASSEMBLY RH CONNECTOR.** Measure the resistance between ECM connector and chassis ground. ***Connector & terminal*** ***(B137) No. 11 — Chassis ground:***	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 assembly RH connector.

Step		Check	Yes	No
5	**CHECK FOR POOR CONTACT.** Check for poor contact of ECM and tumble generator valve assembly RH connector.	Is there poor contact of ECM or the tumble generator valve assembly RH connector?	Repair the poor contact of ECM or tumble generator valve assembly RH connector.	Replace the tumble generator valve assembly RH. <Ref. to FU(STI)-48, Tumble Generator Valve Assembly.> <Ref. to FU(w/o STI)-48, Tumble Generator Valve Assembly.>

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-228, DTC P2017 TUMBLE GENERATED VALVE POSITION SENSOR 1 CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

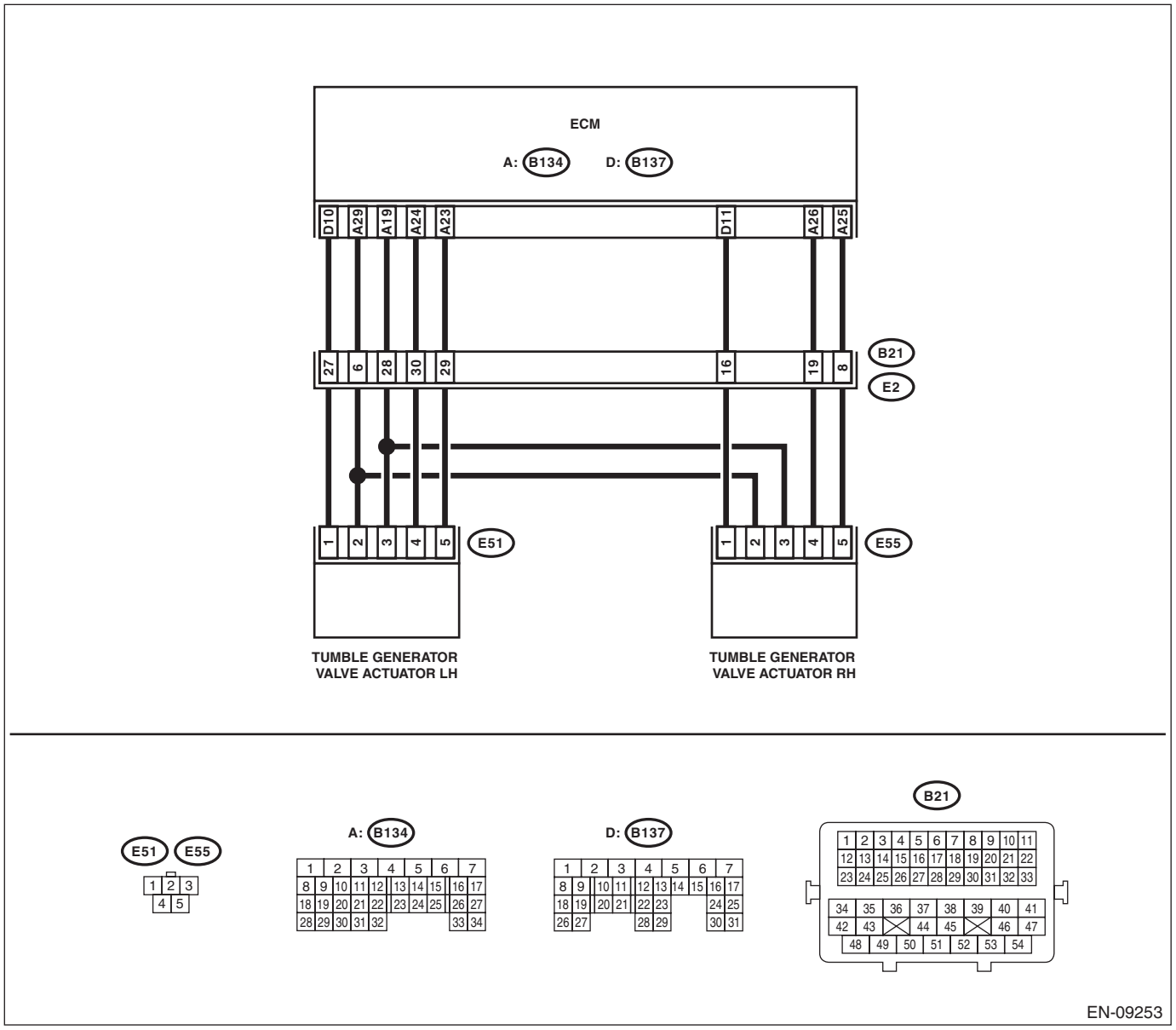
- Improper idling
- Engine stalls.
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK CURRENT DATA.** 1) Start the engine. 2) Read the value of «TGV Position Sensor R» using the Subaru Select Monitor. NOTE: For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.>	Is the value of «TGV Position Sensor R» 5 V 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 HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ASSEMBLY RH CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from tumble generator valve assembly RH. 3) Start the engine. 4) Read the value of «TGV Position Sensor R» using the Subaru Select Monitor. NOTE: For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.>	Is the value of «TGV Position Sensor R» 5 V or more?	Repair the short circuit to power in harness between ECM connector and tumble generator valve assembly RH connector.	Go to step **3**.
3	**CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ASSEMBLY RH CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Measure the resistance of harness between tumble generator valve assembly RH connector and engine ground. ***Connector & terminal*** ***(E55) No. 2 — 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 in harness between ECM connector and tumble generator valve assembly RH connector • Poor contact of ECM connector • Poor contact of coupling connector
4	**CHECK FOR POOR CONTACT.** Check for poor contact of tumble generator valve assembly RH connector.	Is there poor contact of the tumble generator valve assembly RH connector?	Repair the poor contact of tumble generator valve assembly RH connector.	Replace the tumble generator valve assembly RH. <Ref. to FU(STI)-48, Tumble Generator Valve Assembly.> <Ref. to FU(w/o STI)-48, Tumble Generator Valve Assembly.>

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-230, DTC P2021 TUMBLE GENERATED VALVE POSITION SENSOR 2 CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

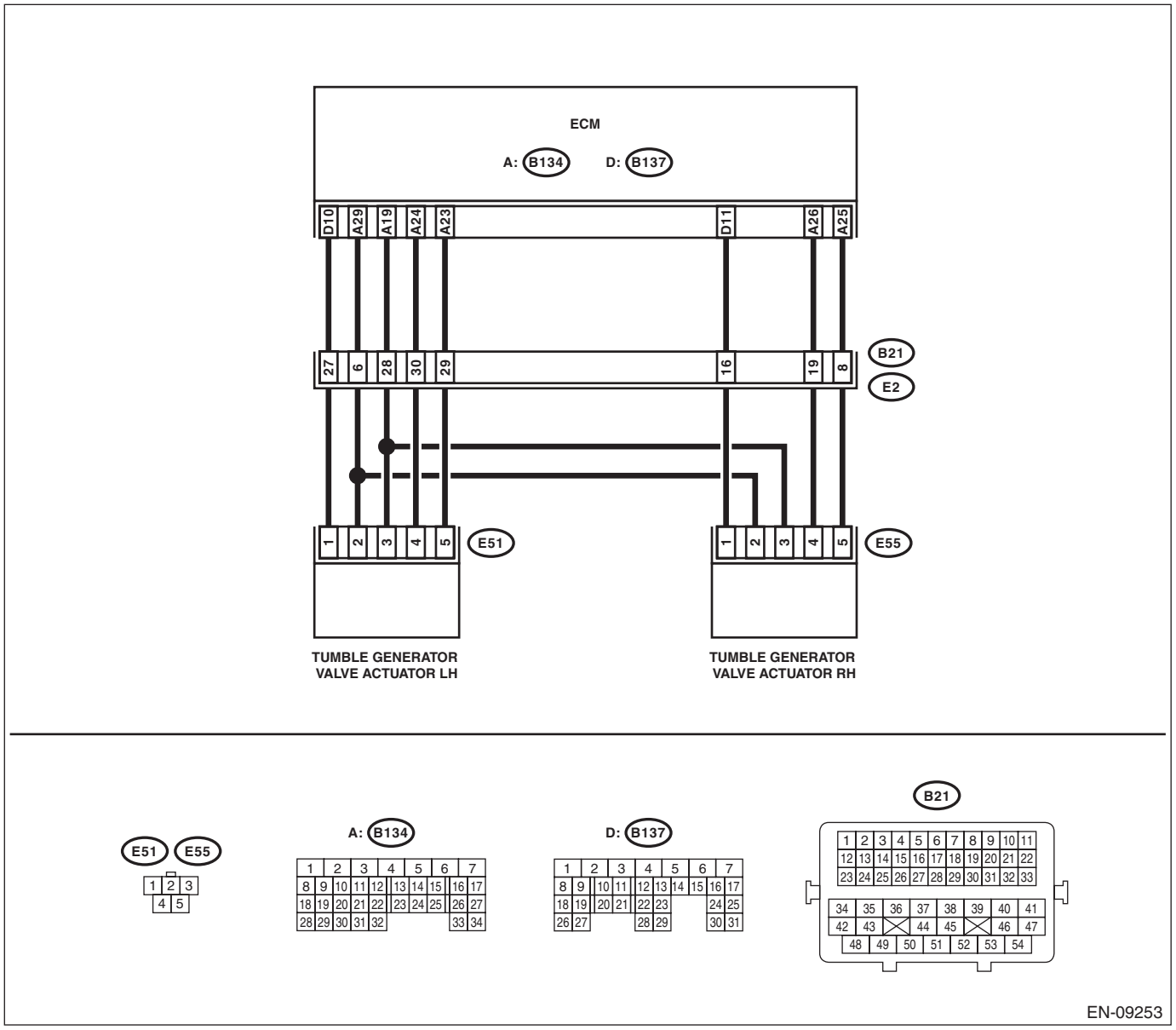
- Improper idling
- Engine stalls.
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK CURRENT DATA.** 1) Start the engine. 2) Read the value of «TGV Position Sensor L» using the Subaru Select Monitor. NOTE: For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.>	Is the value of «TGV Position Sensor L» less than 0.2 V?	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 POWER SUPPLY OF TUMBLE GENERATOR VALVE ASSEMBLY LH.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from tumble generator valve assembly LH. 3) Turn the ignition switch to ON. 4) Measure the voltage between tumble generator valve assembly LH connector and engine ground. ***Connector & terminal*** ***(E51) No. 3 (+) — Engine ground (–):***	Is the voltage 4.5 V or more?	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 tumble generator valve assembly LH connector • Poor contact of ECM connector • Poor contact of coupling connector
3	**CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ASSEMBLY 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 assembly LH connector. ***Connector & terminal*** ***(B137) No. 10 — (E51) No. 1:***	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 tumble generator valve assembly LH connector • Poor contact of coupling connector
4	**CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ASSEMBLY LH CONNECTOR.** Measure the resistance between ECM connector and chassis ground. ***Connector & terminal*** ***(B137) No. 10 — Chassis ground:***	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 assembly LH connector.

	Step	Check	Yes	No
5	**CHECK FOR POOR CONTACT.** Check for poor contact of ECM and tumble generator valve assembly LH connector.	Is there poor contact of ECM or the tumble generator valve assembly LH connector?	Repair the poor contact of ECM or tumble generator valve assembly LH connector.	Replace the tumble generator valve assembly LH. <Ref. to FU(STI)-48, Tumble Generator Valve Assembly.> <Ref. to FU(w/o STI)-48, Tumble Generator Valve Assembly.>

EB:DTC P2022 TUMBLE GENERATED VALVE POSITION SENSOR 2 CIRCUIT HIGH

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-232, DTC P2022 TUMBLE GENERATED VALVE POSITION SENSOR 2 CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

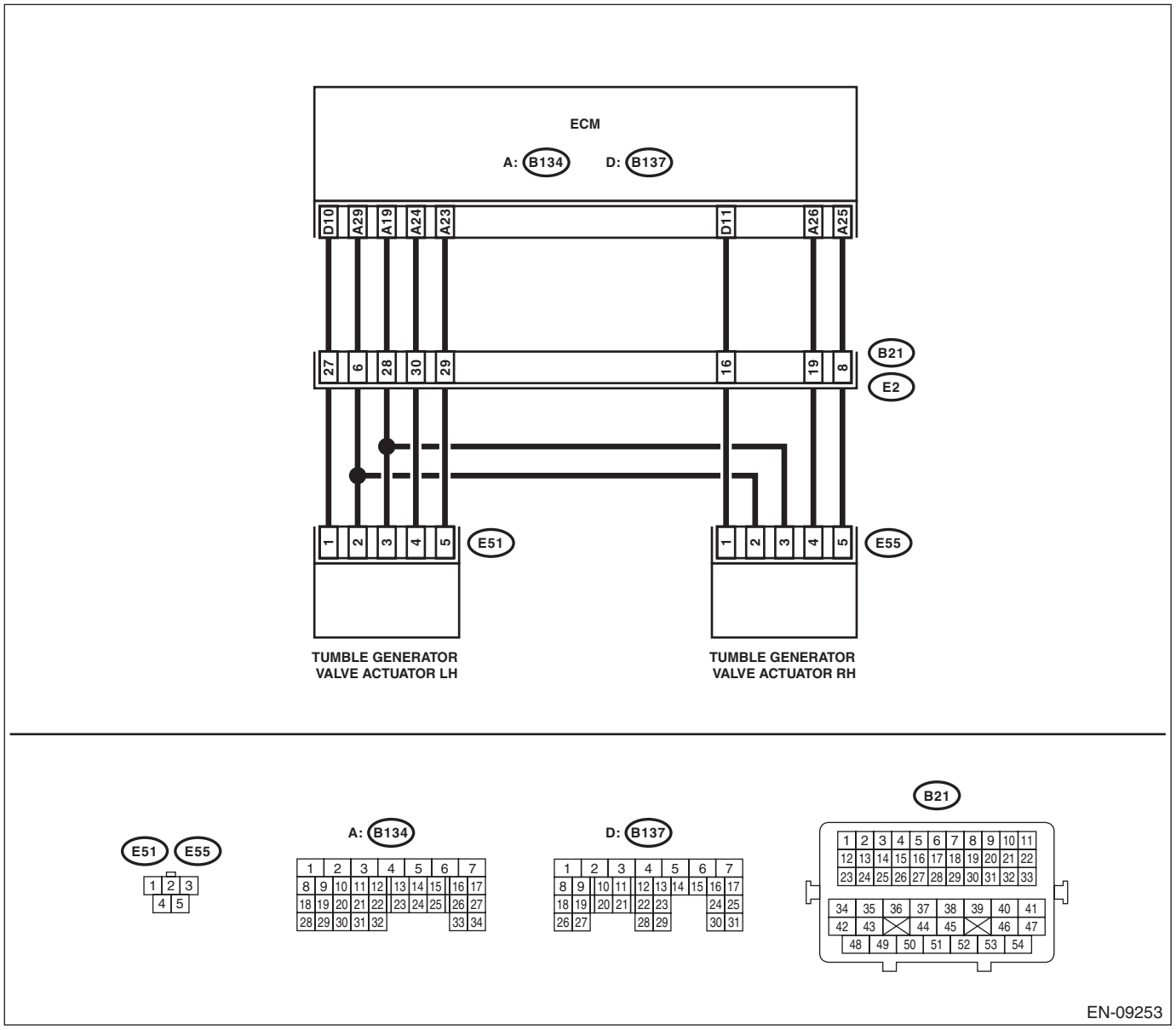
- Improper idling
- Engine stalls.
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK CURRENT DATA.** 1) Start the engine. 2) Read the value of «TGV Position Sensor L» using the Subaru Select Monitor. NOTE: For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.>	Is the value of «TGV Position Sensor L» 5 V 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 HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ASSEMBLY LH CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from tumble generator valve assembly LH. 3) Start the engine. 4) Read the value of «TGV Position Sensor L» using the Subaru Select Monitor. NOTE: For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.>	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 assembly LH connector.	Go to step **3**.
3	**CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ASSEMBLY LH CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Measure the resistance of harness between tumble generator valve assembly LH connector and engine ground. ***Connector & terminal*** ***(E51) No. 2 — 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 in harness between ECM connector and tumble generator valve assembly LH connector • Poor contact of ECM connector • Poor contact of coupling connector
4	**CHECK FOR POOR CONTACT.** Check for poor contact of tumble generator valve assembly LH connector.	Is there poor contact of the tumble generator valve assembly LH connector?	Repair the poor contact of tumble generator valve assembly LH connector.	Replace the tumble generator valve assembly LH. <Ref. to FU(STI)-48, Tumble Generator Valve Assembly.> <Ref. to FU(w/o STI)-48, Tumble Generator Valve Assembly.>

EC:DTC P2088 INTAKE CAMSHAFT POSITION ACTUATOR CONTROL CIRCUIT LOW (BANK 1)

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-234, DTC P2088 INTAKE CAMSHAFT POSITION ACTUATOR CONTROL CIRCUIT LOW (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

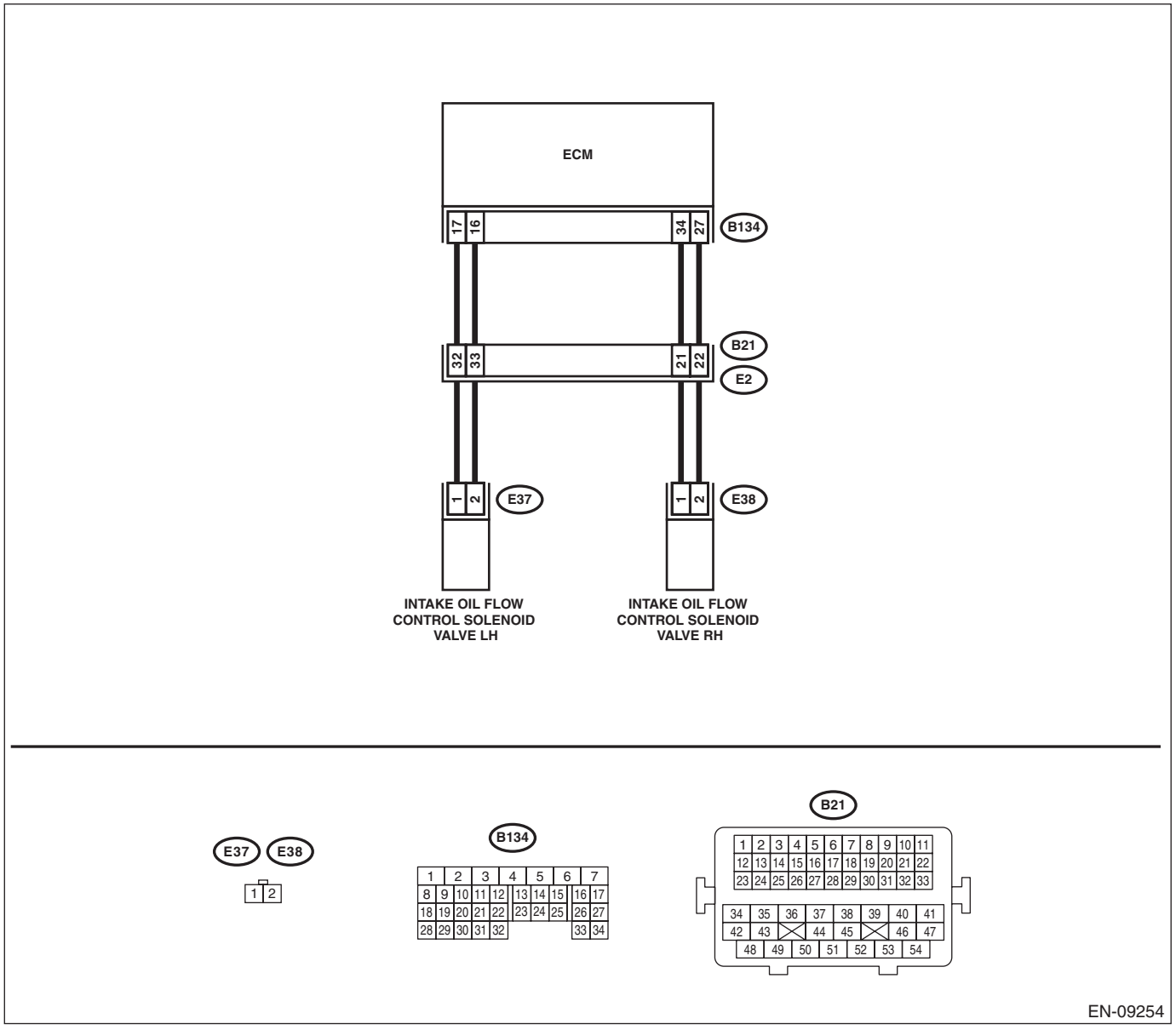
Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE RH CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and oil flow control solenoid valve RH. 3) Measure the resistance of harness between ECM connector and oil flow control solenoid valve RH connector. ***Connector & terminal*** ***(B134) No. 34 — (E38) No. 1:*** ***(B134) No. 27 — (E38) No. 2:***	Is the resistance less than 1 Ω?	Go to step **2**.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and oil flow control solenoid valve RH connector • Poor contact of coupling connector
2	**CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE RH CONNECTOR.** Measure the resistance between ECM connector and chassis ground. ***Connector & terminal*** ***(B134) No. 34 — Chassis ground:*** ***(B134) No. 27 — 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 oil flow control solenoid valve RH connector.
3	**CHECK OIL FLOW CONTROL SOLENOID VALVE.** Measure the resistance between oil flow control solenoid valve terminals. ***Terminals*** ***No. 1 — No. 2:***	Is the resistance 6 — 12 Ω?	Repair the poor contact of ECM and oil flow control solenoid valve RH connector.	Replace the oil flow control solenoid valve RH. <Ref. to ME(STI)-61, Camshaft.> <Ref. to ME(w/o STI)-59, Camshaft.>

ED:DTC P2089 INTAKE CAMSHAFT POSITION ACTUATOR CONTROL CIRCUIT HIGH (BANK 1)

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-235, DTC P2089 INTAKE CAMSHAFT POSITION ACTUATOR CONTROL CIRCUIT HIGH (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

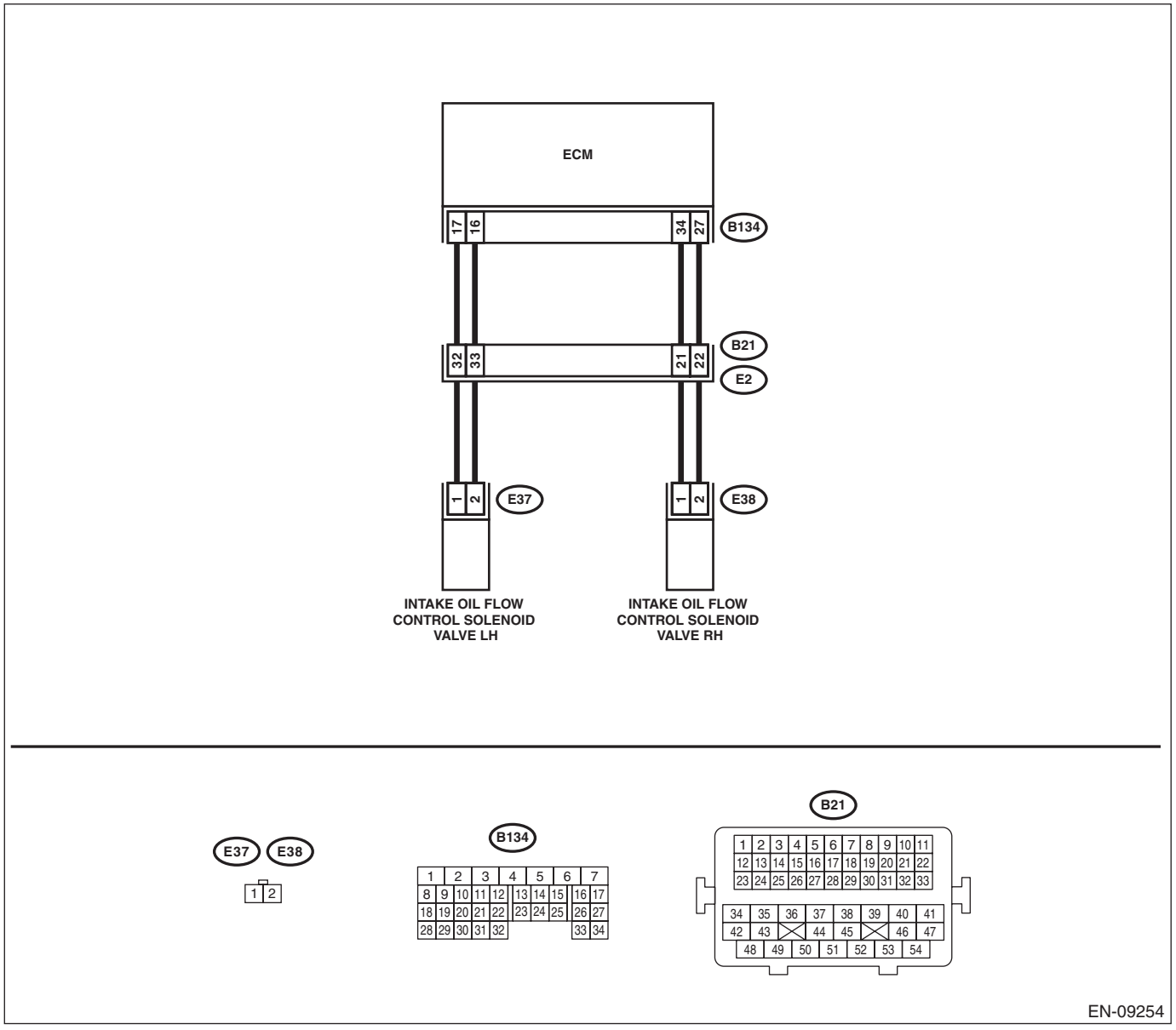
Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE RH CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and oil flow control solenoid valve RH. 3) Measure the voltage between ECM connector and chassis ground. ***Connector & terminal*** ***(B134) No. 34 (+) — Chassis ground (–):*** ***(B134) No. 27 (+) — Chassis ground (–):***	Is the voltage less than 1 V?	Go to step **2**.	Repair the short circuit to power in harness between ECM connector and oil flow control solenoid valve RH connector.
2	**CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE RH CONNECTOR.** Measure the resistance of harness between ECM connector and oil flow control solenoid valve RH connector. ***Connector & terminal*** ***(B134) No. 34 — (E38) No. 1:*** ***(B134) No. 27 — (E38) No. 2:***	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 oil flow control solenoid valve RH connector • Poor contact of coupling connector
3	**CHECK OIL FLOW CONTROL SOLENOID VALVE.** Measure the resistance between oil flow control solenoid valve terminals. ***Terminals*** ***No. 1 — No. 2:***	Is the resistance 6 — 12 Ω?	Repair the poor contact of ECM and oil flow control solenoid valve RH connector.	Replace the oil flow control solenoid valve RH. <Ref. to ME(STI)-61, Camshaft.> <Ref. to ME(w/o STI)-59, Camshaft.>

EE:DTC P2090 EXHAUST CAMSHAFT POSITION ACTUATOR CONTROL CIRCUIT LOW (BANK 1)

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-236, DTC P2090 EXHAUST CAMSHAFT POSITION ACTUATOR CONTROL CIRCUIT LOW (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

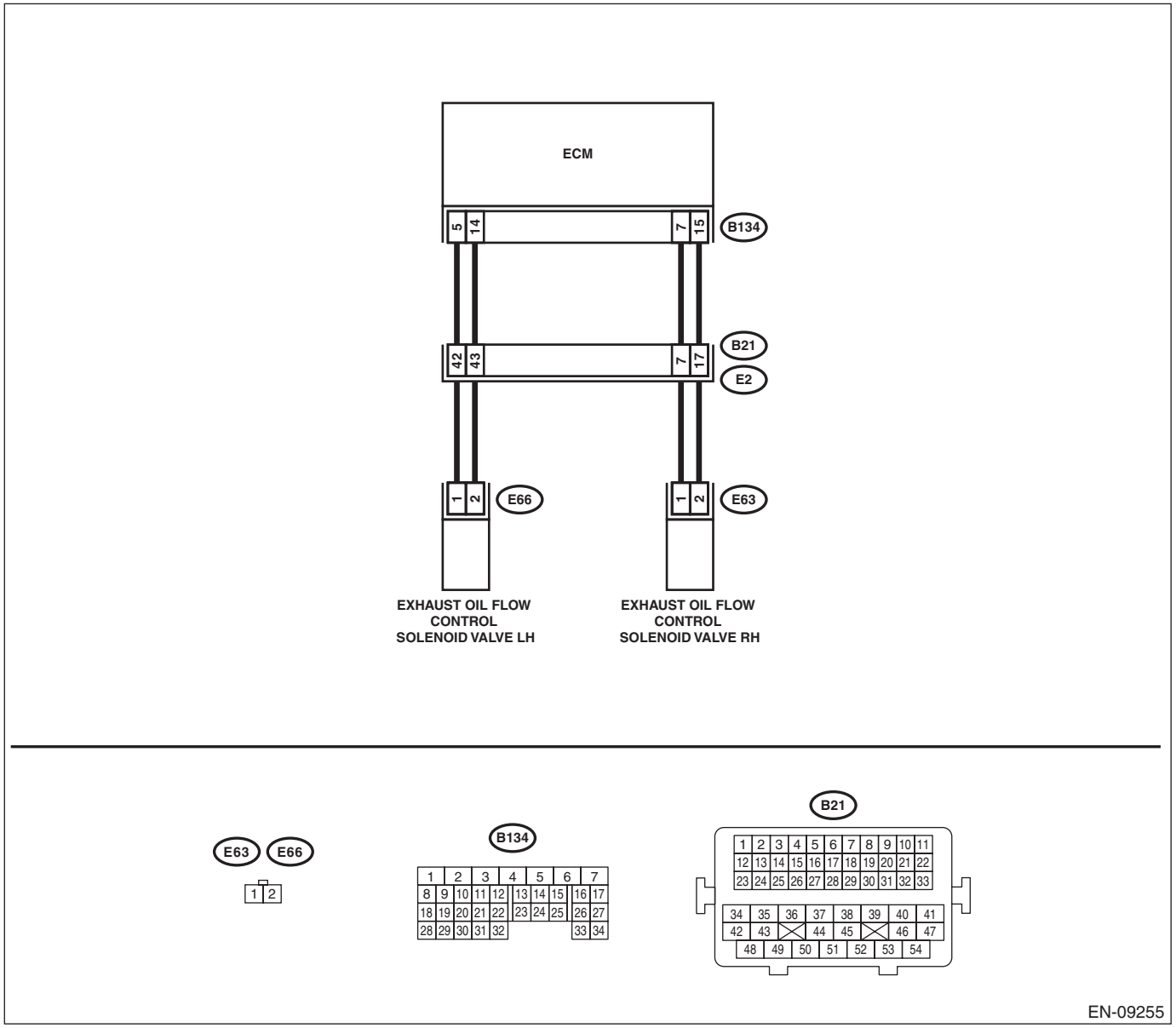
Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE RH CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and oil flow control solenoid valve RH. 3) Measure the resistance of harness between ECM connector and oil flow control solenoid valve RH connector. ***Connector & terminal*** ***(B134) No. 7 — (E63) No. 1:*** ***(B134) No. 15 — (E63) No. 2:***	Is the resistance less than 1 Ω?	Go to step **2**.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and oil flow control solenoid valve RH connector • Poor contact of coupling connector
2	**CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE RH CONNECTOR.** Measure the resistance between ECM connector and chassis ground. ***Connector & terminal*** ***(B134) No. 7 — Chassis ground:*** ***(B134) No. 15 — 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 oil flow control solenoid valve RH connector.
3	**CHECK OIL FLOW CONTROL SOLENOID VALVE.** Measure the resistance between oil flow control solenoid valve terminals. ***Terminals*** ***No. 1 — No. 2:***	Is the resistance 6 — 12 Ω?	Repair the poor contact of ECM and oil flow control solenoid valve RH connector.	Replace the oil flow control solenoid valve RH. <Ref. to FU(STI)-50, Oil Flow Control Solenoid Valve.>

EF:DTC P2091 EXHAUST CAMSHAFT POSITION ACTUATOR CONTROL CIRCUIT HIGH (BANK 1)

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-237, DTC P2091 EXHAUST CAMSHAFT POSITION ACTUATOR CONTROL CIRCUIT HIGH (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

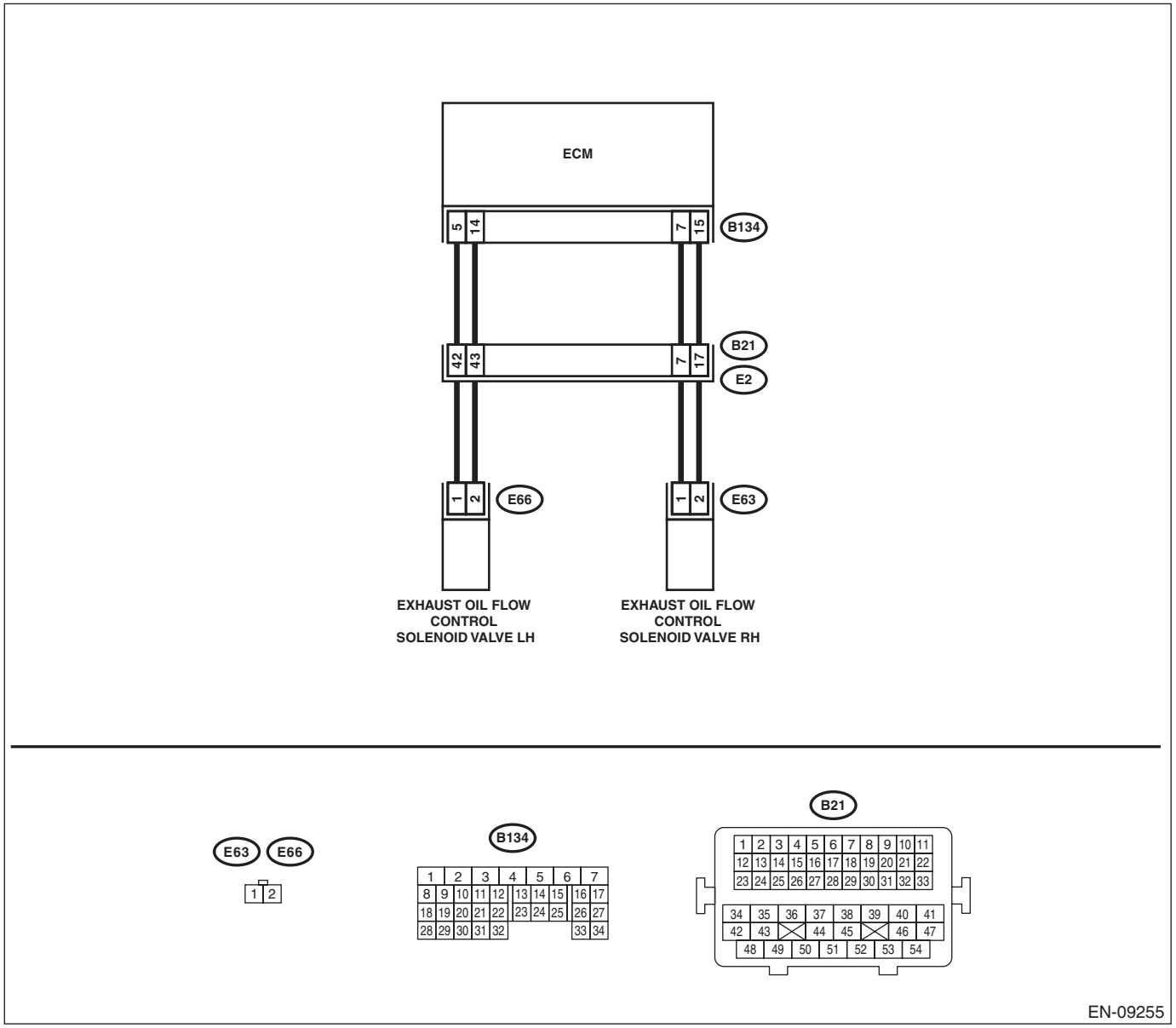
Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE RH CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and oil flow control solenoid valve RH. 3) Measure the voltage between ECM connector and chassis ground. ***Connector & terminal*** ***(B134) No. 7 (+) — Chassis ground (–):*** ***(B134) No. 15 (+) — Chassis ground (–):***	Is the voltage less than 1 V?	Go to step **2**.	Repair the short circuit to power in harness between ECM connector and oil flow control solenoid valve RH connector.
2	**CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE RH CONNECTOR.** Measure the resistance of harness between ECM connector and oil flow control solenoid valve RH connector. ***Connector & terminal*** ***(B134) No. 7 — (E63) No. 1:*** ***(B134) No. 15 — (E63) No. 2:***	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 oil flow control solenoid valve RH connector • Poor contact of coupling connector
3	**CHECK OIL FLOW CONTROL SOLENOID VALVE.** Measure the resistance between oil flow control solenoid valve terminals. ***Terminals*** ***No. 1 — No. 2:***	Is the resistance 6 — 12 Ω?	Repair the poor contact of ECM and oil flow control solenoid valve RH connector.	Replace the oil flow control solenoid valve RH. <Ref. to FU(STI)-50, Oil Flow Control Solenoid Valve.>

EG:DTC P2092 INTAKE CAMSHAFT POSITION ACTUATOR CONTROL CIRCUIT LOW (BANK 2)

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-238, DTC P2092 INTAKE CAMSHAFT POSITION ACTUATOR CONTROL CIRCUIT LOW (BANK 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

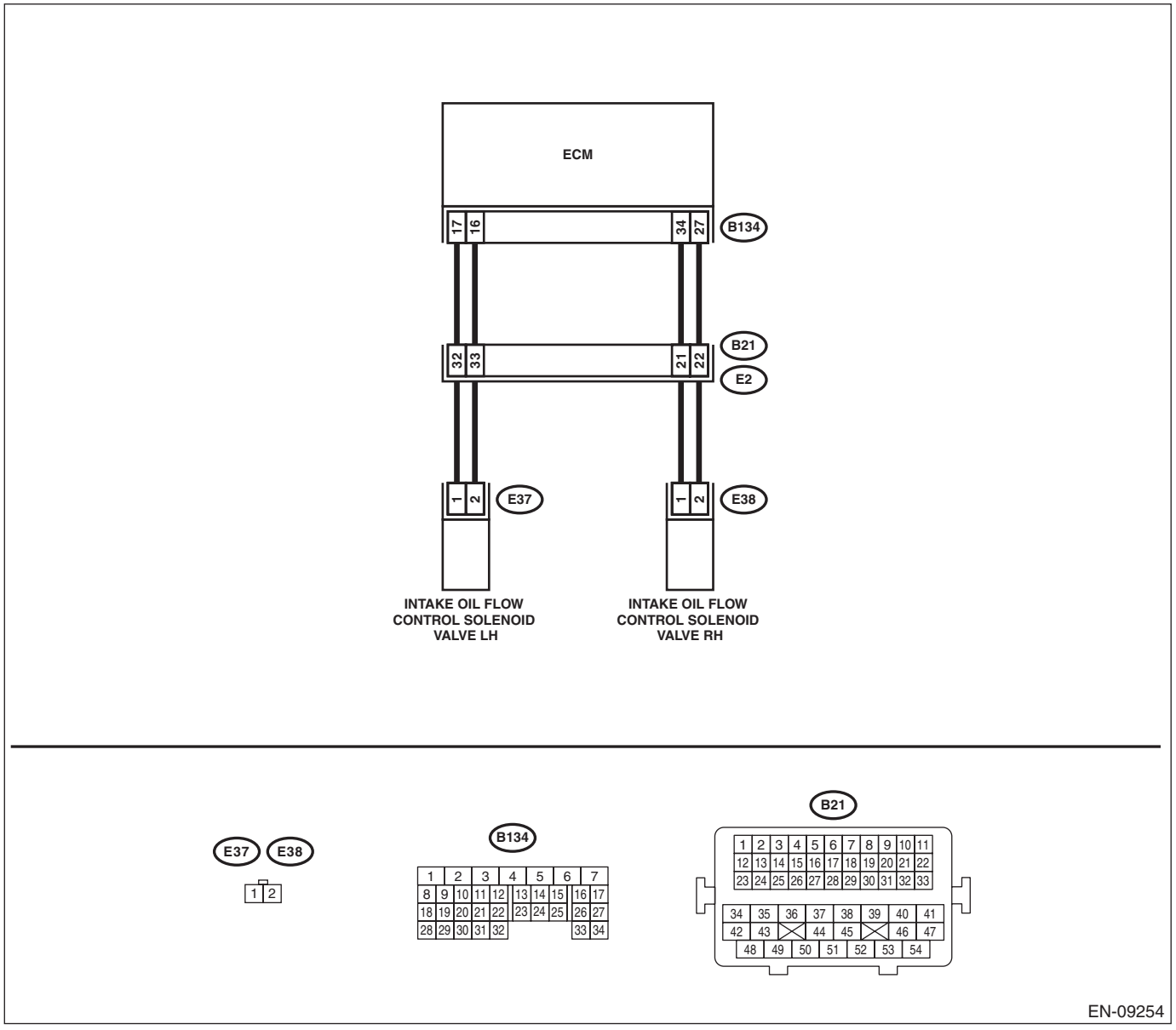
Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE LH CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and oil flow control solenoid valve LH. 3) Measure the resistance of harness between ECM connector and oil flow control solenoid valve LH connector. ***Connector & terminal*** ***(B134) No. 17 — (E37) No. 1:*** ***(B134) No. 16 — (E37) No. 2:***	Is the resistance less than 1 Ω?	Go to step **2**.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and oil flow control solenoid valve LH connector • Poor contact of coupling connector
2	**CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE LH CONNECTOR.** Measure the resistance between ECM connector and chassis ground. ***Connector & terminal*** ***(B134) No. 17 — Chassis ground:*** ***(B134) No. 16 — 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 oil flow control solenoid valve LH connector.
3	**CHECK OIL FLOW CONTROL SOLENOID VALVE.** Measure the resistance between oil flow control solenoid valve terminals. ***Terminals*** ***No. 1 — No. 2:***	Is the resistance 6 — 12 Ω?	Repair the poor contact of ECM and oil flow control solenoid valve LH connector.	Replace the oil flow control solenoid valve LH. <Ref. to ME(STI)-61, Camshaft.> <Ref. to ME(w/o STI)-59, Camshaft.>

EH:DTC P2093 INTAKE CAMSHAFT POSITION ACTUATOR CONTROL CIRCUIT HIGH (BANK 2)

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-238, DTC P2093 INTAKE CAMSHAFT POSITION ACTUATOR CONTROL CIRCUIT HIGH (BANK 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

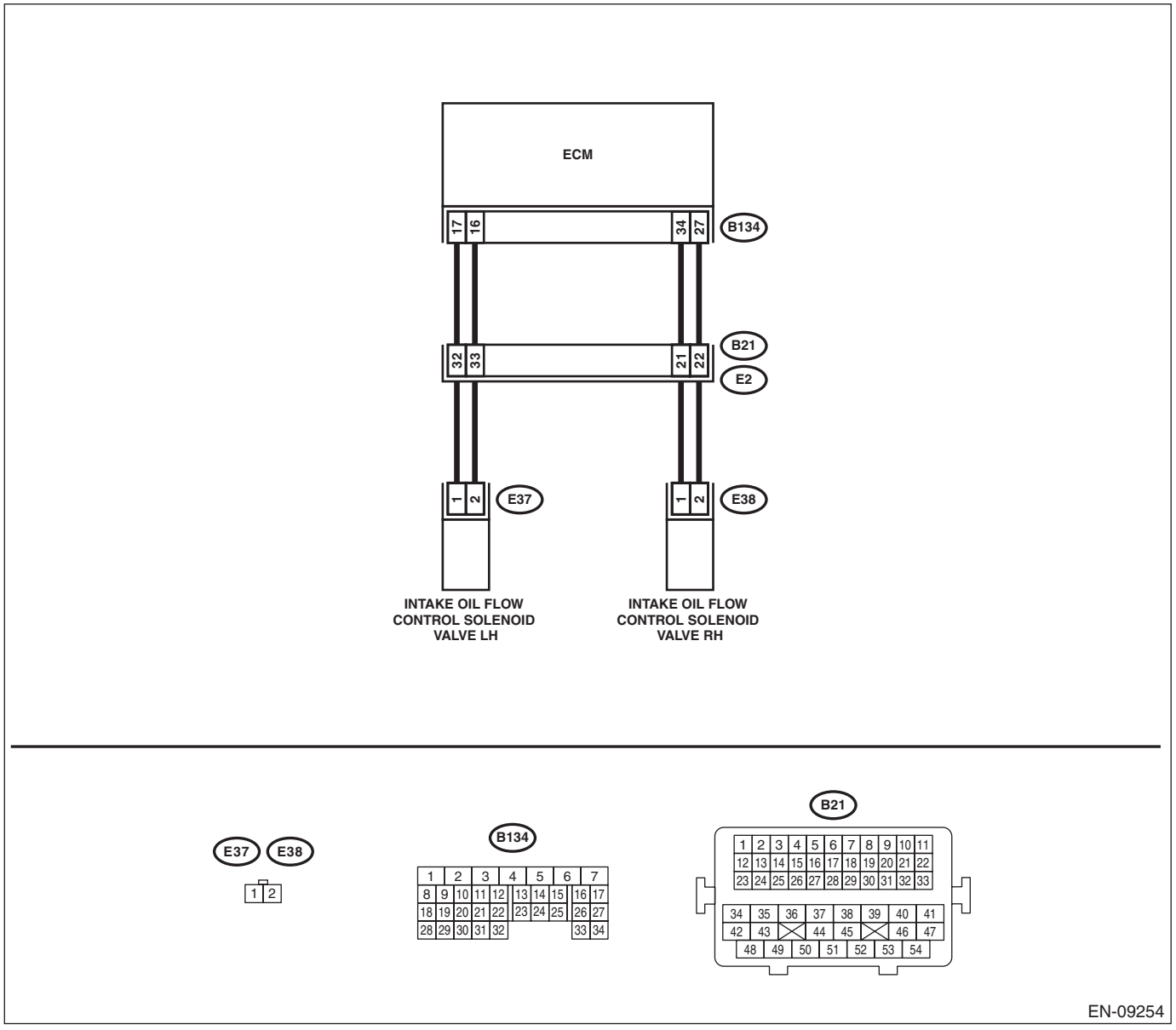
Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE LH CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and oil flow control solenoid valve LH. 3) Measure the voltage between ECM connector and chassis ground. ***Connector & terminal*** ***(B134) No. 17 (+) — Chassis ground (–):*** ***(B134) No. 16 (+) — Chassis ground (–):***	Is the voltage less than 1 V?	Go to step **2**.	Repair the short circuit to power in harness between ECM connector and oil flow control solenoid valve LH connector.
2	**CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE LH CONNECTOR.** Measure the resistance of harness between ECM connector and oil flow control solenoid valve LH connector. ***Connector & terminal*** ***(B134) No. 17 — (E37) No. 1:*** ***(B134) No. 16 — (E37) No. 2:***	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 oil flow control solenoid valve LH connector • Poor contact of coupling connector
3	**CHECK OIL FLOW CONTROL SOLENOID VALVE.** Measure the resistance between oil flow control solenoid valve terminals. ***Terminals*** ***No. 1 — No. 2:***	Is the resistance 6 — 12 Ω?	Repair the poor contact of ECM and oil flow control solenoid valve LH connector.	Replace the oil flow control solenoid valve LH. <Ref. to ME(STI)-61, Camshaft.> <Ref. to ME(w/o STI)-59, Camshaft.>

EI: DTC P2094 EXHAUST CAMSHAFT POSITION ACTUATOR CONTROL CIRCUIT LOW (BANK 2)

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-238, DTC P2094 EXHAUST CAMSHAFT POSITION ACTUATOR CONTROL CIRCUIT LOW (BANK 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

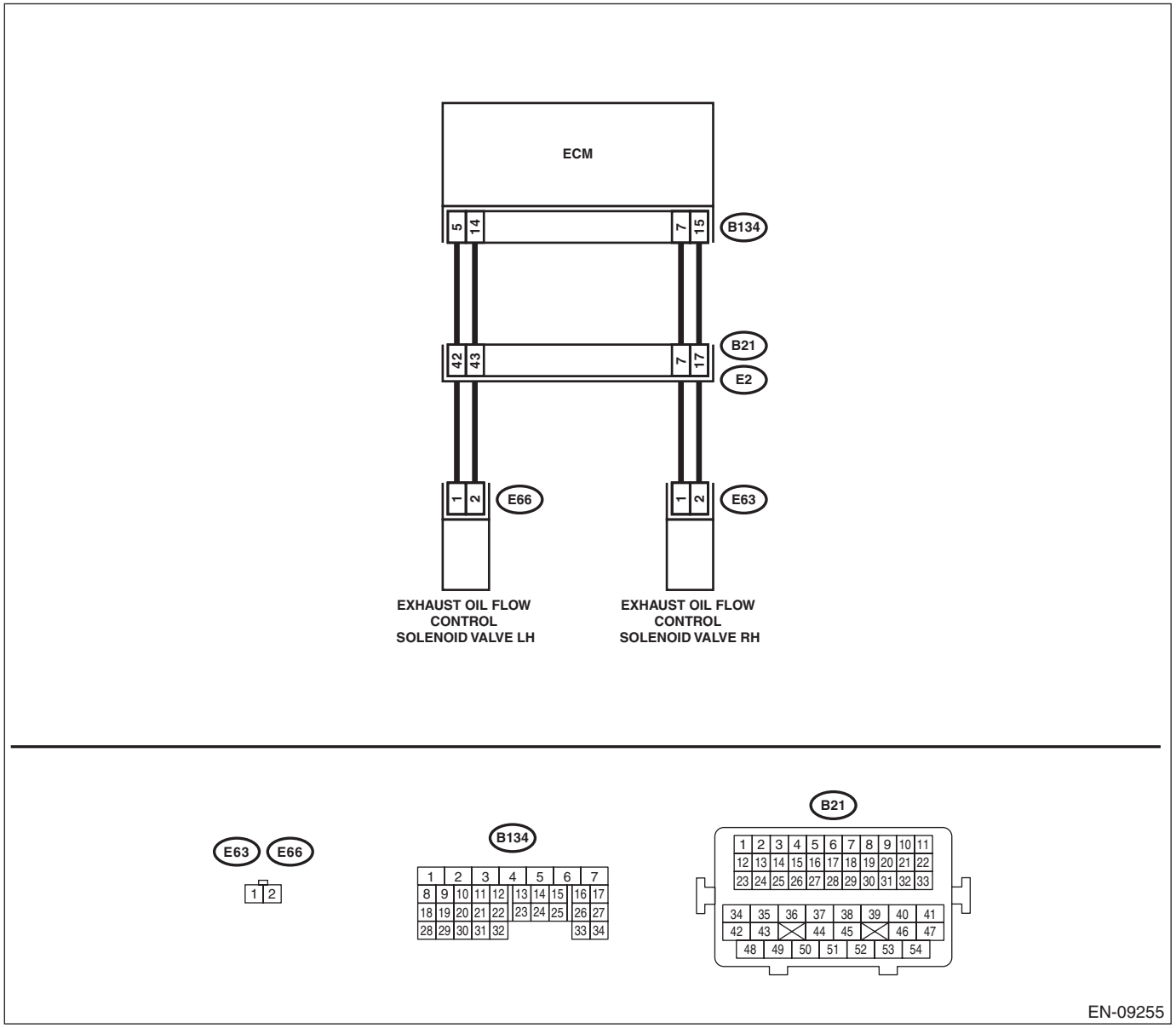
Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE LH CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and oil flow control solenoid valve LH. 3) Measure the resistance of harness between ECM connector and oil flow control solenoid valve LH connector. ***Connector & terminal*** ***(B134) No. 5 — (E66) No. 1:*** ***(B134) No. 14 — (E66) No. 2:***	Is the resistance less than 1 Ω?	Go to step **2**.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and oil flow control solenoid valve LH connector • Poor contact of coupling connector
2	**CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE LH CONNECTOR.** Measure the resistance between ECM connector and chassis ground. ***Connector & terminal*** ***(B134) No. 5 — Chassis ground:*** ***(B134) No. 14 — 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 oil flow control solenoid valve LH connector.
3	**CHECK OIL FLOW CONTROL SOLENOID VALVE.** Measure the resistance between oil flow control solenoid valve terminals. ***Terminals*** ***No. 1 — No. 2:***	Is the resistance 6 — 12 Ω?	Repair the poor contact of ECM and oil flow control solenoid valve LH connector.	Replace the oil flow control solenoid valve LH. <Ref. to FU(STI)-50, Oil Flow Control Solenoid Valve.>

EJ: DTC P2095 EXHAUST CAMSHAFT POSITION ACTUATOR CONTROL CIRCUIT HIGH (BANK 2)

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-238, DTC P2095 EXHAUST CAMSHAFT POSITION ACTUATOR CONTROL CIRCUIT HIGH (BANK 2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

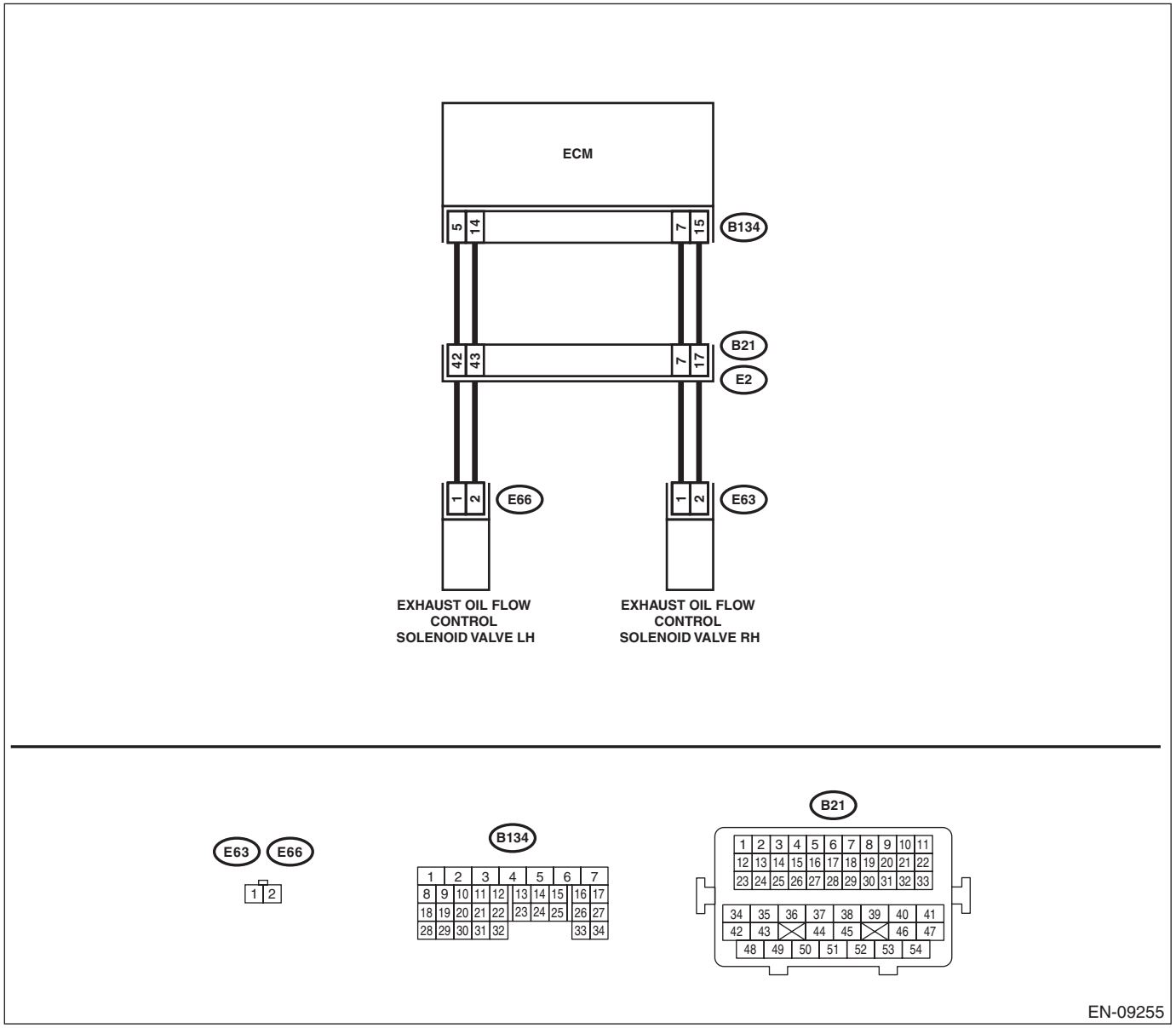
Improper idling

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE LH CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and oil flow control solenoid valve LH. 3) Measure the voltage between ECM connector and chassis ground. ***Connector & terminal*** ***(B134) No. 5 (+) — Chassis ground (–):*** ***(B134) No. 14 (+) — Chassis ground (–):***	Is the voltage less than 1 V?	Go to step **2**.	Repair the short circuit to power in harness between ECM connector and oil flow control solenoid valve LH connector.
2	**CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE LH CONNECTOR.** Measure the resistance of harness between ECM connector and oil flow control solenoid valve LH connector. ***Connector & terminal*** ***(B134) No. 5 — (E66) No. 1:*** ***(B134) No. 14 — (E66) No. 2:***	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 oil flow control solenoid valve LH connector • Poor contact of coupling connector
3	**CHECK OIL FLOW CONTROL SOLENOID VALVE.** Measure the resistance between oil flow control solenoid valve terminals. ***Terminals*** ***No. 1 — No. 2:***	Is the resistance 6 — 12 Ω?	Repair the poor contact of ECM and oil flow control solenoid valve LH connector.	Replace the oil flow control solenoid valve LH. <Ref. to FU(STI)-50, Oil Flow Control Solenoid Valve.>

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

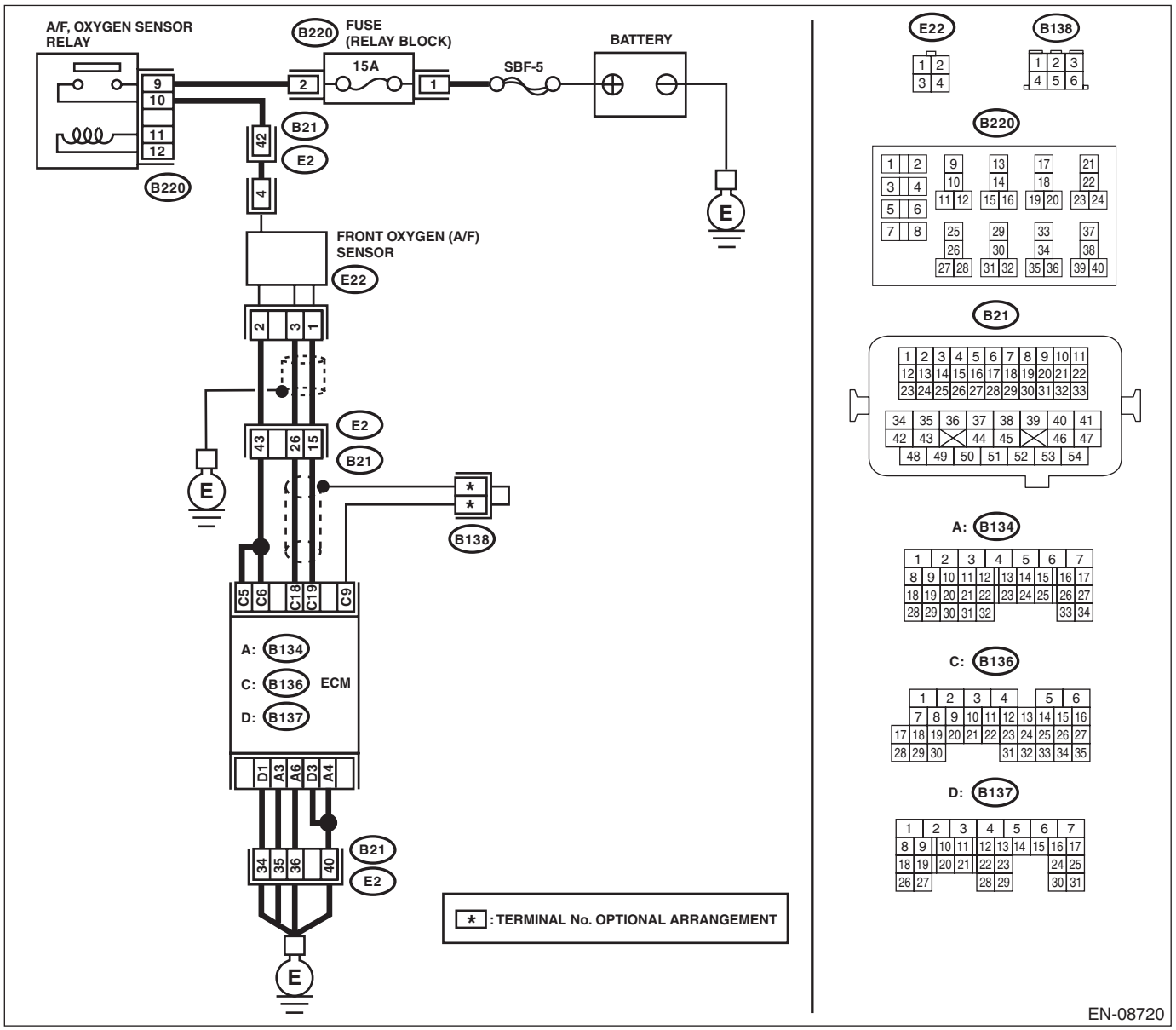
DTC DETECTING CONDITION:

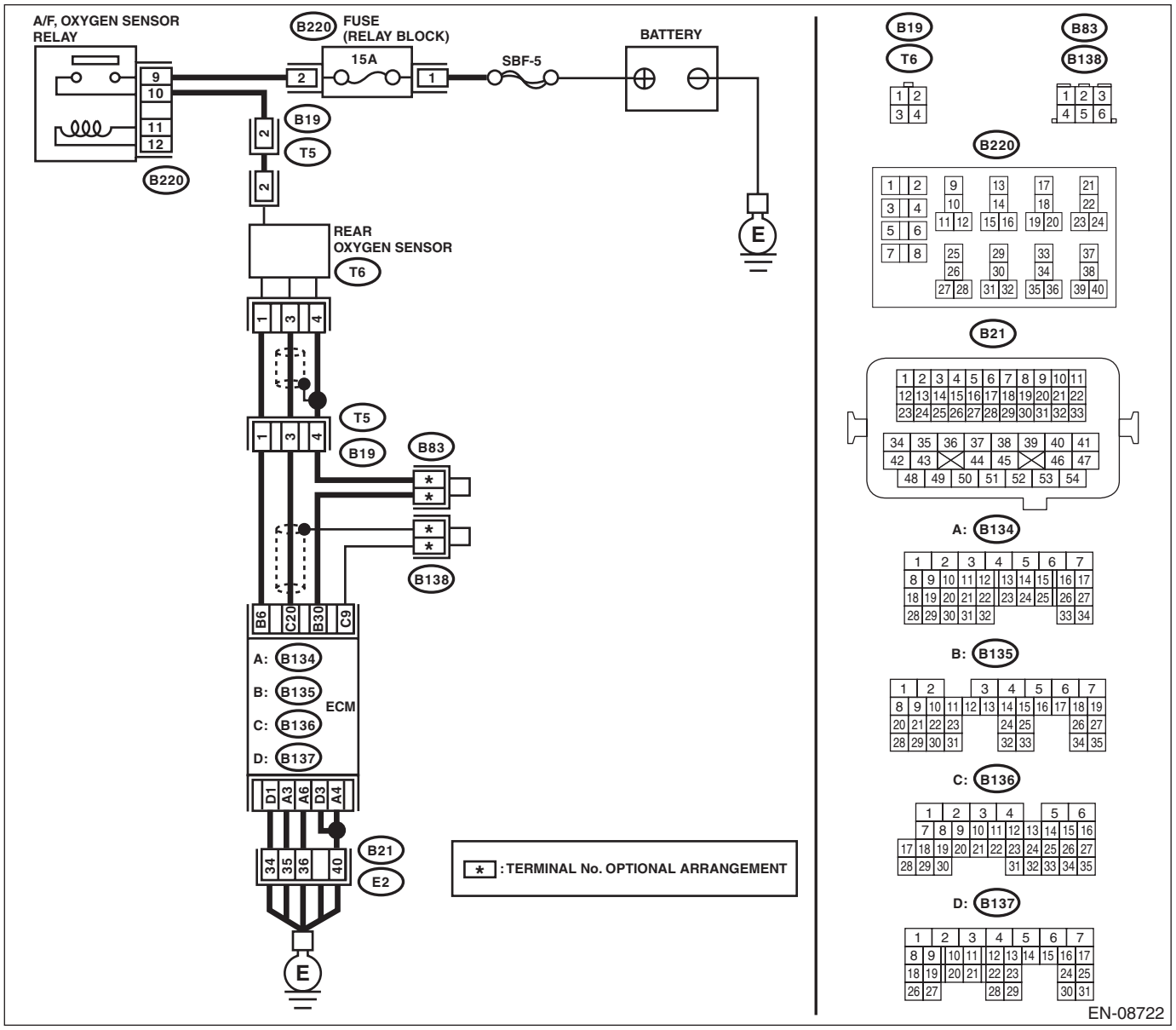
- Detected when 2 consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-239, DTC P2096 POST CATALYST FUEL TRIM SYSTEM TOO LEAN (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

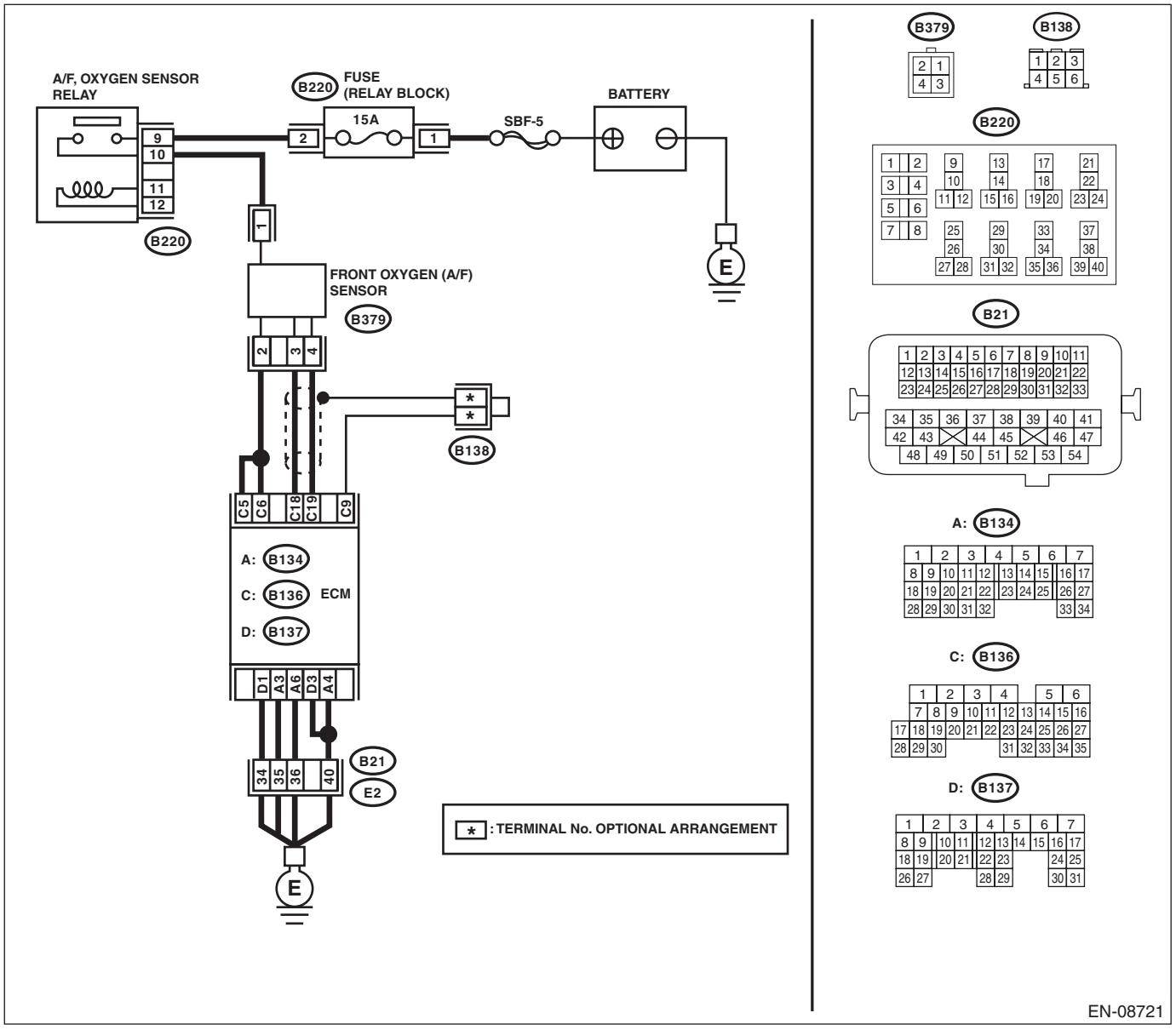
WIRING DIAGRAM:

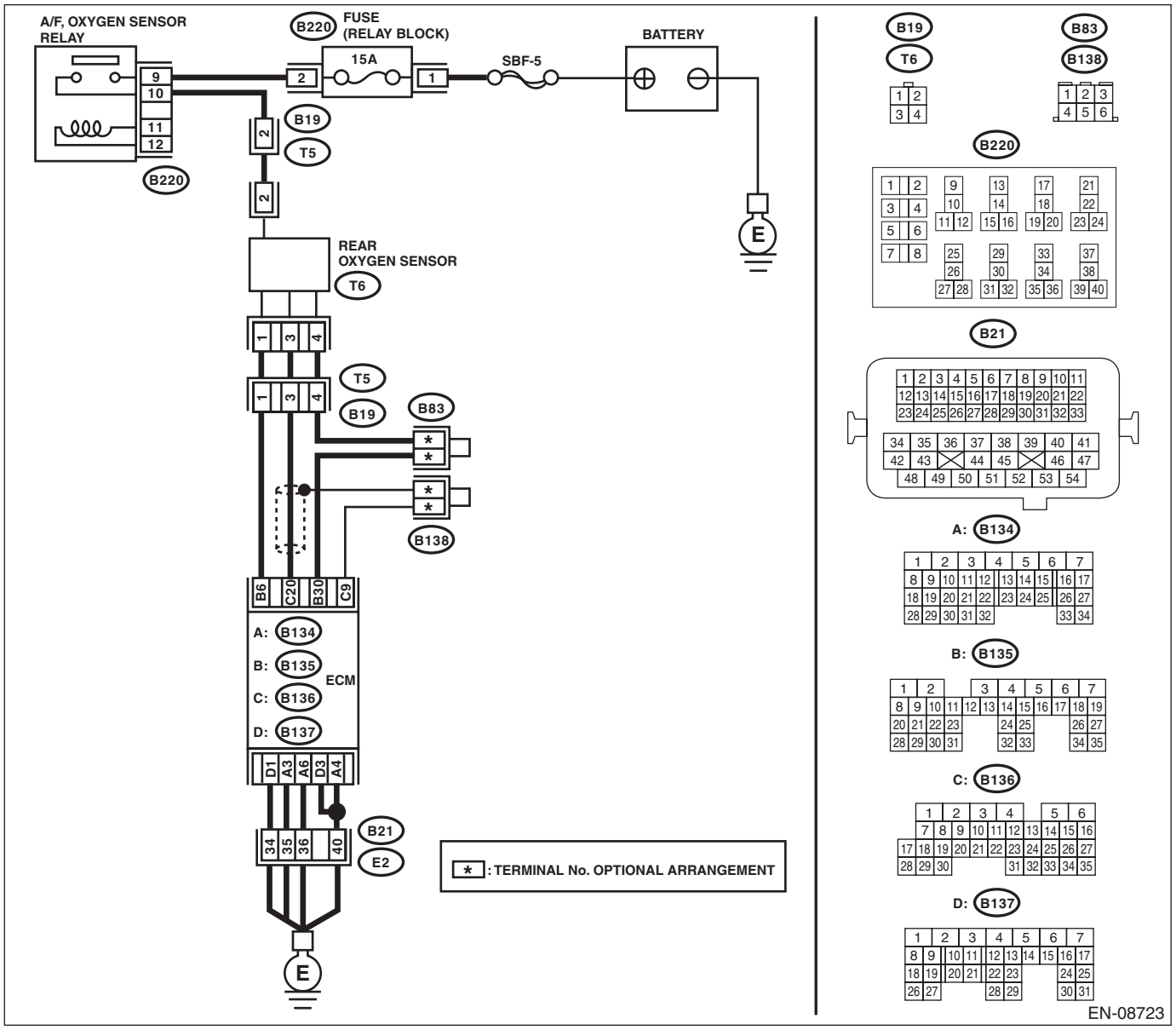
- Models without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>




A/F, OXYGEN SENSOR RELAY
B220
FUSE (RELAY BLOCK)
15A
SBF-5
BATTERY
B19
T5
REAR OXYGEN SENSOR
T6
B83
B138
B6
C20
B30
C9
A: B134
B: B135
C: B136
D: B137
ECM
D1
A3
A6
D3
A4
B21
E2
E
* : TERMINAL No. OPTIONAL ARRANGEMENT
EN-08722

- Models with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>





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(H4DOTC)(diag)-87, 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**.

	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. ***Connector & terminal*** ***Models without SI-DRIVE*** ***(B136) No. 19 — (E22) No. 1:*** ***(B136) No. 18 — (E22) No. 3:*** ***Models with SI-DRIVE*** ***(B136) No. 19 — (B379) No. 4:*** ***(B136) No. 18 — (B379) No. 3:***	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 front oxygen (A/F) sensor connector • Poor contact of ECM 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. ***Connector & terminal*** ***(B136) No. 19 — Chassis ground:*** ***(B136) No. 18 — Chassis ground:***	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 OUTPUT SIGNAL FOR ECM.** 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*** ***Models without SI-DRIVE*** ***(E22) No. 1 (+) — Chassis ground (–):*** ***Models with SI-DRIVE*** ***(B379) No. 4 (+) — Chassis ground (–):***	Is the voltage 4.5 V or more?	Go to step **7**.	Go to step **6**.
6	**CHECK OUTPUT SIGNAL FOR ECM.** Measure the voltage between front oxygen (A/F) sensor connector and chassis ground. ***Connector & terminal*** ***Models without SI-DRIVE*** ***(E22) No. 3 (+) — Chassis ground (–):*** ***Models with SI-DRIVE*** ***(B379) No. 3 (+) — Chassis ground (–):***	Is the voltage 4.95 V or more?	Go to step **7**.	Go to step **8**.
7	**CHECK OUTPUT SIGNAL FOR ECM.** Measure the voltage between front oxygen (A/F) sensor connector and chassis ground. ***Connector & terminal*** ***Models without SI-DRIVE*** ***(E22) No. 3 (+) — Chassis ground (–):*** ***(E22) No. 1 (+) — Chassis ground (–):*** ***Models with SI-DRIVE*** ***(B379) No. 3 (+) — Chassis ground (–):*** ***(B379) No. 4 (+) — 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. After repair, replace the ECM. <Ref. to FU(STI)-59, Engine Control Module (ECM).> <Ref. to FU(w/o STI)-57, Engine Control Module (ECM).>	Repair the poor contact of ECM connector.

	Step	Check	Yes	No
8	**CHECK EXHAUST SYSTEM.**	Are there holes or loose bolts on exhaust system?	Repair the exhaust system.	Go to step **9**.
9	**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 **10**.
10	**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 while disconnecting pressure regulator vacuum hose from intake manifold. <Ref. to ME(STI)-25, INSPECTION, Fuel Pressure.> <Ref. to ME(w/o STI)-24, INSPECTION, Fuel Pressure.> **CAUTION:** **Release fuel pressure before removing the fuel pressure gauge.** NOTE: If fuel pressure does not increase, squeeze the fuel return hose 2 to 3 times, then measure fuel pressure again.	Is the measured value 284 — 314 kPa (2.9 — 3.2 kgf/cm^2, 41 — 46 psi)?	Go to step **11**.	Check the fuel pump and fuel delivery line. • Models without SI-DRIVE <Ref. to FU(w/o STI)-79, INSPECTION, Fuel Pump.> <Ref. to FU(w/o STI)-93, INSPECTION, Fuel Delivery, Return and Evaporation Lines.> • Models with SI-DRIVE <Ref. to FU(STI)-81, INSPECTION, Fuel Pump.> <Ref. to FU(STI)-97, INSPECTION, Fuel Delivery, Return and Evaporation Lines.>
11	**CHECK FUEL PRESSURE.** After connecting the pressure regulator vacuum hose, measure fuel pressure. <Ref. to ME(STI)-25, INSPECTION, Fuel Pressure.> <Ref. to ME(w/o STI)-24, INSPECTION, Fuel Pressure.> **CAUTION:** **Release fuel pressure before removing the fuel pressure gauge.** NOTE: • If fuel pressure does not increase, squeeze fuel return hose 2 to 3 times, then measure fuel pressure again. • If the measured value at this step is out of specification, check or replace pressure regulator and pressure regulator vacuum hose.	Is the measured value 230 — 260 kPa (2.4 — 2.7 kgf/cm^2, 33 — 38 psi)?	Go to step **12**.	Check the fuel pump and fuel delivery line. • Models without SI-DRIVE <Ref. to FU(w/o STI)-79, INSPECTION, Fuel Pump.> <Ref. to FU(w/o STI)-93, INSPECTION, Fuel Delivery, Return and Evaporation Lines.> • Models with SI-DRIVE <Ref. to FU(STI)-81, INSPECTION, Fuel Pump.> <Ref. to FU(STI)-97, INSPECTION, Fuel Delivery, Return and Evaporation Lines.>

	Step	Check	Yes	No
12	**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(H4DOTC)(diag)-40, 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 **13**.	Replace the engine coolant temperature sensor. <Ref. to FU(STI)-34, Engine Coolant Temperature Sensor.> <Ref. to FU(w/o STI)-34, Engine Coolant Temperature Sensor.>
13	**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) Place the shift lever in 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: • Subaru Select Monitor For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.> • 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 **14**.	Replace the mass air flow and intake air temperature sensor. <Ref. to FU(STI)-42, Mass Air Flow and Intake Air Temperature Sensor.> <Ref. to FU(w/o STI)-42, Mass Air Flow and Intake Air Temperature Sensor.>
14	**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) Place the shift lever in neutral position. 3) Turn the A/C switch to OFF. 4) Turn all the accessory switches to OFF. 5) Open the front hood. 6) Measure the ambient temperature. 7) Read the value of «Intake Air 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(H4DOTC)(diag)-40, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Subtract ambient temperature from «Intake Air Temp.». Is the obtained value –10 — 50°C (–18 — 90°F)?	Go to step **15**.	Check the mass air flow and intake air temperature sensor. <Ref. to FU(STI)-42, Mass Air Flow and Intake Air Temperature Sensor.> <Ref. to FU(w/o STI)-42, Mass Air Flow and Intake Air Temperature Sensor.>

	Step	Check	Yes	No
15	**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 «Rear O2 Sensor» using the Subaru Select Monitor or a general scan tool. NOTE: • Depress the clutch pedal. • Subaru Select Monitor For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value of «Rear O2 Sensor» 0.490 V or more?	Go to step **16**.	Go to step **17**.
16	**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 «Rear O2 Sensor» using the Subaru Select Monitor or a general scan tool. NOTE: • Depress the clutch pedal. • Subaru Select Monitor For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value of «Rear O2 Sensor» 0.250 V or less?	Go to step **18**.	Go to step **17**.
17	**CHECK REAR OXYGEN SENSOR CONNECTOR AND COUPLING CONNECTOR.**	Has water entered the connector?	Completely remove any water inside.	Go to step **19**.
18	**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 «Rear O2 Sensor» 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(H4DOTC)(diag)-40, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value in «Rear O2 Sensor» kept at 0.250 V or less for 5 minutes or more?	Replace the front oxygen (A/F) sensor. <Ref. to FU(STI)-54, Front Oxygen (A/F) Sensor.> <Ref. to FU(w/o STI)-53, Front Oxygen (A/F) Sensor.>	Go to step **19**.

	Step	Check	Yes	No
19	**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*** ***(B136) No. 20 — (T6) No. 3:*** ***(B135) No. 30 — (T6) No. 4:***	Is the resistance less than 1 Ω?	Go to step **20**.	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
20	**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*** ***(T6) No. 3 (+) — Chassis ground (–):***	Is the voltage 0.2 — 0.5 V?	Replace the rear oxygen sensor. <Ref. to FU(STI)-56, Rear Oxygen Sensor.> <Ref. to FU(w/o STI)-55, 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

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

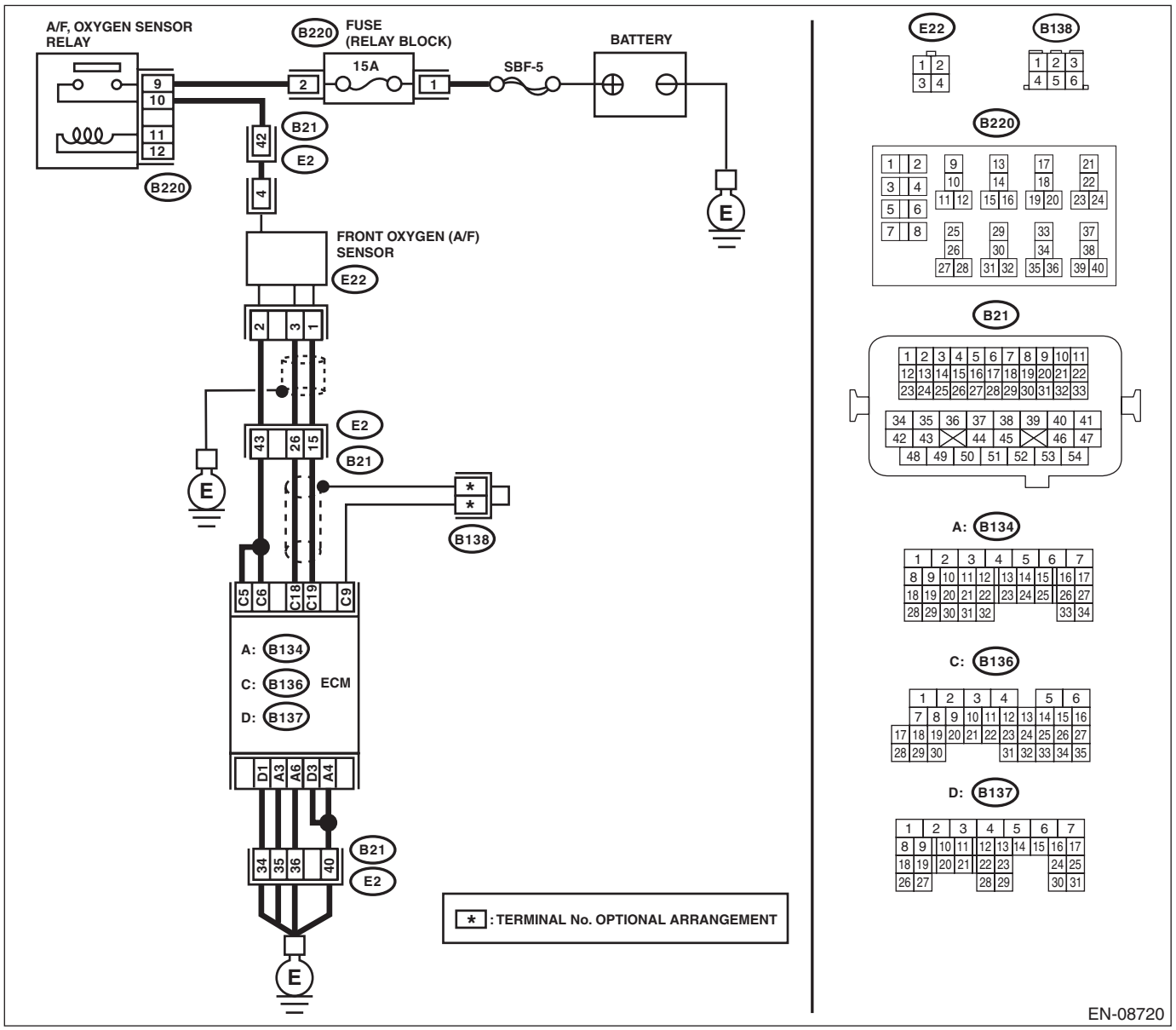
DTC DETECTING CONDITION:

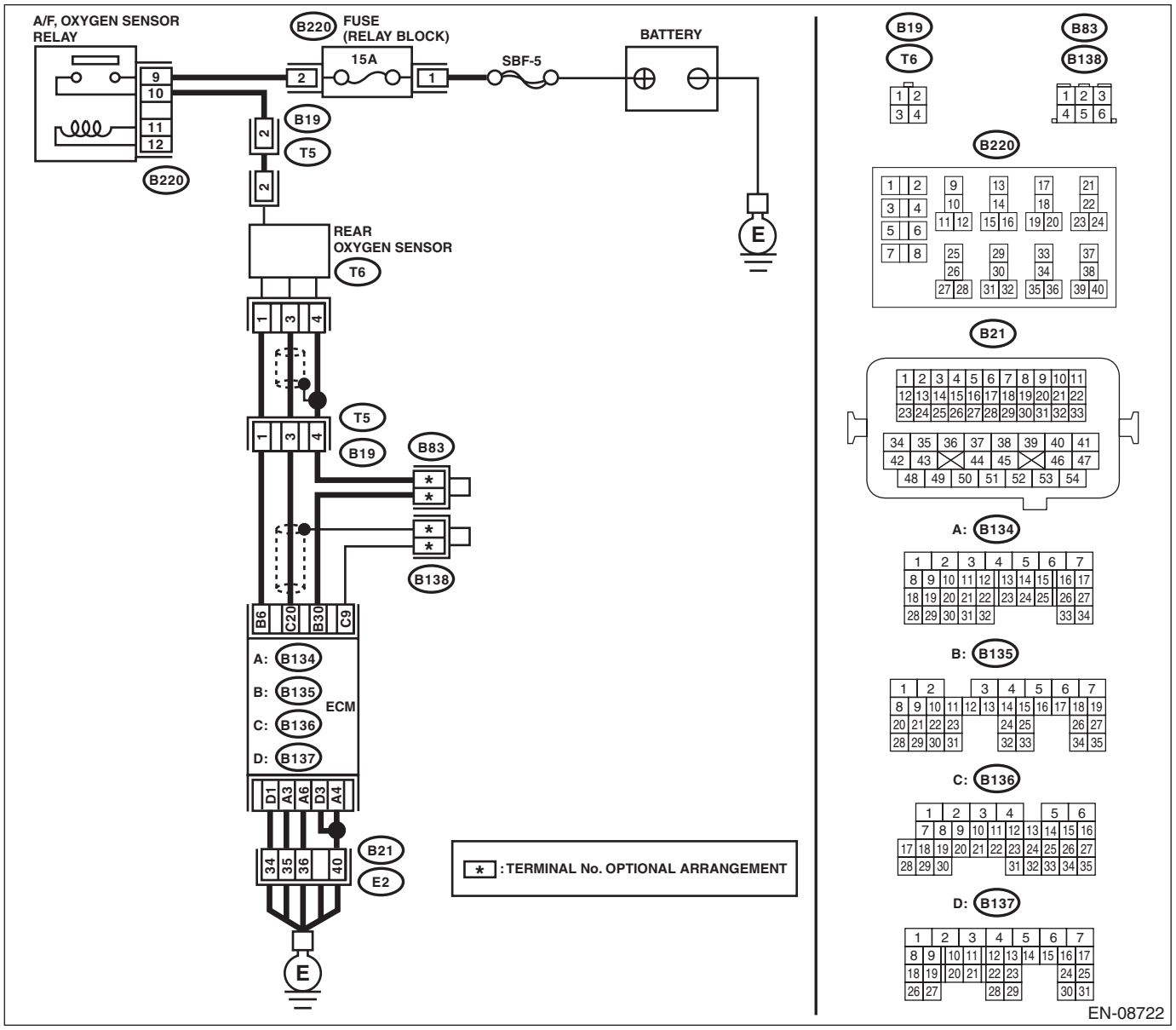
- Detected when 2 consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-241, DTC P2097 POST CATALYST FUEL TRIM SYSTEM TOO RICH (BANK 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

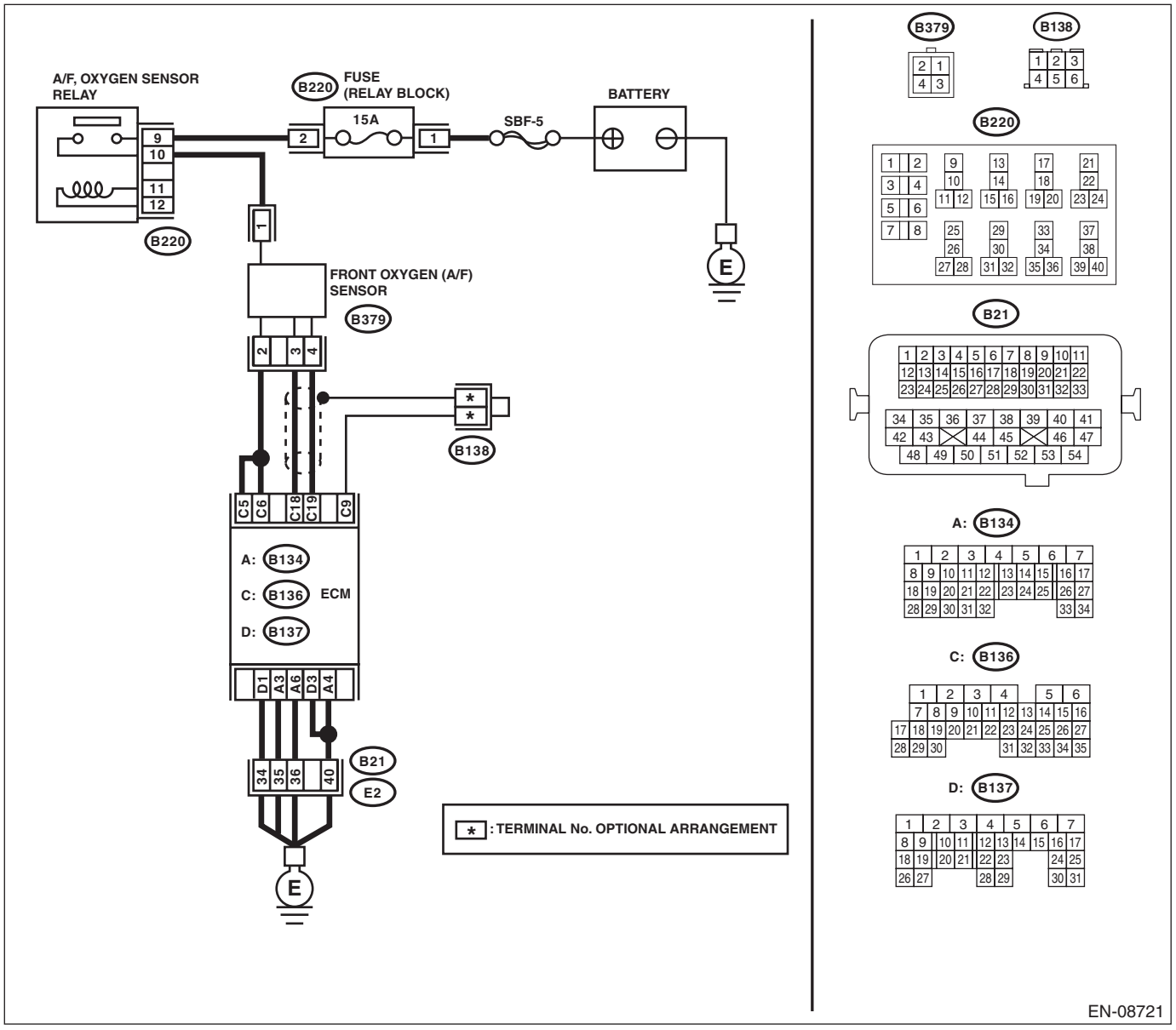
WIRING DIAGRAM:

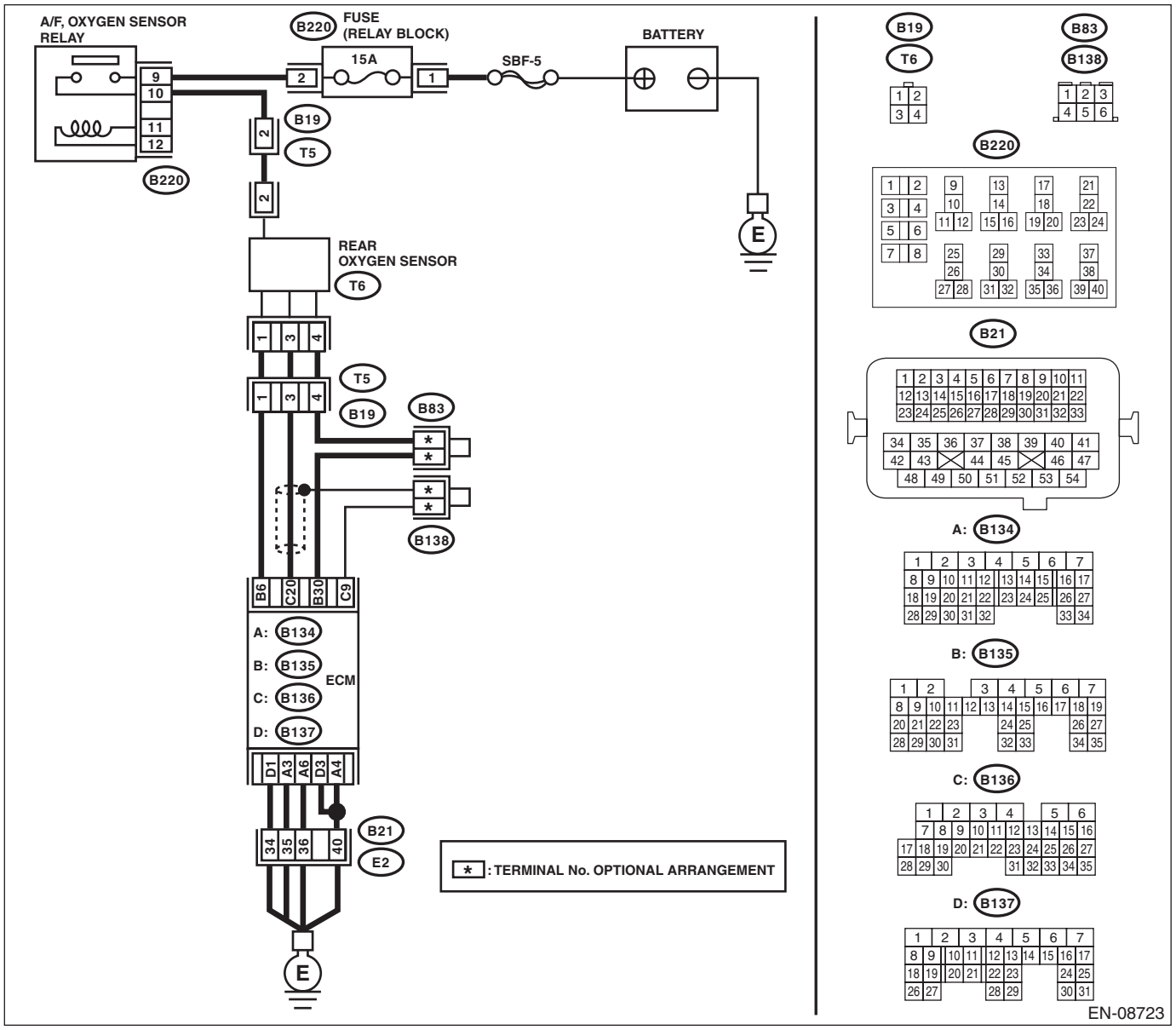
- Models without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>




A/F, OXYGEN SENSOR RELAY
B220
FUSE (RELAY BLOCK)
15A
SBF-5
BATTERY
B19
T5
REAR OXYGEN SENSOR
T6
B83
B138
B6
C20
B30
C9
A: B134
B: B135
C: B136
D: B137
ECM
D1
A3
A6
D3
A4
B21
E2
E
* : TERMINAL No. OPTIONAL ARRANGEMENT
B19
T6
B83
B138
B220
B21
A: B134
B: B135
C: B136
D: B137
EN-08722

- Models with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>





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(H4DOTC)(diag)-87, 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**.

	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. ***Connector & terminal*** ***Models without SI-DRIVE*** ***(B136) No. 19 — (E22) No. 1:*** ***(B136) No. 18 — (E22) No. 3:*** ***Models with SI-DRIVE*** ***(B136) No. 19 — (B379) No. 4:*** ***(B136) No. 18 — (B379) No. 3:***	Is the resistance less than 1 Ω?	Go to step **4**.	Repair the open circuit of harness between ECM connector and front oxygen (A/F) sensor connector.
4	**CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.** Measure the resistance between ECM connector and chassis ground. ***Connector & terminal*** ***(B136) No. 19 — Chassis ground:*** ***(B136) No. 18 — Chassis ground:***	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 OUTPUT SIGNAL FOR ECM.** 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*** ***Models without SI-DRIVE*** ***(E22) No. 1 (+) — Chassis ground (–):*** ***Models with SI-DRIVE*** ***(B379) No. 4 (+) — Chassis ground (–):***	Is the voltage 4.5 V or more?	Go to step **7**.	Go to step **6**.
6	**CHECK OUTPUT SIGNAL FOR ECM.** Measure the voltage between front oxygen (A/F) sensor connector and chassis ground. ***Connector & terminal*** ***Models without SI-DRIVE*** ***(E22) No. 3 (+) — Chassis ground (–):*** ***Models with SI-DRIVE*** ***(B379) No. 3 (+) — Chassis ground (–):***	Is the voltage 4.95 V or more?	Go to step **7**.	Go to step **8**.
7	**CHECK OUTPUT SIGNAL FOR ECM.** Measure the voltage between front oxygen (A/F) sensor connector and chassis ground. ***Connector & terminal*** ***Models without SI-DRIVE*** ***(E22) No. 3 (+) — Chassis ground (–):*** ***(E22) No. 1 (+) — Chassis ground (–):*** ***Models with SI-DRIVE*** ***(B379) No. 3 (+) — Chassis ground (–):*** ***(B379) No. 4 (+) — 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. After repair, replace the ECM. <Ref. to FU(STI)-59, Engine Control Module (ECM).> <Ref. to FU(w/o STI)-57, Engine Control Module (ECM).>	Repair the poor contact of ECM connector.
8	**CHECK EXHAUST SYSTEM.**	Are there holes or loose bolts on exhaust system?	Repair the exhaust system.	Go to step **9**.

	Step	Check	Yes	No
9	**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 **10**.
10	**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 while disconnecting pressure regulator vacuum hose from intake manifold. <Ref. to ME(STI)-25, INSPECTION, Fuel Pressure.> <Ref. to ME(w/o STI)-24, INSPECTION, Fuel Pressure.> **CAUTION:** **Release fuel pressure before removing the fuel pressure gauge.** NOTE: If fuel pressure does not increase, squeeze the fuel return hose 2 to 3 times, then measure fuel pressure again.	Is the measured value 284 — 314 kPa (2.9 — 3.2 kgf/cm^2, 41 — 46 psi)?	Go to step **11**.	Check the fuel pump and fuel delivery line. • Models without SI-DRIVE <Ref. to FU(w/o STI)-79, INSPECTION, Fuel Pump.> <Ref. to FU(w/o STI)-93, INSPECTION, Fuel Delivery, Return and Evaporation Lines.> • Models with SI-DRIVE <Ref. to FU(STI)-81, INSPECTION, Fuel Pump.> <Ref. to FU(STI)-97, INSPECTION, Fuel Delivery, Return and Evaporation Lines.>
11	**CHECK FUEL PRESSURE.** After connecting the pressure regulator vacuum hose, measure fuel pressure. <Ref. to ME(STI)-25, INSPECTION, Fuel Pressure.> <Ref. to ME(w/o STI)-24, INSPECTION, Fuel Pressure.> **CAUTION:** **Release fuel pressure before removing the fuel pressure gauge.** NOTE: • If fuel pressure does not increase, squeeze fuel return hose 2 to 3 times, then measure fuel pressure again. • If the measured value at this step is out of specification, check or replace pressure regulator and pressure regulator vacuum hose.	Is the measured value 230 — 260 kPa (2.4 — 2.7 kgf/cm^2, 33 — 38 psi)?	Go to step **12**.	Check the fuel pump and fuel delivery line. • Models without SI-DRIVE <Ref. to FU(w/o STI)-79, INSPECTION, Fuel Pump.> <Ref. to FU(w/o STI)-93, INSPECTION, Fuel Delivery, Return and Evaporation Lines.> • Models with SI-DRIVE <Ref. to FU(STI)-81, INSPECTION, Fuel Pump.> <Ref. to FU(STI)-97, INSPECTION, Fuel Delivery, Return and Evaporation Lines.>

	Step	Check	Yes	No
12	**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(H4DOTC)(diag)-40, 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 **13**.	Replace the engine coolant temperature sensor. <Ref. to FU(STI)-34, Engine Coolant Temperature Sensor.> <Ref. to FU(w/o STI)-34, Engine Coolant Temperature Sensor.>
13	**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) Place the shift lever in 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: • Subaru Select Monitor For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.> • 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 **14**.	Replace the mass air flow and intake air temperature sensor. <Ref. to FU(STI)-42, Mass Air Flow and Intake Air Temperature Sensor.> <Ref. to FU(w/o STI)-42, Mass Air Flow and Intake Air Temperature Sensor.>
14	**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) Place the shift lever in neutral position. 3) Turn the A/C switch to OFF. 4) Turn all the accessory switches to OFF. 5) Open the front hood. 6) Measure the ambient temperature. 7) Read the value of «Intake Air 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(H4DOTC)(diag)-40, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Subtract ambient temperature from «Intake Air Temp.». Is the obtained value –10 — 50°C (–18 — 90°F)?	Go to step **15**.	Check the mass air flow and intake air temperature sensor. <Ref. to FU(STI)-42, Mass Air Flow and Intake Air Temperature Sensor.> <Ref. to FU(w/o STI)-42, Mass Air Flow and Intake Air Temperature Sensor.>

	Step	Check	Yes	No
15	**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 «Rear O2 Sensor» using the Subaru Select Monitor or a general scan tool. NOTE: • Depress the clutch pedal. • Subaru Select Monitor For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value of «Rear O2 Sensor» 0.490 V or more?	Go to step **16**.	Go to step **17**.
16	**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 «Rear O2 Sensor» using the Subaru Select Monitor or a general scan tool. NOTE: • Depress the clutch pedal. • Subaru Select Monitor For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value of «Rear O2 Sensor» 0.250 V or less?	Go to step **18**.	Go to step **17**.
17	**CHECK REAR OXYGEN SENSOR CONNECTOR AND COUPLING CONNECTOR.**	Has water entered the connector?	Completely remove any water inside.	Go to step **19**.
18	**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 «Rear O2 Sensor» 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(H4DOTC)(diag)-40, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value in «Rear O2 Sensor» kept at 0.8 V or more for 5 minutes or more?	Replace the front oxygen (A/F) sensor. <Ref. to FU(STI)-54, Front Oxygen (A/F) Sensor.> <Ref. to FU(w/o STI)-53, Front Oxygen (A/F) Sensor.>	Go to step **19**.

	Step	Check	Yes	No
19	**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*** ***(B136) No. 20 — (T6) No. 3:*** ***(B135) No. 30 — (T6) No. 4:***	Is the resistance less than 1 Ω?	Go to step **20**.	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
20	**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*** ***(T6) No. 3 (+) — Chassis ground (–):***	Is the voltage 0.2 — 0.5 V?	Replace the rear oxygen sensor. <Ref. to FU(STI)-56, Rear Oxygen Sensor.> <Ref. to FU(w/o STI)-55, 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

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-243, DTC P2101 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

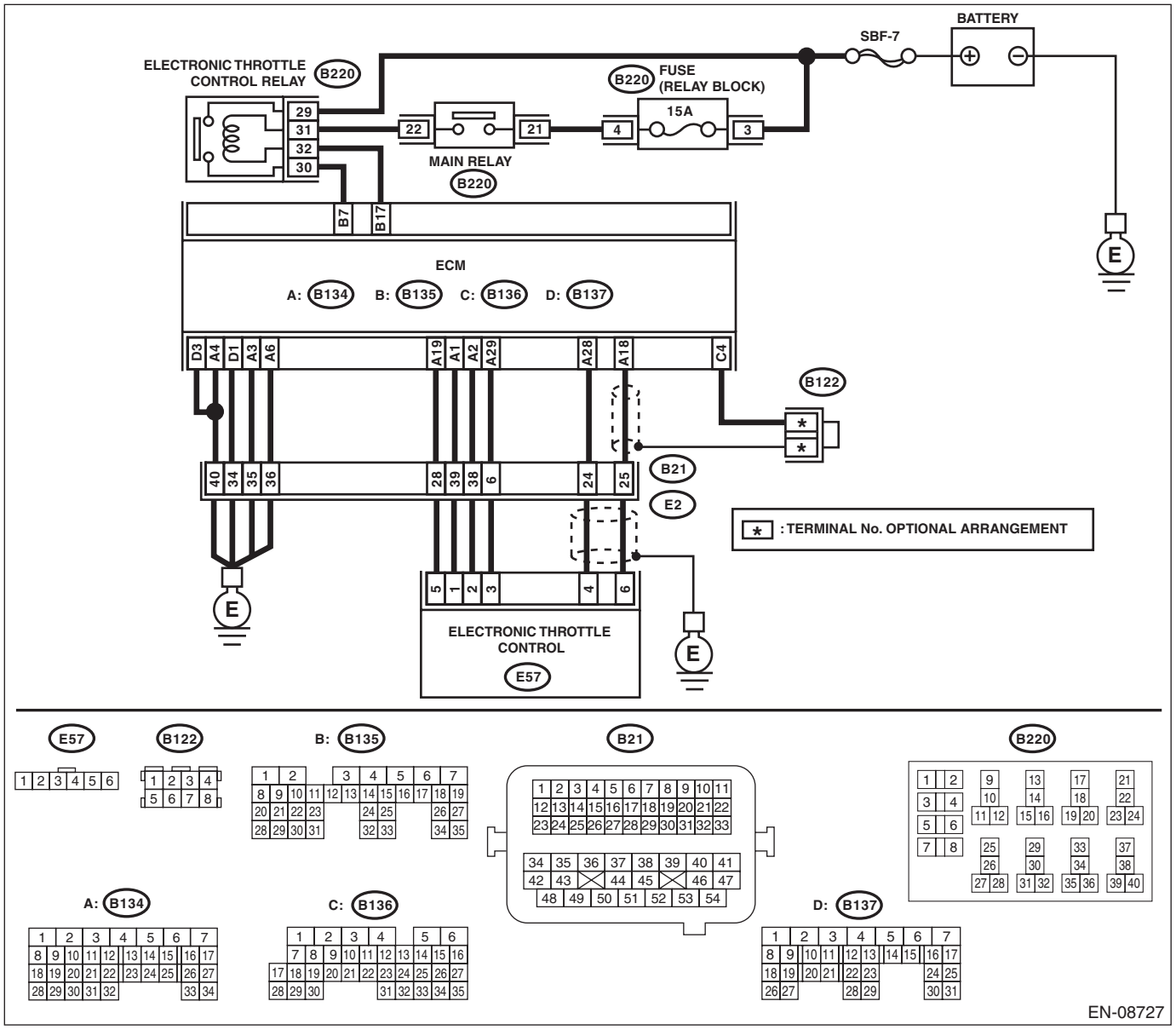
- Improper idling
- Poor driving performance
- Engine stalls.

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



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. 31 and No. 32 of electronic throttle control relay. 4) Measure the resistance between electronic throttle control relay terminals. ***Terminals*** ***No. 29 — No. 30:***	Is the resistance less than 1 Ω?	Go to step **2**.	Replace the electronic throttle control relay. <Ref. to FU(STI)-64, Electronic Throttle Control Relay.> <Ref. to FU(w/o STI)-62, Electronic Throttle Control Relay.>

	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. ***Connector & terminal*** ***(B220) No. 29 (+) — Chassis ground (–):***	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. ***Connector & terminal*** ***(B220) No. 32 (+) — 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 **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. ***Connector & terminal*** ***(B220) No. 32 — Chassis ground:*** ***(B220) No. 30 — Chassis ground:***	Is the resistance 1 MΩ 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. ***Connector & terminal*** ***(B135) No. 17 — (B220) No. 32:*** ***(B135) No. 7 — (B220) No. 30:***	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 ECM connector and chassis ground. ***Connector & terminal*** ***(B134) No. 19 — Chassis ground:*** ***(B134) No. 18 — Chassis ground:*** ***(B134) No. 18 — (B136) No. 4:*** ***(B134) No. 28 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **7**.	Repair the ground short circuit of harness between ECM connector and electronic throttle control connector.

	Step	Check	Yes	No
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. ***Connector & terminal*** ***(E57) No. 6 — Engine ground:*** ***(E57) No. 4 — Engine ground:***	Is the resistance 1 MΩ 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(STI)-59, Engine Control Module (ECM).> <Ref. to FU(w/o STI)-57, Engine Control Module (ECM).>
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. ***Connector & terminal*** ***(B134) No. 18 — (E57) No. 6:*** ***(B134) No. 28 — (E57) No. 4:*** ***(B134) No. 29 — (E57) No. 3:***	Is the resistance less than 1 Ω?	Go to step **9**.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and electronic throttle control connector • Poor contact of coupling 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. ***Connector & terminal*** ***(E57) No. 3 — Engine ground:***	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. ***Connector & terminal*** ***(E57) No. 6 (+) — 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 **11**.

	Step	Check	Yes	No
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. ***Connector & terminal*** ***(B134) No. 19 — (B134) No. 18:*** ***(B134) No. 19 — (B134) No. 28:***	Is the resistance 1 MΩ 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 "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.>	Is the value of «Main-Throttle Sensor» 0.81 — 0.87 V?	Go to step **13**.	Repair the poor contact of electronic throttle control connector. Replace the electronic throttle control if defective. <Ref. to FU(STI)-15, Throttle Body.> <Ref. to FU(w/o STI)-15, Throttle Body.>
13	**CHECK SENSOR OUTPUT.** Read the value of «Sub-Throttle Sensor» using Subaru Select Monitor. NOTE: For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.>	Is the value of «Sub-Throttle Sensor» 1.64 — 1.70 V?	Go to step **14**.	Repair the poor contact of electronic throttle control connector. Replace the electronic throttle control if defective. <Ref. to FU(STI)-15, Throttle Body.> <Ref. to FU(w/o STI)-15, Throttle Body.>
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*** ***(B134) No. 2 — (E57) No. 2:*** ***(B134) No. 1 — (E57) No. 1:***	Is the resistance less than 1 Ω?	Go to step **15**.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and electronic throttle control connector • Poor contact of coupling connector
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. 2 (+) — Engine ground (–):*** ***(E57) No. 1 (+) — 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 **16**.

	Step	Check	Yes	No
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. 2 — Engine ground:*** ***(E57) No. 1 — Engine ground:***	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.
17	**CHECK ELECTRONIC THROTTLE CONTROL MOTOR HARNESS.** Measure the resistance between electronic throttle control connectors. ***Connector & terminal*** ***(E57) No. 2 — (E57) No. 1:***	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.
18	**CHECK ELECTRONIC THROTTLE CONTROL GROUND CIRCUIT.** Measure the resistance between ECM connector and chassis ground. ***Connector & terminal*** ***(B134) No. 3 — Chassis ground:*** ***(B134) No. 4 — Chassis ground:*** ***(B134) No. 6 — Chassis ground:*** ***(B137) No. 1 — Chassis ground:*** ***(B137) No. 3 — Chassis ground:***	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
19	**CHECK ELECTRONIC THROTTLE CONTROL.** Measure the resistance between electronic throttle control terminals. ***Terminals*** ***No. 2 — No. 1:***	Is the resistance 50 Ω or less?	Go to step **20**.	Replace the electronic throttle control. <Ref. to FU(STI)-15, Throttle Body.> <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(STI)-15, Throttle Body.> <Ref. to FU(w/o STI)-15, Throttle Body.>

EN:DTC P2102 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT LOW

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-245, DTC P2102 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

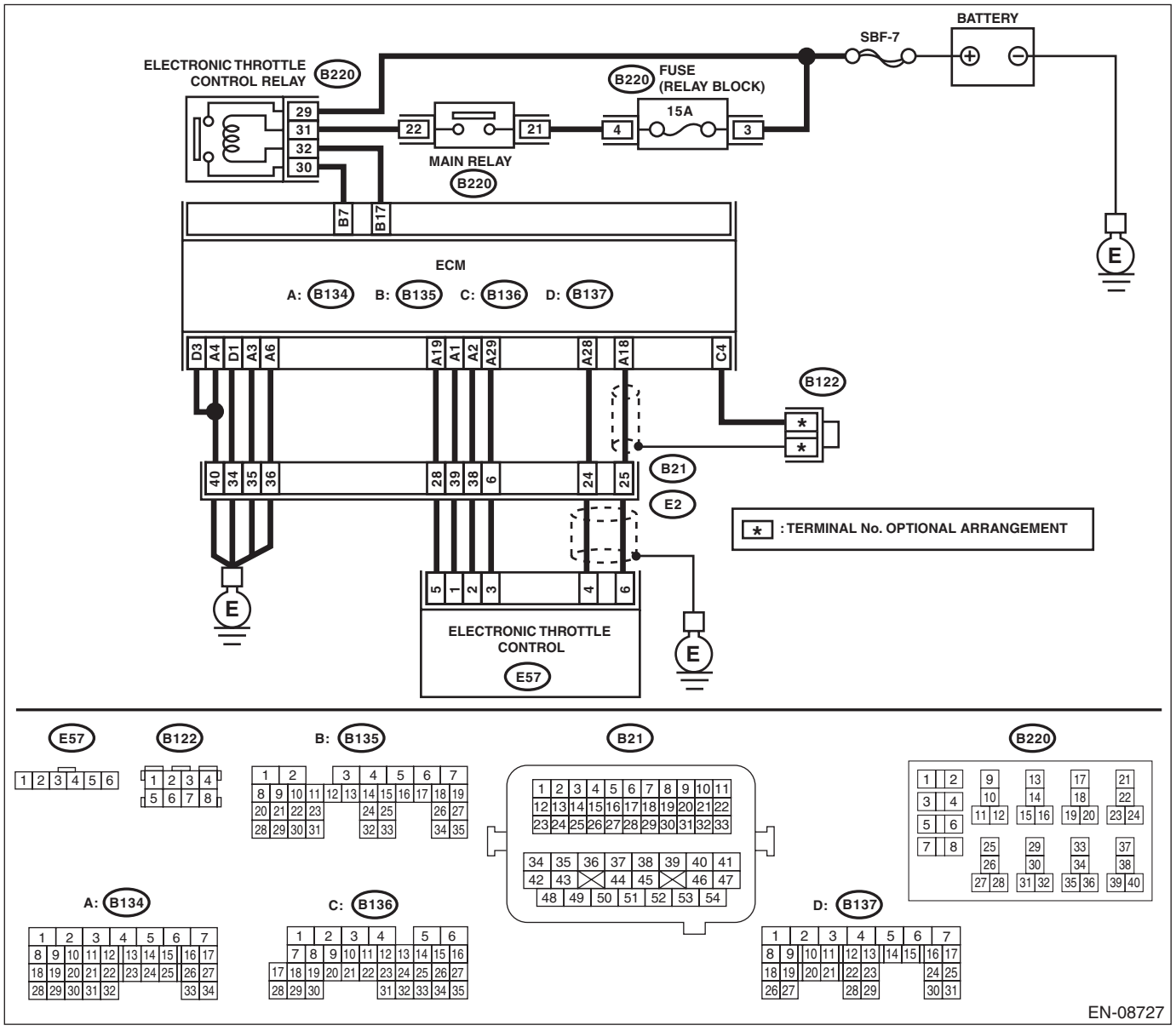
- Improper idling
- Poor driving performance
- Engine stalls.

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	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. 31 and No. 32 of electronic throttle control relay. 4) Measure the resistance between electronic throttle control relay terminals. ***Terminals*** ***No. 29 — No. 30:***	Is the resistance less than 1 Ω?	Go to step **2**.	Replace the electronic throttle control relay. <Ref. to FU(STI)-64, Electronic Throttle Control Relay.> <Ref. to FU(w/o STI)-62, 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. ***Connector & terminal*** ***(B220) No. 29 (+) — Chassis ground (–):***	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. ***Connector & terminal*** ***(B220) No. 32 (+) — 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 **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. ***Connector & terminal*** ***(B220) No. 32 — Chassis ground:*** ***(B220) No. 30 — Chassis ground:***	Is the resistance 1 MΩ 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. ***Connector & terminal*** ***(B135) No. 17 — (B220) No. 32:*** ***(B135) No. 7 — (B220) No. 30:***	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.

EO:DTC P2103 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT HIGH

DTC DETECTING CONDITION:

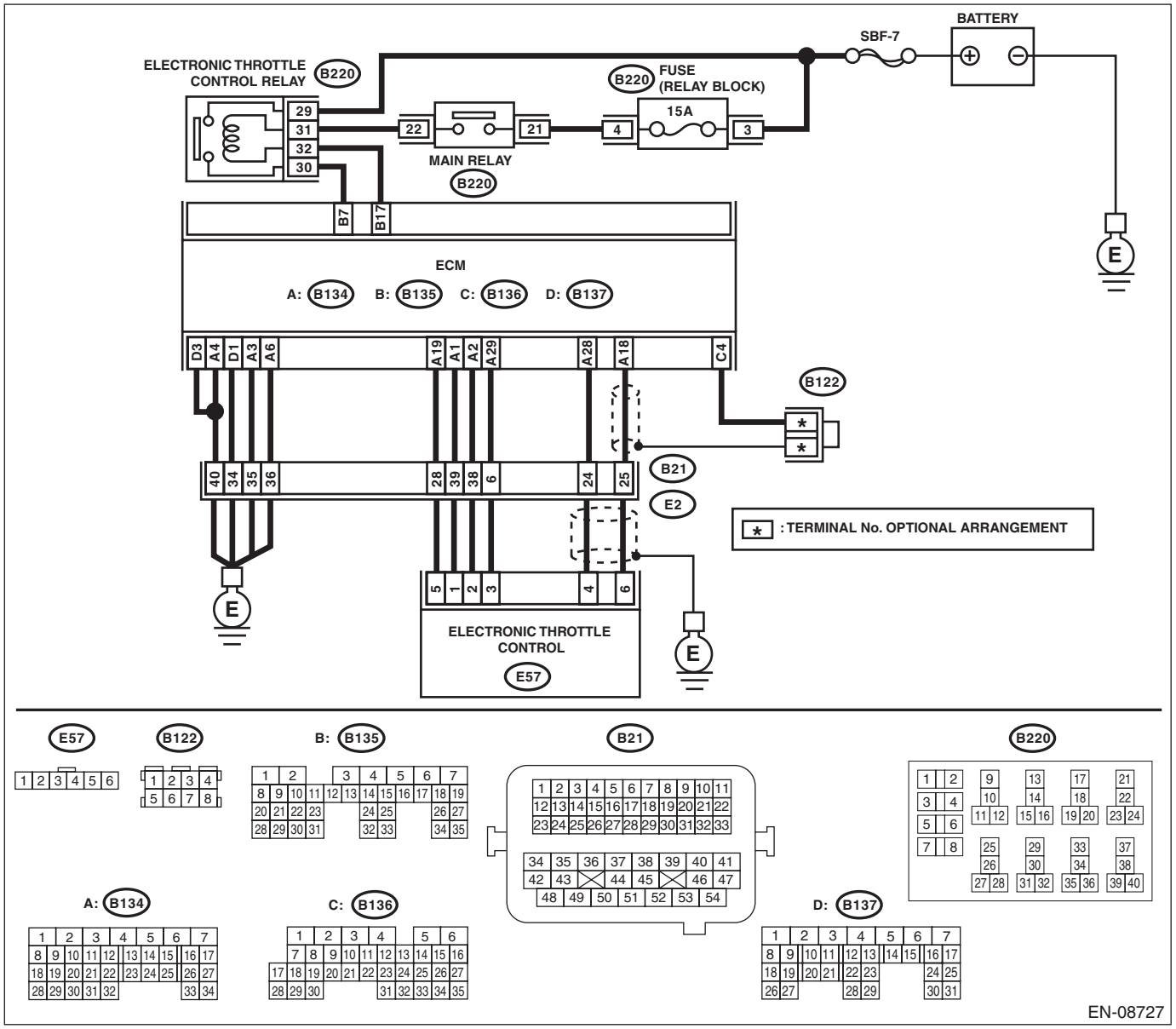
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-247, DTC P2103 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK ELECTRONIC THROTTLE CONTROL RELAY.** 1) Turn the ignition switch to OFF. 2) Remove the electronic throttle control relay. 3) Measure the resistance between electronic throttle control relay terminals. ***Terminals*** ***No. 29 — No. 30:***	Is the resistance 1 MΩ or more?	Go to step **2**.	Replace the electronic throttle control relay. <Ref. to FU(STI)-64, Electronic Throttle Control Relay.> <Ref. to FU(w/o STI)-62, 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. ***Connector & terminal*** ***(B220) No. 30 (+) — 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 **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 ECM connector and chassis ground. ***Connector & terminal*** ***(B135) No. 17 — 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 electronic throttle control relay connector.

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

NOTE:
For the diagnostic procedure, refer to DTC P2101. <Ref. to EN(H4DOTC)(diag)-371, DTC P2101 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

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

NOTE:
For the diagnostic procedure, refer to DTC P2101. <Ref. to EN(H4DOTC)(diag)-371, DTC P2101 THROTTLE ACTUATOR CONTROL MOTOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

ER:DTC P2122 THROTTLE/PEDAL POSITION SENSOR/SWITCH “D” CIRCUIT LOW INPUT

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-255, DTC P2122 THROTTLE/PEDAL POSITION SENSOR/SWITCH “D” CIRCUIT LOW INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

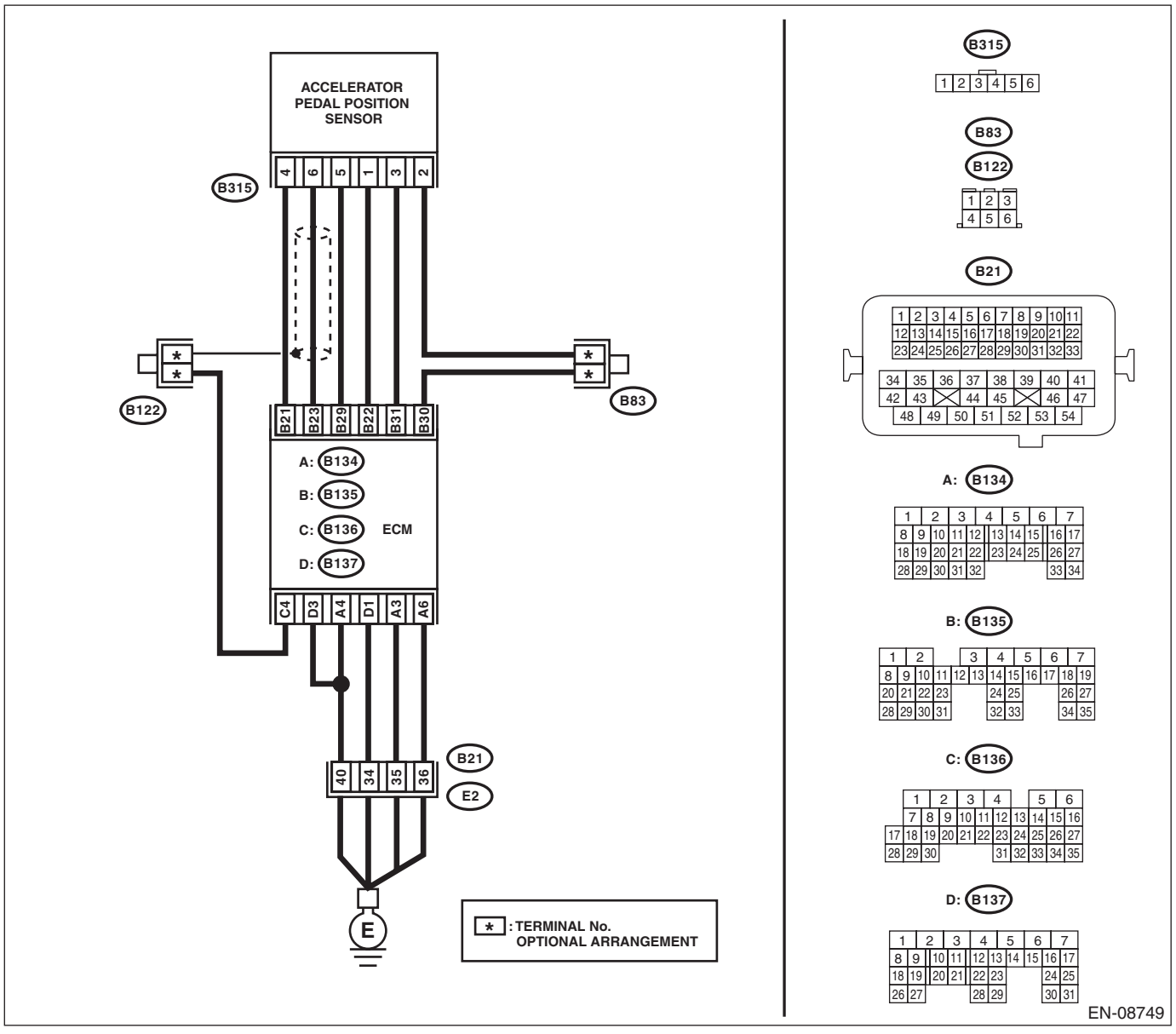
- Improper idling
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK HARNESS BETWEEN ECM AND ACCELERATOR PEDAL POSITION SENSOR CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and accelerator pedal position sensor. 3) Measure the resistance between ECM connector and chassis ground. ***Connector & terminal*** ***(B135) No. 21 — Chassis ground:*** ***(B135) No. 23 — Chassis ground:*** ***(B135) No. 23 — (B136) No. 4:***	Is the resistance 1 MΩ or more?	Go to step **2**.	Repair the short circuit to ground in harness between ECM connector and accelerator pedal position sensor connector.
2	**CHECK SHORT CIRCUIT INSIDE THE ECM.** 1) Connect the connector to ECM. 2) Measure the resistance between accelerator pedal position sensor connector and chassis ground. ***Connector & terminal*** ***(B315) No. 6 — Chassis ground:***	Is the resistance 1 MΩ or more?	Replace the accelerator pedal. <Ref. to SP(STI)-4, Accelerator Pedal.>	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(STI)-59, Engine Control Module (ECM).> <Ref. to FU(w/o STI)-57, Engine Control Module (ECM).>

ES:DTC P2123 THROTTLE/PEDAL POSITION SENSOR/SWITCH “D” CIRCUIT HIGH INPUT

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-257, DTC P2123 THROTTLE/PEDAL POSITION SENSOR/SWITCH “D” CIRCUIT HIGH INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

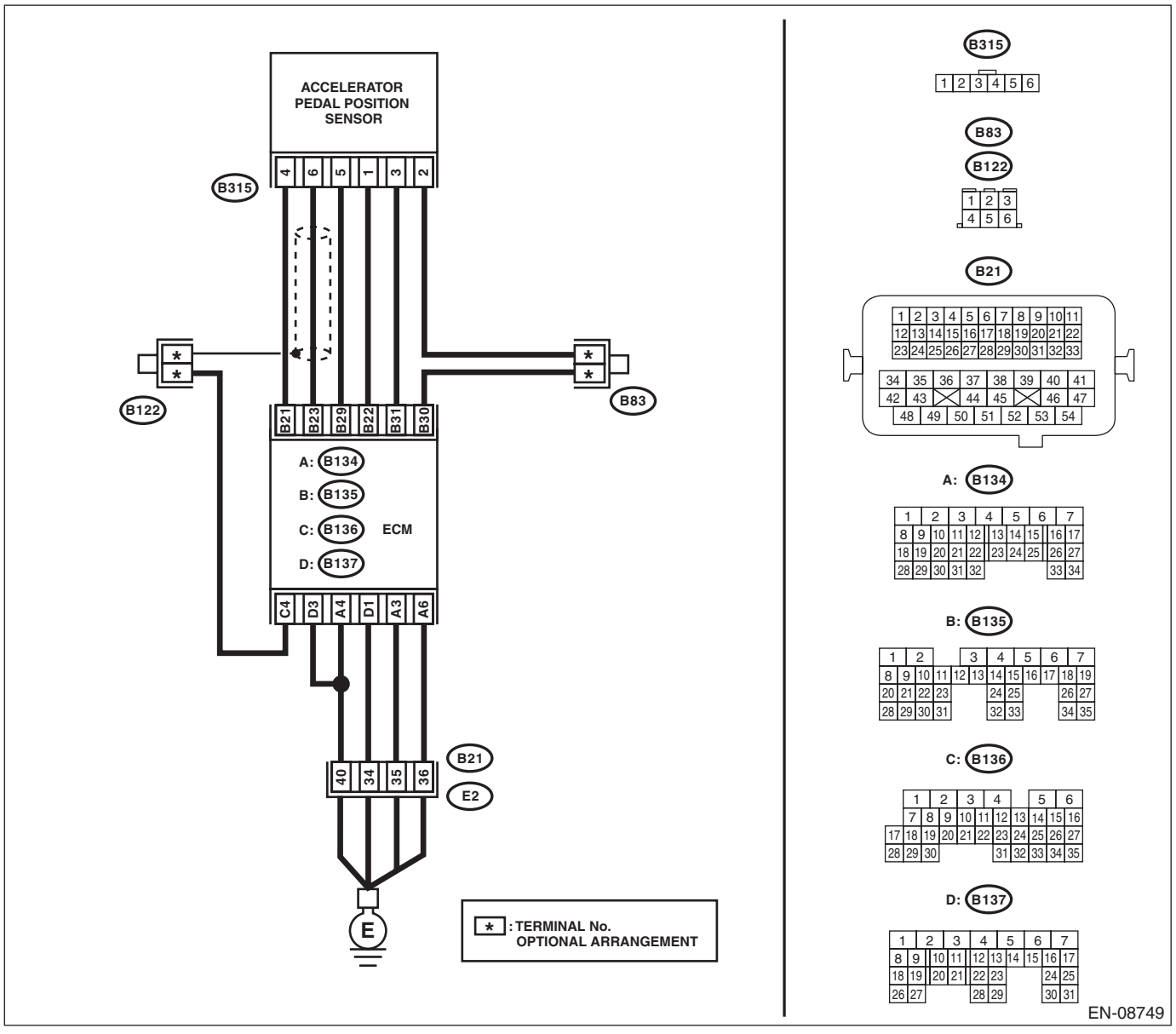
- Improper idling
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK HARNESS BETWEEN ECM AND ACCELERATOR PEDAL POSITION SENSOR CONNECTOR.** 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. ***Connector & terminal*** ***(B135) No. 23 — (B315) No. 6:*** ***(B135) No. 29 — (B315) No. 5:***	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.
2	**CHECK HARNESS BETWEEN ECM AND ACCELERATOR PEDAL POSITION SENSOR CONNECTOR.** 1) Connect the connector to ECM. 2) Measure the resistance between accelerator pedal position sensor connector and chassis ground. ***Connector & terminal*** ***(B315) No. 5 — Chassis 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 ACCELERATOR PEDAL POSITION SENSOR CONNECTOR.** 1) Turn the ignition switch to ON. 2) Measure the voltage between accelerator pedal position sensor connector and chassis ground. ***Connector & terminal*** ***(B315) No. 6 (+) — Chassis ground (–):***	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**.
4	**CHECK HARNESS BETWEEN ECM AND ACCELERATOR PEDAL POSITION SENSOR CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connectors. ***Connector & terminal*** ***(B135) No. 21 — (B135) No. 23:***	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(STI)-4, Accelerator Pedal.>	Repair the short circuit to power supply in harness between ECM connector and accelerator pedal position sensor connector.

ET:DTC P2127 THROTTLE/PEDAL POSITION SENSOR/SWITCH “E” CIRCUIT LOW INPUT

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-259, DTC P2127 THROTTLE/PEDAL POSITION SENSOR/SWITCH “E” CIRCUIT LOW INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

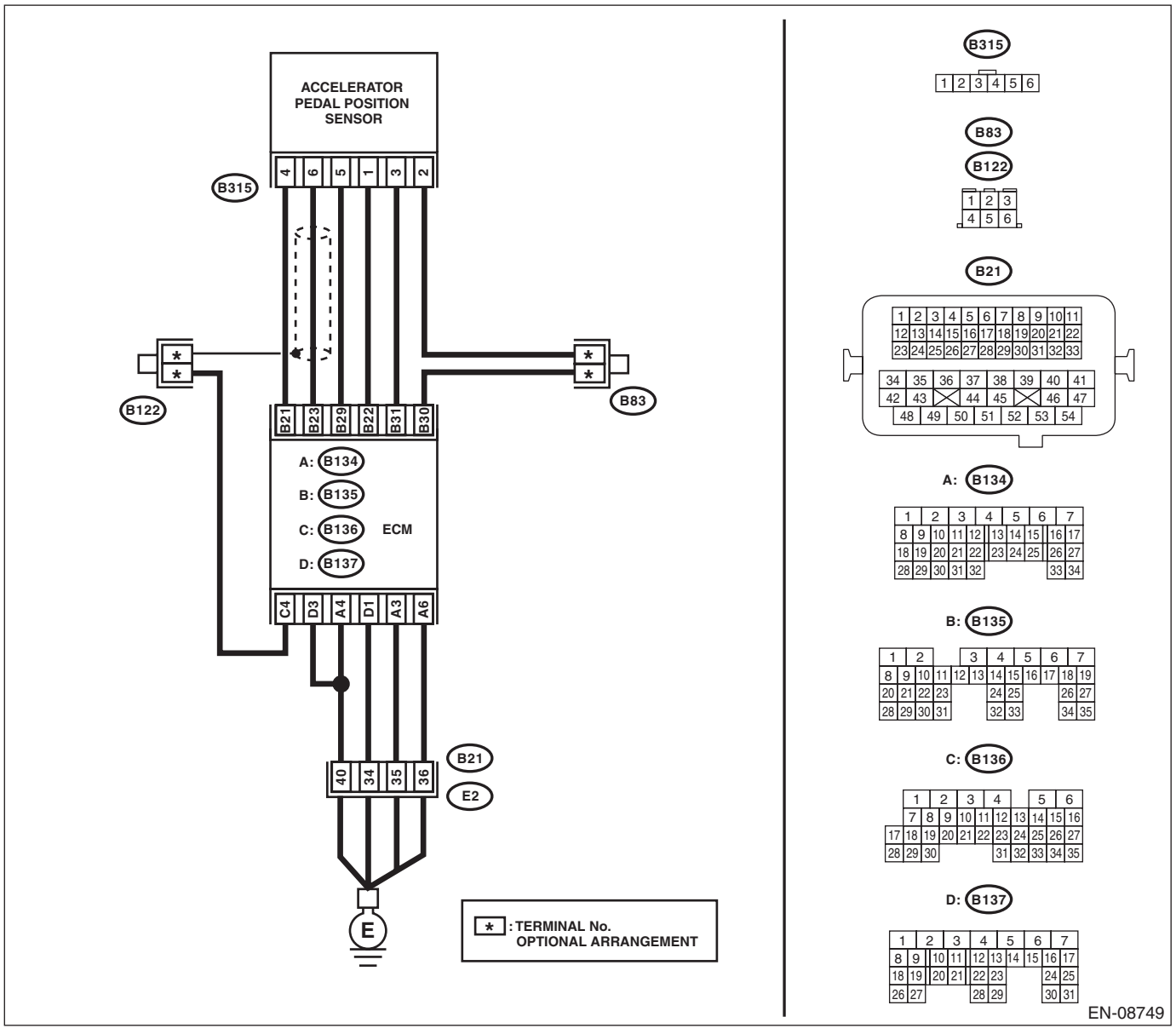
- Improper idling
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK HARNESS BETWEEN ECM AND ACCELERATOR PEDAL POSITION SENSOR CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and accelerator pedal position sensor. 3) Measure the resistance between ECM connector and chassis ground. ***Connector & terminal*** ***(B135) No. 22 — Chassis ground:*** ***(B135) No. 31 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **2**.	Repair the short circuit to ground in harness between ECM connector and accelerator pedal position sensor connector.
2	**CHECK SHORT CIRCUIT INSIDE THE ECM.** 1) Connect the connector to ECM. 2) Measure the resistance between accelerator pedal position sensor connector and chassis ground. ***Connector & terminal*** ***(B315) No. 3 — Chassis ground:***	Is the resistance 1 MΩ or more?	Replace the accelerator pedal. <Ref. to SP(STI)-4, Accelerator Pedal.>	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(STI)-59, Engine Control Module (ECM).> <Ref. to FU(w/o STI)-57, Engine Control Module (ECM).>

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-261, DTC P2128 THROTTLE/PEDAL POSITION SENSOR/SWITCH “E” CIRCUIT HIGH INPUT, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

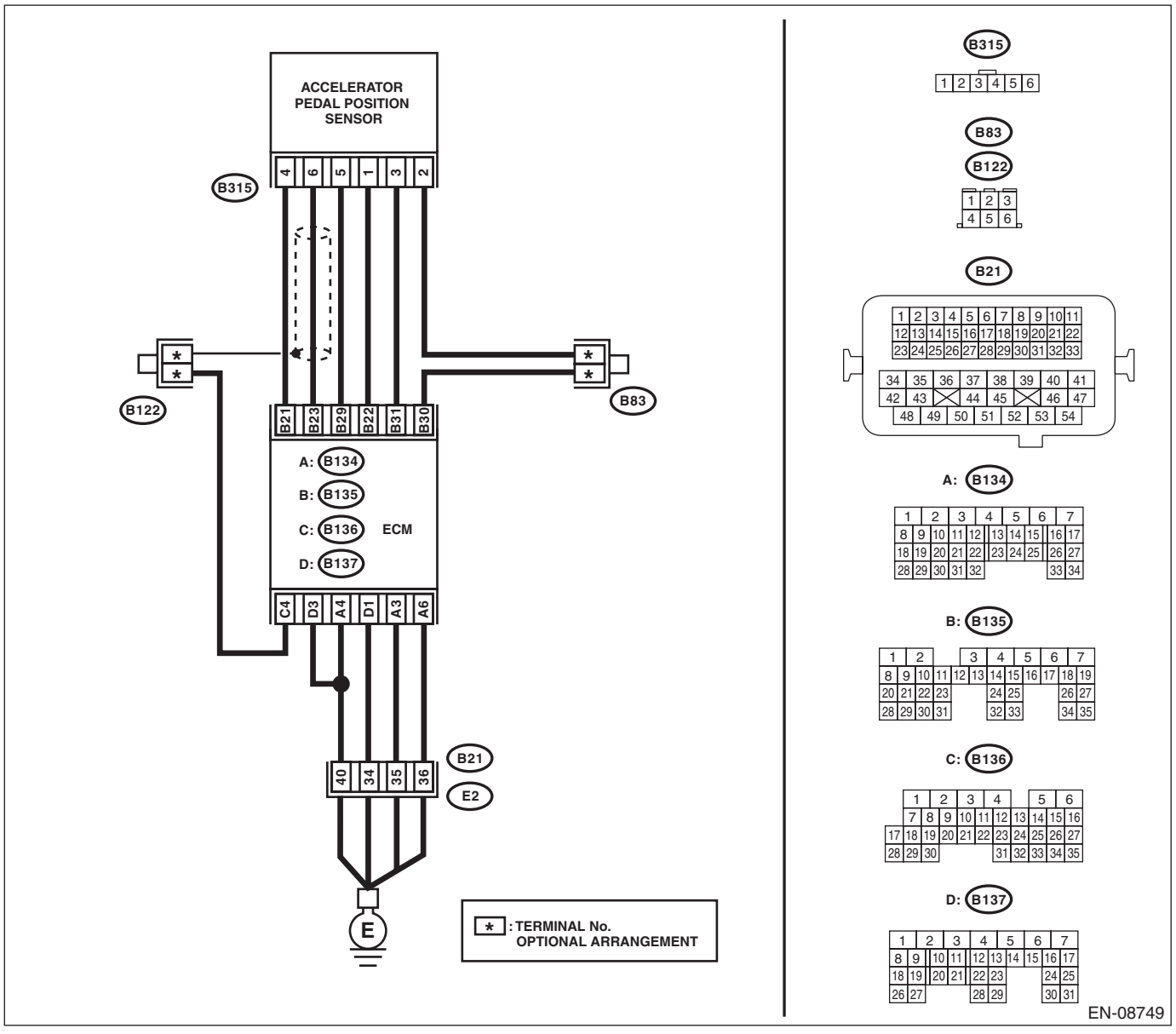
- Improper idling
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK HARNESS BETWEEN ECM AND ACCELERATOR PEDAL POSITION SENSOR CONNECTOR.** 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. ***Connector & terminal*** ***(B135) No. 31 — (B315) No. 3:*** ***(B135) No. 30 — (B315) No. 2:***	Is the resistance less than 1 Ω?	Go to step **2**.	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 • Poor contact of joint connector
2	**CHECK HARNESS BETWEEN ECM AND ACCELERATOR PEDAL POSITION SENSOR CONNECTOR.** 1) Connect the connector to ECM. 2) Measure the resistance between accelerator pedal position sensor connector and chassis ground. ***Connector & terminal*** ***(B315) No. 2 — Chassis ground:***	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 of harness between ECM connector and engine ground • Poor contact of ECM connector • Poor contact of coupling connector
3	**CHECK HARNESS BETWEEN ECM AND ACCELERATOR PEDAL POSITION SENSOR CONNECTOR.** 1) Turn the ignition switch to ON. 2) Measure the voltage between accelerator pedal position sensor connector and chassis ground. ***Connector & terminal*** ***(B315) No. 3 (+) — Chassis ground (–):***	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**.
4	**CHECK HARNESS BETWEEN ECM AND ACCELERATOR PEDAL POSITION SENSOR CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM connectors. ***Connector & terminal*** ***(B135) No. 22 — (B135) No. 31:***	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(STI)-4, Accelerator Pedal.>	Repair the short circuit to power supply in harness between ECM connector and accelerator pedal position sensor connector.

EV:DTC P2135 THROTTLE/PEDAL POSITION SENSOR/SWITCH “A”/“B” VOLTAGE CORRELATION

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-263, DTC P2135 THROTTLE/PEDAL POSITION SENSOR/SWITCH “A”/“B” VOLTAGE CORRELATION, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

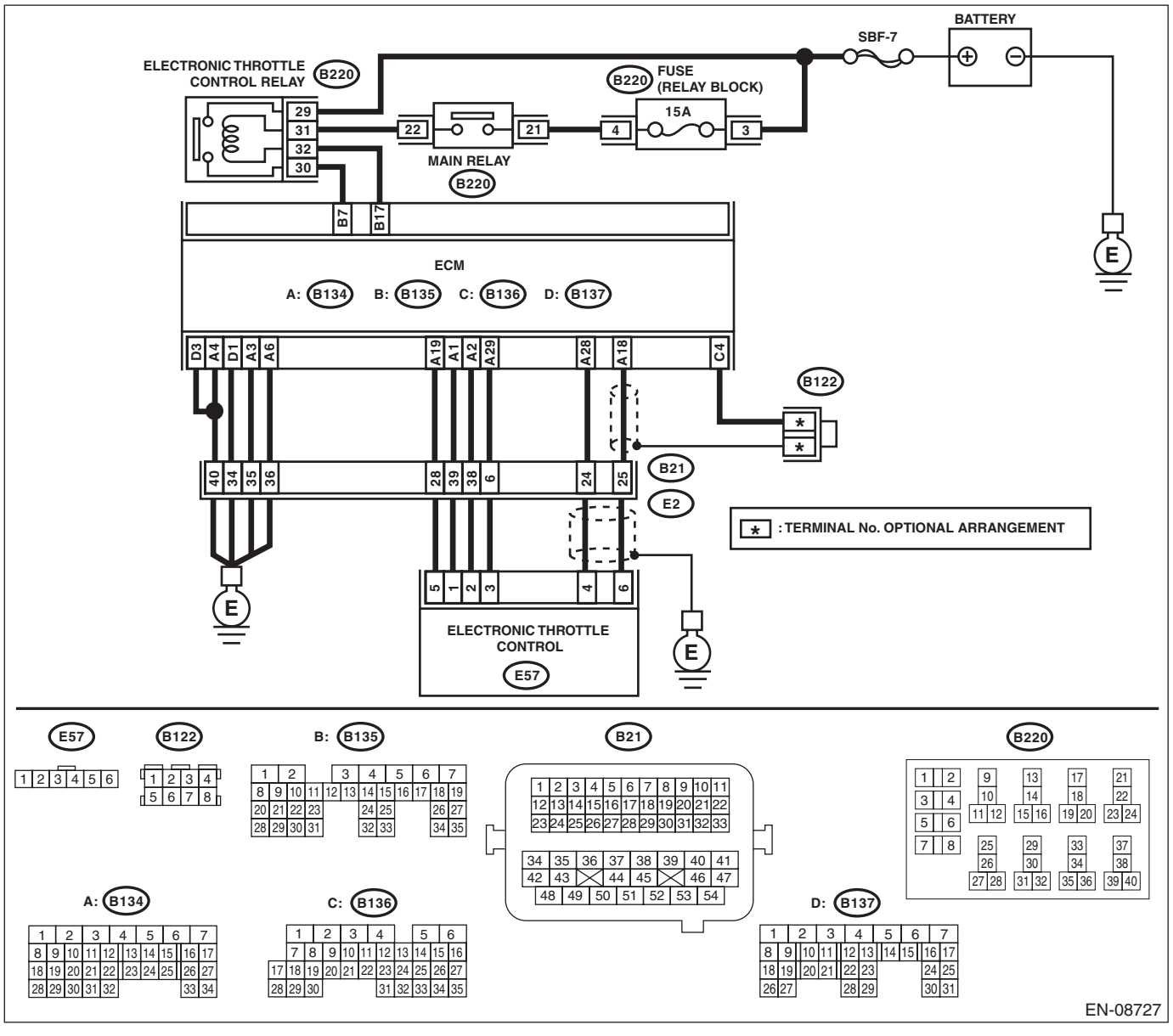
- Improper idling
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**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 between ECM connector and chassis ground. ***Connector & terminal*** ***(B134) No. 19 — Chassis ground:*** ***(B134) No. 18 — Chassis ground:*** ***(B134) No. 18 — (B136) No. 4:*** ***(B134) No. 28 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **2**.	Repair the ground short circuit of harness between ECM connector and electronic throttle control connector.
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. 6 — Engine ground:*** ***(E57) No. 4 — Engine ground:***	Is the resistance 1 MΩ 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(STI)-59, Engine Control Module (ECM).> <Ref. to FU(w/o STI)-57, Engine Control Module (ECM).>
3	**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. ***Connector & terminal*** ***(B134) No. 18 — (E57) No. 6:*** ***(B134) No. 28 — (E57) No. 4:*** ***(B134) No. 29 — (E57) No. 3:***	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 electronic throttle control connector • Poor contact of coupling connector
4	**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 **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

	Step	Check	Yes	No
5	**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. 6 (+) — 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 **6**.
6	**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*** ***(B134) No. 19 — (B134) No. 18:*** ***(B134) No. 19 — (B134) No. 28:***	Is the resistance 1 MΩ or more?	Repair the poor contact of electronic throttle control connector. Replace the electronic throttle control if defective. <Ref. to FU(STI)-15, Throttle Body.> <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.

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

DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-265, DTC P2138 THROTTLE/PEDAL POSITION SENSOR/SWITCH “D”/“E” VOLTAGE CORRELATION, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

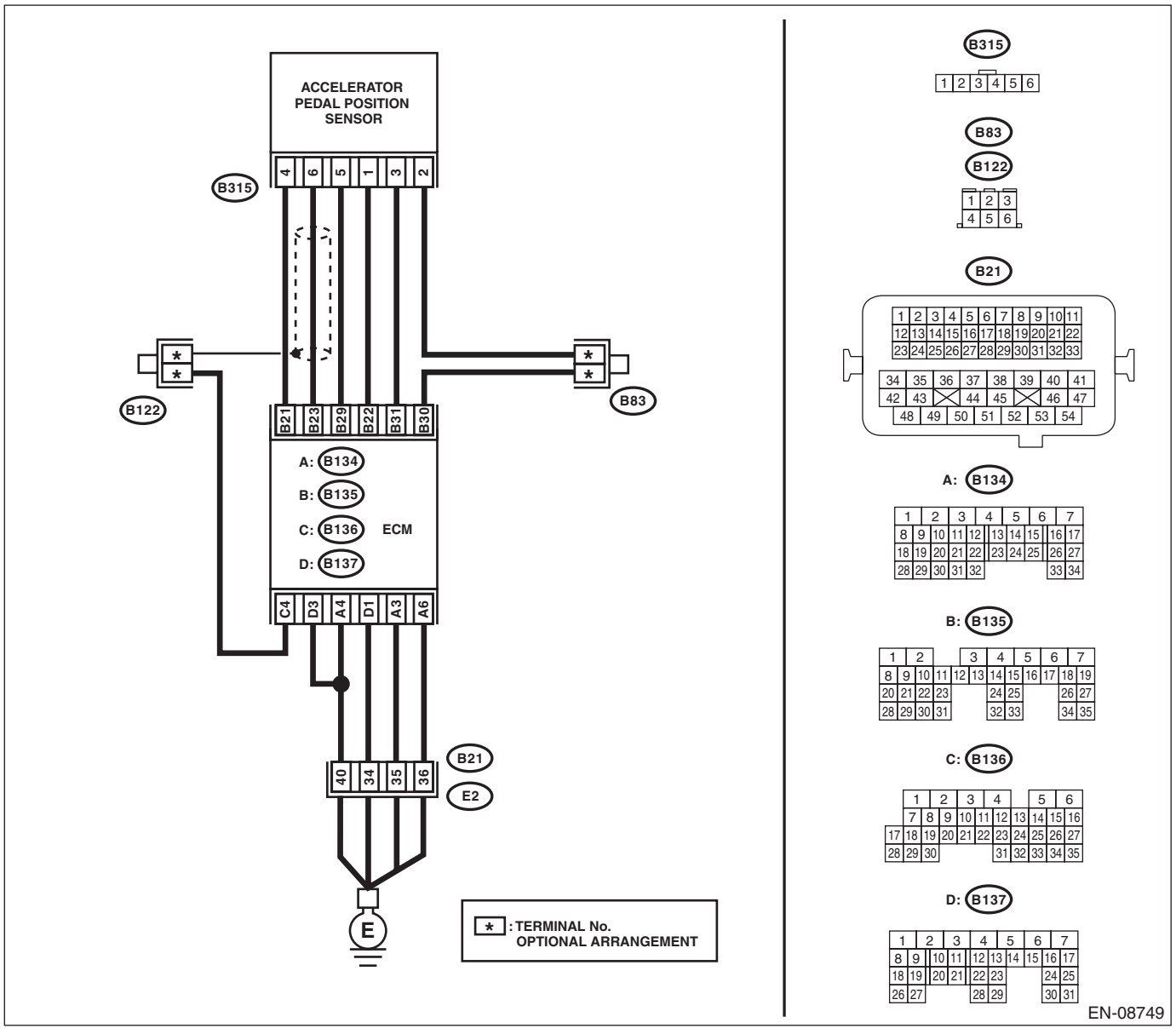
- Improper idling
- Poor driving performance

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK ACCELERATOR PEDAL POSITION SENSOR OUTPUT.** 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM connector and chassis ground. ***Connector & terminal*** ***Main accelerator pedal position sensor signal*** ***(B135) No. 23 (+) — Chassis ground (–):*** ***Sub accelerator pedal position sensor signal*** ***(B135) No. 31 (+) — Chassis ground (–):***	Is the difference in measured values for the main accelerator pedal position sensor signal and the sub accelerator pedal position sensor signal 0 V?	Go to step **3**.	Go to step **2**.
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 (–):***	Is the difference in measured values for the main accelerator pedal position sensor signal and the sub accelerator pedal position sensor signal 0 V?	Replace the accelerator pedal. <Ref. to SP(STI)-4, Accelerator Pedal.>	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
3	**CHECK HARNESS BETWEEN ECM AND ACCELERATOR PEDAL POSITION SENSOR CONNECTOR.** Measure the resistance of harness between accelerator pedal position sensor connector and chassis ground. ***Connector & terminal*** ***(B315) No. 5 — Chassis ground:*** ***(B315) No. 2 — Chassis 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 accelerator pedal position sensor connector • Open circuit of harness between ECM connector and engine ground • Poor contact of ECM connector • Poor contact of coupling connector

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

DTC DETECTING CONDITION:

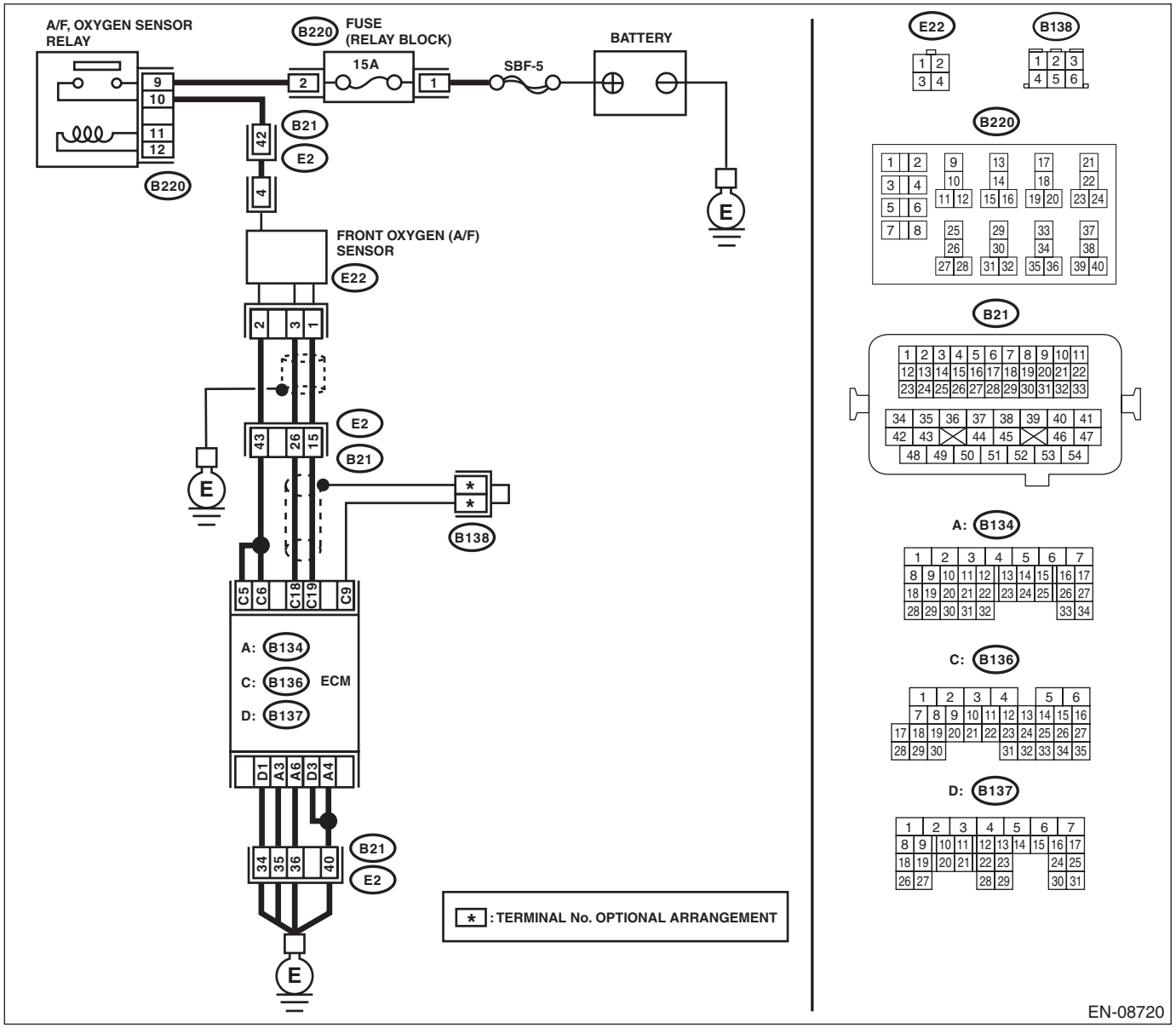
- Detected when 2 consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-267, DTC P2195 O2 SENSOR SIGNAL BIASED/ STUCK LEAN (BANK 1 SENSOR 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

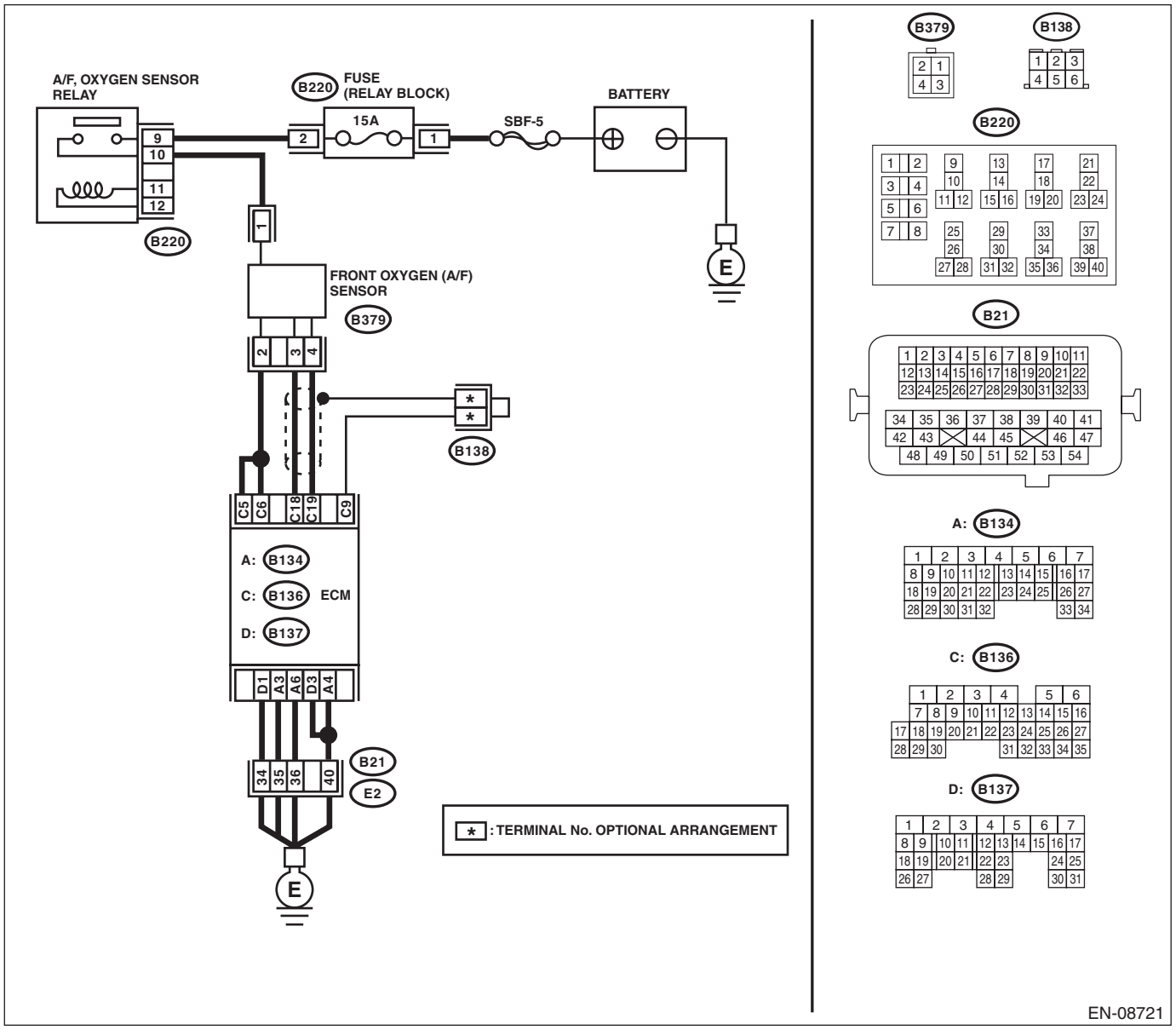
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Models without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



- Models with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



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**.

Step		Check	Yes	No
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*** ***Models without SI-DRIVE*** ***(B136) No. 19 — (E22) No. 1:*** ***(B136) No. 18 — (E22) No. 3:*** ***Models with SI-DRIVE*** ***(B136) No. 19 — (B379) No. 4:*** ***(B136) No. 18 — (B379) No. 3:***	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.
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(STI)-54, Front Oxygen (A/F) Sensor.> <Ref. to FU(w/o STI)-53, Front Oxygen (A/F) Sensor.>

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

DTC DETECTING CONDITION:

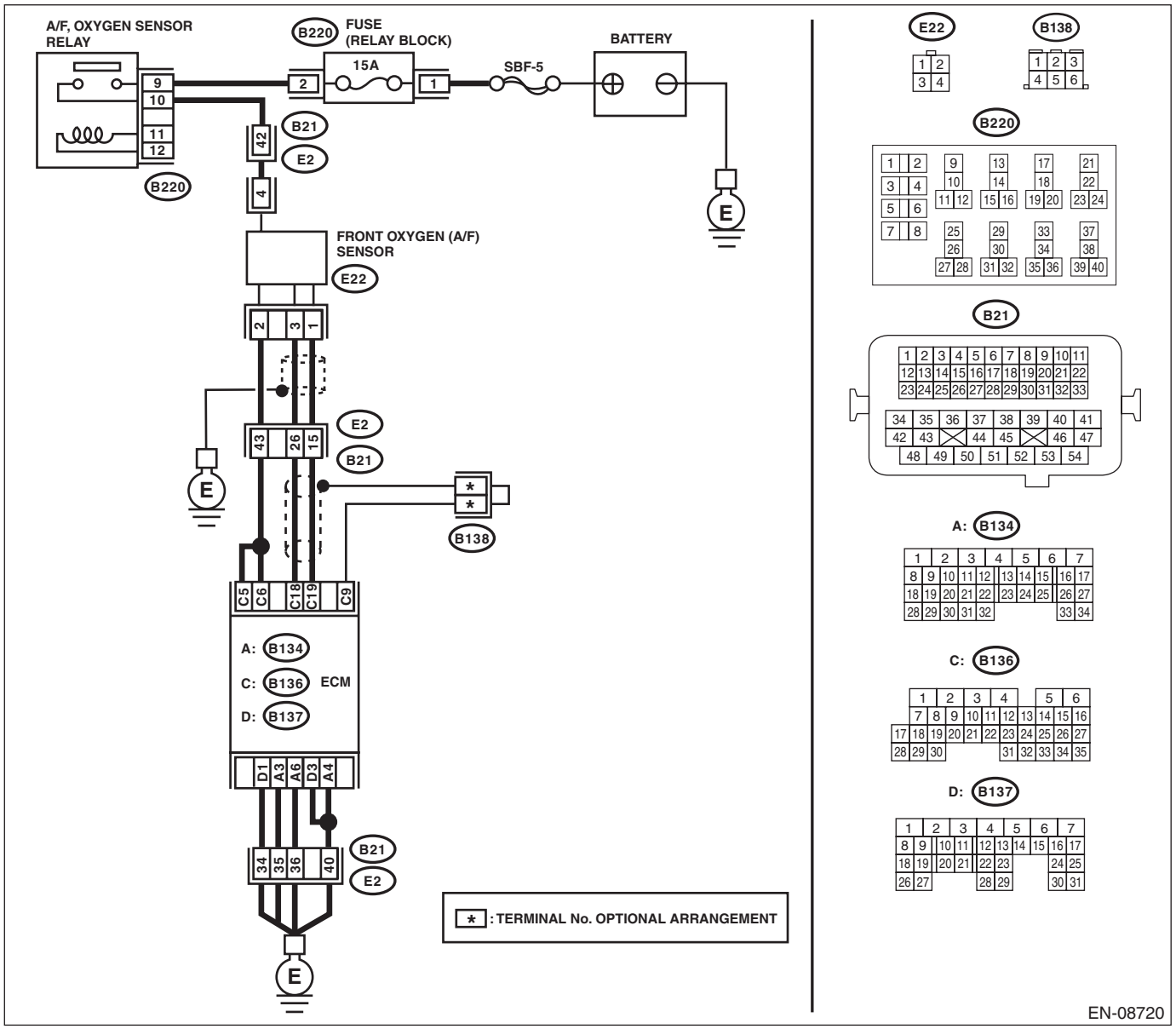
- Detected when 2 consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-269, DTC P2196 O2 SENSOR SIGNAL BIASED/ STUCK RICH (BANK 1 SENSOR 1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

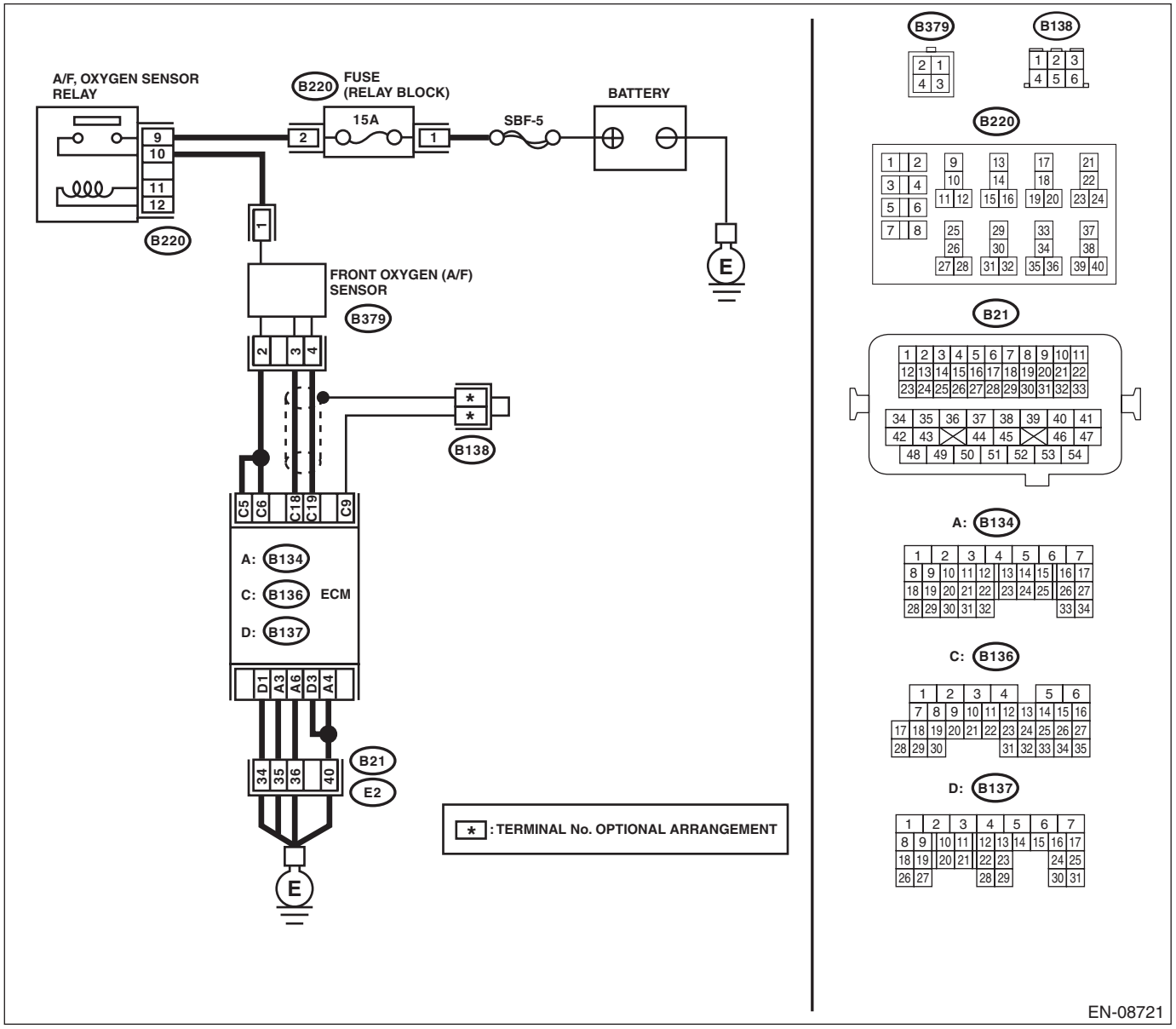
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Models without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



- Models with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



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*** ***(B136) No. 19 — Chassis ground:*** ***(B136) No. 18 — 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.

	Step	Check	Yes	No
3	**CHECK OUTPUT SIGNAL FOR ECM.** 1) Connect the connector to ECM. 2) Turn the ignition switch to ON. 3) Measure the voltage between ECM connector and chassis ground. ***Connector & terminal*** ***(B136) No. 19 (+) — Chassis ground (–):***	Is the voltage 4.5 V or more?	Go to step **5**.	Go to step **4**.
4	**CHECK OUTPUT SIGNAL FOR ECM.** Measure the voltage between ECM connector and chassis ground. ***Connector & terminal*** ***(B136) No. 18 (+) — Chassis ground (–):***	Is the voltage 4.95 V or more?	Go to step **5**.	Replace the front oxygen (A/F) sensor. <Ref. to FU(STI)-54, Front Oxygen (A/F) Sensor.> <Ref. to FU(w/o STI)-53, Front Oxygen (A/F) Sensor.>
5	**CHECK OUTPUT SIGNAL FOR ECM.** Measure the voltage between ECM connector and chassis ground. ***Connector & terminal*** ***(B136) No. 19 (+) — Chassis ground (–):*** ***(B136) No. 18 (+) — 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. After repair, replace the ECM. <Ref. to FU(STI)-59, Engine Control Module (ECM).> <Ref. to FU(w/o STI)-57, Engine Control Module (ECM).>	Repair the poor contact of ECM connector.

EZ:DTC P219A BANK 1 AIR-FUEL RATIO IMBALANCE

DTC DETECTING CONDITION:

- Detected when 2 consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-271, DTC P219A BANK 1 AIR-FUEL RATIO IMBALANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

TROUBLE SYMPTOM:

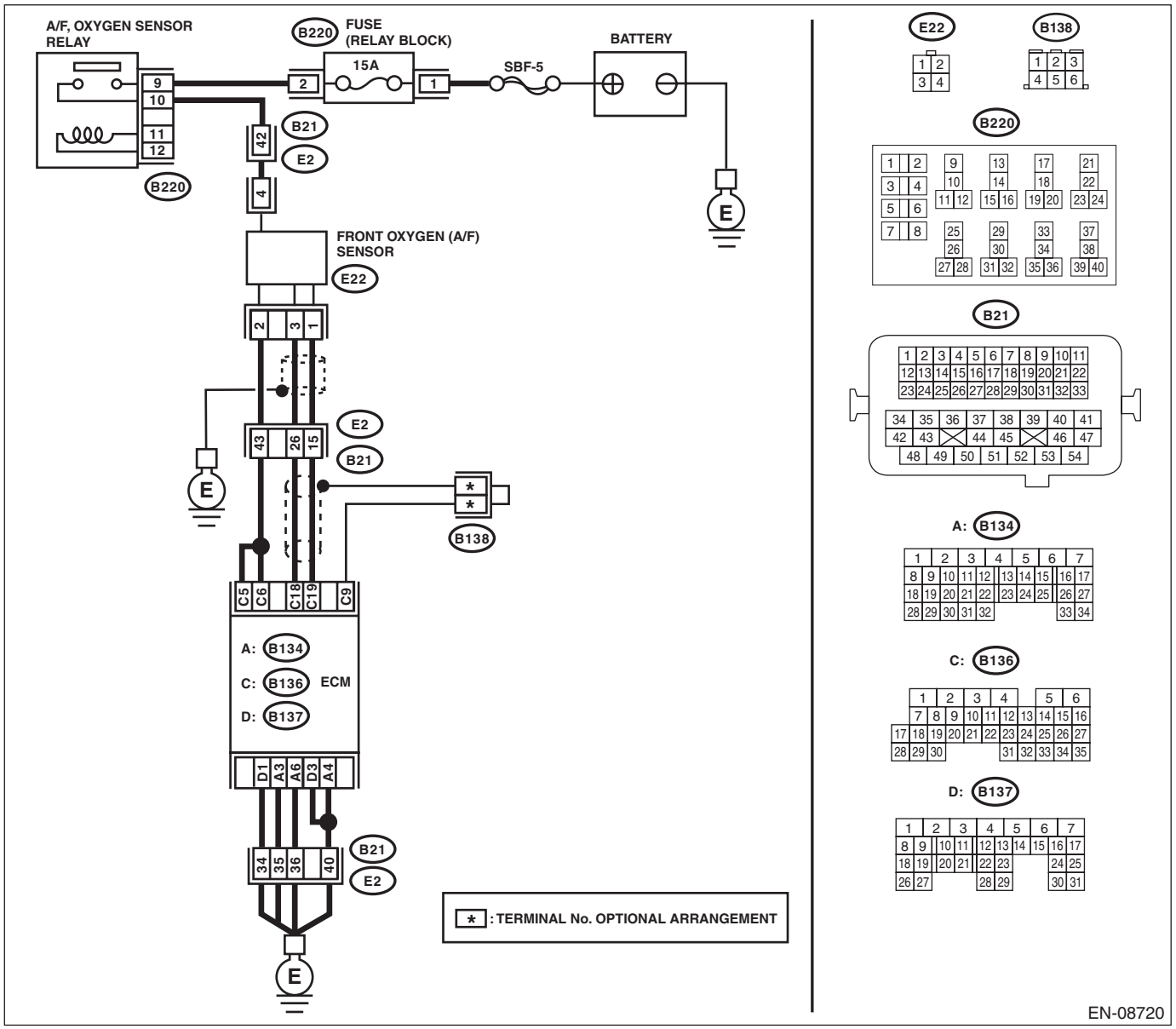
- Engine stalls.
- Improper idling

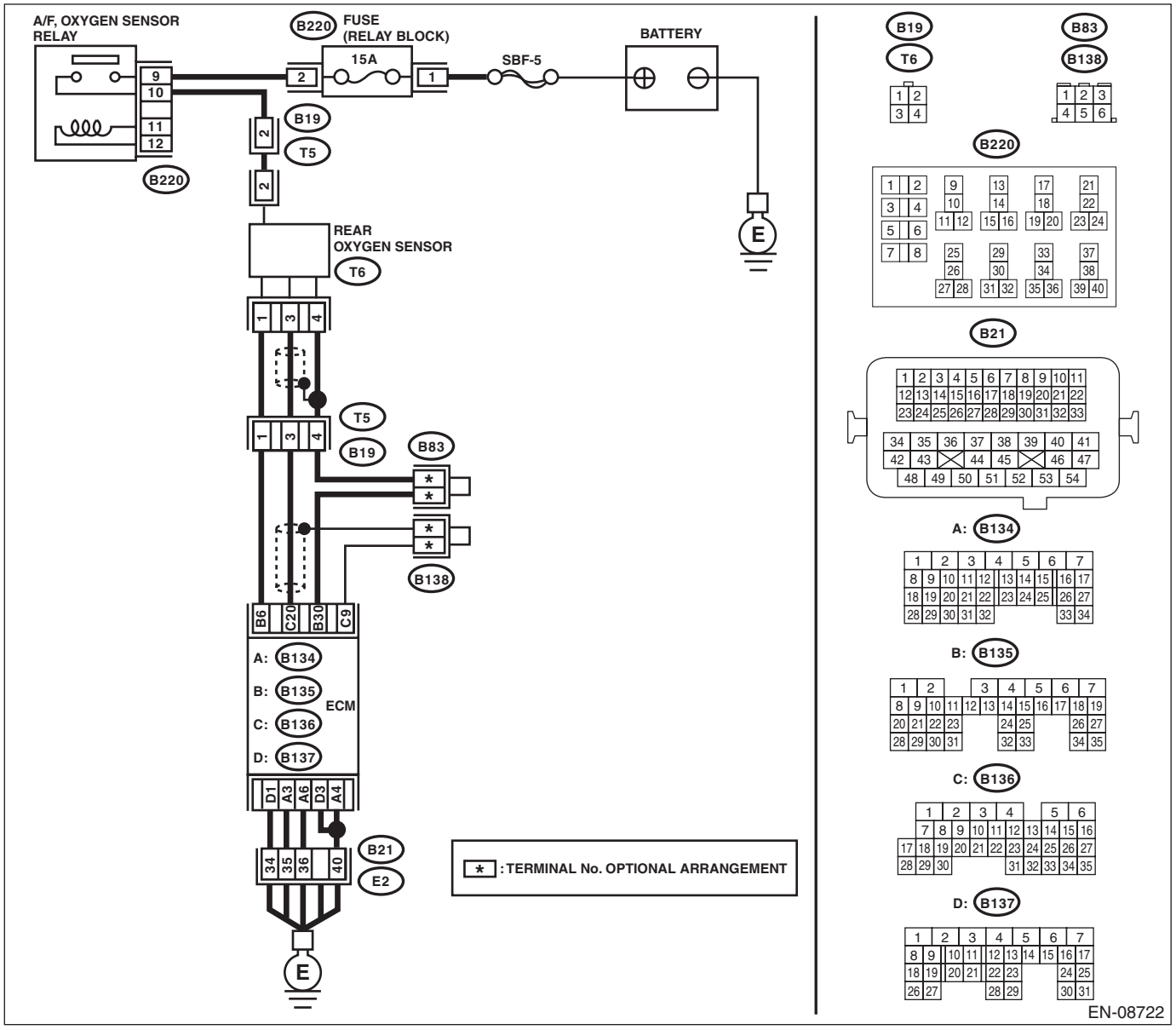
CAUTION:

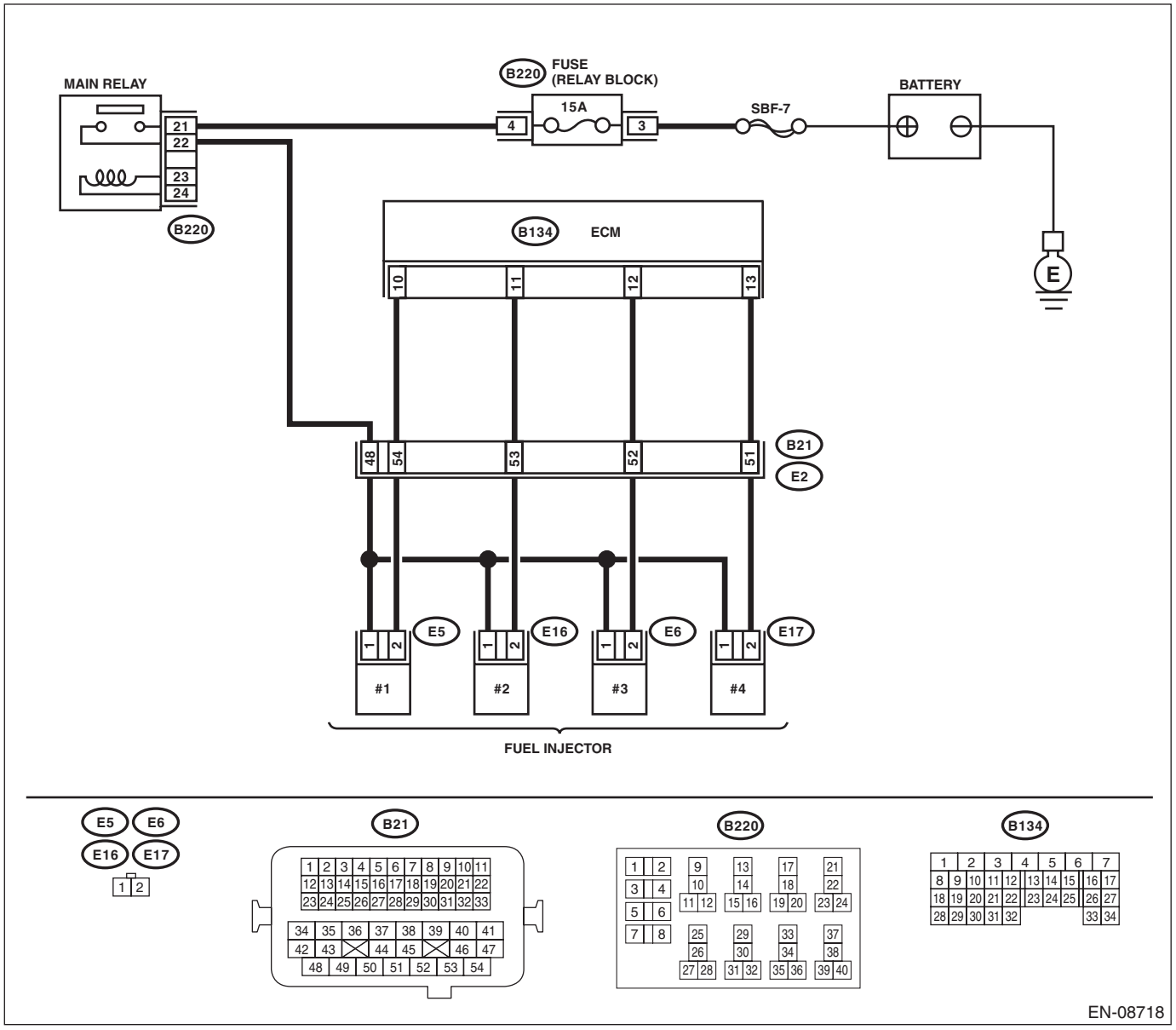
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

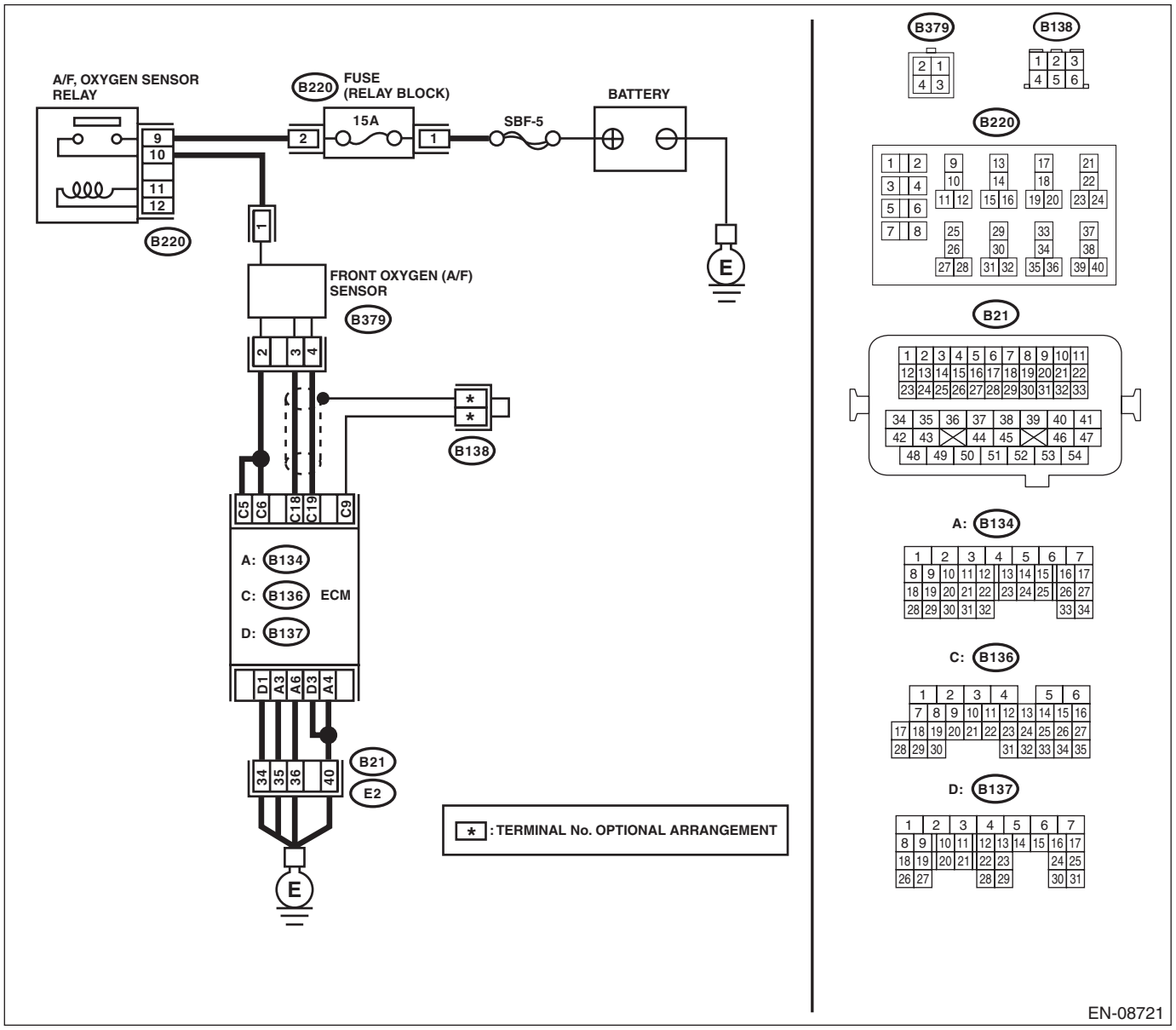
- Models without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>

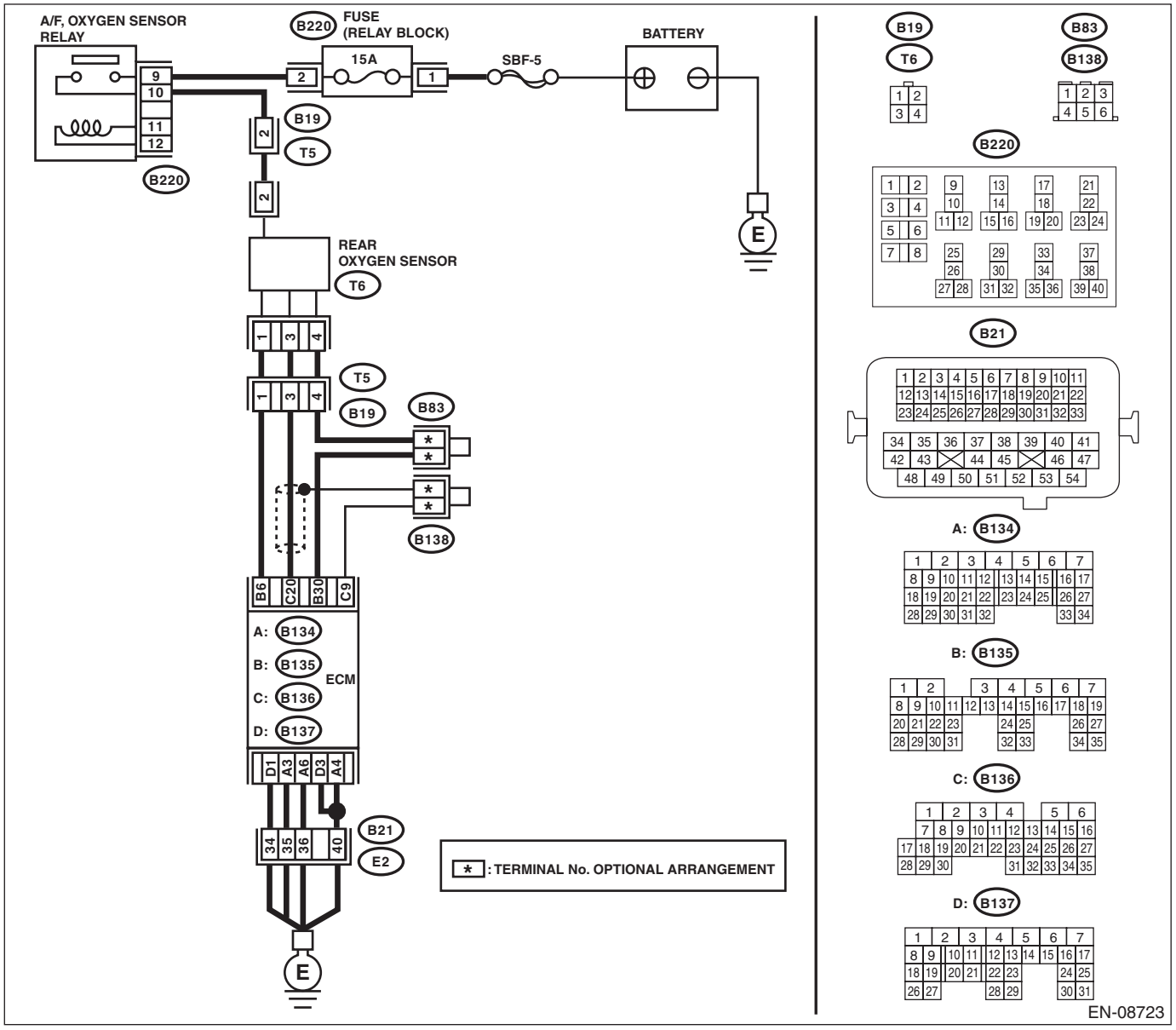


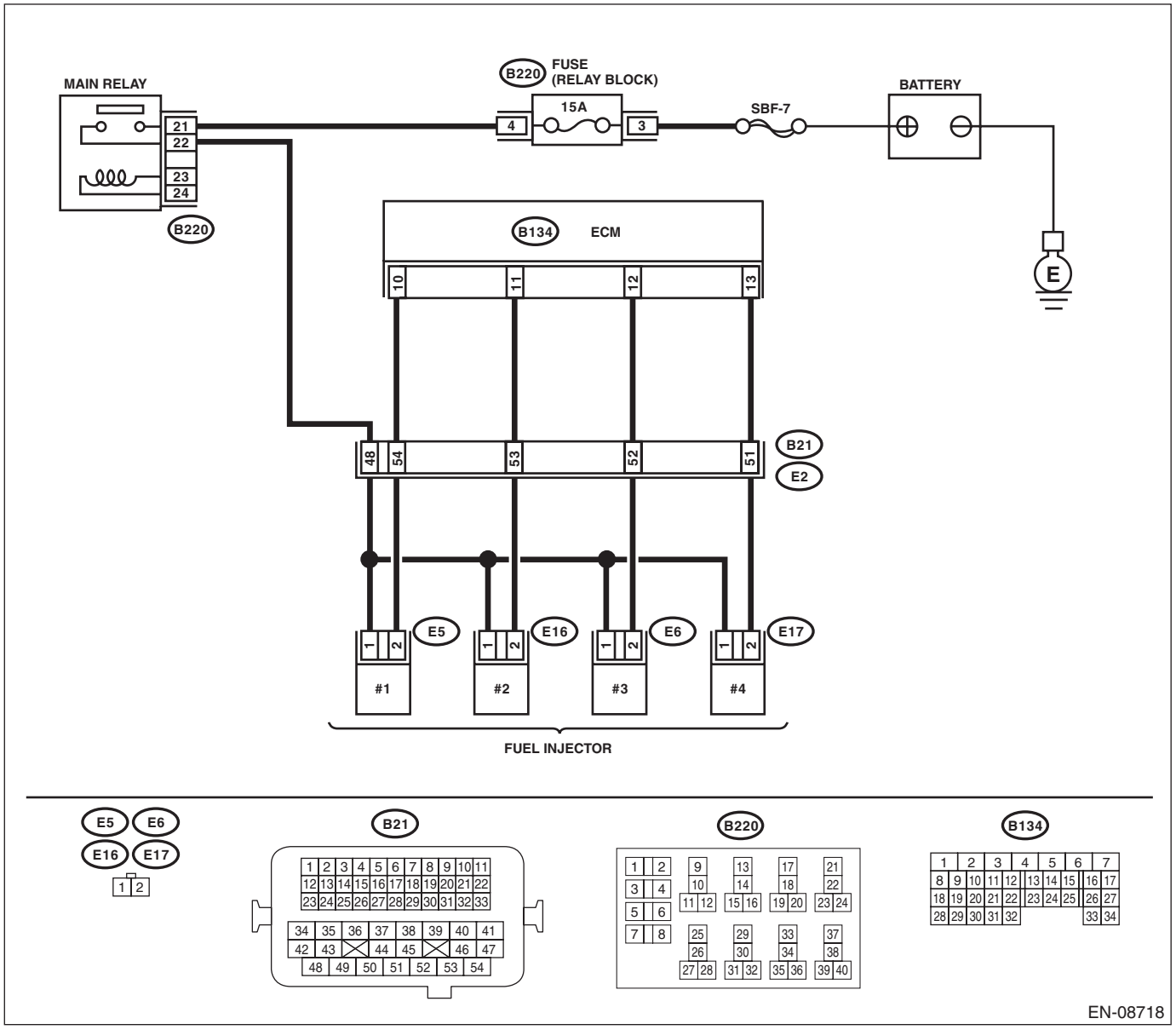

A/F, OXYGEN SENSOR RELAY
B220
FUSE (RELAY BLOCK)
15A
SBF-5
BATTERY
B19
T5
B220
REAR OXYGEN SENSOR
T6
E
B83
B138
B6
C20
B30
C9
A: B134
B: B135
C: B136
D: B137
ECM
D1
A3
A6
D3
A4
B21
E2
* : TERMINAL No. OPTIONAL ARRANGEMENT
B19
T6
B83
B138
B220
B21
A: B134
B: B135
C: B136
D: B137
EN-08722


MAIN RELAY
21
22
23
24
B220
B220
FUSE
(RELAY BLOCK)
15A
4
3
SBF-7
BATTERY
B134
ECM
10
11
12
13
E
48
54
53
52
51
B21
E2
E5
E16
E6
E17
1
2
#1
#2
#3
#4
FUEL INJECTOR
E5
E6
E16
E17
B21
B220
B134
EN-08718

- Models with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>




A/F, OXYGEN SENSOR RELAY
B220
FUSE (RELAY BLOCK)
15A
SBF-5
BATTERY
B19
T5
REAR OXYGEN SENSOR
T6
B83
B138
B6
C20
B30
C9
A: B134
B: B135
C: B136
D: B137
ECM
D1
A3
A6
D3
A4
B21
34
35
36
40
E2
E
* : TERMINAL No. OPTIONAL ARRANGEMENT
B19
T6
B83
B138
B220
B21
A: B134
B: B135
C: B136
D: B137
EN-08723



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*** ***Models without SI-DRIVE*** ***(B136) No. 19 — (E22) No. 1:*** ***(B136) No. 18 — (E22) No. 3:*** ***Models with SI-DRIVE*** ***(B136) No. 19 — (B379) No. 4:*** ***(B136) No. 18 — (B379) No. 3:***	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

	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*** ***(B136) No. 19 — Chassis ground:*** ***(B136) No. 18 — Chassis ground:***	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 OUTPUT SIGNAL FOR ECM.** 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*** ***Models without SI-DRIVE*** ***(E22) No. 1 (+) — Chassis ground (–):*** ***Models with SI-DRIVE*** ***(B379) No. 4 (+) — Chassis ground (–):***	Is the voltage 4.5 V or more?	Go to step **6**.	Go to step **5**.
5	**CHECK OUTPUT SIGNAL FOR ECM.** Measure the voltage between front oxygen (A/F) sensor connector and chassis ground. ***Connector & terminal*** ***Models without SI-DRIVE*** ***(E22) No. 3 (+) — Chassis ground (–):*** ***Models with SI-DRIVE*** ***(B379) No. 3 (+) — Chassis ground (–):***	Is the voltage 4.95 V or more?	Go to step **6**.	Go to step **7**.
6	**CHECK OUTPUT SIGNAL FOR ECM.** Measure the voltage between front oxygen (A/F) sensor connector and chassis ground. ***Connector & terminal*** ***Models without SI-DRIVE*** ***(E22) No. 3 (+) — Chassis ground (–):*** ***(E22) No. 1 (+) — Chassis ground (–):*** ***Models with SI-DRIVE*** ***(B379) No. 3 (+) — Chassis ground (–):*** ***(B379) No. 4 (+) — 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. After repair, replace the ECM. <Ref. to FU(STI)-59, Engine Control Module (ECM).> <Ref. to FU(w/o STI)-57, Engine Control Module (ECM).>	Repair the poor contact of ECM connector.
7	**CHECK EXHAUST SYSTEM.**	Are there holes or loose bolts on exhaust system?	Repair the exhaust system.	Go to step **8**.
8	**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 **9**.

	Step	Check	Yes	No
9	**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 while disconnecting pressure regulator vacuum hose from intake manifold. <Ref. to ME(STI)-25, INSPECTION, Fuel Pressure.> <Ref. to ME(w/o STI)-24, INSPECTION, Fuel Pressure.> **CAUTION:** **Release fuel pressure before removing the fuel pressure gauge.** NOTE: If fuel pressure does not increase, squeeze the fuel return hose 2 to 3 times, then measure fuel pressure again.	Is the measured value 284 — 314 kPa (2.9 — 3.2 kg/cm^2, 41 — 46 psi)?	Go to step **10**.	Check the fuel pump and fuel delivery line. • Models without SI-DRIVE <Ref. to FU(w/o STI)-79, INSPECTION, Fuel Pump.> <Ref. to FU(w/o STI)-93, INSPECTION, Fuel Delivery, Return and Evaporation Lines.> • Models with SI-DRIVE <Ref. to FU(STI)-81, INSPECTION, Fuel Pump.> <Ref. to FU(STI)-97, INSPECTION, Fuel Delivery, Return and Evaporation Lines.>
10	**CHECK FUEL PRESSURE.** After connecting the pressure regulator vacuum hose, measure fuel pressure. <Ref. to ME(STI)-25, INSPECTION, Fuel Pressure.> <Ref. to ME(w/o STI)-24, INSPECTION, Fuel Pressure.> **CAUTION:** **Release fuel pressure before removing the fuel pressure gauge.** NOTE: • If fuel pressure does not increase, squeeze fuel return hose 2 to 3 times, then measure fuel pressure again. • If the measured value at this step is out of specification, check or replace pressure regulator vacuum hose.	Is the measured value 230 — 260 kPa (2.4 — 2.7 kg/cm^2, 33 — 38 psi)?	Go to step **11**.	Check the fuel pump and fuel delivery line. • Models without SI-DRIVE <Ref. to FU(w/o STI)-79, INSPECTION, Fuel Pump.> <Ref. to FU(w/o STI)-93, INSPECTION, Fuel Delivery, Return and Evaporation Lines.> • Models with SI-DRIVE <Ref. to FU(STI)-81, INSPECTION, Fuel Pump.> <Ref. to FU(STI)-97, INSPECTION, Fuel Delivery, Return and Evaporation Lines.>

	Step	Check	Yes	No
11	**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(H4DOTC)(diag)-40, 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 **12**.	Replace the engine coolant temperature sensor. <Ref. to FU(STI)-34, Engine Coolant Temperature Sensor.> <Ref. to FU(w/o STI)-34, Engine Coolant Temperature Sensor.>
12	**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) Place the shift lever in 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: • Subaru Select Monitor For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.> • 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 **13**.	Replace the mass air flow and intake air temperature sensor. <Ref. to FU(STI)-42, Mass Air Flow and Intake Air Temperature Sensor.> <Ref. to FU(w/o STI)-42, Mass Air Flow and Intake Air Temperature Sensor.>
13	**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) Place the shift lever in neutral position. 3) Turn the A/C switch to OFF. 4) Turn all the accessory switches to OFF. 5) Open the front hood. 6) Measure the ambient temperature. 7) Read the value of «Intake Air 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(H4DOTC)(diag)-40, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Subtract ambient temperature from «Intake Air Temp.». Is the obtained value –10 — 50°C (–18 — 90°F)?	Go to step **14**.	Check the mass air flow and intake air temperature sensor. <Ref. to FU(STI)-42, Mass Air Flow and Intake Air Temperature Sensor.> <Ref. to FU(w/o STI)-42, Mass Air Flow and Intake Air Temperature Sensor.>

	Step	Check	Yes	No
14	**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 «Rear O2 Sensor» using the Subaru Select Monitor or a general scan tool. NOTE: • Depress the clutch pedal. • Subaru Select Monitor For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value of «Rear O2 Sensor» 0.490 V or more?	Go to step **15**.	Go to step **16**.
15	**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 «Rear O2 Sensor» using the Subaru Select Monitor or a general scan tool. NOTE: • Depress the clutch pedal. • Subaru Select Monitor For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value of «Rear O2 Sensor» 0.250 V or less?	Go to step **17**.	Go to step **16**.
16	**CHECK REAR OXYGEN SENSOR CONNECTOR AND COUPLING CONNECTOR.**	Has water entered the connector?	Completely remove any water inside.	Go to step **18**.
17	**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 «Rear O2 Sensor» 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(H4DOTC)(diag)-40, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value in «Rear O2 Sensor» kept at 0.250 V or less for 5 minutes or more?	Replace the front oxygen (A/F) sensor. <Ref. to FU(STI)-54, Front Oxygen (A/F) Sensor.> <Ref. to FU(w/o STI)-53, Front Oxygen (A/F) Sensor.>	Go to step **18**.

	Step	Check	Yes	No
18	**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*** ***(B136) No. 20 — (T6) No. 3:*** ***(B135) No. 30 — (T6) No. 4:***	Is the resistance less than 1 Ω?	Go to step **19**.	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
19	**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*** ***(T6) No. 3 (+) — Chassis ground (–):***	Is the voltage 0.2 — 0.5 V?	Replace the rear oxygen sensor. <Ref. to FU(STI)-56, Rear Oxygen Sensor.> <Ref. to FU(w/o STI)-55, Rear Oxygen Sensor.>	Go to step **20**.
20	**CHECK OUTPUT SIGNAL OF ECM.** 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground on faulty cylinders. ***Connector & terminal*** ***#1 (B134) No. 10 (+) — Chassis ground (–):*** ***#2 (B134) No. 11 (+) — Chassis ground (–):*** ***#3 (B134) No. 12 (+) — Chassis ground (–):*** ***#4 (B134) No. 13 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **25**.	Go to step **21**.
21	**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. 2 — Engine ground:*** ***#2 (E16) No. 2 — Engine ground:*** ***#3 (E6) No. 2 — Engine ground:*** ***#4 (E17) No. 2 — Engine ground:***	Is the resistance 1 MΩ or more?	Go to step **22**.	Repair the short circuit to ground in harness between ECM connector and fuel injector connector.
22	**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 (B134) No. 10 — (E5) No. 2:*** ***#2 (B134) No. 11 — (E16) No. 2:*** ***#3 (B134) No. 12 — (E6) No. 2:*** ***#4 (B134) No. 13 — (E17) No. 2:***	Is the resistance less than 1 Ω?	Go to step **23**.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and fuel injector connector • Poor contact of coupling connector

	Step	Check	Yes	No
23	**CHECK FUEL INJECTOR.** Measure the resistance between fuel injector terminals on faulty cylinder. ***Terminals*** ***No. 1 — No. 2:***	Is the resistance 5 — 20 Ω?	Go to step **24**.	Replace the faulty fuel injector. <Ref. to FU(STI)-45, Fuel Injector.> <Ref. to FU(w/o STI)-45, Fuel Injector.>
24	**CHECK POWER SUPPLY LINE.** 1) Turn the ignition switch to ON. 2) Measure the voltage between fuel injector connector of faulty cylinders and engine ground. ***Connector & terminal*** ***#1 (E5) No. 1 (+) — Engine ground (–):*** ***#2 (E16) No. 1 (+) — Engine ground (–):*** ***#3 (E6) No. 1 (+) — Engine ground (–):*** ***#4 (E17) No. 1 (+) — Engine ground (–):***	Is the voltage 10 V or more?	Repair the poor contact of all connectors in fuel injector circuit.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between the main relay and fuel injector connector on faulty cylinders • Poor contact of coupling connector • Poor contact of main relay connector
25	**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) Turn the ignition switch to ON. 4) Measure the voltage between ECM and chassis ground on faulty cylinders. ***Connector & terminal*** ***#1 (B134) No. 10 (+) — Chassis ground (–):*** ***#2 (B134) No. 11 (+) — Chassis ground (–):*** ***#3 (B134) No. 12 (+) — Chassis ground (–):*** ***#4 (B134) No. 13 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Repair the short circuit to power in harness between ECM connector and fuel injector connectors.	Go to step **26**.
26	**CHECK FUEL INJECTOR.** 1) Turn the ignition switch to OFF. 2) Measure the resistance between fuel injector terminals on faulty cylinder. ***Terminals*** ***No. 1 — No. 2:***	Is the resistance 5 — 20 Ω?	Go to step **27**.	Replace the faulty fuel injector. <Ref. to FU(STI)-45, Fuel Injector.> <Ref. to FU(w/o STI)-45, Fuel Injector.>
27	**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(STI)-37, Camshaft Position Sensor.> <Ref. to FU(STI)-35, Crankshaft Position Sensor.> <Ref. to FU(w/o STI)-37, Camshaft Position Sensor.> <Ref. to FU(w/o STI)-35, Crankshaft Position Sensor.>	Go to step **28**.

	Step	Check	Yes	No
28	**CHECK CRANK SPROCKET.** Remove the timing belt cover. <Ref. to ME(STI)-49, REMOVAL, Timing Belt Cover.> <Ref. to ME(w/o STI)-47, REMOVAL, Timing Belt Cover.>	Is the crank sprocket rusted or does it have broken teeth?	Replace the crank sprocket. <Ref. to ME(STI)-60, Crank Sprocket.> <Ref. to ME(w/o STI)-58, Crank Sprocket.>	Go to step **29**.
29	**CHECK INSTALLATION CONDITION OF TIMING BELT.** Turn the crankshaft using ST, and align the alignment mark on crank sprocket with alignment mark on cylinder block. ST 499987500 CRANKSHAFT SOCKET	Is the timing belt dislocated from its proper position?	Repair the installation condition of timing belt. <Ref. to ME(STI)-50, Timing Belt.> <Ref. to ME(w/o STI)-48, Timing Belt.>	Go to step **30**.
30	**CHECK FUEL LEVEL.**	Is the fuel meter indication higher than the “Lower” level?	Go to step **31**.	Refill the fuel so that the fuel meter indication is higher than the “Lower” level, and proceed to the next step. Go to step **31**.
31	**CHECK STATUS OF MALFUNCTION INDICATOR LIGHT.** 1) Clear the memory using the Subaru Select Monitor or general scan tool. <Ref. to EN(H4DOTC)(diag)-63, 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 **33**.	Go to step **32**.
32	**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
33	**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 **34**.

	Step	Check	Yes	No
34	**CHECK MISFIRE SYMPTOM.** 1) Turn the ignition switch to ON. 2) Check for DTC. <Ref. to EN(H4DOTC)(diag)-48, Read Diagnostic Trouble Code (DTC).>	Does the Subaru Select Monitor or general scan tool indicate only one DTC?	Go to step **37**.	Go to step **35**.
35	**CHECK DTC.**	Is DTC P0301 and P0303 displayed on the Subaru Select Monitor or general scan tool?	Go to step **38**.	Go to step **36**.
36	**CHECK DTC.**	Is DTC P0302 and P0304 displayed on the Subaru Select Monitor or general scan tool?	Go to step **39**.	Go to step **40**.
37	**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(H4DOTC)(diag)-170, DTC P0171 SYSTEM TOO LEAN (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
38	**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 belt teeth	Go to DTC P0171. <Ref. to EN(H4DOTC)(diag)-170, DTC P0171 SYSTEM TOO LEAN (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
39	**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 belt teeth	Go to DTC P0171. <Ref. to EN(H4DOTC)(diag)-170, DTC P0171 SYSTEM TOO LEAN (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
40	**CYLINDER AT RANDOM.**	Is the engine idle rough?	Go to DTC P0171. <Ref. to EN(H4DOTC)(diag)-170, DTC P0171 SYSTEM TOO LEAN (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>	Repair or replace faulty parts. NOTE: Check the following items. • Spark plug • Ignition coil • Fuel injector • Compression ratio

FA:DTC P2257 AIR SYSTEM CONTROL "A" CIRCUIT LOW

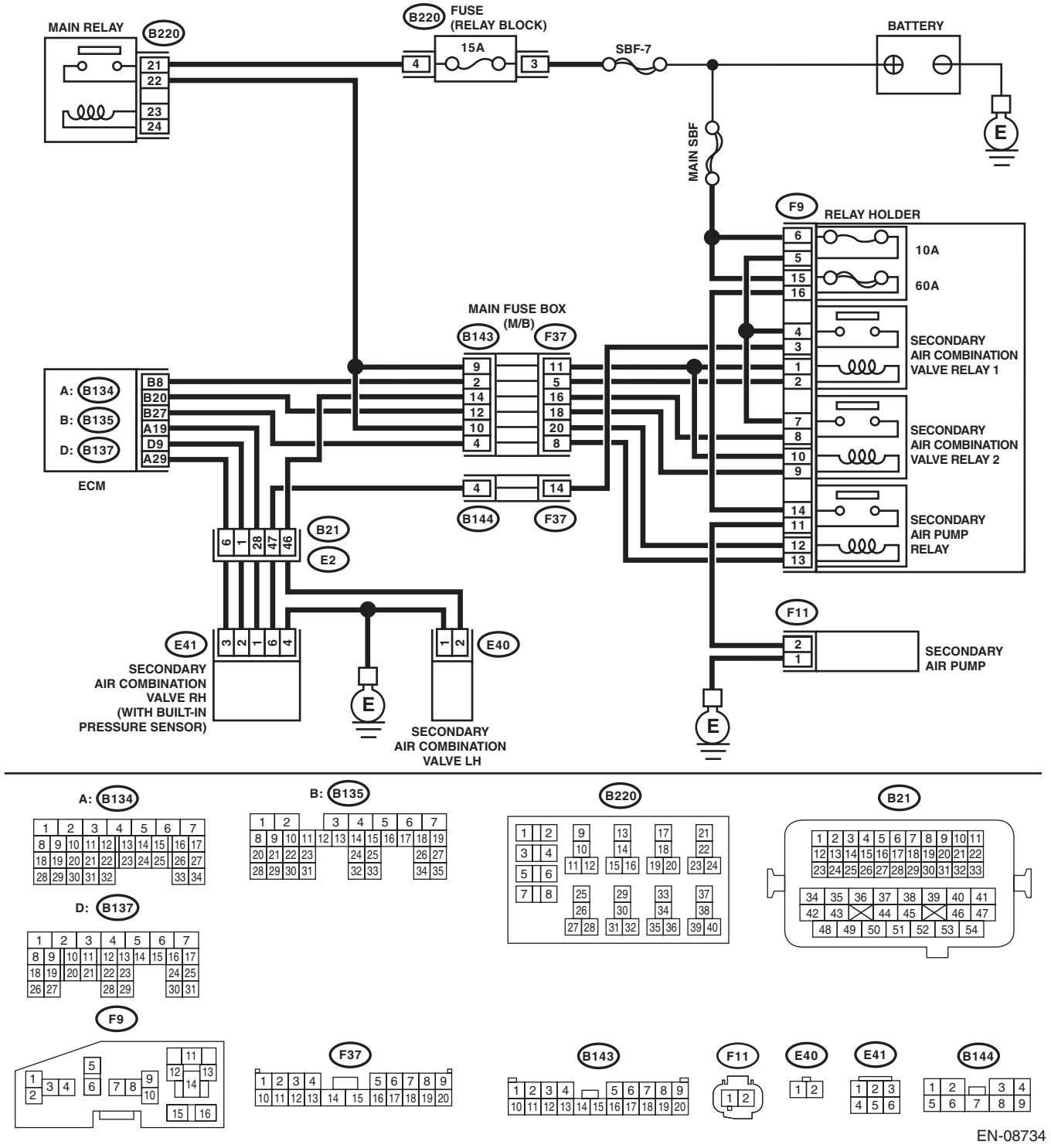
DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-274, DTC P2257 AIR SYSTEM CONTROL "A" CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

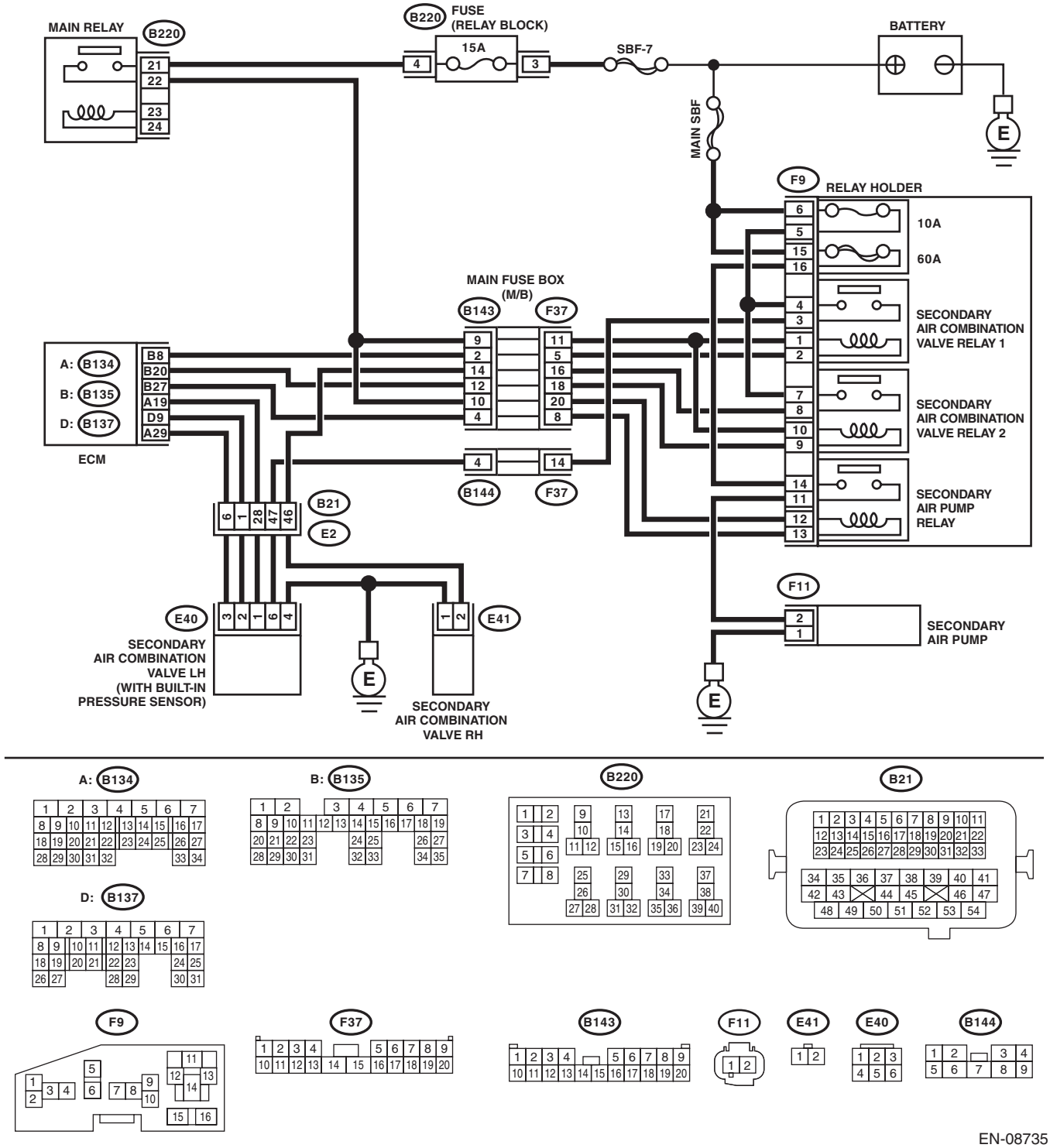
CAUTION:
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

• Models without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



- Models with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



EN-08735

	Step	Check	Yes	No
1	**CHECK HARNESS BETWEEN ECM AND SECONDARY AIR PUMP RELAY CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Remove the secondary air pump relay. 4) Measure the resistance of harness between ECM connector and secondary air pump relay connector. ***Connector & terminal*** ***(B135) No. 27 — (F9) No. 13:***	Is the resistance less than 1 Ω?	Go to step **2**.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and secondary air pump relay connector • Poor contact of coupling connector
2	**CHECK HARNESS BETWEEN ECM AND SECONDARY AIR PUMP RELAY CONNECTOR.** Measure the resistance between ECM connector and chassis ground. ***Connector & terminal*** ***(B135) No. 27 — Chassis ground:***	Is the resistance 1 MΩ or more?	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.	Repair the short circuit to ground in harness between ECM connector and secondary air pump relay connector.

FB:DTC P2258 AIR SYSTEM CONTROL "A" CIRCUIT HIGH

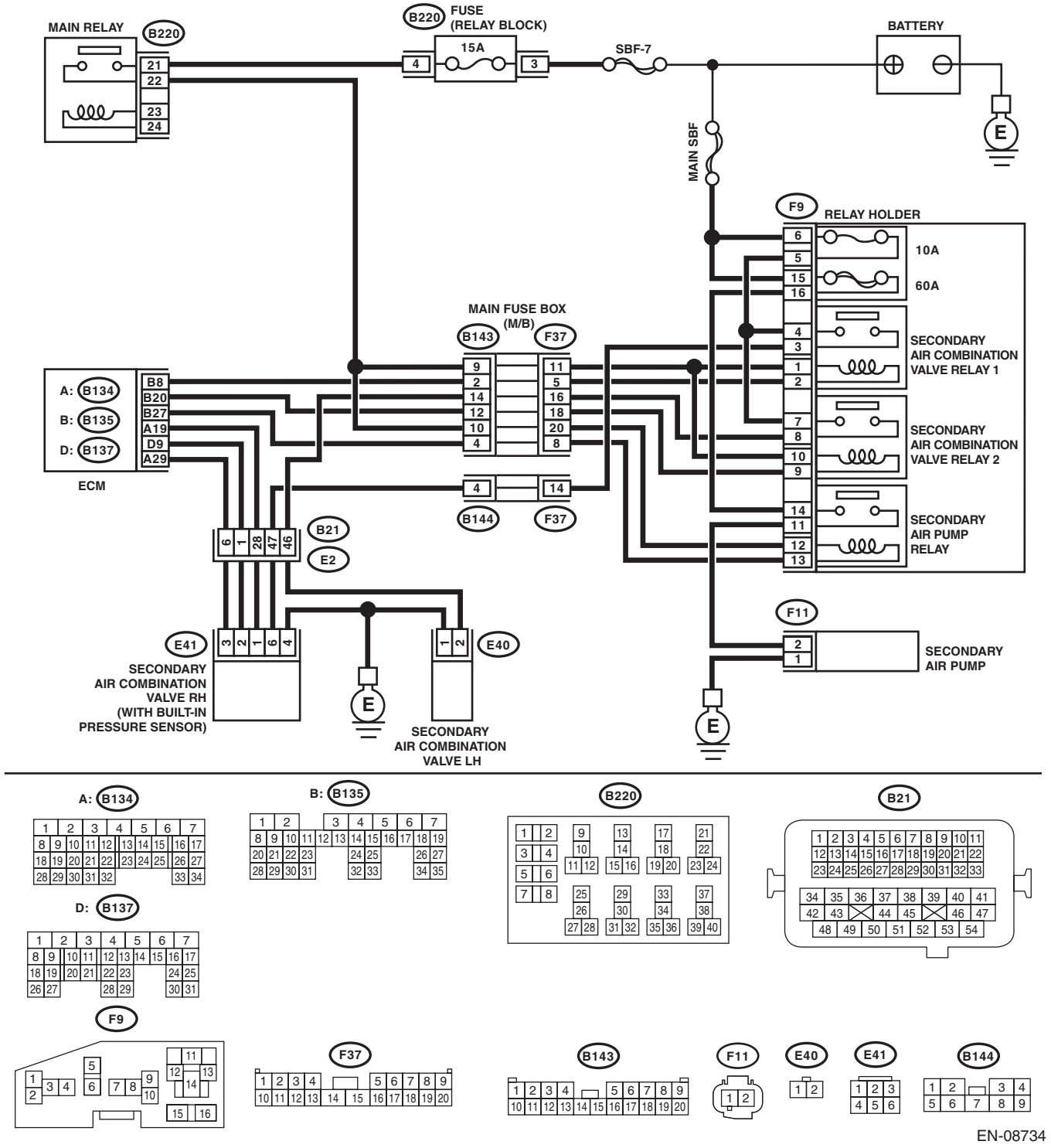
DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-275, DTC P2258 AIR SYSTEM CONTROL "A" CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

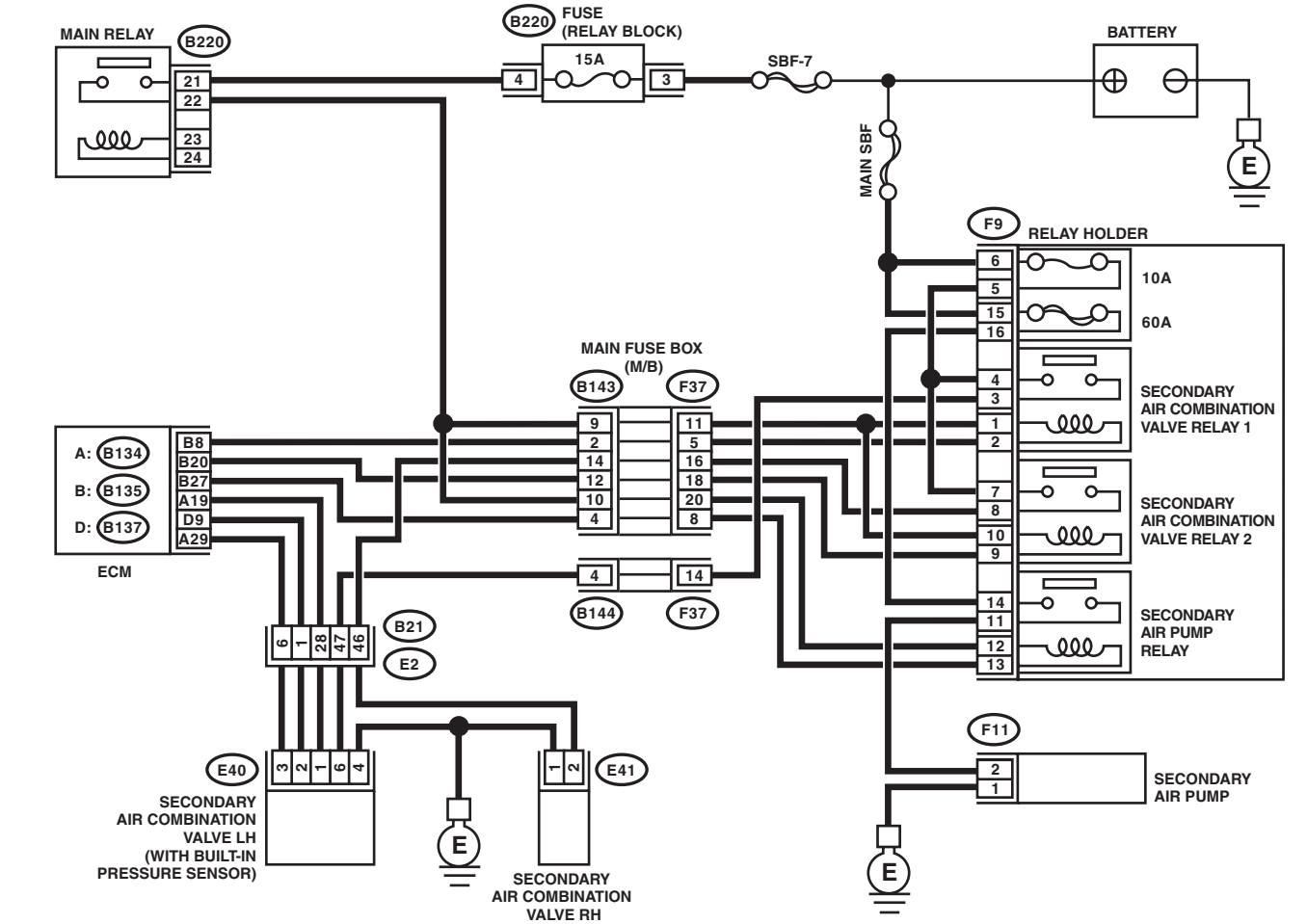
CAUTION:
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

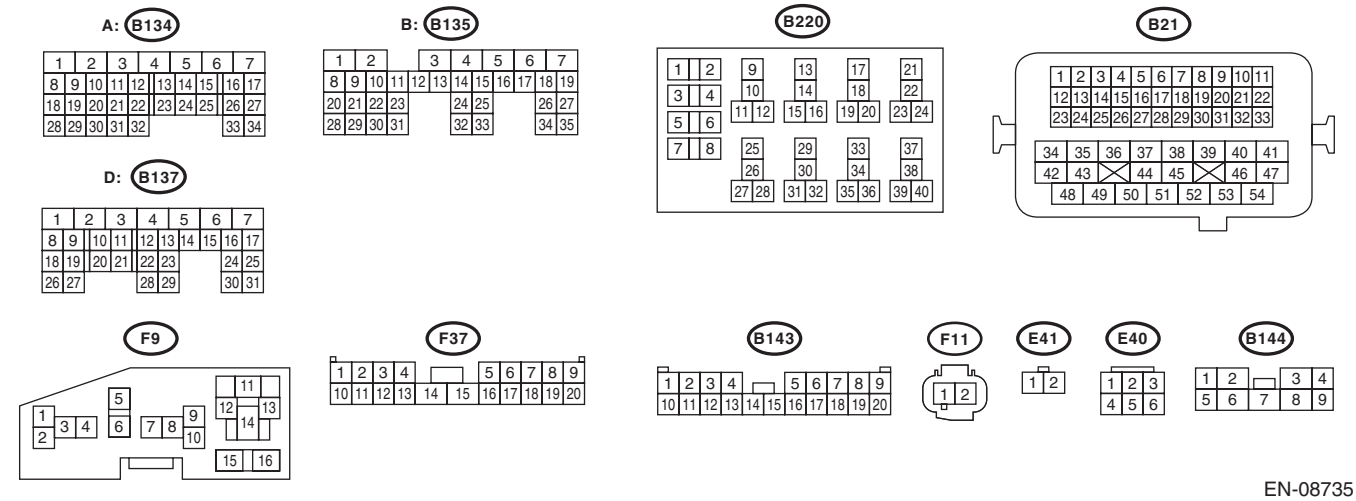
WIRING DIAGRAM:

• Models without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



- Models with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>





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	Step	Check	Yes	No
1	**CHECK HARNESS BETWEEN ECM AND SECONDARY AIR PUMP RELAY CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Remove the secondary air pump relay. 4) Measure the voltage between ECM connector and chassis ground. ***Connector & terminal*** ***(B135) No. 27 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Repair the short circuit to power in harness between ECM connector and secondary air pump relay 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.

FC:DTC P2401 EVAPORATIVE EMISSION SYSTEM LEAK DETECTION PUMP CONTROL CIRCUIT LOW

DTC DETECTING CONDITION:

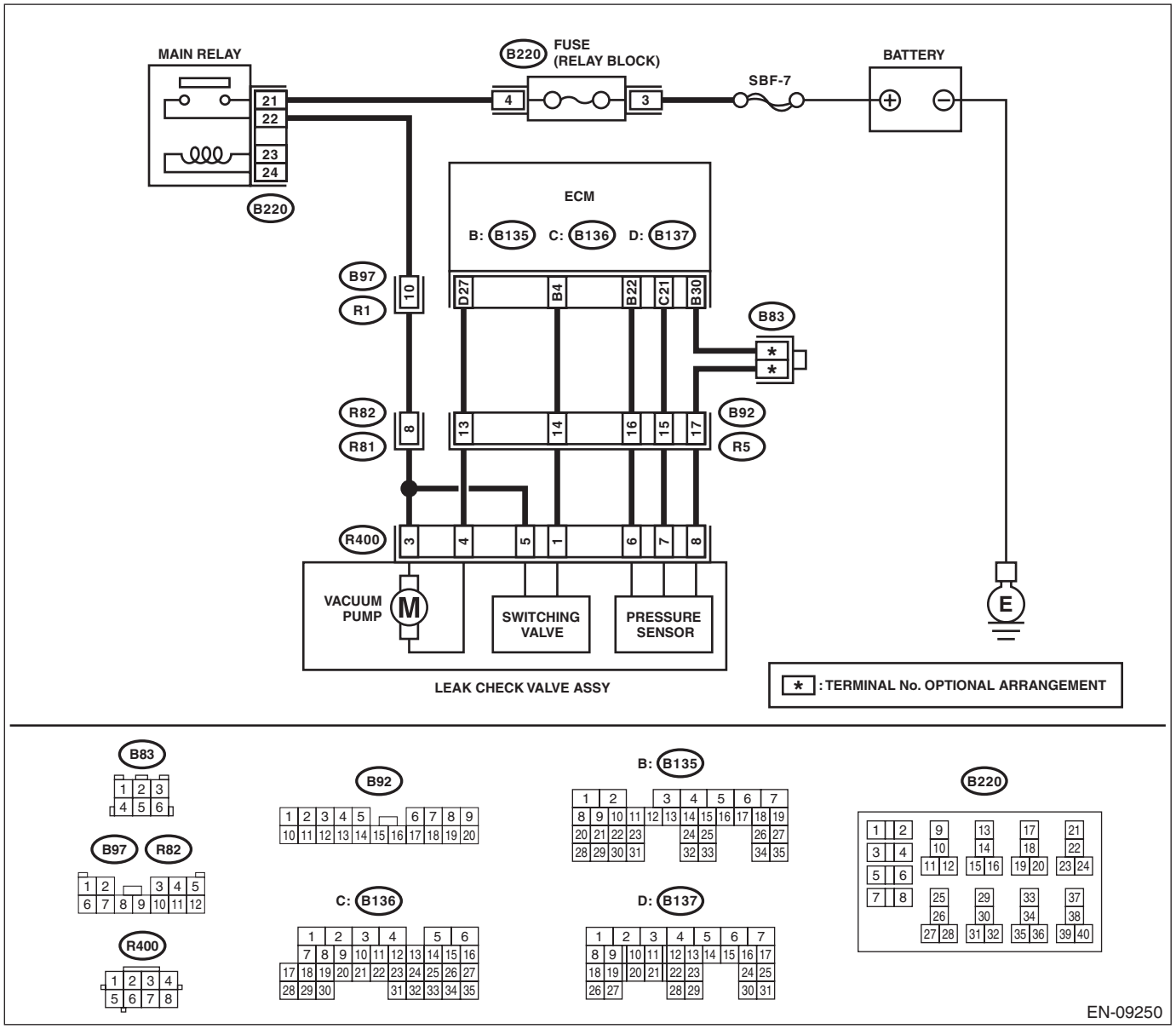
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-276, DTC P2401 EVAPORATIVE EMISSION SYSTEM LEAK DETECTION PUMP CONTROL CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK HARNESS BETWEEN ECM AND LEAK CHECK VALVE ASSEMBLY CONNECTOR.** 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM connector and chassis ground. ***Connector & terminal*** ***(B137) No. 27 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **2**.	Go to step **3**.
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 open or short circuit of harness or temporary poor contact of connector may be the cause.
3	**CHECK POWER SUPPLY TO LEAK CHECK VALVE ASSEMBLY.** Measure the voltage between the leak check valve assembly connector and engine ground. ***Connector & terminal*** ***(R400) No. 3 (+) — Engine ground (–):***	Is the voltage 10 V or more?	Go to step **4**.	Repair the power supply circuit.
4	**CHECK HARNESS BETWEEN ECM AND LEAK CHECK VALVE ASSEMBLY CONNECTOR.** 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. ***Connector & terminal*** ***(R400) No. 4 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **5**.	Repair the short circuit to ground in harness between ECM connector and leak check valve assembly connector.
5	**CHECK HARNESS BETWEEN ECM AND LEAK CHECK VALVE ASSEMBLY CONNECTOR.** Measure the resistance of harness between ECM connector and the leak check valve assembly connector. ***Connector & terminal*** ***(B137) No. 27 — (R400) No. 4:***	Is the resistance less than 1 Ω?	Go to step **6**.	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

Step		Check	Yes	No
6	**CHECK LEAK CHECK VALVE ASSEMBLY.** Check the vacuum pump of the leak check valve assembly. <Ref. to EC(STI)-21, CHECK VACUUM PUMP, INSPECTION, Leak Check Valve Assembly.> <Ref. to EC(w/o STI)-22, 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(STI)-19, Leak Check Valve Assembly.> <Ref. to EC(w/o STI)-20, Leak Check Valve Assembly.>

FD:DTC P2402 EVAPORATIVE EMISSION SYSTEM LEAK DETECTION PUMP CONTROL CIRCUIT HIGH

DTC DETECTING CONDITION:

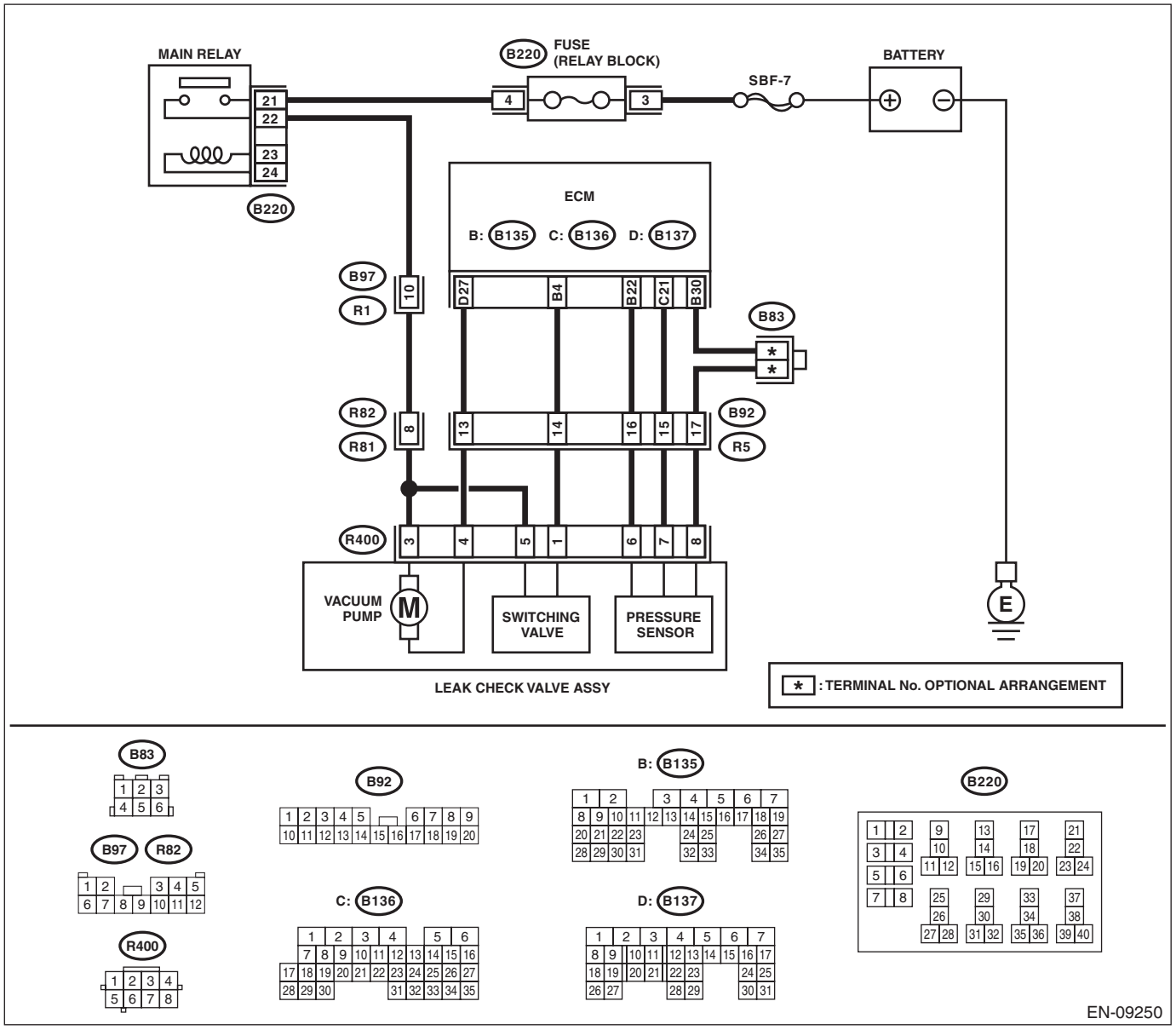
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-278, DTC P2402 EVAPORATIVE EMISSION SYSTEM LEAK DETECTION PUMP CONTROL CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK HARNESS BETWEEN ECM AND LEAK CHECK VALVE ASSEMBLY CONNECTOR.** 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. ***Connector & terminal*** ***(R400) No. 4 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Repair the short circuit to power in harness between ECM connector and leak check valve assembly connector.	Go to step **2**.
2	**CHECK LEAK CHECK VALVE ASSEMBLY.** 1) Turn the ignition switch to OFF. 2) Check the vacuum pump of the leak check valve assembly. <Ref. to EC(STI)-21, CHECK VACUUM PUMP, INSPECTION, Leak Check Valve Assembly.> <Ref. to EC(w/o STI)-22, 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(STI)-19, Leak Check Valve Assembly.> <Ref. to EC(w/o STI)-20, Leak Check Valve Assembly.>

FE:DTC P2404 EVAPORATIVE EMISSION SYSTEM LEAK DETECTION PUMP SENSE CIRCUIT RANGE/PERFORMANCE

DTC DETECTING CONDITION:

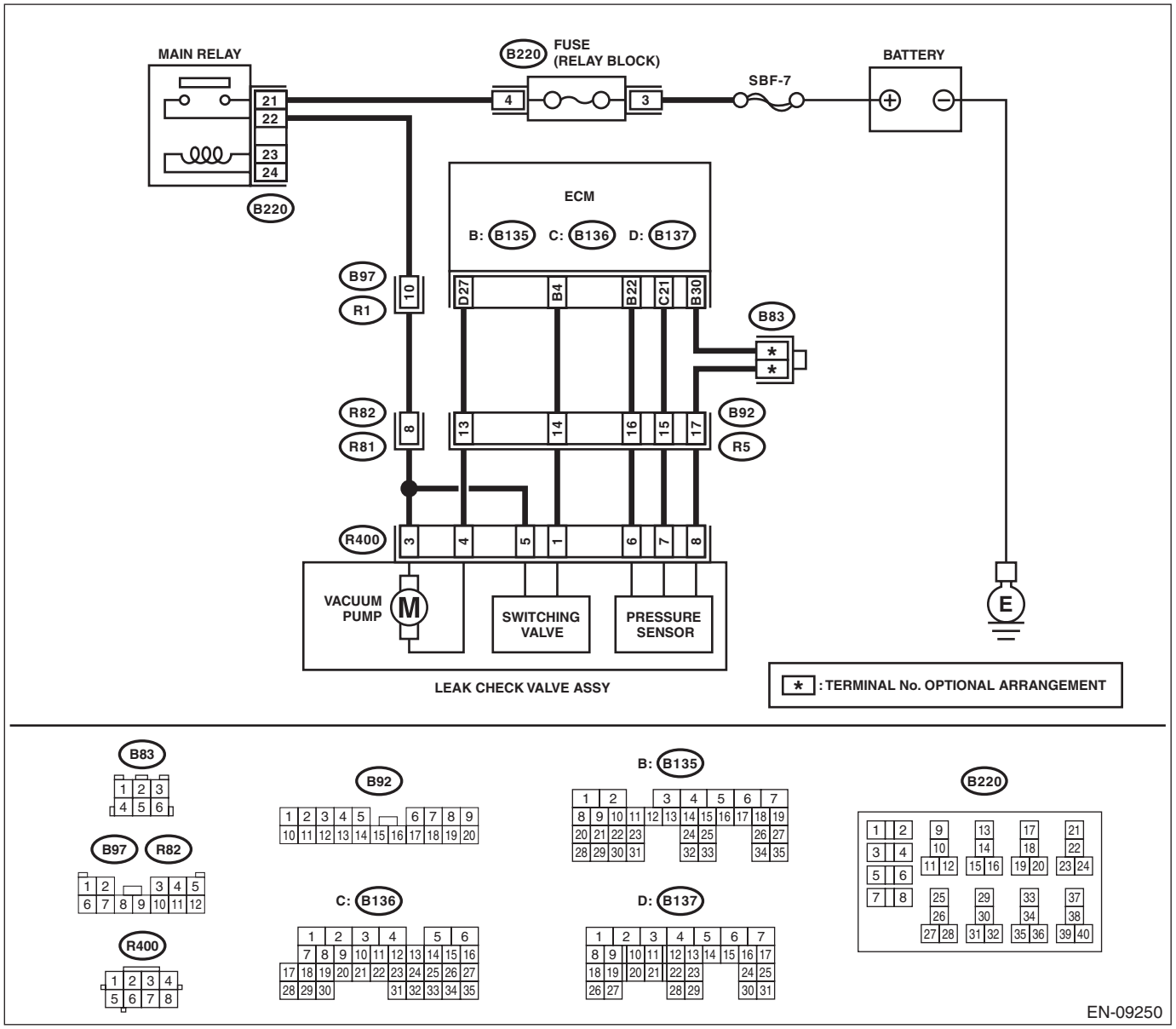
- Detected when 2 consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-279, DTC P2404 EVAPORATIVE EMISSION SYSTEM LEAK DETECTION PUMP SENSE CIRCUIT RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	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(H4DOTC)(diag)-87, List of Diagnostic Trouble Code (DTC).>	Go to step **2**.
2	**CHECK ELCM PUMP.** Operate the ELCM pump using the Subaru Select Monitor. NOTE: Refer to "Compulsory Valve Operation Check Mode" for more operation procedures. <Ref. to EN(H4DOTC)(diag)-64, Compulsory Valve 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*** ***(B137) No. 27 — (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*** ***(B137) No. 27 — Chassis ground:***	Is the resistance 1 MΩ or more?	Replace the leak check valve assembly. <Ref. to EC(STI)-19, Leak Check Valve Assembly.> <Ref. to EC(w/o STI)-20, Leak Check Valve Assembly.>	Repair the short circuit to ground in harness between ECM connector and leak check valve assembly connector.

	Step	Check	Yes	No
6	**CHECK ELCM SWITCHING VALVE.** Operate the ELCM switching valve using the Subaru Select Monitor. NOTE: Refer to "Compulsory Valve Operation Check Mode" for more operation procedures. <Ref. to EN(H4DOTC)(diag)-64, Compulsory Valve Operation Check Mode.>	Does the ELCM switching valve operate?	Go to step **10**.	Go to step **7**.
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 (–):***	Is the voltage 10 V or more?	Go to step **8**.	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
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*** ***(B135) No. 4 — (R400) No. 1:***	Is the resistance less than 1 Ω?	Go to step **9**.	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
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*** ***(B135) No. 4 — Chassis ground:***	Is the resistance 1 MΩ or more?	Replace the leak check valve assembly. <Ref. to EC(STI)-19, Leak Check Valve Assembly.> <Ref. to EC(w/o STI)-20, Leak Check Valve Assembly.>	Repair the short circuit to ground in harness between ECM connector and leak check valve assembly connector.

	Step	Check	Yes	No
10	**CHECK EVAPORATIVE EMISSION CONTROL SYSTEM.** Perform drive cycle I. <Ref. to EN(H4DOTC)(diag)-59, DRIVE CYCLE H, PROCEDURE, Drive Cycle.>	Is DTC P2404 displayed on the display?	Replace the leak check valve assembly. <Ref. to EC(STI)-19, Leak Check Valve Assembly.> <Ref. to EC(w/o STI)-20, Leak Check Valve Assembly.>	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.

FF: DTC P2419 EVAPORATIVE EMISSION SYSTEM SWITCHING VALVE CONTROL CIRCUIT LOW

DTC DETECTING CONDITION:

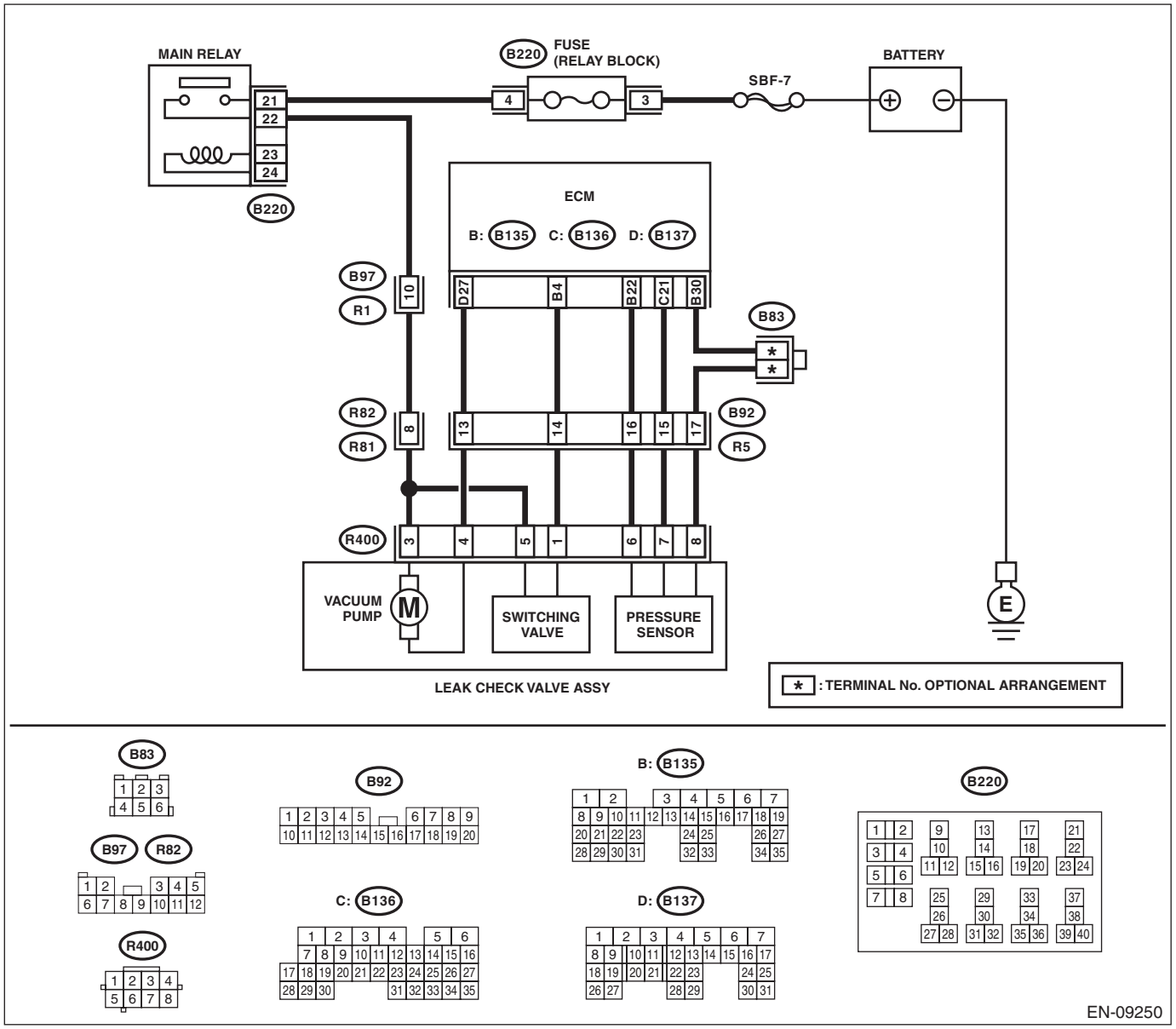
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-280, DTC P2419 EVAPORATIVE EMISSION SYSTEM SWITCHING VALVE CONTROL CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK HARNESS BETWEEN ECM AND LEAK CHECK VALVE ASSEMBLY CONNECTOR.** 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM connector and chassis ground. ***Connector & terminal*** ***(B135) No. 4 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **2**.	Go to step **3**.
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 open or short circuit of harness or temporary poor contact of connector may be the cause.
3	**CHECK POWER SUPPLY TO LEAK CHECK VALVE ASSEMBLY.** Measure the voltage between the leak check valve assembly connector and engine ground. ***Connector & terminal*** ***(R400) No. 5 (+) — Engine ground (–):***	Is the voltage 10 V or more?	Go to step **4**.	Repair the power supply circuit.
4	**CHECK HARNESS BETWEEN ECM AND LEAK CHECK VALVE ASSEMBLY CONNECTOR.** 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. ***Connector & terminal*** ***(R400) No. 1 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **5**.	Repair the short circuit to ground in harness between ECM connector and leak check valve assembly connector.
5	**CHECK HARNESS BETWEEN ECM AND LEAK CHECK VALVE ASSEMBLY CONNECTOR.** Measure the resistance of harness between ECM connector and the leak check valve assembly connector. ***Connector & terminal*** ***(B135) No. 4 — (R400) No. 1:***	Is the resistance less than 1 Ω?	Go to step **6**.	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

	Step	Check	Yes	No
6	**CHECK LEAK CHECK VALVE ASSEMBLY.** Check the switching valve of the leak check valve assembly. <Ref. to EC(STI)-20, CHECK SWITCHING VALVE, INSPECTION, Leak Check Valve Assembly.> <Ref. to EC(w/o STI)-21, 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(STI)-19, Leak Check Valve Assembly.> <Ref. to EC(w/o STI)-20, Leak Check Valve Assembly.>

FG:DTC P2420 EVAPORATIVE EMISSION SYSTEM SWITCHING VALVE CONTROL CIRCUIT HIGH

DTC DETECTING CONDITION:

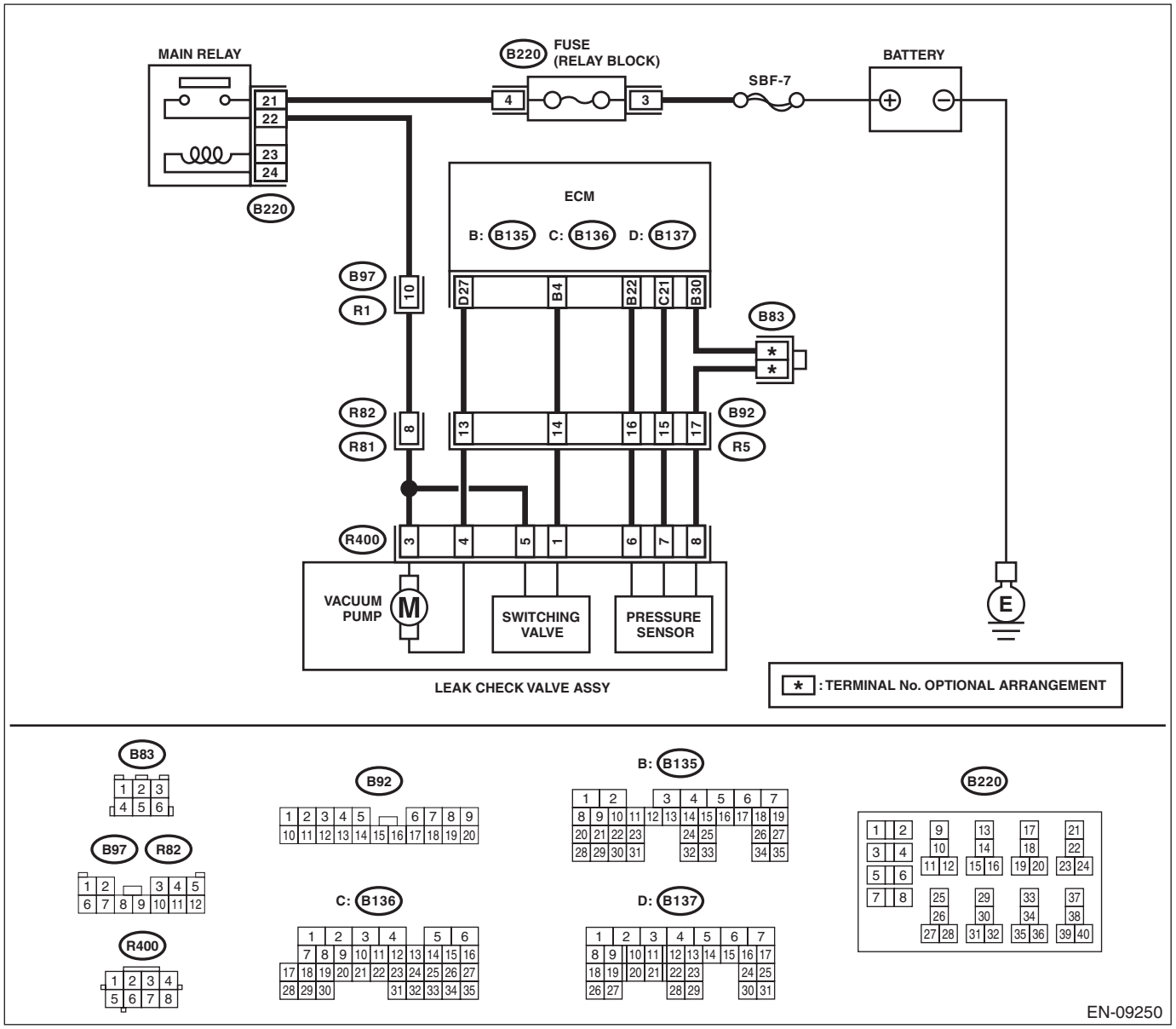
- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-282, DTC P2420 EVAPORATIVE EMISSION SYSTEM SWITCHING VALVE CONTROL CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:

After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

- Engine electrical system, without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>
- Engine electrical system, with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



	Step	Check	Yes	No
1	**CHECK HARNESS BETWEEN ECM AND LEAK CHECK VALVE ASSEMBLY CONNECTOR.** 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. ***Connector & terminal*** ***(R400) No. 1 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Repair the short circuit to power in harness between ECM connector and leak check valve assembly connector.	Go to step **2**.
2	**CHECK LEAK CHECK VALVE ASSEMBLY.** 1) Turn the ignition switch to OFF. 2) Check the switching valve of the leak check valve assembly. <Ref. to EC(STI)-20, CHECK SWITCHING VALVE, INSPECTION, Leak Check Valve Assembly.> <Ref. to EC(w/o STI)-21, 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(STI)-19, Leak Check Valve Assembly.> <Ref. to EC(w/o STI)-20, Leak Check Valve Assembly.>

FH:DTC P2431 SECONDARY AIR INJECTION SYSTEM AIR FLOW /PRESSURE SENSOR CIRCUIT RANGE/PERFORMANCE

DTC DETECTING CONDITION:

- Detected when two consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-284, DTC P2431 SECONDARY AIR INJECTION SYSTEM AIR FLOW /PRESSURE SENSOR CIRCUIT RANGE/PERFORMANCE, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, 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(H4DOTC)(diag)-87, 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, read the values in «Sec. Air Piping Pressure», «Mani. Absolute Pressure» and «Atmosphere Pressure», and compare them with actual atmospheric pressure. NOTE: For detailed operation procedures, refer to “READ CURRENT DATA FOR ENGINE”. <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.>	Does the displayed value differ from the actual atmospheric pressure by 200 mmHg (27 kPa, 8 inHg, 3.9 psig) or more?	Replace the secondary air combination valve (with built-in pressure sensor). <Ref. to EC(STI)-29, Secondary Air Combination Valve.> <Ref. to EC(w/o STI)-30, Secondary Air Combination Valve.>	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.

FI: DTC P2432 SECONDARY AIR INJECTION SYSTEM AIR FLOW /PRESSURE SENSOR CIRCUIT LOW

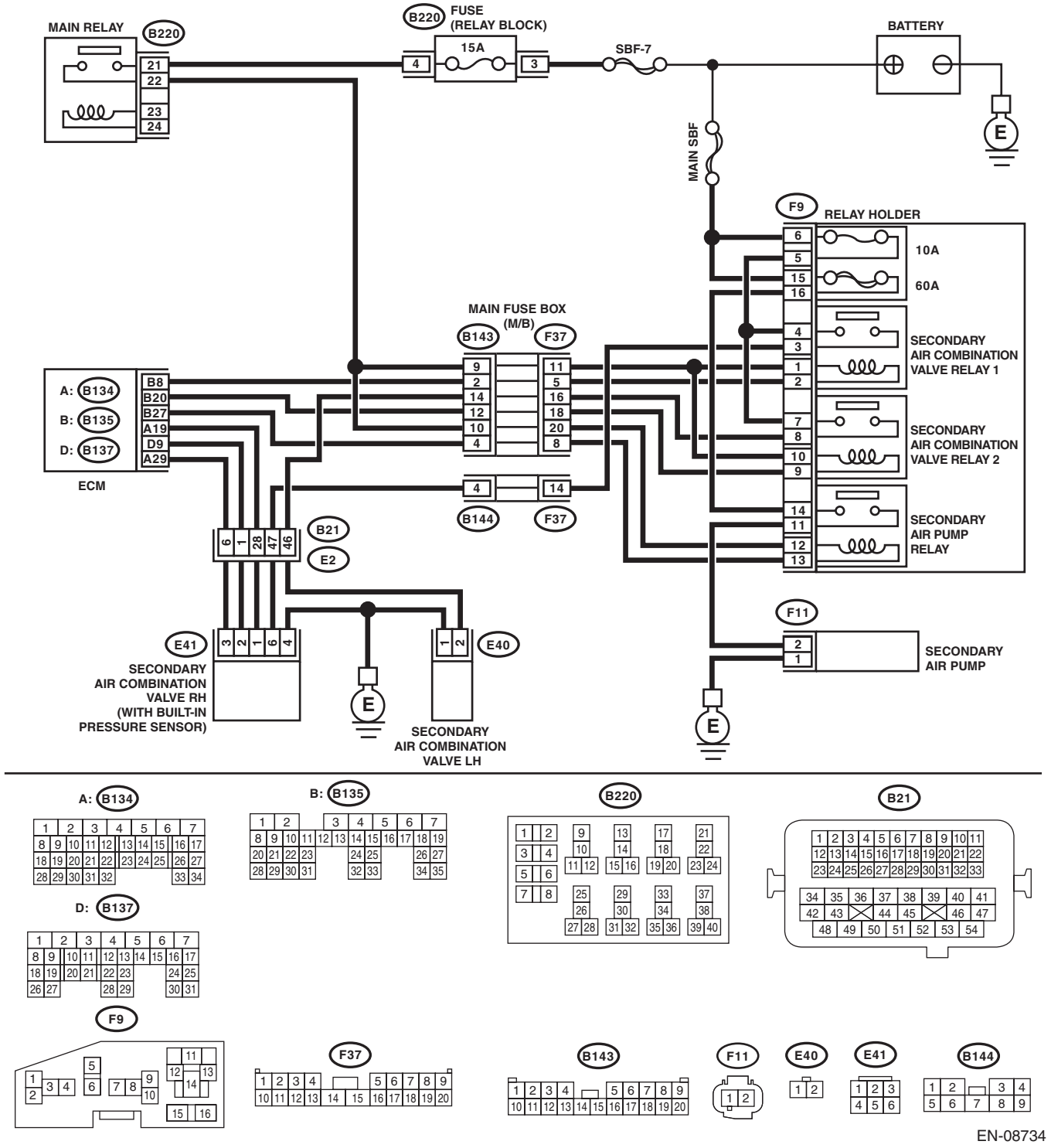
DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-285, DTC P2432 SECONDARY AIR INJECTION SYSTEM AIR FLOW /PRESSURE SENSOR CIRCUIT LOW, Diagnostic Trouble Code (DTC) Detecting Criteria.>

CAUTION:
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

• Models without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



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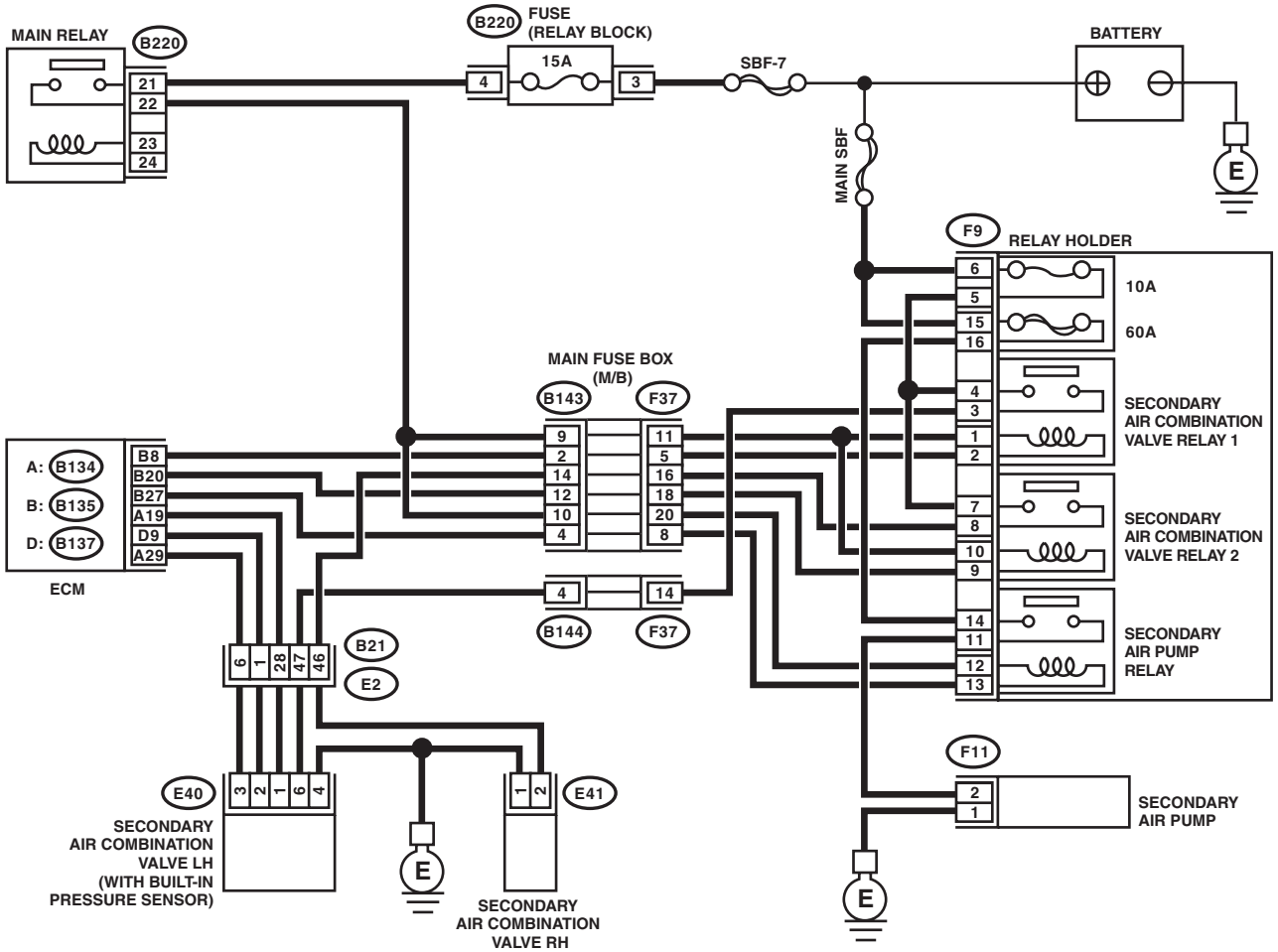
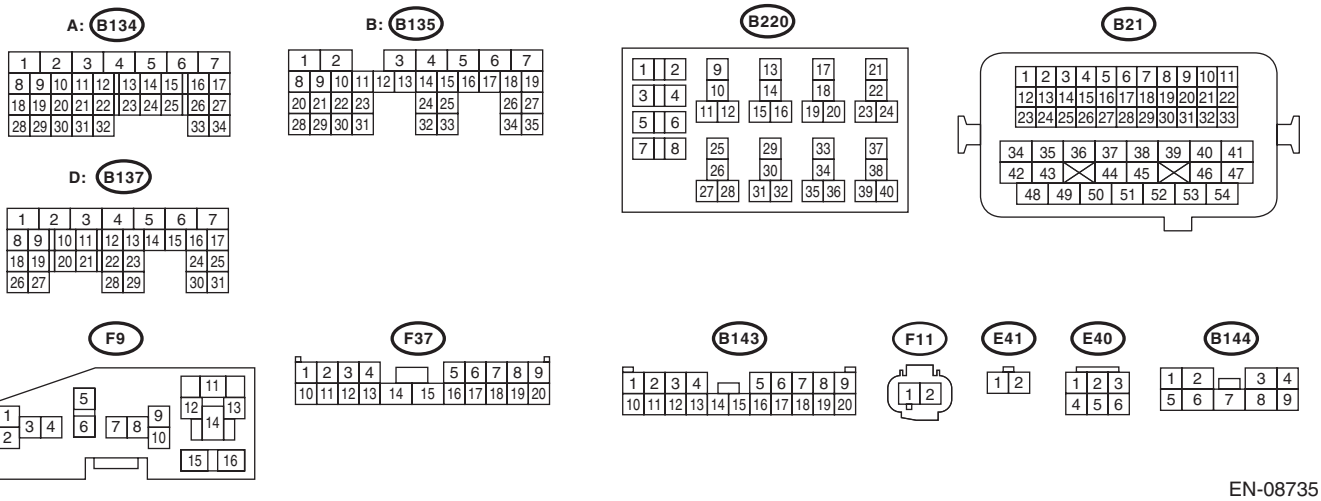
- Models with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>





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	Step	Check	Yes	No
1	**CHECK CURRENT DATA.** 1) Turn the ignition switch to ON. 2) Read the value of «Sec. Air Piping Pressure» using Subaru Select Monitor. NOTE: For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.>	Is the value of «Sec. Air Piping Pressure» less than 53.3 kPa (400 mmHg, 15.8 inHg)?	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 POWER SUPPLY OF SECONDARY AIR COMBINATION VALVE.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from secondary air combination valve RH (models without SI-DRIVE) or LH (models with SI-DRIVE). 3) Turn the ignition switch to ON. 4) Measure the voltage between the secondary air combination valve RH or LH connector and chassis ground. ***Connector & terminal*** ***Models without SI-DRIVE*** ***(E41) No. 1 (+) — Chassis ground (–):*** ***Models with SI-DRIVE*** ***(E40) No. 1 (+) — Chassis ground (–):***	Is the voltage 4.5 V or more?	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 secondary air combination valve RH or LH connector • Poor contact of ECM connector • Poor contact of coupling connector
3	**CHECK HARNESS BETWEEN ECM AND SECONDARY AIR COMBINATION VALVE CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM connector and secondary air combination valve RH or LH connector. ***Connector & terminal*** ***Models without SI-DRIVE*** ***(B137) No. 9 — (E41) No. 2:*** ***Models with SI-DRIVE*** ***(B137) No. 9 — (E40) No. 2:***	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 secondary air combination valve RH or LH connector • Poor contact of coupling connector
4	**CHECK HARNESS BETWEEN ECM AND SECONDARY AIR COMBINATION VALVE CONNECTOR.** Measure the resistance between ECM connector and chassis ground. ***Connector & terminal*** ***(B137) No. 9 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **5**.	Repair the ground short circuit in harness between ECM connector and secondary air combination valve RH or LH connector.

	Step	Check	Yes	No
5	**CHECK FOR POOR CONTACT.** Check for poor contact of the ECM and secondary air combination valve RH or LH connector.	Is there poor contact of ECM or secondary air combination valve RH or LH connector?	Repair the poor contact of the ECM or secondary air combination valve RH or LH connector.	Replace the secondary air combination valve RH or LH. <Ref. to EC(STI)-29, Secondary Air Combination Valve.> <Ref. to EC(w/o STI)-30, Secondary Air Combination Valve.>

FJ: DTC P2433 SECONDARY AIR INJECTION SYSTEM AIR FLOW /PRESSURE SENSOR CIRCUIT HIGH

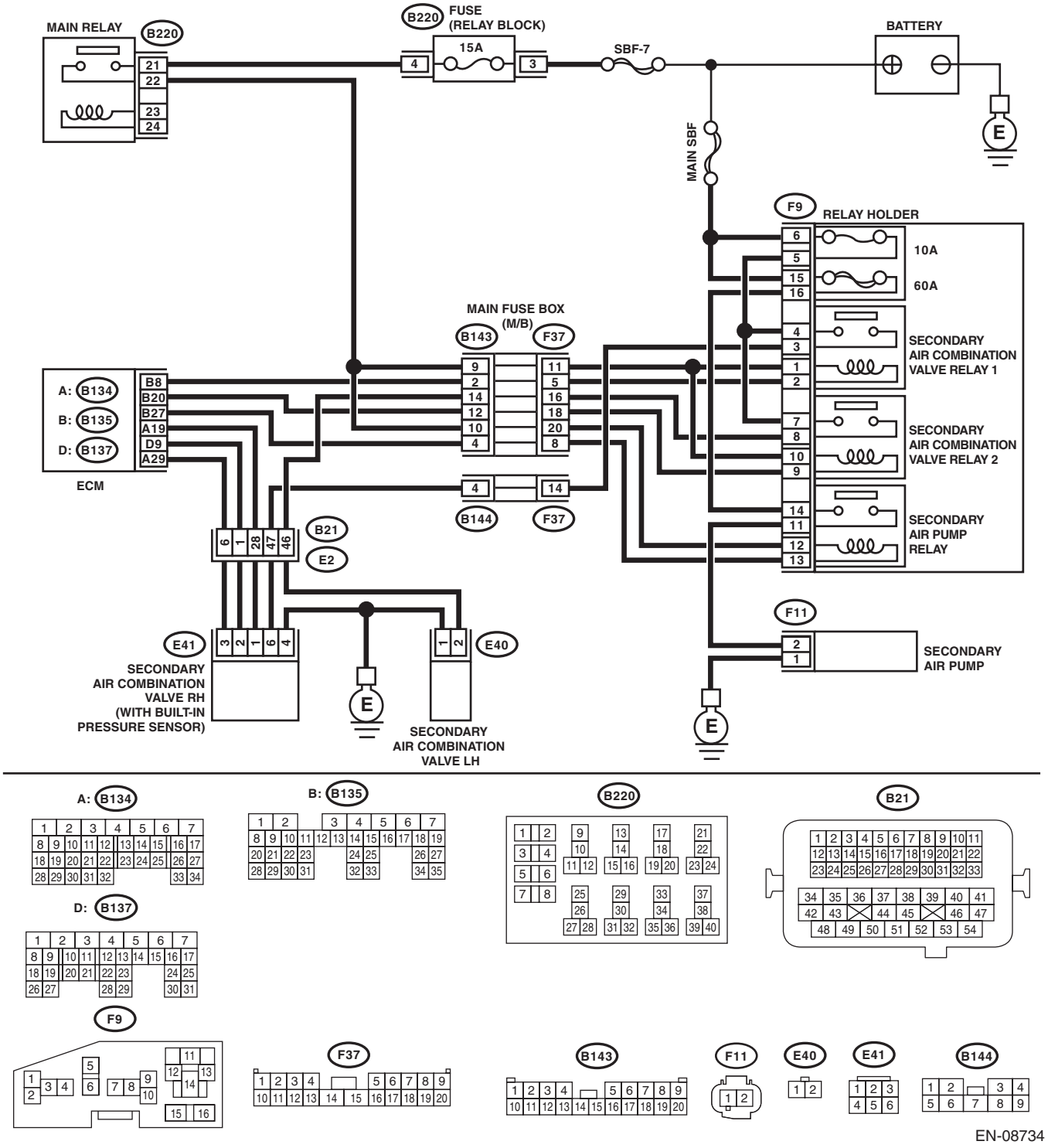
DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-286, DTC P2433 SECONDARY AIR INJECTION SYSTEM AIR FLOW /PRESSURE SENSOR CIRCUIT HIGH, Diagnostic Trouble Code (DTC) Detecting Criteria.>

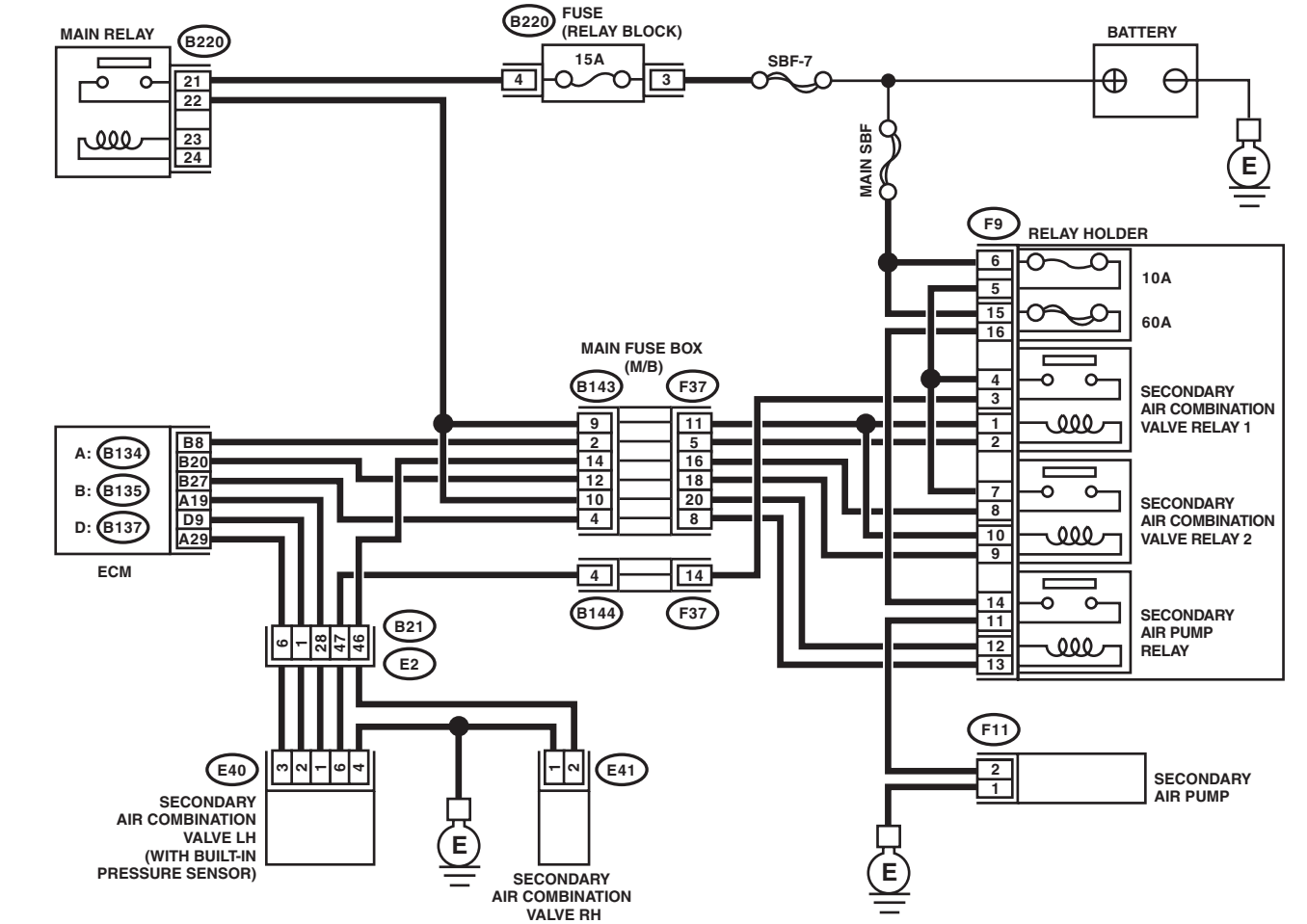
CAUTION:
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

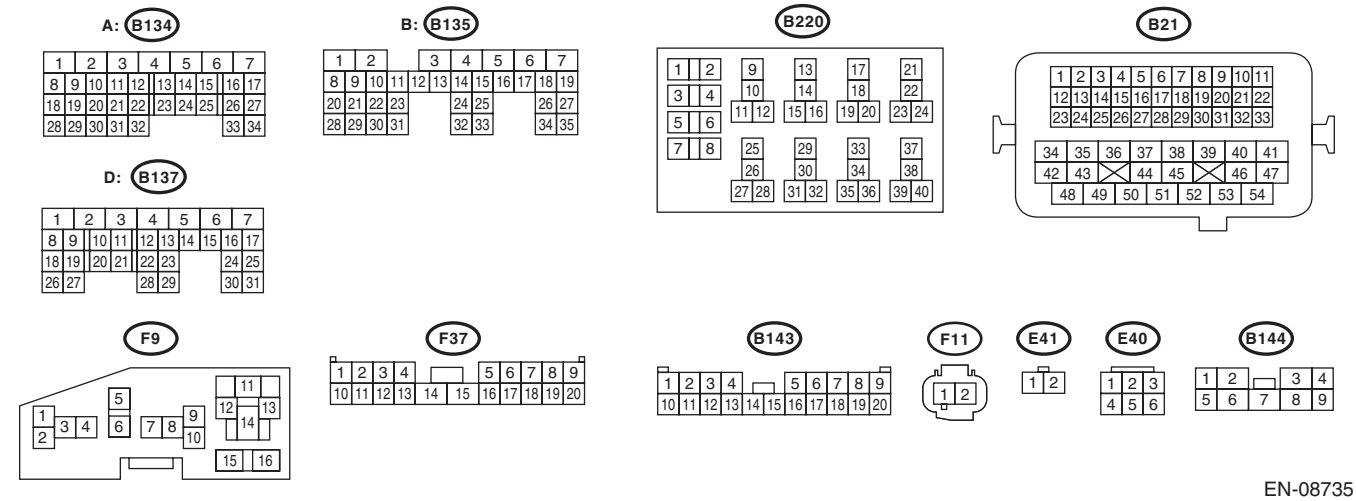
WIRING DIAGRAM:

• Models without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



- Models with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>





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	Step	Check	Yes	No
1	**CHECK CURRENT DATA.** 1) Turn the ignition switch to ON. 2) Read the value of «Sec. Air Piping Pressure» using Subaru Select Monitor. NOTE: For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.>	Is the value of «Sec. Air Piping Pressure» 133.3 kPa (1,000 mmHg, 39.4 inHg) 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 HARNESS BETWEEN ECM AND SECONDARY AIR COMBINATION VALVE CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from secondary air combination valve RH (models without SI-DRIVE) or LH (models with SI-DRIVE). 3) Turn the ignition switch to ON. 4) Read the value of «Sec. Air Piping Pressure» using Subaru Select Monitor. NOTE: For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.>	Is the value of «Sec. Air Piping Pressure» 133.3 kPa (1,000 mmHg, 39.4 inHg) or more?	Repair the short circuit to power supply in harness between ECM connector and secondary air combination valve RH or LH connector.	Go to step **3**.
3	**CHECK HARNESS BETWEEN ECM AND SECONDARY AIR COMBINATION VALVE CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Measure the resistance of the harness between secondary air combination valve RH or LH connector and engine ground. ***Connector & terminal*** ***Models without SI-DRIVE*** ***(E41) No. 3 — Engine ground:*** ***Models with SI-DRIVE*** ***(E40) No. 3 — 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 in harness between ECM connector and secondary air combination valve RH or LH connector • Poor contact of ECM connector • Poor contact of coupling connector
4	**CHECK FOR POOR CONTACT.** Check for poor contact of the secondary air combination valve RH or LH connector.	Is there poor contact of the secondary air combination valve RH or LH connector?	Repair the poor contact of secondary air combination valve RH or LH connector.	Replace the secondary air combination valve RH or LH. <Ref. to EC(STI)-29, Secondary Air Combination Valve.> <Ref. to EC(w/o STI)-30, Secondary Air Combination Valve.>

FK:DTC P2440 SECONDARY AIR INJECTION SYSTEM SWITCHING VALVE STUCK OPEN (BANK1)

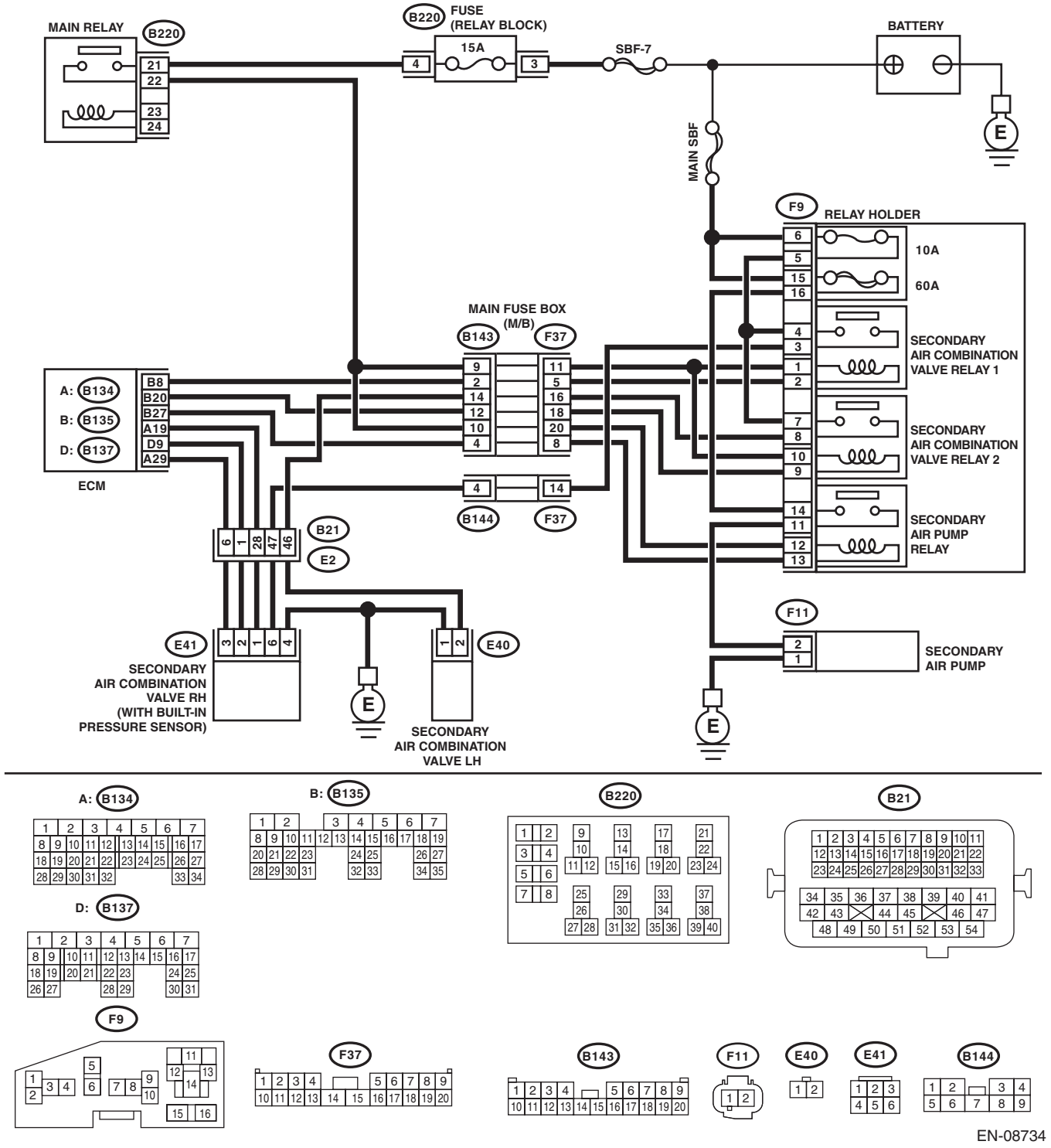
DTC DETECTING CONDITION:

- Detected when 2 consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-287, DTC P2440 SECONDARY AIR INJECTION SYSTEM SWITCHING VALVE STUCK OPEN (BANK1), Diagnostic Trouble Code (DTC) Detecting Criteria.>

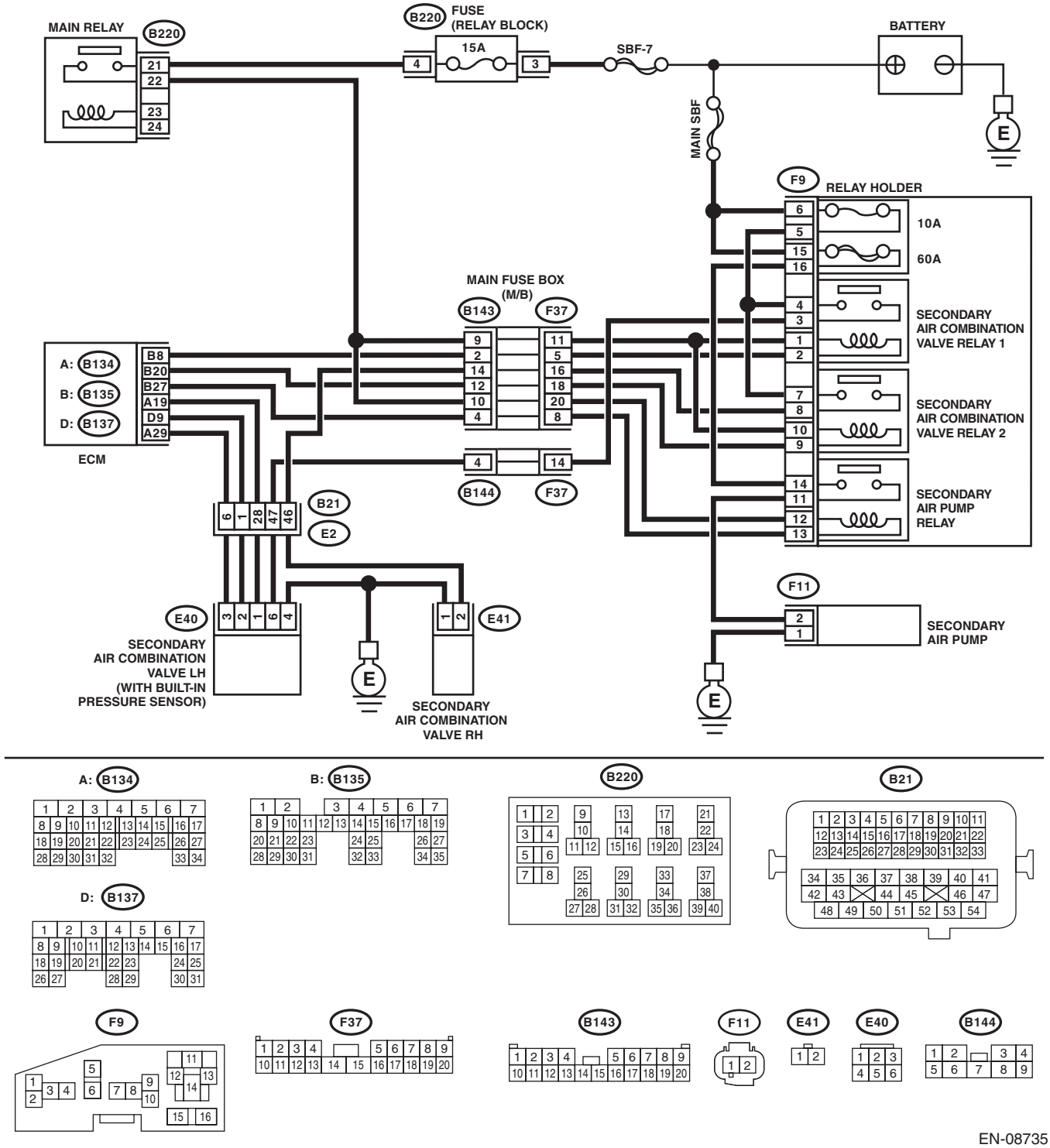
CAUTION:
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

• Models without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



- Models with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



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Step		Check	Yes	No
1	**CHECK SECONDARY AIR COMBINATION VALVE FUSE.** Check if the secondary air combination valve fuse (10 A) is blown out.	Is the fuse blown out?	Go to step **2**.	Go to step **3**.

	Step	Check	Yes	No
2	**CHECK HARNESS BETWEEN FUSE BOX AND SECONDARY AIR COMBINATION VALVE RH CONNECTOR.** 1) Remove the secondary air combination valve fuse (10 A) from the fuse box. 2) Disconnect the connector from the secondary air combination valve RH. 3) Measure the resistance between the secondary air combination valve fuse and secondary air combination valve RH connector, and chassis ground. ***Connector & terminal*** ***Models without SI-DRIVE*** ***(F9) No. 5 — Chassis ground:*** ***(E41) No. 6 — Chassis ground:*** ***Models with SI-DRIVE*** ***(F9) No. 5 — Chassis ground:*** ***(E41) No. 2 — Chassis ground:***	Is the resistance 1 MΩ or more?	Replace the fuse with a new part, and connect the secondary air combination valve RH connector. Go to step **3**.	Repair the short circuit to ground in harness between the fuse box and the secondary air combination valve RH connector.
3	**CHECK SECONDARY AIR COMBINATION VALVE RH OPERATION.** 1) Connect the delivery (test) mode connector. 2) Turn the ignition switch to ON. 3) Perform operation check for the secondary air combination valve RH using the Subaru Select Monitor. NOTE: Refer to “Compulsory Valve Operation Check Mode” for more operation procedures. <Ref. to EN(H4DOTC)(diag)-64, Compulsory Valve Operation Check Mode.>	Does the secondary air combination valve RH repeatedly switch to ON and OFF?	Go to step **4**.	Go to step **6**.
4	**CHECK DUCT BETWEEN SECONDARY AIR PUMP AND SECONDARY AIR COMBINATION VALVE RH.** Check the duct between the secondary air pump and secondary air combination valve RH.	Is there damage, clog or disconnection of the duct?	Replace, clean or connect the duct.	Go to step **5**.
5	**CHECK PIPE BETWEEN SECONDARY AIR COMBINATION VALVE RH AND CYLINDER HEAD.** Check the pipe between the secondary air combination valve RH and cylinder head.	Is there damage, clog or disconnection of the pipe?	Replace, clean or connect the pipe.	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.

	Step	Check	Yes	No
6	**CHECK POWER SUPPLY TO SECONDARY AIR COMBINATION VALVE RH.** 1) Disconnect the connector from the secondary air combination valve RH. 2) In the condition of step 3, measure the voltage between secondary air combination valve RH connector and chassis ground. ***Connector & terminal*** ***Models without SI-DRIVE*** ***(E41) No. 6 (+) — Chassis ground (–):*** ***Models with SI-DRIVE*** ***(E41) No. 2 (+) — Chassis ground (–):***	Does the voltage repeatedly change between 10 V and 0 V?	Replace the secondary air combination valve RH. <Ref. to EC(STI)-29, Secondary Air Combination Valve.> <Ref. to EC(w/o STI)-30, Secondary Air Combination Valve.>	Go to step **7**.
7	**CHECK HARNESS BETWEEN SECONDARY AIR COMBINATION VALVE RH AND CHASSIS GROUND.** Measure the resistance between the secondary air combination valve RH connector and chassis ground. ***Connector & terminal*** ***Models without SI-DRIVE*** ***(E41) No. 4 — Chassis ground:*** ***Models with SI-DRIVE*** ***(E41) No. 1 — Chassis ground:***	Is the resistance less than 5 Ω?	• Models without SI-DRIVE: Go to step **8**. • Models with SI-DRIVE: Go to step **14**.	Repair the open circuit in harness between secondary air combination valve RH connector and chassis ground.
8	**CHECK HARNESS BETWEEN SECONDARY AIR COMBINATION VALVE RELAY 1 AND SECONDARY AIR COMBINATION VALVE RH CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Remove the secondary air combination valve relay 1 from the relay box. 3) Measure the resistance of the harness between secondary air combination valve relay 1 connector and secondary air combination valve RH connector. ***Connector & terminal*** ***(F9) No. 3 — (E41) No. 6:***	Is the resistance less than 1 Ω?	Go to step **9**.	Repair the open circuit in harness between secondary air combination valve relay 1 and secondary air combination valve RH connector.
9	**CHECK SECONDARY AIR COMBINATION VALVE RELAY 1.** 1) Connect the battery to terminals No. 1 and No. 2 of the secondary air combination valve relay 1. 2) Measure the resistance between the secondary air combination valve relay 1 terminals. ***Terminals*** ***No. 3 — No. 4:***	Is the resistance less than 1 Ω?	Go to step **10**.	Replace the secondary air combination valve relay 1. <Ref. to EN(H4DOTC)(diag)-9, Electrical Component Location.>
10	**CHECK SECONDARY AIR COMBINATION VALVE RELAY 1.** Measure the resistance between the secondary air combination valve relay 1 terminals with the battery disconnected. ***Terminals*** ***No. 3 — No. 4:***	Is the resistance 1 MΩ or more?	Go to step **11**.	Replace the secondary air combination valve relay 1. <Ref. to EN(H4DOTC)(diag)-9, Electrical Component Location.>

	Step	Check	Yes	No
11	**CHECK SECONDARY AIR COMBINATION VALVE RELAY 1 POWER SUPPLY.** 1) Turn the ignition switch to ON. 2) Measure the voltage between the secondary air combination valve relay 1 connector and chassis ground. ***Connector & terminal*** ***(F9) No. 4 (+) — Chassis ground (–):*** ***(F9) No. 1 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **12**.	Repair the open or ground short circuit of power supply circuit.
12	**CHECK HARNESS BETWEEN ECM AND SECONDARY AIR COMBINATION VALVE RELAY 1 CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the ECM connector. 3) Measure the resistance of harness between ECM connector and secondary air combination valve relay 1 connector. ***Connector & terminal*** ***(B135) No. 8 — (F9) No. 2:***	Is the resistance less than 1 Ω?	Go to step **13**.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and secondary air combination valve relay 1 connector • Poor contact of coupling connector
13	**CHECK HARNESS BETWEEN ECM AND SECONDARY AIR COMBINATION VALVE RELAY 1 CONNECTOR.** Measure the resistance between the secondary air combination valve relay 1 connector and chassis ground. ***Connector & terminal*** ***(F9) No. 2 — 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 secondary air combination valve relay 1 connector.
14	**CHECK HARNESS BETWEEN SECONDARY AIR COMBINATION VALVE RELAY 2 AND SECONDARY AIR COMBINATION VALVE RH CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Remove the secondary air combination valve relay 2 from the relay box. 3) Measure the resistance of the harness between secondary air combination valve relay 2 connector and secondary air combination valve RH connector. ***Connector & terminal*** ***(F9) No. 8 — (E41) No. 2:***	Is the resistance less than 1 Ω?	Go to step **15**.	Repair the open circuit in harness between secondary air combination valve relay 2 and secondary air combination valve RH connector.
15	**CHECK SECONDARY AIR COMBINATION VALVE RELAY 2.** 1) Connect the battery to terminals No. 9 and No. 10 of the secondary air combination valve relay 2. 2) Measure the resistance between the secondary air combination valve relay 2 terminals. ***Terminals*** ***No. 7 — No. 8:***	Is the resistance less than 1 Ω?	Go to step **16**.	Replace the secondary air combination valve relay 2. <Ref. to EN(H4DOTC)(diag)-9, Electrical Component Location.>
16	**CHECK SECONDARY AIR COMBINATION VALVE RELAY 2.** Measure the resistance between the secondary air combination valve relay 2 terminals with the battery disconnected. ***Terminals*** ***No. 7 — No. 8:***	Is the resistance 1 MΩ or more?	Go to step **17**.	Replace the secondary air combination valve relay 2. <Ref. to EN(H4DOTC)(diag)-9, Electrical Component Location.>

	Step	Check	Yes	No
17	**CHECK SECONDARY AIR COMBINATION VALVE RELAY 2 POWER SUPPLY.** 1) Turn the ignition switch to ON. 2) Measure the voltage between the secondary air combination valve relay 2 connector and chassis ground. ***Connector & terminal*** ***(F9) No. 7 (+) — Chassis ground (–):*** ***(F9) No. 10 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **18**.	Repair the open or ground short circuit of power supply circuit.
18	**CHECK HARNESS BETWEEN ECM AND SECONDARY AIR COMBINATION VALVE RELAY 2 CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the ECM connector. 3) Measure the resistance of harness between ECM connector and secondary air combination valve relay 2 connector. ***Connector & terminal*** ***(B135) No. 20 — (F9) No. 9:***	Is the resistance less than 1 Ω?	Go to step **19**.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and secondary air combination valve relay 2 connector • Poor contact of coupling connector
19	**CHECK HARNESS BETWEEN ECM AND SECONDARY AIR COMBINATION VALVE RELAY 2 CONNECTOR.** Measure the resistance between the secondary air combination valve relay 2 connector and chassis ground. ***Connector & terminal*** ***(F9) No. 9 — 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 secondary air combination valve relay 2 connector.

FL: DTC P2441 SECONDARY AIR INJECTION SYSTEM SWITCHING VALVE STUCK CLOSED (BANK1)

NOTE:
For the diagnostic procedure, refer to DTC P2440. <Ref. to EN(H4DOTC)(diag)-446, DTC P2440 SECONDARY AIR INJECTION SYSTEM SWITCHING VALVE STUCK OPEN (BANK1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

FM:DTC P2442 SECONDARY AIR INJECTION SYSTEM SWITCHING VALVE STUCK OPEN (BANK2)

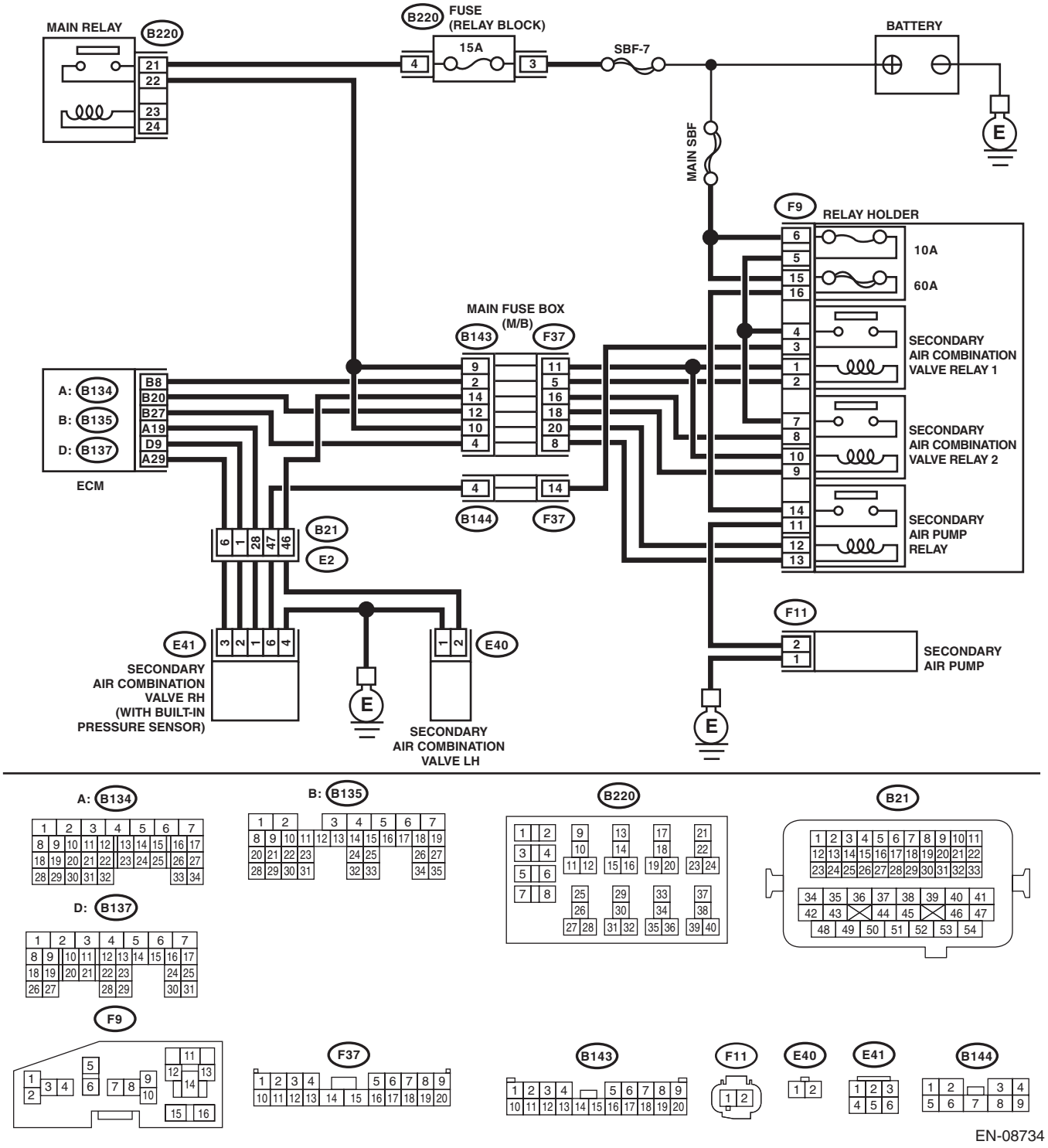
DTC DETECTING CONDITION:

- Detected when 2 consecutive driving cycles with fault occur.
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-287, DTC P2442 SECONDARY AIR INJECTION SYSTEM SWITCHING VALVE STUCK OPEN (BANK2), Diagnostic Trouble Code (DTC) Detecting Criteria.>

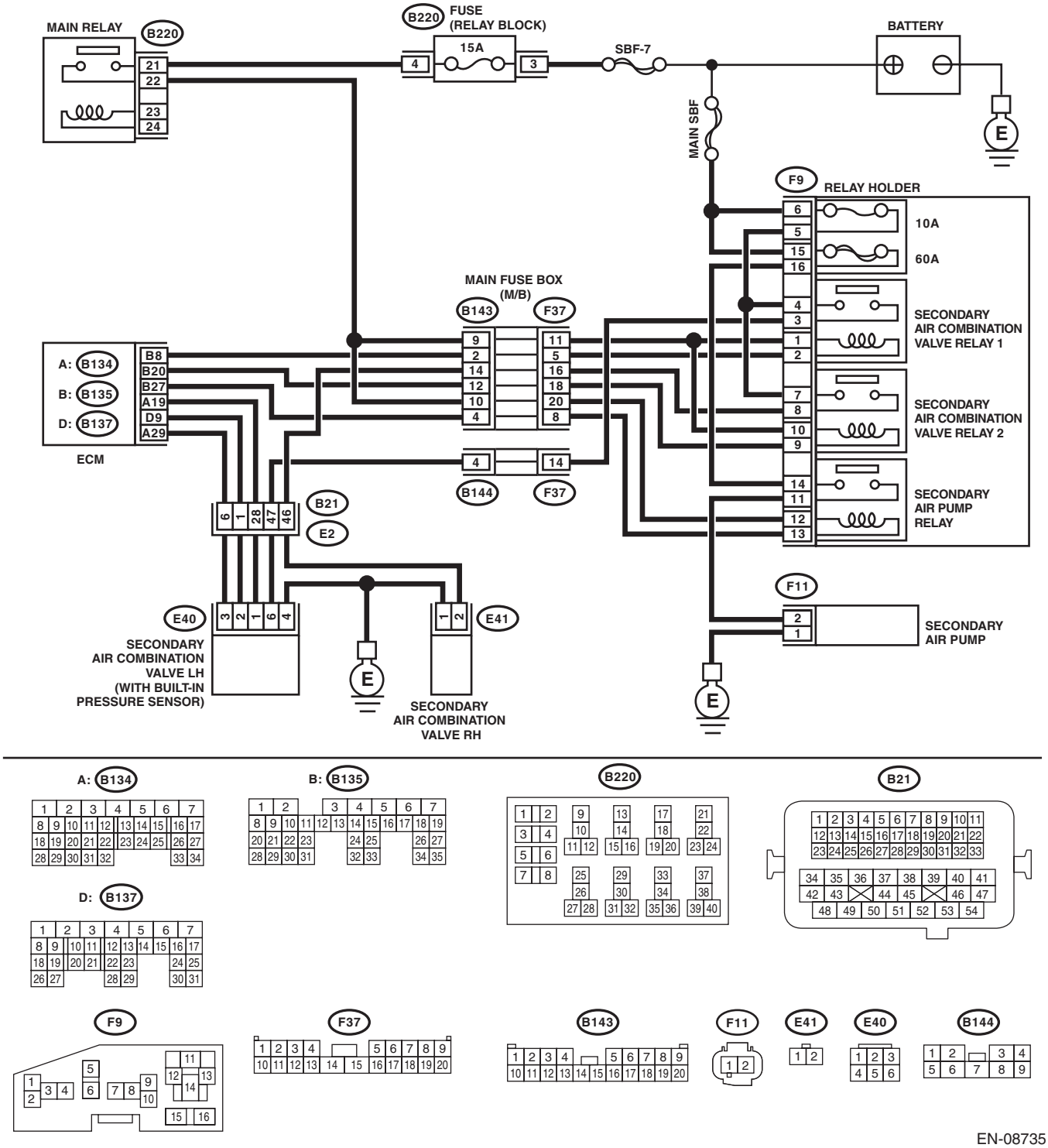
CAUTION:
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

WIRING DIAGRAM:

• Models without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



- Models with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



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Step		Check	Yes	No
1	**CHECK SECONDARY AIR COMBINATION VALVE FUSE.** Check if the secondary air combination valve fuse (10 A) is blown out.	Is the fuse blown out?	Go to step **2**.	Go to step **3**.

	Step	Check	Yes	No
2	**CHECK HARNESS BETWEEN FUSE BOX AND SECONDARY AIR COMBINATION VALVE LH CONNECTOR.** 1) Remove the secondary air combination valve fuse (10 A) from the fuse box. 2) Disconnect the connector from the secondary air combination valve LH. 3) Measure the resistance between the secondary air combination valve fuse and secondary air combination valve LH connector, and chassis ground. ***Connector & terminal*** ***Models without SI-DRIVE*** ***(F9) No. 5 — Chassis ground:*** ***(E40) No. 2 — Chassis ground:*** ***Models with SI-DRIVE*** ***(F9) No. 5 — Chassis ground:*** ***(E40) No. 6 — Chassis ground:***	Is the resistance 1 MΩ or more?	Replace the fuse with a new part, and connect the secondary air combination valve LH connector. Go to step **3**.	Repair the ground short circuit of harness between the fuse box and the secondary air combination valve LH connector.
3	**CHECK SECONDARY AIR COMBINATION VALVE LH OPERATION.** 1) Connect the delivery (test) mode connector. 2) Turn the ignition switch to ON. 3) Perform operation check for the secondary air combination valve LH using the Subaru Select Monitor. NOTE: Refer to “Compulsory Valve Operation Check Mode” for more operation procedures. <Ref. to EN(H4DOTC)(diag)-64, Compulsory Valve Operation Check Mode.>	Does the secondary air combination valve LH repeatedly switch to ON and OFF?	Go to step **4**.	Go to step **6**.
4	**CHECK DUCT BETWEEN SECONDARY AIR PUMP AND SECONDARY AIR COMBINATION VALVE LH.** Check the duct between the secondary air pump and secondary air combination valve LH.	Is there damage, clog or disconnection of the duct?	Replace, clean or connect the duct.	Go to step **5**.
5	**CHECK PIPE BETWEEN SECONDARY AIR COMBINATION VALVE LH AND CYLINDER HEAD.** Check the pipe between the secondary air combination valve LH and cylinder head.	Is there damage, clog or disconnection of the pipe?	Replace, clean or connect the pipe.	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.

	Step	Check	Yes	No
6	**CHECK POWER SUPPLY TO SECONDARY AIR COMBINATION VALVE LH.** 1) Disconnect the connector from the secondary air combination valve LH. 2) In the condition of step 3, measure the voltage between secondary air combination valve LH connector and chassis ground. ***Connector & terminal*** ***Models without SI-DRIVE*** ***(E40) No. 2 (+) — Chassis ground (–):*** ***Models with SI-DRIVE*** ***(E40) No. 6 (+) — Chassis ground (–):***	Does the voltage repeatedly change between 10 V and 0 V?	Replace the secondary air combination valve LH. <Ref. to EC(STI)-29, Secondary Air Combination Valve.> <Ref. to EC(w/o STI)-30, Secondary Air Combination Valve.>	Go to step **7**.
7	**CHECK HARNESS BETWEEN SECONDARY AIR COMBINATION VALVE LH AND CHASSIS GROUND.** Measure the resistance between the secondary air combination valve LH connector and chassis ground. ***Connector & terminal*** ***Models without SI-DRIVE*** ***(E40) No. 1 — Chassis ground:*** ***Models with SI-DRIVE*** ***(E40) No. 4 — Chassis ground:***	Is the resistance less than 5 Ω?	• Models without SI-DRIVE: Go to step **8**. • Models with SI-DRIVE: Go to step **14**.	Repair the open circuit in harness between secondary air combination valve LH connector and chassis ground.
8	**CHECK HARNESS BETWEEN SECONDARY AIR COMBINATION VALVE RELAY 2 AND SECONDARY AIR COMBINATION VALVE LH CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Remove the secondary air combination valve relay 2 from the relay box. 3) Measure the resistance of the harness between the secondary air combination valve relay 2 and secondary air combination valve LH connector. ***Connector & terminal*** ***(F9) No. 8 — (E40) No. 2:***	Is the resistance less than 1 Ω?	Go to step **9**.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between secondary air combination valve relay 2 connector and secondary air combination valve LH connector • Poor contact of coupling connector
9	**CHECK SECONDARY AIR COMBINATION VALVE RELAY 2.** 1) Connect the battery to terminals No. 10 and No. 9 of the secondary air combination valve relay 2. 2) Measure the resistance between the secondary air combination valve relay 2 terminals. ***Terminals*** ***No. 7 — No. 8:***	Is the resistance less than 1 Ω?	Go to step **10**.	Replace the secondary air combination valve relay 2. <Ref. to EN(H4DOTC)(diag)-9, Electrical Component Location.>
10	**CHECK SECONDARY AIR COMBINATION VALVE RELAY 2.** Measure the resistance between the secondary air combination valve relay 2 terminals with the battery disconnected. ***Terminals*** ***No. 7 — No. 8:***	Is the resistance 1 MΩ or more?	Go to step **11**.	Replace the secondary air combination valve relay 2. <Ref. to EN(H4DOTC)(diag)-9, Electrical Component Location.>

	Step	Check	Yes	No
11	**CHECK SECONDARY AIR COMBINATION VALVE RELAY 2 POWER SUPPLY.** 1) Turn the ignition switch to ON. 2) Measure the voltage between the secondary air combination valve relay 2 connector and chassis ground. ***Connector & terminal*** ***(F9) No. 7 (+) — Chassis ground (–):*** ***(F9) No. 10 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **12**.	Repair the open or ground short circuit of power supply circuit.
12	**CHECK HARNESS BETWEEN ECM AND SECONDARY AIR COMBINATION VALVE RELAY 2 CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the ECM connector. 3) Measure the resistance of harness between ECM connector and secondary air combination valve relay 2 connector. ***Connector & terminal*** ***(B135) No. 20 — (F9) No. 9:***	Is the resistance less than 1 Ω?	Go to step **13**.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and secondary air combination valve relay 2 connector • Poor contact of coupling connector
13	**CHECK HARNESS BETWEEN ECM AND SECONDARY AIR COMBINATION VALVE RELAY 2 CONNECTOR.** Measure the resistance between the secondary air combination valve relay 2 connector and chassis ground. ***Connector & terminal*** ***(F9) No. 9 — 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 secondary air combination valve relay 2 connector.
14	**CHECK HARNESS BETWEEN SECONDARY AIR COMBINATION VALVE RELAY 1 AND SECONDARY AIR COMBINATION VALVE LH CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Remove the secondary air combination valve relay 1 from the relay box. 3) Measure the resistance of the harness between the secondary air combination valve relay 1 and secondary air combination valve LH connector. ***Connector & terminal*** ***(F9) No. 3 — (E40) No. 6:***	Is the resistance less than 1 Ω?	Go to step **15**.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between secondary air combination valve relay 1 connector and secondary air combination valve LH connector • Poor contact of coupling connector
15	**CHECK SECONDARY AIR COMBINATION VALVE RELAY 1.** 1) Connect the battery to terminals No. 1 and No. 2 of the secondary air combination valve relay 1. 2) Measure the resistance between the secondary air combination valve relay 1 terminals. ***Terminals*** ***No. 3 — No. 4:***	Is the resistance less than 1 Ω?	Go to step **16**.	Replace the secondary air combination valve relay 1. <Ref. to EN(H4DOTC)(diag)-9, Electrical Component Location.>

	Step	Check	Yes	No
16	**CHECK SECONDARY AIR COMBINATION VALVE RELAY 1.** Measure the resistance between the secondary air combination valve relay 1 terminals with the battery disconnected. ***Terminals*** ***No. 3 — No. 4:***	Is the resistance 1 MΩ or more?	Go to step **17**.	Replace the secondary air combination valve relay 1. <Ref. to EN(H4DOTC)(diag)-9, Electrical Component Location.>
17	**CHECK SECONDARY AIR COMBINATION VALVE RELAY 1 POWER SUPPLY.** 1) Turn the ignition switch to ON. 2) Measure the voltage between the secondary air combination valve relay 1 connector and chassis ground. ***Connector & terminal*** ***(F9) No. 4 (+) — Chassis ground (–):*** ***(F9) No. 1 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **18**.	Repair the open or ground short circuit of power supply circuit.
18	**CHECK HARNESS BETWEEN ECM AND SECONDARY AIR COMBINATION VALVE RELAY 1 CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the ECM connector. 3) Measure the resistance of harness between ECM connector and secondary air combination valve relay 1 connector. ***Connector & terminal*** ***(B135) No. 8 — (F9) No. 2:***	Is the resistance less than 1 Ω?	Go to step **19**.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and secondary air combination valve relay 1 connector • Poor contact of coupling connector
19	**CHECK HARNESS BETWEEN ECM AND SECONDARY AIR COMBINATION VALVE RELAY 1 CONNECTOR.** Measure the resistance between the secondary air combination valve relay 1 connector and chassis ground. ***Connector & terminal*** ***(F9) No. 2 — 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 secondary air combination valve relay 1 connector.

FN:DTC P2443 SECONDARY AIR INJECTION SYSTEM SWITCHING VALVE STUCK CLOSED (BANK2)

NOTE:
For the diagnostic procedure, refer to DTC P2442. <Ref. to EN(H4DOTC)(diag)-453, DTC P2442 SECONDARY AIR INJECTION SYSTEM SWITCHING VALVE STUCK OPEN (BANK2), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

FO:DTC P2444 SECONDARY AIR INJECTION SYSTEM PUMP STUCK ON

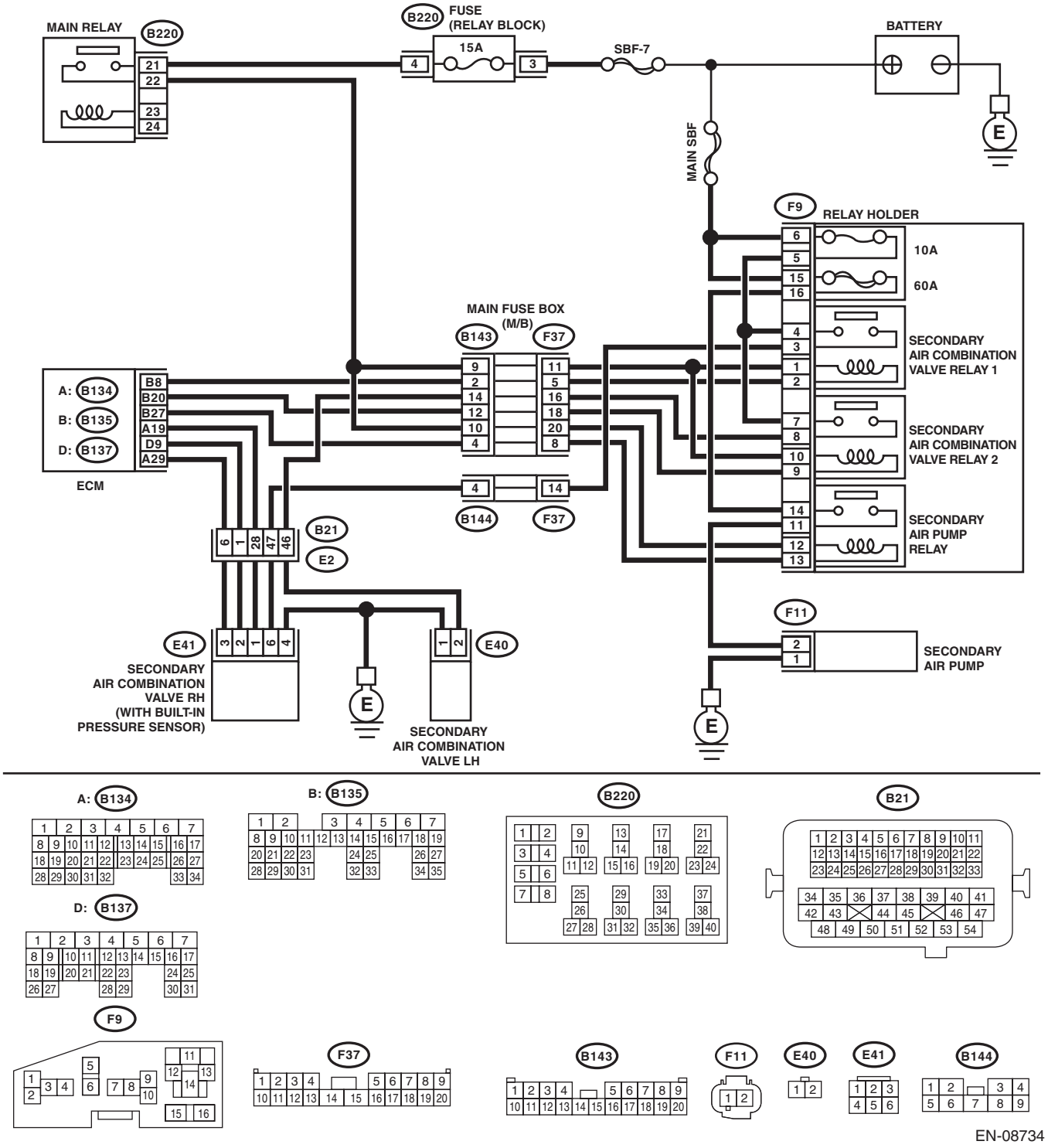
DTC DETECTING CONDITION:

- Immediately at fault recognition
- GENERAL DESCRIPTION <Ref. to GD(H4DOTC)-288, DTC P2444 SECONDARY AIR INJECTION SYSTEM PUMP STUCK ON, Diagnostic Trouble Code (DTC) Detecting Criteria.>

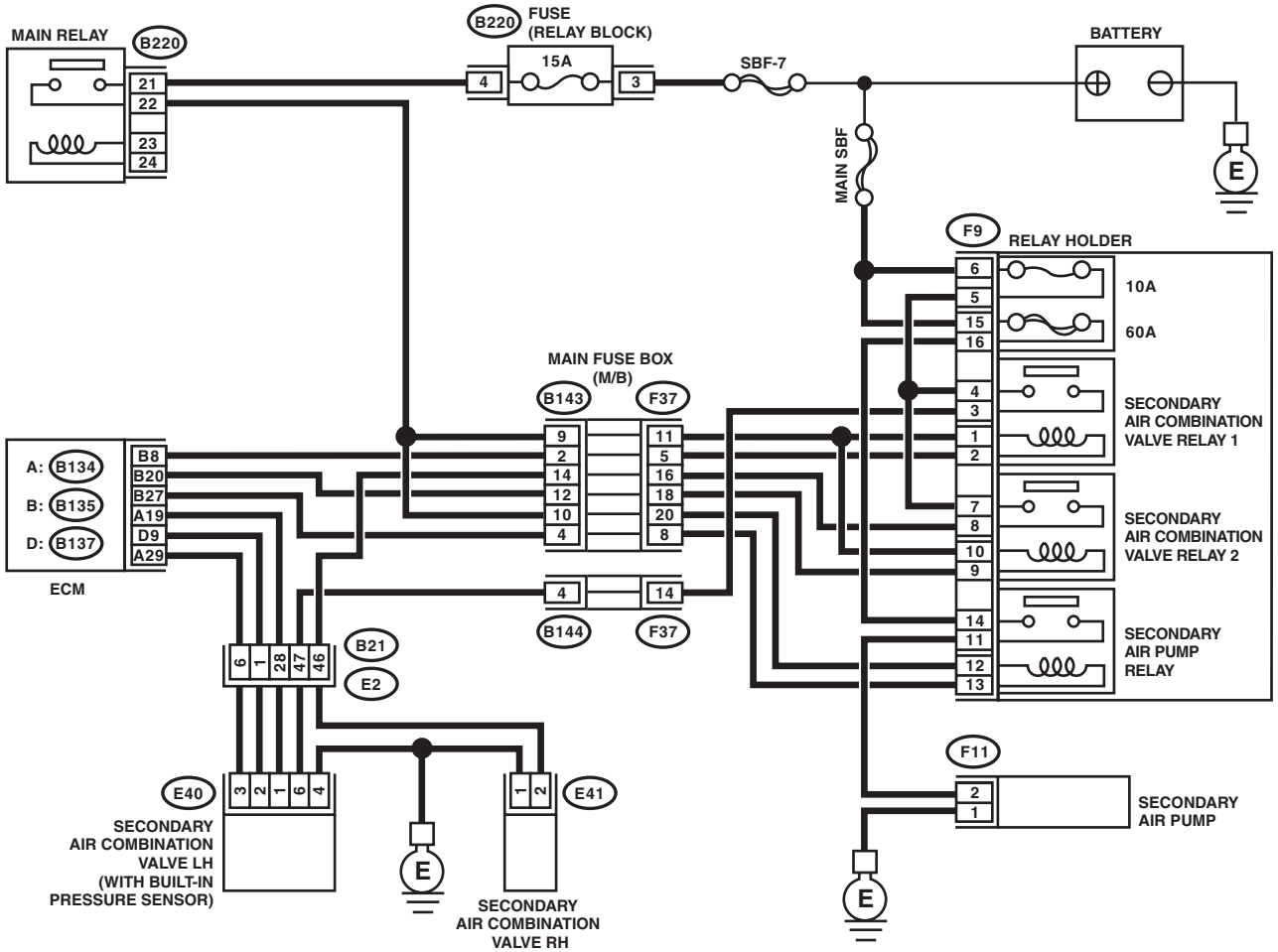
CAUTION:
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, PROCEDURE, Inspection Mode.>.

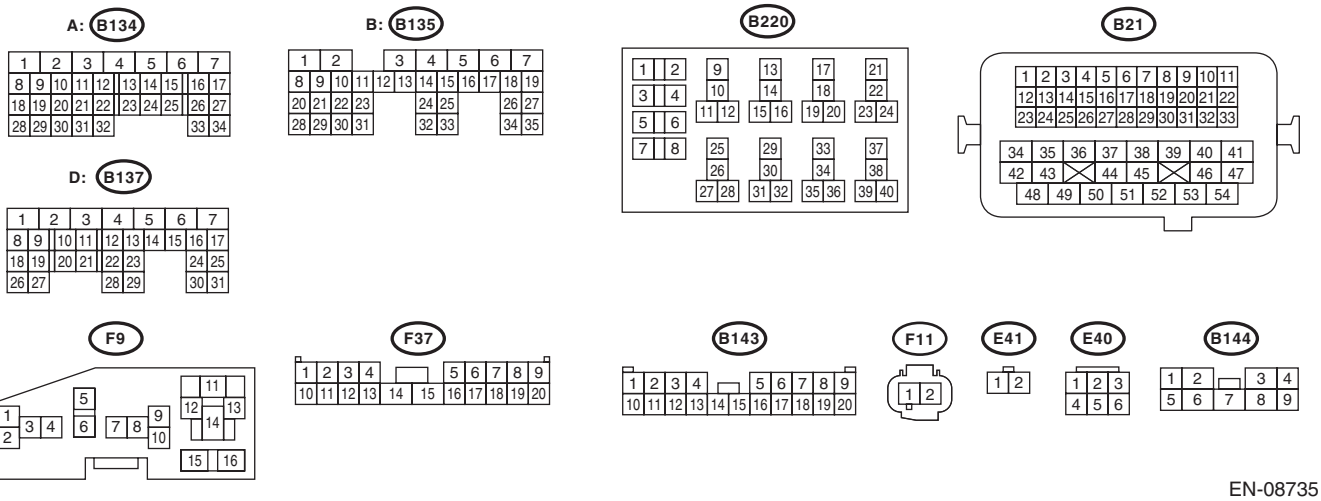
WIRING DIAGRAM:

• Models without SI-DRIVE <Ref. to WI-32, WITHOUT SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>



- Models with SI-DRIVE <Ref. to WI-48, WITH SI-DRIVE, WIRING DIAGRAM, Engine Electrical System.>





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	Step	Check	Yes	No
1	**CHECK SECONDARY AIR PIPING PRESSURE.** 1) Turn the ignition switch to ON. 2) Using the Subaru Select Monitor, read the value of «Sec. Air Piping Pressure», and compare with the actual atmospheric pressure. NOTE: For detailed operation procedures, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOTC)(diag)-40, Subaru Select Monitor.>	Is the difference between «Sec. Air Piping Pressure» and atmospheric pressure 50 mmHg (6.7 kPa, 2.0 inHg, 0.97 psig) or less?	Go to step **2**.	Replace the secondary air combination valve RH (models without SI-DRIVE) or LH (models with SI-DRIVE). <Ref. to EC(STI)-29, Secondary Air Combination Valve.> <Ref. to EC(w/o STI)-30, Secondary Air Combination Valve.>
2	**CHECK HARNESS BETWEEN ECM AND SECONDARY AIR PUMP RELAY CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Remove the secondary air pump relay from the relay holder. 3) Measure the resistance between the secondary air pump relay connector and engine ground terminals. ***Connector & terminal*** ***(F9) No. 13 — 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 secondary air pump relay connector, and go to the next step. Go to step **3**.
3	**CHECK SECONDARY AIR PUMP FUSE.** 1) Disconnect the secondary air pump connector. 2) Install the secondary air pump relay to the relay holder. 3) Check the MAIN SBF and the secondary air pump fuse (60 A) for blown out.	Is the fuse blown out?	Replace the fuse with a new part, and go to the next step. Go to step **4**.	Go to step **4**.
4	**CHECK SECONDARY AIR PUMP POWER SUPPLY.** 1) Disconnect the positive (+) terminal after disconnecting the negative (–) terminal of battery. 2) Measure the resistance between secondary air pump connector and battery cable positive terminal. ***Connector & terminal*** ***(F11) No. 2 — battery cable positive terminal:***	Is the resistance 1 MΩ or more?	Go to step **6**.	Go to step **5**.
5	**CHECK SECONDARY AIR PUMP RELAY.** 1) Remove the secondary air pump relay from the relay holder. 2) Measure the resistance between the secondary air pump relay terminals. ***Terminals*** ***No. 11 — No. 14:***	Is the resistance 1 MΩ or more?	Repair the short circuit to power of the secondary air pump, and go to the next step. Go to step **6**.	Replace the secondary air pump relay. <Ref. to EN(H4DOTC)(diag)-9, LOCATION, Electrical Component Location.> After replacement, go to the next step. Go to step **6**.

Step		Check	Yes	No
6	**CHECK SECONDARY AIR PUMP.** Check the appearance of secondary air pump and the condition of impeller.	Is the secondary air pump free from deformation, cracks and other damages? And does the impeller rotate smoothly?	End.	Replace the secondary air pump. <Ref. to EC(STI)-27, Secondary Air Pump.> <Ref. to EC(w/o STI)-29, Secondary Air Pump.>

FP: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(H4DOTC)-289, 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(H4DOTC)(diag)-63, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DOTC)(diag)-49, 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(H4DOTC)(diag)-87, List of Diagnostic Trouble Code (DTC).>	Replace the ECM. <Ref. to FU(STI)-59, Engine Control Module (ECM).> <Ref. to FU(w/o STI)-57, Engine Control Module (ECM).> NOTE: The soak timer IC is built into the ECM.

FQ:DTC U0073 CAN FAILURE, BUS ‘OFF’ DETECTION

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

FR:DTC U0122 CAN (VDC) DATA NOT LOADED

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

FS:DTC U0140 CAN (BCU) DATA NOT LOADED

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

FT:DTC U0416 CAN (VDC) DATA ABNORMAL

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

FU:DTC U0422 CAN (BCU) DATA ABNORMAL

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

21.Diagnostic Procedure without Diagnostic Trouble Code (DTC)

A: CHECK SI-DRIVE (SUBARU INTELLIGENT DRIVE) SYSTEM

DIAGNOSIS:
SI-DRIVE mode does not switch.

CAUTION:
Note that SI-DRIVE system operates the following controls when it switches the modes.
1. Switches to S (SPORT) when turning the engine ON after turning the engine OFF in S# (SPORT sharp) mode.
2. Returns to the mode last selected when turning the engine ON after turning the engine OFF in S (SPORT) or I (Intelligent) mode.
3. Switches to S (SPORT) when the malfunction indicator light illuminates while the engine is running. In this case, Cannot switch to S# (SPORT sharp) or I (Intelligent) mode.
4. Cannot switch to S# (SPORT sharp), when engine coolant temperature tells that overheating may occur. Switches to S (SPORT) while driving in S# (SPORT sharp) mode.