

ENGINE SECTION 2

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

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

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

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

FUEL INJECTION (FUEL SYSTEM) FU(H4DOTC)

EMISSION CONTROL (AUX. EMISSION CONTROL DEVICE) EC(H4DOTC)

INTAKE (INDUCTION) IN(H4DOTC)

MECHANICAL ME(H4DOTC)

EXHAUST EX(H4DOTC)

COOLING CO(H4DOTC)

LUBRICATION LU(H4DOTC)

SPEED CONTROL SYSTEM SP(H4DOTC)

IGNITION IG(H4DOTC)

STARTING/CHARGING SYSTEM SC(H4DOTC)

ENGINE (DIAGNOSTIC) EN(H4DOTC)

ENGINE (DIAGNOSTIC)

EN(H4DOTC)

	Page
1. Basic Diagnostics Procedure	2
2. Check List for Interview	4
3. General Description	6
4. Electrical Component Location	9
5. Engine Control Module (ECM) I/O Signal	23
6. Engine Condition Data	27
7. Transmission Control Module (TCM) I/O Signal	28
8. Data Link Connector	29
9. OBD-II General Scan Tool	30
10. Subaru Select Monitor.....	33
11. Read Diagnostic Trouble Code (DTC)	39
12. Inspection Mode.....	40
13. Drive Cycle.....	45
14. Clear Memory Mode.....	47
15. Compulsory Valve Operation Check Mode	48
16. Malfunction Indicator Light	50
17. Diagnostics for Engine Starting Failure	59
18. List of Diagnostic Trouble Code (DTC)	74
19. Diagnostic Procedure with Diagnostic Trouble Code (DTC)	80
20. General Diagnostic Table.....	295

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

19. Diagnostic Procedure with Diagnostic Trouble Code (DTC)

A: DTC P0011 “A” CAMSHAFT POSITION - TIMING OVER - ADVANCED OR SYSTEM PERFORMANCE (BANK 1)

DTC DETECTING CONDITION:

Detect as soon as the malfunction occurs.

TROUBLE SYMPTOM:

- Engine stalls.
- Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

Step	Check	Yes	No
<p>1 CHECK DTC ON DISPLAY.</p>	<p>Is any other DTC displayed?</p>	<p>Inspect the relevant DTC using “List of Diagnostic Trouble Code (DTC)”. <Ref. to EN(H4DOTC)-74, List of Diagnostic Trouble Code (DTC).></p>	<p>Go to step 2.</p>
<p>2 CHECK CURRENT DATA. 1) Start the engine and idle it. 2) Check the AVCS system operating angle and oil flow control solenoid valve duty output using Subaru Select Monitor or OBD-II general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedure, refer to “READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE”. <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • OBD-II general scan tool <p>For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</p>	<p>Is the AVCS system operating angle approx. 0 degree and oil flow control solenoid valve duty output approx. 10%?</p>	<p>A temporary poor malfunction. Perform the following to clean oil routing. Replace the engine oil, and then idle the engine for 5 minutes and replace the oil filter and engine oil.</p>	<p>Check the following and repair or replace it if necessary.</p> <ul style="list-style-type: none"> • Oil pipe (clogging) • Oil flow control solenoid valve (clogging or dirt of oil routing, spring setting, clogging of valve) • Intake camshaft (dirt, damage of camshaft) • Timing belt (alignment of timing mark)

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

B: DTC P0021 “A” CAMSHAFT POSITION - TIMING OVER - ADVANCED OR SYSTEM PERFORMANCE (BANK 2)

DTC DETECTING CONDITION:

Detect as soon as the malfunction occurs.

TROUBLE SYMPTOM:

- Engine stalls.
- Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using “List of Diagnostic Trouble Code (DTC)”. <Ref. to EN(H4DOTC)-74, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK CURRENT DATA. 1) Start the engine and idle it. 2) Check the AVCS system operating angle and oil flow control solenoid valve duty output using Subaru Select Monitor or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to “READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE”. <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.	Is the AVCS system operating angle approx. 0 degree and oil flow control solenoid valve duty output approx. 10%?	A temporary poor malfunction. Perform the following to clean oil routing. Replace the engine oil, and then idle the engine for 5 minutes and replace the oil filter and engine oil.	Check the following and repair or replace it if necessary. <ul style="list-style-type: none"> • Engine oil (amount, dirt) • Oil pipe (clogging) • Oil flow control solenoid valve (clogging or dirt of oil routing, spring setting, clogging of valve) • Intake camshaft (dirt, damage of camshaft) • Timing belt (alignment of timing mark)

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

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

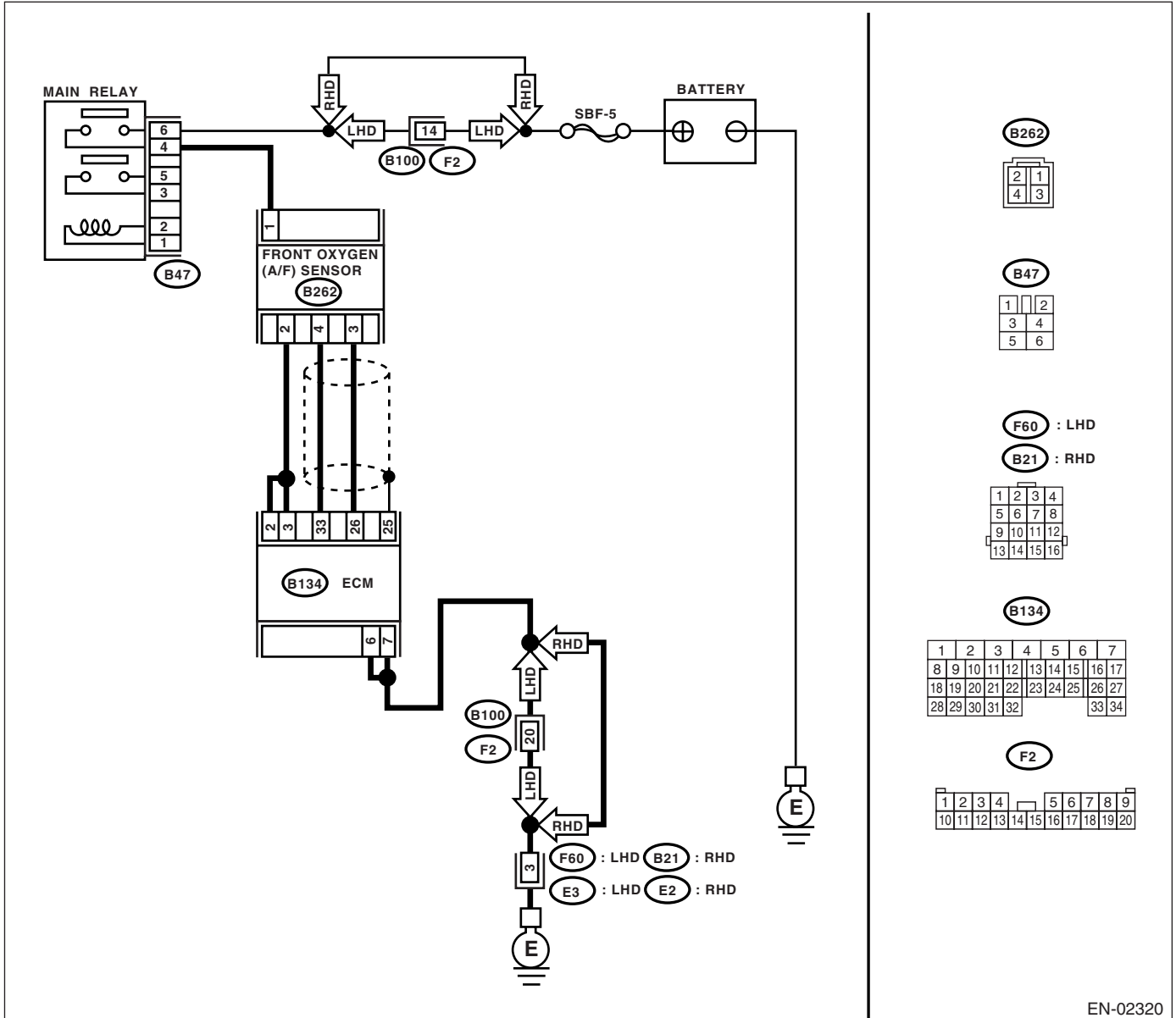
DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02320

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>1 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.</p> <p>1) Start the engine, and warm-up the engine. 2) Turn the ignition switch to OFF. 3) Disconnect the connector from ECM and front oxygen (A/F) sensor. 4) Measure the resistance of harness between ECM and front oxygen (A/F) sensor connector.</p> <p>Connector & terminal (B134)No. 2 — (B262)No. 2: (B134)No. 3 — (B262)No. 2:</p>	Is the resistance less than 1 Ω ?	Go to step 2.	Repair the open circuit in harness between ECM and front oxygen (A/F) sensor connector.
<p>2 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.</p> <p>Measure the resistance of harness between ECM and front oxygen (A/F) sensor connector.</p> <p>Connector & terminal (B134) No. 33 — (B262) No. 4: (B134) No. 26 — (B262) No. 3:</p>	Is the resistance less than 1 Ω ?	Go to step 3.	Repair the open circuit in harness between ECM and front oxygen (A/F) sensor connector.
<p>3 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.</p> <p>Measure the resistance of harness between main relay and front oxygen (A/F) sensor connector.</p> <p>Connector & terminal (B47) No. 4 — (B262) No. 1:</p>	Is the resistance less than 1 Ω ?	Go to step 4.	Repair the open circuit in harness between ECM and front oxygen (A/F) sensor connector.
<p>4 CHECK FRONT OXYGEN (A/F) SENSOR.</p> <p>Measure the resistance between front oxygen (A/F) sensor connector terminals.</p> <p>Terminals No. 2 — No. 1:</p>	Is the resistance less than 5 Ω ?	Go to step 5.	Replace the front oxygen (A/F) sensor. <Ref. to FU(H4DOTC)-45, Front Oxygen (A/F) Sensor.>
<p>5 CHECK POOR CONTACT.</p> <p>Check poor contact in ECM and front oxygen (A/F) sensor connector.</p>	Is there poor contact in ECM or front oxygen (A/F) sensor connector?	Repair the poor contact in ECM and front oxygen (A/F) sensor.	Replace the front oxygen (A/F) sensor. <Ref. to FU(H4DOTC)-45, Front Oxygen (A/F) Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

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

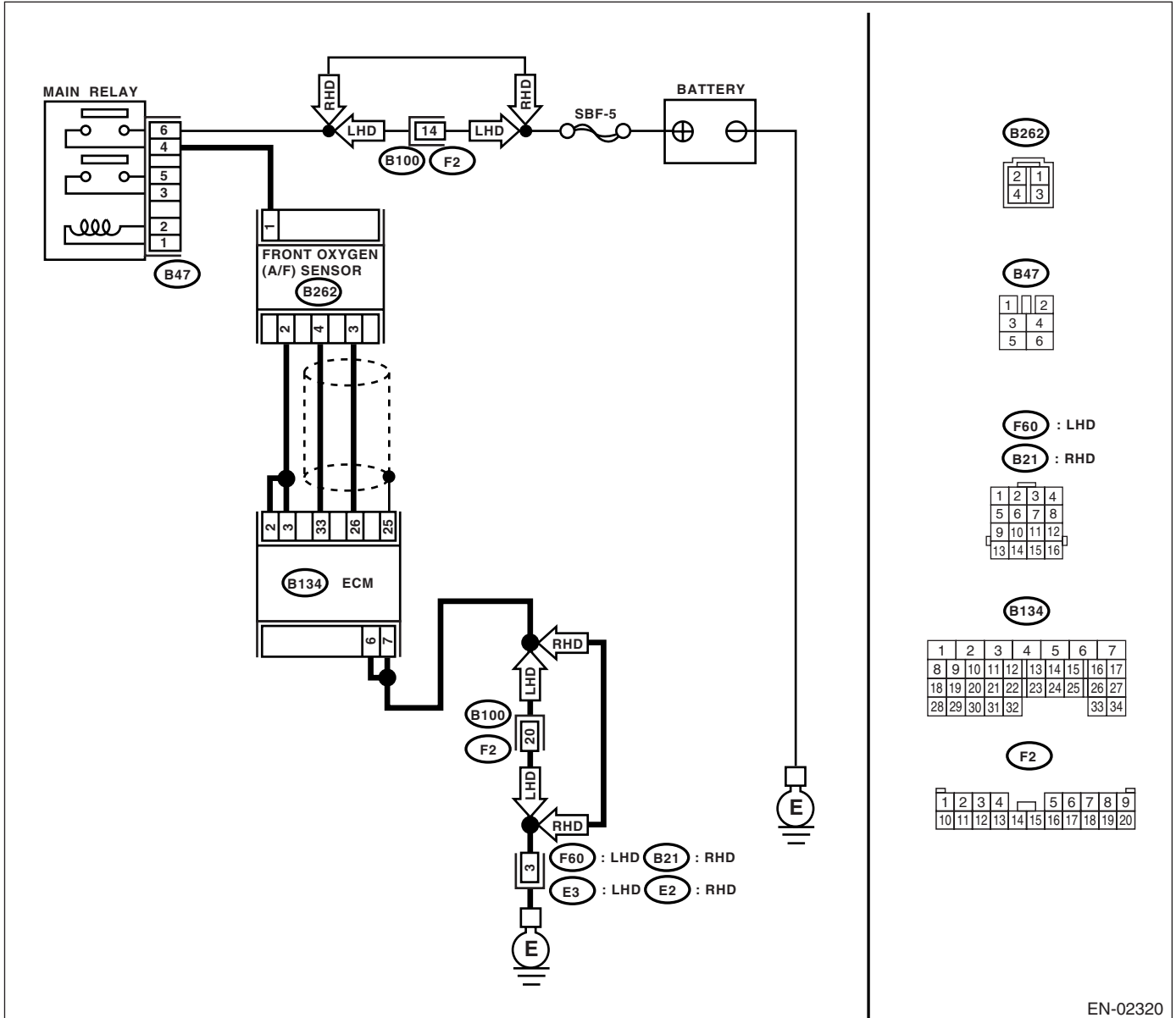
DTC DETECTING CONDITION:

Detect as soon as the malfunction occurs.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02320

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>1</p> <p>CHECK POWER SUPPLY TO FRONT OXYGEN (A/F) SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from front oxygen (A/F) sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between front oxygen (A/F) sensor connector and engine ground. Connector & terminal (B262) No. 1 (+) — Engine ground (-):</p>	Is the voltage more than 10 V?	Go to step 2.	Repair the power supply line. NOTE: In this case repair the following: • Open circuit in harness between main relay and front oxygen (A/F) sensor • CHECK POOR CONTACT OF FRONT OXYGEN (A/F) SENSOR. • Poor contact in main relay connector
<p>2</p> <p>CHECK GROUND CIRCUIT FOR ECM. Measure the resistance of harness between ECM connector and chassis ground. Connector & terminal (B134) No. 6 — Chassis ground: (B134) No. 7 — Chassis ground:</p>	Is the resistance less than 5 Ω ?	Go to step 3.	Repair the harness and connector. NOTE: In this case repair the following: • Open circuit in harness between ECM and engine ground cable • Poor contact in ECM connector. • Poor contact in coupling connector
<p>3</p> <p>CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of front oxygen (A/F) sensor heater current using Subaru Select Monitor or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</p>	Is the current more than 0.2 A?	Repair poor contact connector. NOTE: In this case repair the following: • Poor contact in front oxygen (A/F) sensor connector • Poor contact in ECM connector.	Go to step 4.
<p>4</p> <p>CHECK OUTPUT SIGNAL FROM ECM. 1) Start and idle the engine. 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B134) No. 2 (+) — Chassis ground (-):</p>	Is the voltage less than 1 V?	Go to step 6.	Go to step 5.
<p>5</p> <p>CHECK OUTPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B134) No. 2 (+) — Chassis ground (-):</p>	Does the voltage change by shaking the harness and connector of ECM while monitoring the value with voltage meter?	Repair the poor contact in ECM connector.	Go to step 6.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
6 CHECK OUTPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. <i>Connector & terminal</i> <i>(B134) No. 3 (+) — Chassis ground (-):</i>	Is the voltage less than 1 V?	Go to step 8 .	Go to step 7 .
7 CHECK OUTPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. <i>Connector & terminal</i> <i>(B134) No. 3 (+) — Chassis ground (-):</i>	Does the voltage change by shaking the harness and connector of ECM while monitoring the value with voltage meter?	Repair the poor contact in ECM connector.	Go to step 8 .
8 CHECK FRONT OXYGEN (A/F) SENSOR. 1) Turn the ignition switch to OFF. 2) Measure the resistance between front oxygen (A/F) sensor connector terminals. <i>Terminals</i> <i>No. 2 — No. 1:</i>	Is the resistance less than 10 Ω ?	Repair the harness and connector. NOTE: In this case repair the following: <ul style="list-style-type: none"> • Open or ground short circuit in harness between front oxygen (A/F) sensor and ECM connector • Poor contact in front oxygen (A/F) sensor connector • Poor contact in ECM connector. 	Replace the front oxygen (A/F) sensor. <Ref. to FU(H4DOTC)-45, Front Oxygen (A/F) Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

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

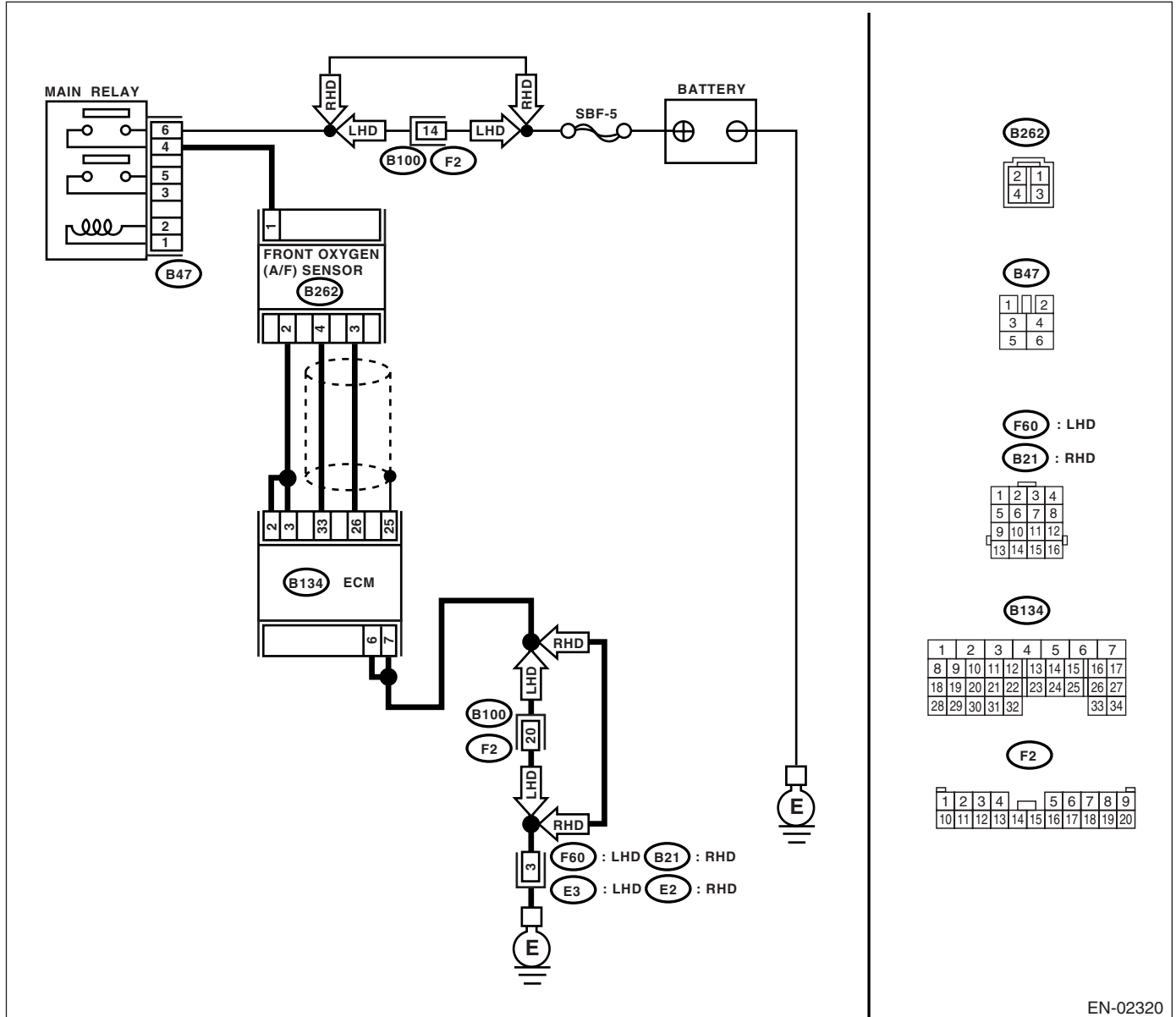
DTC DETECTING CONDITION:

Detect as soon as the malfunction occurs.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02320

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal <i>(B134) No. 2 (+) — Chassis ground (-):</i> <i>(B134) No. 3 (+) — Chassis ground (-):</i>	Is the voltage more than 8 V?	Go to step 3.	Go to step 2.
2 CHECK FRONT OXYGEN (A/F) SENSOR HEATER CURRENT. 1) Turn the ignition switch to OFF. 2) Repair the battery short circuit in harness between ECM and front oxygen (A/F) sensor connector. 3) Turn the ignition switch to ON. 4) Read the data of front oxygen (A/F) sensor heater current using Subaru Select Monitor or OBD-II general scan tool. NOTE: <ul style="list-style-type: none"> • Subaru Select Monitor For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.> <ul style="list-style-type: none"> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.	Is the current more than 2.3 A?	Replace the ECM. <Ref. to FU(H4DOTC)-50, Engine Control Module (ECM).>	END.
3 CHECK OUTPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal <i>(B134) No. 2 (+) — Chassis ground (-):</i> <i>(B134) No. 3 (+) — Chassis ground (-):</i>	Does the voltage change by shaking the harness and connector of ECM while monitoring the value with voltage meter?	Repair the battery short circuit in harness between ECM and front oxygen (A/F) sensor connector.	END.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

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

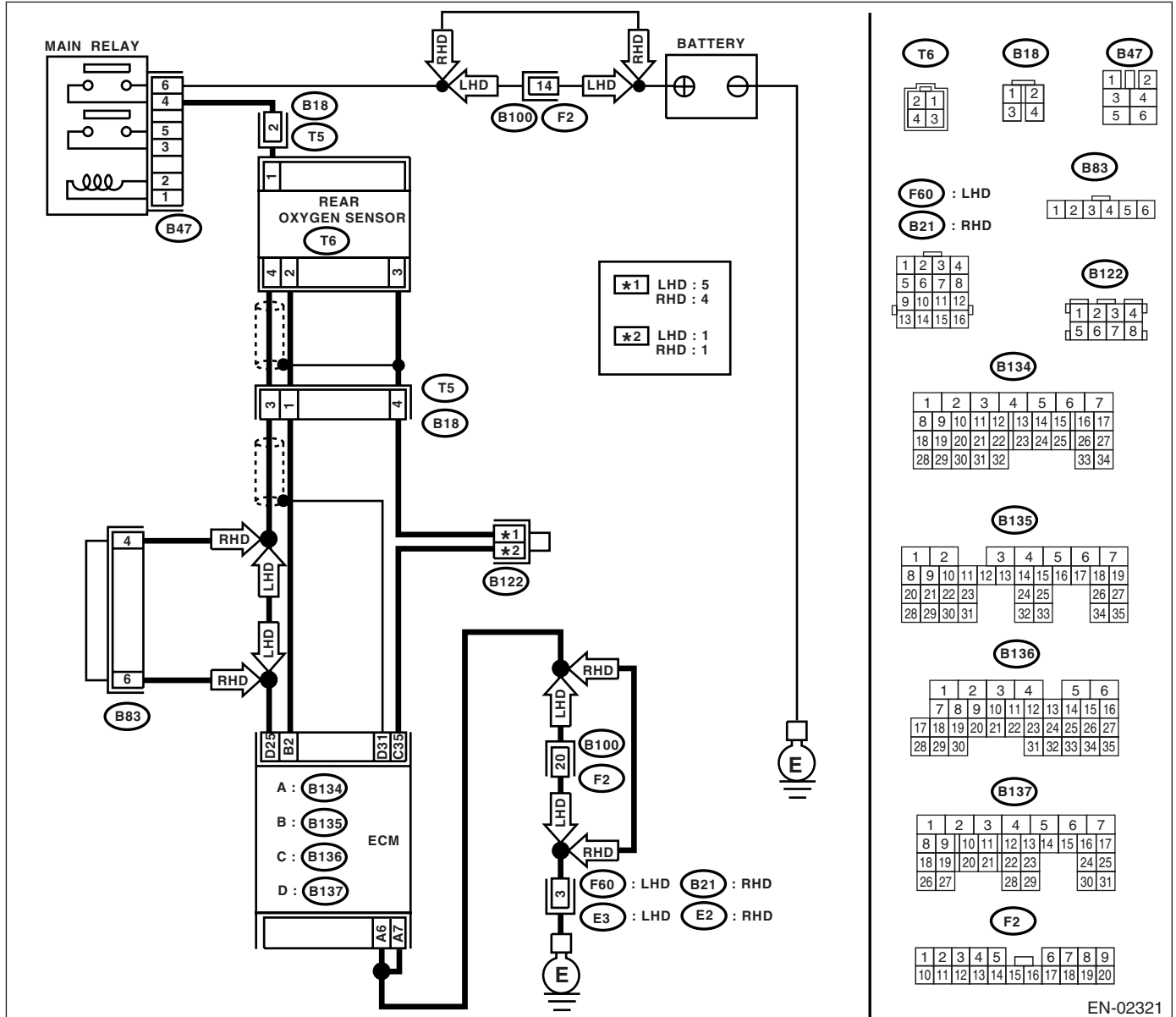
DTC DETECTING CONDITION:

Detect as soon as the malfunction occurs.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02321

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK GROUND CIRCUIT FOR ECM. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM connector and chassis ground. Connector & terminal (B134) No. 6 — Chassis ground: (B134) No. 7 — Chassis ground:	Is the resistance less than 5 Ω ?	Go to step 2.	Repair the harness and connector. NOTE: In this case repair the following: <ul style="list-style-type: none"> • Open circuit in harness between ECM and engine ground cable • Poor contact in ECM connector. • Poor contact in coupling connector
2 CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of rear oxygen (A/F) sensor heater current using Subaru Select Monitor or OBD-II general scan tool. NOTE: <ul style="list-style-type: none"> • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.> <ul style="list-style-type: none"> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.	Is the current more than 0.2 A?	Repair the connector. NOTE: In this case repair the following: <ul style="list-style-type: none"> • Poor contact in rear oxygen sensor connector • Poor contact in rear oxygen sensor connecting harness connector • Poor contact in ECM connector. 	Go to step 3.
3 CHECK OUTPUT SIGNAL FROM ECM. 1) Start and idle the engine. 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 2 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Go to step 6.	Go to step 4.
4 CHECK OUTPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 2 (+) — Chassis ground (-):	Does the voltage change by shaking the harness and connector of ECM while monitoring the value with voltage meter?	Repair the poor contact in ECM connector.	Go to step 5.
5 CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from rear oxygen sensor. 3) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 2 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Replace the ECM. <Ref. to FU(H4DOTC)-50, Engine Control Module (ECM).>	Repair battery short circuit in harness between ECM and rear oxygen sensor connector. After repair, replace the ECM. <Ref. to FU(H4DOTC)-50, Engine Control Module (ECM).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>6</p> <p>CHECK POWER SUPPLY TO REAR OXYGEN SENSOR.</p> <p>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 or chassis ground.</p> <p>Connector & terminal (T6) No. 1 (+) — Chassis ground (-):</p>	<p>Is the voltage more than 10 V?</p>	<p>Go to step 7.</p>	<p>Repair the power supply line.</p> <p>NOTE: In this case repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between main relay and rear oxygen sensor connector • Poor contact in rear oxygen sensor connector • Poor contact in coupling connector
<p>7</p> <p>CHECK REAR OXYGEN SENSOR.</p> <p>1) Turn the ignition switch to OFF. 2) Measure the resistance between rear oxygen sensor connector terminals.</p> <p>Terminals No. 1 — No. 2:</p>	<p>Is the resistance less than 30 Ω?</p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between rear oxygen sensor and ECM connector • Poor contact in rear oxygen sensor connector • Poor contact in ECM connector. • Poor contact in coupling connector 	<p>Replace the rear oxygen sensor. <Ref. to FU(H4DOTC)-47, Rear Oxygen Sensor.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

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

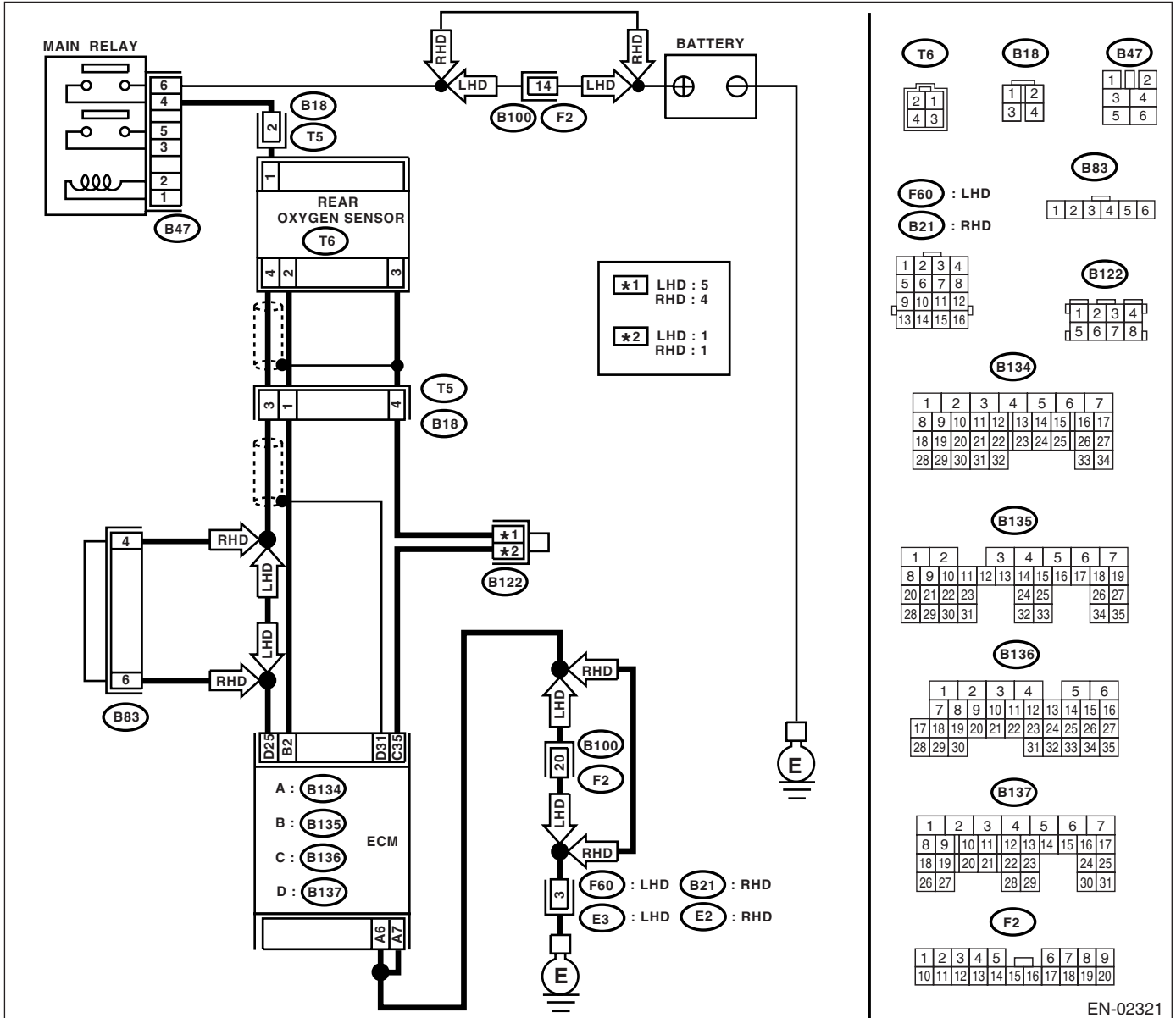
DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02321

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK INPUT SIGNAL FROM ECM. 1) Turn the ignition switch to OFF. 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B135) No. 2 (+) — Chassis ground (-):	Is the voltage more than 8 V?	Go to step 2.	Go to step 3.
2 CHECK CURRENT DATA. 1) Repair battery short circuit in harness between ECM and rear oxygen sensor connector. 2) Turn the ignition switch to ON. 3) Read the data of rear oxygen (A/F) sensor heater current using Subaru Select Monitor or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.	Is the current more than 7 A?	Replace the ECM. <Ref. to FU(H4DOTC)-50, Engine Control Module (ECM).>	END.
3 CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair the poor contact in ECM connector.	END.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

H: DTC P0068 MANIFOLD PRESSURE SENSOR RANGE/PERFORMANCE

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

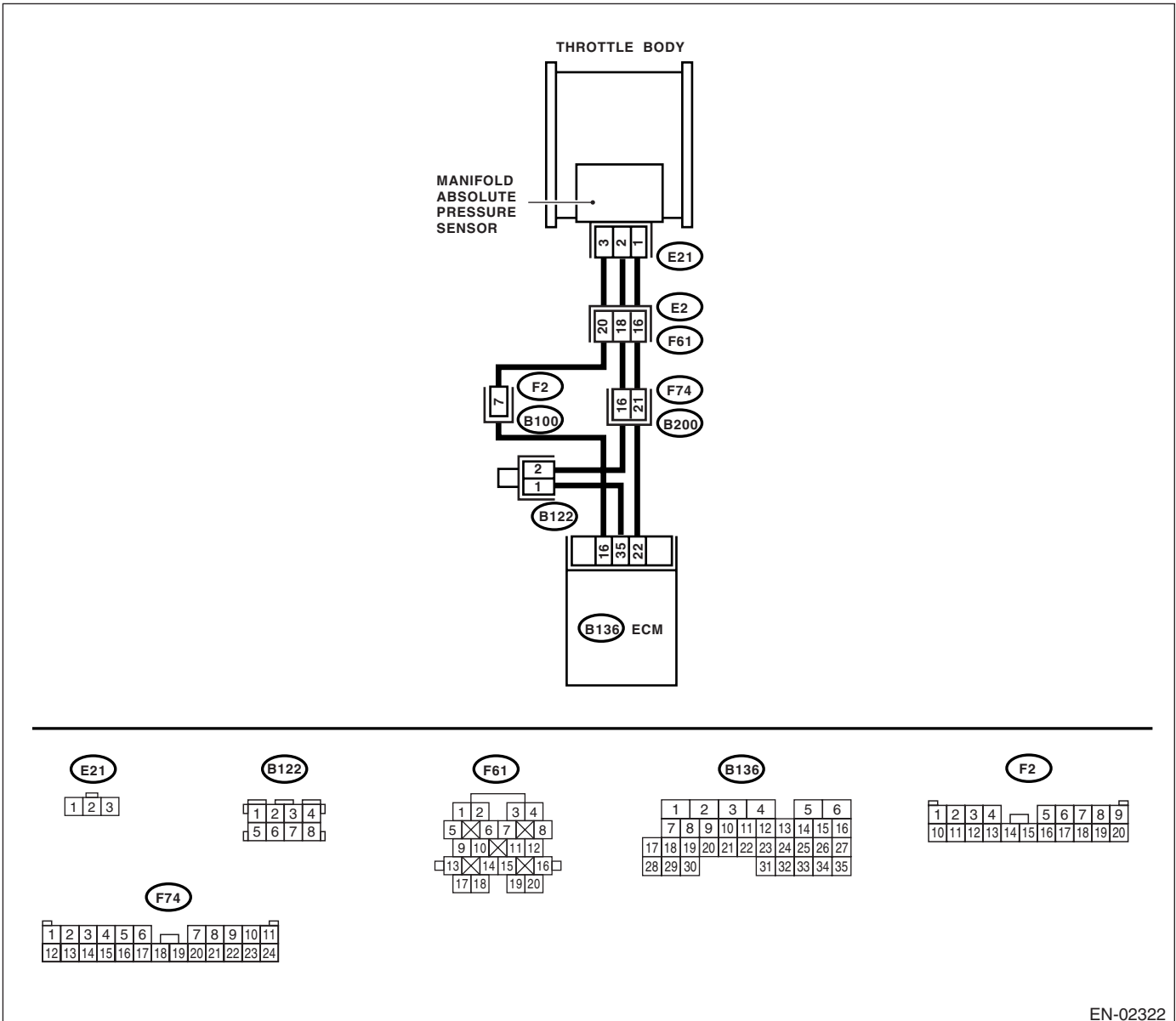
Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:

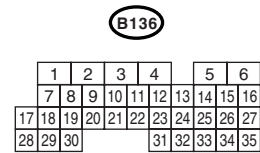
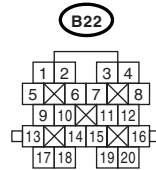
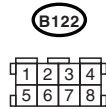
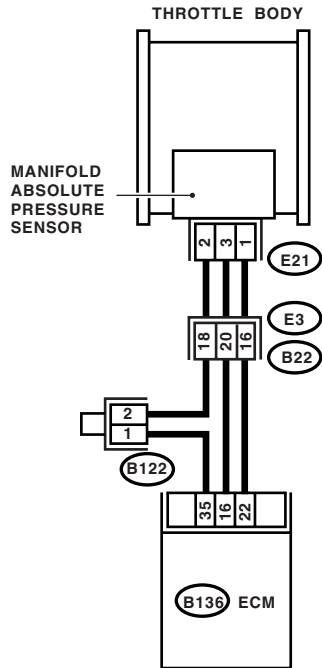
- LHD model



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

- RHD model



EN-02323

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK IDLE SWITCH SIGNAL. 1) Turn the ignition switch to ON. 2) Operate the LED operation mode for engine using Subaru Select Monitor. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "LED OPERATION MODE FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.>	Does the LED of {Idle Switch Signal} come on?	Go to step 2.	Check the throttle position sensor circuit. <Ref. to EN(H4DOTC)-122, DTC P0121 THROTTLE/ PEDAL POSITION SENSOR/ SWITCH "A" CIRCUIT RANGE/ PERFORMANCE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0106.
2 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Check related DTC. "List of Diagnostic Trouble Code (DTC)" <Ref. to EN(H4DOTC)-74, List of Diagnostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0106.	Go to step 3.
3 CHECK MANIFOLD ABSOLUTE PRESSURE SENSOR CONDITION.	Is the manifold absolute pressure sensor installation bolt tightened securely?	Go to step 4.	Tighten manifold absolute pressure sensor installation bolt securely.
4 CHECK CONDITION OF THROTTLE BODY.	Is the throttle body installation bolt tightened securely?	Replace the manifold absolute pressure sensor. <Ref. to FU(H4DOTC)-36, Manifold Absolute Pressure Sensor.>	Tighten throttle body installation bolt securely.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

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

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

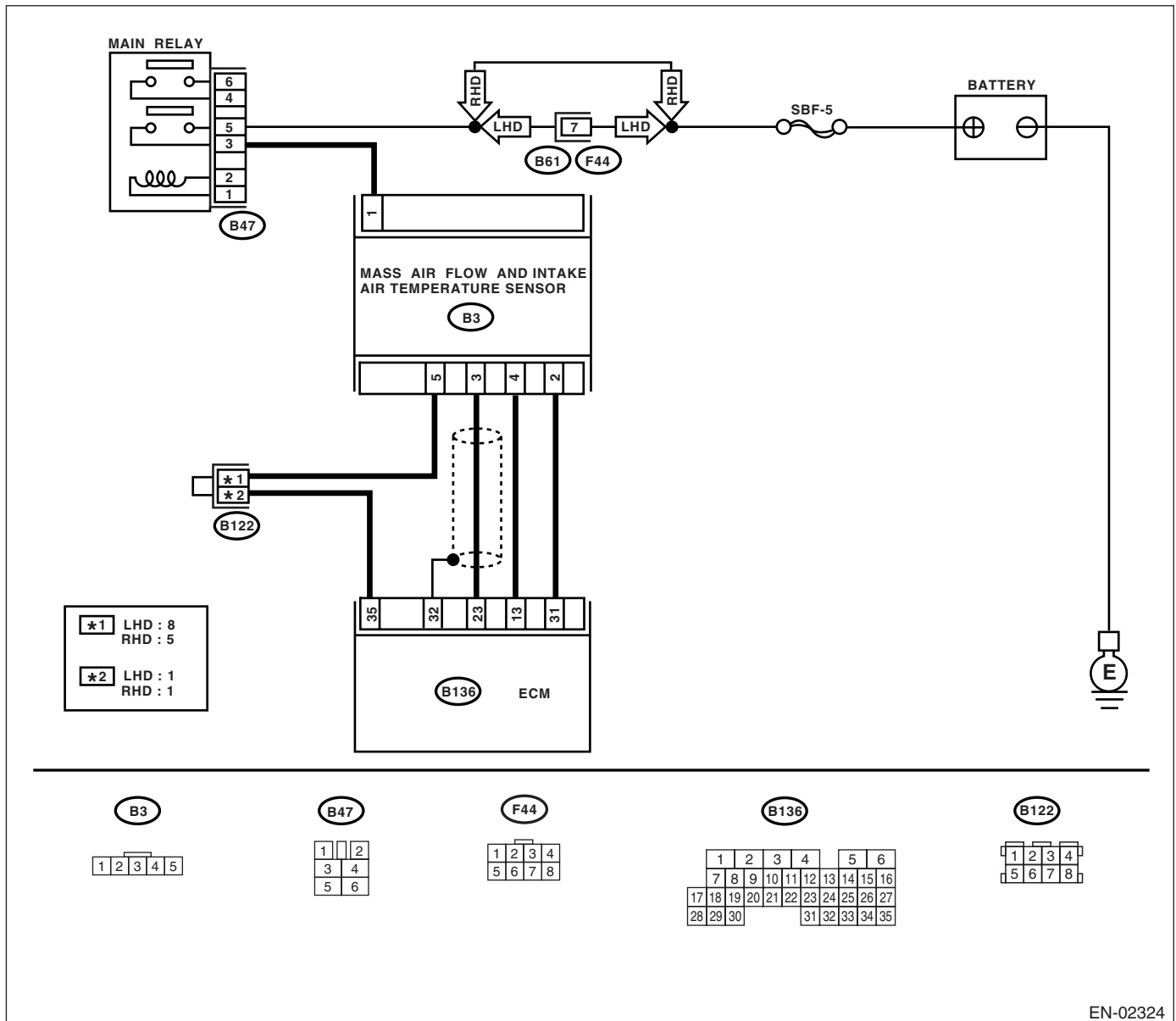
TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02324

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4DOTC)-74, List of Diagnostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0101.	Replace the mass air flow and intake air temperature sensor. <Ref. to FU(H4DOTC)-35, Mass Air Flow and Intake Air Temperature Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

J: DTC P0102MASS OR VOLUME AIR FLOW CIRCUIT LOW INPUT

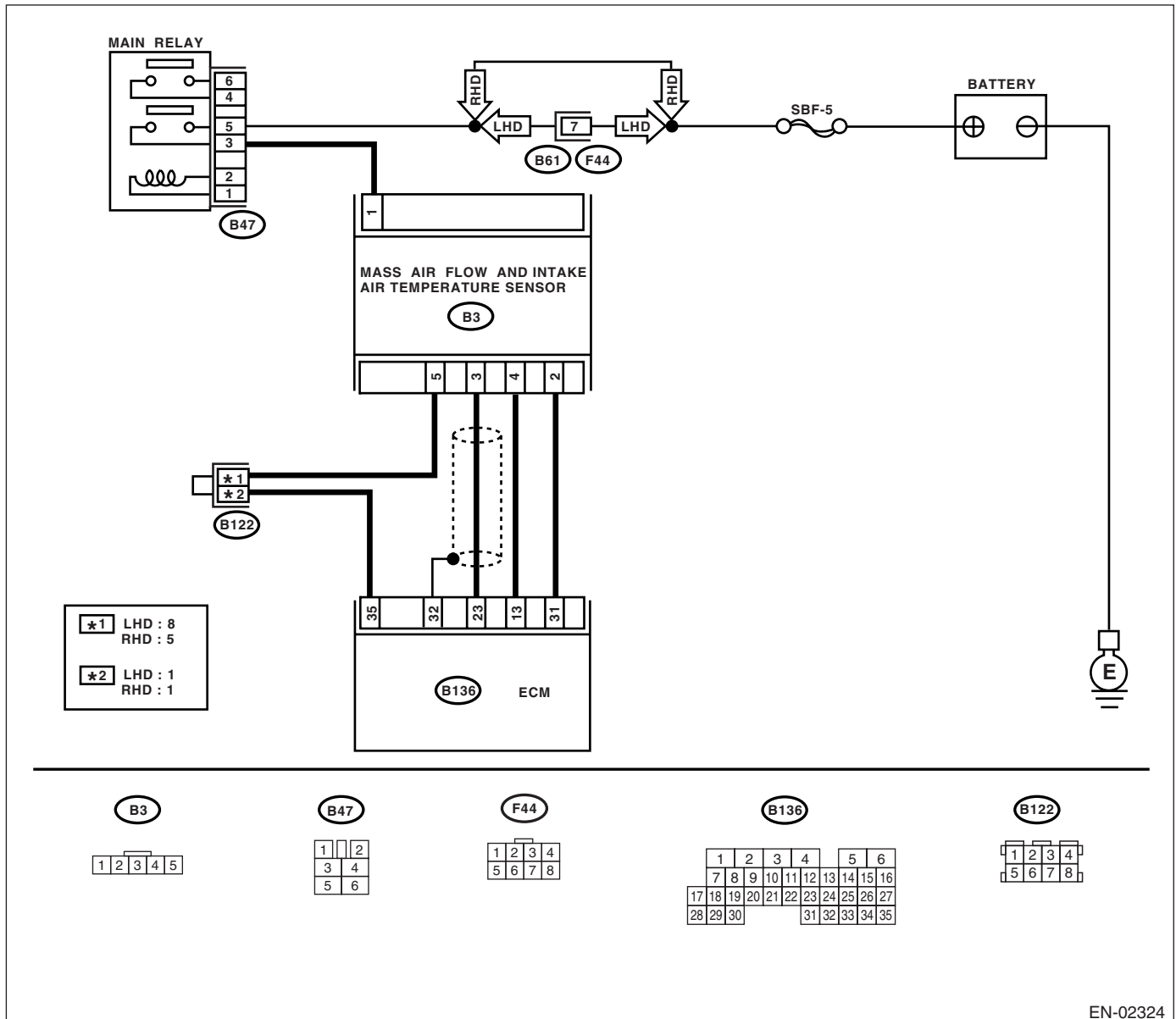
DTC DETECTING CONDITION:

Immediately at fault recognition

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

WIRING DIAGRAM:



EN-02324

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>1 CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.</p> <p>1) Turn the ignition switch to OFF. 2) Connect the Subaru Select Monitor or the OBD-II general scan tool to data link connector. 3) Turn the ignition switch to ON and the Subaru Select Monitor or OBD-II general scan tool switch to ON. 4) Start the engine. 5) Connect the Subaru Select Monitor or OBD-II general scan tool, and read the mass air flow sensor voltage.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • OBD-II general scan tool <p>For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</p>	Is the voltage 0.2 — 4.7 V?	Even if the malfunction indicator light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the mass air flow sensor.	Go to step 2.
<p>2 CHECK INPUT SIGNAL FROM ECM.</p> <p>Measure the voltage between ECM connector and chassis ground while engine is idling.</p> <p>Connector & terminal (B136) No. 23 (+) — Chassis ground (-):</p>	Is the voltage more than 0.2 V?	Go to step 4.	Go to step 3.
<p>3 CHECK INPUT SIGNAL FOR ECM (WITH SUBARU SELECT MONITOR).</p> <p>Measure the voltage between ECM connector and chassis ground while engine is idling.</p>	Does the voltage change by shaking the harness and connector of ECM while monitoring the value with Subaru Select Monitor?	Repair the poor contact in ECM connector.	Contact the SUBARU dealer. NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.
<p>4 CHECK POWER SUPPLY TO MASS AIR FLOW SENSOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from mass air flow sensor. 3) Turn the ignition switch to ON. 4) Measure voltage between mass air flow sensor connector and chassis ground.</p> <p>Connector & terminal (B3) No. 1 (+) — Chassis ground (-):</p>	Is the voltage more than 5 V?	Go to step 5.	Repair open circuit between mass air flow sensor and main relay

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
5 CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM and mass air flow sensor connector. <i>Connector & terminal</i> (B136) No. 23 — (B3) No. 3: (B136) No. 31 — (B3) No. 2: (B135) No. 35 — (B3) No. 5:	Is the resistance less than 1 Ω ?	Go to step 6.	Repair open circuit between ECM and mass air flow sensor connector.
6 CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW SENSOR CONNECTOR. Measure the resistance of harness between ECM and chassis ground. <i>Connector & terminal</i> (B136) No. 23 — Chassis ground: (B136) No. 31 — Chassis ground: (B135) No. 35 — Chassis ground:	Is the resistance more than 1 M Ω ?	Go to step 7.	Repair ground short circuit between ECM and mass air flow sensor connector.
7 CHECK POOR CONTACT. Check poor contact in mass air flow sensor connector.	Is there poor contact in mass air flow sensor connector?	Repair poor contact in mass air flow sensor connector.	Replace the mass air flow and intake air temperature sensor. <Ref. to FU(H4DOTC)-35, Mass Air Flow and Intake Air Temperature Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

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

DTC DETECTING CONDITION:

Immediately at fault recognition

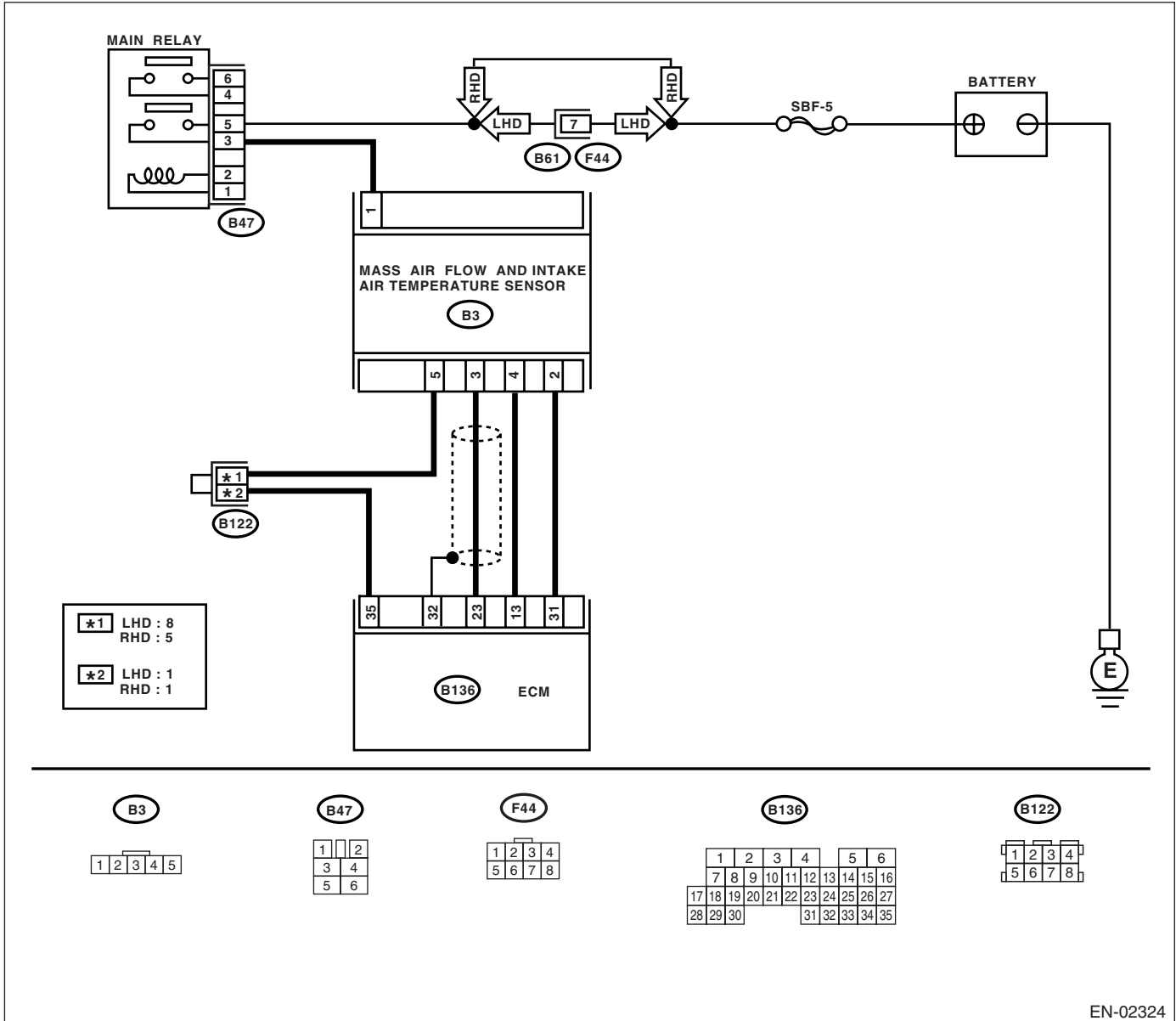
TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>

WIRING DIAGRAM:



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>1 CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.</p> <p>1) Turn the ignition switch to OFF. 2) Connect the Subaru Select Monitor or the OBD-II general scan tool to data link connector. 3) Turn the ignition switch to ON and the Subaru Select Monitor or OBD-II general scan tool switch to ON. 4) Start the engine. 5) Connect the Subaru Select Monitor or OBD-II general scan tool, and read the mass air flow sensor voltage.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • OBD-II general scan tool <p>For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</p>	<p>Is the voltage 0.2 — 4.7 V?</p>	<p>Even if the malfunction indicator light illuminates, the circuit has returned to a normal condition at this time.</p>	<p>Go to step 2.</p>
<p>2 CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from mass air flow sensor. 3) Turn the ignition switch to ON. 4) Measure voltage between mass air flow sensor connector and chassis ground.</p> <p>Connector & terminal (B3) No. 3 (+) — Chassis ground (-):</p>	<p>Is the voltage more than 5 V?</p>	<p>Repair battery short circuit in harness between mass air flow sensor connector and ECM connector.</p>	<p>Go to step 3.</p>
<p>3 CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM connector and mass air flow sensor connector.</p> <p>Connector & terminal (B3) No. 2 — (B136) No. 31:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Replace the mass air flow sensor. <Ref. to FU(H4DOTC)-35, Mass Air Flow and Intake Air Temperature Sensor.></p>	<p>Repair open circuit in harness between mass air flow sensor connector and ECM connector.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

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

DTC DETECTING CONDITION:

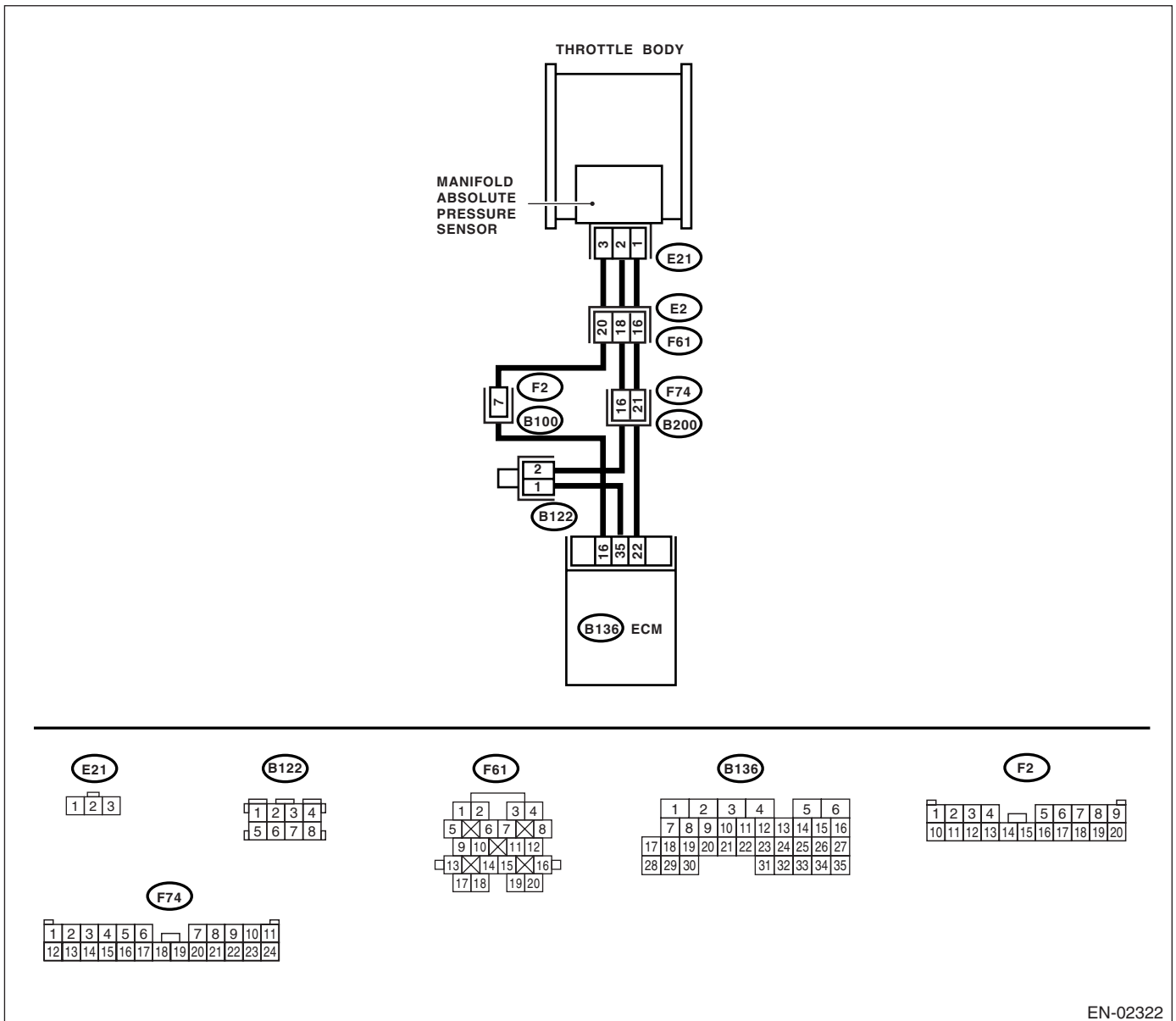
Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:

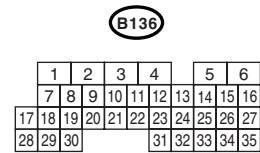
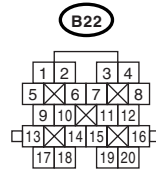
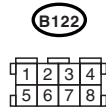
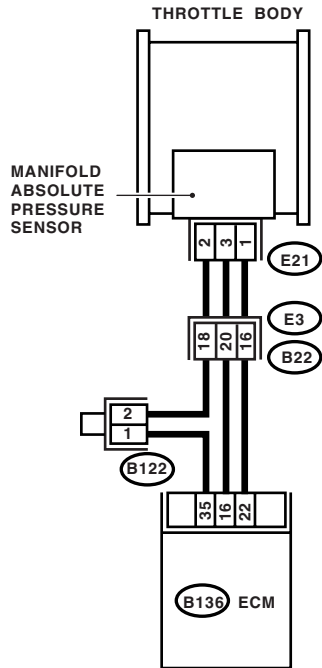
- LHD model



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

- RHD model



EN-02323

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. <i>Connector & terminal</i> <i>(B136) No. 16 (+) — Chassis ground (-):</i>	Is the voltage more than 4.5 V?	Go to step 3.	Go to step 2.
2 CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. <i>Connector & terminal</i> <i>(B136) No. 16 (+) — Chassis ground (-):</i>	Does the voltage change by shaking the harness and connector of ECM while monitoring the value with voltage meter?	Repair the poor contact in ECM connector.	Contact the SUBARU dealer. NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.
3 CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM and chassis ground. <i>Connector & terminal</i> <i>(B136) No. 22 (+) — Chassis ground (-):</i>	Is the voltage less than 0.7 V?	Go to step 4.	Contact the SUBARU dealer. NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.
4 CHECK HARNESS BETWEEN ECM AND MANIFOLD ABSOLUTE PRESSURE SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the manifold absolute pressure sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between manifold absolute pressure sensor connector and engine ground. <i>Connector & terminal</i> <i>(E21) No. 3 (+) — Engine ground (-):</i>	Is the voltage more than 4.5 V?	Go to step 5.	Repair the open circuit in harness between ECM and manifold absolute pressure sensor connector.
5 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 and manifold absolute pressure sensor connector. <i>Connector & terminal</i> <i>(B136) No. 35 — (E21) No. 2:</i>	Is the resistance less than 1 Ω ?	Go to step 6.	Repair the open circuit in harness between ECM and manifold absolute pressure sensor connector.
6 CHECK HARNESS BETWEEN ECM AND MANIFOLD ABSOLUTE PRESSURE SENSOR CONNECTOR. Measure the resistance of harness between manifold absolute pressure sensor connector and engine ground. <i>Connector & terminal</i> <i>(E21) No. 1 — Engine ground:</i>	Is the resistance more than 1 M Ω ?	Go to step 7.	Repair the ground short circuit in harness between ECM and manifold absolute pressure sensor connector.
7 CHECK POOR CONTACT. Check poor contact in manifold absolute pressure sensor connector.	Is there poor contact in manifold absolute pressure sensor connector?	Repair poor contact in manifold absolute pressure sensor connector.	Replace the manifold absolute pressure sensor. <Ref. to FU(H4DOTC)-36, Manifold Absolute Pressure Sensor.>

M: DTC P0108 INTAKE AIR PRESSURE SENSOR CIRCUIT HIGH INPUT

DTC DETECTING CONDITION:

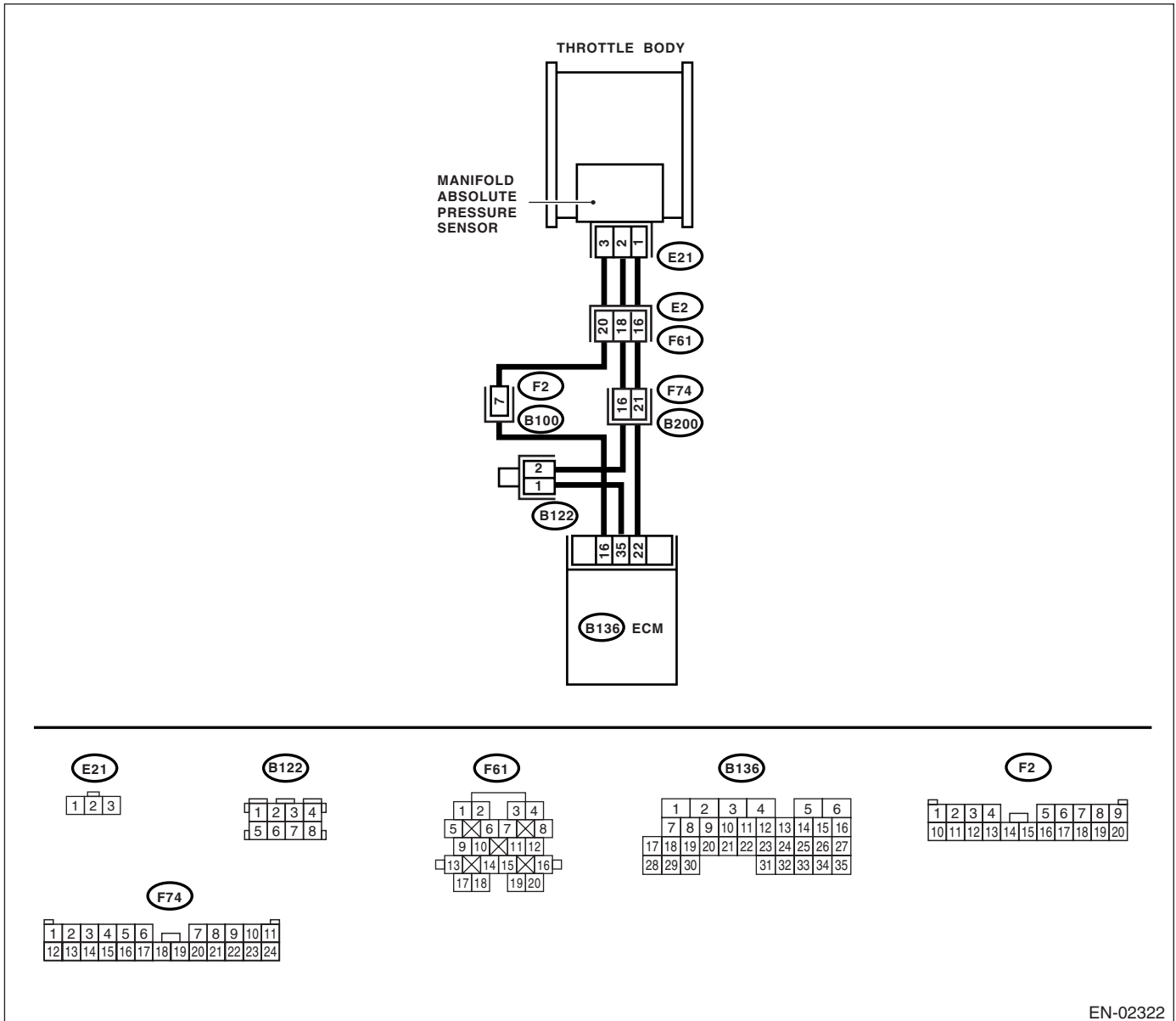
Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:

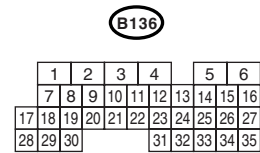
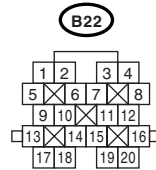
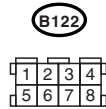
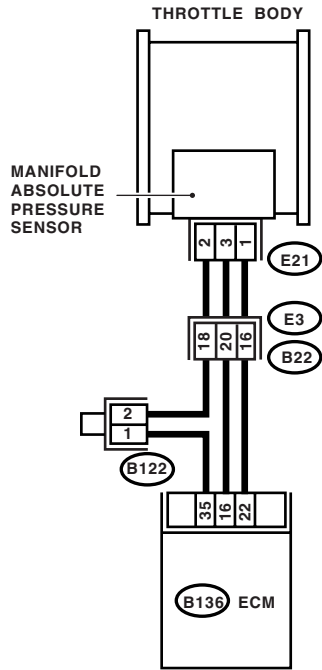
- LHD model



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

- RHD model



EN-02323

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. <i>Connector & terminal</i> <i>(B136) No. 16 (+) — Chassis ground (-):</i>	Is the voltage more than 4.5 V?	Go to step 3.	Go to step 2.
2 CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. <i>Connector & terminal</i> <i>(B136) No. 16 (+) — Chassis ground (-):</i>	Does the voltage change by shaking the harness and connector of ECM while monitoring the value with voltage meter?	Repair the poor contact in ECM connector.	Contact the SUBARU dealer. NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.
3 CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. <i>Connector & terminal</i> <i>(B136) No. 22 (+) — Chassis ground (-):</i>	Is the voltage more than 4.5 V?	Go to step 4.	Contact the SUBARU dealer. NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.
4 CHECK HARNESS BETWEEN ECM AND MANIFOLD ABSOLUTE PRESSURE SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the manifold absolute pressure sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between manifold absolute pressure sensor connector and engine ground. <i>Connector & terminal</i> <i>(E21) No. 3 (+) — Engine ground (-):</i>	Is the voltage more than 4.5 V?	Go to step 5.	Repair the open circuit in harness between ECM and manifold absolute pressure sensor connector.
5 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 and manifold absolute pressure sensor connector. <i>Connector & terminal</i> <i>(B136) No. 22 — (E21) No. 1:</i>	Is the resistance less than 1 Ω ?	Go to step 6.	Repair the open circuit in harness between ECM and manifold absolute pressure sensor connector.
6 CHECK HARNESS BETWEEN ECM AND MANIFOLD ABSOLUTE PRESSURE SENSOR CONNECTOR. Measure the resistance of harness between ECM and manifold absolute pressure sensor connector. <i>Connector & terminal</i> <i>(B136) No. 35 — (E21) No. 2:</i>	Is the resistance less than 1 Ω ?	Go to step 7.	Repair the open circuit in harness between ECM and manifold absolute pressure sensor connector.
7 CHECK POOR CONTACT. Check poor contact in manifold absolute pressure sensor connector.	Is there poor contact in manifold absolute pressure sensor connector?	Repair poor contact in manifold absolute pressure sensor connector.	Replace the manifold absolute pressure sensor. <Ref. to FU(H4DOTC)-36, Manifold Absolute Pressure Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

N: DTC P0111 INTAKE AIR TEMPERATURE CIRCUIT RANGE/PERFORMANCE

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

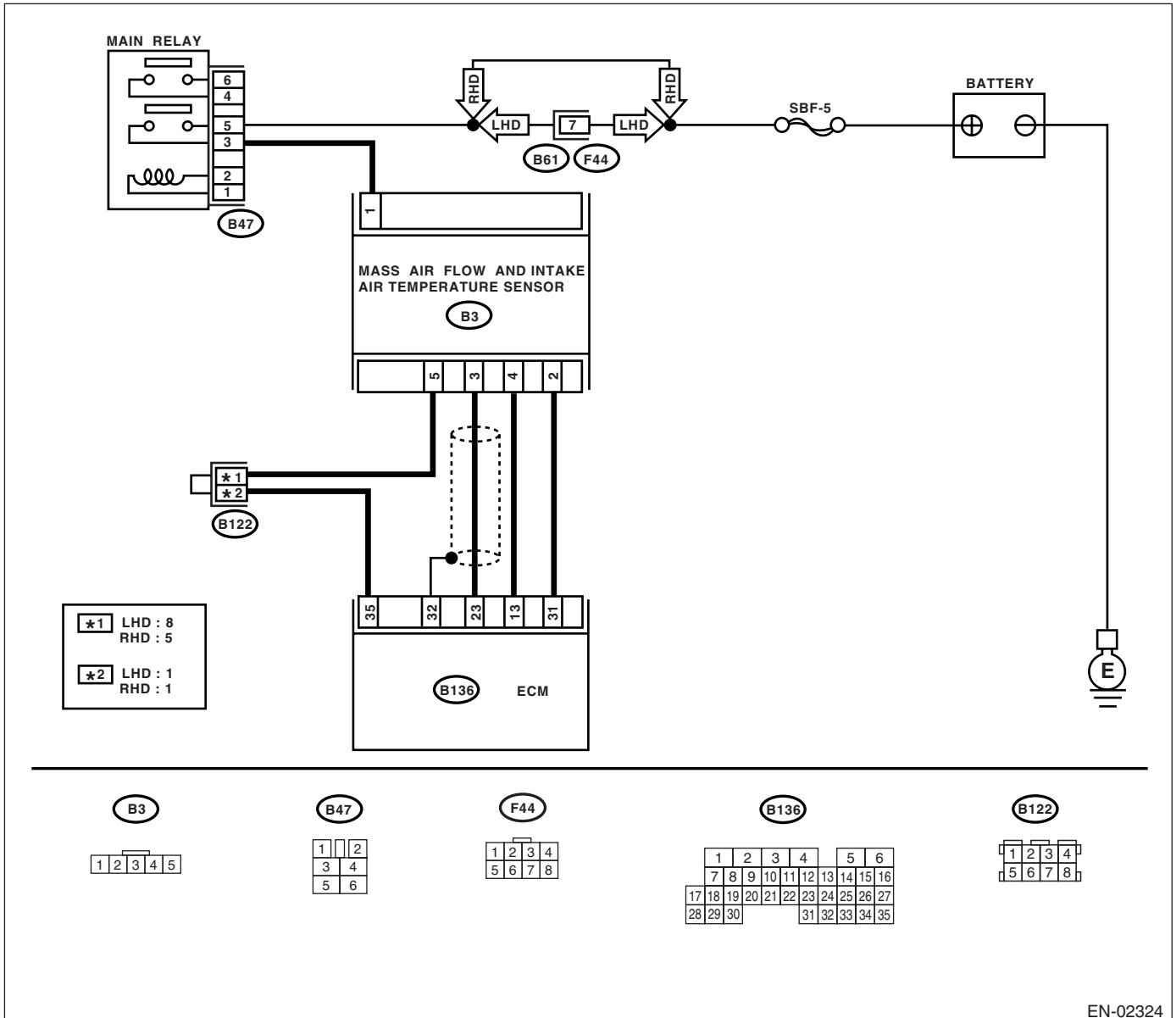
TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02324

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4DOTC)-74, List of Diagnostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0111.	Go to step 2.
2 CHECK ENGINE COOLANT. 1) Start the engine and warm-up completely. 2) Measure the engine coolant temperature using Subaru Select Monitor or OBD-II general scan tool. NOTE: <ul style="list-style-type: none"> • Subaru Select Monitor For detailed operation procedure, refer to "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.> <ul style="list-style-type: none"> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.	Is the engine coolant temperature between 75°C (167°F) and 95°C (203°F)?	Replace the mass air flow and intake air temperature sensor. <Ref. to FU(H4DOTC)-35, Mass Air Flow and Intake Air Temperature Sensor.>	Inspect the DTC P0125 using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4DOTC)-74, List of Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

O: DTC P0112 INTAKE AIR TEMPERATURE CIRCUIT LOW INPUT

DTC DETECTING CONDITION:

Immediately at fault recognition

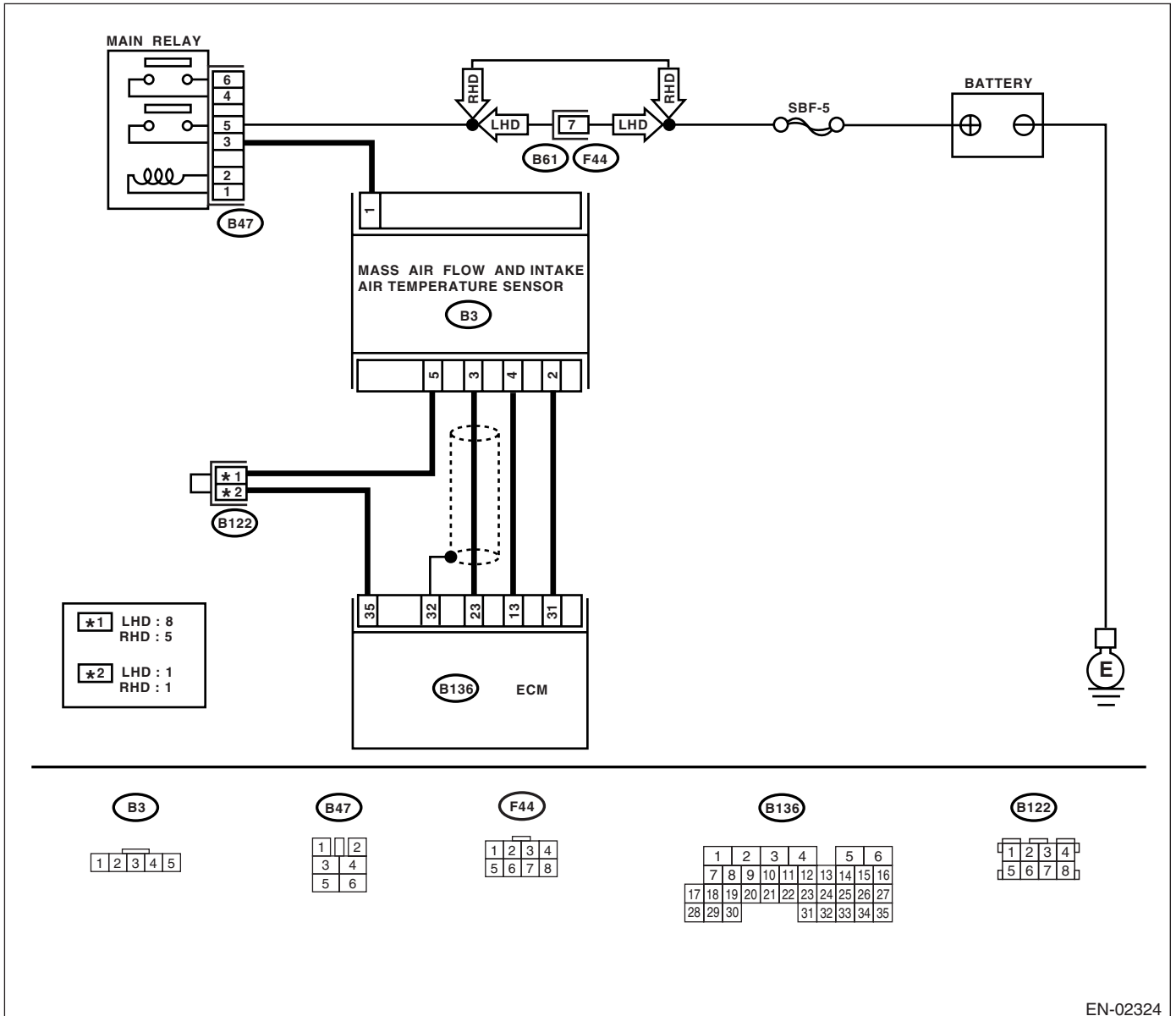
TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02324

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>1</p> <p>CHECK CURRENT DATA.</p> <p>1) Start the engine.</p> <p>2) Read the data of intake air temperature sensor signal using Subaru Select Monitor or the OBD-II general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • OBD-II general scan tool <p>For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</p>	<p>Is engine coolant temperature more than 55°C (131°F)?</p>	<p>Go to step 2.</p>	<p>Repair the poor contact.</p> <p>NOTE:</p> <p>In this case repair the following:</p> <ul style="list-style-type: none"> • Poor contact in mass air flow and intake air temperature sensor • Poor contact in ECM • Poor contact in joint connector
<p>2</p> <p>CHECK HARNESS BETWEEN MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connector from mass air flow and intake air temperature sensor.</p> <p>3) Turn the ignition switch to ON.</p> <p>4) Read the data of intake air temperature sensor signal using Subaru Select Monitor or the OBD-II general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • OBD-II general scan tool <p>For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</p>	<p>Is the value less than -36°C (-33°F)?</p>	<p>Replace the mass air flow and intake air temperature sensor. <Ref. to FU(H4DOTC)-35, Mass Air Flow and Intake Air Temperature Sensor.></p>	<p>Repair ground short circuit in harness between mass air flow and intake air temperature sensor and ECM connector.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

P: DTC P0113 INTAKE AIR TEMPERATURE CIRCUIT HIGH INPUT

DTC DETECTING CONDITION:

Immediately at fault recognition

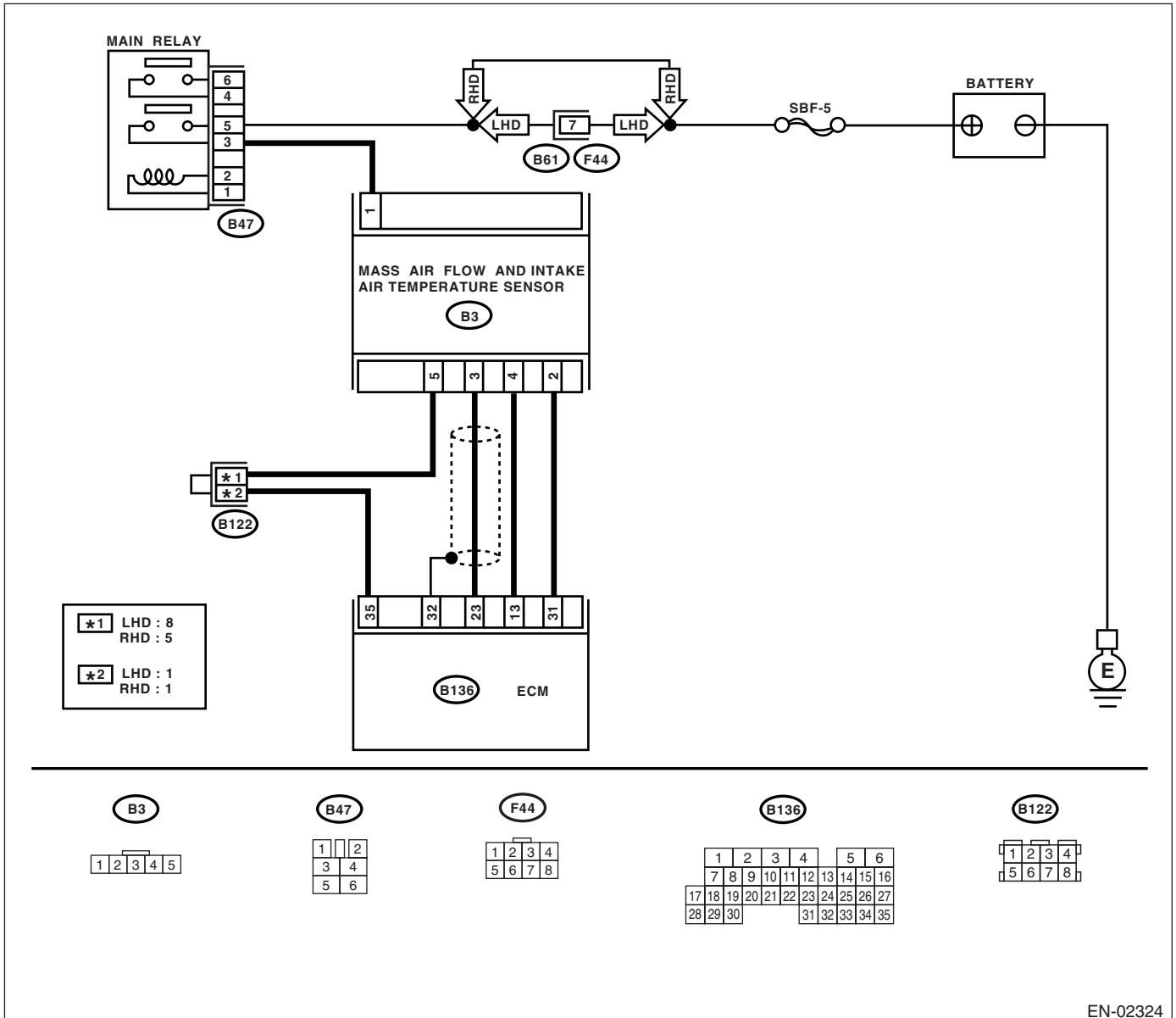
TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02324

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>1</p> <p>CHECK CURRENT DATA.</p> <p>1) Start the engine.</p> <p>2) Read the data of intake air temperature sensor signal using Subaru Select Monitor or the OBD-II general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • OBD-II general scan tool <p>For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</p>	<p>Is the value less than -36°C (-33°F)?</p>	<p>Go to step 2.</p>	<p>Repair the poor contact.</p> <p>NOTE:</p> <p>In this case repair the following:</p> <ul style="list-style-type: none"> • Poor contact in mass air flow and intake air temperature sensor • Poor contact in ECM • Poor contact in joint connector
<p>2</p> <p>CHECK HARNESS BETWEEN MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connector from mass air flow and intake air temperature sensor.</p> <p>3) Measure the voltage between mass air flow and intake air temperature sensor connector and engine ground.</p> <p>Connector & terminal (B3) No. 4 (+) — Engine ground (-):</p>	<p>Is the voltage more than 10 V?</p>	<p>Repair the battery short circuit in harness between mass air flow and intake air temperature sensor and ECM connector.</p>	<p>Go to step 3.</p>
<p>3</p> <p>CHECK HARNESS BETWEEN MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR.</p> <p>1) Turn the ignition switch to ON.</p> <p>2) Measure the voltage between mass air flow and intake air temperature sensor connector and engine ground.</p> <p>Connector & terminal (B3) No. 4 (+) — Engine ground (-):</p>	<p>Is the voltage more than 10 V?</p>	<p>Repair the battery short circuit in harness between mass air flow and intake air temperature sensor and ECM connector.</p>	<p>Go to step 4.</p>
<p>4</p> <p>CHECK HARNESS BETWEEN MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR.</p> <p>Measure the voltage between mass air flow and intake air temperature sensor connector and engine ground.</p> <p>Connector & terminal (B3) No. 4 (+) — Engine ground (-):</p>	<p>Is the voltage more than 4 V?</p>	<p>Go to step 5.</p>	<p>Repair the harness and connector.</p> <p>NOTE:</p> <p>In this case repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between mass air flow and intake air temperature sensor and ECM connector • Poor contact in mass air flow and intake air temperature sensor • Poor contact in ECM • Poor contact in joint connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>5</p> <p>CHECK HARNESS BETWEEN MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Measure the resistance of harness between mass air flow and intake air temperature sensor and engine ground.</p> <p>Connector & terminal (B3) No. 5 — Engine ground:</p>	<p>Is the resistance less than 5 Ω?</p>	<p>Replace the mass air flow and intake air temperature sensor. <Ref. to FU(H4DOTC)-35, Mass Air Flow and Intake Air Temperature Sensor.></p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between mass air flow and intake air temperature sensor and ECM connector • Poor contact in mass air flow and intake air temperature sensor • Poor contact in ECM • Poor contact in joint connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Q: DTC P0117 ENGINE COOLANT TEMPERATURE CIRCUIT LOW INPUT

DTC DETECTING CONDITION:

Immediately at fault recognition

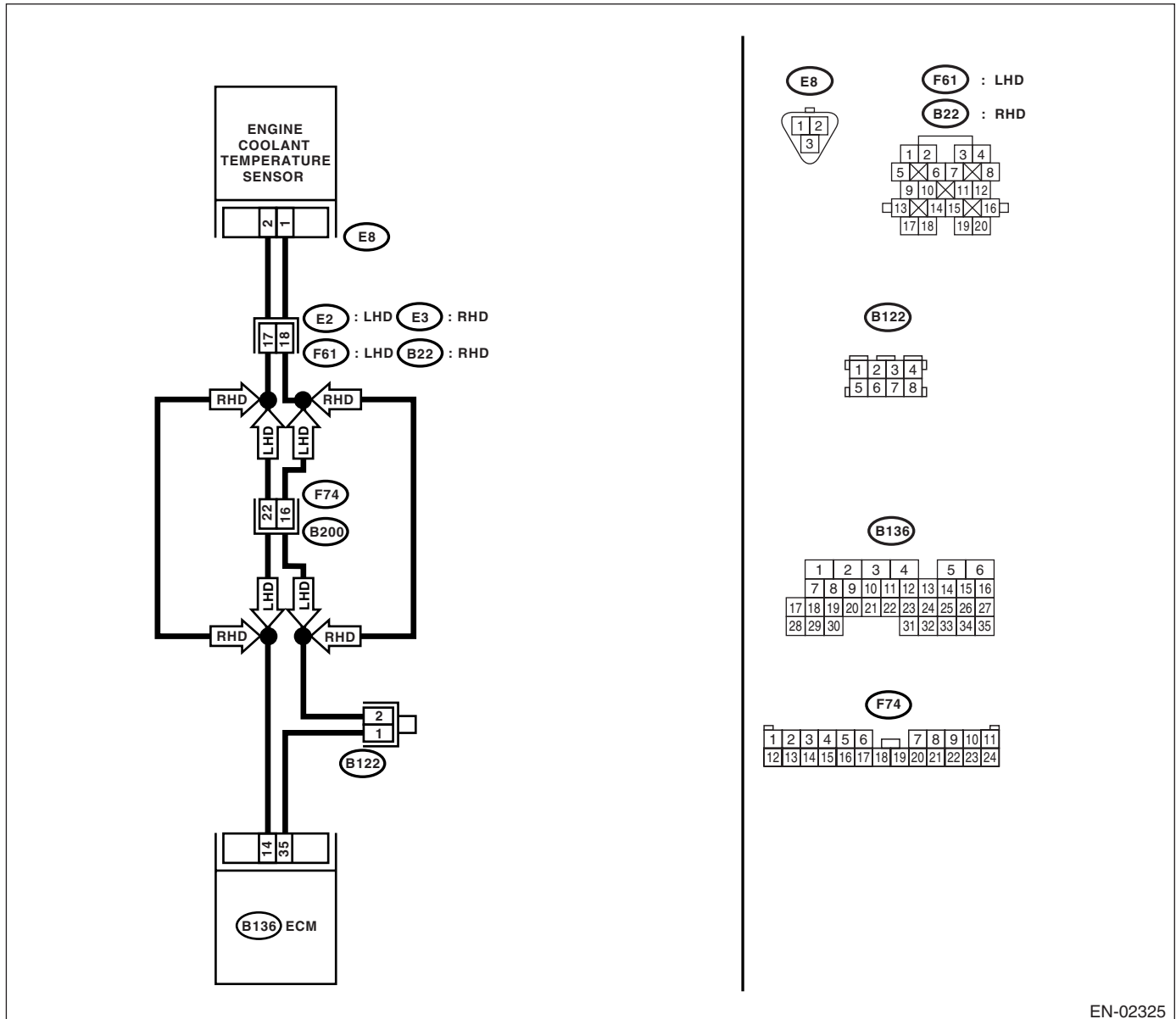
TROUBLE SYMPTOM:

- Hard to start
- Erroneous idling
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>

WIRING DIAGRAM:



EN-02325

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>1</p> <p>CHECK CURRENT DATA.</p> <p>1) Start the engine.</p> <p>2) Read the data of engine coolant temperature sensor signal using Subaru Select Monitor or the OBD-II general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • OBD-II general scan tool <p>For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</p>	<p>Is engine coolant temperature more than 120°C (248°F)?</p>	<p>Go to step 2.</p>	<p>Repair the poor contact.</p> <p>NOTE:</p> <p>In this case repair the following:</p> <ul style="list-style-type: none"> • Poor contact in engine coolant temperature sensor • Poor contact in ECM • Poor contact in coupling connector • Poor contact in joint connector
<p>2</p> <p>CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connectors from the engine coolant temperature sensor.</p> <p>3) Turn the ignition switch to ON.</p> <p>4) Read the data of engine coolant temperature sensor signal using Subaru Select Monitor or the OBD-II general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • OBD-II general scan tool <p>For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</p>	<p>Is the temperature more than -40°C (-40°F)?</p>	<p>Replace the engine coolant temperature sensor. <Ref. to FU(H4DOTC)-29, Engine Coolant Temperature Sensor.></p>	<p>Repair ground short circuit in harness between engine coolant temperature sensor and ECM connector.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

R: DTC P0118 ENGINE COOLANT TEMPERATURE CIRCUIT HIGH INPUT

DTC DETECTING CONDITION:

Immediately at fault recognition

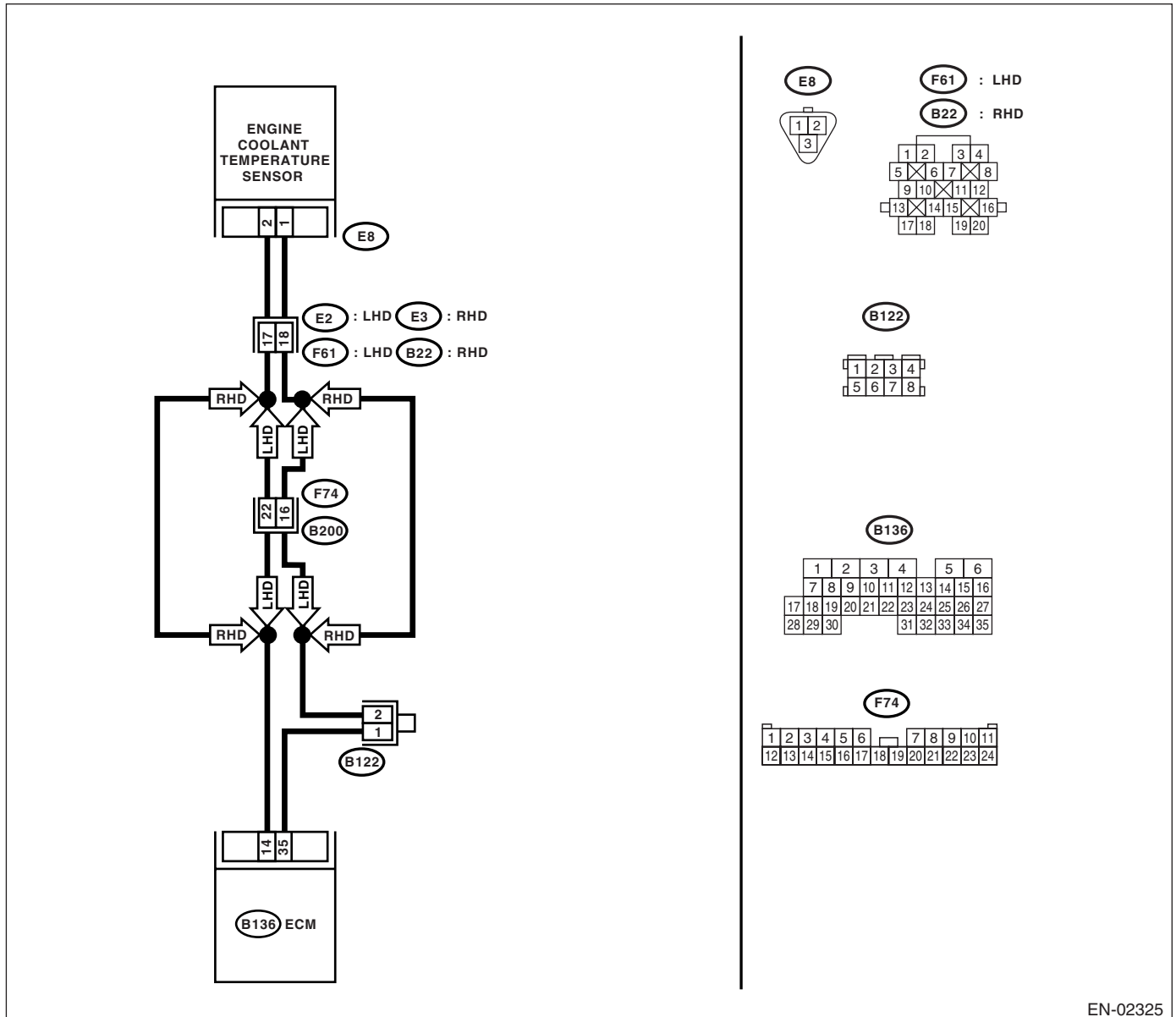
TROUBLE SYMPTOM:

- Hard to start
- Erroneous idling
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>

WIRING DIAGRAM:



EN-02325

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>1</p> <p>CHECK CURRENT DATA.</p> <p>1) Start the engine.</p> <p>2) Read the data of engine coolant temperature sensor signal using Subaru Select Monitor or the OBD-II general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • OBD-II general scan tool <p>For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</p>	<p>Is the value less than -40°C (-40°F)?</p>	<p>Go to step 2.</p>	<p>Repair the poor contact.</p> <p>NOTE:</p> <p>In this case repair the following:</p> <ul style="list-style-type: none"> • Poor contact in engine coolant temperature sensor • Poor contact in ECM • Poor contact in coupling connector • Poor contact in joint connector
<p>2</p> <p>CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connectors from the engine coolant temperature sensor.</p> <p>3) Measure the voltage between engine coolant temperature sensor connector and engine ground.</p> <p>Connector & terminal (E8) No. 2 (+) — Engine ground (-):</p>	<p>Is the voltage more than 10 V?</p>	<p>Repair battery short circuit in harness between ECM and engine coolant temperature sensor connector.</p>	<p>Go to step 3.</p>
<p>3</p> <p>CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.</p> <p>1) Turn the ignition switch to ON.</p> <p>2) Measure the voltage between engine coolant temperature sensor connector and engine ground.</p> <p>Connector & terminal (E8) No. 2 (+) — Engine ground (-):</p>	<p>Is the voltage more than 10 V?</p>	<p>Repair battery short circuit in harness between ECM and engine coolant temperature sensor connector.</p>	<p>Go to step 4.</p>
<p>4</p> <p>CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.</p> <p>Measure the voltage between engine coolant temperature sensor connector and engine ground.</p> <p>Connector & terminal (E8) No. 2 (+) — Engine ground (-):</p>	<p>Is the voltage more than 4 V?</p>	<p>Go to step 5.</p>	<p>Repair the harness and connector.</p> <p>NOTE:</p> <p>In this case repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between ECM and engine coolant temperature sensor connector • Poor contact in engine coolant temperature sensor connector • Poor contact in ECM connector. • Poor contact in coupling connector • Poor contact in joint connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>5</p> <p>CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Measure the resistance of harness between engine coolant temperature sensor connector and engine ground.</p> <p>Connector & terminal (E8) No. 1 — Engine ground:</p>	<p>Is the resistance less than 5 Ω?</p>	<p>Replace the engine coolant temperature sensor. <Ref. to FU(H4DOTC)-29, Engine Coolant Temperature Sensor.></p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between ECM and engine coolant temperature sensor connector • Poor contact in engine coolant temperature sensor connector • Poor contact in ECM connector. • Poor contact in coupling connector • Poor contact in joint connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

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

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

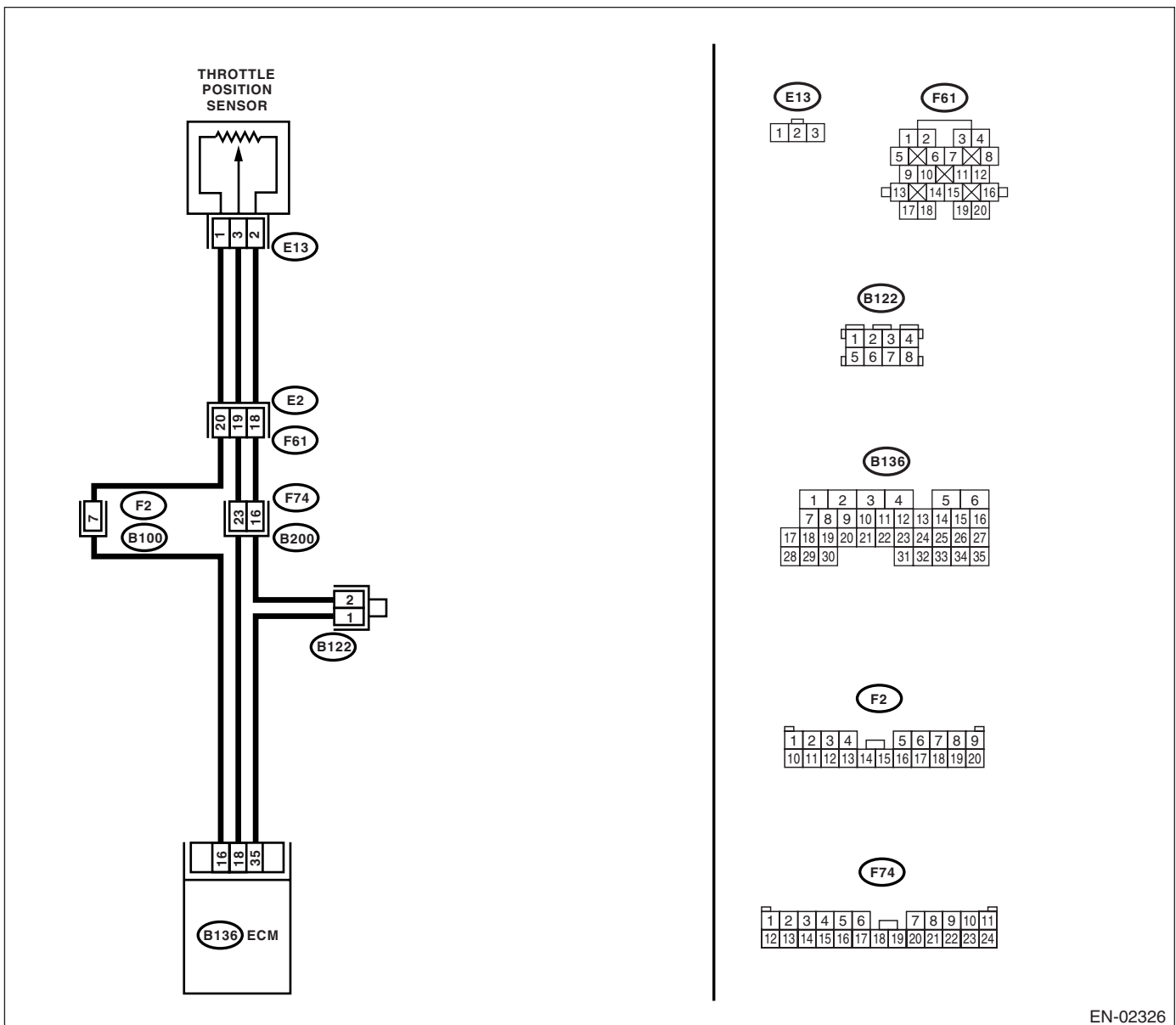
- Erroneous idling
- Engine stalls.
- Poor driving performance
- Fuel is cut.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:

- LHD model

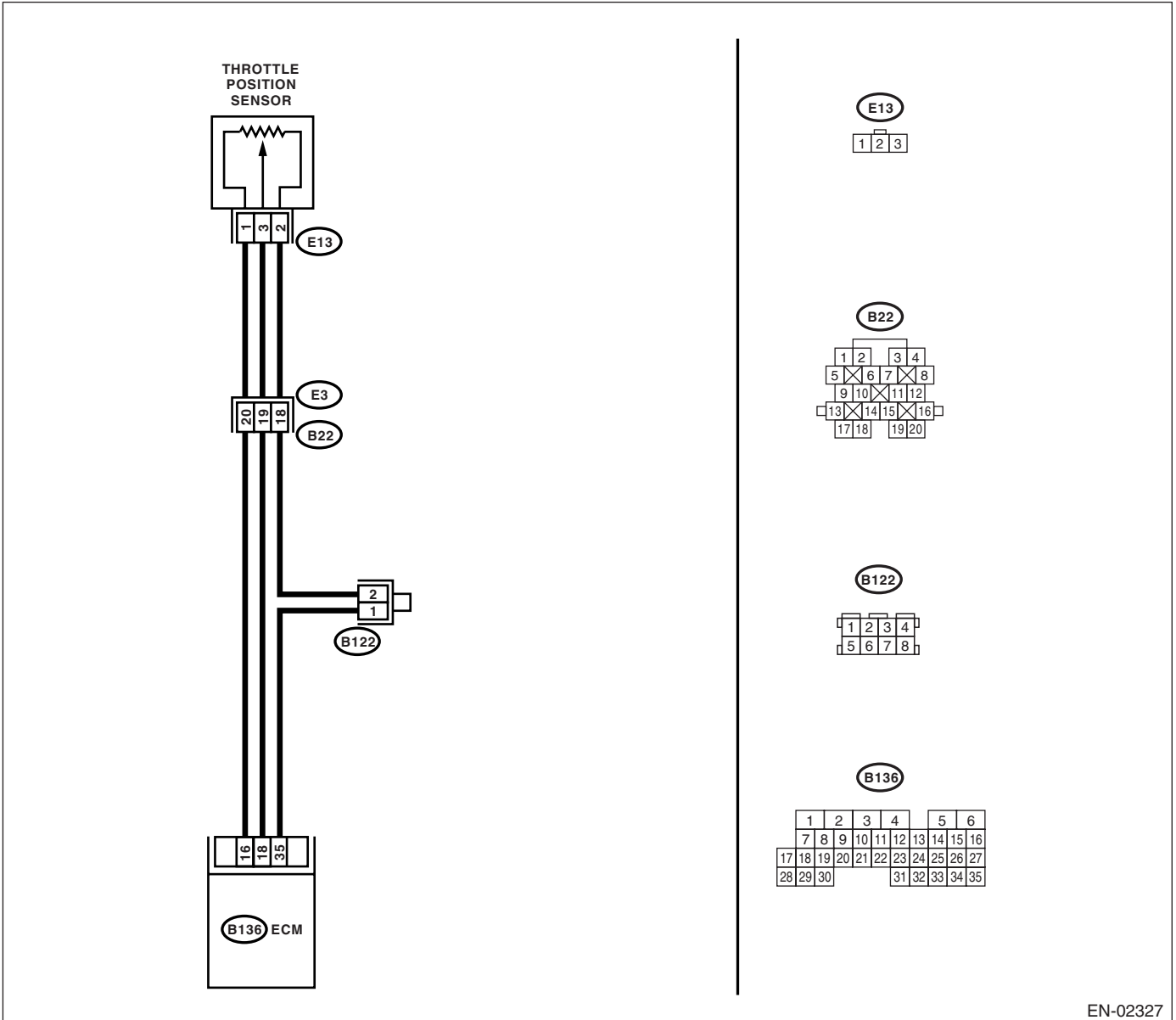


EN-02326

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

- RHD model



EN-02327

Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY. Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4DOTC)-74, List of Diagnostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0121.	Replace the throttle position sensor. <Ref. to FU(H4DOTC)-34, Throttle Position Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

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

DTC DETECTING CONDITION:

Immediately at fault recognition

TROUBLE SYMPTOM:

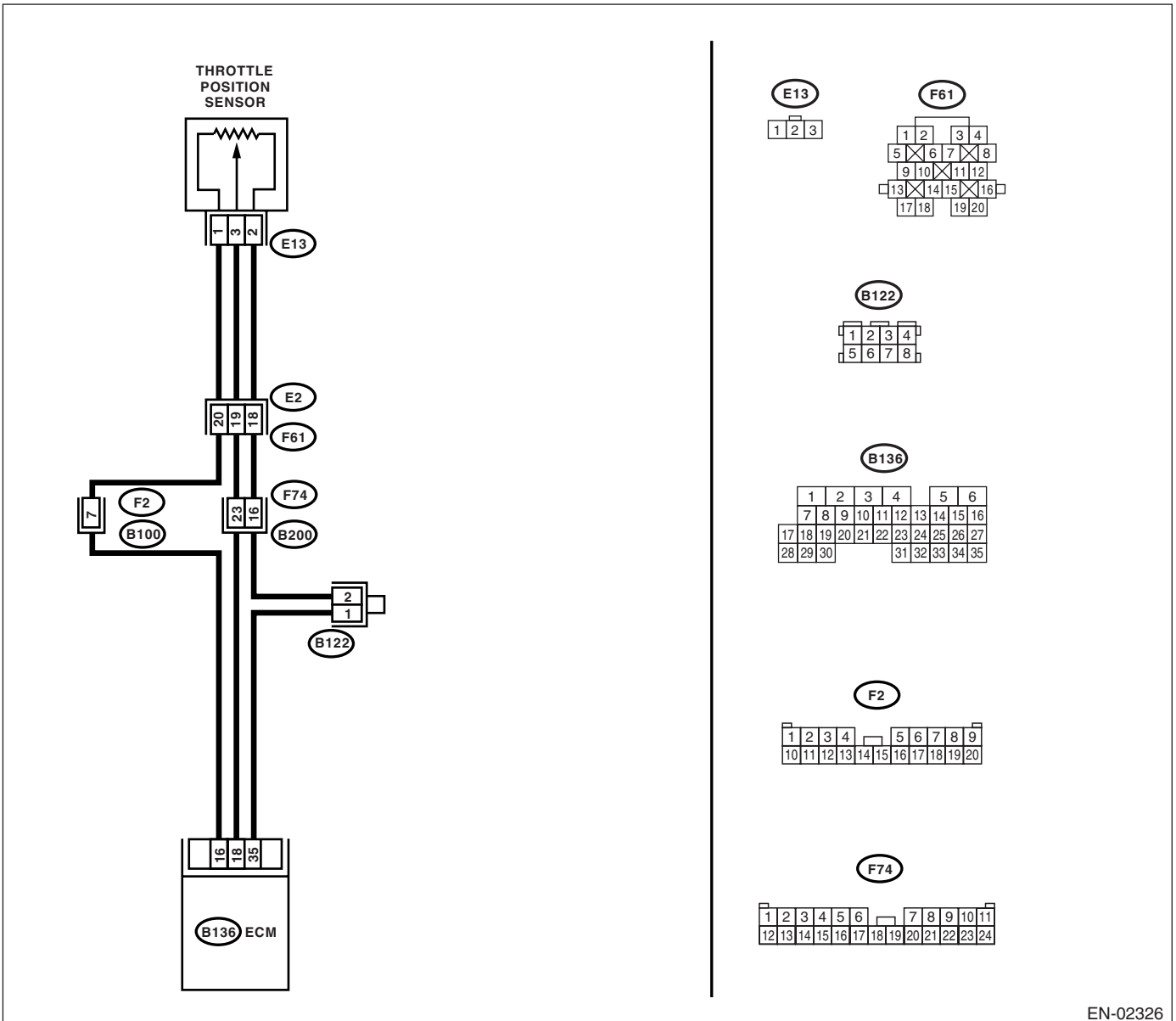
- Erroneous idling
- Engine stalls.
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:

- LHD model

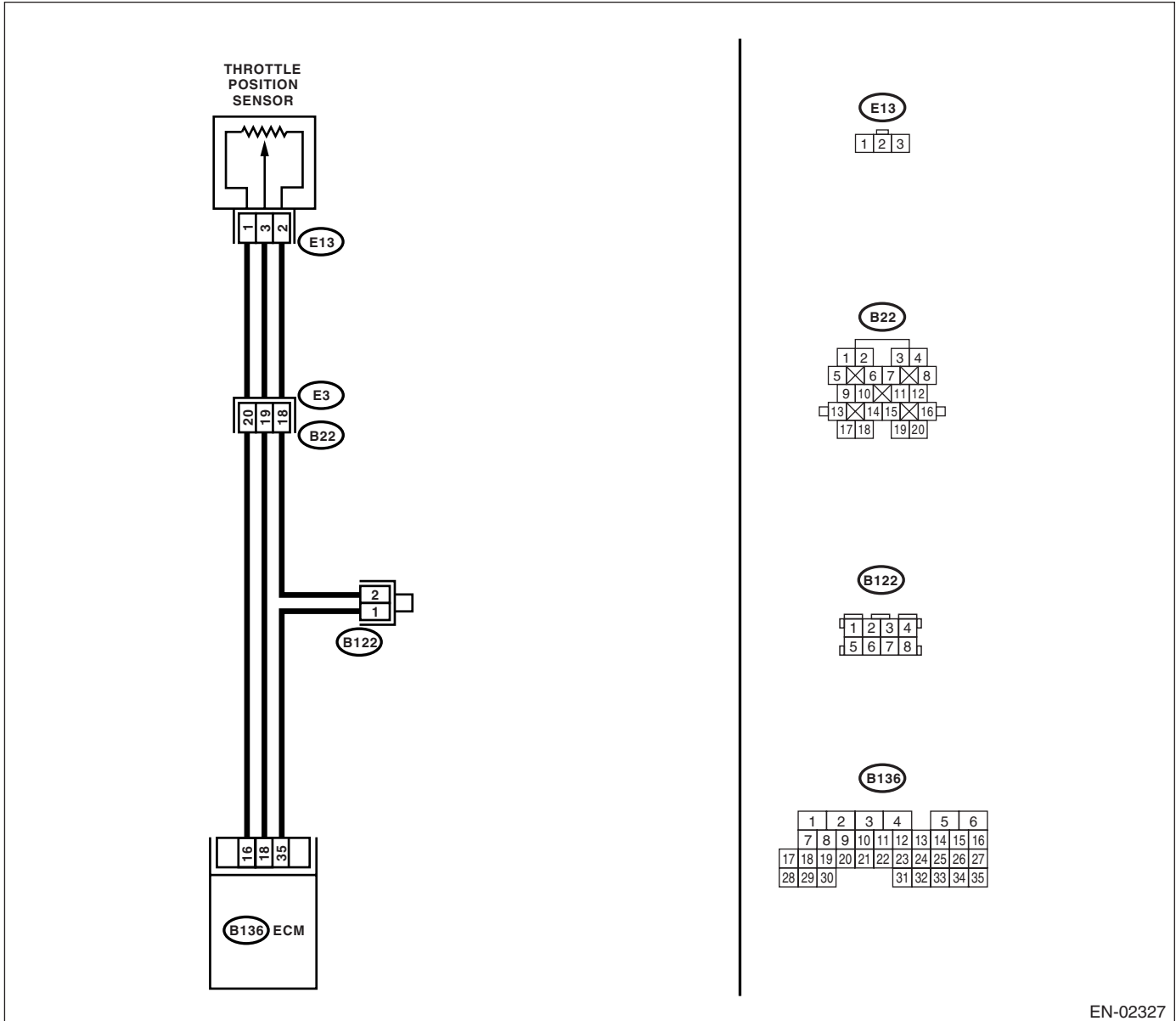


EN-02326

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

- RHD model



EN-02327

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of throttle position sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.	Is the voltage less than 0.15 V?	Go to step 2.	Even if the malfunction indicator light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause. NOTE: In this case repair the following: • Poor contact in throttle position sensor connector • Poor contact in ECM connector. • Poor contact in coupling connector
2 CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground while throttle valve is fully closed. <i>Connector & terminal</i> <i>(B136) No. 16 (+) — Chassis ground (-):</i>	Is the voltage more than 4.5 V?	Go to step 4.	Go to step 3.
3 CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. <i>Connector & terminal</i> <i>(B136) No. 16 (+) — Chassis ground (-):</i>	Does the voltage change by shaking the harness and connector of ECM while monitoring the value with voltage meter?	Repair the poor contact in ECM connector.	Contact the SUBARU dealer. NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.
4 CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. <i>Connector & terminal</i> <i>(B136) No. 18 (+) — Chassis ground (-):</i>	Is the voltage less than 0.15 V?	Go to step 6.	Go to step 5.
5 CHECK INPUT SIGNAL FOR ECM (WITH SUBARU SELECT MONITOR). Measure the voltage between ECM connector and chassis ground.	Does the voltage change by shaking the harness and connector of ECM while monitoring the value with Subaru Select Monitor?	Repair the poor contact in ECM connector.	Go to step 6.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>6</p> <p>CHECK HARNESS BETWEEN ECM AND THROTTLE POSITION SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connectors from throttle position sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between throttle position sensor connector and engine ground.</p> <p>Connector & terminal (E13) No. 1 (+) — Engine ground (-):</p>	<p>Is the voltage more than 4.5 V?</p>	<p>Go to step 7.</p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between throttle position sensor and ECM connector • Poor contact in throttle position sensor connector • Poor contact in ECM connector. • Poor contact in coupling connector • Poor contact in joint connector
<p>7</p> <p>CHECK HARNESS BETWEEN ECM AND THROTTLE POSITION SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Measure the resistance of harness between ECM connector and throttle position sensor connector.</p> <p>Connector & terminal (B136) No. 18 — (E13) No. 3:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 8.</p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between throttle position sensor and ECM connector • Poor contact in ECM connector • Poor contact in throttle position sensor connector • Poor contact in coupling connector
<p>8</p> <p>CHECK HARNESS BETWEEN ECM AND THROTTLE POSITION SENSOR CONNECTOR.</p> <p>Measure the resistance of harness between throttle position sensor connector and engine ground.</p> <p>Connector & terminal (E13) No. 3 — Engine ground:</p>	<p>Is the resistance more than 1 MΩ?</p>	<p>Go to step 9.</p>	<p>Repair ground short circuit in harness between throttle position sensor and ECM connector.</p>
<p>9</p> <p>CHECK POOR CONTACT.</p> <p>Check poor contact in throttle position sensor connector.</p>	<p>Is there poor contact in throttle position sensor connector?</p>	<p>Repair poor contact in throttle position sensor connector.</p>	<p>Replace the throttle position sensor. <Ref. to FU(H4DOTC)-34, Throttle Position Sensor.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

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

DTC DETECTING CONDITION:

Immediately at fault recognition

TROUBLE SYMPTOM:

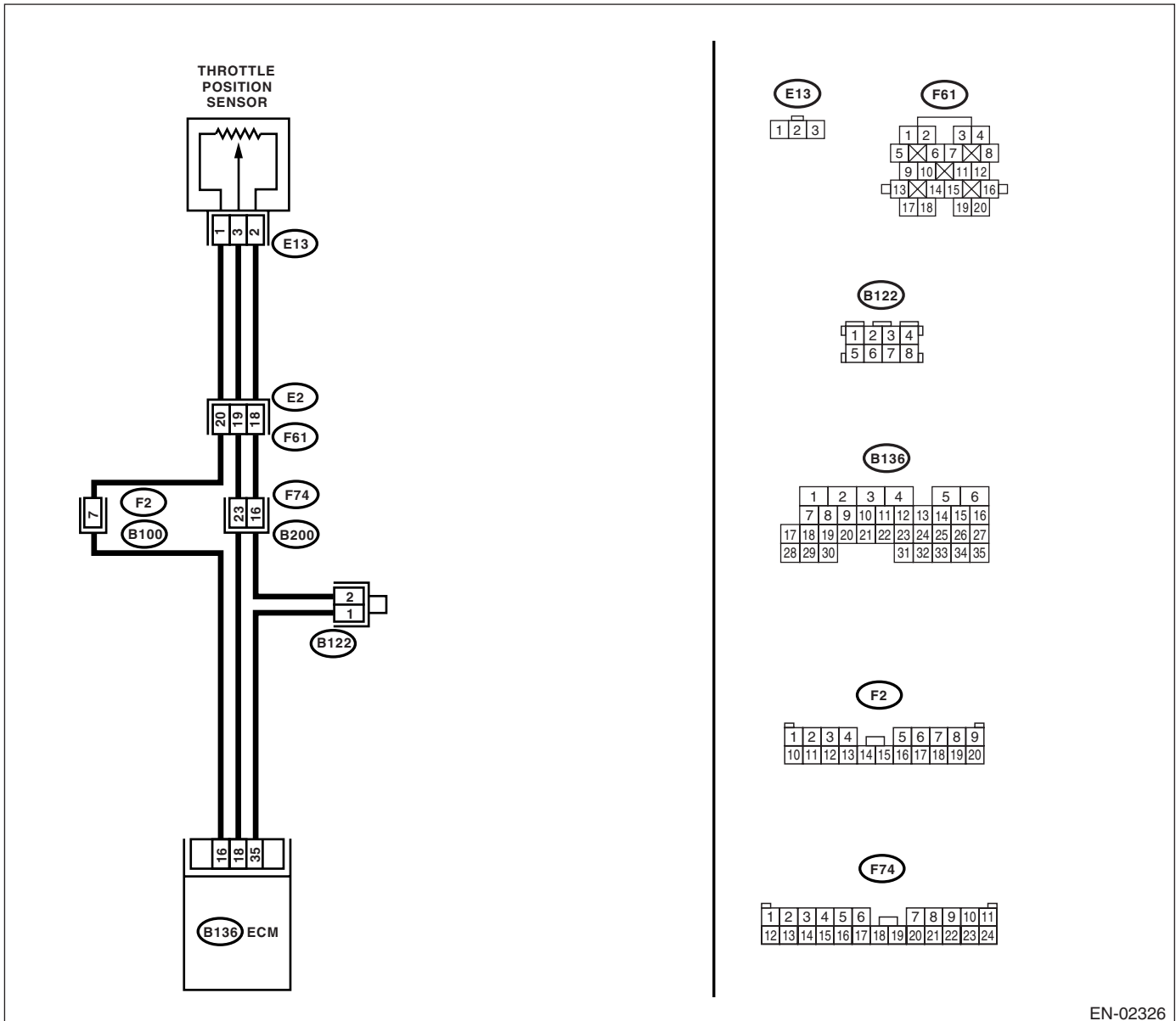
- Erroneous idling
- Engine stalls.
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:

- LHD model

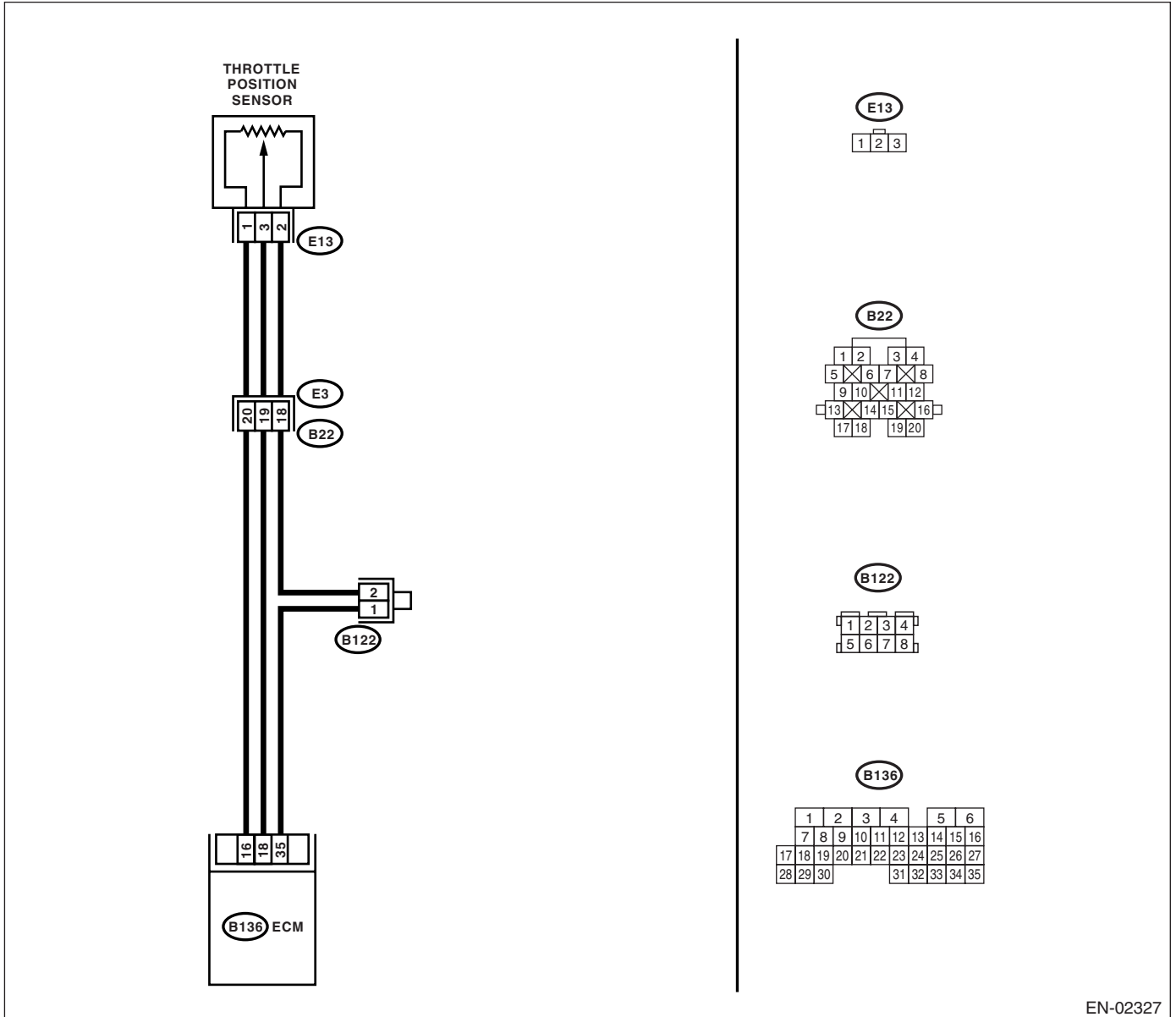


EN-02326

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

- RHD model



EN-02327

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>1</p> <p>CHECK CURRENT DATA.</p> <p>1) Start the engine.</p> <p>2) Read the data of throttle position sensor signal using Subaru Select Monitor or OBD-II general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • OBD-II general scan tool <p>For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</p>	<p>Is the voltage more than 4.7 V?</p>	<p>Go to step 2.</p>	<p>Even if the malfunction indicator light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause.</p> <p>NOTE:</p> <p>In this case repair the following:</p> <ul style="list-style-type: none"> • Poor contact in throttle position sensor connector • Poor contact in ECM connector • Poor contact in coupling connector
<p>2</p> <p>CHECK HARNESS BETWEEN THROTTLE POSITION SENSOR AND ECM CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connectors from throttle position sensor.</p> <p>3) Measure the resistance of harness between throttle position sensor connector and engine ground.</p> <p>Connector & terminal (E13) No. 2 — Engine ground:</p>	<p>Is the resistance less than 5 Ω?</p>	<p>Go to step 3.</p>	<p>Repair the harness and connector.</p> <p>NOTE:</p> <p>In this case repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between throttle position sensor and ECM connector • Poor contact in coupling connector • Poor contact in joint connector
<p>3</p> <p>CHECK HARNESS BETWEEN THROTTLE POSITION SENSOR AND ECM CONNECTOR.</p> <p>1) Turn the ignition switch to ON.</p> <p>2) Measure the voltage between throttle position sensor connector and engine ground.</p> <p>Connector & terminal (E13) No. 3 (+) — Engine ground (-):</p>	<p>Is the voltage more than 4.7 V?</p>	<p>Repair the battery short circuit in harness between throttle position sensor and ECM connector. After repair, replace the ECM. <Ref. to FU(H4DOTC)-50, Engine Control Module (ECM).></p>	<p>Replace the throttle position sensor. <Ref. to FU(H4DOTC)-34, Throttle Position Sensor.></p>

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

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

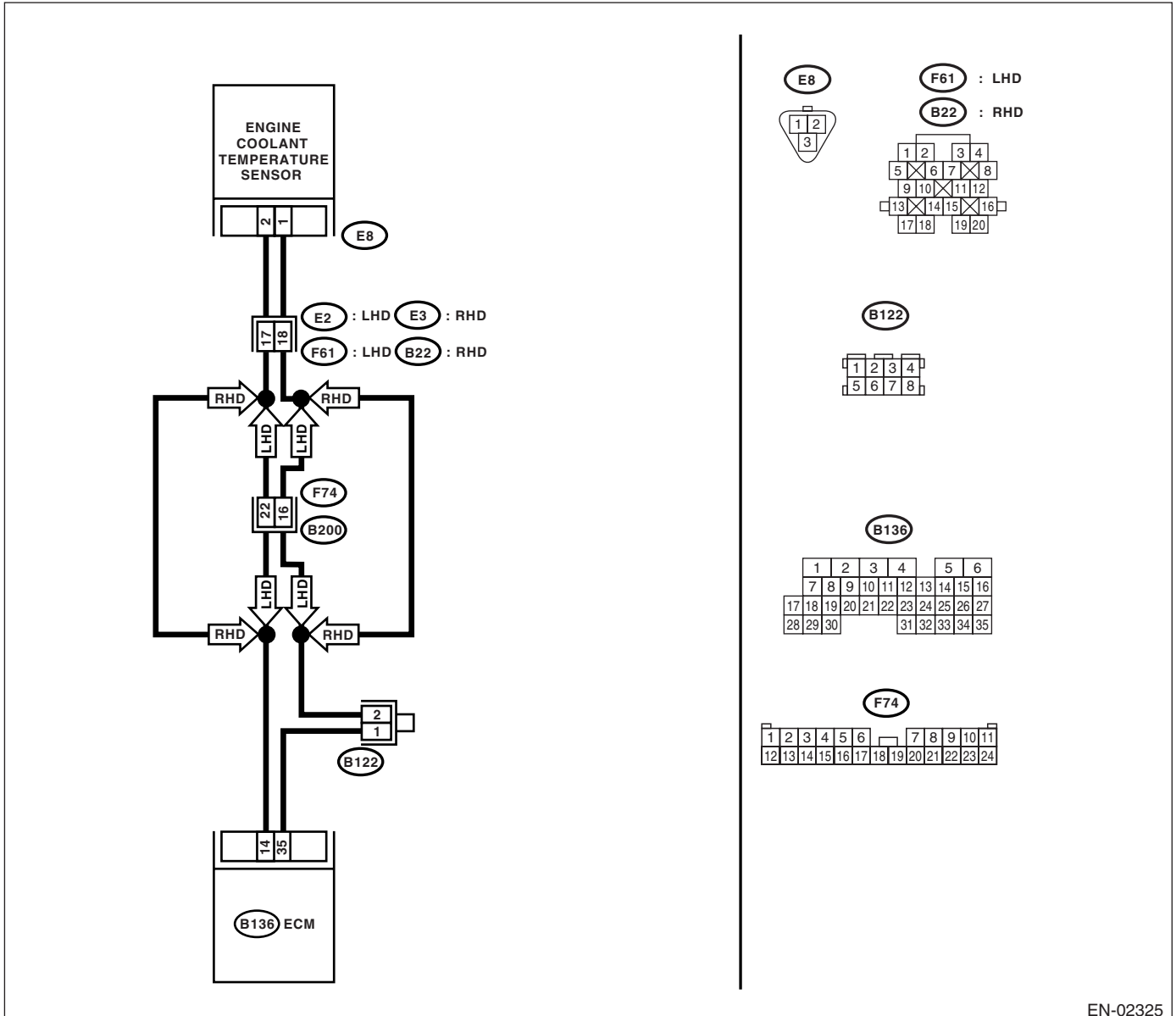
TROUBLE SYMPTOM:

Engine would not return to idling.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02325

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4DOTC)-74, List of Diagnostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0125.	Go to step 2.
2 CHECK ENGINE COOLING SYSTEM. NOTE: Check the following items: • Thermostat open stuck • Coolant level • Coolant freeze • Tire diameter	Is there a fault in engine cooling system?	Replace the thermostat. <Ref. to CO(H4SO)-26, Thermostat.>	Replace the engine coolant temperature sensor. <Ref. to FU(H4DOTC)-29, Engine Coolant Temperature Sensor.>

W: DTC P0129 BAROMETRIC PRESSURE TOO LOW

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4DOTC)-74, List of Diagnostic Trouble Code (DTC).> NOTE: It is not necessary to inspect DTC P0129.	Replace the ECM. <Ref. to FU(H4DOTC)-50, Engine Control Module (ECM).> NOTE: Atmospheric pressure sensor is built in ECM.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

X: DTC P0131 O₂ SENSOR CIRCUIT LOW VOLTAGE (BANK 1 SENSOR1)

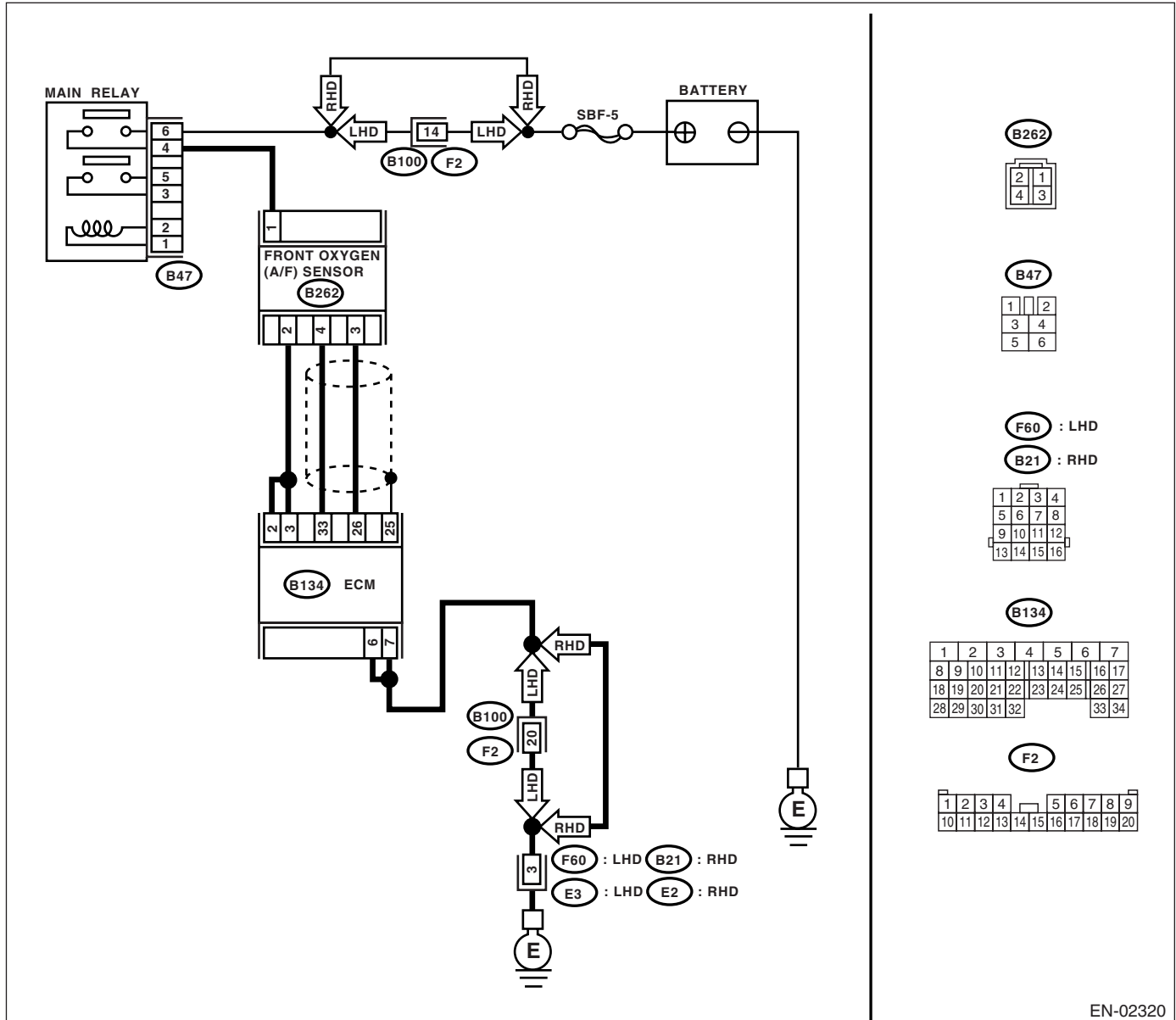
DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02320

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>1</p> <p>CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and front oxygen (A/F) sensor connector. 3) Measure the resistance of harness between ECM and front oxygen (A/F) sensor connector.</p> <p>Connector & terminal (B134) No. 26 — Chassis ground: (B134) No. 33 — Chassis ground:</p>	<p>Is the resistance more than 1 MΩ?</p>	<p>Replace the front oxygen (A/F) sensor. <Ref. to FU(H4DOTC)-45, Front Oxygen (A/F) Sensor.></p>	<p>Repair the ground short circuit in harness between ECM and front oxygen (A/F) sensor connector.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

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

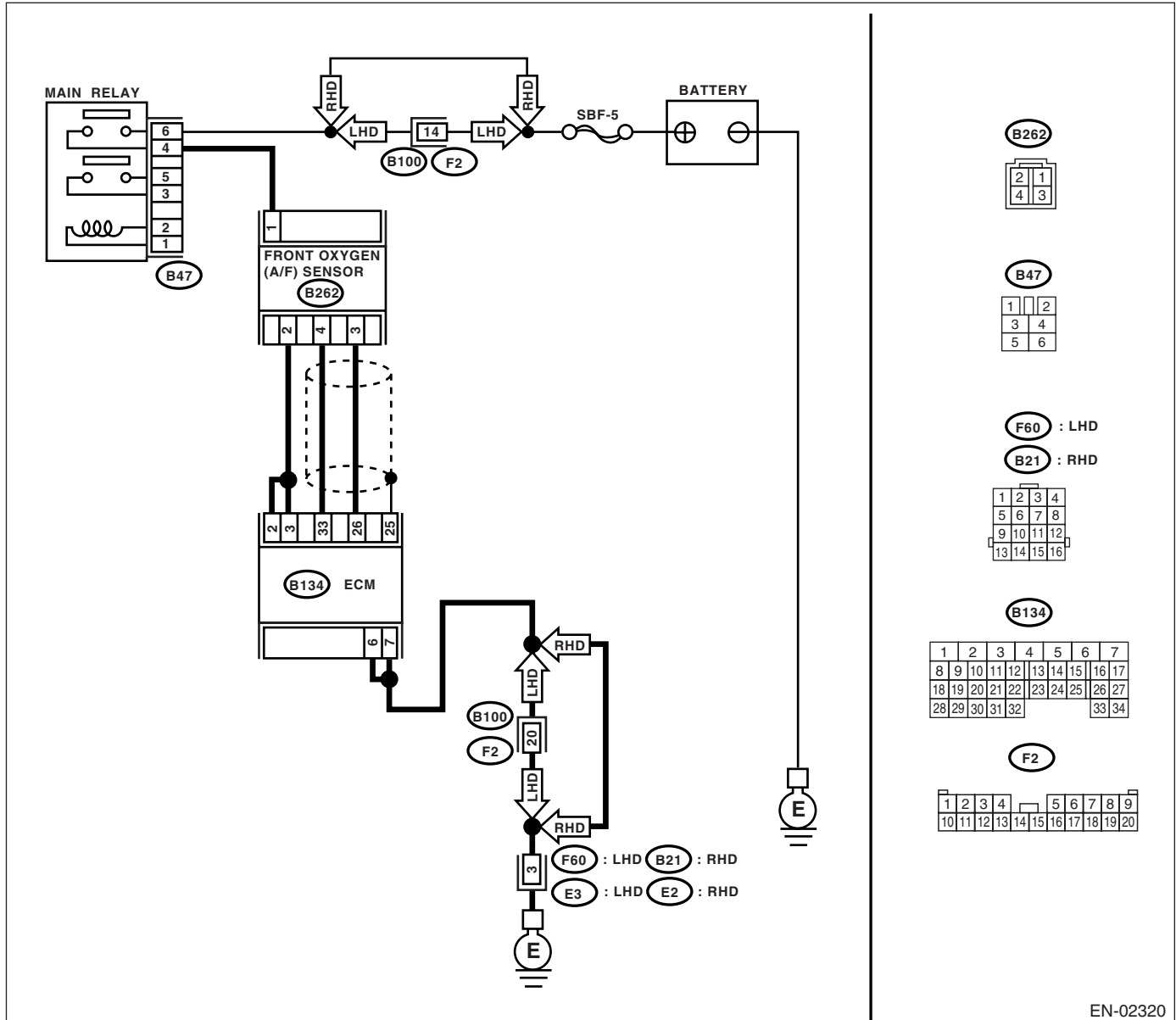
DTC DETECTING CONDITION:

Detect as soon as the malfunction occurs.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02320

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>1 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to ON. 2) Disconnect the connector from front oxygen (A/F) sensor. 3) Measure the voltage of harness between ECM connector and chassis ground.</p> <p>Connector & terminal (B134) No. 26 (+) — Chassis ground (-): (B134) No. 33 (+) — Chassis ground (-):</p>	Is the voltage more than 8 V?	Replace the front oxygen (A/F) sensor. <Ref. to FU(H4DOTC)-45, Front Oxygen (A/F) Sensor.>	Repair the battery short circuit in harness between ECM and front oxygen (A/F) sensor connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

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

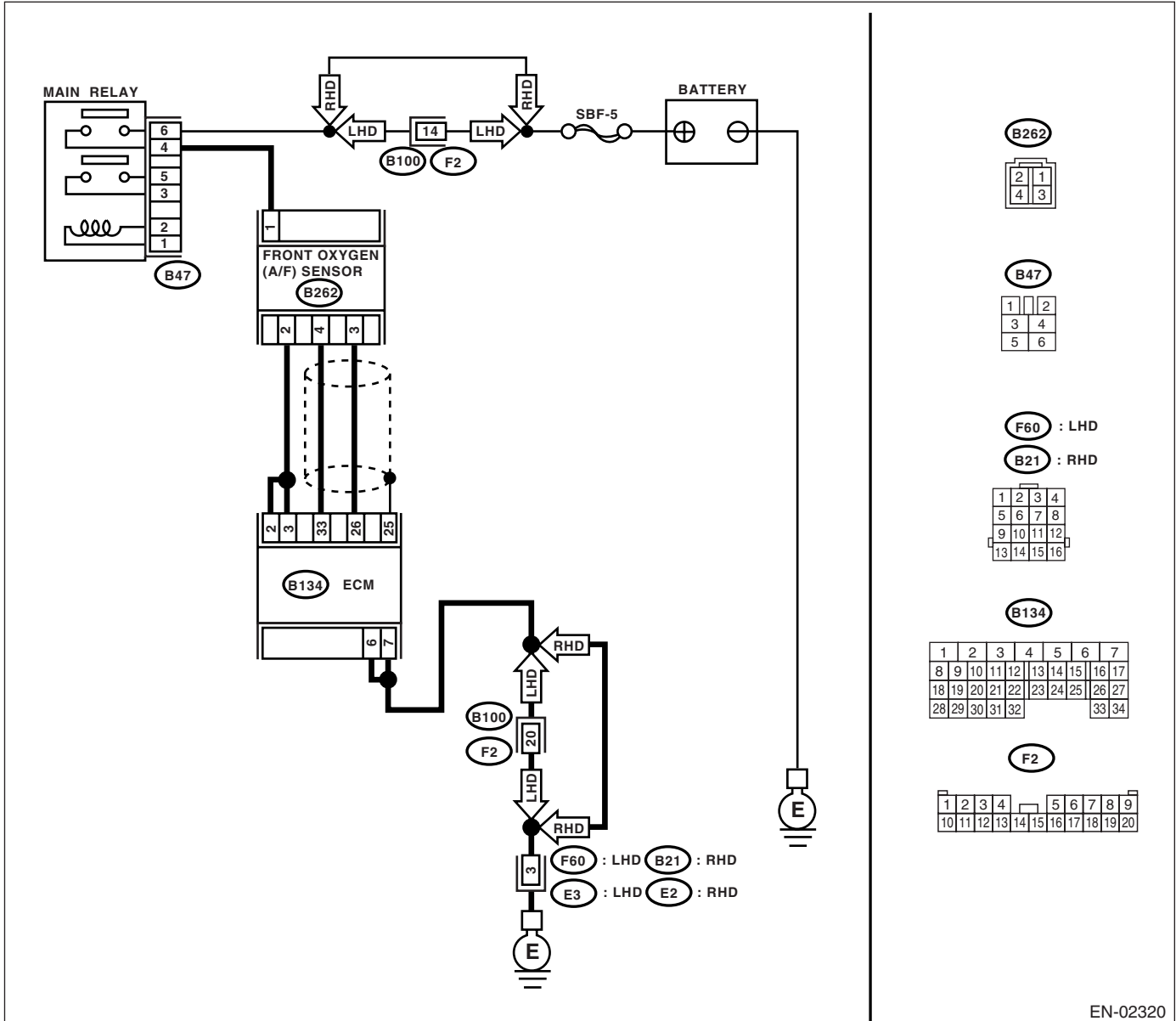
DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02320

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4DOTC)-74, List of Diagnostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0133.	Go to step 2.
2 CHECK EXHAUST SYSTEM. NOTE: Check the following items: <ul style="list-style-type: none">• Loose installation of front portion of exhaust pipe onto cylinder heads• Loose connection between front exhaust pipe and front catalytic converter• Damage of exhaust pipe resulting in a hole	Is there a fault in exhaust system?	Repair exhaust system.	Replace the front oxygen (A/F) sensor. <Ref. to FU(H4DOTC)-45, Front Oxygen (A/F) Sensor.>

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

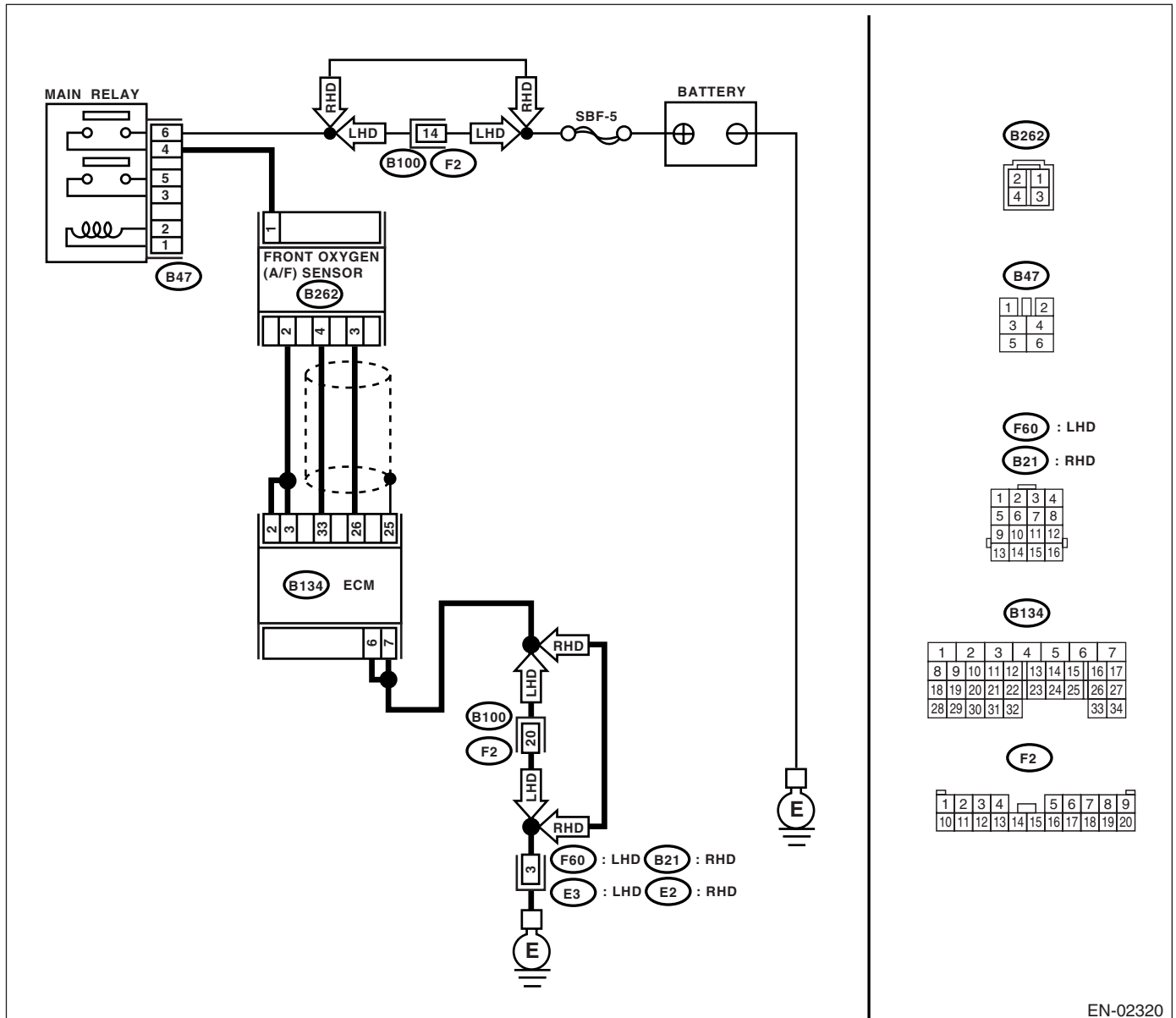
DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02320

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4DOTC)-74, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK FRONT (A/F) OXYGEN SENSOR DATA. 1) Start the engine. 2) While observing the Subaru Select Monitor or OBD-II general scan tool screen, warm-up the engine until coolant temperature is above 70°C (158°F). If the engine is already warmed-up, operate at idle speed for at least 1 minute. 3) Read the data of front oxygen (A/F) sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.	Is the measured value 0.85 — 1.15 (in idling)?	Go to step 3.	Go to step 4.
3 CHECK REAR OXYGEN SENSOR SIGNAL. 1) Race the engine at speeds from idling to 5,000 rpm for a total of 5 cycles. NOTE: To increase the engine speed to 5,000 rpm, slowly depress accelerator pedal, taking approx. 5 seconds, and quickly release accelerator pedal to decrease engine speed. 2) Operate the LED operation mode for engine. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "LED OPERATION MODE FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.>	Does the LED of {Rear O ₂ Rich Signal} blink?	Repair the poor contact in front oxygen (A/F) sensor and rear oxygen sensor connector.	Check the rear oxygen sensor circuit. <Ref. to FU(H4DOTC)-47, Rear Oxygen Sensor.>
4 CHECK EXHAUST SYSTEM. Check the exhaust system parts. NOTE: Check the following items. <ul style="list-style-type: none"> • Loose installation of portions • Damage (crack, hole etc.) of parts • Looseness of front oxygen (A/F) sensor • Looseness and ill fitting of parts between front oxygen (A/F) sensor and rear oxygen sensor 	Is there a fault in exhaust system?	Repair or replace the faulty parts.	Replace the front oxygen (A/F) sensor. <Ref. to FU(H4DOTC)-45, Front Oxygen (A/F) Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

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

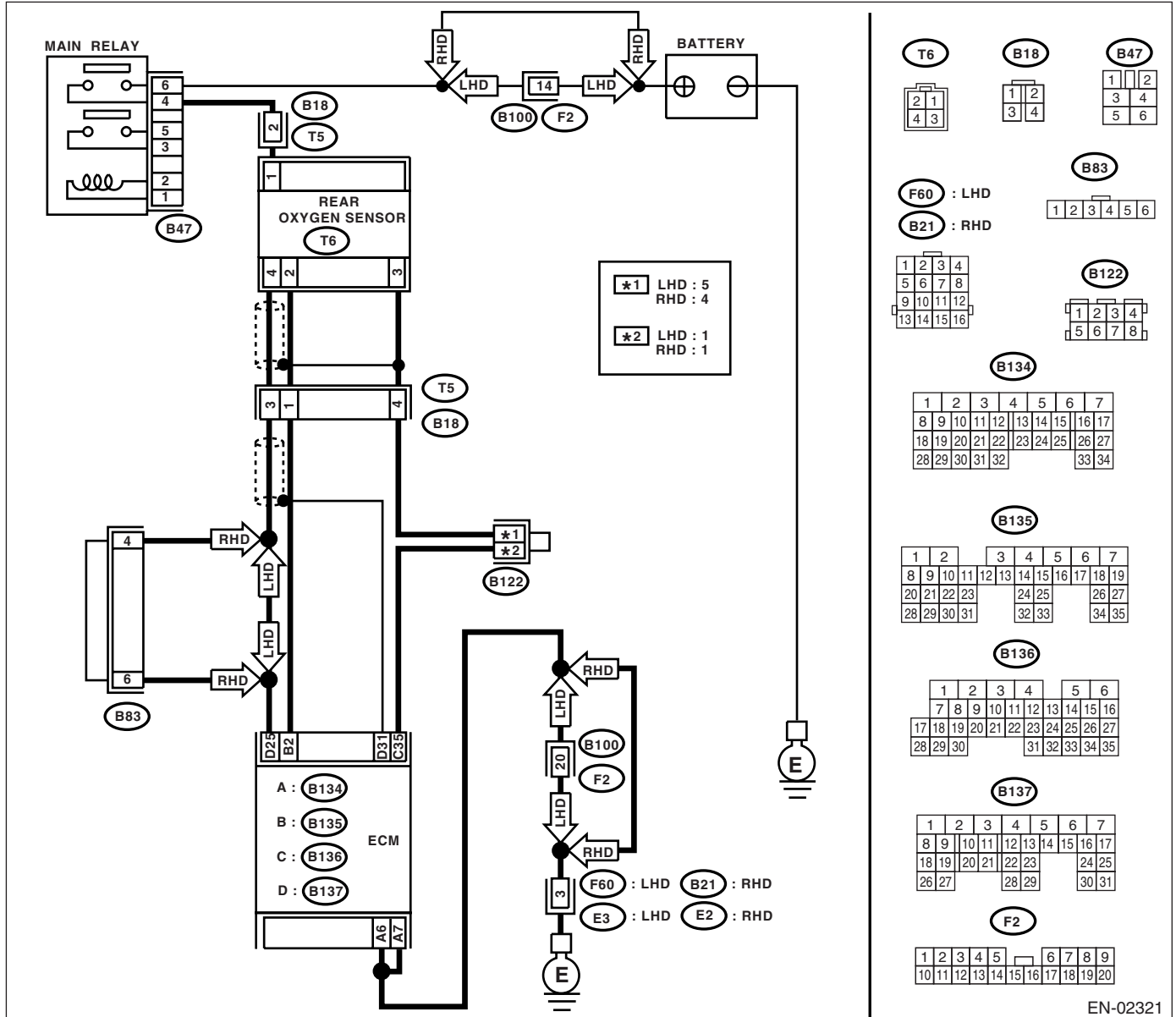
DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02321

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4DOTC)-74, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK REAR OXYGEN SENSOR DATA. 1) Warm-up the engine until engine coolant temperature is above 70°C (158°F), and keep the engine speed at 2,000 rpm to 3,000 rpm for two minutes. 2) Read the data of rear oxygen (A/F) sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: <ul style="list-style-type: none"> • Subaru Select Monitor For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.> <ul style="list-style-type: none"> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.	Does the value fluctuate?	Go to step 6.	Go to step 3.
3 CHECK REAR OXYGEN SENSOR DATA. Read the data of rear oxygen (A/F) sensor signal using Subaru Select Monitor or OBD-II general scan tool.	Is the voltage 0.2 — 0.4 V?	Go to step 4.	Replace the rear oxygen sensor. <Ref. to FU(H4DOTC)-47, Rear Oxygen Sensor.>
4 CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and rear oxygen sensor. 3) Measure the resistance in harness between ECM and rear oxygen sensor connector. Connector & terminal (B137) No. 25 — (T6) No. 4:	Is the resistance more than 3 Ω?	Repair battery short circuit in harness between ECM and rear oxygen sensor connector.	Go to step 5.
5 CHECK HARNESS BETWEEN REAR OXYGEN SENSOR and ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from rear oxygen sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between rear oxygen sensor harness connector and engine ground or chassis ground. Connector & terminal (T6) No. 4 (+) — Engine ground (-):	Is the voltage more than 0.2 V?	Replace the rear oxygen sensor. <Ref. to FU(H4DOTC)-47, Rear Oxygen Sensor.>	Repair the harness and connector. NOTE: In this case repair the following: <ul style="list-style-type: none"> • Open circuit in harness between rear oxygen sensor and ECM connector • Poor contact in rear oxygen sensor connector • Poor contact in ECM connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
6 CHECK EXHAUST SYSTEM. Check exhaust system parts. NOTE: Check the following items: <ul style="list-style-type: none">• Loose part of exhaust system and incomplete installation• Damage (crack, hole etc.) of parts• Looseness and ill fitting of parts between front oxygen (A/F) sensor and rear oxygen sensor	Is there a fault in exhaust system?	Repair or replace the faulty part.	Replace the rear oxygen sensor. <Ref. to FU(H4DOTC)-47, Rear Oxygen Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

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

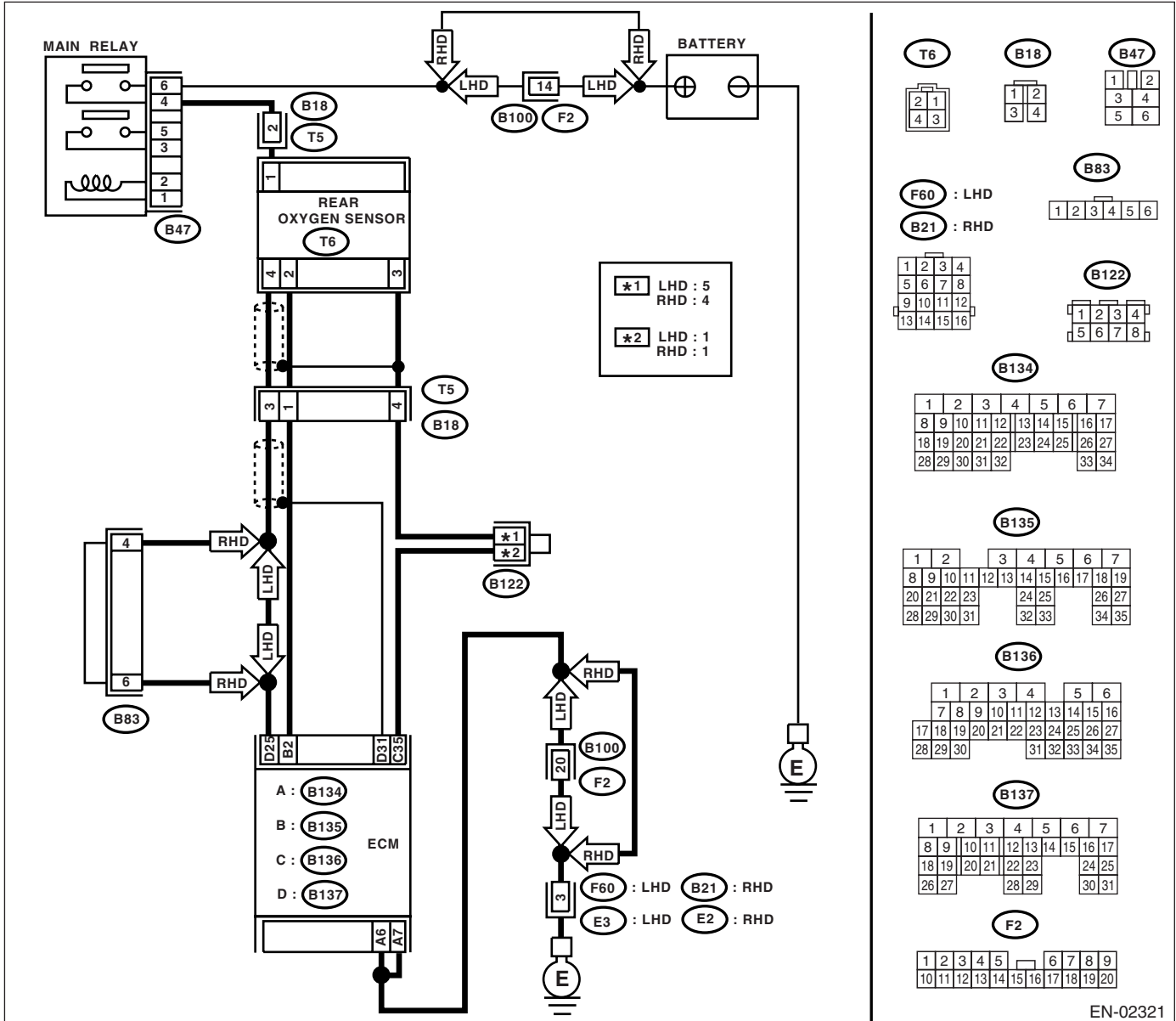
DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02321

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4DOTC)-74, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK REAR OXYGEN SENSOR DATA. 1) Warm-up the engine until engine coolant temperature is above 70°C (158°F), and keep the engine speed at 2,000 rpm to 3,000 rpm for two minutes. 2) Read the data of rear oxygen (A/F) sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: <ul style="list-style-type: none"> • Subaru Select Monitor For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.> <ul style="list-style-type: none"> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.	Does the value fluctuate?	Go to step 6.	Go to step 3.
3 CHECK REAR OXYGEN SENSOR DATA. Read the data of rear oxygen (A/F) sensor signal using Subaru Select Monitor or OBD-II general scan tool.	Is the voltage 0.2 — 0.4 V?	Go to step 4.	Replace the rear oxygen sensor. <Ref. to FU(H4DOTC)-47, Rear Oxygen Sensor.>
4 CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and rear oxygen sensor. 3) Measure the resistance in harness between ECM and rear oxygen sensor connector. Connector & terminal (B137) No. 25 — (T6) No. 4:	Is the resistance more than 3 Ω?	Repair battery short circuit in harness between ECM and rear oxygen sensor connector.	Go to step 5.
5 CHECK HARNESS BETWEEN REAR OXYGEN SENSOR and ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from rear oxygen sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between rear oxygen sensor harness connector and engine ground or chassis ground. Connector & terminal (T6) No. 4 (+) — Engine ground (-):	Is the voltage more than 0.2 V?	Replace the rear oxygen sensor. <Ref. to FU(H4DOTC)-47, Rear Oxygen Sensor.>	Repair the harness and connector. NOTE: In this case repair the following: <ul style="list-style-type: none"> • Open circuit in harness between rear oxygen sensor and ECM connector • Poor contact in rear oxygen sensor connector • Poor contact in ECM connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
6 CHECK EXHAUST SYSTEM. Check exhaust system parts. NOTE: Check the following items: <ul style="list-style-type: none">• Loose part of exhaust system and incomplete installation• Damage (crack, hole etc.) of parts• Looseness and ill fitting of parts between front oxygen (A/F) sensor and rear oxygen sensor	Is there a fault in exhaust system?	Repair or replace the faulty part.	Replace the rear oxygen sensor. <Ref. to FU(H4DOTC)-47, Rear Oxygen Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

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

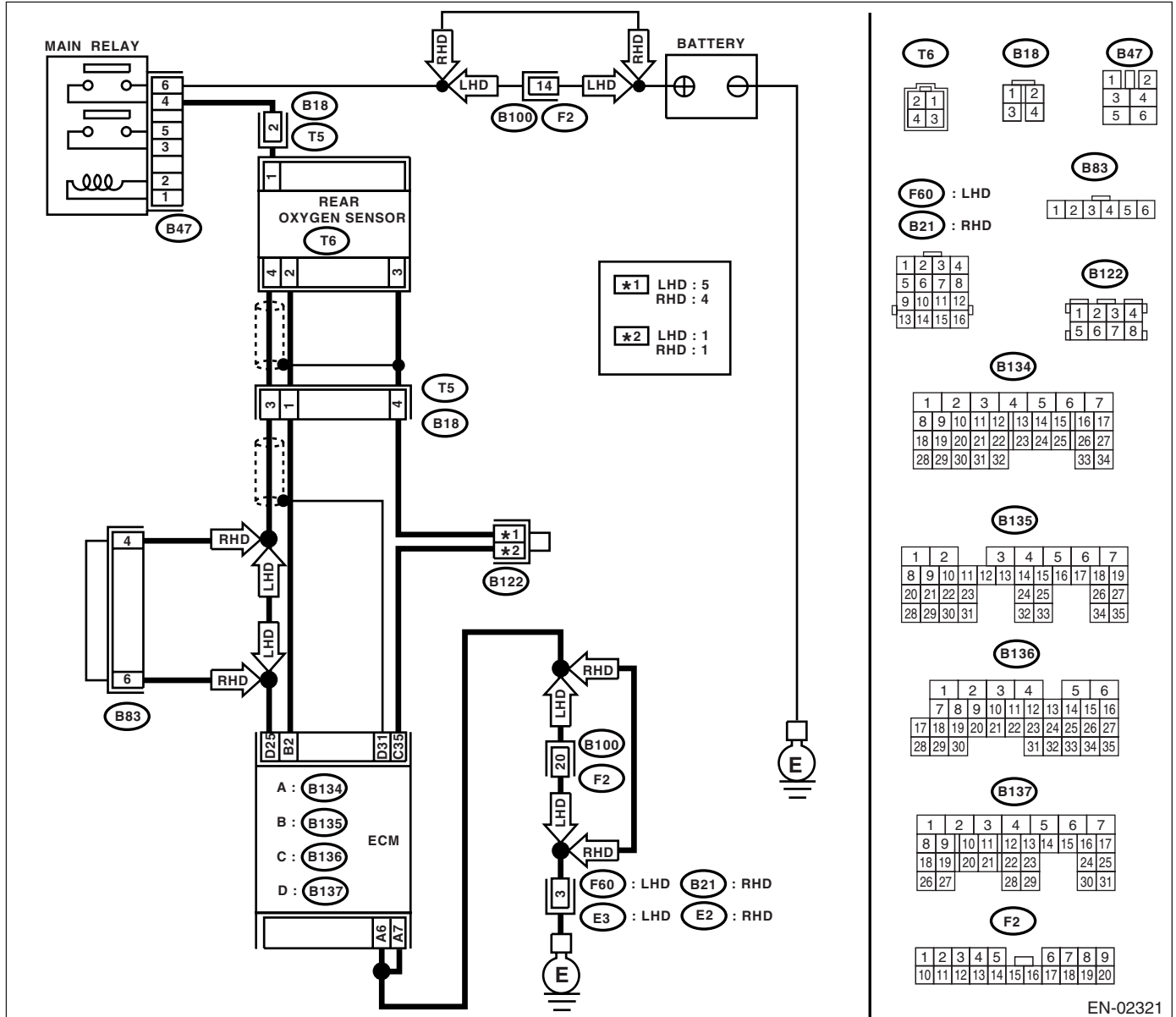
DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02321

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4DOTC)-74, List of Diagnostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0139.	Replace the rear oxygen sensor. <Ref. to FU(H4DOTC)-47, Rear Oxygen Sensor.>

AE:DTC P0171 SYSTEM TOO LEAN (BANK 1)

NOTE:

For diagnostic procedure, refer to DTC P0172. <Ref. to EN(H4DOTC)-149, DTC P0172 SYSTEM TOO RICH (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

AF:DTC P0172 SYSTEM TOO RICH (BANK 1)

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK EXHAUST SYSTEM.	Are there holes or looseness of the bolts on exhaust system?	Repair exhaust system.	Go to step 2.
2 CHECK AIR INTAKE SYSTEM.	Are there holes, loose bolts or disconnection of hose on air intake system?	Repair air intake system.	Go to step 3.
3 CHECK FUEL PRESSURE. Warning: • Place "NO FIRE" signs near the working area. • Be careful not to spill fuel. 1) Release the fuel pressure. (1) Disconnect the connector from fuel pump relay. (2) Start the engine and run it until it stalls. (3) After the engine stalls, crank it for five more seconds. (4) Turn the ignition switch to OFF. 2) Connect the connector to fuel pump relay. 3) Disconnect the fuel delivery hose from fuel filter, and connect the fuel pressure gauge. 4) Install the fuel filler cap. 5) Start the engine and idle while gear position is neutral. 6) Measure the fuel pressure while disconnecting pressure regulator vacuum hose from intake manifold. Warning: Release fuel pressure before removing the fuel pressure gauge. NOTE: If fuel pressure does not increase, squeeze the fuel return hose 2 to 3 times, then measure fuel pressure again.	Is measured value 284 — 314 kPa (2.9 — 3.2 kg/cm ² , 41 — 46 psi)?	Go to step 4.	Repair the following items. Fuel pressure is too high: • Clogged fuel return line or bent hose Fuel pressure is too low: • Improper fuel pump discharge • Clogged fuel supply line

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>4</p> <p>CHECK FUEL PRESSURE. After connecting the pressure regulator vacuum hose, measure fuel pressure.</p> <p>Warning: Release fuel pressure before removing the fuel pressure gauge.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • If fuel pressure does not increase, squeeze fuel return hose 2 to 3 times, then measure fuel pressure again. • If out of specification as measured at this step, check or replace pressure regulator and pressure regulator vacuum hose. 	<p>Is measured value 206 — 235 kPa (2.1 — 2.4 kg/cm², 30 — 34 psi)?</p>	Go to step 5.	<p>Repair the following items.</p> <p>Fuel pressure is too high:</p> <ul style="list-style-type: none"> • Faulty pressure regulator • Clogged fuel return line or bent hose <p>Fuel pressure is too low:</p> <ul style="list-style-type: none"> • Faulty pressure regulator • Improper fuel pump discharge • Clogged fuel supply line
<p>5</p> <p>CHECK ENGINE COOLANT TEMPERATURE SENSOR.</p> <ol style="list-style-type: none"> 1) Start the engine and warm-up completely. 2) Read the data of engine coolant temperature sensor signal using Subaru Select Monitor or the OBD-II general scan tool. <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • OBD-II general scan tool <p>For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</p>	<p>Is engine coolant temperature more than 60°C (140°F)?</p>	Go to step 6.	<p>Replace the engine coolant temperature sensor. <Ref. to FU(H4DOTC)-29, Engine Coolant Temperature Sensor.></p>
<p>6</p> <p>CHECK MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR.</p> <ol style="list-style-type: none"> 1) Start and warm-up the engine until engine coolant temperature is greater than 60°C (140°F). 2) Place the shift lever in neutral position. 3) Turn the A/C switch to OFF. 4) Turn all accessory switches to OFF. 5) Read the data of mass air flow and intake air temperature sensor signal using Subaru Select Monitor or the OBD-II general scan tool. <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • OBD-II general scan tool <p>For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</p>	<p>Is the measured value within the following?</p> <p>Ignition ON: 73.3 — 106.6 kPa (550 — 800 mmHg, 21.65 — 31.50 inHg)</p> <p>Idling: 24.0 — 41.3 kPa (180 — 310 mmHg, 7.09 — 12.20 inHg)</p>	Go to step 7.	<p>Replace the mass air flow and intake air temperature sensor. <Ref. to FU(H4DOTC)-35, Mass Air Flow and Intake Air Temperature Sensor.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>7</p> <p>CHECK MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR.</p> <p>1) Start and warm-up the engine until engine coolant temperature is greater than 60°C (140°F).</p> <p>2) Place the shift lever in neutral position.</p> <p>3) Turn the A/C switch to OFF.</p> <p>4) Turn all accessory switches to OFF.</p> <p>5) Open the hood.</p> <p>6) Measure the ambient temperature.</p> <p>7) Read the data of mass air flow and intake air temperature sensor signal using Subaru Select Monitor or the OBD-II general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual. 	<p>Subtract the ambient temperature from intake air temperature, and is the value from -10°C (14°F) to 50°C (122°F)?</p>	<p>Contact the SUBARU dealer.</p> <p>NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.</p>	<p>Check mass air flow and intake air temperature sensor. <Ref. to FU(H4DOTC)-35, Mass Air Flow and Intake Air Temperature Sensor.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

AG:DTC P0230 FUEL PUMP PRIMARY CIRCUIT

DTC DETECTING CONDITION:

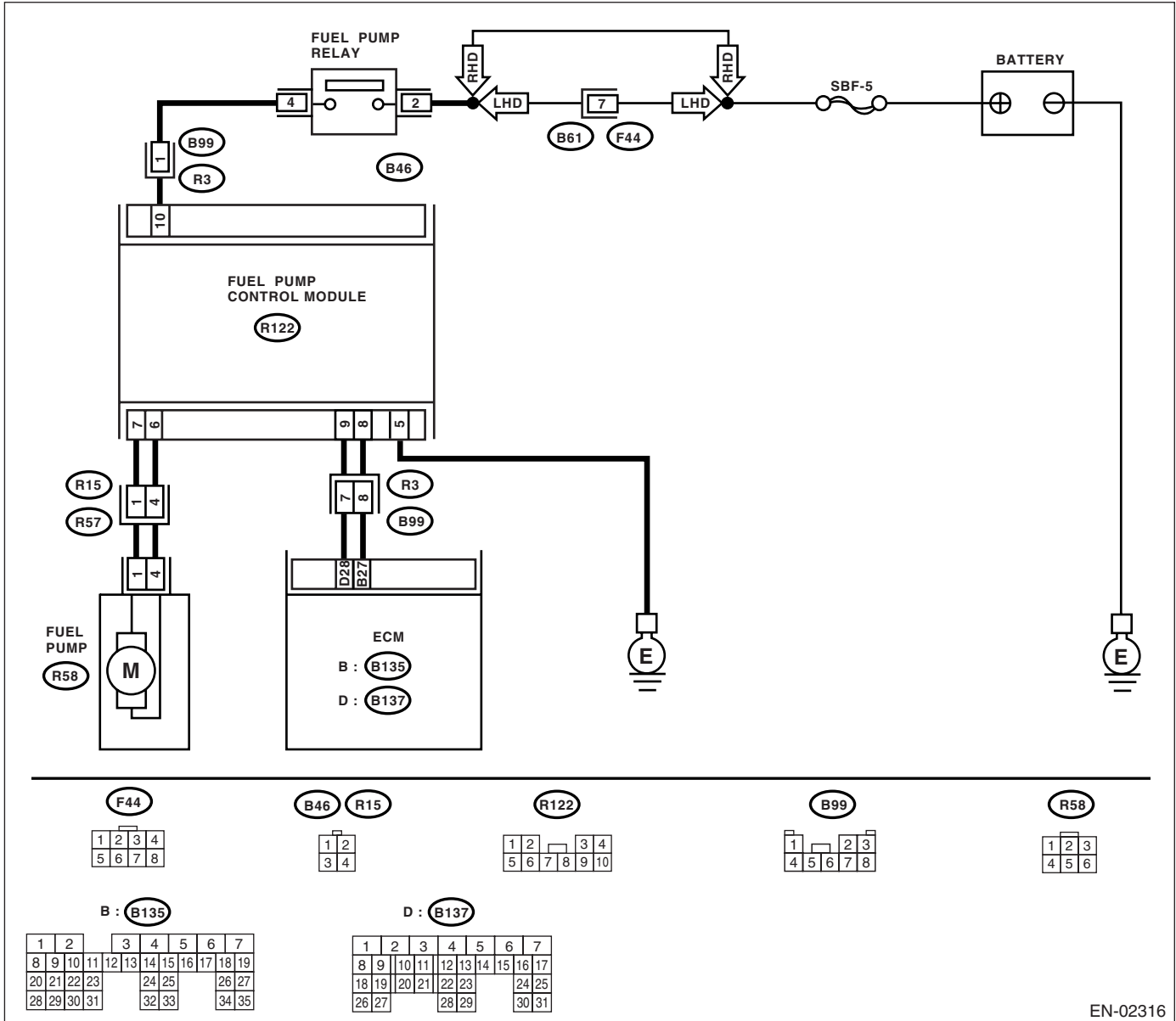
Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:

- LHD model

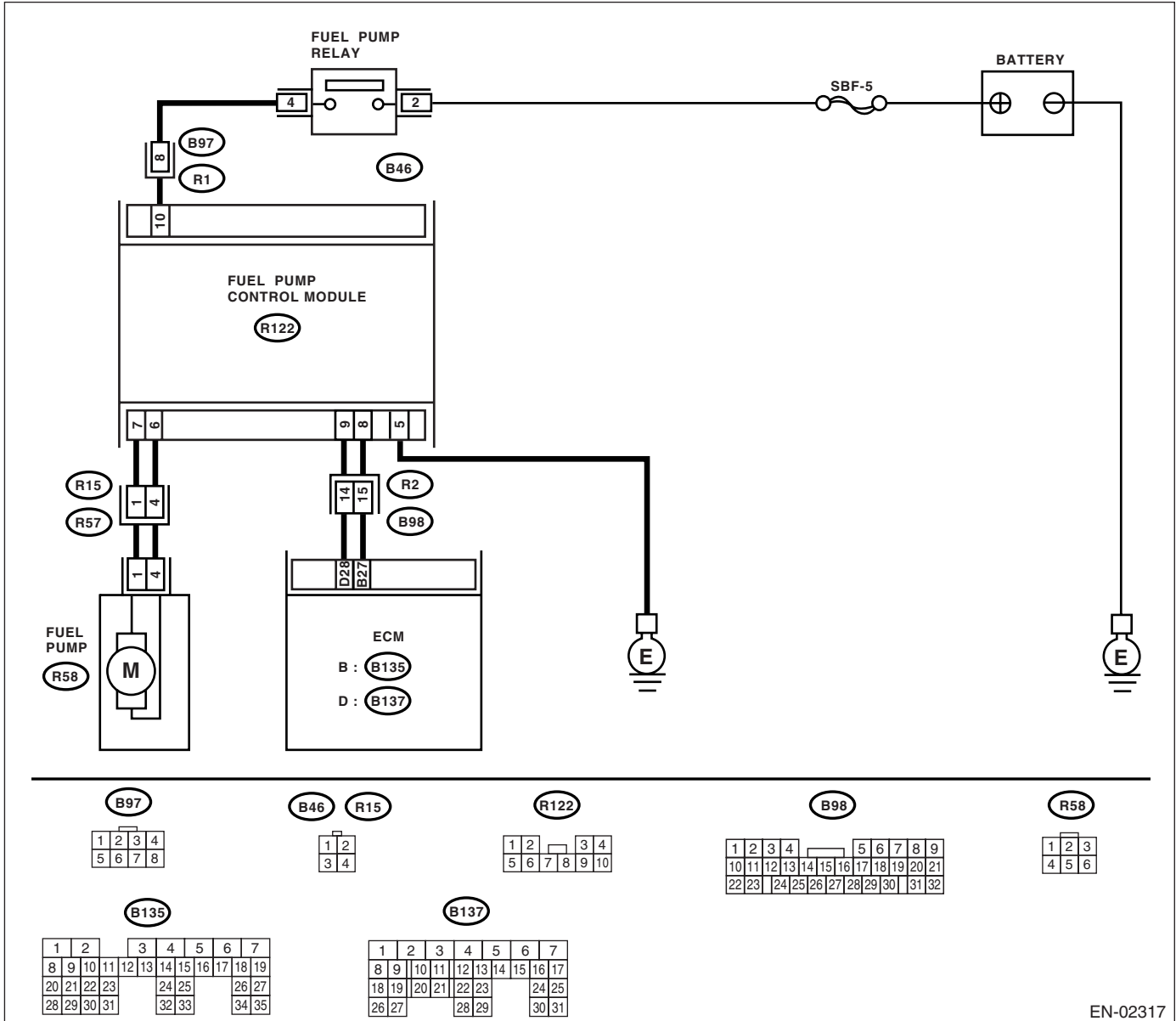


EN-02316

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

• RHD model



EN-02317

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>1</p> <p>CHECK POWER SUPPLY CIRCUIT TO FUEL PUMP CONTROL UNIT.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from fuel pump control unit. 3) Turn the ignition switch to ON. 4) Measure the voltage between fuel pump control unit and chassis ground.</p> <p>Connector & terminal (R122) No. 10 (+) — Chassis ground (-):</p>	<p>Is the voltage more than 10 V?</p>	<p>Go to step 2.</p>	<p>Repair the power supply circuit.</p> <p>NOTE: In this case repair the following:</p> <ul style="list-style-type: none"> • Open or ground short circuit in harness between fuel pump relay and fuel pump control unit. • Poor contact in fuel pump control unit connector. • Poor contact in fuel pump relay connector.
<p>2</p> <p>CHECK GROUND CIRCUIT OF FUEL PUMP CONTROL UNIT.</p> <p>1) Turn the ignition switch to OFF. 2) Measure the resistance of harness between fuel pump control unit and chassis ground.</p> <p>Connector & terminal (R122) No. 5 — Chassis ground:</p>	<p>Is the resistance less than 5 Ω?</p>	<p>Go to step 3.</p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case repair the following:</p> <ul style="list-style-type: none"> • Open circuit between fuel pump control unit and chassis ground. • Poor contact in fuel pump control unit connector.
<p>3</p> <p>CHECK HARNESS BETWEEN FUEL PUMP CONTROL UNIT AND FUEL PUMP CONNECTOR.</p> <p>1) Disconnect the connector from fuel pump. 2) Measure the resistance of harness between fuel pump control unit and fuel pump connector.</p> <p>Connector & terminal (R122) No. 7 — (R58) No. 1: (R122) No. 6 — (R58) No. 4:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 4.</p>	<p>Repair open circuit between fuel pump control unit and fuel pump.</p>
<p>4</p> <p>CHECK HARNESS BETWEEN FUEL PUMP CONTROL UNIT AND FUEL PUMP CONNECTOR.</p> <p>Measure the resistance of harness between fuel pump control unit and chassis ground.</p> <p>Connector & terminal (R122) No. 7 — Chassis ground: (R122) No. 6 — Chassis ground:</p>	<p>Is the resistance more than 1 MΩ?</p>	<p>Go to step 5.</p>	<p>Repair ground short circuit between fuel pump control unit and fuel pump.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
5 CHECK HARNESS BETWEEN FUEL PUMP CONTROL UNIT AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance in harness between fuel pump control unit and ECM connector. <i>Connector & terminal</i> <i>(R122) No. 8 — (B135) No. 27:</i> <i>(R122) No. 9 — (B137) No. 28:</i>	Is the resistance less than 1 Ω ?	Go to step 6.	Repair the harness and connector. NOTE: In this case repair the following: • Open circuit between fuel pump control unit and ECM. • Poor contact in fuel pump control unit and ECM connector
6 CHECK HARNESS BETWEEN FUEL PUMP CONTROL UNIT AND ECM CONNECTOR. Measure the resistance of harness between fuel pump control unit and chassis ground. <i>Connector & terminal</i> <i>(R122) No. 8 — Chassis ground:</i> <i>(R122) No. 9 — Chassis ground:</i>	Is the resistance more than 1 $M\Omega$?	Go to step 7.	Repair the ground short circuit between fuel pump control unit and ECM.
7 CHECK POOR CONTACT. Check poor contact in ECM and fuel pump control unit connector.	Is there poor contact in ECM and fuel pump control unit connector?	Repair the poor contact in ECM and fuel pump control unit.	Go to step 8.
8 CHECK EXPERIENCE OF OUT OF GAS.	Have the vehicle been out of gas before?	Complete the diagnosis. NOTE: DTC may be re-recorded due to the idle running of fuel pump at out of gas.	Replace the fuel pump control unit. <Ref. to FU(H4DOTC)-53, Fuel Pump Control Unit.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

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

DTC DETECTING CONDITION:

Immediately at fault recognition

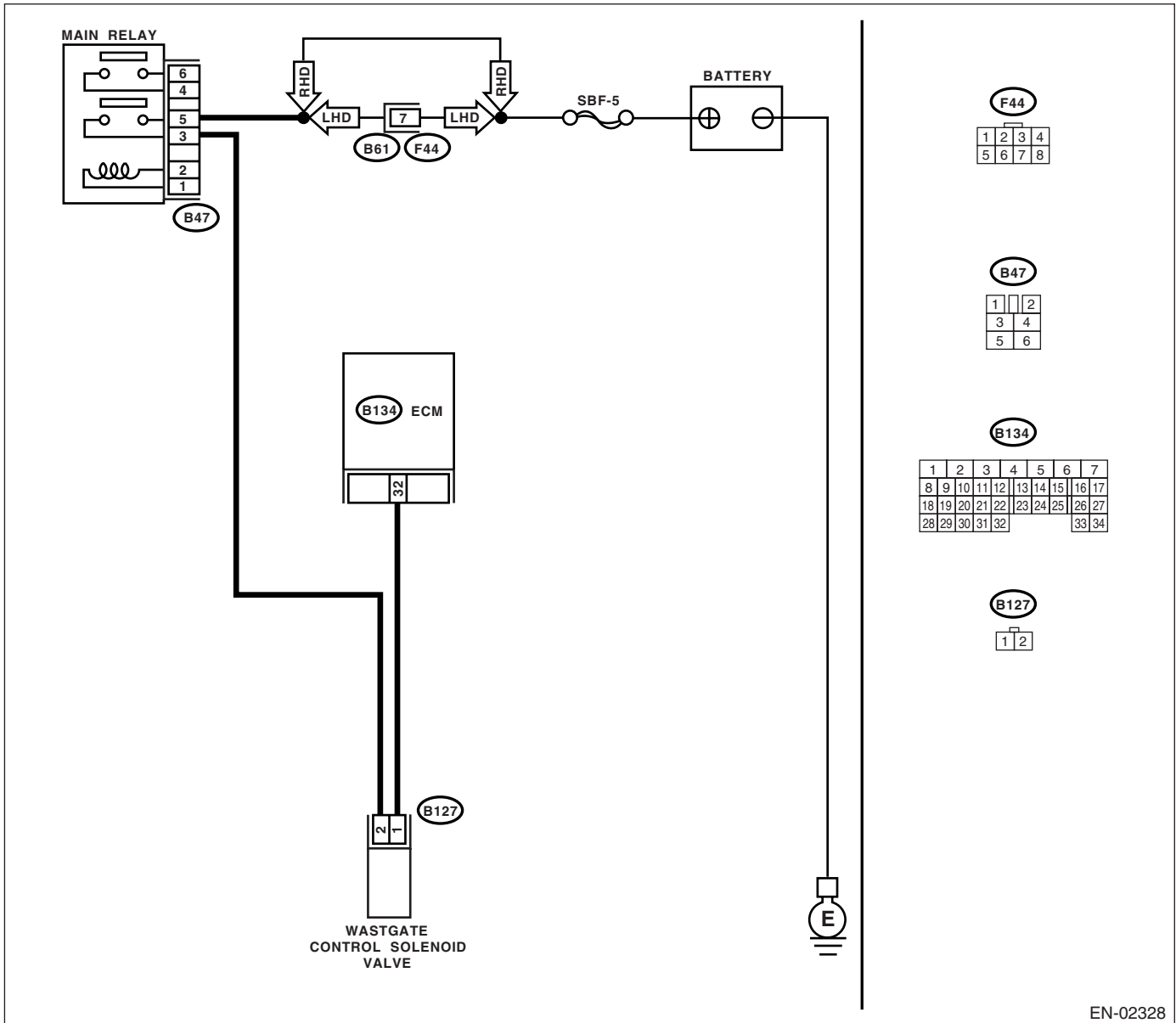
TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4DOTC)-74, List of Diagnostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0244.	Replace the wastegate control solenoid valve. <Ref. to FU(H4DOTC)-44, Wastegate Control Solenoid Valve Assembly.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

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

DTC DETECTING CONDITION:

Immediately at fault recognition

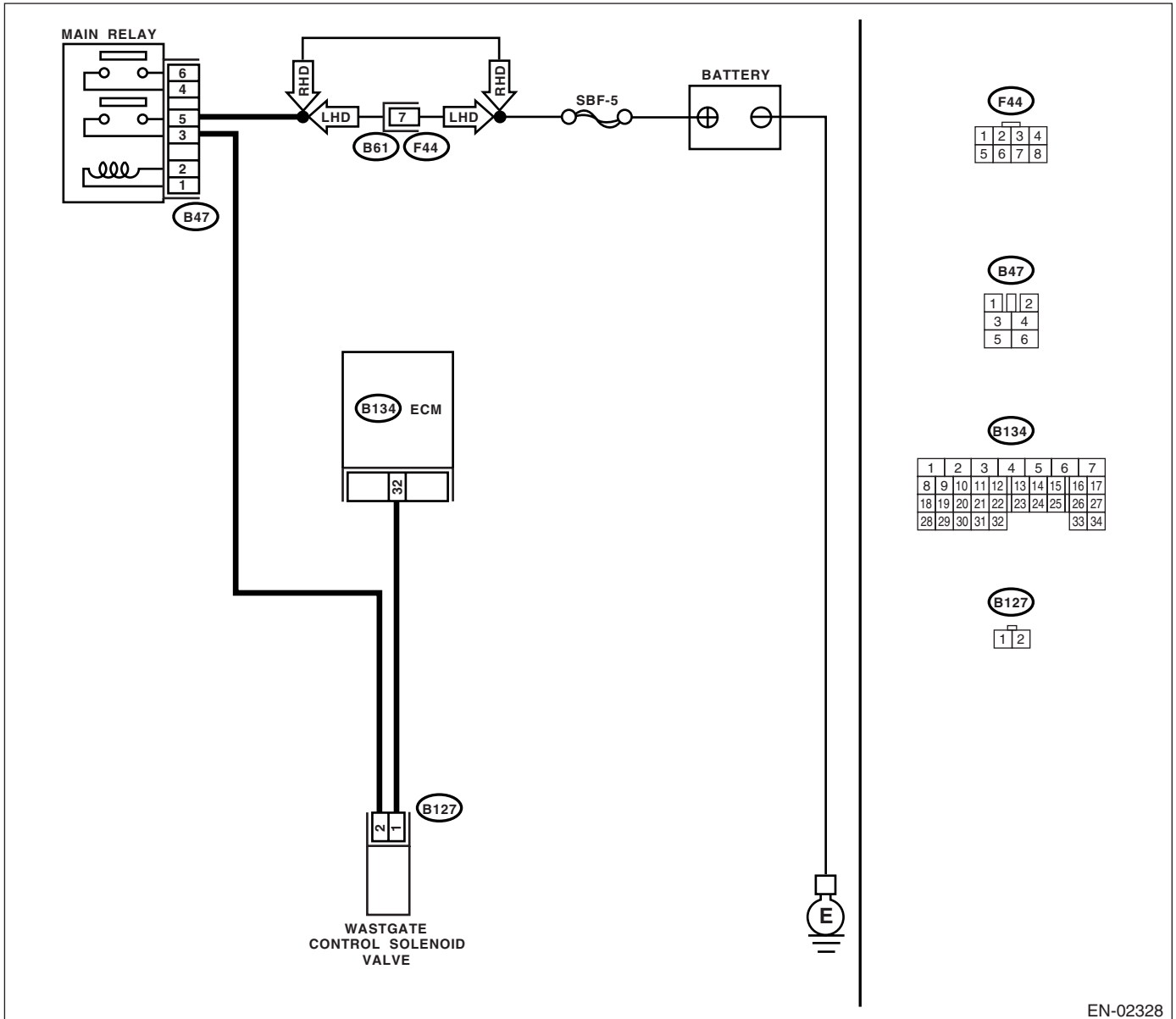
TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02328

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. <i>Connector & terminal</i> <i>(B134) No. 32 (+) — Chassis ground (-):</i>	Is the voltage more than 10 V?	Even if the malfunction indicator light illuminates, the circuit has returned to a normal condition at this time.	Go to step 2.
2 CHECK HARNESS BETWEEN WASTEGATE CONTROL SOLENOID VALVE AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from wastegate control solenoid valve and ECM. 3) Measure the resistance in harness between wastegate control solenoid valve connector and engine ground. <i>Connector & terminal</i> <i>(B127) No. 1 — Engine ground:</i>	Is the resistance less than 10 Ω ?	Repair ground short circuit in harness between ECM and wastegate control solenoid valve connector.	Go to step 3.
3 CHECK HARNESS BETWEEN WASTEGATE CONTROL SOLENOID VALVE AND ECM CONNECTOR. Measure the resistance of harness between wastegate control solenoid valve and ECM. <i>Connector & terminal</i> <i>(B134) No. 32 — (B127) No. 1:</i>	Is the resistance less than 1 Ω ?	Go to step 4.	Repair open circuit in harness between ECM and wastegate control solenoid valve connector. NOTE: In this case repair the following: <ul style="list-style-type: none"> • Open circuit in harness between ECM and wastegate control solenoid valve connector
4 CHECK WASTEGATE CONTROL SOLENOID VALVE. 1) Remove the wastegate control solenoid valve. 2) Measure the resistance between wastegate control solenoid valve terminals. <i>Terminals</i> <i>No. 1 — No. 2:</i>	Is the resistance 30 — 34 Ω ?	Go to step 5.	Replace the wastegate control solenoid valve. <Ref. to FU(H4DOTC)-44, Wastegate Control Solenoid Valve Assembly.>
5 CHECK POWER SUPPLY TO WASTEGATE CONTROL SOLENOID VALVE. 1) Turn the ignition switch to ON. 2) Measure the voltage between wastegate control solenoid valve and engine ground. <i>Connector & terminal</i> <i>(B127) No. 2 (+) — Engine ground (-):</i>	Is the voltage more than 10 V?	Go to step 6.	Repair open circuit in harness between main relay and wastegate control solenoid valve connector.
6 CHECK POOR CONTACT. Check poor contact in wastegate control solenoid valve connector.	Is there poor contact in wastegate control solenoid valve connector?	Repair poor contact in wastegate control solenoid valve connector.	Contact the SUB-ARU dealer. NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

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

Immediately at fault recognition

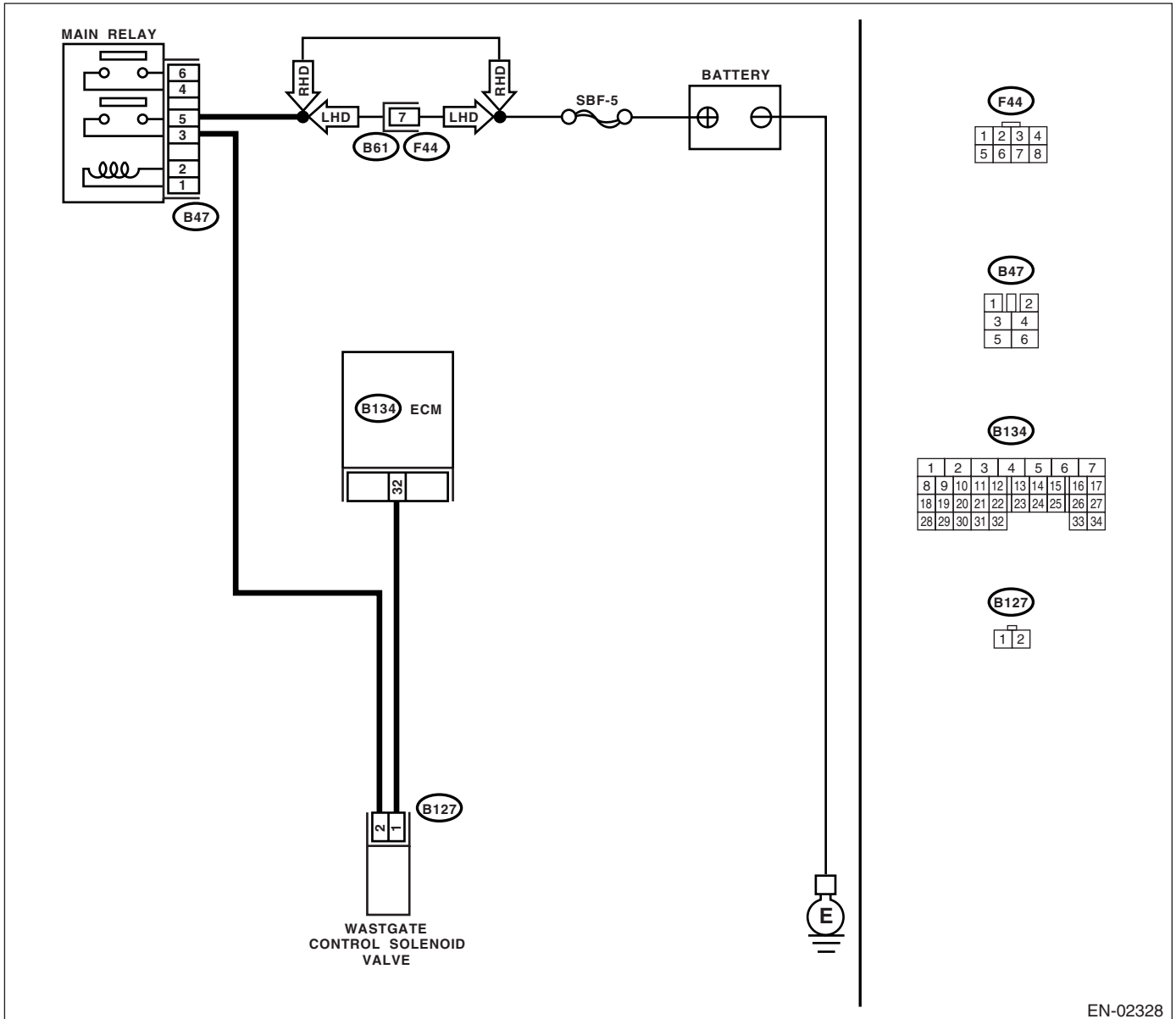
TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02328

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. <i>Connector & terminal</i> <i>(B134) No. 32 (+) — Chassis ground (-):</i>	Is the voltage more than 10 V?	Go to step 3.	Go to step 2.
2 CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair the poor contact in ECM connector.	Replace the ECM. <Ref. to FU(H4DOTC)-50, Engine Control Module (ECM).>
3 CHECK HARNESS BETWEEN WASTEGATE CONTROL SOLENOID VALVE AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from wastegate control solenoid valve. 3) Turn the ignition switch to ON. 4) Measure the voltage between ECM and chassis ground. <i>Connector & terminal</i> <i>(B134) No. 32 (+) — Chassis ground (-):</i>	Is the voltage more than 10 V?	Repair battery short circuit in harness between ECM and wastegate control solenoid valve connector. After repair, replace the ECM. <Ref. to FU(H4DOTC)-50, Engine Control Module (ECM).>	Go to step 4.
4 CHECK WASTEGATE CONTROL SOLENOID VALVE. 1) Turn the ignition switch to OFF. 2) Measure the resistance between wastegate control solenoid valve terminals. <i>Terminals</i> <i>No. 1 — No. 2:</i>	Is the resistance less than 1 Ω ?	Replace the wastegate control solenoid valve and ECM. <Ref. to FU(H4DOTC)-44, Wastegate Control Solenoid Valve Assembly.> <Ref. to FU(H4DOTC)-50, Engine Control Module (ECM).>	Go to step 5.
5 CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair the poor contact in ECM connector.	Replace the ECM. <Ref. to FU(H4DOTC)-50, Engine Control Module (ECM).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

AK:DTC P0301 CYLINDER 1 MISFIRE DETECTED

NOTE:

For the diagnostic procedure, refer to DTC P0304. <Ref. to EN(H4DOTC)-163, DTC P0304 CYLINDER 4 MISFIRE DETECTED, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

AL:DTC P0302 CYLINDER 2 MISFIRE DETECTED

NOTE:

For the diagnostic procedure, refer to DTC P0304. <Ref. to EN(H4DOTC)-163, DTC P0304 CYLINDER 4 MISFIRE DETECTED, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

AM:DTC P0303 CYLINDER 3 MISFIRE DETECTED

NOTE:

For the diagnostic procedure, refer to DTC P0304. <Ref. to EN(H4DOTC)-163, DTC P0304 CYLINDER 4 MISFIRE DETECTED, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

AN:DTC P0304 CYLINDER 4 MISFIRE DETECTED

DTC DETECTING CONDITION:

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

TROUBLE SYMPTOM:

- Engine stalls.
- Erroneous idling
- Rough driving

CAUTION:

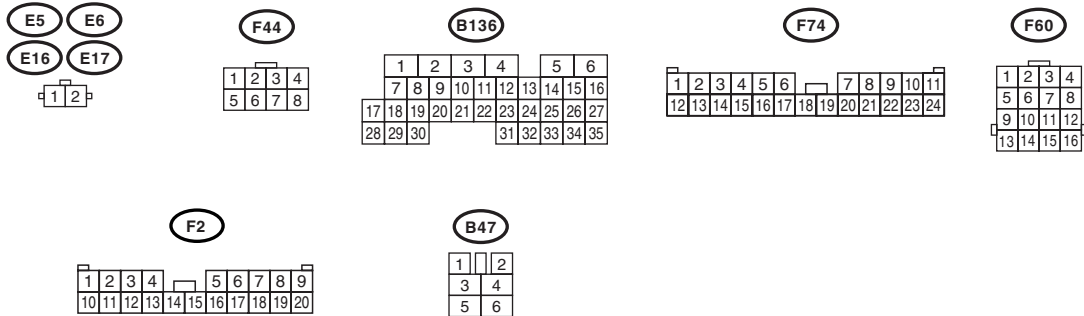
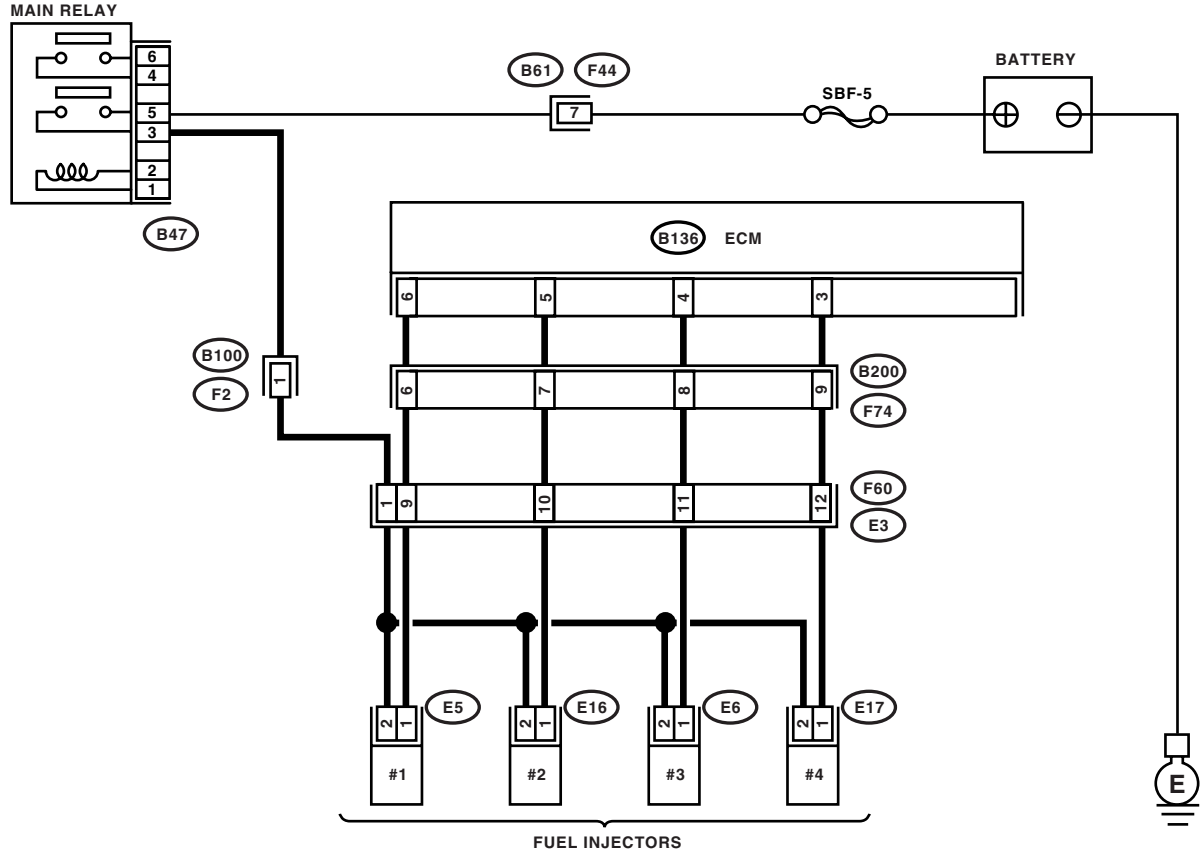
After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

WIRING DIAGRAM:

- LHD model

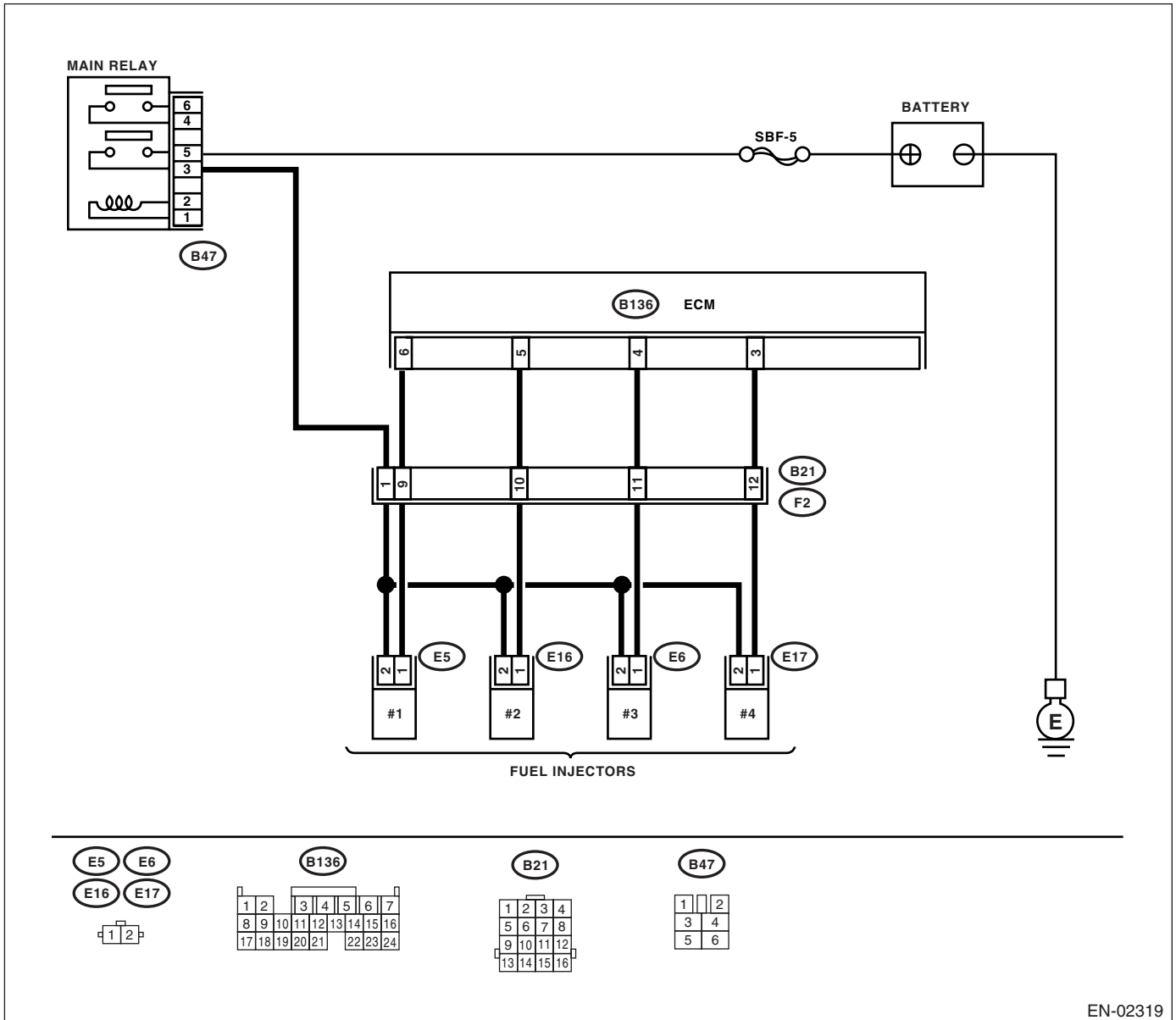


EN-02318

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

- RHD model



EN-02319

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4DOTC)-74, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM connector and chassis ground on faulty cylinders. Connector & terminal <i>#1 (B136) No. 6 (+) — Chassis ground (-):</i> <i>#2 (B136) No. 5 (+) — Chassis ground (-):</i> <i>#3 (B136) No. 4 (+) — Chassis ground (-):</i> <i>#4 (B136) No. 3 (+) — Chassis ground (-):</i>	Is the voltage more than 10 V?	Go to step 7.	Go to step 3.
3 CHECK HARNESS BETWEEN FUEL INJECTOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from fuel injector on faulty cylinder. 3) Disconnect the connector from ECM. 4) Measure the voltage between ECM connector and engine ground on faulty cylinders. Connector & terminal <i>#1 (E5) No. 1 — Engine ground:</i> <i>#2 (E16) No. 1 — Engine ground:</i> <i>#3 (E6) No. 1 — Engine ground:</i> <i>#4 (E17) No. 1 — Engine ground:</i>	Is the resistance more than 1 M Ω ?	Go to step 4.	Repair ground short circuit in harness between fuel injector and ECM connector.
4 CHECK HARNESS BETWEEN FUEL INJECTOR AND ECM CONNECTOR. Measure the resistance of harness connector between ECM connector and fuel injector on faulty cylinders. Connector & terminal <i>#1 (B136) No. 6 — (E5) No. 1:</i> <i>#2 (B136) No. 5 — (E16) No. 1:</i> <i>#3 (B136) No. 4 — (E6) No. 1:</i> <i>#4 (B136) No. 3 — (E17) No. 1:</i>	Is the resistance less than 1 Ω ?	Go to step 5.	Repair the harness and connector. NOTE: In this case repair the following: <ul style="list-style-type: none"> • Open circuit in harness between ECM and fuel injector connector • Poor contact in coupling connector
5 CHECK FUEL INJECTOR. Measure the resistance between fuel injector terminals on faulty cylinder. Terminals <i>No. 1 — No. 2:</i>	Is the resistance 5 — 20 Ω ?	Go to step 6.	Replace the faulty fuel injector. <Ref. to FU(H4DOTC)-38, Fuel Injector.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>6</p> <p>CHECK POWER SUPPLY LINE. 1) Turn the ignition switch to ON. 2) Measure the voltage between fuel injector and engine ground on faulty cylinders. Connector & terminal #1 (E5) No. 2 (+) — Engine ground (-): #2 (E16) No. 2 (+) — Engine ground (-): #3 (E6) No. 2 (+) — Engine ground (-): #4 (E17) No. 2 (+) — Engine ground (-):</p>	Is the voltage more than 10 V?	Repair poor contact in all connectors in fuel injector circuit.	Repair the harness and connector. NOTE: In this case repair the following: • Open circuit in harness between main relay and fuel injector connector on faulty cylinders • Poor contact in coupling connector • Poor contact in main relay connector • Poor contact in fuel injector connector on faulty cylinders
<p>7</p> <p>CHECK HARNESS BETWEEN FUEL INJECTOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from fuel injector on faulty cylinder. 3) Turn the ignition switch to ON. 4) Measure the voltage between ECM connector and chassis ground on faulty cylinders. Connector & terminal #1 (B136) No. 6 (+) — Chassis ground (-): #2 (B136) No. 5 (+) — Chassis ground (-): #3 (B136) No. 4 (+) — Chassis ground (-): #4 (B136) No. 3 (+) — Chassis ground (-):</p>	Is the voltage more than 10 V?	Repair battery short circuit in harness between ECM and fuel injector. After repair, replace the ECM. <Ref. to FU(H4DOTC)-50, Engine Control Module (ECM).>	Go to step 8.
<p>8</p> <p>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:</p>	Is the resistance less than 1 Ω ?	Replace the faulty fuel injector and ECM. <Ref. to FU(H4DOTC)-38, Fuel Injector.> <Ref. to FU(H4DOTC)-50, Engine Control Module (ECM).>	Go to step 9.
<p>9</p> <p>CHECK INSTALLATION OF CAMSHAFT POSITION SENSOR/CRANKSHAFT POSITION SENSOR.</p>	Is the installation of camshaft position sensor or crankshaft position sensor loosened?	Tighten camshaft position sensor or crankshaft position sensor.	Go to step 10.
<p>10</p> <p>CHECK CRANK SPROCKET. Remove the timing belt cover.</p>	Is the crank sprocket rusted or does it have broken teeth?	Replace the crank sprocket. <Ref. to ME(H4DOTC)-67, Crank Sprocket.>	Go to step 11.
<p>11</p> <p>CHECK INSTALLATION CONDITION OF TIMING BELT. Turn the crankshaft, and align alignment mark on crank sprocket with alignment mark on cylinder block.</p>	Is the timing belt dislocated from its proper position?	Repair installation condition of timing belt. <Ref. to ME(H4DOTC)-58, Timing Belt Assembly.>	Go to step 12.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
12 CHECK FUEL LEVEL.	Is the fuel meter indication higher than the "Lower" level?	Go to step 13 .	Replenish fuel so fuel meter indication is higher than the "Lower" level. After replenishing fuel, Go to step 13 .
13 CHECK STATUS OF MALFUNCTION INDICATOR LIGHT. 1) Clear the memory using Subaru Select Monitor. <Ref. to EN(H4DOTC)-47, Clear Memory Mode.> 2) Start the engine, and drive the vehicle more than 10 minutes.	Does the malfunction indicator light illuminate or blink?	Go to step 15 .	Go to step 14 .
14 CHECK CAUSE OF MISFIRE DIAGNOSED.	Was the cause of misfire diagnosed when the engine is running?	Finish diagnostics operation, if the engine has no abnormality.	Repair the poor contact. NOTE: In this case repair the following: <ul style="list-style-type: none"> • Poor contact in ignition coil connector • Poor contact in fuel injector connector on faulty cylinders • Poor contact in ECM connector. • Poor contact in coupling connector
15 CHECK AIR INTAKE SYSTEM.	Is there any fault in air intake system?	Repair air intake system. NOTE: Check the following items: <ul style="list-style-type: none"> • Are there air leaks or air suction caused by loose or dislocated nuts and bolts? • Are there cracks or any disconnection of hoses? 	Go to step 16 .
16 CHECK CYLINDER.	Is there a fault in that cylinder?	Repair or replace the faulty part. NOTE: Check the following items: <ul style="list-style-type: none"> • Spark plug • Fuel injector • Compression 	Go to DTC P0171 and P0172. <Ref. to EN(H4DOTC)-148, DTC P0171 SYSTEM TOO LEAN (BANK 1), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

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

DTC DETECTING CONDITION:

Immediately at fault recognition

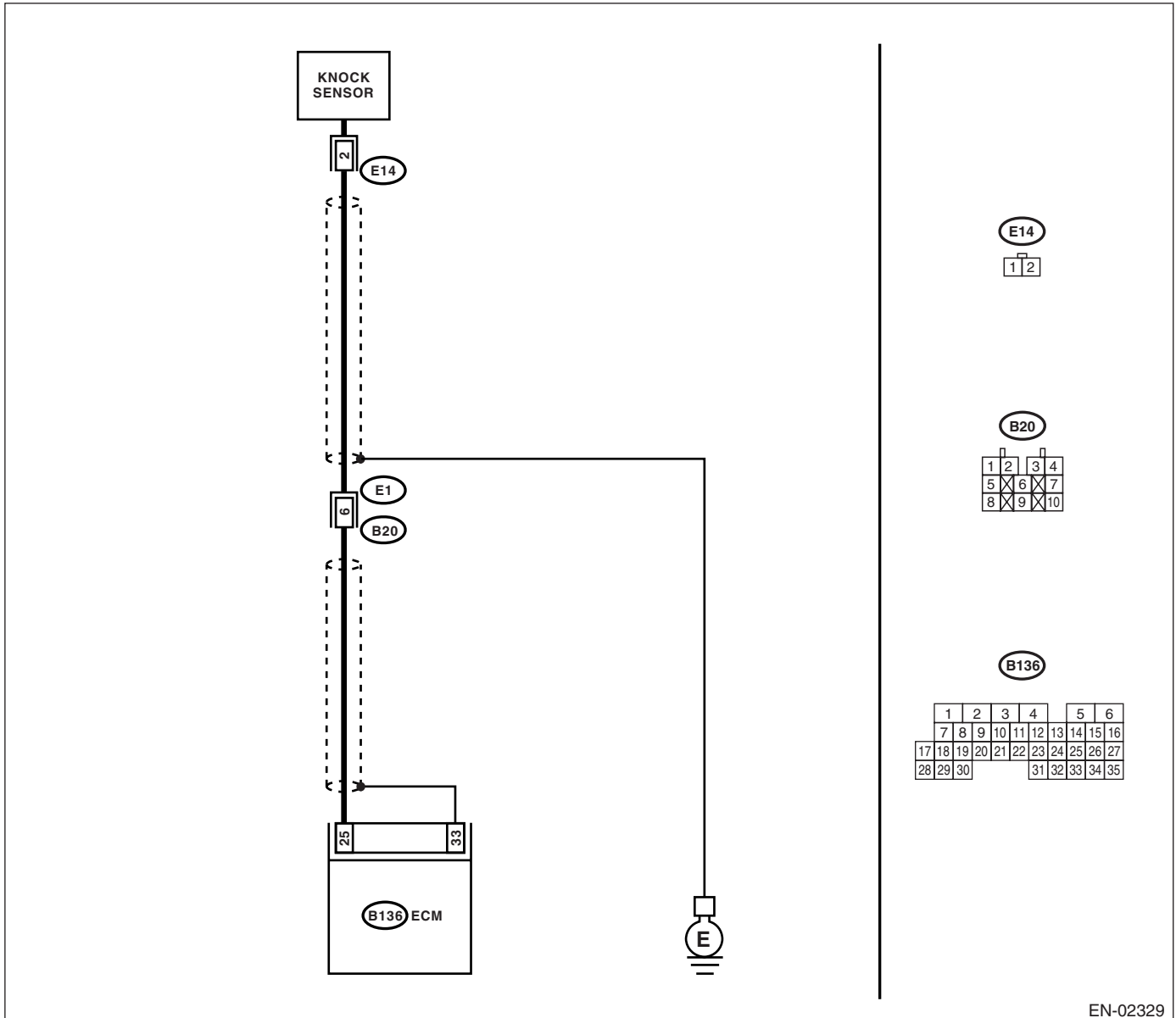
TROUBLE SYMPTOM:

- Poor driving performance
- Knocking occurs.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK HARNESS BETWEEN KNOCK SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance between ECM harness connector and chassis ground. <i>Connector & terminal</i> <i>(B136) No. 25 — Chassis ground:</i>	Is the resistance more than 700 k Ω ?	Go to step 2.	Repair the harness and connector. NOTE: In this case repair the following: <ul style="list-style-type: none"> • Open circuit in harness between knock sensor and ECM connector • Poor contact in knock sensor connector • Poor contact in coupling connector
2 CHECK KNOCK SENSOR. 1) Disconnect the connector from knock sensor. 2) Measure the resistance between knock sensor connector terminal and engine ground. <i>Terminals</i> <i>No. 2 — Engine ground:</i>	Is the resistance more than 700 k Ω ?	Go to step 3.	Repair the harness and connector. NOTE: In this case repair the following: <ul style="list-style-type: none"> • Poor contact in knock sensor connector • Poor contact in coupling connector
3 CHECK CONDITION OF KNOCK SENSOR INSTALLATION.	Is the knock sensor installation bolt tightened securely?	Replace the knock sensor. <Ref. to FU(H4DOTC)-33, Knock Sensor.>	Tighten knock sensor installation bolt securely.

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

DTC DETECTING CONDITION:

Immediately at fault recognition

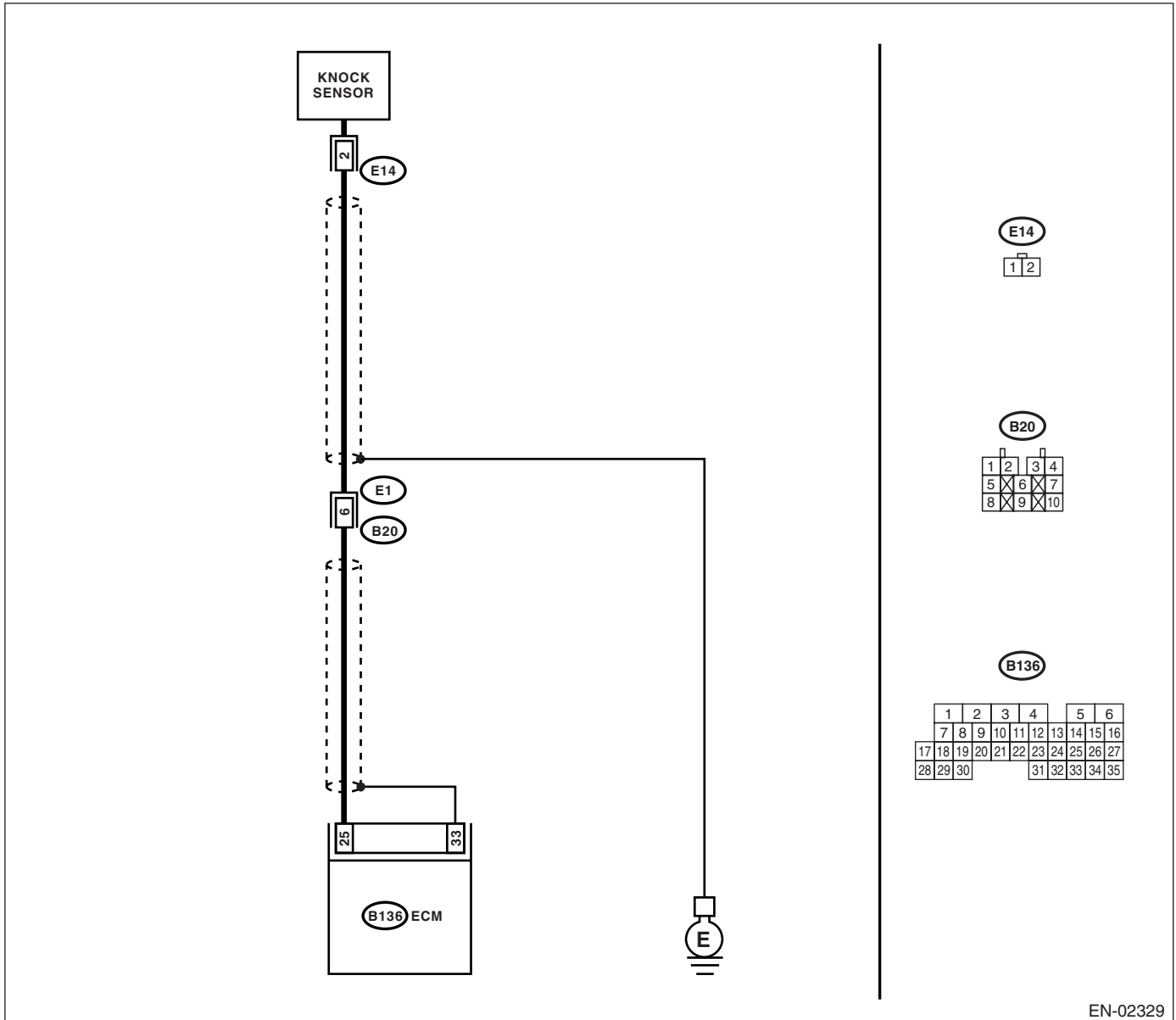
TROUBLE SYMPTOM:

- Poor driving performance
- Knocking occurs.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02329

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK HARNESS BETWEEN KNOCK SENSOR AND ECM CONNECTOR. Measure the resistance of harness between ECM connector and chassis ground. <i>Connector & terminal</i> <i>(B136) No. 25 — Chassis ground:</i>	Is the resistance less than 400 kΩ?	Go to step 2.	Go to step 3.
2 CHECK KNOCK SENSOR. 1) Disconnect the connector from knock sensor. 2) Measure the resistance between knock sensor connector terminal and engine ground. <i>Terminals</i> <i>No. 2 — Engine ground:</i>	Is the resistance less than 400 kΩ?	Replace the knock sensor. <Ref. to FU(H4DOTC)-33, Knock Sensor.>	Repair ground short circuit in harness between knock sensor connector and ECM connector. NOTE: The harness between both connectors are shielded. Repair short circuit in harness covered with shield.
3 CHECK INPUT SIGNAL FROM ECM. 1) Connect the connectors to ECM and knock sensor. 2) Turn the ignition switch to ON. 3) Measure the voltage between ECM and chassis ground. <i>Connector & terminal</i> <i>(B136) No. 25 (+) — Chassis ground (-):</i>	Is the voltage more than 2 V?	Even if the malfunction indicator light illuminates, the circuit has returned to a normal condition at this time. (However, the possibility of poor contact still remains.) NOTE: In this case repair the following: <ul style="list-style-type: none"> • Poor contact in knock sensor connector • Poor contact in ECM connector. • Poor contact in coupling connector 	Repair the poor contact in ECM connector.

AQ:DTC P0335 CRANKSHAFT POSITION SENSOR “A” CIRCUIT

DTC DETECTING CONDITION:

Immediately at fault recognition

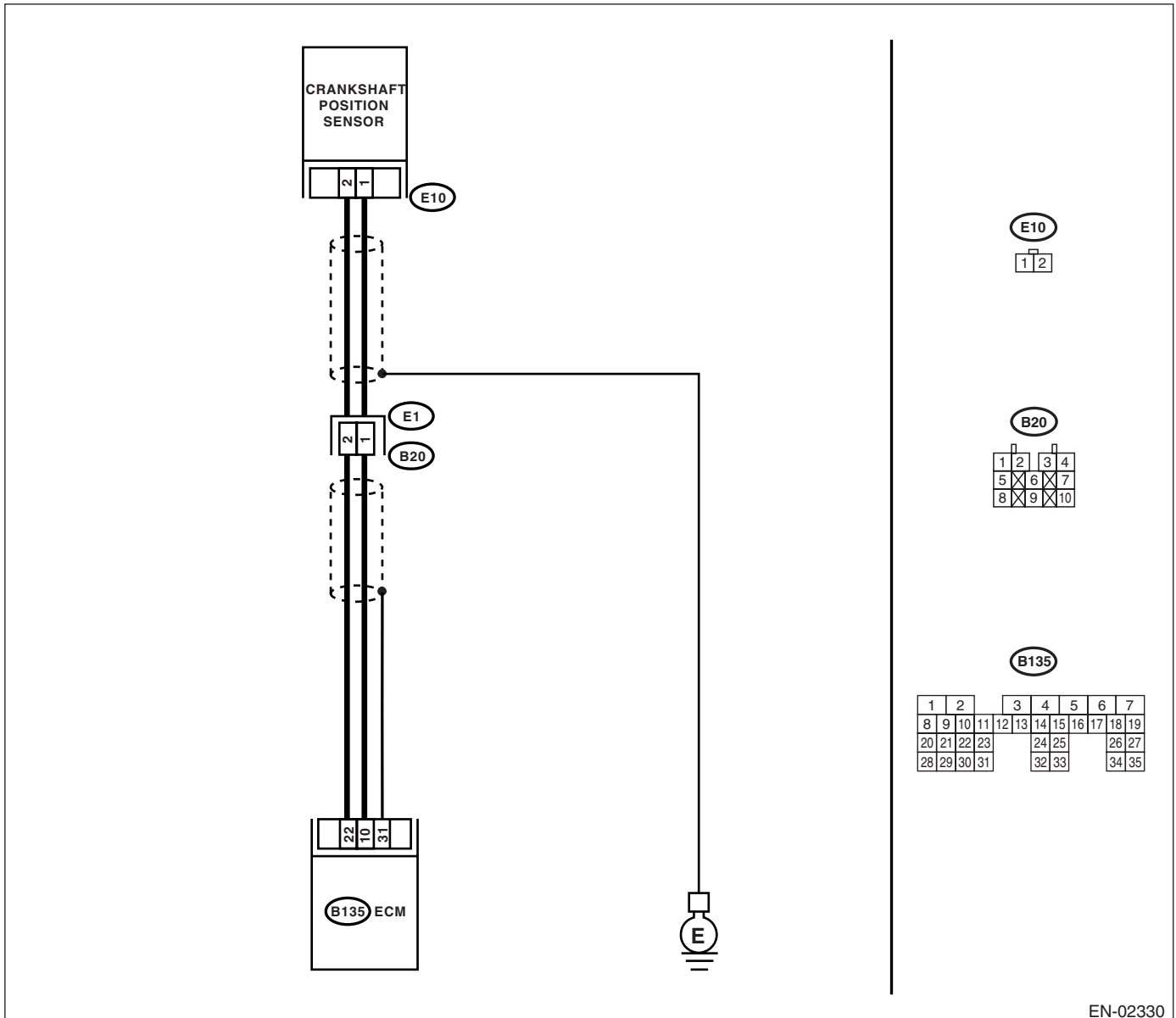
TROUBLE SYMPTOM:

- Engine stalls.
- Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>1</p> <p>CHECK HARNESS BETWEEN CRANKSHAFT POSITION SENSOR AND ECM CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from the crankshaft position sensor. 3) Measure the resistance of harness between crankshaft position sensor connector and engine ground.</p> <p>Connector & terminal (E10) No. 1 — Engine ground:</p>	<p>Is the resistance more than 100 kΩ?</p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between crankshaft position sensor and ECM connector • Poor contact in ECM connector. • Poor contact in coupling connector 	<p>Go to step 2.</p>
<p>2</p> <p>CHECK HARNESS BETWEEN CRANKSHAFT POSITION SENSOR AND ECM CONNECTOR.</p> <p>Measure the resistance of harness between crankshaft position sensor connector and engine ground.</p> <p>Connector & terminal (E10) No. 1 — Engine ground:</p>	<p>Is the resistance more than 1 MΩ?</p>	<p>Go to step 3.</p>	<p>Repair ground short circuit in harness between crankshaft position sensor and ECM connector.</p> <p>NOTE: The harness between both connectors are shielded. Repair ground short circuit in harness together with shield.</p>
<p>3</p> <p>CHECK HARNESS BETWEEN CRANKSHAFT POSITION SENSOR AND ECM CONNECTOR.</p> <p>Measure the resistance of harness between crankshaft position sensor connector and engine ground.</p> <p>Connector & terminal (E10) No. 2 — Engine ground:</p>	<p>Is the resistance less than 5 Ω?</p>	<p>Go to step 4.</p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between crankshaft position sensor and ECM connector • Poor contact in ECM connector. • Poor contact in coupling connector
<p>4</p> <p>CHECK CONDITION OF CRANKSHAFT POSITION SENSOR.</p>	<p>Is the crankshaft position sensor installation bolt tightened securely?</p>	<p>Go to step 5.</p>	<p>Tighten the crankshaft position sensor installation bolt securely.</p>
<p>5</p> <p>CHECK CRANKSHAFT POSITION SENSOR.</p> <p>1) Remove the crankshaft position sensor. 2) Measure the resistance between connector terminals of crankshaft position sensor.</p> <p>Terminals No. 1 — No. 2:</p>	<p>Is the resistance 1 — 4 kΩ?</p>	<p>Repair poor contact in crankshaft position sensor connector.</p>	<p>Replace the crankshaft position sensor. <Ref. to FU(H4DOTC)-30, Crankshaft Position Sensor.></p>

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

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

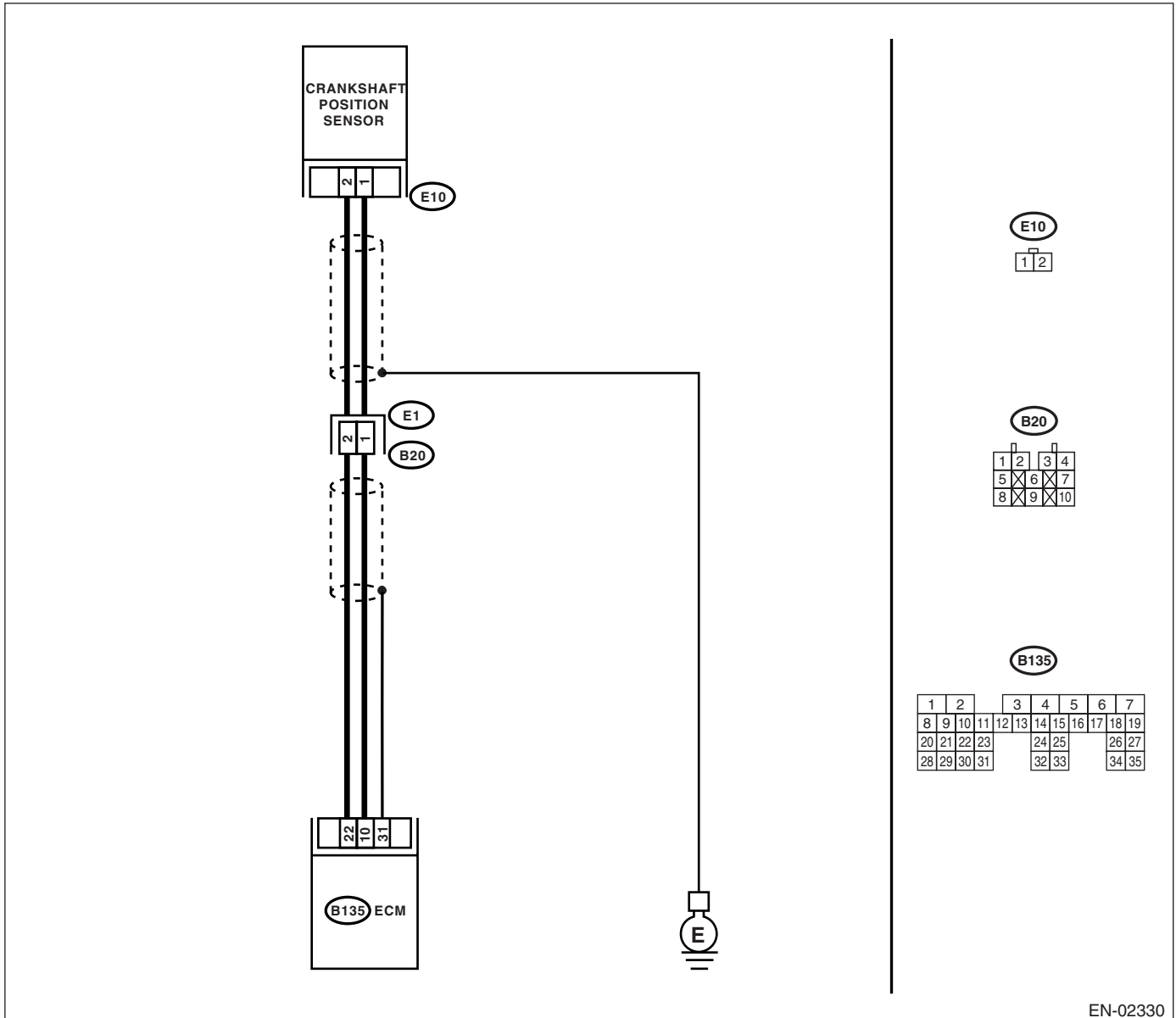
TROUBLE SYMPTOM:

- Engine stalls.
- Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02330

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4DOTC)-74, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK CONDITION OF CRANKSHAFT POSITION SENSOR. Turn the ignition switch to OFF.	Is the crankshaft position sensor installation bolt tightened securely?	Go to step 3.	Tighten the crankshaft position sensor installation bolt securely.
3 CHECK CRANK SPROCKET. Remove the front belt cover.	Are crank sprocket teeth cracked or damaged?	Replace the crank sprocket. <Ref. to ME(H4DOTC)-67, Crank Sprocket.>	Go to step 4.
4 CHECK INSTALLATION CONDITION OF TIMING BELT. Turn the crankshaft, and align alignment mark on crank sprocket with alignment mark on cylinder block.	Is the timing belt dislocated from its proper position?	Repair installation condition of timing belt. <Ref. to ME(H4DOTC)-58, Timing Belt Assembly.>	Replace the crankshaft position sensor. <Ref. to FU(H4DOTC)-30, Crankshaft Position Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

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

DTC DETECTING CONDITION:

Immediately at fault recognition

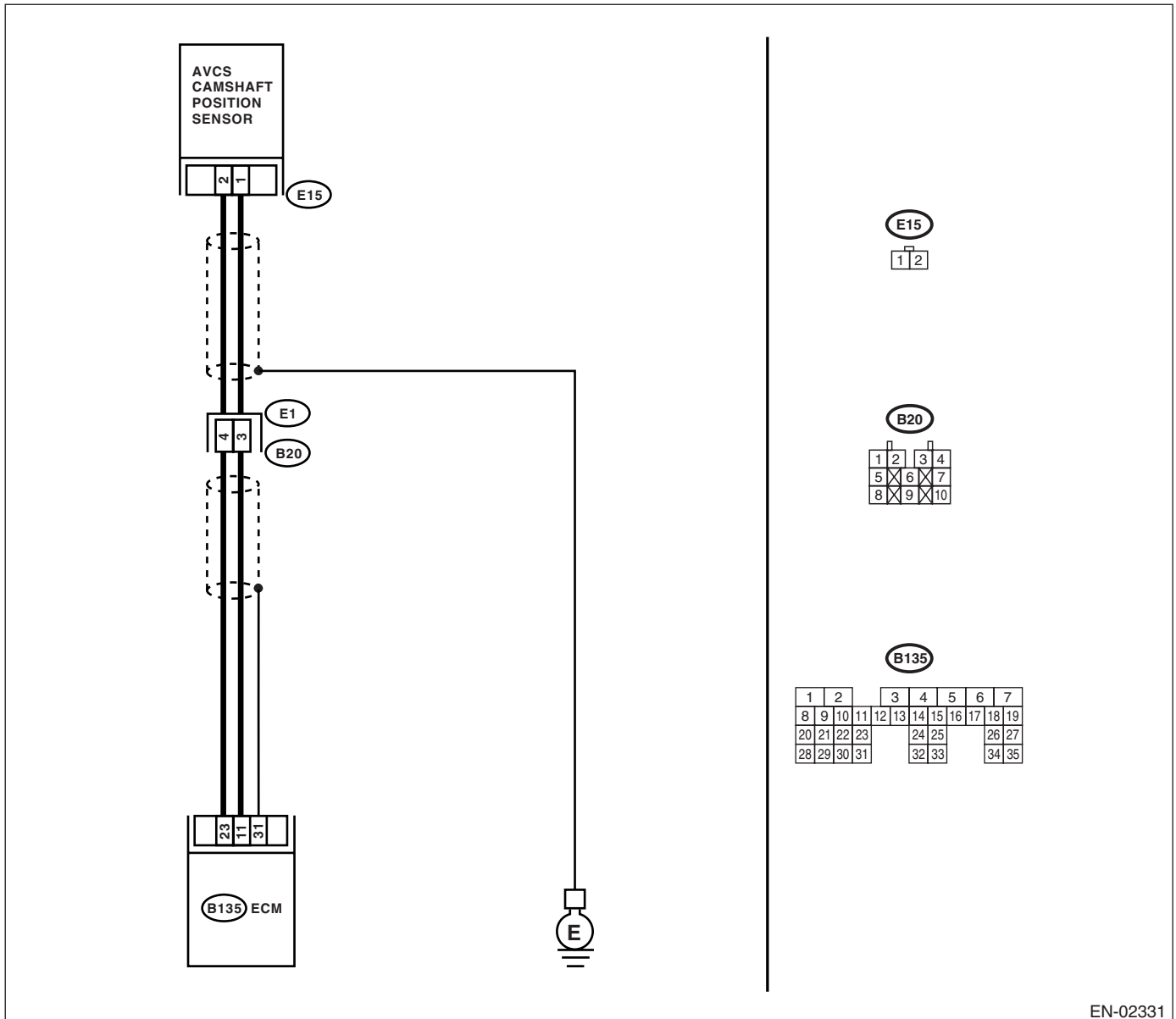
TROUBLE SYMPTOM:

- Engine stalls.
- Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02331

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>1</p> <p>CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR CONNECTOR AND ECM CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from camshaft position sensor connector. 3) Measure the resistance of harness between camshaft position sensor connector and engine ground.</p> <p>Connector & terminal (E15) No. 1 — Engine ground:</p>	<p>Is the resistance more than 100 kΩ?</p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between camshaft position sensor connector and ECM connector • Poor contact in ECM connector. • Poor contact in coupling connector 	<p>Go to step 2.</p>
<p>2</p> <p>CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR CONNECTOR AND ECM CONNECTOR.</p> <p>Measure the resistance of harness between camshaft position sensor connector and engine ground.</p> <p>Connector & terminal (E15) No. 1 — Engine ground:</p>	<p>Is the resistance less than 10 Ω?</p>	<p>Repair ground short circuit in harness between camshaft position sensor connector and ECM connector.</p> <p>NOTE: The harness between both connectors are shielded. Repair ground short circuit in harness together with shield.</p>	<p>Go to step 3.</p>
<p>3</p> <p>CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR CONNECTOR AND ECM CONNECTOR.</p> <p>Measure the resistance of harness between camshaft position sensor connector and engine ground.</p> <p>Connector & terminal (E15) No. 2 — Engine ground:</p>	<p>Is the resistance less than 5 Ω?</p>	<p>Go to step 4.</p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between camshaft position sensor connector and ECM connector • Poor contact in ECM connector • Poor contact in coupling connector
<p>4</p> <p>CHECK CONDITION OF CAMSHAFT POSITION SENSOR CONNECTOR.</p>	<p>Is the camshaft position sensor connector installation bolt tightened securely?</p>	<p>Go to step 5.</p>	<p>Tighten the camshaft position sensor connector installation bolt securely.</p>
<p>5</p> <p>CHECK CAMSHAFT POSITION SENSOR CONNECTOR.</p> <p>1) Remove the camshaft position sensor connector. 2) Measure the resistance between connector terminals of camshaft position sensor connector.</p> <p>Terminals No. 1 — No. 2:</p>	<p>Is the resistance 1 — 4 kΩ?</p>	<p>Repair poor contact in camshaft position sensor connector.</p>	<p>Replace the camshaft position sensor connector. <Ref. to FU(H4DOTC)-31, Camshaft Position Sensor.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

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

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

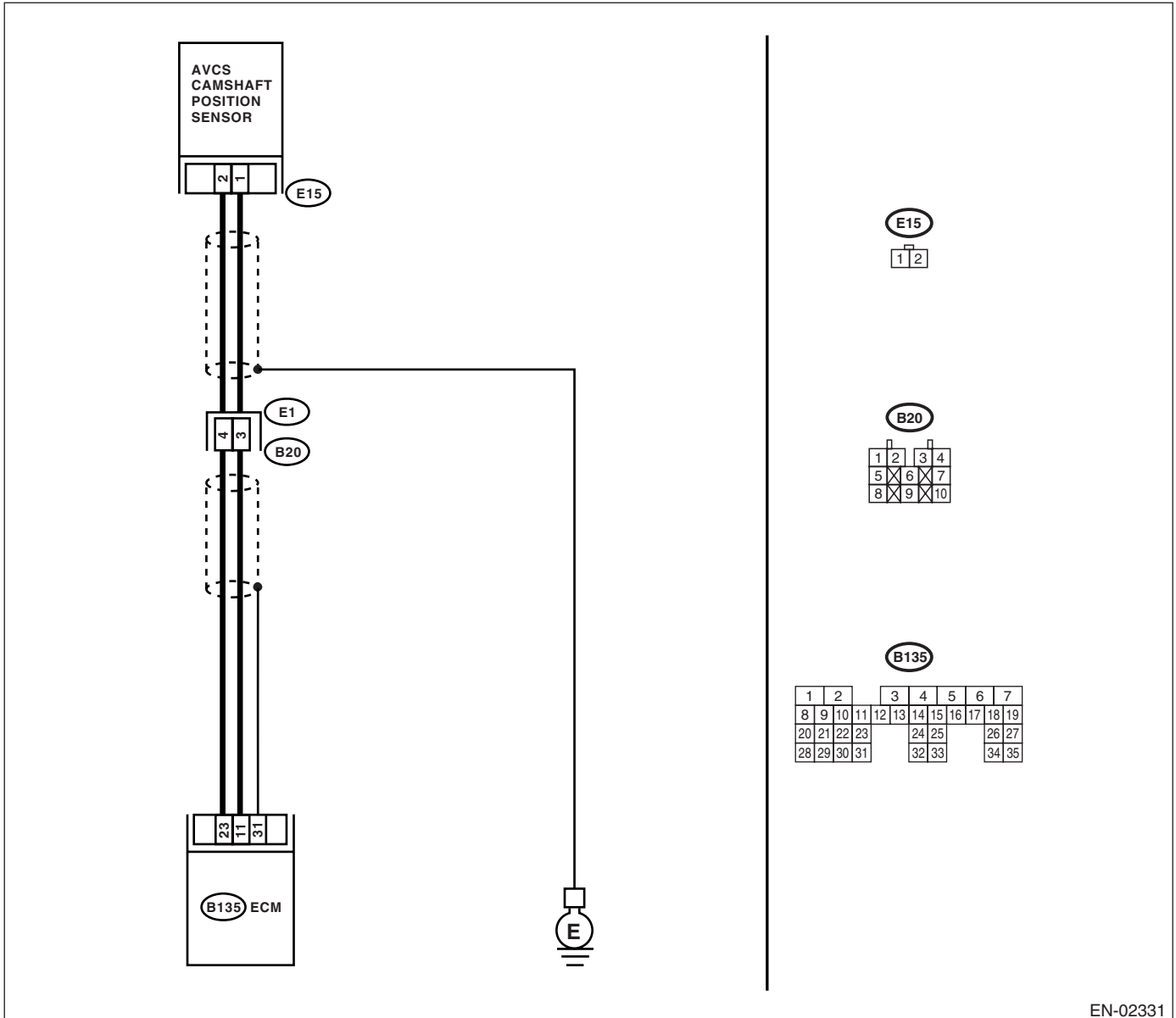
TROUBLE SYMPTOM:

- Engine stalls.
- Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02331

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>1</p> <p>CHECK ANY OTHER DTC ON DISPLAY.</p>	<p>Is any other DTC displayed?</p>	<p>Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4DOTC)-74, List of Diagnostic Trouble Code (DTC).></p>	<p>Go to step 2.</p>
<p>2</p> <p>CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR CONNECTOR AND ECM CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from camshaft position sensor connector. 3) Measure the resistance of harness between camshaft position sensor connector and engine ground.</p> <p>Connector & terminal (E15) No. 1 — Engine ground:</p>	<p>Is the resistance more than 100 kΩ?</p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between camshaft position sensor connector and ECM connector • Poor contact in ECM connector • Poor contact in coupling connector 	<p>Go to step 3.</p>
<p>3</p> <p>CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR CONNECTOR AND ECM CONNECTOR.</p> <p>Measure the resistance of harness between camshaft position sensor connector and engine ground.</p> <p>Connector & terminal (E15) No. 1 — Engine ground:</p>	<p>Is the resistance less than 10 Ω?</p>	<p>Repair ground short circuit in harness between camshaft position sensor connector and ECM connector.</p> <p>NOTE: The harness between both connectors are shielded. Repair ground short circuit in harness together with shield.</p>	<p>Go to step 4.</p>
<p>4</p> <p>CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR CONNECTOR AND ECM CONNECTOR.</p> <p>Measure the resistance of harness between camshaft position sensor connector and engine ground.</p> <p>Connector & terminal (E15) No. 2 — Engine ground:</p>	<p>Is the resistance less than 5 Ω?</p>	<p>Go to step 5.</p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between camshaft position sensor connector and ECM connector • Poor contact in ECM connector • Poor contact in coupling connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
5 CHECK CONDITION OF CAMSHAFT POSITION SENSOR CONNECTOR.	Is the camshaft position sensor connector installation bolt tightened securely?	Go to step 6.	Tighten the camshaft position sensor connector installation bolt securely.
6 CHECK CAMSHAFT POSITION SENSOR CONNECTOR. 1) Remove the camshaft position sensor connector. 2) Measure the resistance between connector terminals of camshaft position sensor connector. <i>Terminals</i> <i>No. 1 — No. 2:</i>	Is the resistance 1 — 4 k Ω ?	Go to step 7.	Replace the camshaft position sensor connector. <Ref. to FU(H4DOTC)-31, Camshaft Position Sensor.>
7 CHECK CONDITION OF CAMSHAFT POSITION SENSOR CONNECTOR. Turn the ignition switch to OFF.	Is the camshaft position sensor connector installation bolt tightened securely?	Go to step 8.	Tighten the camshaft position sensor connector installation bolt securely.
8 CHECK CAM SPROCKET. Remove the front belt cover. <Ref. to ME(H4DOTC)-57, Timing Belt Cover.>	Are cam sprocket teeth cracked or damaged?	Replace the cam sprocket. <Ref. to ME(H4DOTC)-66, Cam Sprocket.>	Go to step 9.
9 CHECK INSTALLATION CONDITION OF TIMING BELT. Turn the crankshaft, and align alignment mark on camshaft sprocket with alignment mark on timing belt cover LH.	Is the timing belt dislocated from its proper position?	Repair installation condition of timing belt. <Ref. to ME(H4DOTC)-58, Timing Belt Assembly.>	Replace the camshaft position sensor connector. <Ref. to FU(H4DOTC)-31, Camshaft Position Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

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

DTC DETECTING CONDITION:

Immediately at fault recognition

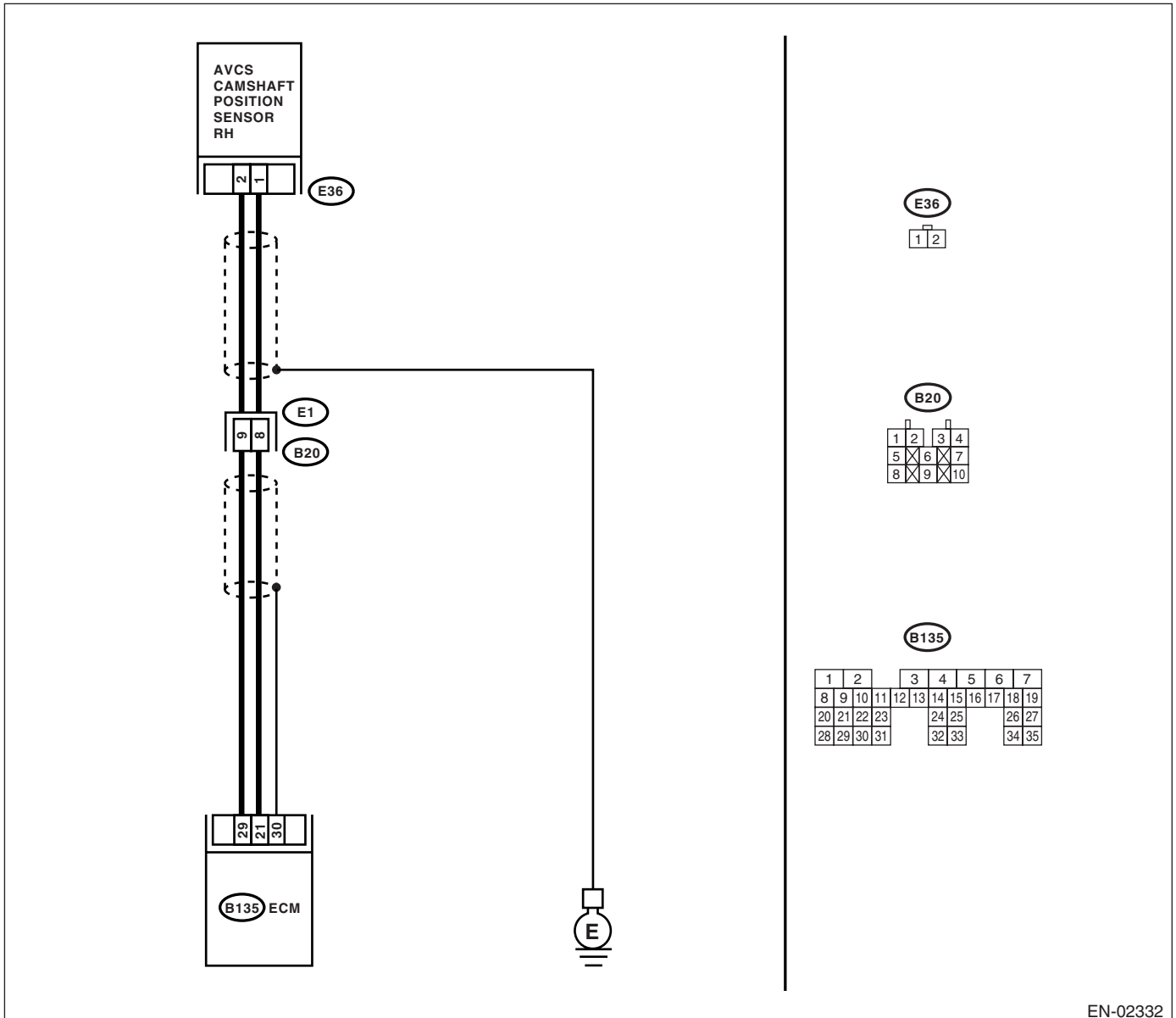
TROUBLE SYMPTOM:

- Engine stalls.
- Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02332

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>1</p> <p>CHECK CURRENT DATA.</p> <p>1) Start the engine.</p> <p>2) Drive the vehicle at the speed of approx. 30 km/h (19 MPH), and then measure the ignition timing advance angle using Subaru Select Monitor or OBD-II general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • OBD-II general scan tool <p>For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</p>	<p>Does the ignition timing advance angle changed smoothly according to engine output?</p> <p>Idling: -2 — +2°</p> <p>Driving: -2 — +50°</p>	<p>Repair the poor contact connector.</p> <p>NOTE:</p> <p>In this case, repair the following:</p> <ul style="list-style-type: none"> • Poor contact of AVCS camshaft position sensor connector. • Poor contact in ECM connector. 	<p>Go to step 2.</p>
<p>2</p> <p>CHECK HARNESS BETWEEN AVCS CAMSHAFT POSITION SENSOR CONNECTOR AND ECM CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connector from AVCS camshaft position sensor connector and ECM.</p> <p>3) Measure the resistance of harness between AVCS camshaft position sensor connector and engine ground.</p> <p>Connector & terminal</p> <p>(B36) No. 1 — (B135) No. 21:</p> <p>(B36) No. 2 — (B135) No. 29:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 3.</p>	<p>Repair the harness and connector.</p> <p>NOTE:</p> <p>In this case, repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between AVCS camshaft position sensor connector and ECM connector • Poor contact in ECM connector • Poor contact in coupling connector
<p>3</p> <p>CHECK HARNESS BETWEEN AVCS CAMSHAFT POSITION SENSOR CONNECTOR AND ECM CONNECTOR.</p> <p>Measure the resistance of harness between AVCS camshaft position sensor connector and engine ground.</p> <p>Connector & terminal</p> <p>(E36) No. 1 — Engine ground:</p> <p>(E36) No. 2 — Engine ground:</p>	<p>Is the resistance more than 1 MΩ?</p>	<p>Go to step 4.</p>	<p>Repair the ground short circuit in harness between AVCS camshaft position sensor connector and ECM connector.</p> <p>NOTE:</p> <p>The harness between both connectors are shielded. Repair ground short circuit in harness together with shield.</p>
<p>4</p> <p>CHECK CONDITION OF AVCS CAMSHAFT POSITION SENSOR CONNECTOR.</p>	<p>Is the AVCS camshaft position sensor connector installation bolt tightened securely?</p>	<p>Go to step 5.</p>	<p>Tighten the AVCS camshaft position sensor connector installation bolt securely.</p>
<p>5</p> <p>CHECK AVCS CAMSHAFT POSITION SENSOR CONNECTOR.</p> <p>1) Remove the AVCS camshaft position sensor.</p> <p>2) Measure the resistance between the AVCS camshaft position sensor connector terminals.</p> <p>Terminals</p> <p>No. 1 — No. 2:</p>	<p>Is the resistance 1 — 4 kΩ?</p>	<p>Check for the clogging on oil pressure routing of oil flow control solenoid valve.</p>	<p>Replace the AVCS camshaft position sensor connector.</p> <p><Ref. to FU(H4DOTC)-32, AVCS Camshaft Position Sensor.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

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

DTC DETECTING CONDITION:

Immediately at fault recognition

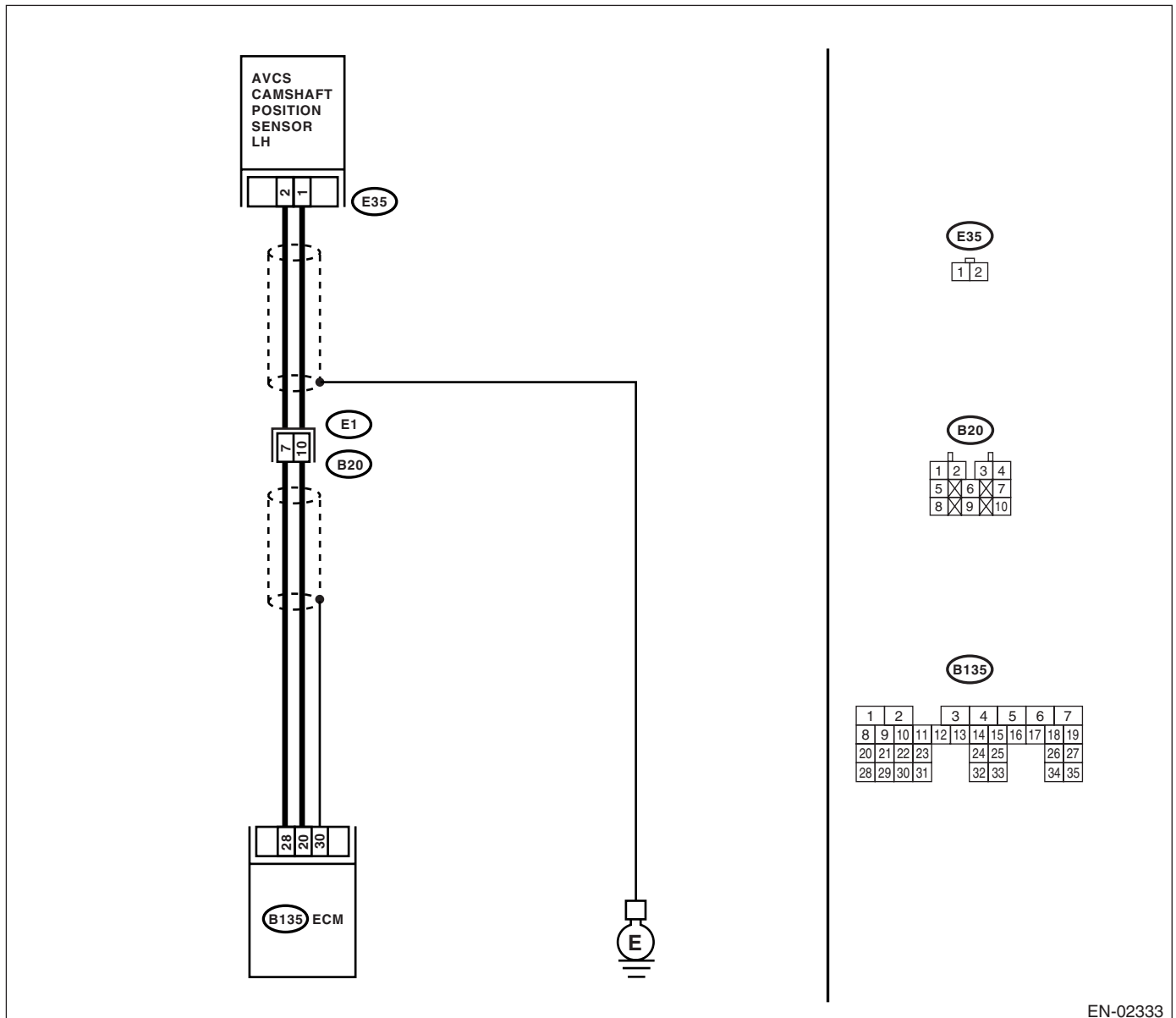
TROUBLE SYMPTOM:

- Engine stalls.
- Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>1</p> <p>CHECK CURRENT DATA.</p> <p>1) Start the engine.</p> <p>2) Drive the vehicle at the speed of approx. 30 km/h (19 MPH), and then measure the ignition timing advance angle using Subaru Select Monitor or OBD-II general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • OBD-II general scan tool <p>For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</p>	<p>Does the ignition timing advance angle changed smoothly according to engine output?</p> <p>Idling: -2 — +2°</p> <p>Driving: -2 — +50°</p>	<p>Repair the poor contact connector.</p> <p>NOTE:</p> <p>In this case, repair the following:</p> <ul style="list-style-type: none"> • Poor contact of AVCS camshaft position sensor connector. • Poor contact in ECM connector. 	<p>Go to step 2.</p>
<p>2</p> <p>CHECK HARNESS BETWEEN AVCS CAMSHAFT POSITION SENSOR CONNECTOR AND ECM CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connector from AVCS camshaft position sensor connector and ECM.</p> <p>3) Measure the resistance of harness between AVCS camshaft position sensor connector and engine ground.</p> <p>Connector & terminal</p> <p>(B35) No. 1 — (B135) No. 20:</p> <p>(B35) No. 2 — (B135) No. 28:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 3.</p>	<p>Repair the harness and connector.</p> <p>NOTE:</p> <p>In this case, repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between AVCS camshaft position sensor connector and ECM connector • Poor contact in ECM connector. • Poor contact in coupling connector
<p>3</p> <p>CHECK HARNESS BETWEEN AVCS CAMSHAFT POSITION SENSOR CONNECTOR AND ECM CONNECTOR.</p> <p>Measure the resistance of harness between AVCS camshaft position sensor connector and engine ground.</p> <p>Connector & terminal</p> <p>(E35) No. 1 — Engine ground:</p> <p>(E35) No. 2 — Engine ground:</p>	<p>Is the resistance more than 1 MΩ?</p>	<p>Go to step 4.</p>	<p>Repair the ground short circuit in harness between AVCS camshaft position sensor connector and ECM connector.</p> <p>NOTE:</p> <p>The harness between both connectors are shielded. Repair ground short circuit in harness together with shield.</p>
<p>4</p> <p>CHECK CONDITION OF AVCS CAMSHAFT POSITION SENSOR CONNECTOR.</p>	<p>Is the AVCS camshaft position sensor connector installation bolt tightened securely?</p>	<p>Go to step 5.</p>	<p>Tighten the AVCS camshaft position sensor connector installation bolt securely.</p>
<p>5</p> <p>CHECK AVCS CAMSHAFT POSITION SENSOR CONNECTOR.</p> <p>1) Remove the AVCS camshaft position sensor connector.</p> <p>2) Measure the resistance between the AVCS camshaft position sensor connector terminals.</p> <p>Terminals</p> <p>No. 1 — No. 2:</p>	<p>Is the resistance 1 — 4 kΩ?</p>	<p>Check for the oil clogging on oil pressure routing of oil flow control solenoid valve.</p>	<p>Replace the AVCS camshaft position sensor connector.</p> <p><Ref. to FU(H4DOTC)-32, AVCS Camshaft Position Sensor.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

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

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

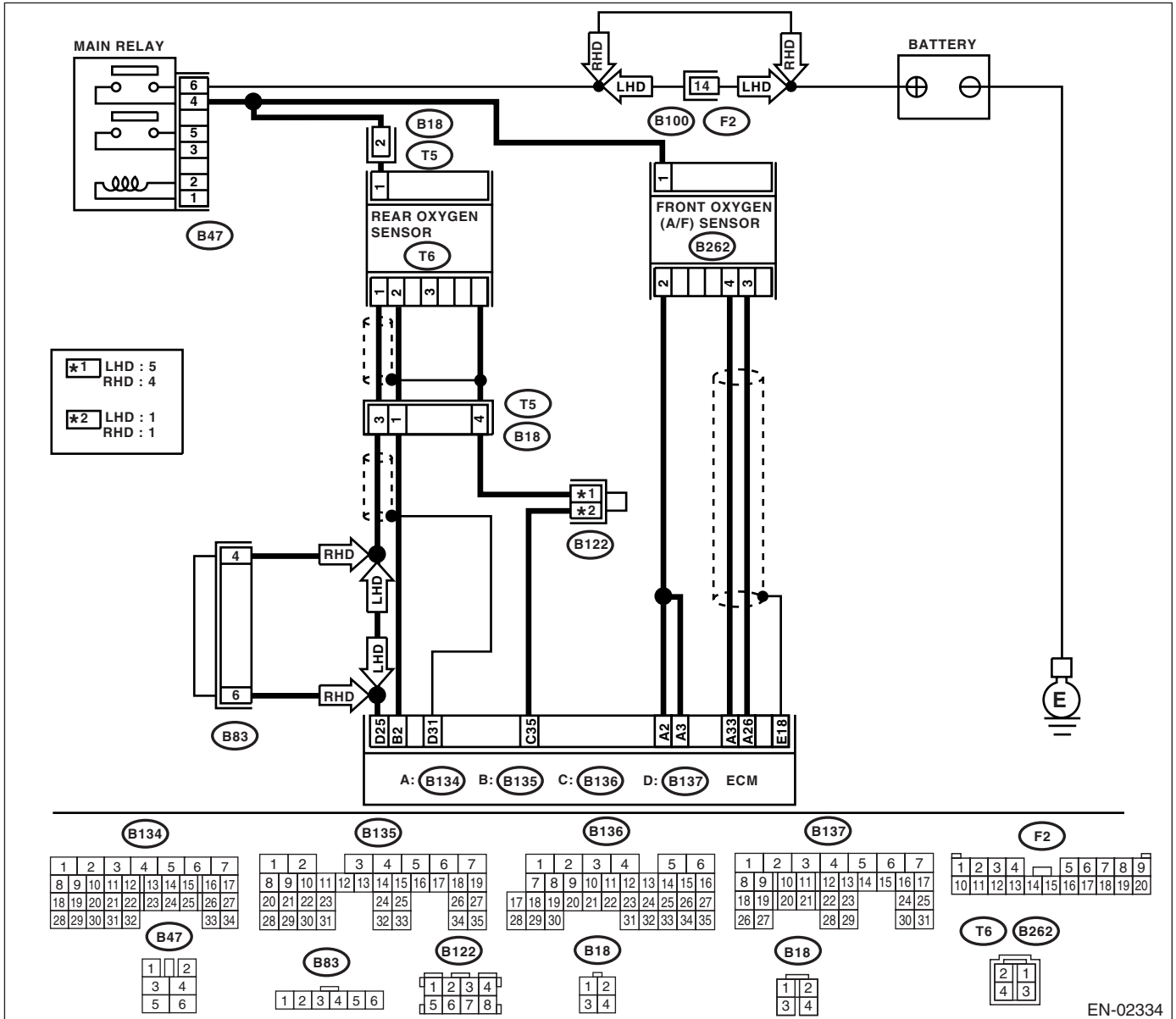
TROUBLE SYMPTOM:

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

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02334

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4DOTC)-74, List of Diagnostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0420.	Go to step 2.
2 CHECK EXHAUST SYSTEM. Check for gas leaks or air suction caused by loose or dislocated nuts and bolts, and open hole at exhaust pipes. NOTE: Check the following positions. <ul style="list-style-type: none"> • Between cylinder head and front exhaust pipe • Between front exhaust pipe and front catalytic converter • Between front catalytic converter and rear catalytic converter 	Is there a fault in exhaust system?	Repair or replace the exhaust system. <Ref. to EX(H4DOTC)-2, General Description.>	Go to step 3.
3 CHECK REAR CATALYTIC CONVERTER. Separate rear catalytic converter from rear exhaust pipe.	Is there damage at rear face of rear catalyst?	Replace the front and rear catalytic converter <Ref. to EC(H4DOTC)-3, Front Catalytic Converter.> <Ref. to EC(H4DOTC)-4, Rear Catalytic Converter.>	Go to step 4.
4 CHECK FRONT CATALYTIC CONVERTER. Remove the front catalytic converter.	Is there damage at rear face or front face of front catalyst?	Replace the front catalytic converter. <Ref. to EC(H4DOTC)-3, Front Catalytic Converter.>	Contact the SUBARU dealer. NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

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

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

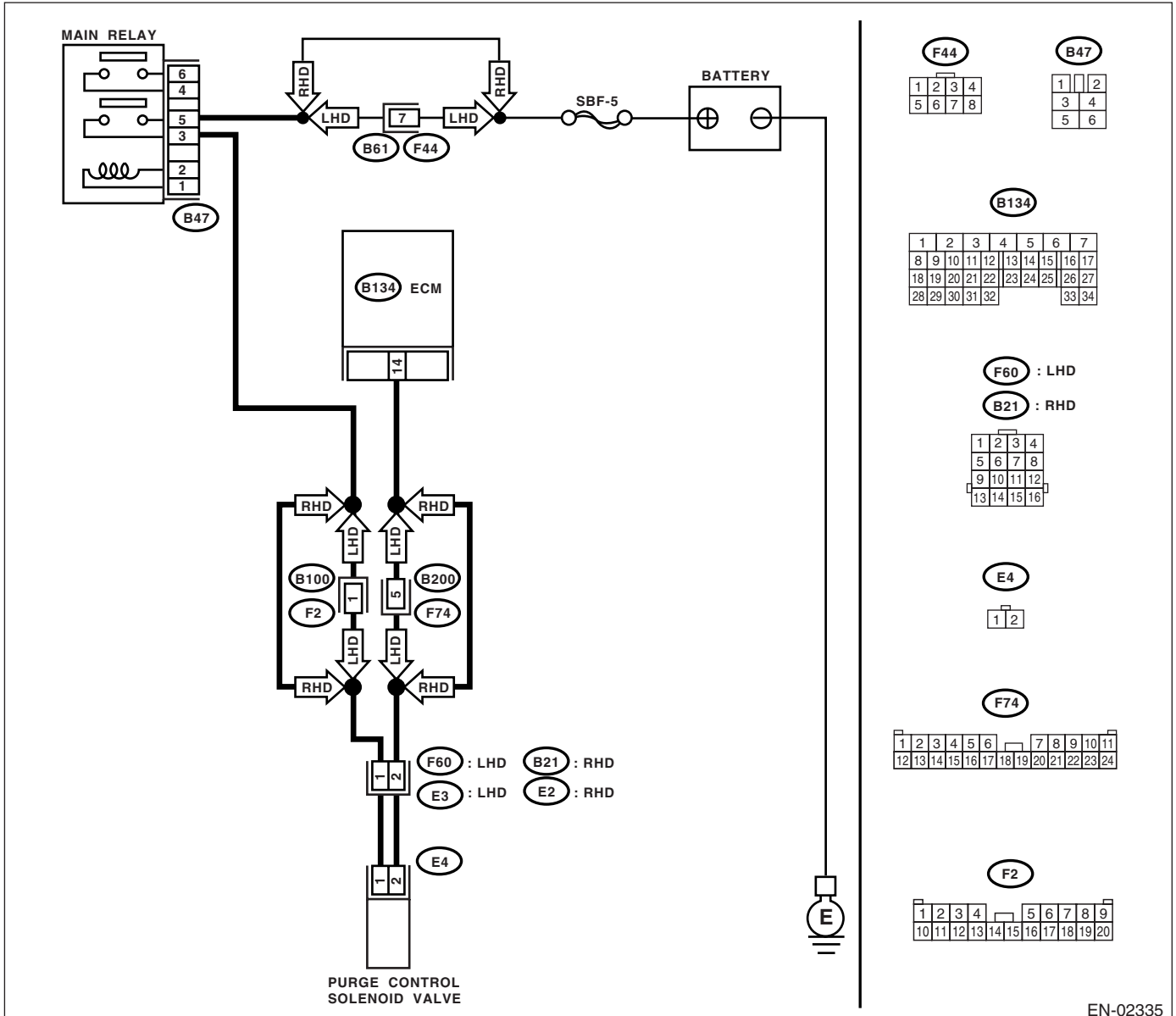
TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02335

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. <i>Connector & terminal</i> <i>(B134) No. 14 (+) — Chassis ground (-):</i>	Is the voltage more than 10 V?	Even if the malfunction indicator light illuminates, the circuit has returned to a normal condition at this time.	Go to step 2.
2 CHECK HARNESS BETWEEN PURGE CONTROL SOLENOID VALVE AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from purge control solenoid valve and ECM. 3) Measure the resistance of harness between purge control solenoid valve connector and engine ground. <i>Connector & terminal</i> <i>(E4) No. 2 — Engine ground:</i>	Is the resistance more than 1 M Ω ?	Go to step 3.	Repair ground short circuit in harness between ECM and purge control solenoid valve connector.
3 CHECK HARNESS BETWEEN PURGE CONTROL SOLENOID VALVE AND ECM CONNECTOR. Measure the resistance of harness between ECM and purge control solenoid valve of harness connector. <i>Connector & terminal</i> <i>(B134) No. 14 — (E4) No. 2:</i>	Is the resistance less than 1 Ω ?	Go to step 4.	Repair open circuit in harness between ECM and purge control solenoid valve connector. NOTE: In this case repair the following: <ul style="list-style-type: none"> • Open circuit in harness between ECM and purge control solenoid valve connector • Poor contact in coupling connector
4 CHECK PURGE CONTROL SOLENOID VALVE. 1) Remove the purge control solenoid valve. 2) Measure the resistance between purge control solenoid valve terminals. <i>Terminals</i> <i>No. 1 — No. 2:</i>	Is the resistance 10 — 100 Ω ?	Go to step 5.	Replace the purge control solenoid valve. <Ref. to EC(H4DOTC)-7, Purge Control Solenoid Valve.>
5 CHECK POWER SUPPLY TO PURGE CONTROL SOLENOID VALVE. 1) Turn the ignition switch to ON. 2) Measure the voltage between purge control solenoid valve and engine ground. <i>Connector & terminal</i> <i>(E4) No. 1 (+) — Engine ground (-):</i>	Is the voltage more than 10 V?	Go to step 6.	Repair open circuit in harness between main relay and purge control solenoid valve connector.
6 CHECK POOR CONTACT. Check poor contact in purge control solenoid valve connector.	Is there poor contact in purge control solenoid valve connector?	Repair poor contact in purge control solenoid valve connector.	Contact the SUBARU dealer. NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

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

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

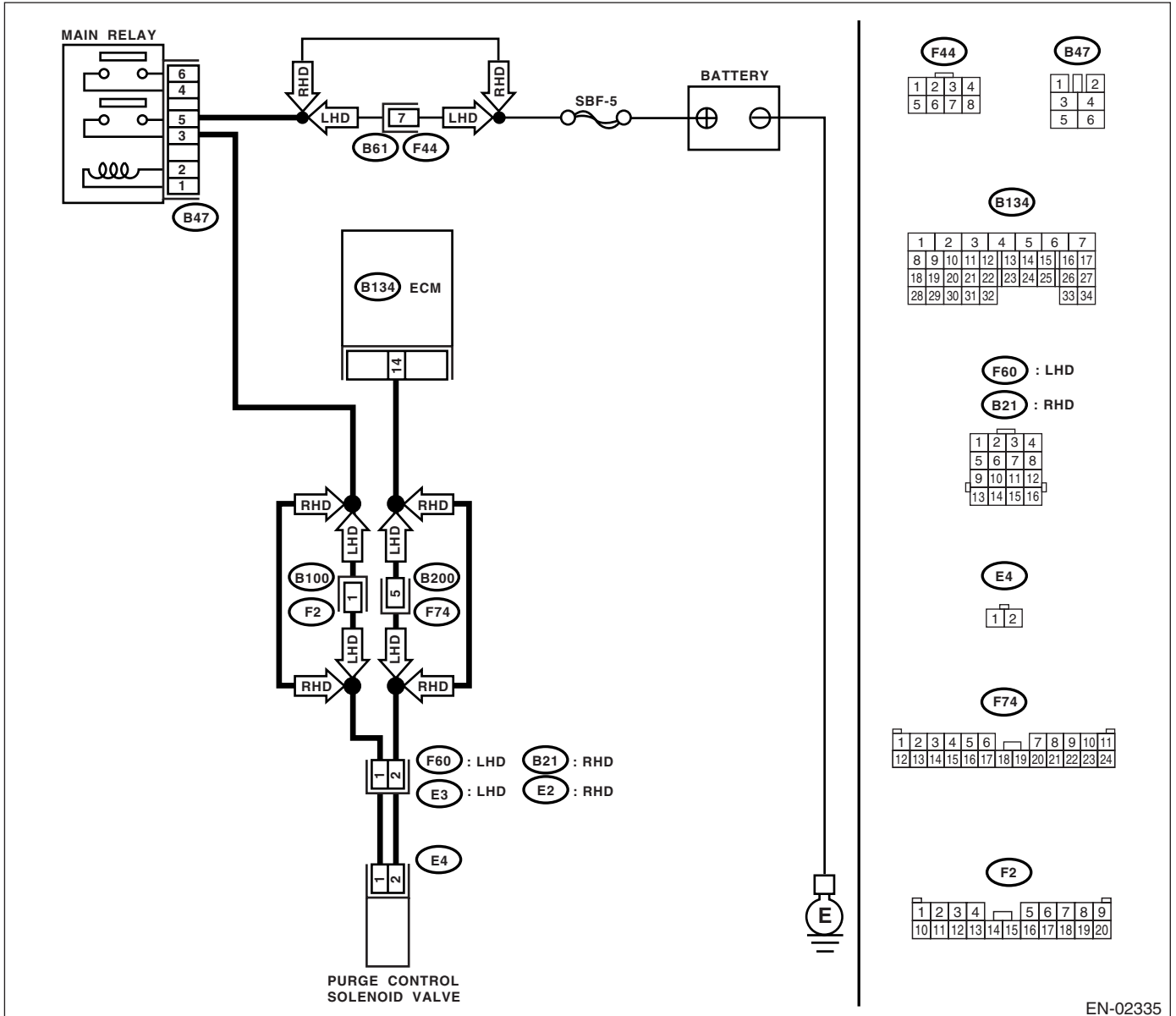
TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02335

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to OFF. 2) Connect the test mode connector at the lower portion of instrument panel (on the driver's side). 3) Turn the ignition switch to ON. 4) While operating the purge control solenoid valve, measure voltage between ECM and chassis ground. NOTE: Purge control solenoid valve operation can be executed using Subaru Select Monitor. For the procedure, refer to "Compulsory Valve Operation Check Mode". <Ref. to EN(H4DOTC)-48, Compulsory Valve Operation Check Mode.> Connector & terminal (B134) No. 14 (+) — Chassis ground (-):	Is the voltage 0 — 13 V?	Go to step 2.	Even if the malfunction indicator light illuminates, the circuit has returned to a normal condition at this time. In this case, repair poor contact in ECM connector.
2 CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 14 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 4.	Go to step 3.
3 CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair the poor contact in ECM connector.	Replace the ECM. <Ref. to FU(H4DOTC)-50, Engine Control Module (ECM).>
4 CHECK HARNESS BETWEEN PURGE CONTROL SOLENOID VALVE AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from purge control solenoid valve. 3) Turn the ignition switch to ON. 4) Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 14 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Repair battery short circuit in harness between ECM and purge control solenoid valve connector. After repair, replace the ECM. <Ref. to FU(H4DOTC)-50, Engine Control Module (ECM).>	Go to step 5.
5 CHECK PURGE CONTROL SOLENOID VALVE. 1) Turn the ignition switch to OFF. 2) Measure the resistance between purge control solenoid valve terminals. Terminals No. 1 — No. 2:	Is the resistance less than 1 Ω ?	Replace the purge control solenoid valve and ECM. <Ref. to EC(H4DOTC)-7, Purge Control Solenoid Valve.> <Ref. to FU(H4DOTC)-50, Engine Control Module (ECM).>	Go to step 6.
6 CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair the poor contact in ECM connector.	Replace the ECM. <Ref. to FU(H4DOTC)-50, Engine Control Module (ECM).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

AZ:DTC P0461 FUEL LEVEL SENSOR CIRCUIT RANGE/PERFORMANCE

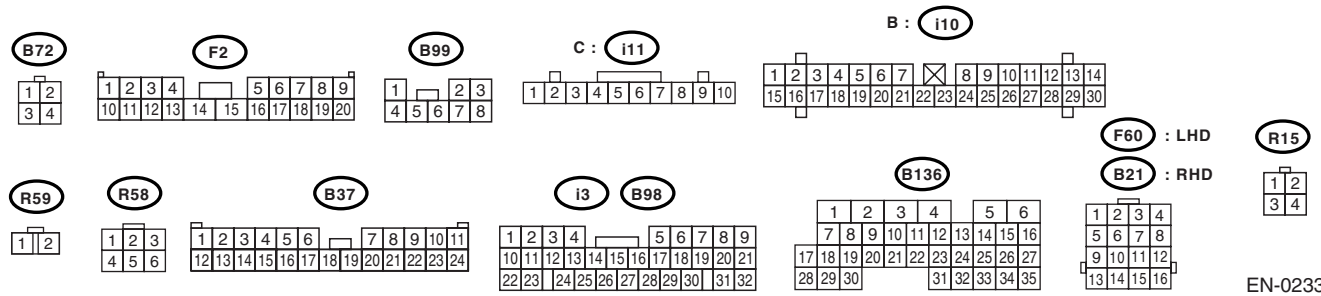
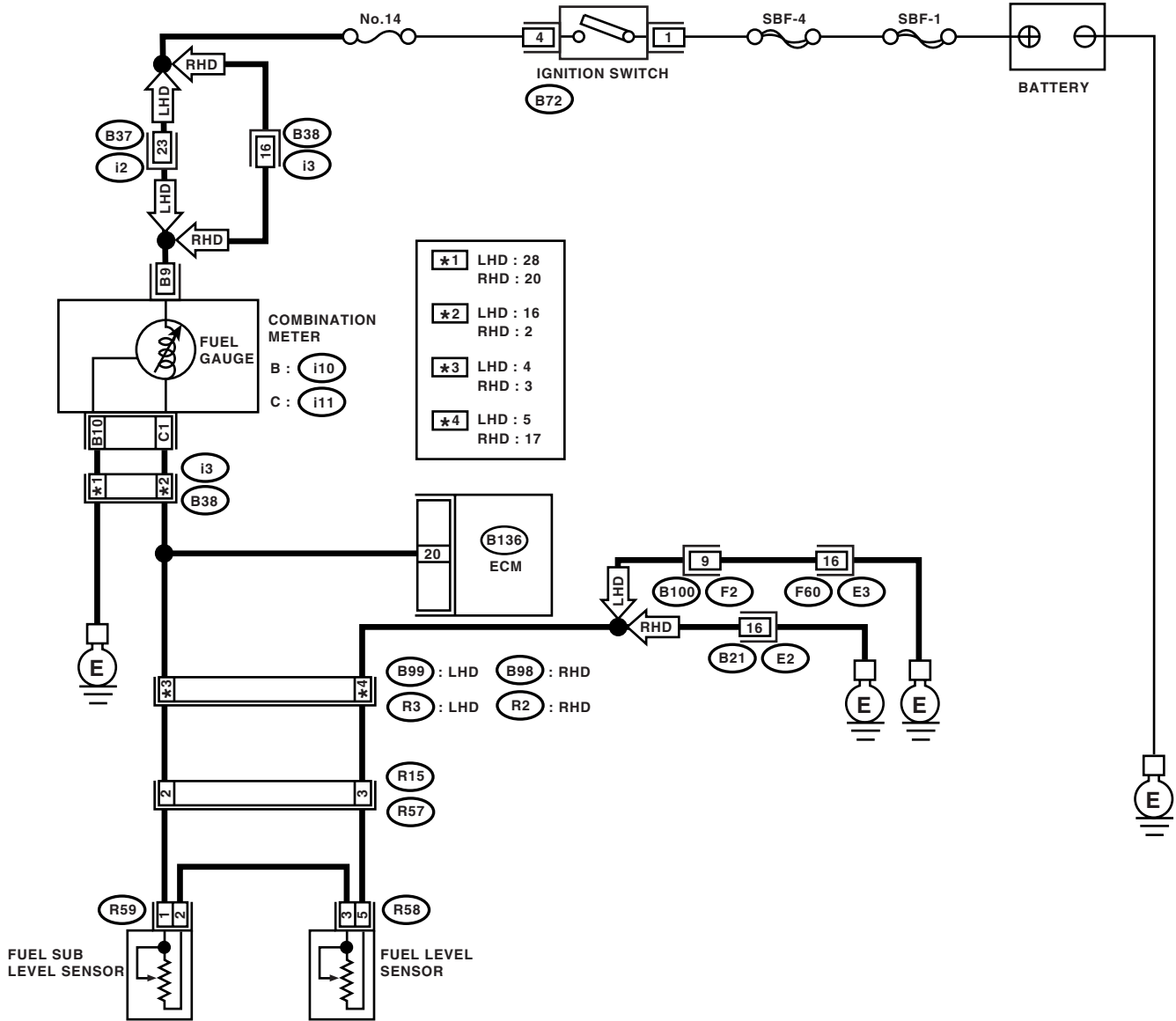
DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02336

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4DOTC)-74, List of Diagnostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0461.	Replace the fuel level sensor and fuel sub level sensor. <Ref. to FU(H4DOTC)-64, Fuel Level Sensor.> <Ref. to FU(H4DOTC)-65, Fuel Sub Level Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

BA:DTC P0462 FUEL LEVEL SENSOR CIRCUIT LOW INPUT

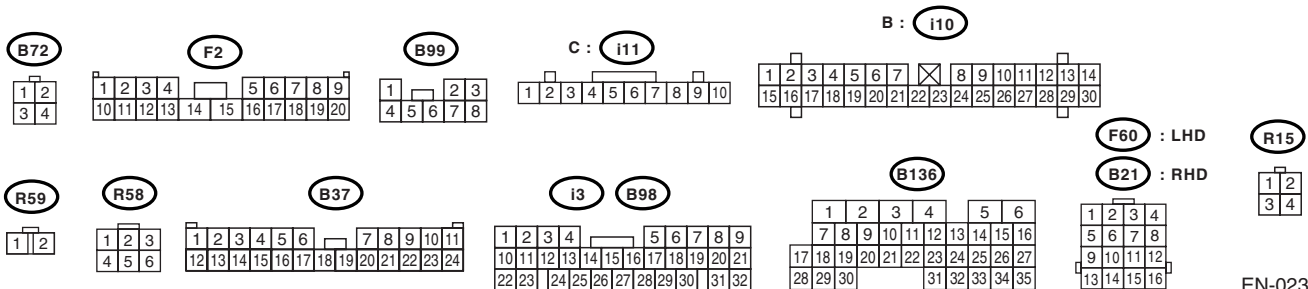
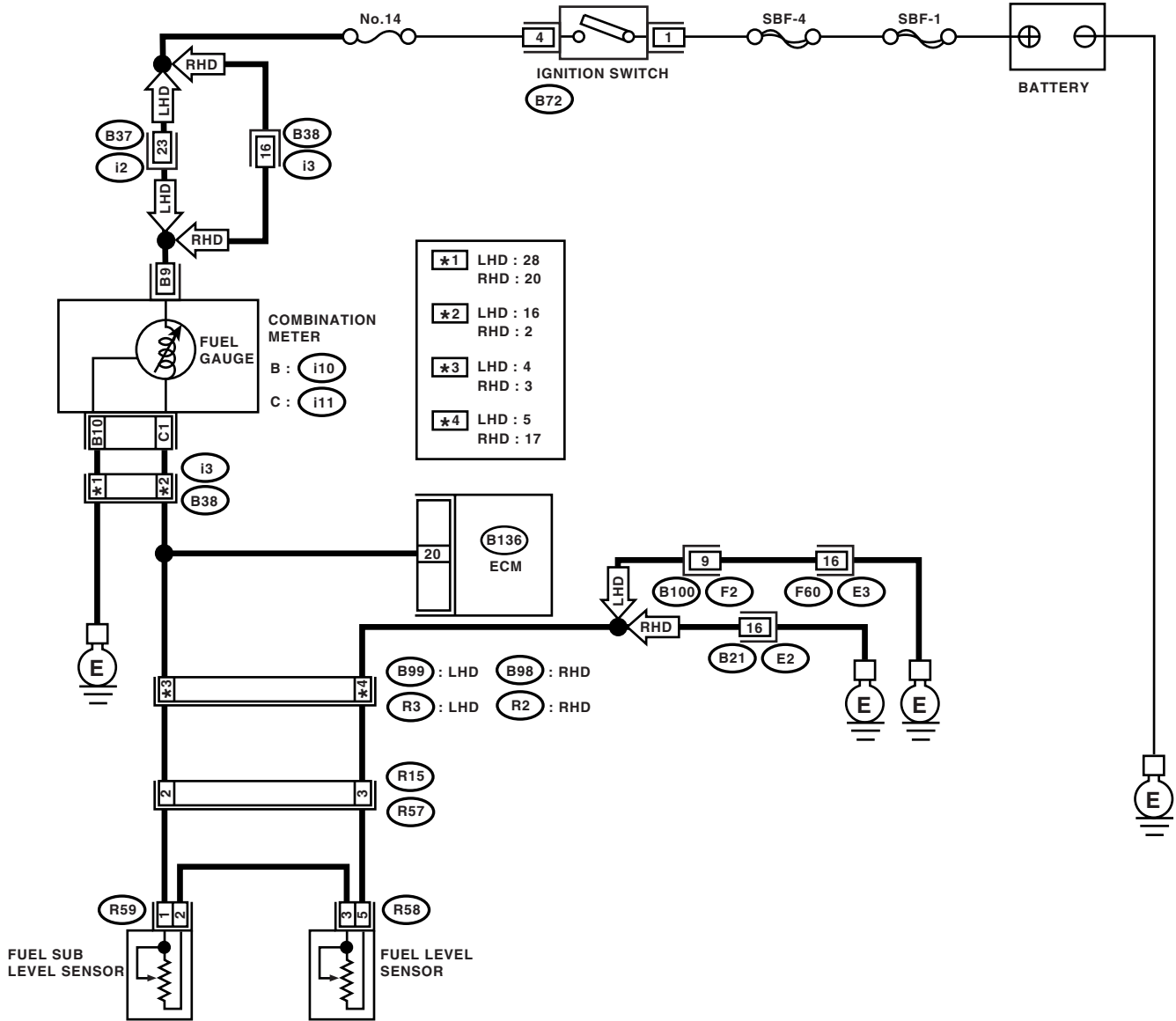
DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02336

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK SPEEDOMETER AND TACHOMETER OPERATION IN COMBINATION METER.	Does the speedometer and tachometer operate normally?	Go to step 2.	Repair or replace the combination meter. <Ref. to IDI-3, Combination Meter System.>
2 CHECK INPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON.(engine OFF) 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B136) No. 20 (+) — Chassis ground (-):	Is the voltage less than 0.12 V?	Go to step 4.	Go to step 3.
3 CHECK INPUT SIGNAL FOR ECM (WITH SUBARU SELECT MONITOR). Read the data of fuel level sensor signal using Subaru Select Monitor. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.>	Does the voltage change by shaking the harness and connector of ECM while monitoring the value with Subaru Select Monitor?	Repair the poor contact in ECM connector.	Even if the malfunction indicator light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause. NOTE: In this case repair the following: • Poor contact in combination meter connector • Poor contact in ECM connector • Poor contact in coupling connector
4 CHECK INPUT VOLTAGE OF ECM. 1) Turn the ignition switch to OFF. 2) Separate fuel tank cord connector (R57) and rear wiring harness connector (R15). 3) Turn the ignition switch to ON. 4) Measure the voltage of harness between ECM connector and chassis ground. Connector & terminal (B136) No. 20 (+) — Chassis ground (-):	Is the voltage more than 0.12 V?	Go to step 5.	Go to step 6.
5 CHECK HARNESS BETWEEN ECM AND COMBINATION METER. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from connector (i10), (i11) and ECM connector. 3) Measure the resistance between ECM and chassis ground. Connector & terminal (B136) No. 20 — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 7.	Repair the ground short in harness between ECM and combination meter connector.
6 CHECK HARNESS BETWEEN ECM AND COMBINATION METER. Measure the resistance between ECM and combination meter connector. Connector & terminal (B136) No. 20 — (i11) No. 1:	Is the resistance less than 10 Ω?	Repair or replace the combination meter. <Ref. to IDI-3, Combination Meter System.>	Repair open circuit between ECM and combination meter connector. NOTE: In this case repair the following: Poor contact in coupling connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
7 CHECK FUEL TANK CORD. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from fuel sub level sensor. 3) Measure the resistance between fuel sub level sensor and chassis ground. Connector & terminal (R59) No. 1 — Chassis ground:	Is the resistance more than 1 M Ω ?	Go to step 8.	Repair ground short circuit in fuel tank cord.
8 CHECK FUEL TANK CORD. 1) Disconnect the connector from fuel pump assembly. 2) Measure the resistance between fuel pump assembly and chassis ground. Connector & terminal (R59) No. 2 — Chassis ground:	Is the resistance more than 1 M Ω ?	Go to step 9.	Repair ground short circuit in fuel tank cord.
9 CHECK FUEL LEVEL SENSOR. 1) Remove the fuel pump assembly. <Ref. to FU(H4DOTC)-62, Fuel Pump.> 2) Measure the resistance between fuel level sensor and terminals with its float set to the full position. Terminals No. 3 — No. 5:	Is the resistance 0.5 — 2.5 Ω ?	Go to step 10.	Replace the fuel level sensor.
10 CHECK FUEL SUB LEVEL SENSOR. 1) Remove the fuel sub level sensor. <Ref. to FU(H4DOTC)-65, Fuel Sub Level Sensor.> 2) Measure the resistance between fuel sub level sensor and terminals with its float set to the full position. Terminals No. 1 — No. 2:	Is the resistance 0.5 — 2.5 Ω ?	Repair poor contact in harness between ECM and combination meter connector.	Replace the fuel sub level sensor.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

BB:DTC P0463 FUEL LEVEL SENSOR CIRCUIT HIGH INPUT

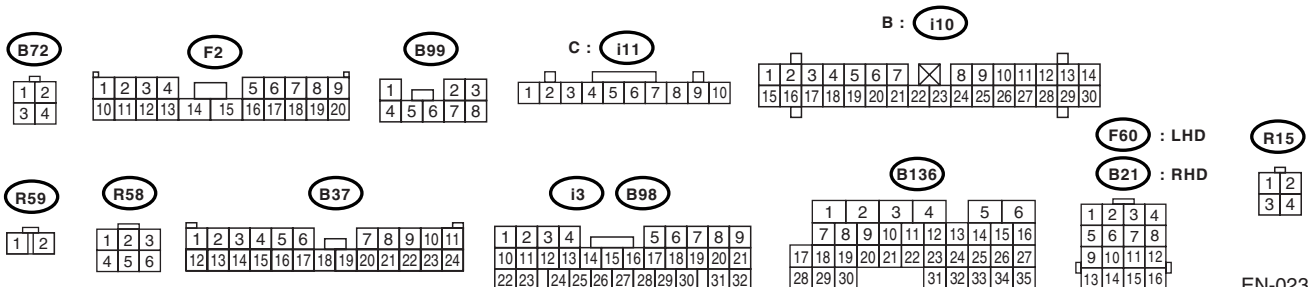
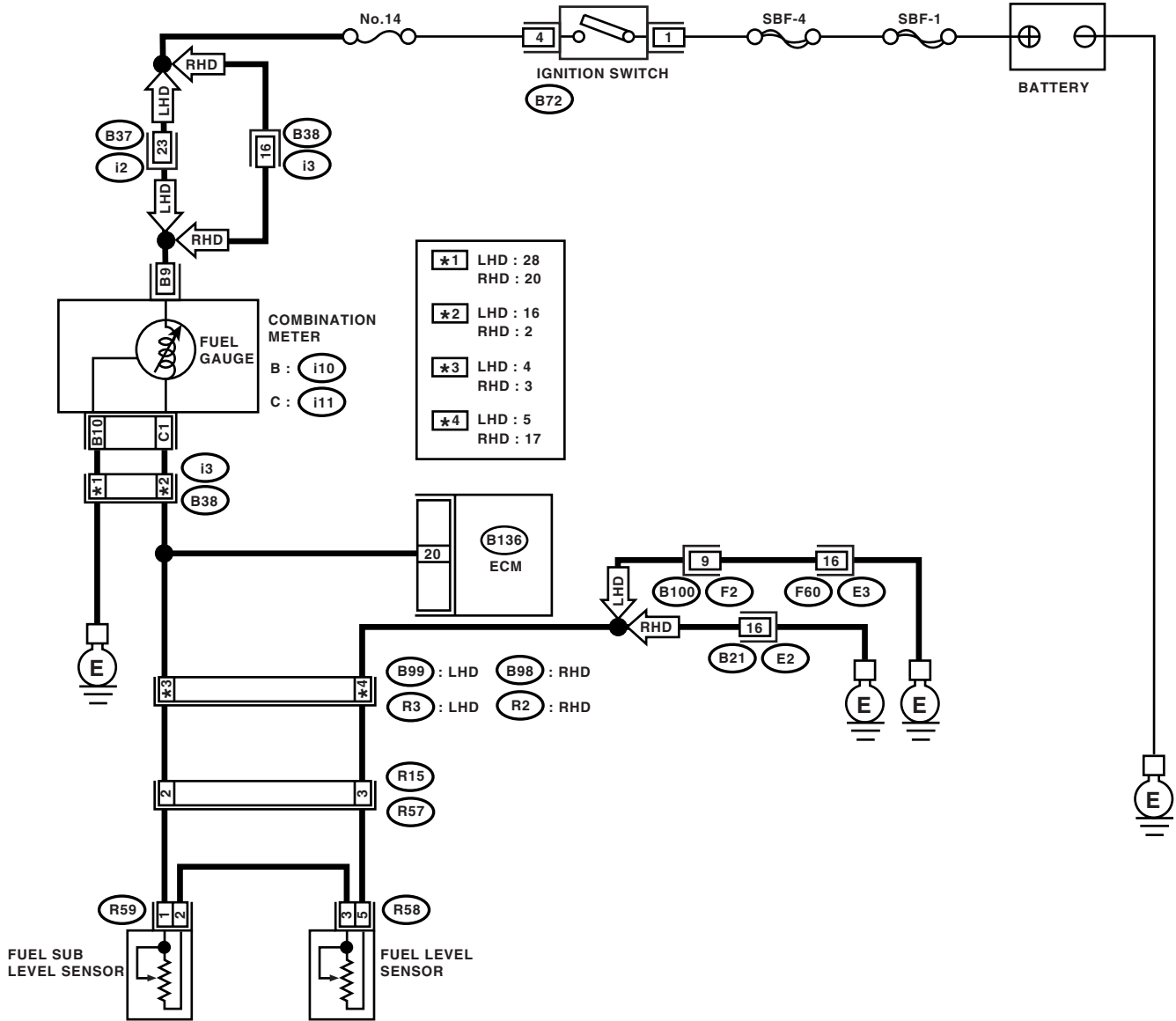
DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02336

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK SPEEDOMETER AND TACHOMETER OPERATION IN COMBINATION METER.	Does the speedometer and tachometer operate normally?	Go to step 2.	Repair or replace the combination meter. <Ref. to IDI-3, Combination Meter System.>
2 CHECK INPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON.(engine OFF) 2) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B136) No. 20 (+) — Chassis ground (-):	Is the voltage more than 4.75 V?	Go to step 3.	Even if the malfunction indicator light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause. NOTE: In this case repair the following: <ul style="list-style-type: none"> • Poor contact in fuel pump connector • Poor contact in coupling connector
3 CHECK INPUT VOLTAGE OF ECM. 1) Turn the ignition switch to OFF. 2) Disconnect the combination meter connector (i11) and ECM connector. 3) Turn the ignition switch to ON. 4) Measure the voltage of harness between ECM and chassis ground. Connector & terminal (B136) No. 20 (+) — Chassis ground (-):	Is the voltage more than 4.75 V?	Go to step 4.	Repair battery short circuit between ECM and combination meter connector.
4 CHECK HARNESS BETWEEN ECM AND FUEL TANK CORD. 1) Turn the ignition switch to OFF. 2) Separate fuel tank cord connector (R57) and rear wiring harness connector (R15). 3) Measure the resistance between ECM and fuel tank cord. Connector & terminal (B136) No. 20 — (R15) No. 2:	Is the resistance less than 5 Ω ?	Go to step 5.	Repair open circuit between ECM and fuel tank cord.
5 CHECK HARNESS BETWEEN FUEL TANK CORD AND CHASSIS GROUND. Measure the resistance between fuel tank cord and chassis ground. Connector & terminal (R15) No. 3 — Chassis ground:	Is the resistance less than 5 Ω ?	Go to step 6.	Repair open circuit between fuel tank cord and chassis ground. NOTE: In this case repair the following: Poor contact in coupling connector
6 CHECK FUEL TANK CORD. 1) Disconnect the connector from fuel level sensor. 2) Measure the resistance between fuel level sensor and coupler connector. Connector & terminal (R57) No. 3 — (R58) No. 5:	Is the resistance less than 10 Ω ?	Go to step 7.	Repair open circuit between coupling connector and fuel level sensor.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
7 CHECK FUEL TANK CORD. 1) Disconnect the connector from fuel sub level sensor. 2) Measure the resistance between fuel level sensor and fuel sub level sensor. <i>Connector & terminal</i> <i>(R58) No. 3 — (R59) No. 2:</i>	Is the resistance less than 10 Ω ?	Go to step 8 .	Repair open circuit between fuel level sensor and fuel sub level sensor.
8 CHECK FUEL TANK CORD. Measure the resistance between fuel sub level sensor and coupler connector. <i>Connector & terminal</i> <i>(R57) No. 2 — (R59) No. 1:</i>	Is the resistance less than 10 Ω ?	Go to step 9 .	Repair open circuit between coupling connector and fuel sub level sensor.
9 CHECK FUEL LEVEL SENSOR. 1) Remove the fuel pump assembly. <Ref. to FU(H4DOTC)-62, Fuel Pump.> 2) While moving the fuel level sensor float up and down, measure resistance between fuel level sensor terminals. <i>Terminals</i> <i>No. 3 — No. 5:</i>	Is the resistance more than 53 Ω ?	Replace the fuel level sensor. <Ref. to FU(H4DOTC)-64, Fuel Level Sensor.>	Go to step 10 .
10 CHECK FUEL SUB LEVEL SENSOR. 1) Remove the fuel sub level sensor. <Ref. to FU(H4DOTC)-65, Fuel Sub Level Sensor.> 2) While moving the fuel sub level sensor float up and down, measure resistance between fuel sub level sensor terminals. <i>Terminals</i> <i>No. 1 — No. 2:</i>	Is the resistance more than 45 Ω ?	Replace the fuel sub level sensor. <Ref. to FU(H4DOTC)-65, Fuel Sub Level Sensor.>	Replace the combination meter. <Ref. to IDI-10, Combination Meter Assembly.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

BC:DTC P0464 FUEL LEVEL SENSOR CIRCUIT INTERMITTENT

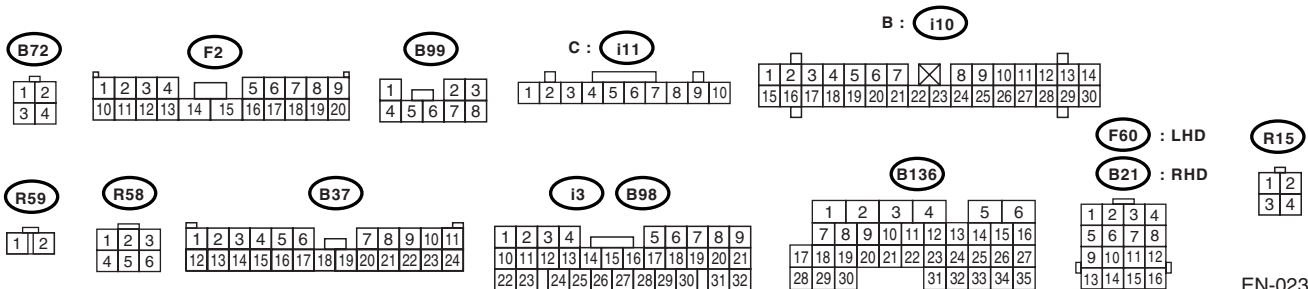
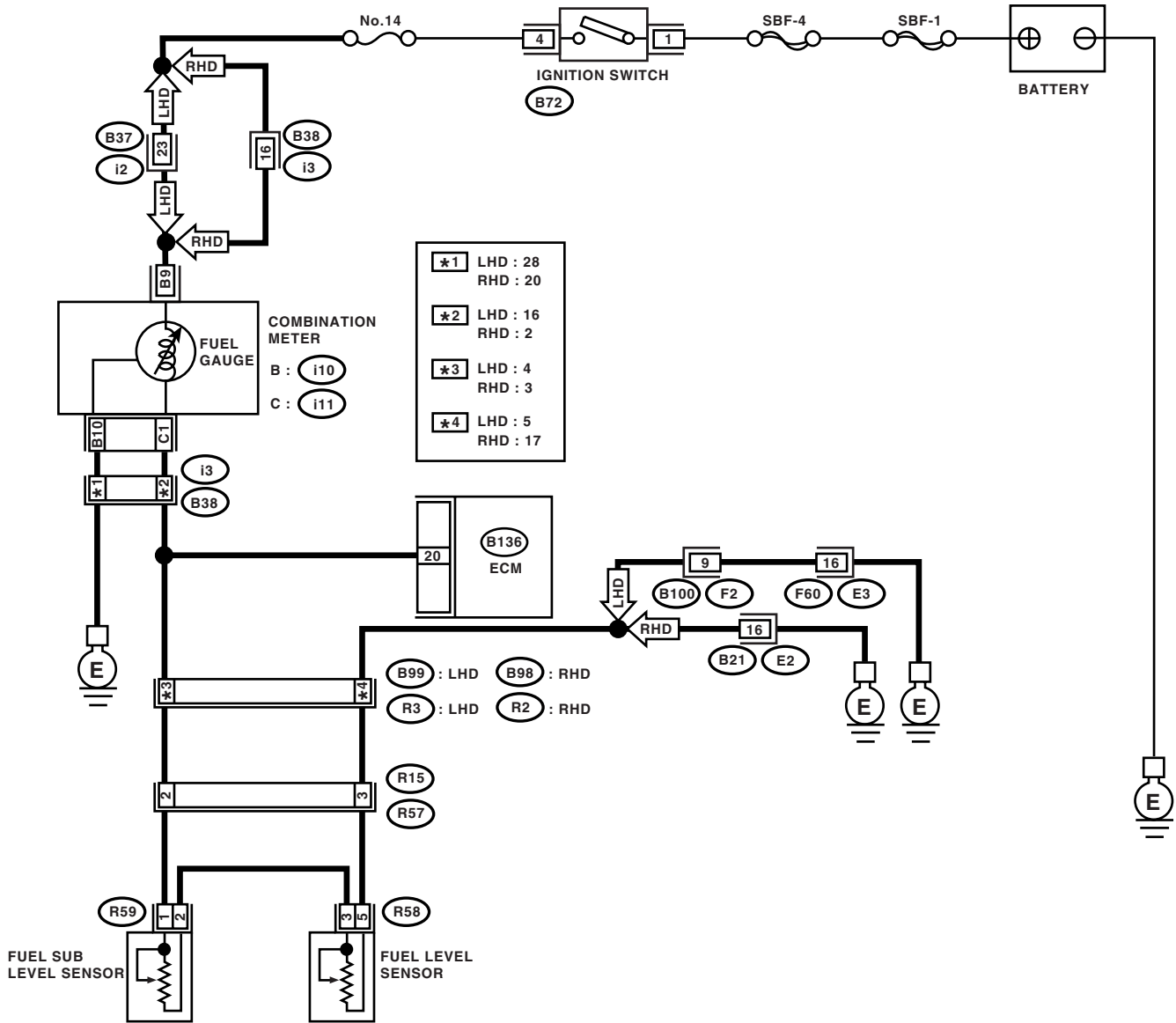
DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02336

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4DOTC)-74, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK FUEL LEVEL SENSOR. 1) Remove the fuel pump assembly. <Ref. to FU(H4DOTC)-62, Fuel Pump.> 2) While moving the fuel level sensor float up and down, make sure that the resistance between fuel level sensor terminals changes smoothly. <i>Terminals</i> No. 3 — No. 5:	Does the resistance change smoothly between approx. 0.5 — 52 Ω?	Go to step 3.	Replace the fuel level sensor. <Ref. to FU(H4DOTC)-64, Fuel Level Sensor.>
3 CHECK FUEL SUB LEVEL SENSOR. 1) Remove the fuel sub level sensor. <Ref. to FU(H4DOTC)-65, Fuel Sub Level Sensor.> 2) While moving the fuel sub level sensor float up and down, make sure that the resistance between fuel level sensor terminals changes smoothly. <i>Terminals</i> No. 1 — No. 2:	Does the resistance change smoothly between approx. 0.5 — 44 Ω?	Repair poor contact in ECM, combination meter and coupling connectors.	Replace the fuel sub level sensor. <Ref. to FU(H4DOTC)-65, Fuel Sub Level Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

BD:DTC P0483 COOLING FAN RATIONALITY CHECK

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Occurrence of noise
- Over-heating

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

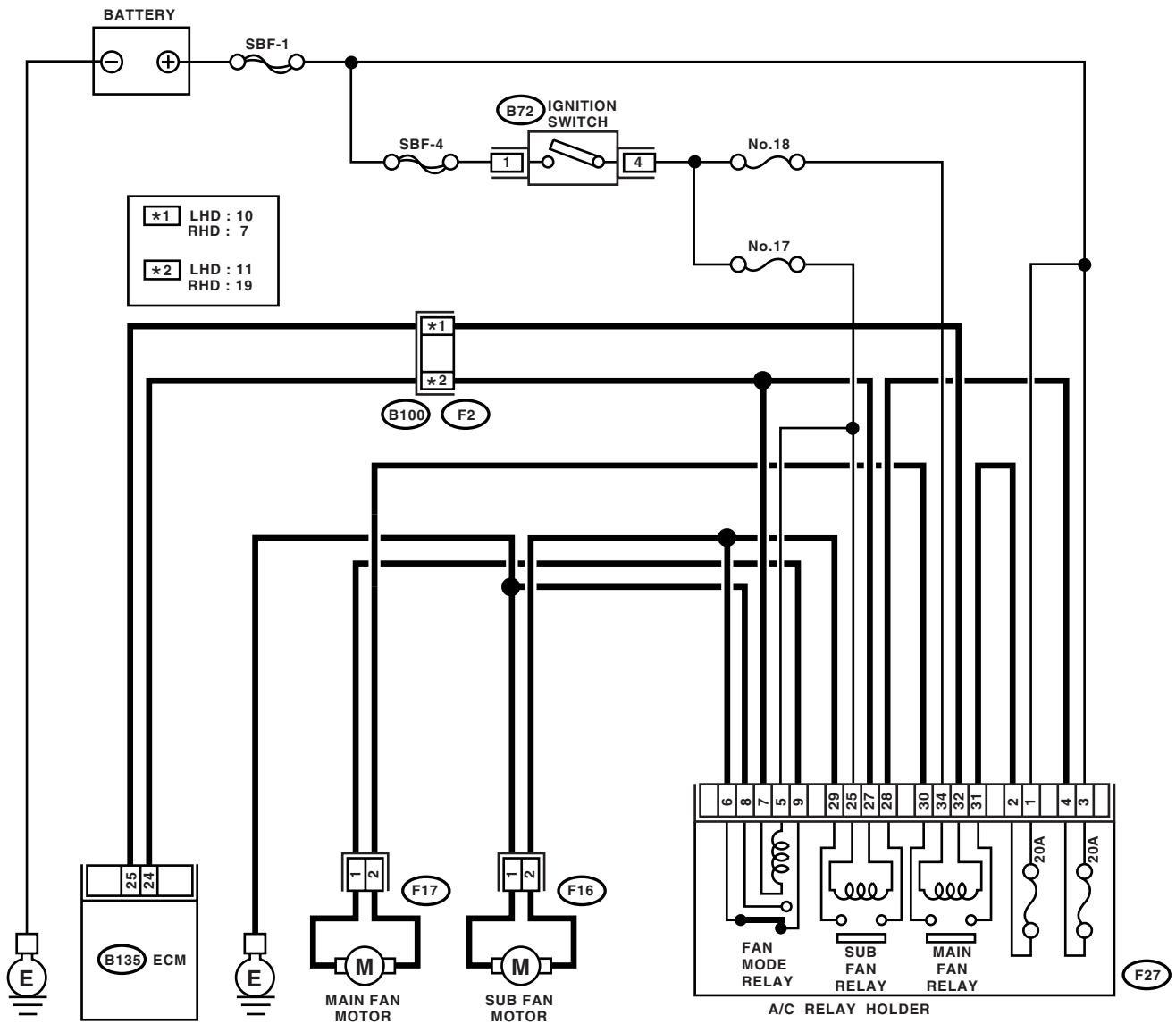
NOTE:

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

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

WIRING DIAGRAM:

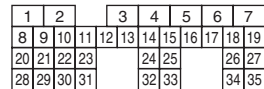


(F16)

(F17)



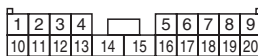
(B135)



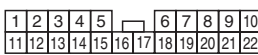
(B72)



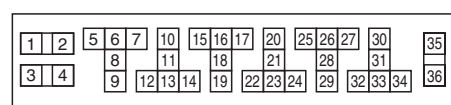
(F2) : LHD



(F2) : RHD



(F27)



EN-02337

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4DOTC)-74, List of Diagnostic Trouble Code (DTC).>	Check the radiator fan, fan motor and thermostat and replace the thermostat when it is stuck. <Ref. to CO(H4SO)-35, Radiator Main Fan and Fan Motor.> <Ref. to CO(H4SO)-40, Radiator Sub Fan and Fan Motor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

BE:DTC P0502 VEHICLE SPEED SENSOR CIRCUIT LOW INPUT

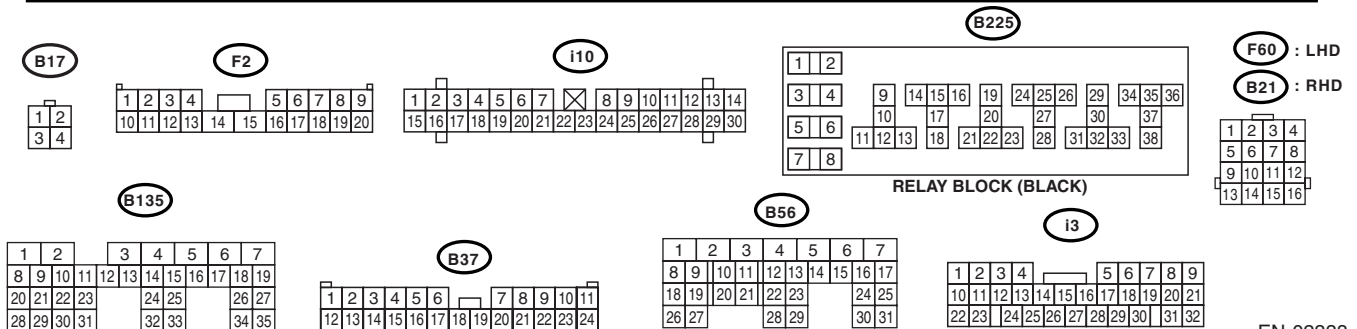
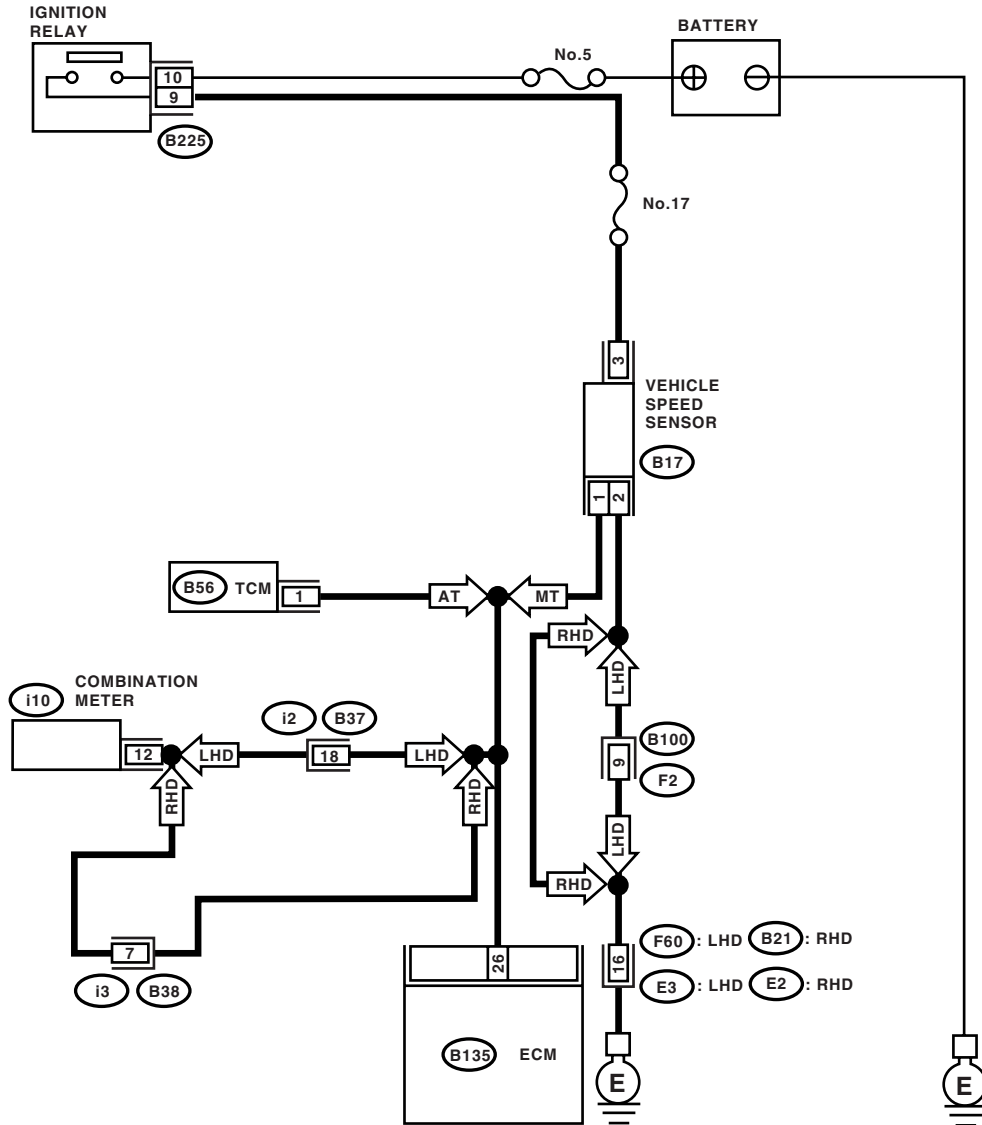
DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02338

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1	CHECK TRANSMISSION TYPE.	Go to step 2.	Go to step 4.
2	CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and TCM. 3) Measure the resistance of harness between TCM connector and chassis ground. <i>Connector & terminal</i> <i>(B56) No. 1 — Chassis ground:</i>	Go to step 3.	Repair ground short circuit in harness between ECM and TCM connector.
3	CHECK POOR CONTACT. Check poor contact in TCM connector.	Repair poor contact in TCM connector.	Contact the SUBARU dealer.
4	CHECK HARNESS BETWEEN VEHICLE SPEED SENSOR AND ECM CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from vehicle speed sensor ECM. 3) Measure the resistance of harness between vehicle speed sensor connector and chassis ground. <i>Connector & terminal</i> <i>(B17) No. 1 — Chassis ground:</i>	Go to step 5.	Repair ground short circuit in harness between vehicle speed sensor and ECM connector.
5	CHECK POOR CONTACT. Check poor contact in vehicle speed sensor connector.	Repair poor contact in vehicle speed sensor connector.	Replace the vehicle speed sensor. <Ref. to 5MT-46, Vehicle Speed Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

BF:DTC P0503 VEHICLE SPEED SENSOR CIRCUIT HIGH INPUT

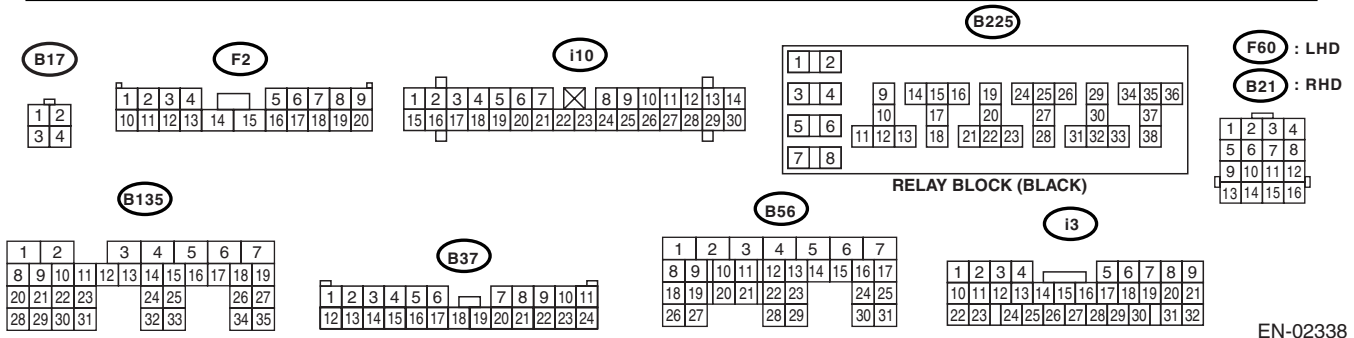
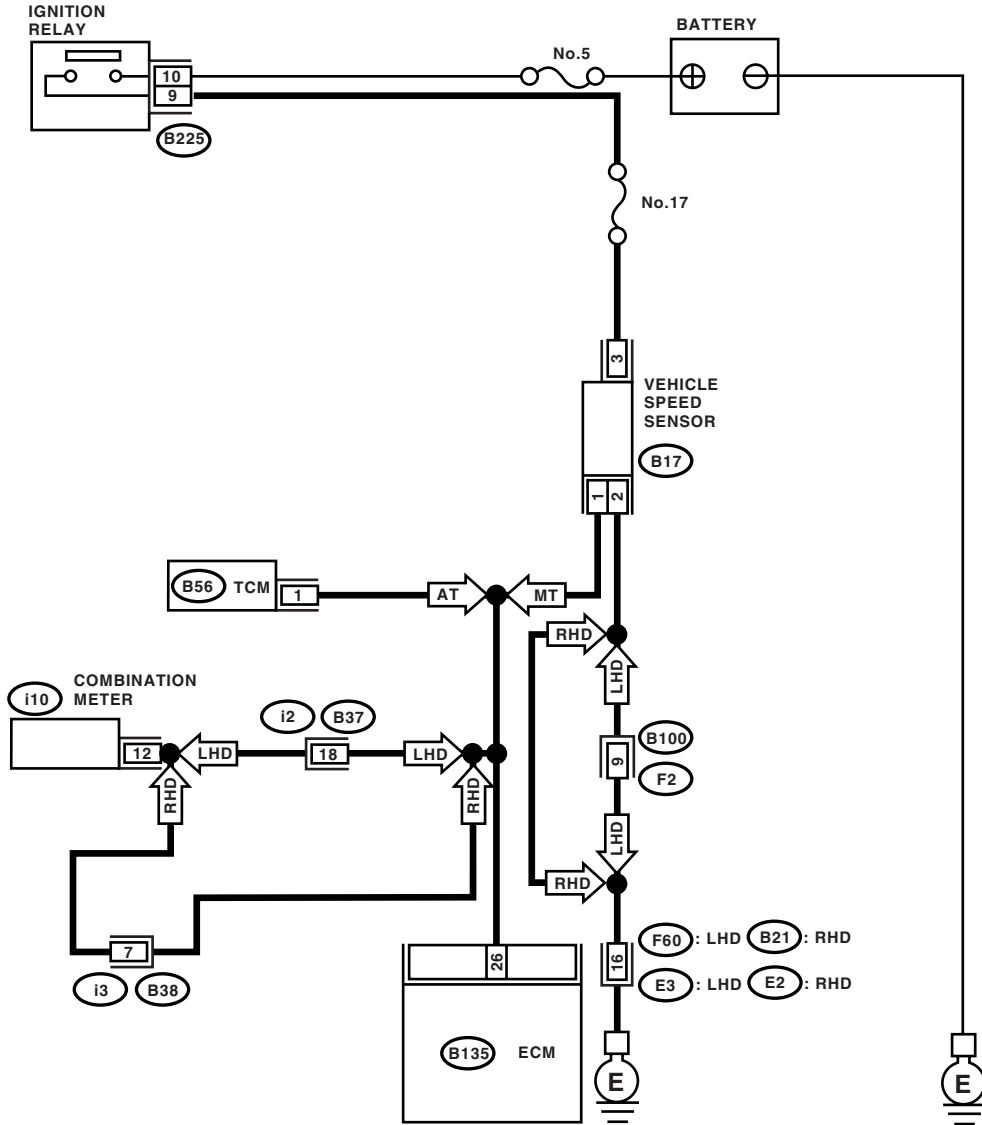
DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02338

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1	CHECK TRANSMISSION TYPE.	Is the transmission type AT?	Go to step 2 .
2	CHECK SPEEDOMETER OPERATION IN COMBINATION METER.	Does speedometer operate normally?	Go to step 3 .
3	CHECK HARNESS BETWEEN ECM AND COMBINATION METER CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the combination meter. 3) Measure the resistance between ECM and combination meter connector. Connector & terminal (B134) No. 1 — (i11) No. 2:	Is the resistance less than 10 Ω ?	Repair the poor contact in ECM connector. Repair the harness and connector. NOTE: In this case repair the following: <ul style="list-style-type: none"> • Open circuit in harness between ECM and combination meter connector • Poor contact in ECM connector. • Poor contact in combination meter connector • Poor contact in coupling connector

BG:DTC P0506 IDLE CONTROL SYSTEM RPM LOWER THAN EXPECTED

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

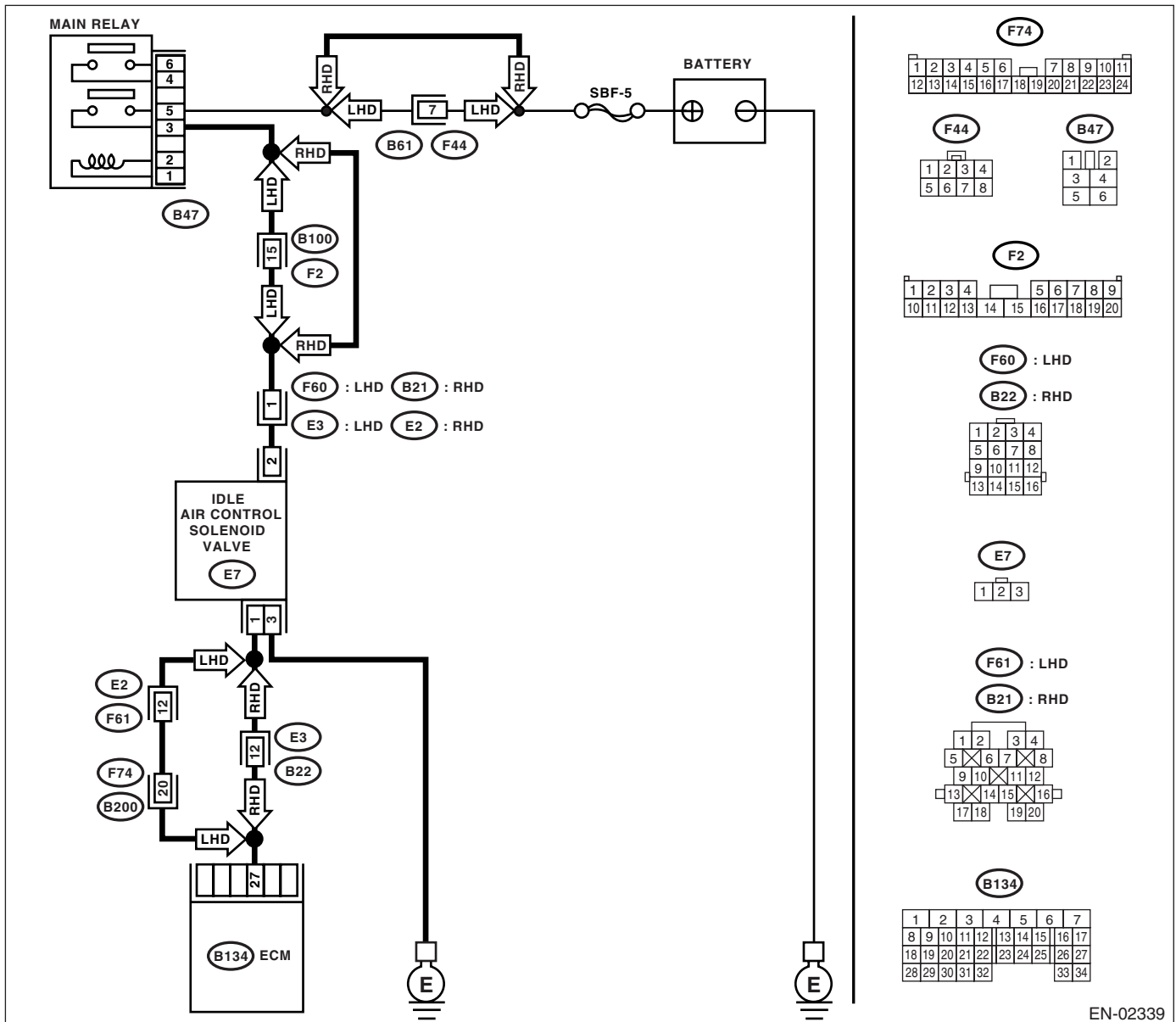
TROUBLE SYMPTOM:

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

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>

WIRING DIAGRAM:



EN-02339

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4DOTC)-74, List of Diagnostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0506.	Go to step 2.
2 CHECK IDLE AIR CONTROL SOLENOID VALVE. 1) Turn the ignition switch to OFF. 2) Remove the idle air control solenoid valve from the throttle body. <Ref. to FU(H4DOTC)-37, REMOVAL, Idle Air Control Solenoid Valve.> 3) Using an air gun, force air into the idle air control solenoid valve by-pass air inlet. Confirm that forced air subsequently escapes from both main air passage and assist air passage.	Does air flow out?	Go to step 3.	Replace the idle air control solenoid valve. <Ref. to FU(H4DOTC)-37, Idle Air Control Solenoid Valve.> After replace, Go to step 3.
3 CHECK IDLE AIR CONTROL SOLENOID VALVE DUTY RATIO. 1) Turn the ignition switch to ON. 2) Start the engine, and warm-up the engine. 3) Turn all accessory switches to OFF. 4) Read the data of idle air control solenoid duty ratio using Subaru Select Monitor or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.	Is the duty ratio more than 60%	Go to step 4.	END.
4 CHECK BY-PASS AIR LINE. 1) Turn the ignition switch to OFF. 2) Remove the idle air control solenoid valve from the throttle body. <Ref. to FU(H4DOTC)-37, REMOVAL, Idle Air Control Solenoid Valve.> 3) Remove the throttle body from the intake manifold. <Ref. to FU(H4DOTC)-13, REMOVAL, Throttle Body.> 4) Using an air gun, force air into the solenoid valve installation area and throttle valve interior. Confirm that forced air subsequently escapes from both these areas.	Does air flow out?	Replace the idle air control solenoid valve. <Ref. to FU(H4DOTC)-37, Idle Air Control Solenoid Valve.>	Replace the throttle body. <Ref. to FU(H4DOTC)-13, Throttle Body.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

BH:DTC P0507 IDLE CONTROL SYSTEM RPM HIGHER THAN EXPECTED

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

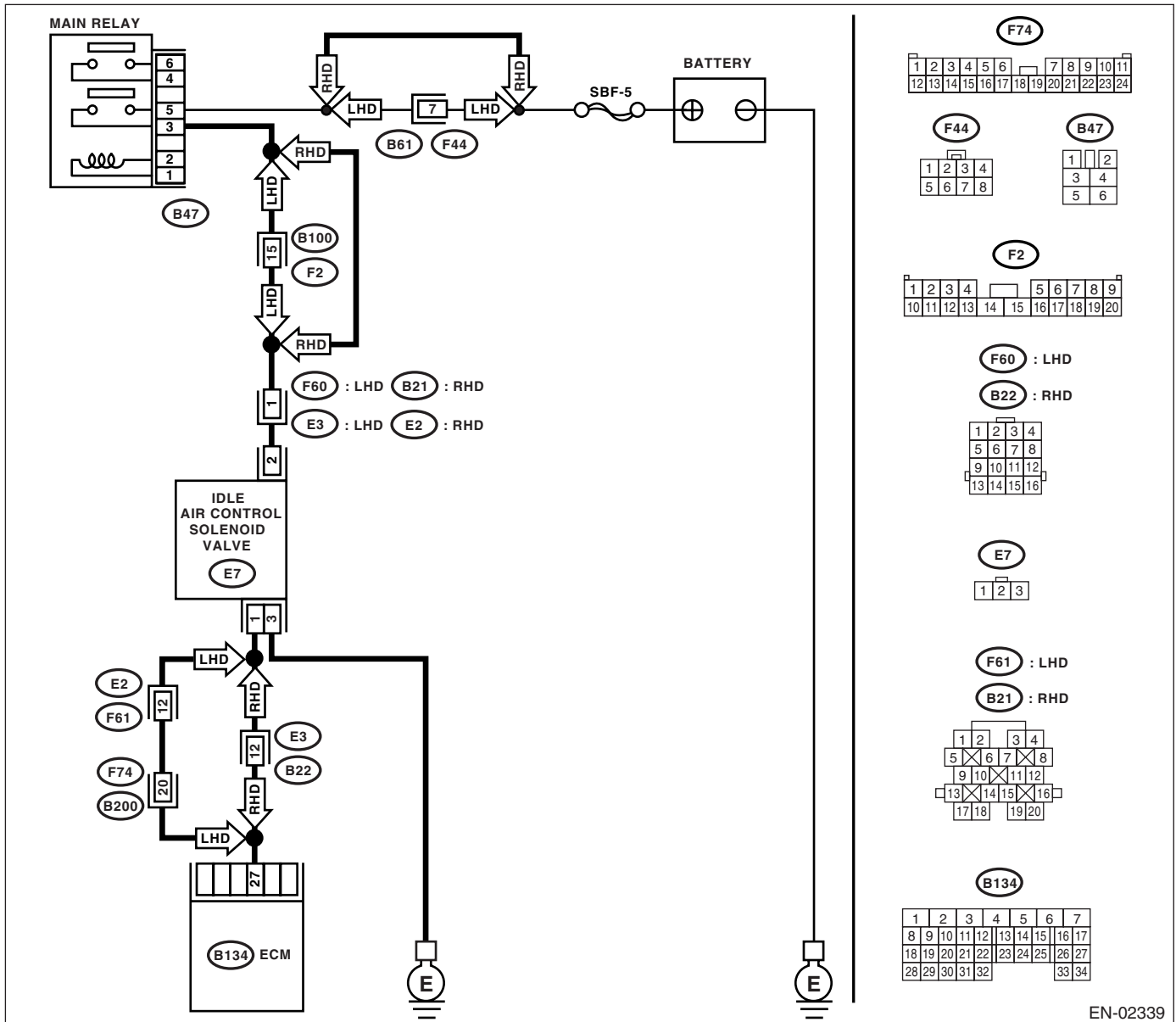
TROUBLE SYMPTOM:

Engine keeps running at higher revolution than specified idling revolution

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02339

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4DOTC)-74, List of Diagnostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0507.	Go to step 2.
2 CHECK THROTTLE CABLE.	Does the throttle cable have play for adjustment?	Go to step 3.	Adjust throttle cable. <Ref. to SP(H4SO)-9, INSTALLATION, Accelerator Control Cable.>
3 CHECK AIR INTAKE SYSTEM. 1) Turn the ignition switch to ON. 2) Start and idle the engine. 3) Check the following items: <ul style="list-style-type: none"> • Loose installation of intake manifold, idle air control solenoid valve and throttle body • Cracks of intake manifold gasket, idle air control solenoid valve gasket and throttle body gasket • Disconnections of vacuum hoses 	Is there any fault in air intake system?	Repair air suction and leaks.	Replace the idle air control solenoid valve. <Ref. to FU(H4DOTC)-37, Idle Air Control Solenoid Valve.>

BI: DTC P0508 IDLE CONTROL SYSTEM CIRCUIT LOW

DTC DETECTING CONDITION:

Immediately at fault recognition

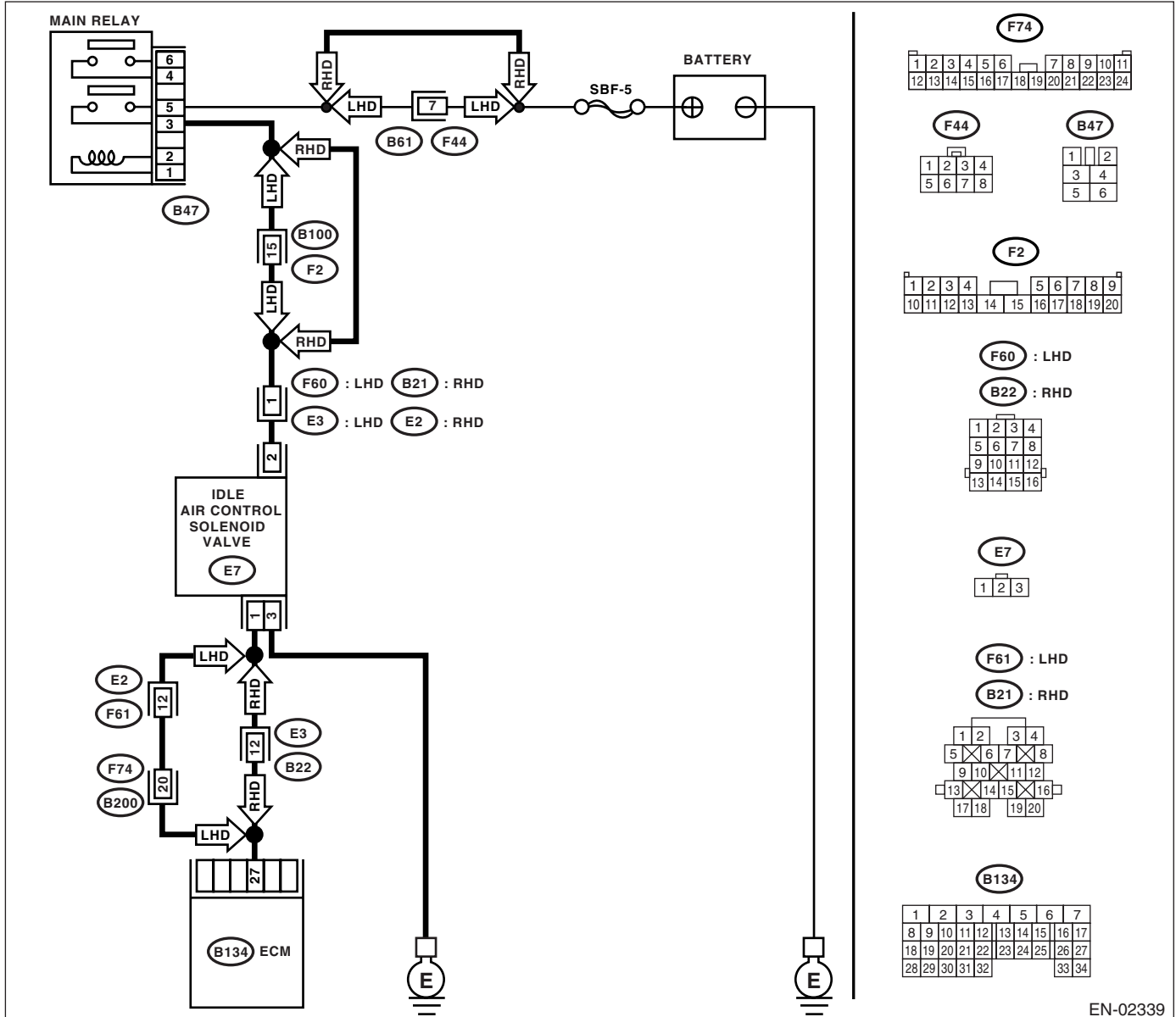
TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Engine breathing

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>

WIRING DIAGRAM:



EN-02339

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. <i>Connector & terminal</i> <i>(B134) No. 27 (+) — Chassis ground (-):</i>	Is the voltage more than 3 V?	Repair the poor contact in ECM connector.	Go to step 2.
2 CHECK POWER SUPPLY TO IDLE AIR CONTROL SOLENOID VALVE. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from idle air control solenoid valve. 3) Turn the ignition switch to ON. 4) Measure the voltage between idle air control solenoid valve and engine ground. <i>Connector & terminal</i> <i>(E7) No. 2 (+) — Engine ground (-):</i>	Is the voltage more than 10 V?	Go to step 3.	Repair the harness and connector. NOTE: In this case repair the following: <ul style="list-style-type: none"> • Open circuit in harness between idle air control solenoid valve and main relay connector • Poor contact in coupling connector
3 CHECK HARNESS BETWEEN ECM AND IDLE AIR CONTROL SOLENOID VALVE CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM and idle air control solenoid valve connector. <i>Connector & terminal</i> <i>(B134) No. 27 — (E7) No. 1:</i>	Is the resistance less than 1 Ω ?	Go to step 4.	Repair the harness and connector. NOTE: In this case repair the following: <ul style="list-style-type: none"> • Open circuit in harness between ECM and idle air control solenoid valve connector • Poor contact in coupling connector
4 CHECK HARNESS BETWEEN ECM AND IDLE AIR CONTROL SOLENOID VALVE CONNECTOR. Measure the resistance of harness between ECM and chassis ground. <i>Connector & terminal</i> <i>(B134) No. 10 — Chassis ground:</i>	Is the resistance more than 1 M Ω ?	Go to step 5.	Repair ground short circuit in harness between ECM and idle air control solenoid valve connector.
5 CHECK GROUND CIRCUIT OF IDLE AIR CONTROL SOLENOID VALVE. Measure the resistance of harness between idle air control solenoid valve connector and engine ground. <i>Connector & terminal</i> <i>(E7) No. 3 — Engine ground:</i>	Is the resistance less than 5 Ω ?	Go to step 6.	Repair open circuit in harness between idle air control solenoid valve connector and engine ground cable.
6 CHECK POOR CONTACT. Check poor contact in ECM and idle air control solenoid valve connectors.	Is there poor contact in ECM and idle air control solenoid valve connectors?	Repair poor contact in ECM and idle air control solenoid valve connectors.	Replace the idle air control solenoid valve. <Ref. to FU(H4DOTC)-37, Idle Air Control Solenoid Valve.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK THROTTLE CABLE.	Does the throttle cable have play for adjustment?	Go to step 2.	Adjust throttle cable. <Ref. to SP(H4SO)-9, Accelerator Control Cable.>
2 CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 27 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 3.	Go to step 4.
3 CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from idle air control solenoid valve. 3) Turn the ignition switch to ON. 4) Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 27 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Repair battery short circuit in harness between ECM and idle air control solenoid valve connector. After repair, replace the ECM. <Ref. to FU(H4DOTC)-50, Engine Control Module (ECM).>	Replace the idle air control solenoid valve and ECM. <Ref. to FU(H4DOTC)-37, Idle Air Control Solenoid Valve.> <Ref. to FU(H4DOTC)-50, Engine Control Module (ECM).>
4 CHECK OUTPUT SIGNAL FROM ECM. Measure the voltage between ECM and chassis ground. Connector & terminal (B134) No. 27 (+) — Chassis ground (-):	Does the voltage change by shaking the harness and connector of ECM while monitoring the value with voltage meter?	Repair battery short circuit in harness between ECM and idle air control solenoid valve connector. After repair, replace the ECM. <Ref. to FU(H4DOTC)-50, Engine Control Module (ECM).>	Contact the SUBARU dealer. NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.

BK:DTC P0512 STARTER REQUEST CIRCUIT

DTC DETECTING CONDITION:

Immediately at fault recognition

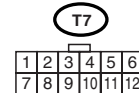
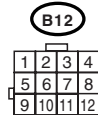
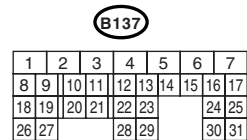
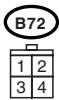
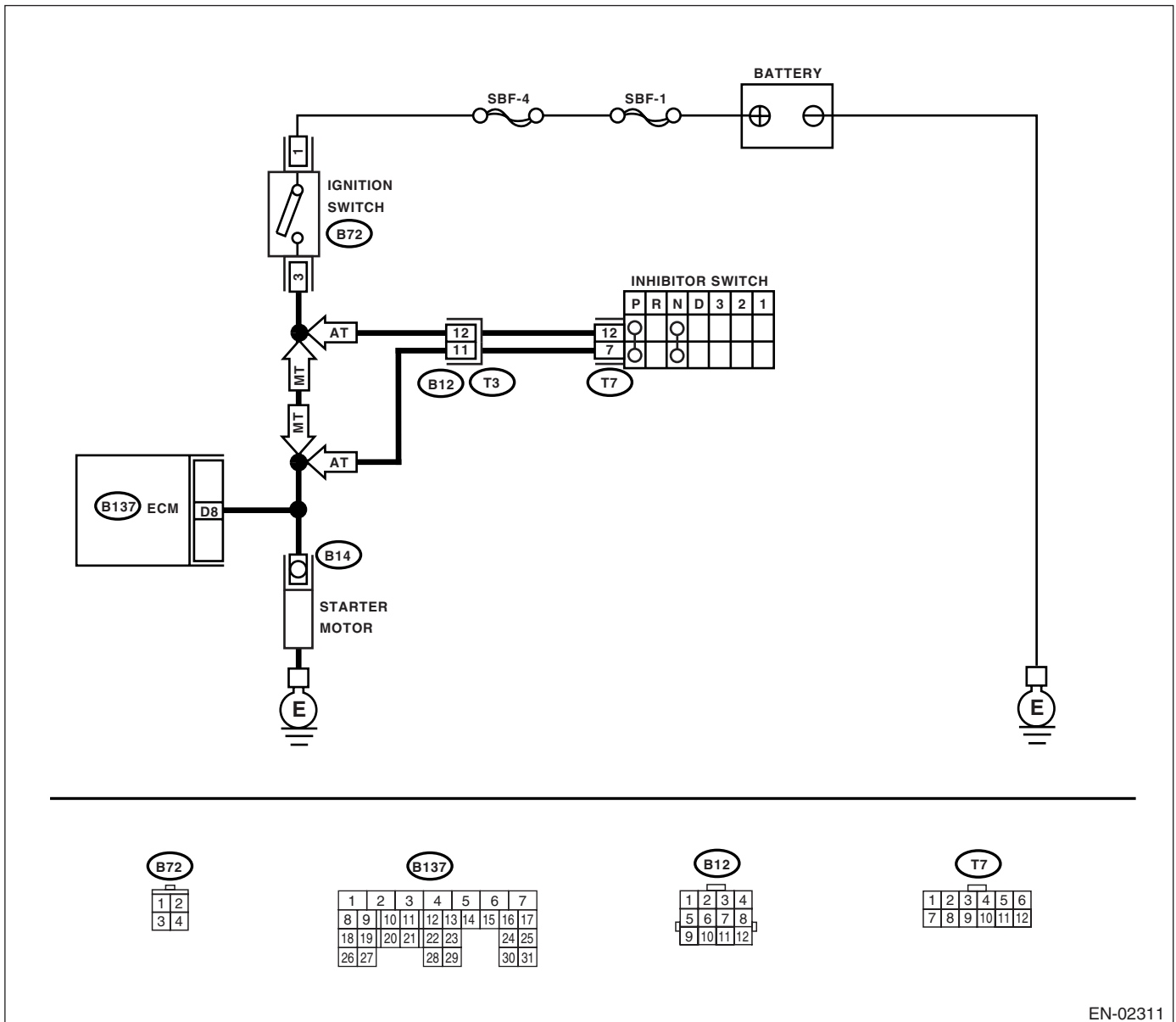
TROUBLE SYMPTOM:

Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK OPERATION OF STARTER MOTOR.	Does the starter motor operate when ignition switch to ON?	Repair battery short circuit in starter motor circuit. After repair, replace the ECM. <Ref. to FU(H4DOTC)-50, Engine Control Module (ECM).>	Check starter motor circuit. <Ref. to EN(H4DOTC)-60, STARTER MOTOR CIRCUIT, Diagnostics for Engine Starting Failure.>

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

DTC DETECTING CONDITION:

Immediately at fault recognition

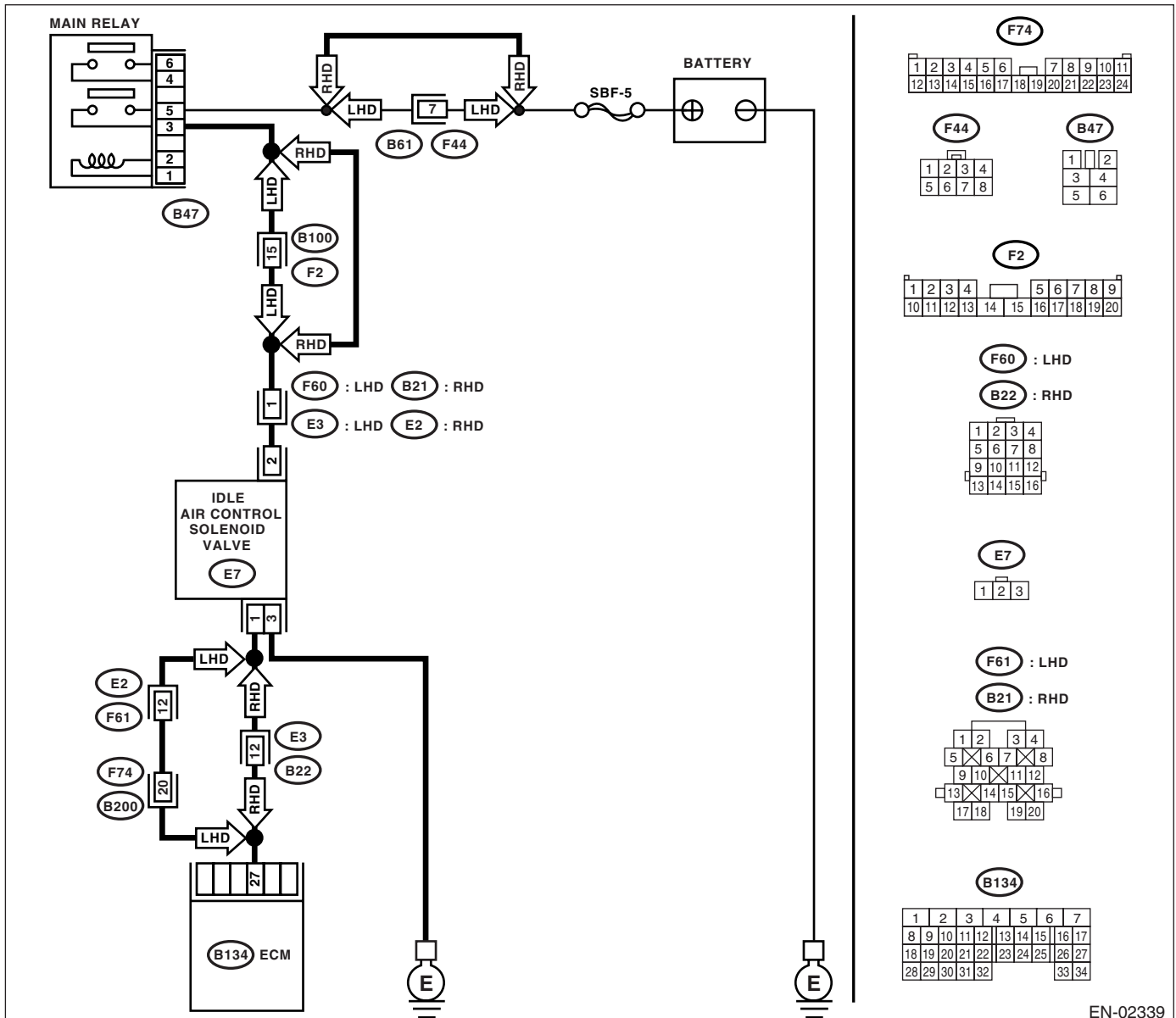
TROUBLE SYMPTOM:

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

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02339

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4DOTC)-74, List of Diagnostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0519.	Go to step 2.
2 CHECK AIR INTAKE SYSTEM. 1) Turn the ignition switch to ON. 2) Start and idle the engine. 3) Check the following items: <ul style="list-style-type: none"> • Loose installation of intake manifold, idle air control solenoid valve and throttle body • Cracks of intake manifold gasket, idle air control solenoid valve gasket and throttle body gasket • Disconnections of vacuum hoses 	Is there any fault in air intake system?	Repair air suction and leaks.	Go to step 3.
3 CHECK THROTTLE CABLE.	Does the throttle cable have play for adjustment?	Go to step 4.	Adjust throttle cable. <Ref. to SP(H4SO)-9, INSTALLATION, Accelerator Control Cable.>
4 CHECK AIR BY-PASS LINE. 1) Turn the ignition switch to OFF. 2) Remove the idle air control solenoid valve from the throttle body. <Ref. to FU(H4DOTC)-37, Idle Air Control Solenoid Valve.> 3) Confirm that there are no foreign particles in by-pass air line.	Are foreign particles in by-pass air line?	Remove foreign particles from by-pass air line.	Replace the idle air control solenoid valve. <Ref. to FU(H4DOTC)-37, Idle Air Control Solenoid Valve.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>1</p> <p>CHECK CURRENT DATA.</p> <p>1) Start the engine.</p> <p>2) Read the data of exhaust temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • OBD-II general scan tool <p>For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</p>	<p>Is engine coolant temperature more than 1200°C (2192°F)?</p>	<p>Go to step 2.</p>	<p>Repair the poor contact.</p> <p>NOTE:</p> <p>In this case repair the following:</p> <ul style="list-style-type: none"> • Poor contact of exhaust temperature sensor • Poor contact in ECM • Poor contact in joint connector
<p>2</p> <p>CHECK HARNESS BETWEEN EXHAUST TEMPERATURE SENSOR AND ECM CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connector from exhaust temperature sensor.</p> <p>3) Turn the ignition switch to ON.</p> <p>4) Read the data of exhaust temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • OBD-II general scan tool <p>For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</p>	<p>Is the temperature less than 372°C (702°F)?</p>	<p>Replace the exhaust temperature sensor. <Ref. to FU(H4DOTC)-49, Exhaust Temperature Sensor.></p>	<p>Repair ground short circuit in harness between exhaust temperature sensor and ECM connector.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

BN:DTC P0546 EXHAUST GAS TEMPERATURE SENSOR HIGH - BANK 1

DTC DETECTING CONDITION:

Immediately at fault recognition

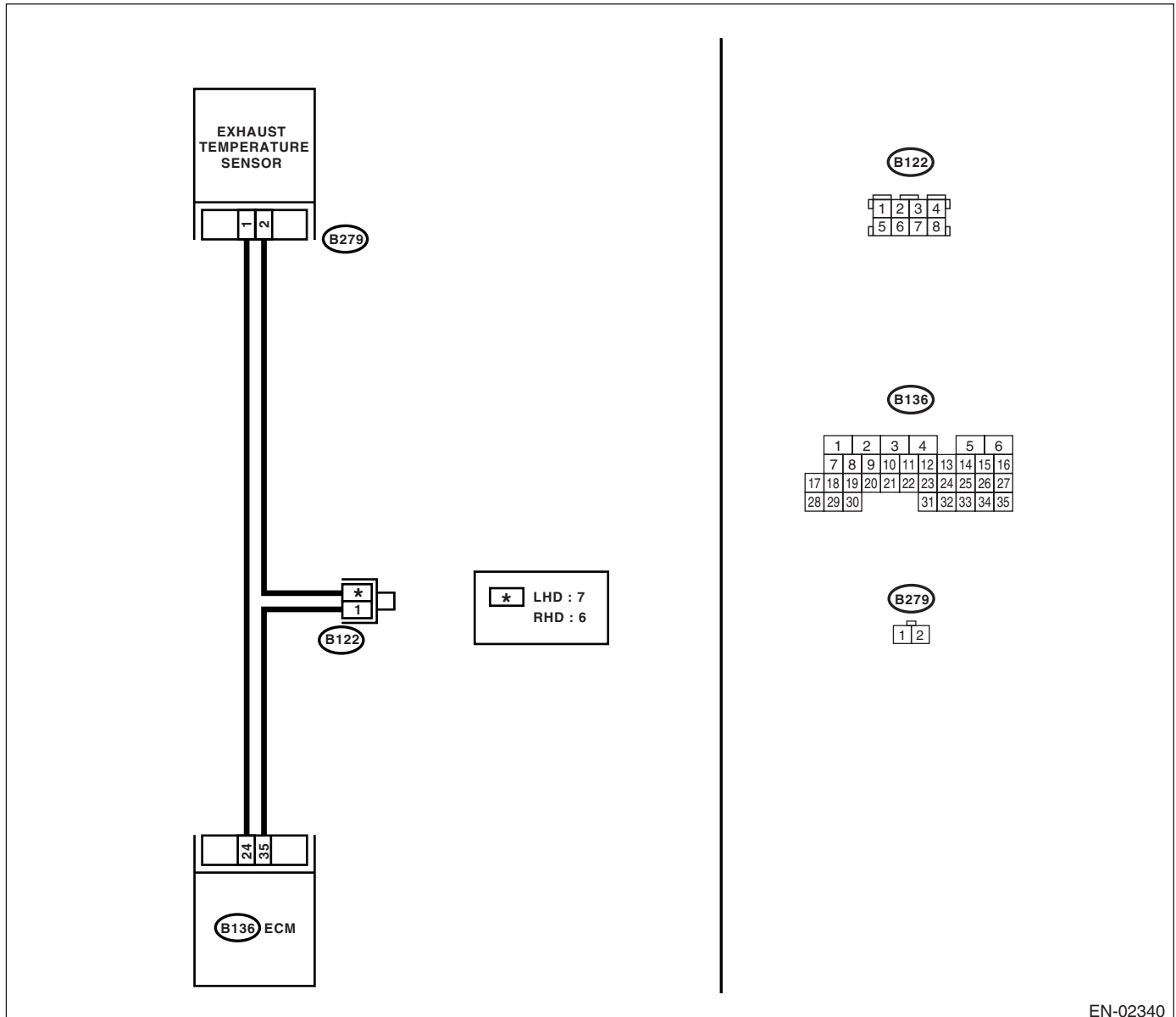
TROUBLE SYMPTOM:

- Hard to start
- Erroneous idling
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02340

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>1 CHECK CURRENT DATA.</p> <p>1) Start the engine.</p> <p>2) Read the data of exhaust temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • OBD-II general scan tool <p>For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</p>	<p>Is the temperature less than 372°C (702°F)?</p>	<p>Go to step 2.</p>	<p>Repair the poor contact.</p> <p>NOTE:</p> <p>In this case repair the following:</p> <ul style="list-style-type: none"> • Poor contact of exhaust temperature sensor • Poor contact in ECM • Poor contact in joint connector
<p>2 CHECK HARNESS BETWEEN EXHAUST TEMPERATURE SENSOR AND ECM CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connector from exhaust temperature sensor.</p> <p>3) Measure the voltage between exhaust temperature sensor connector and engine ground.</p> <p>Connector & terminal (B279) No. 1 (+) — Engine ground (-):</p>	<p>Is the voltage more than 10 V?</p>	<p>Repair battery short circuit in harness between ECM and exhaust temperature sensor connector.</p>	<p>Go to step 3.</p>
<p>3 CHECK HARNESS BETWEEN EXHAUST TEMPERATURE SENSOR AND ECM CONNECTOR.</p> <p>1) Turn the ignition switch to ON.</p> <p>2) Measure the voltage between exhaust temperature sensor connector and engine ground.</p> <p>Connector & terminal (B279) No. 1 (+) — Engine ground (-):</p>	<p>Is the voltage more than 10 V?</p>	<p>Repair battery short circuit in harness between ECM and exhaust temperature sensor connector.</p>	<p>Go to step 4.</p>
<p>4 CHECK HARNESS BETWEEN EXHAUST TEMPERATURE SENSOR AND ECM CONNECTOR.</p> <p>Measure the voltage between exhaust temperature sensor connector and engine ground.</p> <p>Connector & terminal (B279) No. 1 (+) — Engine ground (-):</p>	<p>Is the voltage more than 4 V?</p>	<p>Go to step 5.</p>	<p>Repair the harness and connector.</p> <p>NOTE:</p> <p>In this case repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between ECM and exhaust temperature sensor connector • Poor contact of exhaust temperature sensor connector • Poor contact in ECM connector. • Poor contact in joint connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>5</p> <p>CHECK HARNESS BETWEEN EXHAUST TEMPERATURE SENSOR AND ECM CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Measure the resistance of harness between exhaust temperature sensor connector and engine ground.</p> <p>Connector & terminal (B279) No. 2 — Engine ground:</p>	<p>Is the resistance less than 5 Ω?</p>	<p>Replace the exhaust temperature sensor. <Ref. to FU(H4DOTC)-49, Exhaust Temperature Sensor.></p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between ECM and exhaust temperature sensor connector • Poor contact of exhaust temperature sensor connector • Poor contact in ECM connector. • Poor contact in joint connector

BO:DTC P0558 GENERATOR CIRCUIT LOW INPUT

NOTE:

Refer to DTC P0559 for diagnostic procedure. <Ref. to EN(H4DOTC)-226, DTC P0559 GENERATOR CIRCUIT HIGH INPUT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

BP:DTC P0559 GENERATOR CIRCUIT HIGH INPUT

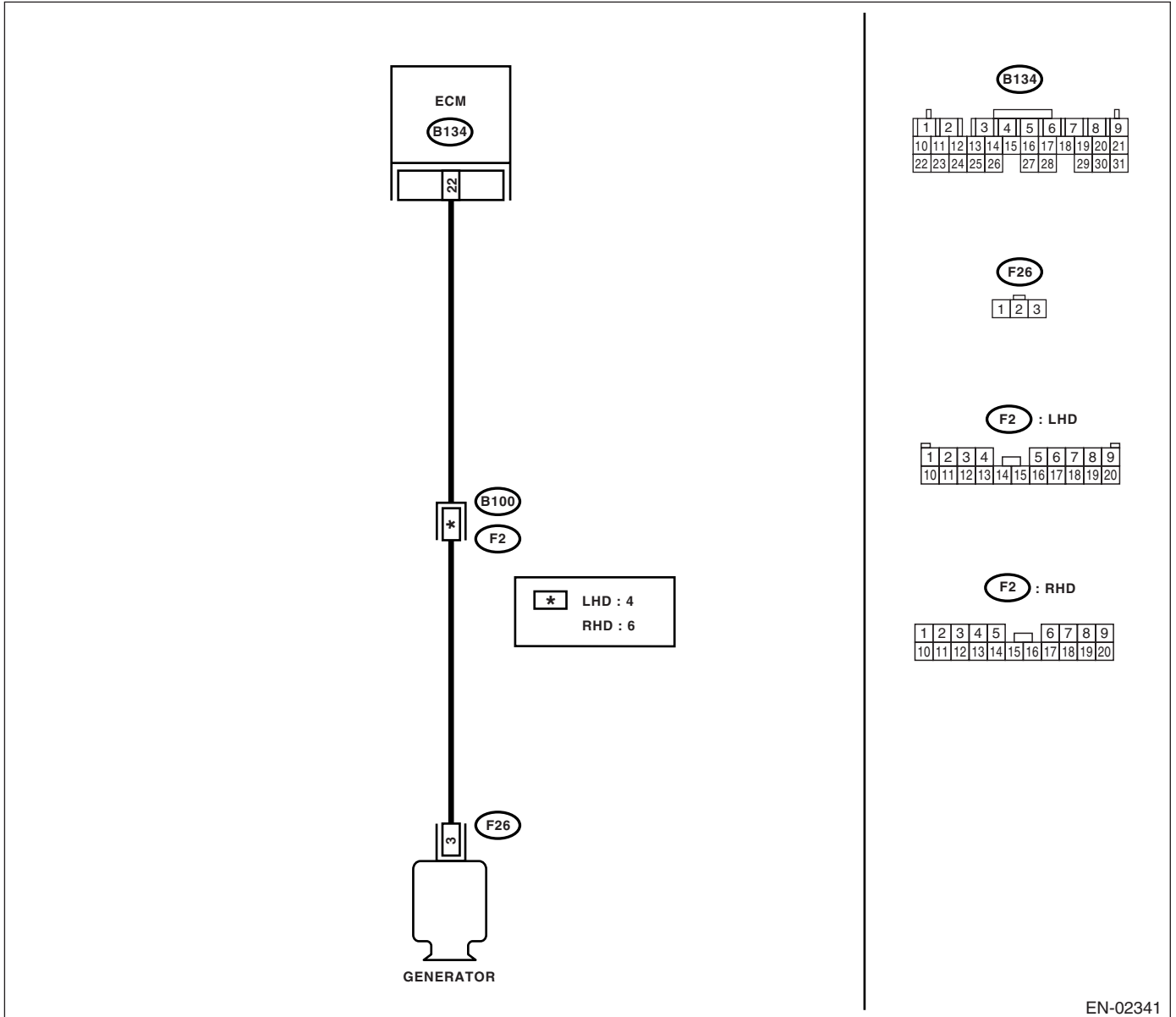
DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02341

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>1</p> <p>CHECK HARNESS BETWEEN GENERATOR AND ECM CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connector from generator and ECM.</p> <p>3) Measure the resistance of harness between generator connector and engine ground.</p> <p>Connector & terminal (F26) No. 3 — Engine ground:</p>	<p>Is the resistance more than 1 MΩ?</p>	<p>Go to step 2.</p>	<p>Repair ground short circuit in harness between ECM and purge control solenoid valve connector.</p>
<p>2</p> <p>CHECK HARNESS BETWEEN GENERATOR AND ECM CONNECTOR.</p> <p>Measure the resistance of harness between ECM and generator.</p> <p>Connector & terminal (B134) No. 22 — (F26) No. 3:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Repair poor contact connector.</p>	<p>Repair open circuit in harness between ECM and generator connector.</p> <p>NOTE: In this case repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between ECM and generator connector • Poor contact in coupling connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

BQ:DTC P0600 SERIAL COMMUNICATION LINK

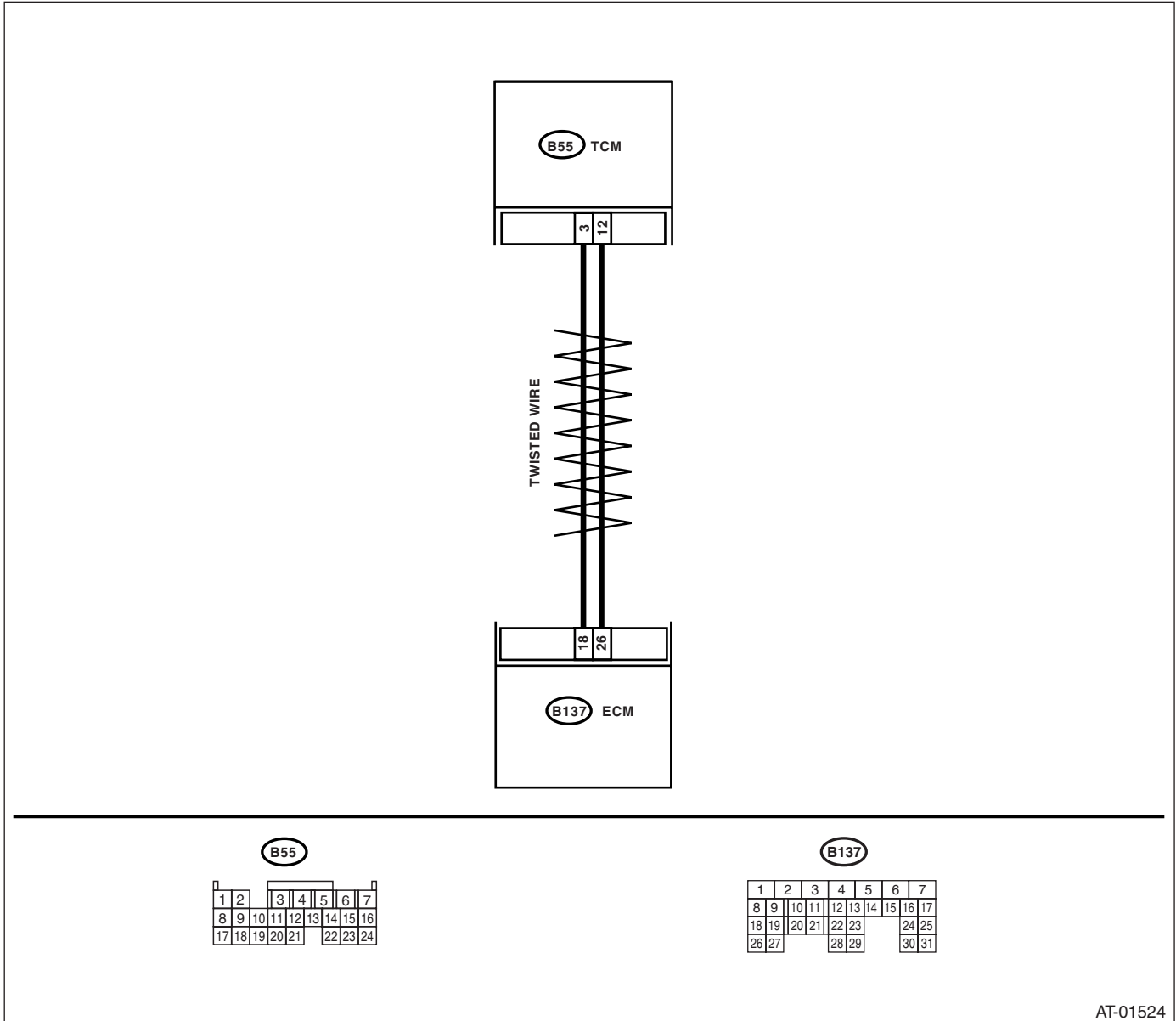
DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



AT-01524

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK HARNESS BETWEEN ECM AND TCM. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connector from TCM. 4) Measure the resistance between connectors of ECM and TCM. <i>Connector & terminal</i> (B137) No. 18 — (B55) No. 3: (B137) No. 26 — (B54) No. 12:	Is the resistance less than 1 Ω ?	Go to step 2.	Repair the harness connector.
2 CHECK HARNESS BETWEEN ECM AND TCM. Measure the resistance between ECM connector and chassis ground. <i>Connector & terminal</i> (B137) No. 18 — Chassis ground: (B137) No. 26 — Chassis ground:	Is the resistance more than 1 M Ω ?	Go to step 3.	Repair the harness connector.
3 CHECK HARNESS BETWEEN ECM AND TCM. Measure the resistance of ECM connectors. <i>Connector & terminal</i> (B137) No. 18 — (B137) No. 26:	Is the resistance more than 1 M Ω ?	Go to step 4.	Repair the harness connector.
4 CHECK AT SYSTEM STATUS. Check the AT using Subaru Select Monitor.	Does the Subaru Select Monitor display DTC P1718?	Inspect the AT system.	Replace the ECM. <Ref. to FU(H4DOTC)-50, Engine Control Module (ECM).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

BR:DTC P0604 INTERNAL CONTROL MODULE READ ONLY MEMORY (ROM) ERROR

DTC DETECTING CONDITION:

Immediately at fault recognition

TROUBLE SYMPTOM:

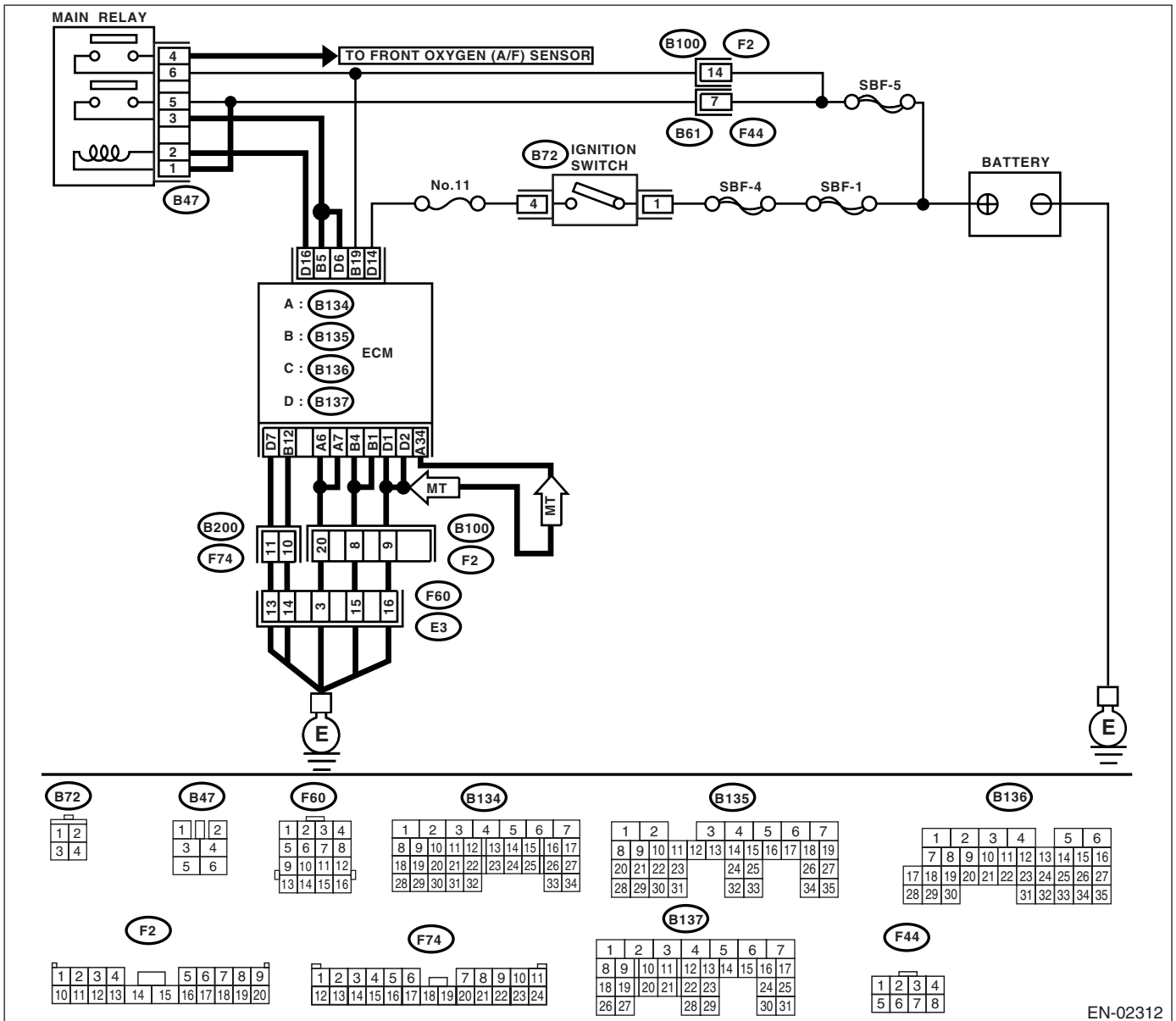
- Engine does not start.
- Engine stalls.

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:

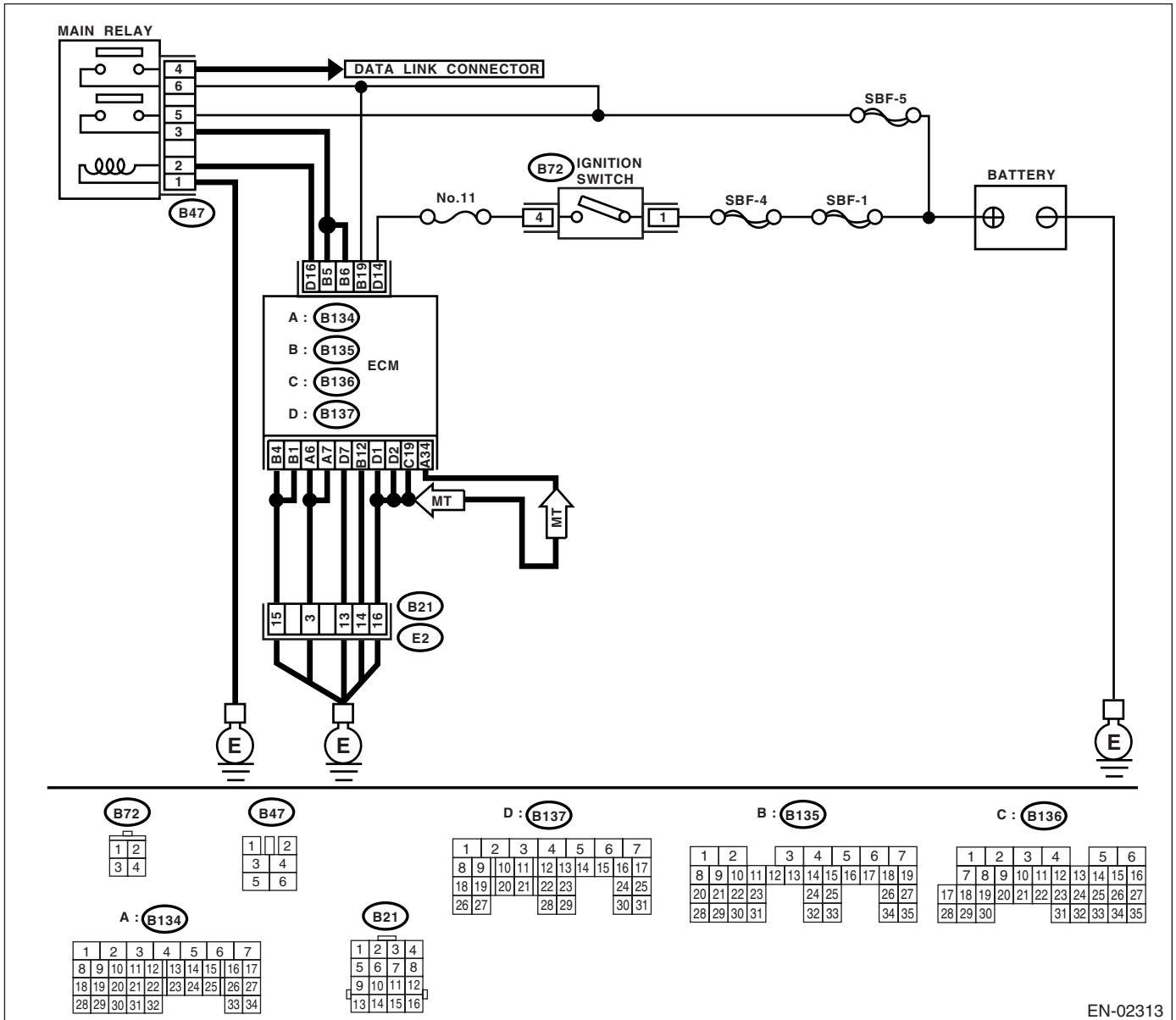
- LHD model



EN-02312

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

• RHD model



Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY. Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0604?	Replace the ECM. <Ref. to FU(H4DOTC)-50, Engine Control Module (ECM).>	Temporary poor contact occurs.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

BS:DTC P0691 COOLING FAN 1 CONTROL CIRCUIT LOW

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

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

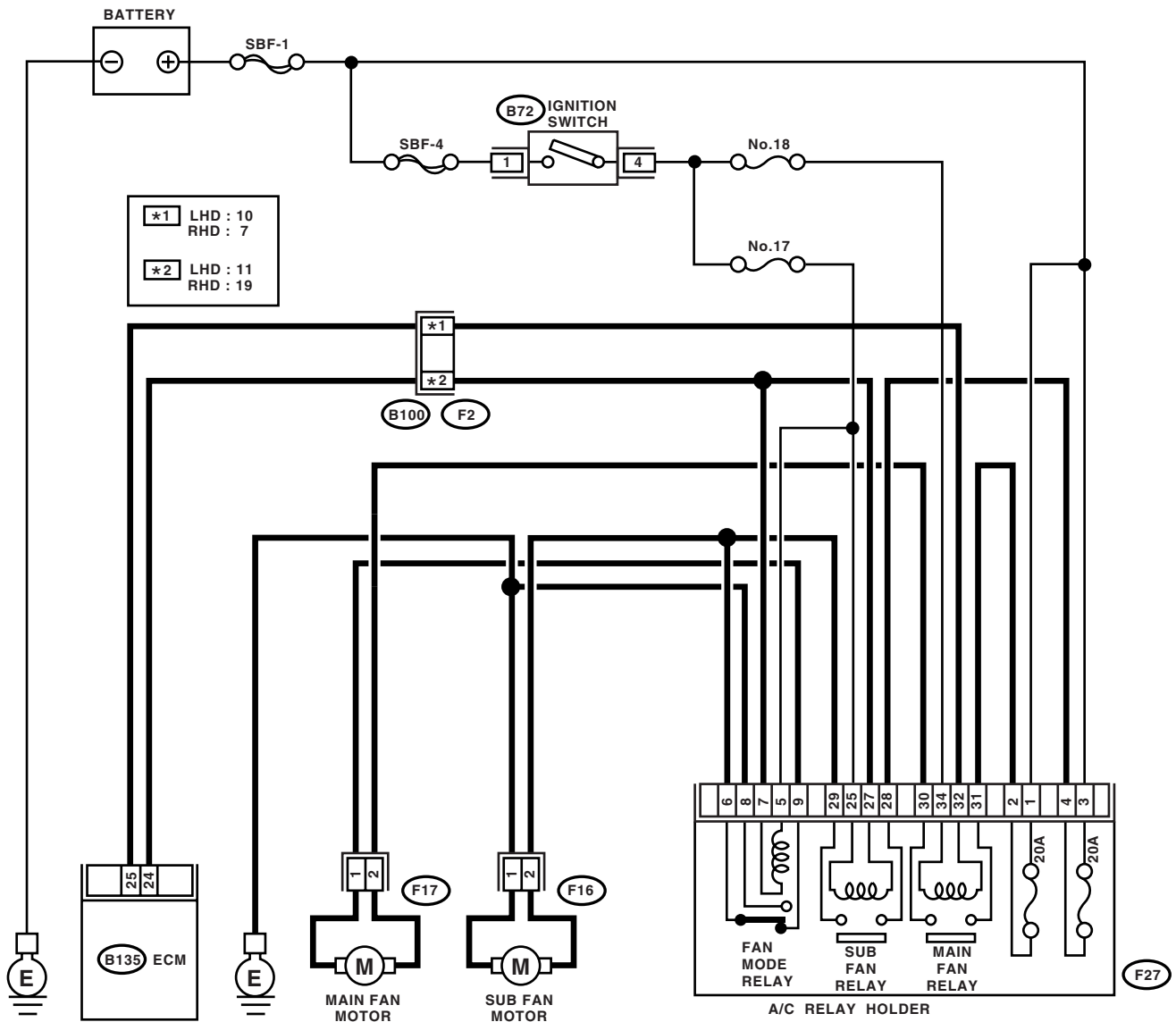
CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, OPERATION, Inspection Mode.>.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

WIRING DIAGRAM:



(F16)

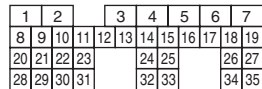
(F17)



(B72)



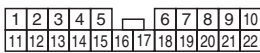
(B135)



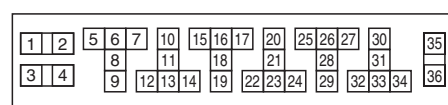
(F2) : LHD



(F2) : RHD



(F27)



EN-02337

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>1 CHECK OUTPUT SIGNAL FROM ECM. 1) Turn the ignition switch to OFF. 2) Connect the test mode connector. 3) Turn the ignition switch to ON. 4) While operating the radiator fan relay, measure voltage between ECM terminal and ground.</p> <p>NOTE: Radiator fan relay operation can be executed using Subaru Select Monitor. For procedure, refer to "Compulsory Valve Operation Check Mode". <Ref. to EN(H4DOTC)-48, Compulsory Valve Operation Check Mode.></p> <p>Connector & terminal (B135) No. 24 (+) — Chassis ground (-): (B135) No. 25 (+) — Chassis ground (-):</p>	<p>Does the voltage vary between 0 — 10 V?</p>	<p>Repair the poor contact in ECM connector.</p>	<p>Go to step 2.</p>
<p>2 CHECK GROUND SHORT CIRCUIT IN RADIATOR FAN RELAY CONTROL CIRCUIT. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM connector and chassis ground.</p> <p>Connector & terminal (B135) No. 24 — Chassis ground: (B135) No. 25 — Chassis ground:</p>	<p>Is the resistance more than 1 MΩ?</p>	<p>Go to step 3.</p>	<p>Repair ground short circuit in radiator fan relay control circuit.</p>
<p>3 CHECK POWER SUPPLY FOR RELAY. 1) Remove the main fan relay 1 and sub fan relay from A/C relay holder. 2) Turn the ignition switch to ON. 3) Measure the voltage between fuse and relay box (F/B) connector and chassis ground.</p> <p>Connector & terminal (F27) No. 25 (+) — Chassis ground (-): (F27) No. 34 (+) — Chassis ground (-):</p>	<p>Is the voltage more than 10 V?</p>	<p>Go to step 4.</p>	<p>Repair open circuit in harness between ignition switch and fuse and relay box (F/B) connector.</p>
<p>4 CHECK MAIN FAN RELAY 1. 1) Turn the ignition switch to OFF. 2) Measure the resistance of main fan relay 1 terminals.</p> <p>Terminals No. 32 — No. 34:</p>	<p>Is the resistance 87 — 107 Ω?</p>	<p>Go to step 5.</p>	<p>Replace the main fan relay 1.</p>
<p>5 CHECK SUB FAN RELAY. 1) Turn the ignition switch to OFF. 2) Measure the resistance between sub fan relay terminals.</p> <p>Terminals No. 25 — No. 27:</p>	<p>Is the resistance 87 — 107 Ω?</p>	<p>Go to step 6.</p>	<p>Replace the sub fan relay.</p>
<p>6 CHECK OPEN CIRCUIT IN FAN RELAY CONTROL CIRCUIT. Measure the resistance of harness between ECM and fan relay connector.</p> <p>Connector & terminal (B135) No. 24 — (F27) No. 27: (B135) No. 25 — (F27) No. 32:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 7.</p>	<p>Repair harness and connector.</p> <p>NOTE: In this case repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between ECM and fan relay connector • Poor contact in coupling connector

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

	Step	Check	Yes	No
7	CHECK POOR CONTACT. Check poor contact in ECM or fan relay connector.	Is there poor contact in ECM or fan relay connector?	Repair the poor contact in ECM or fan relay connector.	Contact the SUBARU dealer.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

BT:DTC P0692 COOLING FAN 1 CONTROL CIRCUIT HIGH

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

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

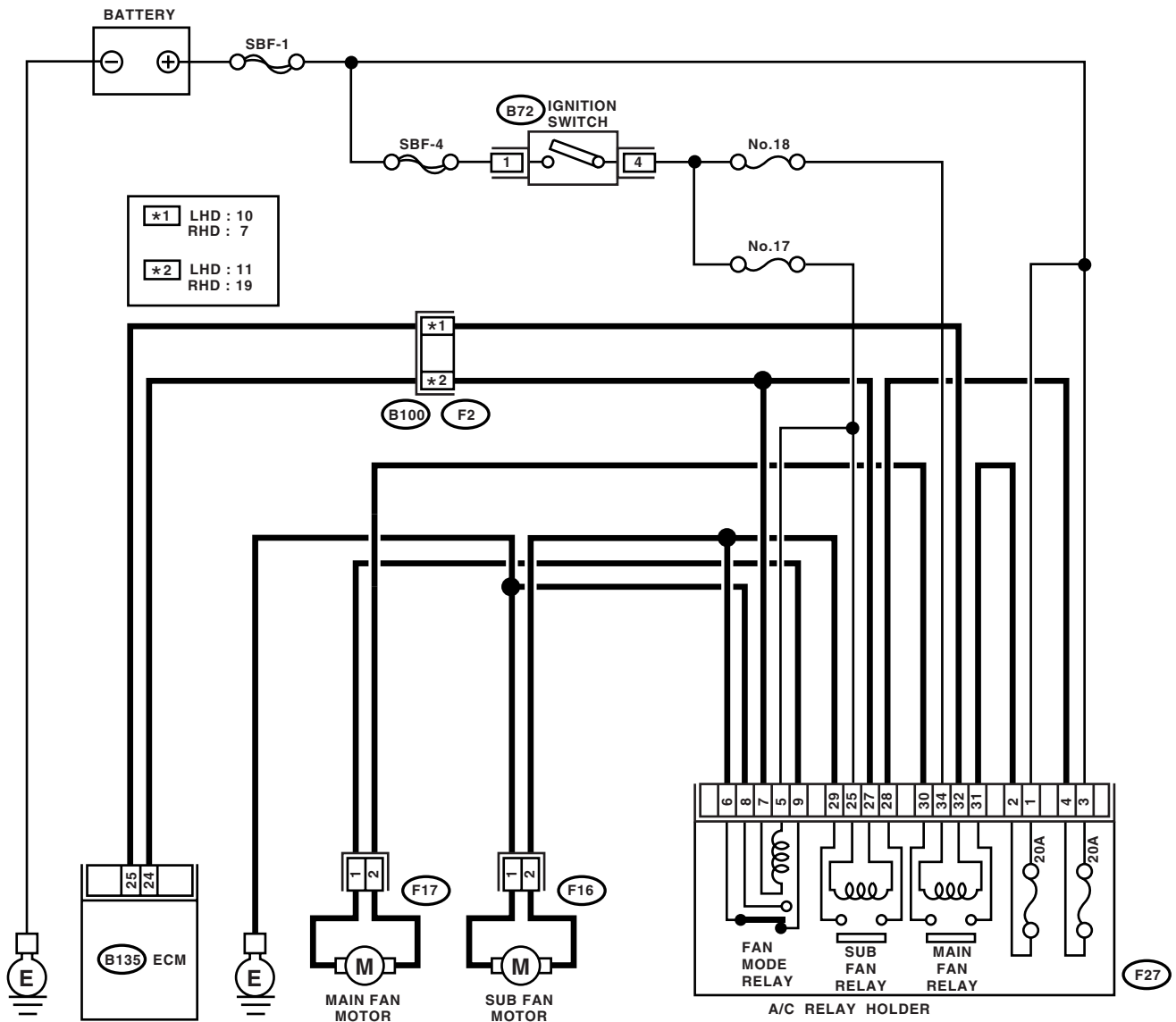
CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

WIRING DIAGRAM:

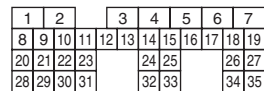


F16

F17



B135



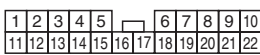
B72



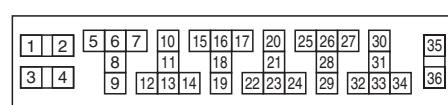
F2 : LHD



F2 : RHD



F27



EN-02337

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>1 CHECK OUTPUT SIGNAL FROM ECM.</p> <p>1) Turn the ignition switch to OFF. 2) Connect the test mode connector. 3) Turn the ignition switch to ON. 4) While operating the radiator fan relay, measure voltage between ECM and chassis ground.</p> <p>NOTE: Radiator fan relay operation can be executed using Subaru Select Monitor. For procedure, refer to "Compulsory Valve Operation Check Mode". <Ref. to EN(H4DOTC)-48, Compulsory Valve Operation Check Mode.></p> <p>Connector & terminal (B135) No. 24 (+) — Chassis ground (-): (B135) No. 25 (+) — Chassis ground (-):</p>	Does the voltage vary between 0 — 10 V?	Even if the malfunction indicator light illuminates, the circuit has returned to a normal condition at this time. In this case, repair poor contact in ECM connector.	Go to step 2.
<p>2 CHECK SHORT CIRCUIT IN RADIATOR FAN RELAY CONTROL CIRCUIT.</p> <p>1) Turn the ignition switch to OFF. 2) Remove the main fan relay 1, sub fan relay and fan mode relay. 3) Disconnect the test mode connectors 4) Turn the ignition switch to ON. 5) Measure the voltage between ECM and chassis ground.</p> <p>Connector & terminal (B135) No. 24 (+) — Chassis ground (-): (B135) No. 25 (+) — Chassis ground (-):</p>	Is the voltage more than 10 V?	Repair battery short circuit in radiator fan relay control circuit. After repair, replace the ECM. <Ref. to FU(H4DOTC)-50, Engine Control Module (ECM).>	Go to step 3.
<p>3 CHECK MAIN FAN RELAY 1.</p> <p>1) Turn the ignition switch to OFF. 2) Remove the main fan relay 1. 3) Measure the resistance of main fan relay 1 terminals.</p> <p>Terminals No. 30 — No. 31:</p>	Is the resistance less than 1 Ω ?	Replace the main fan relay 1 and ECM. <Ref. to FU(H4DOTC)-50, Engine Control Module (ECM).>	Go to step 4.
<p>4 CHECK SUB FAN RELAY.</p> <p>1) Remove the sub fan relay. 2) Measure the resistance between sub fan relay terminals.</p> <p>Terminals No. 28 — No. 29:</p>	Is the resistance less than 1 Ω ?	Replace the sub fan relay and ECM. <Ref. to FU(H4DOTC)-50, Engine Control Module (ECM).>	Go to step 5.
<p>5 CHECK POOR CONTACT.</p> <p>Check poor contact in ECM connector.</p>	Is there poor contact in ECM connector?	Repair the poor contact in ECM connector.	Replace the ECM. <Ref. to FU(H4DOTC)-50, Engine Control Module (ECM).>

BU:DTC P0700 TRANSMISSION CONTROL SYSTEM (MIL REQUEST)

NOTE:

For the diagnostic procedure, refer to AT section. <Ref. to 4AT(H4SO)-2, PROCEDURE, Basic Diagnostic Procedure.>

BV:DTC P0851 NEUTRAL SWITCH INPUT CIRCUIT LOW (AT MODEL)

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

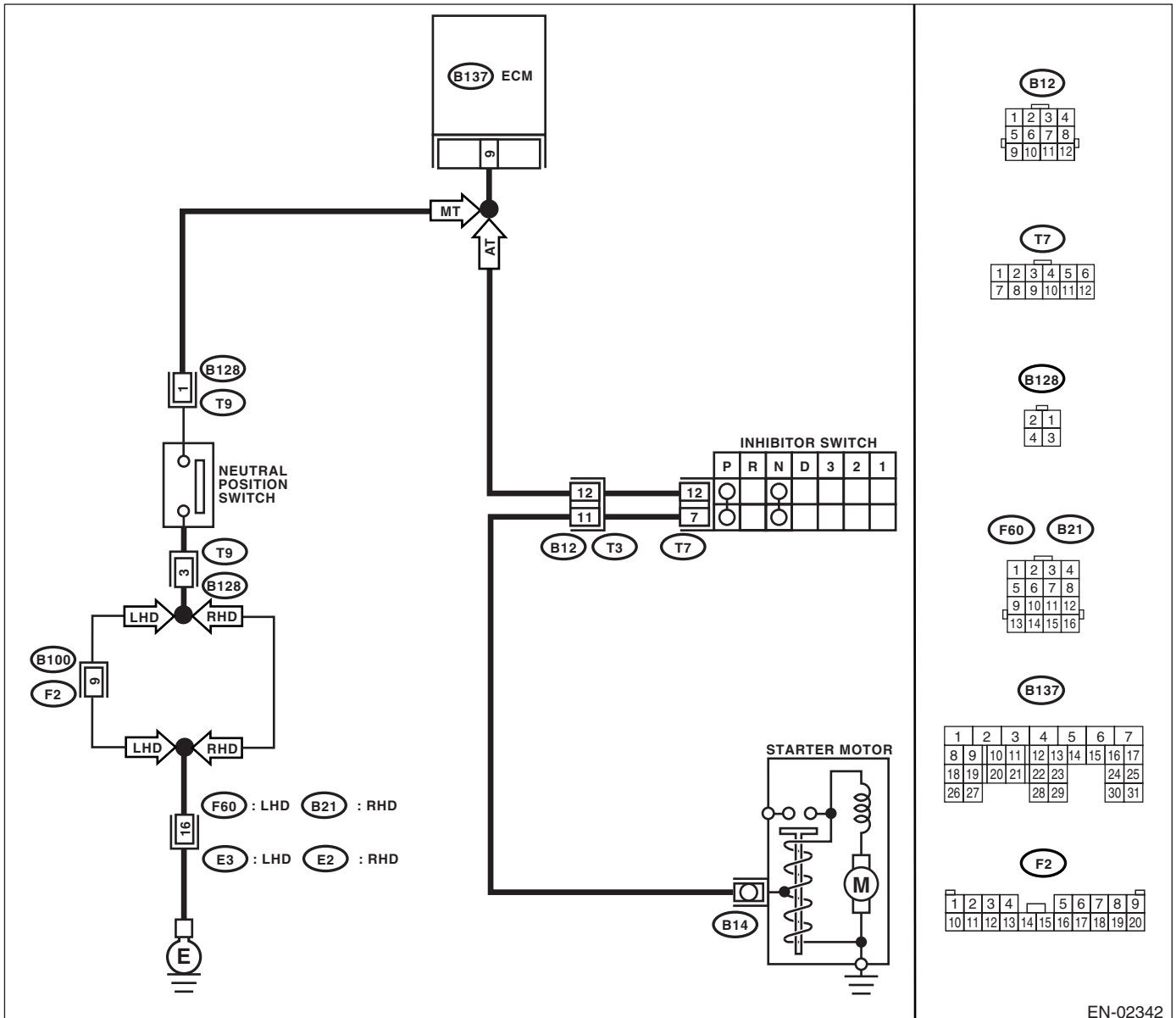
TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02342

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK INPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Shift the select lever to other than "N" and "P" ranges. 3) Measure the voltage between ECM and chassis ground. <i>Connector & terminal</i> <i>(B137) No. 9 (+) — Chassis ground (-):</i>	Is the voltage 4.5 — 5.5 V?	Even if the malfunction indicator light illuminates, the circuit has returned to a normal condition at this time.	Go to step 2.
2 CHECK HARNESS BETWEEN ECM AND TRANSMISSION HARNESS CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and transmission harness connector (T3). 3) Measure the resistance of harness between ECM connector and chassis ground. <i>Connector & terminal</i> <i>(B137) No. 9 — Chassis ground:</i>	Is the resistance more than 1 MΩ?	Go to step 3.	Repair ground short circuit in harness between ECM and transmission harness connector.
3 CHECK TRANSMISSION HARNESS CONNECTOR. 1) Disconnect the connector from inhibitor switch. 2) Measure the resistance of harness between transmission harness connector and engine ground. <i>Connector & terminal</i> <i>(T3) No. 12 — Engine ground:</i>	Is the resistance more than 1 MΩ?	Go to step 4.	Repair ground short circuit in harness between transmission harness and inhibitor switch connector.
4 CHECK INHIBITOR SWITCH. Measure the resistance between inhibitor switch connector the receptacle's terminals in selector lever except for "N" range. <i>Terminals</i> <i>No. 7 — No. 12:</i>	Is the resistance more than 1 MΩ?	Go to step 5.	Replace the inhibitor switch. <Ref. to 4AT-51, Inhibitor Switch.>
5 CHECK SELECTOR CABLE CONNECTION.	Is there any fault in selector cable connection to inhibitor switch?	Repair selector cable connection. <Ref. to CS-14, INSPECTION, Select Cable.>	Contact the SUBARU dealer. NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.

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

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

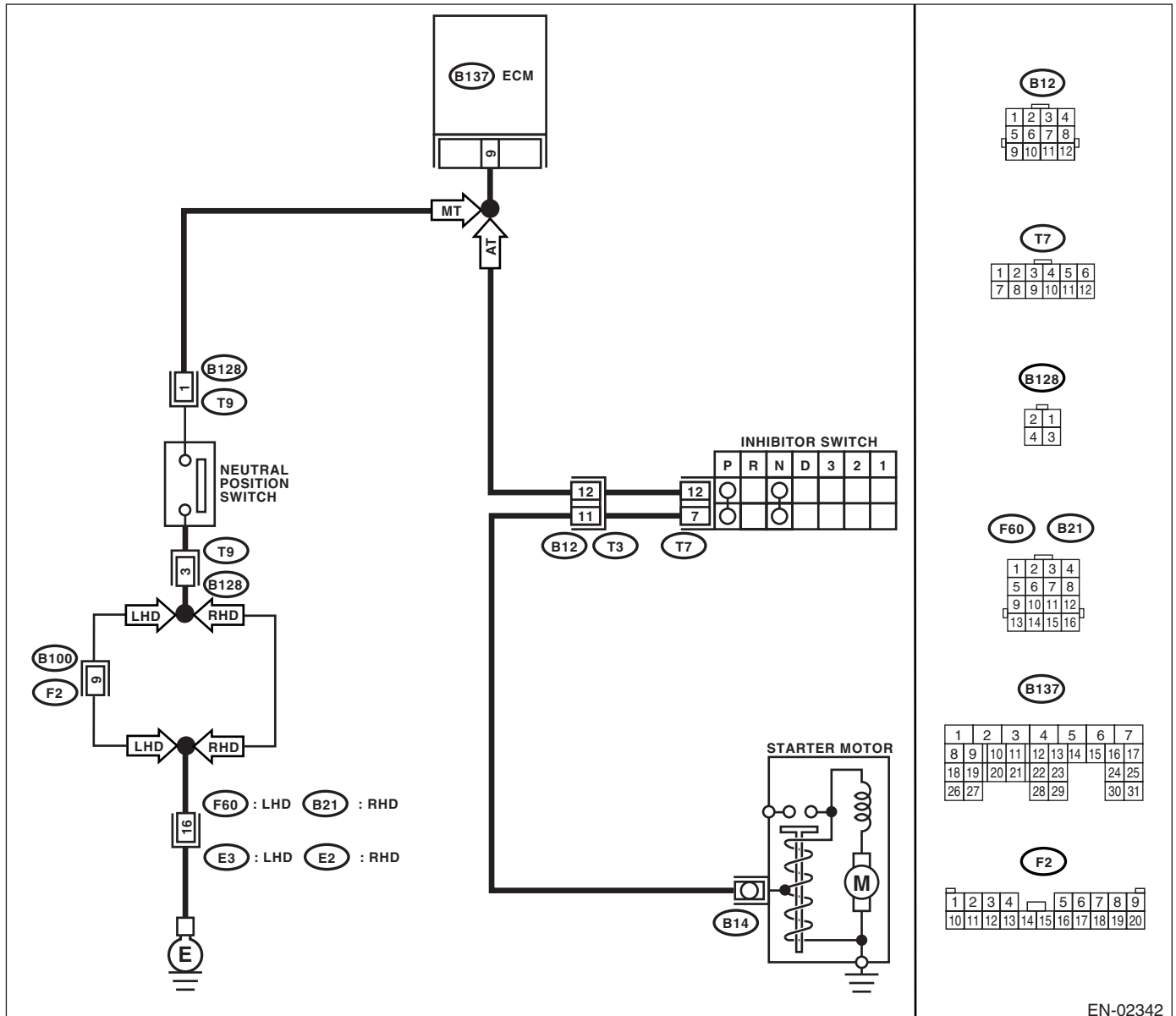
TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02342

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK INPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Place the shift lever in neutral. 3) Measure the voltage between ECM and chassis ground. <i>Connector & terminal</i> <i>(B137) No. 9 (+) — Chassis ground (-):</i>	Is the voltage more than 10 V?	Go to step 2.	Go to step 4.
2 CHECK INPUT SIGNAL FROM ECM. 1) Place the shift lever except in neutral. 2) Measure the voltage between ECM and chassis ground. <i>Connector & terminal</i> <i>(B137) No. 9 (+) — Chassis ground (-):</i>	Is the voltage less than 1 V?	Go to step 3.	Go to step 4.
3 CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair the poor contact in ECM connector.	Contact the SUB-ARU dealer.
4 CHECK NEUTRAL POSITION SWITCH. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from transmission harness. 3) Place the shift lever in neutral. 4) Measure the resistance between transmission harness and connector terminals. <i>Connector & terminal</i> <i>(T9) No. 1 — No. 3:</i>	Is the resistance more than 1 M Ω ?	Go to step 5.	Repair short circuit in transmission harness or replace the neutral position switch.
5 CHECK NEUTRAL POSITION SWITCH. 1) Place the shift lever except in neutral. 2) Measure the resistance between transmission harness connector terminals. <i>Terminals</i> <i>No. 1 — No. 3:</i>	Is the resistance less than 1 Ω ?	Go to step 6.	Repair short circuit in transmission harness or replace the neutral position switch.
6 CHECK HARNESS BETWEEN ECM AND NEUTRAL POSITION SWITCH CONNECTOR. Measure the resistance between ECM and chassis ground. <i>Connector & terminal</i> <i>(B137) No. 9 — Chassis ground:</i>	Is the resistance more than 1 M Ω ?	Go to step 7.	Repair ground short circuit in harness between ECM and transmission harness connector.
7 CHECK HARNESS BETWEEN ECM AND NEUTRAL POSITION SWITCH CONNECTOR. 1) Disconnect the connector from ECM. 2) Measure the resistance of harness between ECM and transmission harness connector. <i>Connector & terminal</i> <i>(B137) No. 9 — (B128) No. 1:</i>	Is the resistance less than 1 Ω ?	Go to step 8.	Repair open circuit in harness between ECM and transmission harness connector.
8 CHECK HARNESS BETWEEN ECM AND NEUTRAL POSITION SWITCH CONNECTOR. Measure the resistance of harness between transmission harness connector and engine ground. <i>Connector & terminal</i> <i>(B128) No. 1 — Engine ground:</i>	Is the resistance less than 5 Ω ?	Go to step 9.	Repair open circuit between transmission harness connector and engine ground terminal.
9 CHECK POOR CONTACT. Check poor contact in transmission harness connector.	Is there poor contact in transmission harness connector?	Repair poor contact in transmission harness connector.	Contact the SUB-ARU dealer.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

BX:DTC P0852 NEUTRAL SWITCH INPUT CIRCUIT HIGH (AT MODEL)

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

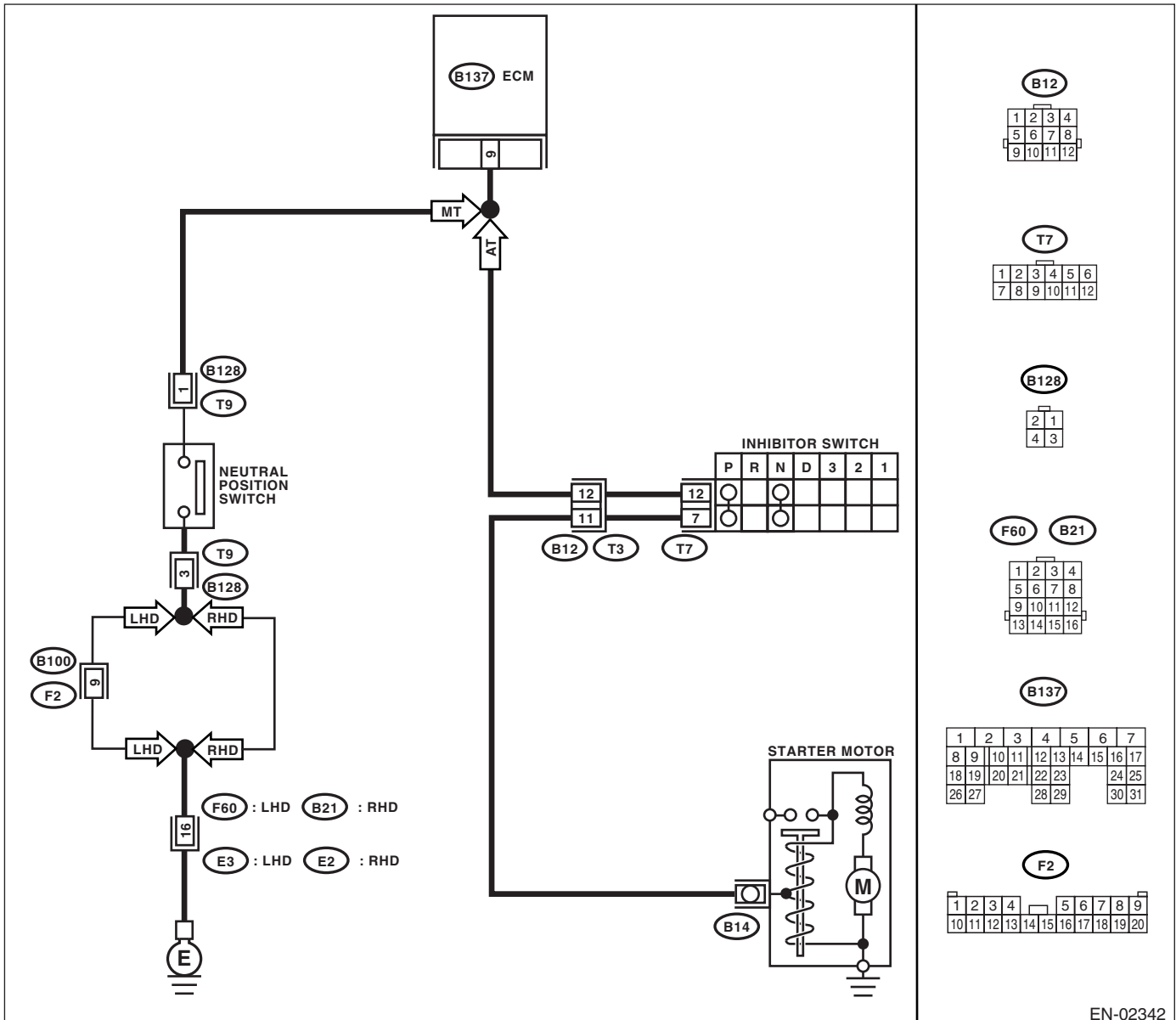
TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02342

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK INPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground with select lever at "N" and "P" ranges. <i>Connector & terminal</i> <i>(B137) No. 9 (+) — Chassis ground (-):</i>	Is the voltage less than 1 V?	Go to step 2.	Go to step 4.
2 CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM and chassis ground with select lever at except "N" and "P" ranges. <i>Connector & terminal</i> <i>(B137) No. 9 (+) — Chassis ground (-):</i>	Is the voltage 4.5 — 5.5 V?	Go to step 3.	Go to step 4.
3 CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair the poor contact in ECM connector.	Contact the SUB-ARU dealer. NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.
4 CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM and chassis ground. <i>Connector & terminal</i> <i>(B137) No. 9 (+) — Chassis ground (-):</i>	Is the voltage more than 10 V?	Repair the battery short circuit in harness between ECM and inhibitor switch connector.	Go to step 5.
5 CHECK HARNESS BETWEEN ECM AND INHIBITOR SWITCH CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and inhibitor switch. 3) Measure the resistance of harness between ECM and inhibitor switch connector. <i>Connector & terminal</i> <i>(B137) No. 9 — (T7) No. 12:</i>	Is the resistance less than 1 Ω ?	Go to step 6.	Repair harness and connector. NOTE: In this case repair the following: <ul style="list-style-type: none"> • Open circuit in harness between ECM and inhibitor switch connector. • Poor contact in coupling connector • Poor contact in inhibitor switch connector • Poor contact in ECM connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
6 CHECK INHIBITOR SWITCH GROUND LINE. Measure the resistance of harness between inhibitor switch connector and engine ground. <i>Connector & terminal</i> <i>(T7) No. 7 — Engine ground:</i>	Is the resistance less than 5 Ω ?	Go to step 7.	Repair open circuit in harness between inhibitor switch connector and starter motor ground line. NOTE: In this case repair the following: <ul style="list-style-type: none"> • Open circuit in harness between inhibitor switch connector and starter motor ground line • Poor contact in starter motor connector • Poor contact in starter motor ground • Starter motor
7 CHECK INHIBITOR SWITCH. Measure the resistance between inhibitor switch connector receptacle's terminals with select lever at "N" and "P" ranges. <i>Terminals</i> <i>No. 7 — No. 12:</i>	Is the resistance less than 1 Ω ?	Go to step 8.	Replace the inhibitor switch. <Ref. to 4AT-51, Inhibitor Switch.>
8 CHECK SELECTOR CABLE CONNECTION.	Is there any fault in selector cable connection to inhibitor switch?	Repair selector cable connection. <Ref. to CS-14, INSPECTION, Select Cable.>	Contact the SUB-ARU dealer. NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

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

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

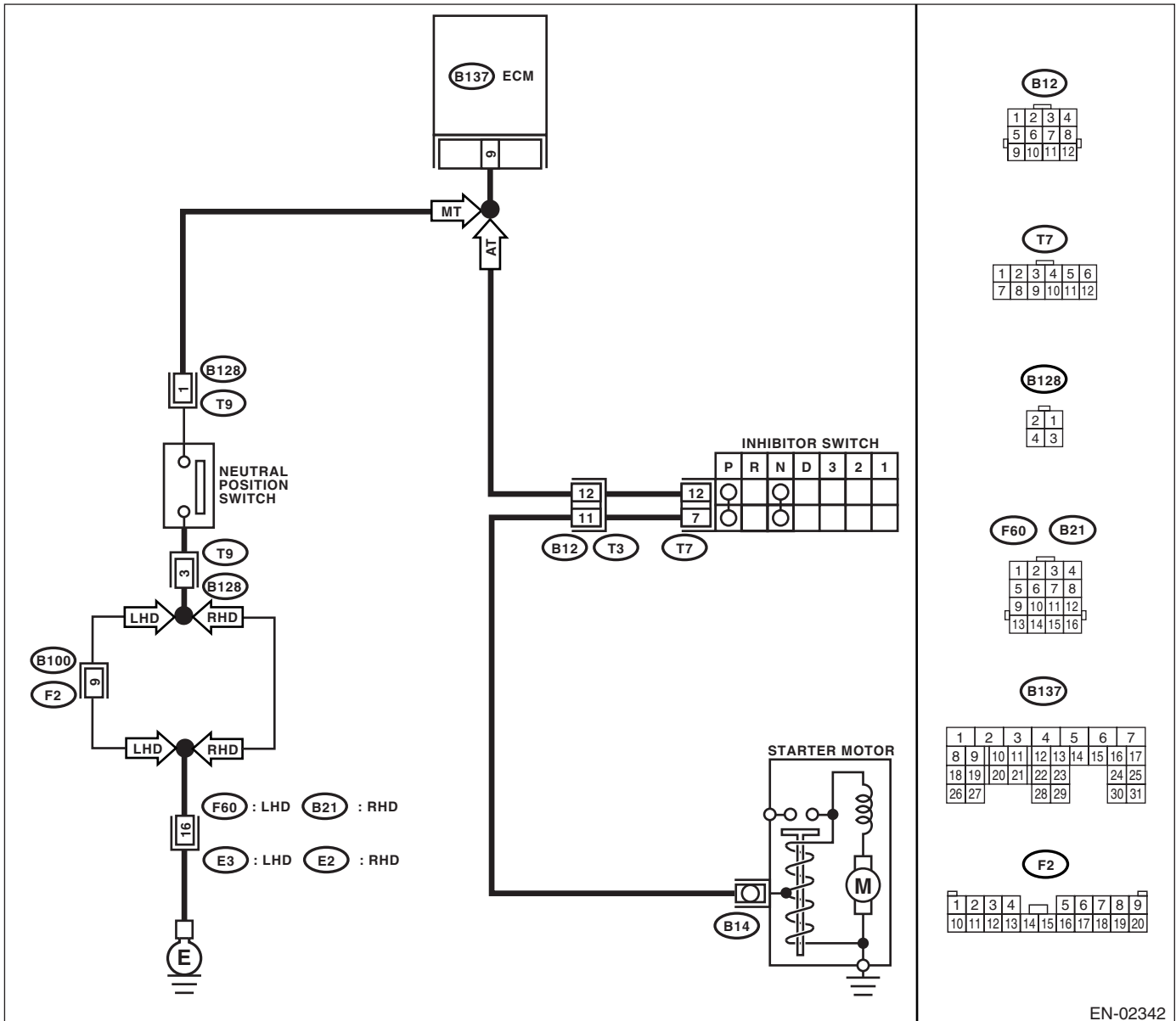
TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02342

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK INPUT SIGNAL FROM ECM. 1) Turn the ignition switch to ON. 2) Place the shift lever except in neutral position. 3) Measure the voltage between ECM and chassis ground. <i>Connector & terminal</i> <i>(B137) No. 9 (+) — Chassis ground (-):</i>	Is the voltage less than 1 V?	Go to step 2.	Go to step 4.
2 CHECK INPUT SIGNAL FROM ECM. 1) Place the shift lever in neutral position. 2) Measure the voltage between ECM and chassis ground. <i>Connector & terminal</i> <i>(B137) No. 9 (+) — Chassis ground (-):</i>	Is the voltage more than 10 V?	Go to step 3.	Go to step 4.
3 CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair the poor contact in ECM connector.	Contact the SUB-ARU dealer.
4 CHECK INPUT SIGNAL FROM ECM. 1) Disconnect the connector from ECM. 2) Measure the voltage between ECM and chassis ground. <i>Connector & terminal</i> <i>(B137) No. 9 (+) — Chassis ground (-):</i>	Is the voltage more than 10 V?	Repair battery short circuit in harness between ECM and transmission harness connector.	Go to step 5.
5 CHECK HARNESS BETWEEN ECM AND TRANSMISSION HARNESS CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and transmission harness connector (T9). 3) Measure the resistance of harness between ECM and neutral switch connector. <i>Connector & terminal</i> <i>(B137) No. 9 — (B128) No. 1:</i>	Is the resistance less than 1 Ω ?	Go to step 6.	Repair the harness and connector. NOTE: In this case repair the following: <ul style="list-style-type: none"> • Open circuit in harness between ECM and transmission harness connector • Poor contact in transmission harness connector. • Poor contact in ECM connector.
6 CHECK NEUTRAL POSITION SWITCH GROUND LINE. Measure the resistance of harness between transmission harness connector and engine ground. <i>Connector & terminal</i> <i>(B128) No. 3 — Engine ground:</i>	Is the resistance less than 5 Ω ?	Go to step 7.	Repair open circuit in the neutral position switch ground line.
7 CHECK NEUTRAL POSITION SWITCH. 1) Place the shift lever except in neutral position. 2) Measure the resistance between transmission harness connector socket terminals. <i>Terminals</i> <i>No. 1 — No. 3:</i>	Is the resistance less than 1 Ω ?	Go to step 8.	Replace the neutral position switch.
8 CHECK POOR CONTACT. Check poor contact in transmission harness connector.	Is there poor contact in transmission harness connector?	Repair poor contact in transmission harness connector.	Contact the SUB-ARU dealer.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

BZ:DTC P1086 TUMBLE GENERATED VALVE POSITION SENSOR 2 CIRCUIT LOW

DTC DETECTING CONDITION:

Immediately at fault recognition

TROUBLE SYMPTOM:

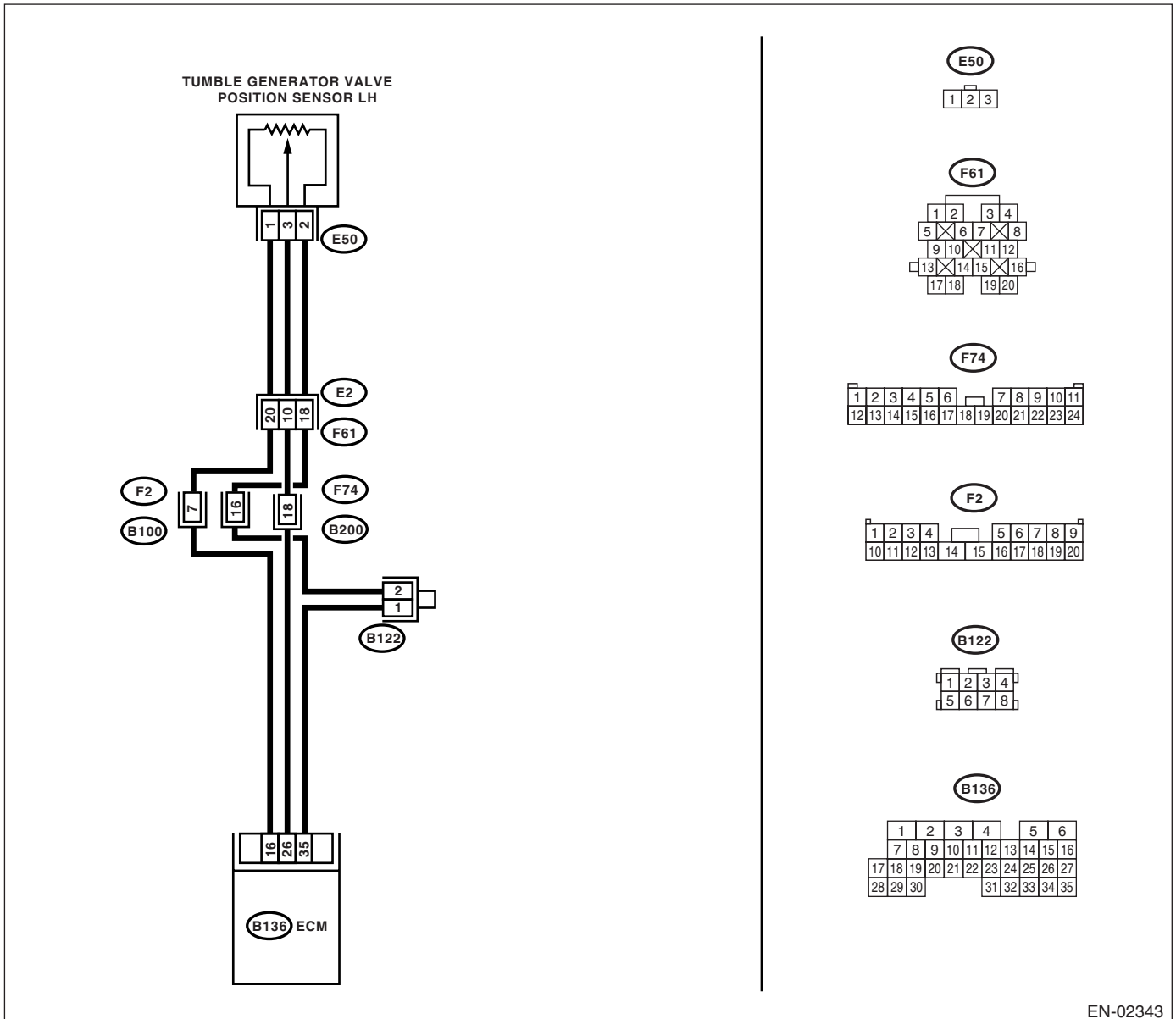
- Erroneous idling
- Engine stalls.
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:

- LHD model

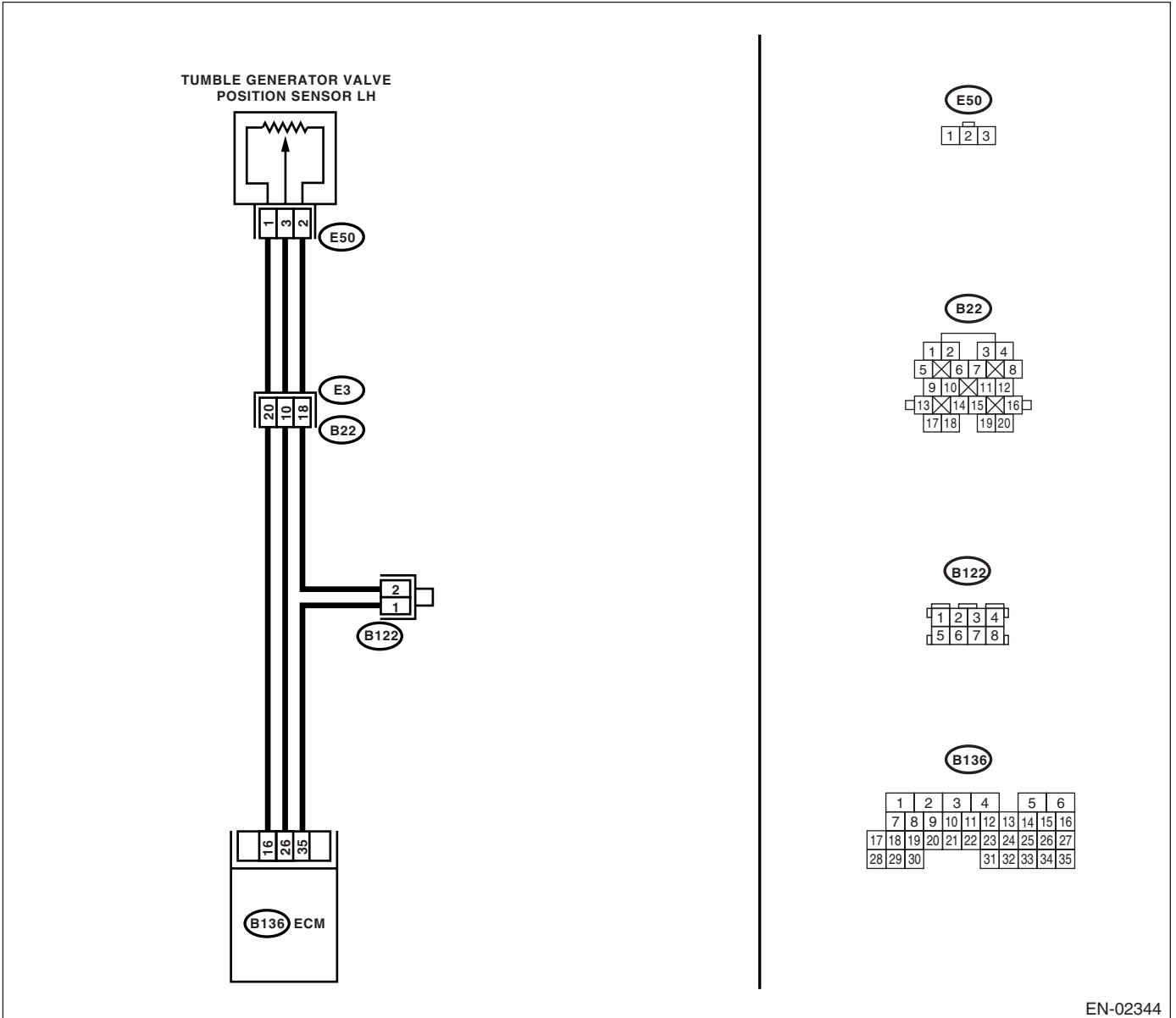


EN-02343

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

- RHD model



EN-02344

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of throttle position sensor signal using Subaru Select Monitor or OBD-II general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.	Is the voltage less than 0.1 V?	Go to step 2.	Even if the malfunction indicator light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause. NOTE: In this case repair the following: • Poor contact in throttle position sensor connector • Poor contact in ECM connector. • Poor contact in coupling connector
2 CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground while tumble generator valve is fully closed. <i>Connector & terminal</i> <i>(B136) No. 16 (+) — Chassis ground (-):</i>	Is the voltage more than 4.5 V?	Go to step 4.	Go to step 3.
3 CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. <i>Connector & terminal</i> <i>(B136) No. 16 (+) — Chassis ground (-):</i>	Does the voltage change by shaking the harness and connector of ECM while monitoring the value with voltage meter?	Repair the poor contact in ECM connector.	Contact the SUBARU dealer. NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.
4 CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground. <i>Connector & terminal</i> <i>(B136) No. 26 (+) — Chassis ground (-):</i>	Is the voltage less than 0.1 V?	Go to step 6.	Go to step 5.
5 CHECK INPUT SIGNAL FOR ECM (WITH SUBARU SELECT MONITOR). Measure the voltage between ECM connector and chassis ground.	Does the voltage change by shaking the harness and connector of ECM while monitoring the value with Subaru Select Monitor?	Repair the poor contact in ECM connector.	Go to step 6.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>6</p> <p>CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE POSITION SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from tumble generator valve position sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between tumble generator valve position sensor connector and engine ground.</p> <p>Connector & terminal (E50) No. 1 (+) — Engine ground (-):</p>	<p>Is the voltage more than 4.5 V?</p>	<p>Go to step 7.</p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between tumble generator valve position sensor and ECM connector • Poor contact in tumble generator valve position sensor connector • Poor contact in ECM connector. • Poor contact in coupling connector • Poor contact in joint connector
<p>7</p> <p>CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE POSITION SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Measure the resistance of harness between ECM connector and tumble generator valve position sensor connector.</p> <p>Connector & terminal (B136) No. 26 — (E50) No. 3:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 8.</p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between tumble generator valve position sensor and ECM connector • Poor contact in ECM connector. • Poor contact in tumble generator valve position sensor connector • Poor contact in coupling connector
<p>8</p> <p>CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE POSITION SENSOR CONNECTOR.</p> <p>Measure the resistance of harness between tumble generator valve position sensor connector and engine ground.</p> <p>Connector & terminal (E50) No. 3 — Engine ground:</p>	<p>Is the resistance more than 1 MΩ?</p>	<p>Go to step 9.</p>	<p>Repair ground short circuit in harness between tumble generator valve position sensor and ECM connector.</p>
<p>9</p> <p>CHECK POOR CONTACT.</p> <p>Repair poor contact in tumble generator valve position sensor connector.</p>	<p>Is there poor contact in tumble generator valve position sensor connector?</p>	<p>Repair the poor contact in tumble generator valve position sensor connector.</p>	<p>Replace the tumble generator valve assembly. <Ref. to FU(H4DOTC)-42, Tumble Generator Valve Assembly.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

CA:DTC P1087 TUMBLE GENERATED VALVE POSITION SENSOR 2 CIRCUIT HIGH

DTC DETECTING CONDITION:

Immediately at fault recognition

TROUBLE SYMPTOM:

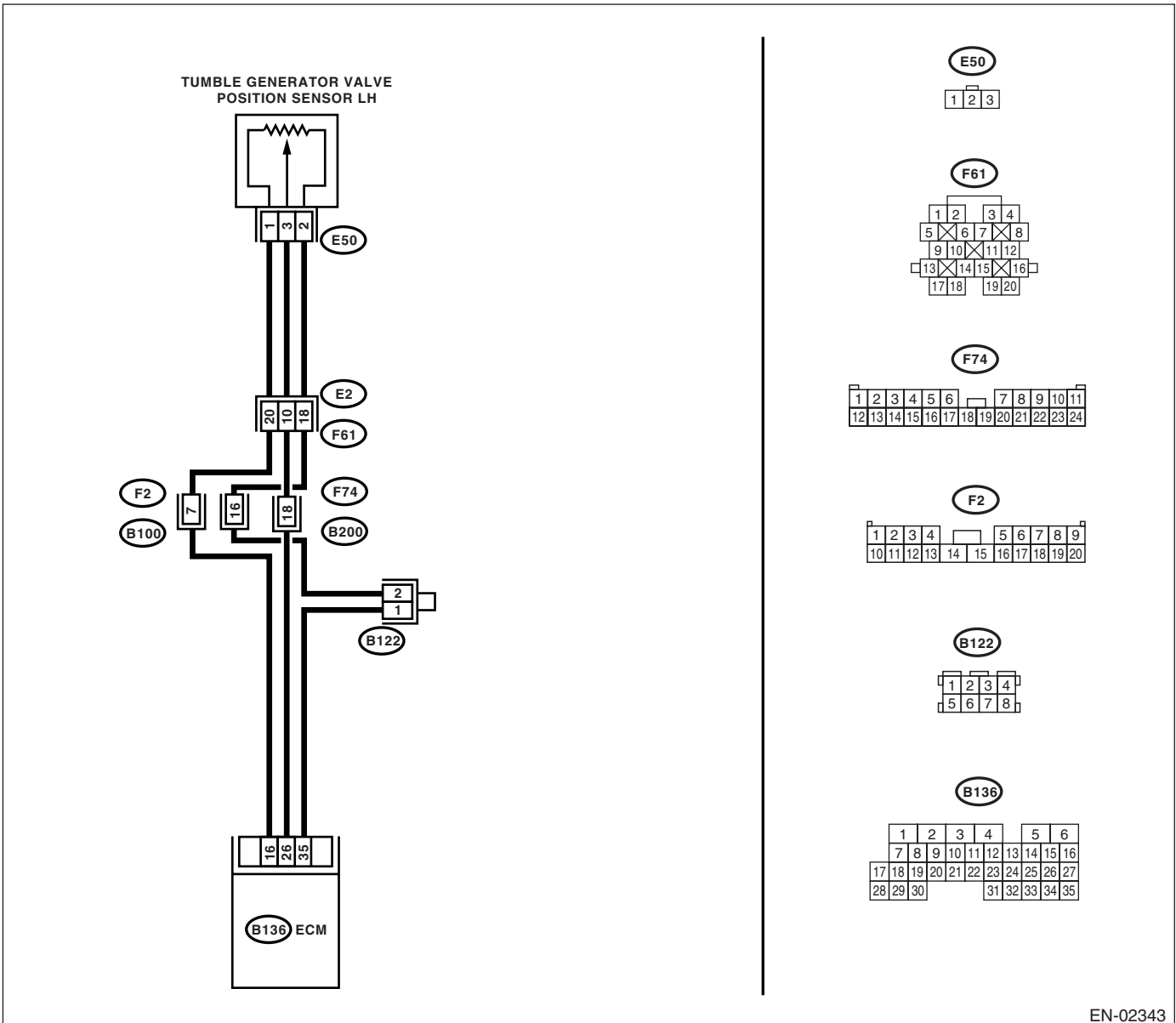
- Erroneous idling
- Engine stalls.
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:

- LHD model

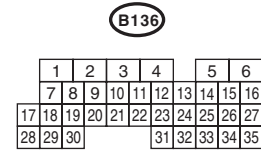
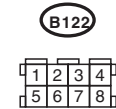
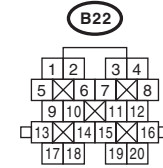
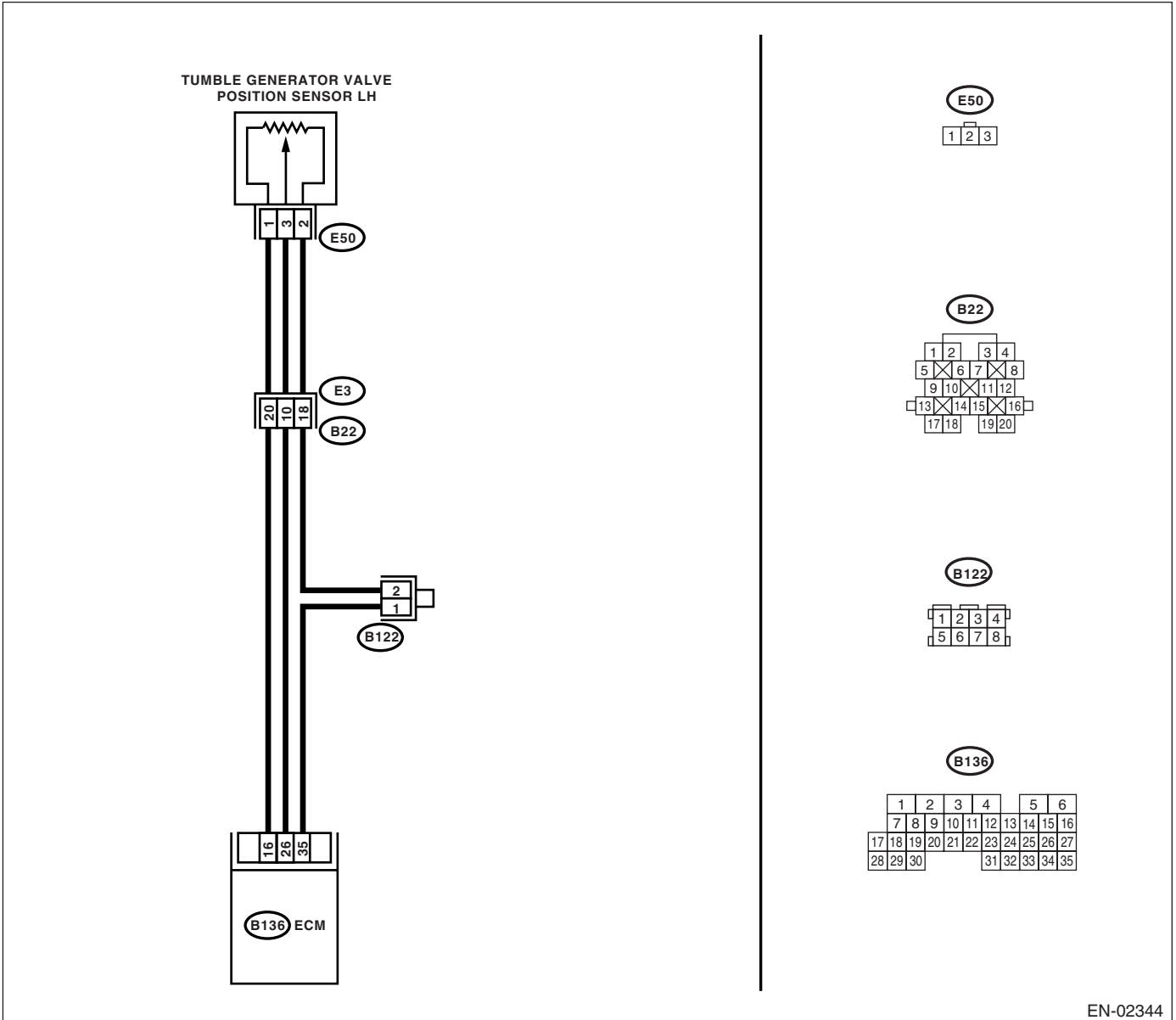


EN-02343

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

- RHD model



EN-02344

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>1</p> <p>CHECK CURRENT DATA.</p> <p>1) Start the engine.</p> <p>2) Read the data of throttle position sensor signal using Subaru Select Monitor or OBD-II general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • OBD-II general scan tool <p>For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</p>	<p>Is the voltage more than 4.9 V?</p>	<p>Go to step 2.</p>	<p>Even if the malfunction indicator light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause.</p> <p>NOTE:</p> <p>In this case repair the following:</p> <ul style="list-style-type: none"> • Poor contact in tumble generator valve position sensor connector • Poor contact in ECM connector. • Poor contact in coupling connector
<p>2</p> <p>CHECK HARNESS BETWEEN TUMBLE GENERATOR VALVE POSITION SENSOR AND ECM CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connectors from throttle position sensor.</p> <p>3) Measure the resistance of harness between throttle position sensor connector and engine ground.</p> <p>Connector & terminal (E50) No. 2 — Engine ground:</p>	<p>Is the resistance less than 5 Ω?</p>	<p>Go to step 3.</p>	<p>Repair the harness and connector.</p> <p>NOTE:</p> <p>In this case repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between tumble generator valve position sensor and ECM connector • Poor contact in coupling connector • Poor contact in joint connector
<p>3</p> <p>CHECK HARNESS BETWEEN THROTTLE POSITION SENSOR AND ECM CONNECTOR.</p> <p>1) Turn the ignition switch to ON.</p> <p>2) Measure the voltage between throttle position sensor connector and engine ground.</p> <p>Connector & terminal (E50) No. 3 (+) — Engine ground (-):</p>	<p>Is the voltage more than 4.9 V?</p>	<p>Repair battery short circuit in harness between tumble generator valve position sensor and ECM connector. After repair, replace the ECM. <Ref. to FU(H4DOTC)-50, Engine Control Module (ECM).></p>	<p>Replace the tumble generator valve assembly. <Ref. to FU(H4DOTC)-42, Tumble Generator Valve Assembly.></p>

CB:DTC P1088 TUMBLE GENERATED VALVE POSITION SENSOR 1 CIRCUIT LOW

DTC DETECTING CONDITION:

Immediately at fault recognition

TROUBLE SYMPTOM:

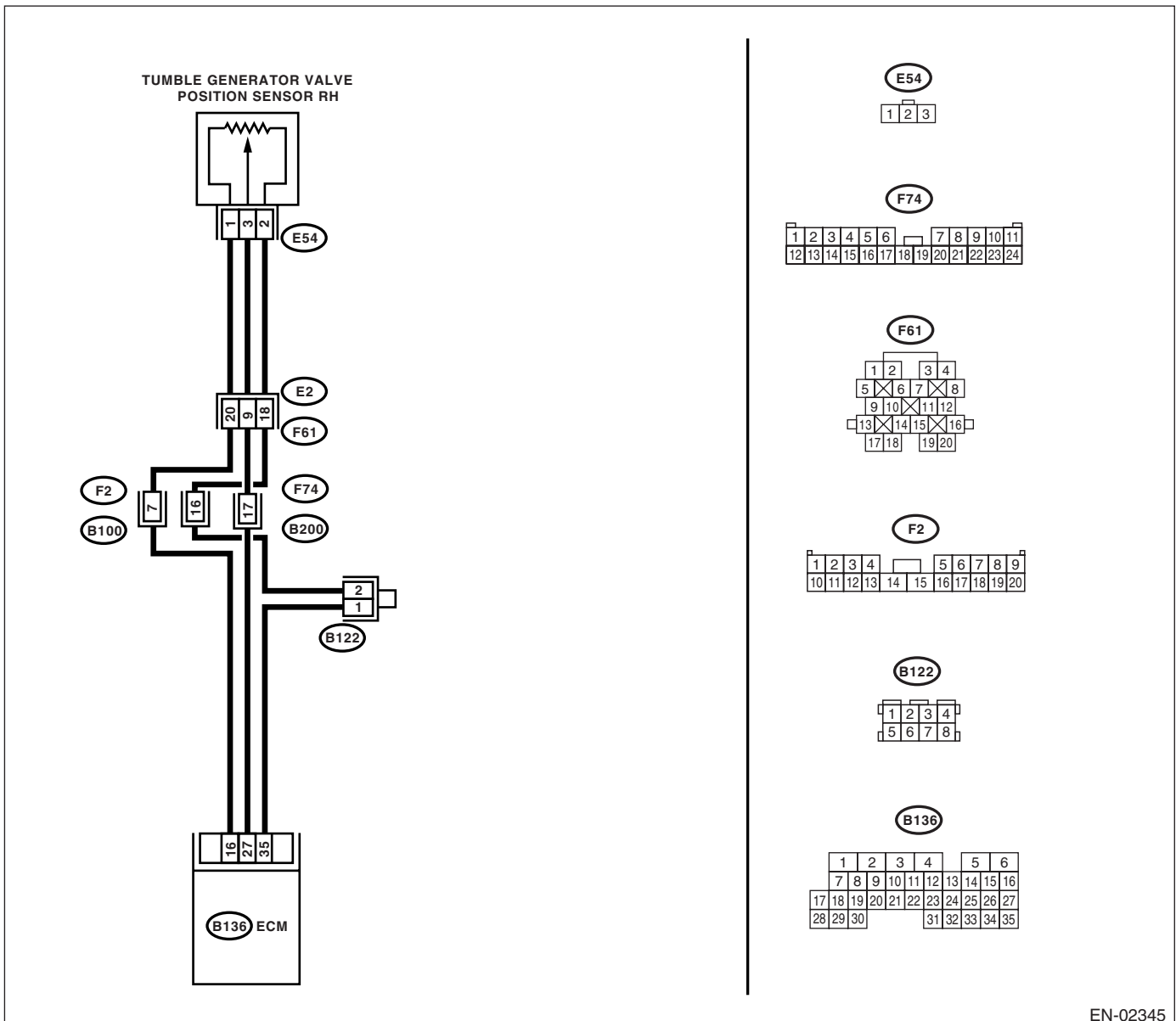
- Erroneous idling
- Engine stalls.
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:

- LHD model

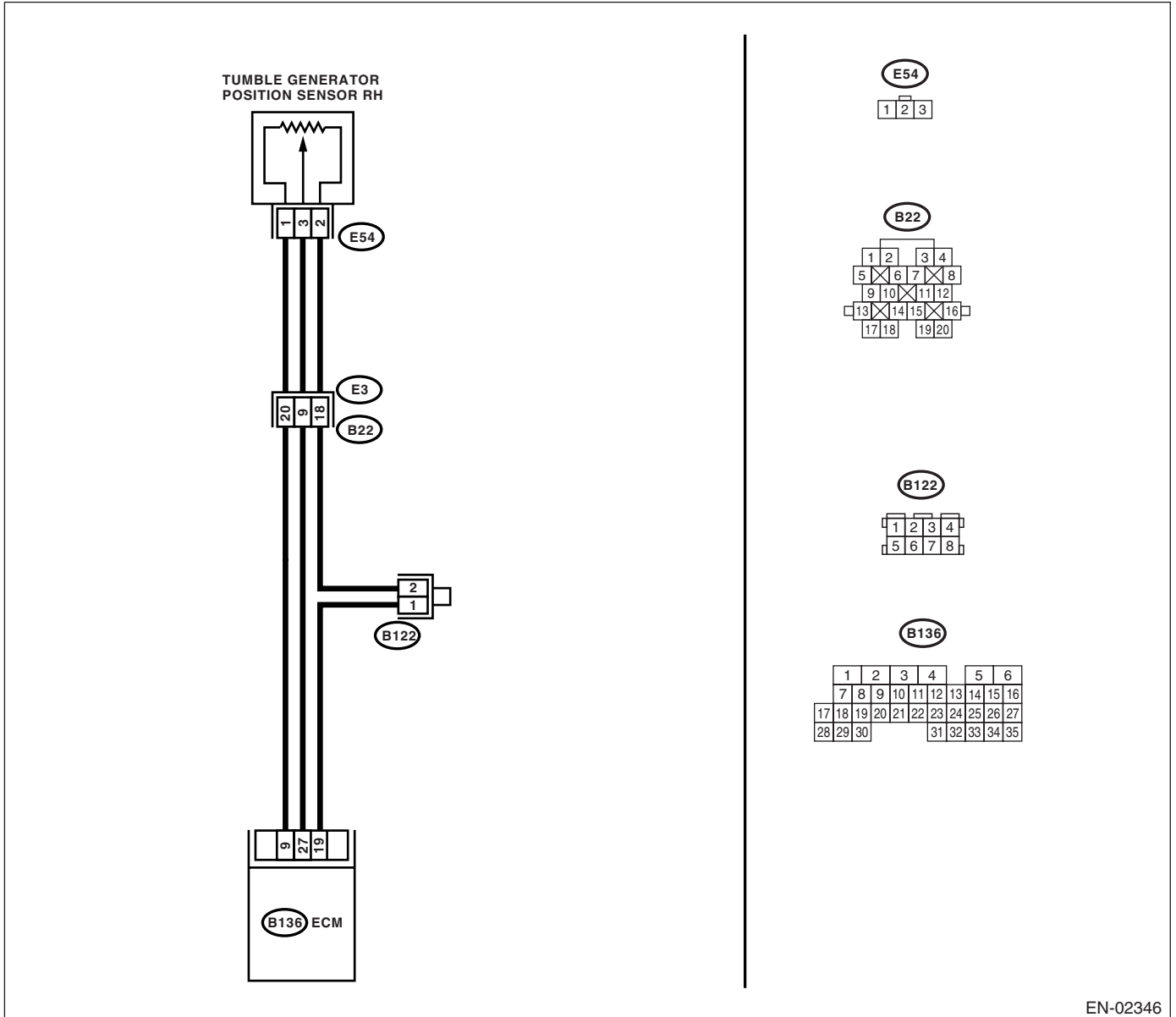


EN-02345

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

- RHD model



EN-02346

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>1</p> <p>CHECK CURRENT DATA. 1) Start the engine. 2) Read the data of tumble generator valve position sensor signal using Subaru Select Monitor or OBD-II general scan tool.</p> <p>NOTE: • Subaru Select Monitor For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</p>	Is the voltage less than 0.1 V?	Go to step 2.	<p>Even if the malfunction indicator light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause.</p> <p>NOTE: In this case repair the following: • Poor contact in tumble generator valve position sensor connector • Poor contact in ECM connector. • Poor contact in coupling connector</p>
<p>2</p> <p>CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground while throttle valve is fully closed.</p> <p>Connector & terminal (B136) No. 16 (+) — Chassis ground (-):</p>	Is the voltage more than 4.5 V?	Go to step 4.	Go to step 3.
<p>3</p> <p>CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground.</p> <p>Connector & terminal (B136) No. 16 (+) — Chassis ground (-):</p>	Does the voltage change by shaking the harness and connector of ECM while monitoring the value with voltage meter?	Repair the poor contact in ECM connector.	<p>Contact the SUBARU dealer.</p> <p>NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.</p>
<p>4</p> <p>CHECK INPUT SIGNAL FROM ECM. Measure the voltage between ECM connector and chassis ground.</p> <p>Connector & terminal (B136) No. 27 (+) — Chassis ground (-):</p>	Is the voltage less than 0.1 V?	Go to step 6.	Go to step 5.
<p>5</p> <p>CHECK INPUT SIGNAL FOR ECM (WITH SUBARU SELECT MONITOR). Measure the voltage between ECM connector and chassis ground.</p>	Does the voltage change by shaking the harness and connector of ECM while monitoring the value with Subaru Select Monitor?	Repair the poor contact in ECM connector.	Go to step 6.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>6</p> <p>CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE POSITION SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connectors from throttle position sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between throttle position sensor connector and engine ground.</p> <p>Connector & terminal (E54) No. 1 (+) — Engine ground (-):</p>	<p>Is the voltage more than 4.5 V?</p>	<p>Go to step 7.</p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between tumble generator valve position sensor and ECM connector • Poor contact in throttle position sensor connector • Poor contact in ECM connector. • Poor contact in coupling connector • Poor contact in joint connector
<p>7</p> <p>CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE POSITION SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Measure the resistance of harness between ECM connector and throttle position sensor connector.</p> <p>Connector & terminal (B136) No. 27 — (E54) No. 3:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 8.</p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between tumble generator valve position sensor and ECM connector • Poor contact in ECM connector. • Poor contact in tumble generator valve position sensor connector • Poor contact in coupling connector
<p>8</p> <p>CHECK HARNESS BETWEEN ECM AND THROTTLE POSITION SENSOR CONNECTOR.</p> <p>Measure the resistance of harness between tumble generator valve position sensor connector and engine ground.</p> <p>Connector & terminal (E54) No. 3 — Engine ground:</p>	<p>Is the resistance more than 1 MΩ?</p>	<p>Go to step 9.</p>	<p>Repair ground short circuit in harness between tumble generator valve position sensor and ECM connector.</p>
<p>9</p> <p>CHECK POOR CONTACT.</p> <p>Repair poor contact in tumble generator valve position sensor connector.</p>	<p>Is there poor contact in tumble generator valve position sensor connector?</p>	<p>Repair the poor contact in tumble generator valve position sensor connector.</p>	<p>Replace the tumble generator valve assembly. <Ref. to FU(H4DOTC)-42, Tumble Generator Valve Assembly.></p>

CC:DTC P1089 TUMBLE GENERATED VALVE POSITION SENSOR 1 CIRCUIT HIGH

DTC DETECTING CONDITION:

Immediately at fault recognition

TROUBLE SYMPTOM:

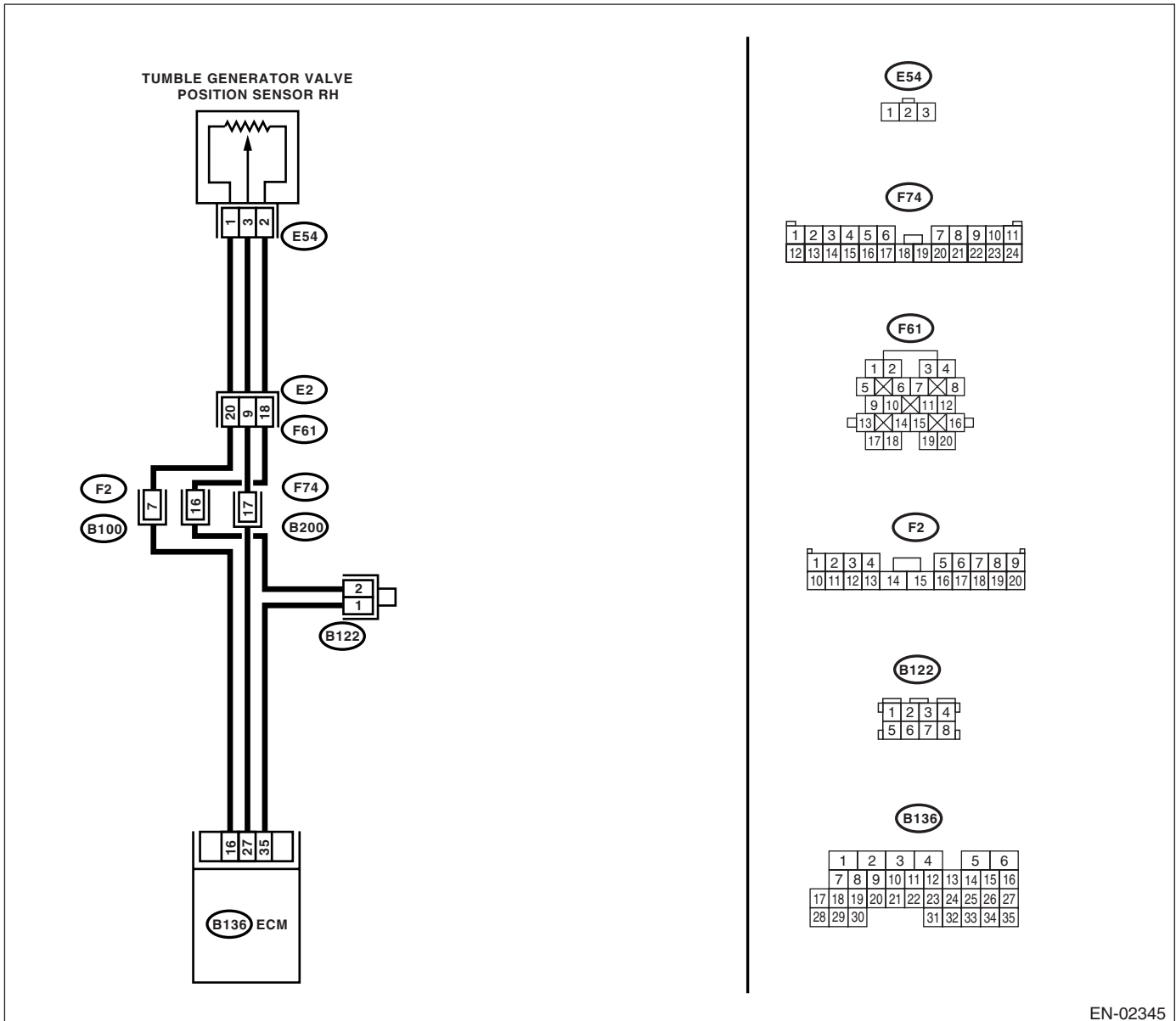
- Erroneous idling
- Engine stalls.
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:

- LHD model

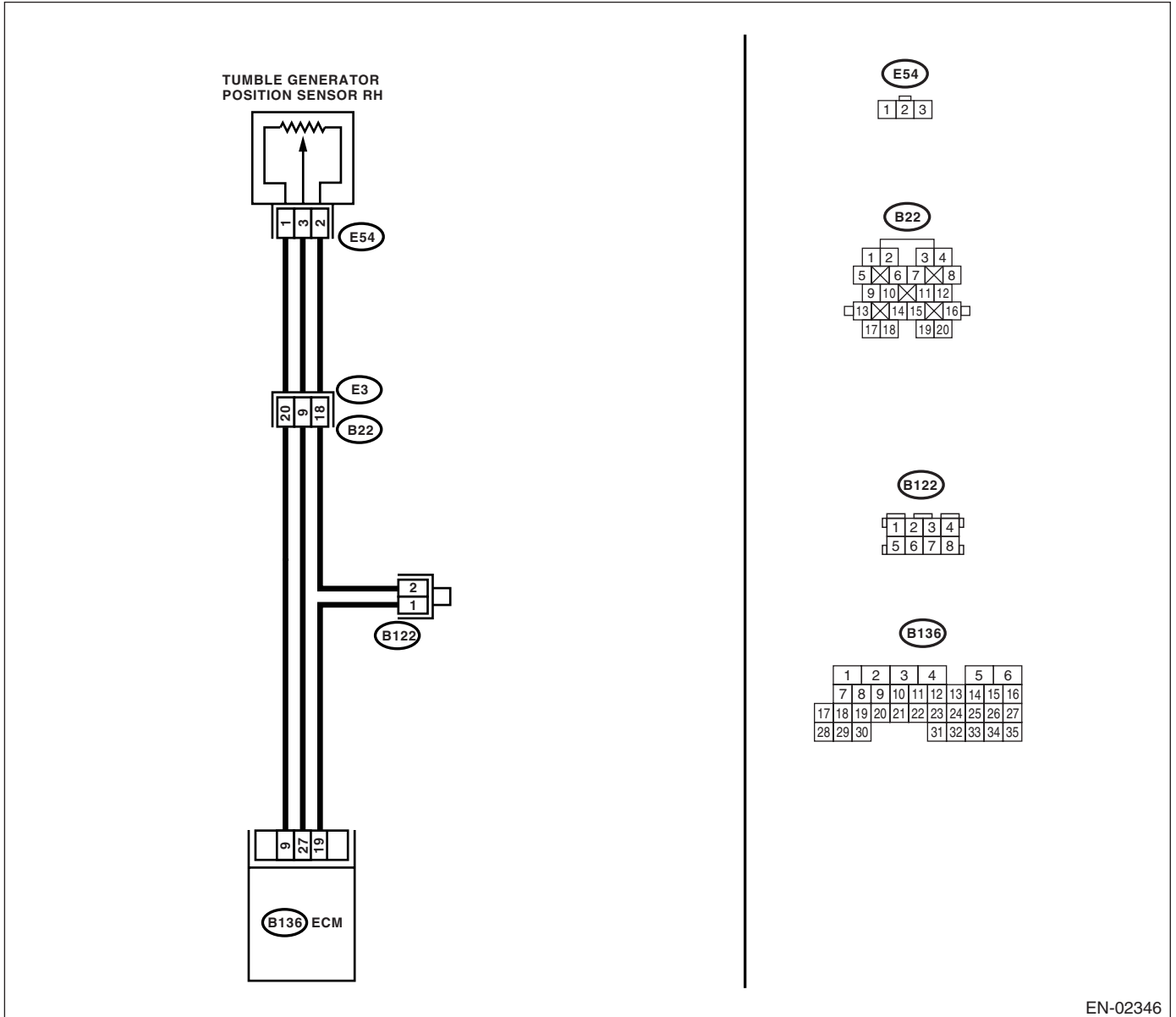


EN-02345

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

- RHD model



EN-02346

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>1</p> <p>CHECK CURRENT DATA.</p> <p>1) Start the engine.</p> <p>2) Read the data of tumble generator valve position sensor signal using Subaru Select Monitor or OBD-II general scan tool.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Subaru Select Monitor <p>For detailed operation procedure, refer to "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to EN(H4DOTC)-33, Subaru Select Monitor.></p> <ul style="list-style-type: none"> • OBD-II general scan tool <p>For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.</p>	<p>Is the voltage more than 4.9 V?</p>	<p>Go to step 2.</p>	<p>Even if the malfunction indicator light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause.</p> <p>NOTE:</p> <p>In this case repair the following:</p> <ul style="list-style-type: none"> • Poor contact in tumble generator valve position sensor connector • Poor contact in ECM connector. • Poor contact in coupling connector
<p>2</p> <p>CHECK HARNESS BETWEEN TUMBLE GENERATOR VALVE POSITION SENSOR AND ECM CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connectors from throttle position sensor.</p> <p>3) Measure the resistance of harness between tumble generator valve position sensor connector and engine ground.</p> <p>Connector & terminal (E54) No. 2 — Engine ground:</p>	<p>Is the resistance less than 5 Ω?</p>	<p>Go to step 3.</p>	<p>Repair the harness and connector.</p> <p>NOTE:</p> <p>In this case repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between tumble generator valve position sensor and ECM connector • Poor contact in coupling connector • Poor contact in joint connector
<p>3</p> <p>CHECK HARNESS BETWEEN TUMBLE GENERATOR VALVE POSITION SENSOR AND ECM CONNECTOR.</p> <p>1) Turn the ignition switch to ON.</p> <p>2) Measure the voltage between throttle position sensor connector and engine ground.</p> <p>Connector & terminal (E54) No. 3 (+) — Engine ground (-):</p>	<p>Is the voltage more than 4.9 V?</p>	<p>Repair battery short circuit in harness between tumble generator valve position sensor and ECM connector. After repair, replace the ECM. <Ref. to FU(H4DOTC)-50, Engine Control Module (ECM).></p>	<p>Replace the tumble generator valve assembly. <Ref. to FU(H4DOTC)-42, Tumble Generator Valve Assembly.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

CD:DTC P1090 TUMBLE GENERATED VALVE SYSTEM 1 (VALVE OPEN)

DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4DOTC)-74, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK TUMBLE GENERATOR VALVE RH. 1) Remove the tumble generator valve assembly. 2) Check tumble generator valve body.	Does the tumble generator valve move smoothly? (No dirt or foreign materials clogged)	Replace the tumble generator valve assembly. <Ref. to FU(H4DOTC)-42, Tumble Generator Valve Assembly.>	Clean tumble generator valve.

CE:DTC P1091 TUMBLE GENERATED VALVE SYSTEM 1 (VALVE CLOSE)

DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4DOTC)-74, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 CHECK TUMBLE GENERATOR VALVE RH. 1) Remove the tumble generator valve assembly. 2) Check tumble generator valve body.	Does the tumble generator valve move smoothly? (No dirt or foreign materials clogged)	Replace the tumble generator valve assembly. <Ref. to FU(H4DOTC)-42, Tumble Generator Valve Assembly.>	Clean tumble generator valve.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

CF:DTC P1092 TUMBLE GENERATED VALVE SYSTEM 2 (VALVE OPEN)

DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4DOTC)-74, List of Diagnostic Trouble Code (DTC).>
2	CHECK TUMBLE GENERATOR VALVE RH. 1) Remove the tumble generator valve assembly. 2) Check tumble generator valve body.	Does the tumble generator valve move smoothly? (No dirt or foreign materials clogged)	Replace the tumble generator valve assembly. <Ref. to FU(H4DOTC)-42, Tumble Generator Valve Assembly.>

CG:DTC P1093 TUMBLE GENERATED VALVE SYSTEM 2 (VALVE CLOSE)

DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4DOTC)-74, List of Diagnostic Trouble Code (DTC).>
2	CHECK TUMBLE GENERATOR VALVE RH. 1) Remove the tumble generator valve assembly. 2) Check tumble generator valve body.	Does the tumble generator valve move smoothly? (No dirt or foreign materials clogged)	Replace the tumble generator valve assembly. <Ref. to FU(H4DOTC)-42, Tumble Generator Valve Assembly.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

CH:DTC P1094 TUMBLE GENERATED VALVE SIGNAL 1 CIRCUIT MALFUNCTION (OPEN)

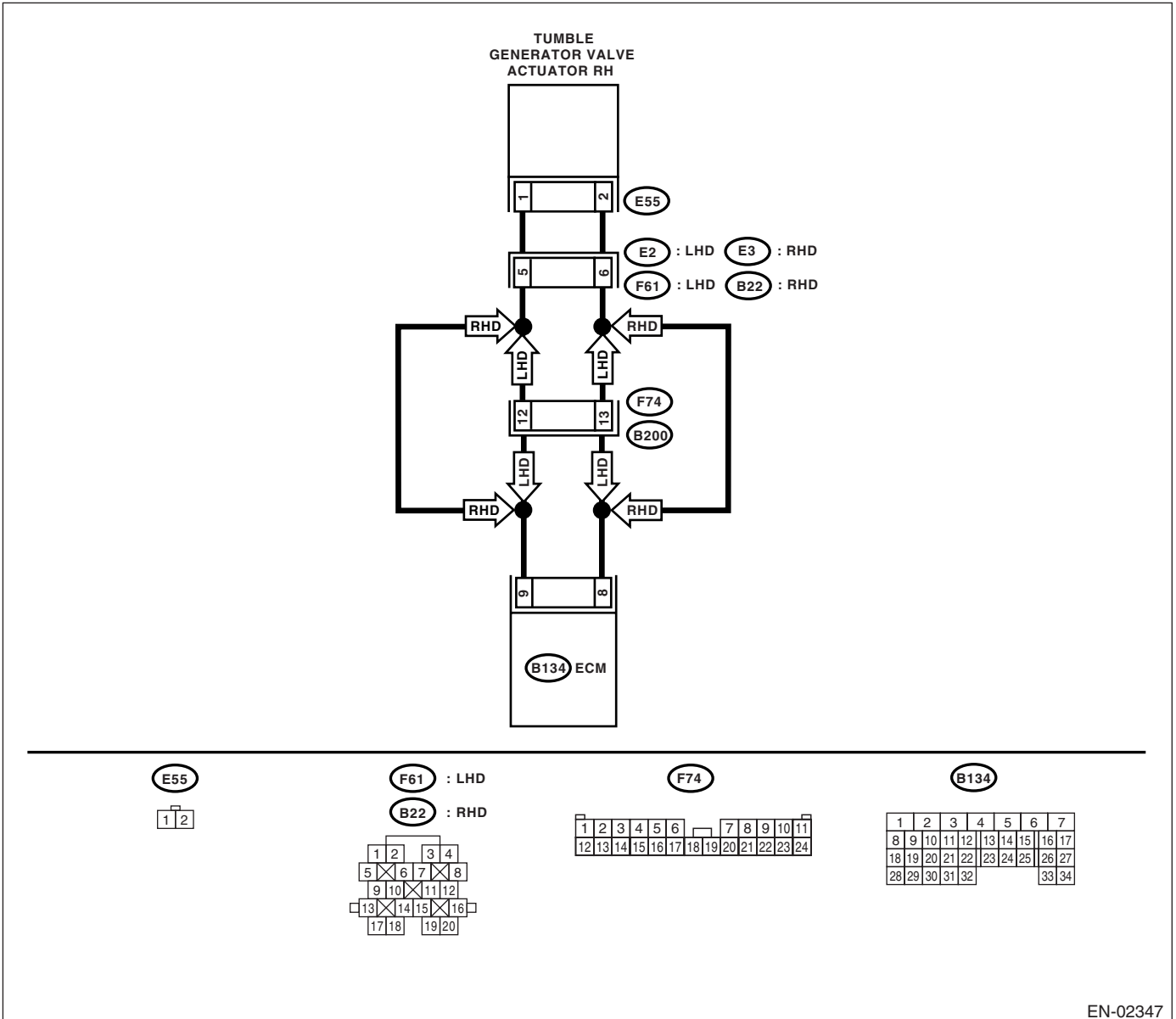
DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02347

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>1</p> <p>CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ACTUATOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from tumble generator valve and ECM connector. 3) Measure the resistance between tumble generator valve actuator and ECM connector.</p> <p>Connector & terminal (E55) No. 1 — (B134) No. 9: (E55) No. 2 — (B135) No. 8:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 2.</p>	<p>Repair the open circuit between ECM and tumble generator valve connector.</p> <p>NOTE: In this case repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between ECM and tumble generator valve actuator connector. • Poor contact in coupling connector
<p>2</p> <p>CHECK POOR CONTACT.</p> <p>Check poor contact in tumble generator valve actuator connector.</p>	<p>Is there poor contact in tumble generator valve actuator connector.</p>	<p>Repair the poor contact in tumble generator valve actuator connector.</p>	<p>Replace the tumble generator valve assembly. <Ref. to FU(H4DOTC)-42, Tumble Generator Valve Assembly.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

CI: DTC P1095 TUMBLE GENERATED VALVE SIGNAL 1 CIRCUIT MALFUNCTION (SHORT)

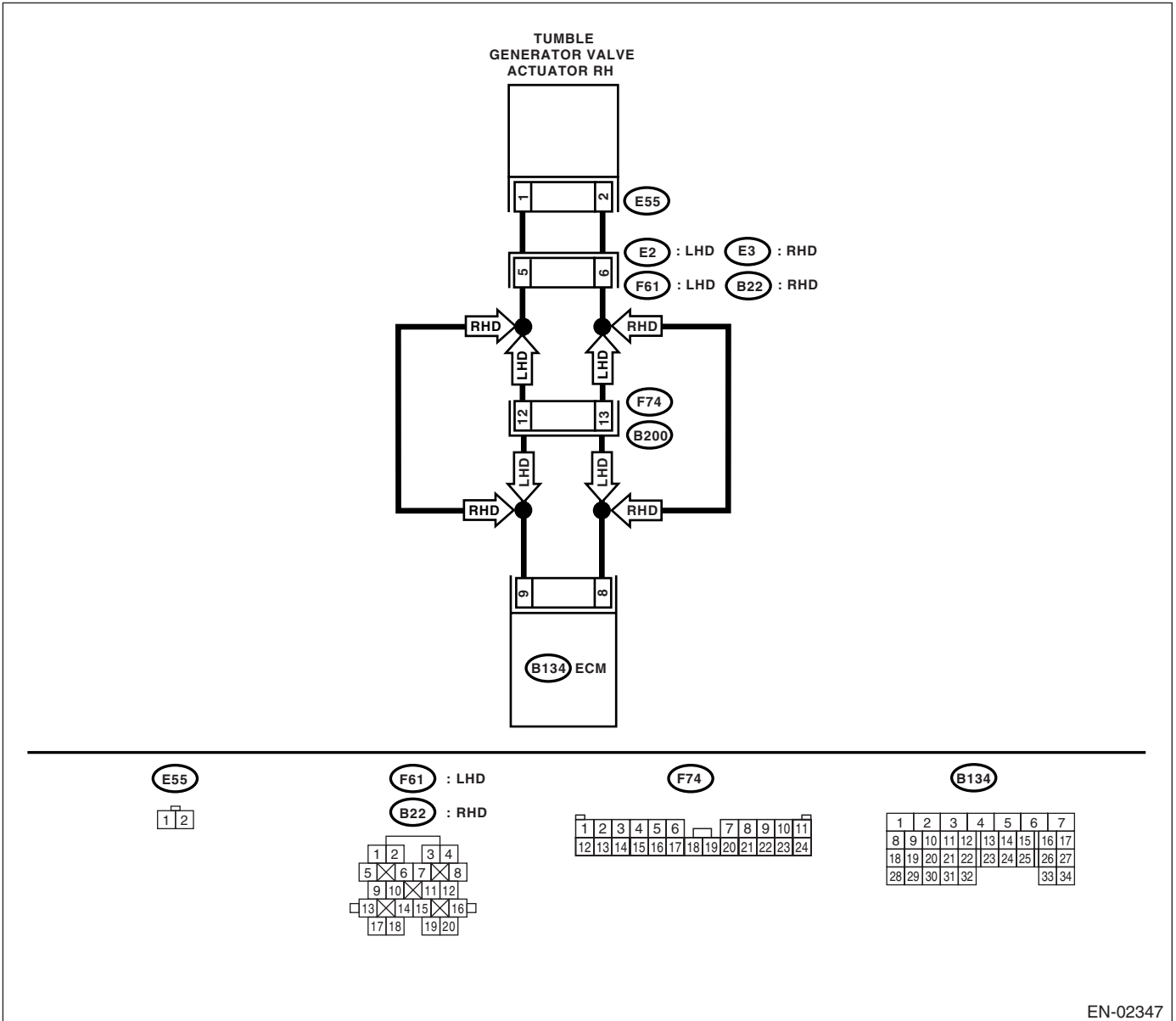
DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02347

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>1</p> <p>CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ACTUATOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connector from tumble generator valve connector.</p> <p>3) Measure the voltage between tumble generator valve actuator and chassis ground.</p> <p>Connector & terminal</p> <p>(E55) No. 1 (+) — Chassis ground (-):</p> <p>(E55) No. 2 (+) — Chassis ground (-):</p>	<p>Is the voltage less than 5 V?</p>	<p>Replace the tumble generator valve assembly. <Ref. to FU(H4DOTC)-42, Tumble Generator Valve Assembly.></p>	<p>Repair the battery short circuit between ECM and tumble generator valve actuator.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

CJ:DTC P1096 TUMBLE GENERATED VALVE SIGNAL 2 CIRCUIT MALFUNCTION (OPEN)

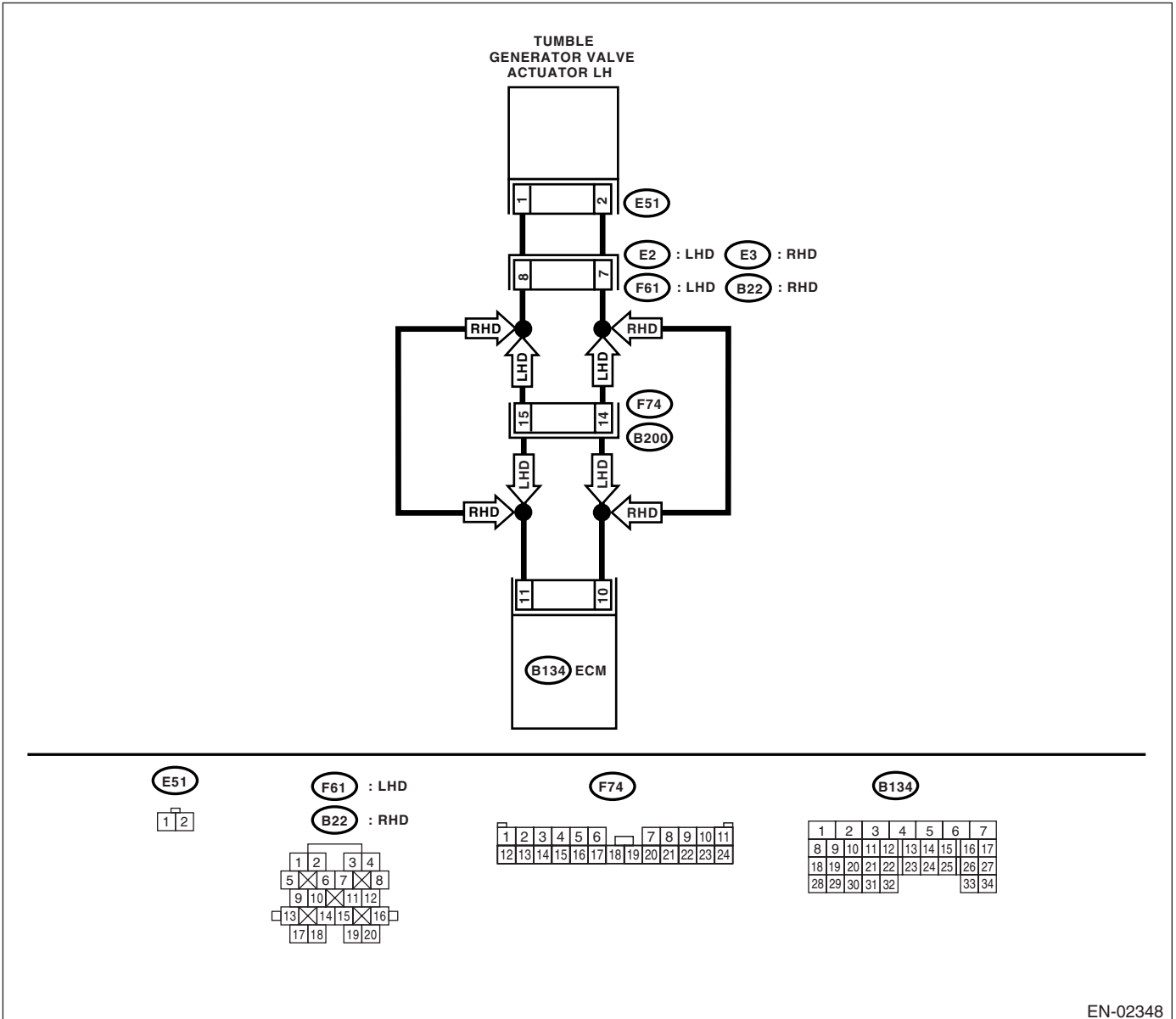
DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02348

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>1</p> <p>CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ACTUATOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from tumble generator valve and ECM connector. 3) Measure the resistance between tumble generator valve actuator and ECM connector.</p> <p>Connector & terminal (E51) No. 1 — (B134) No. 11: (E51) No. 2 — (B134) No. 10:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 2.</p>	<p>Repair the open circuit between ECM and tumble generator valve connector.</p> <p>NOTE: In this case repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between ECM and tumble generator valve actuator connector. • Poor contact in coupling connector
<p>2</p> <p>CHECK POOR CONTACT.</p> <p>Check poor contact in tumble generator valve actuator connector.</p>	<p>Is there poor contact in tumble generator valve actuator connector.</p>	<p>Repair the poor contact in tumble generator valve actuator connector.</p>	<p>Replace the tumble generator valve assembly. <Ref. to FU(H4DOTC)-42, Tumble Generator Valve Assembly.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

CK:DTC P1097 TUMBLE GENERATED VALVE SIGNAL 2 CIRCUIT MALFUNCTION (SHORT)

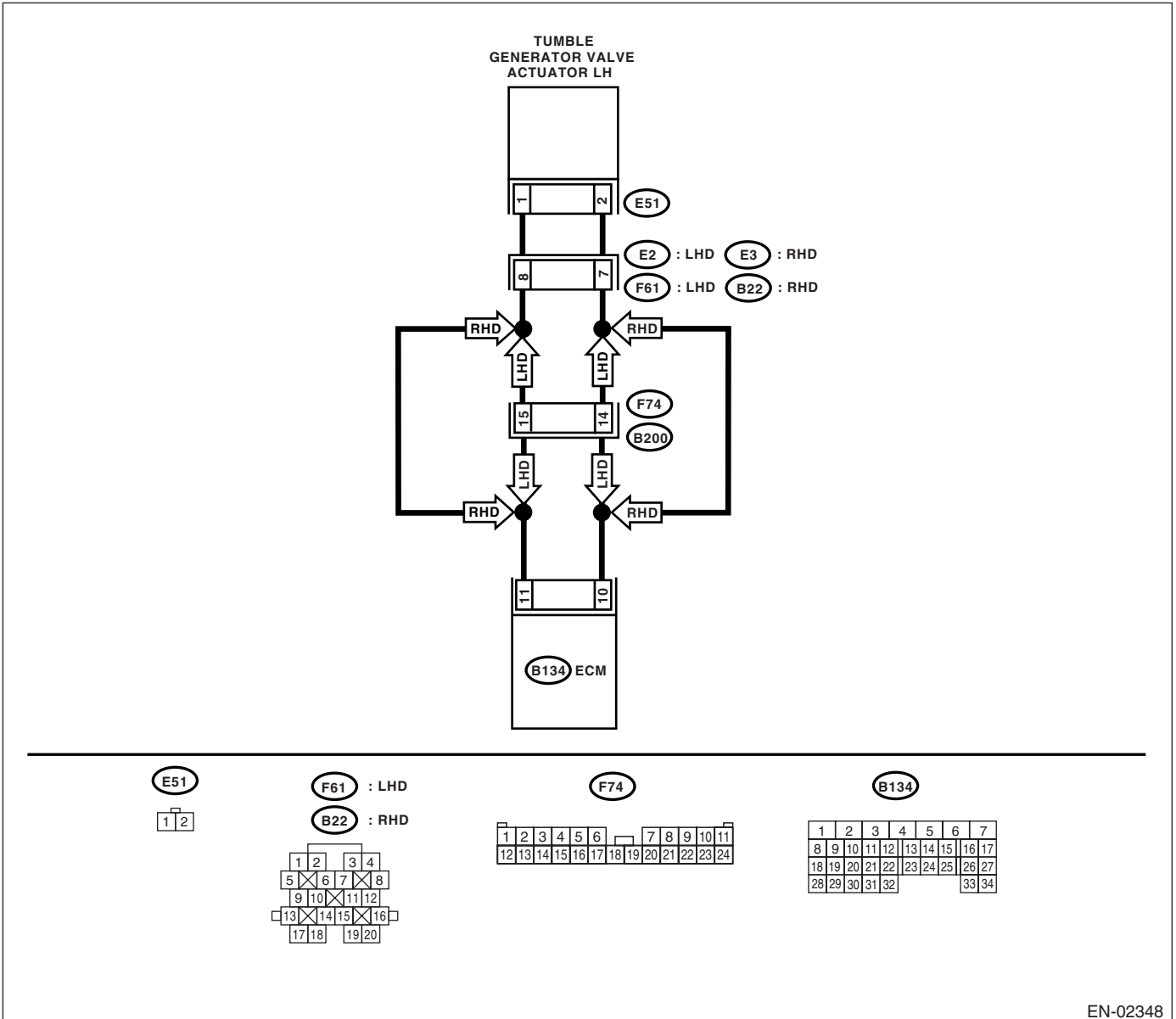
DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02348

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ACTUATOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from tumble generator valve connector. 3) Measure the voltage between tumble generator valve actuator and chassis ground. <i>Connector & terminal</i> (E51) No. 1 (+) — Chassis ground (-): (E51) No. 2 (+) — Chassis ground (-):	Is the voltage less than 5 V?	Replace the tumble generator valve assembly. <Ref. to FU(H4DOTC)-42, Tumble Generator Valve Assembly.>	Repair the battery short circuit between ECM and tumble generator valve actuator.

CL:DTC P1110 ATMOSPHERIC PRESSURE SENSOR CIRCUIT MALFUNCTION (LOW INPUT)

DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1110?	Replace the ECM. <Ref. to FU(H4DOTC)-50, Engine Control Module (ECM).> NOTE: Atmospheric pressure sensor is built in ECM.	Temporary poor contact occurs.

CM:DTC P1111 ATMOSPHERIC PRESSURE SENSOR CIRCUIT MALFUNCTION (HIGH INPUT)

DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1111?	Replace the ECM. <Ref. to FU(H4DOTC)-50, Engine Control Module (ECM).> NOTE: Atmospheric pressure sensor is built in ECM.	Temporary poor contact occurs.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

CN:DTC P1152 O₂ SENSOR CIRCUIT RANGE/PERFORMANCE (LOW) (BANK 1 SENSOR 1)

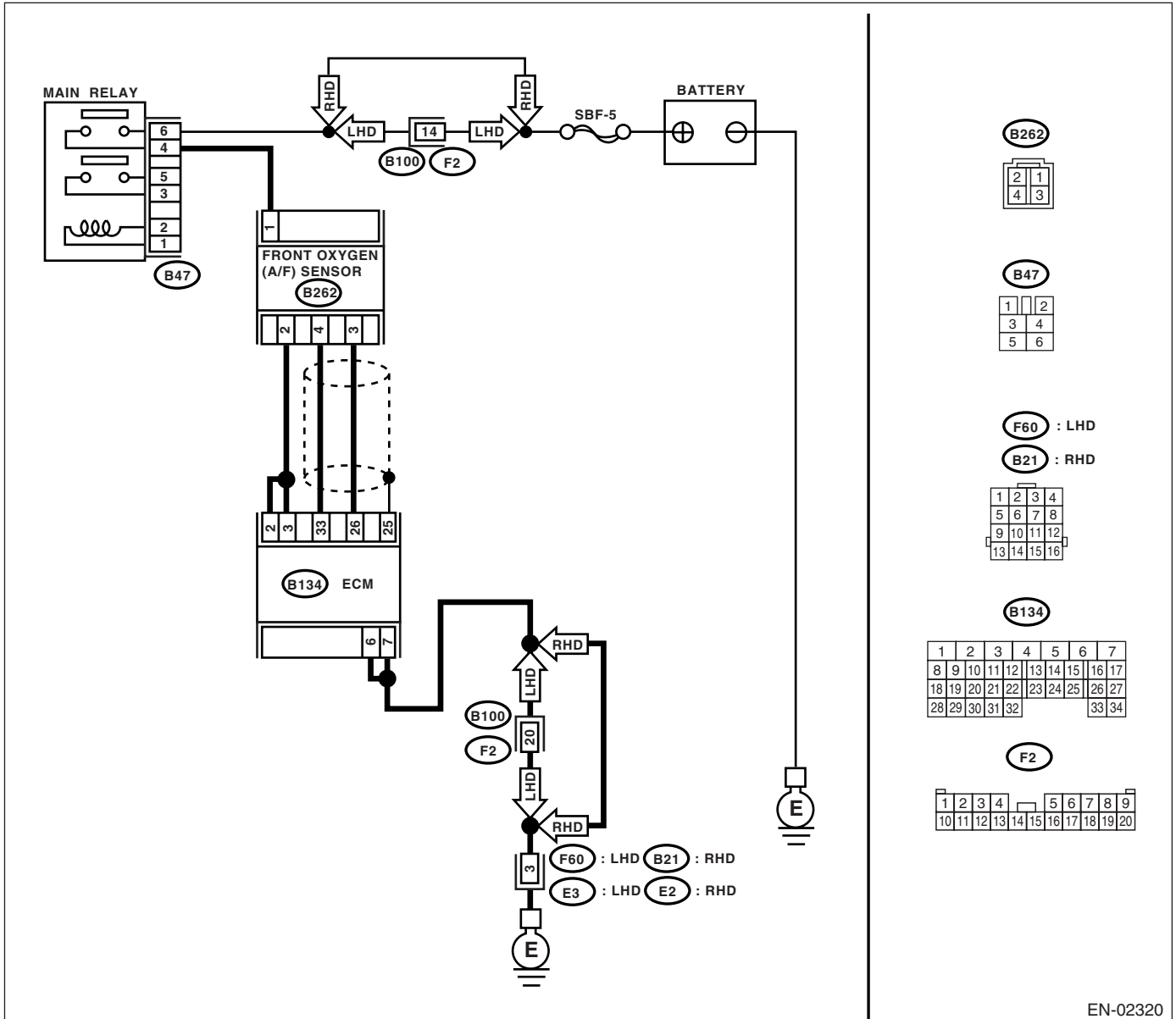
DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02320

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>1</p> <p>CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and front oxygen (A/F) sensor connector. 3) Measure the resistance of harness between ECM and front oxygen (A/F) sensor connector.</p> <p>Connector & terminal (B134) No. 26 — (B18) No. 3: (B134) No. 33 — (B18) No. 4:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 2.</p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case repair the following:</p> <ul style="list-style-type: none"> • Check harness between ECM and front oxygen (A/F) sensor connector. • Poor contact in front oxygen (A/F) sensor connector • Poor contact in ECM connector.
<p>2</p> <p>CHECK POOR CONTACT. Check poor contact in front oxygen (A/F) sensor connector.</p>	<p>Is there any poor contact in front oxygen (A/F) sensor connector?</p>	<p>Repair the poor contact in front oxygen (A/F) sensor connector.</p>	<p>Replace the front oxygen (A/F) sensor. <Ref. to FU(H4DOTC)-45, Front Oxygen (A/F) Sensor.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

CO:DTC P1153 O₂ SENSOR CIRCUIT RANGE/PERFORMANCE (HIGH) (BANK 1 SENSOR 1)

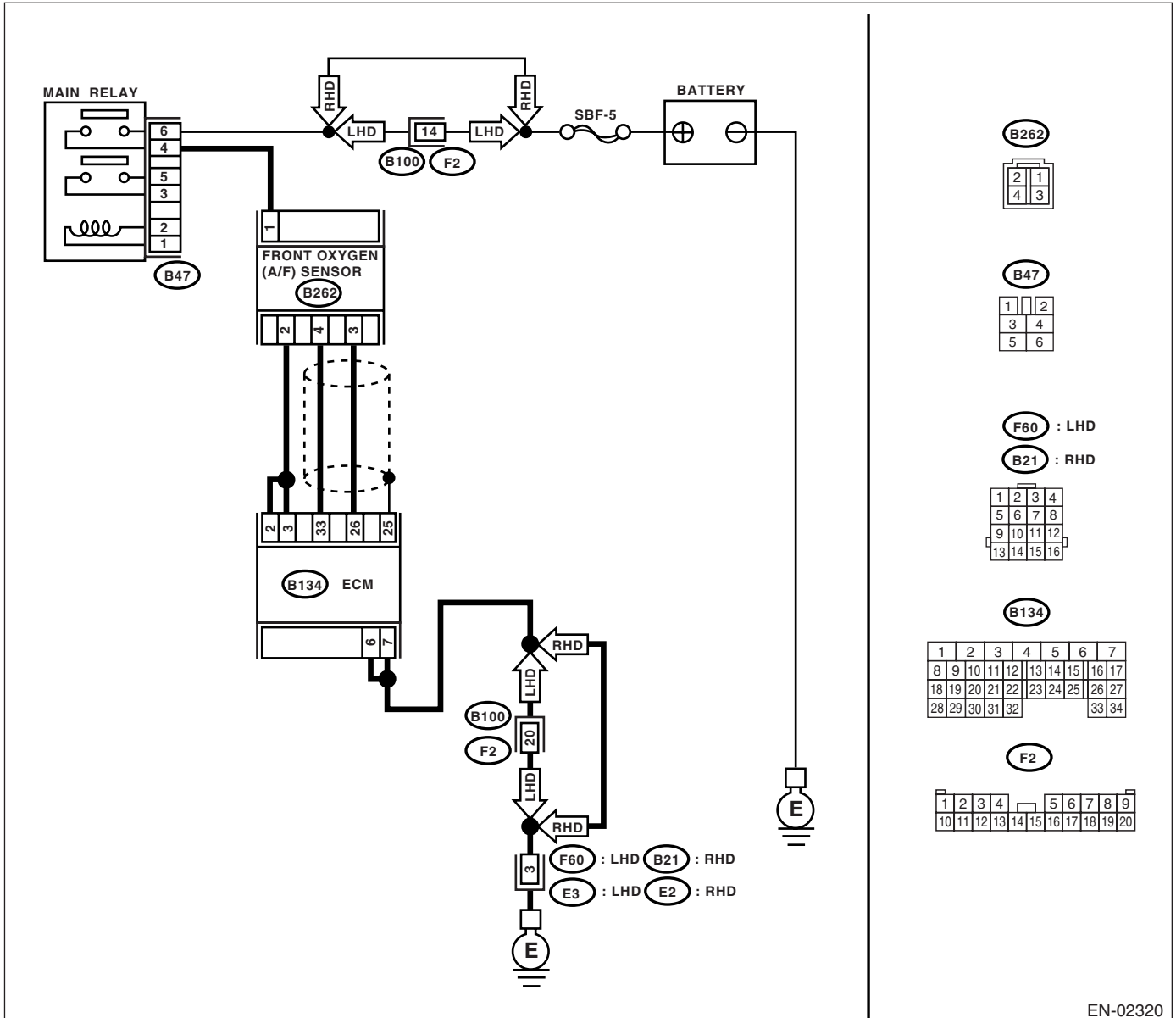
DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02320

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and front oxygen (A/F) sensor. 3) Measure the resistance of harness between ECM connector and chassis ground. <i>Connector & terminal</i> <i>(B134) No. 33 — Chassis ground:</i>	Is the resistance more than 1 MΩ?	Go to step 2.	Repair the ground short circuit in harness between ECM and front oxygen (A/F) sensor connector.
2 CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR. Measure the resistance of harness between ECM connector and chassis ground. <i>Connector & terminal</i> <i>(B134) No. 26 — Chassis ground:</i>	Is the resistance more than 1 MΩ?	Go to step 3.	Repair the ground short circuit in harness between ECM and front oxygen (A/F) sensor connector.
3 CHECK OUTPUT SIGNAL FOR ECM. 1) Connect the connector to ECM and front oxygen (A/F) sensor. 2) Turn the ignition switch to ON. 3) Measure the voltage between ECM connector and chassis ground. <i>Connector & terminal</i> <i>(B134) No. 33 (+) — Chassis ground (-):</i>	Is the voltage more than 4.5 V?	Go to step 4.	Go to step 5.
4 CHECK OUTPUT SIGNAL FOR ECM. Measure the voltage between ECM connector and chassis ground. <i>Connector & terminal</i> <i>(B134) No. 33 (+) — Chassis ground (-):</i>	Is the voltage more than 10 V?	Repair the battery short circuit in harness between ECM and front oxygen (A/F) sensor connector. After repair, replace the ECM. <Ref. to FU(H4DOTC)-50, Engine Control Module (ECM).>	Repair the poor contact in ECM connector.
5 CHECK OUTPUT SIGNAL FOR ECM. Measure the voltage between ECM connector and chassis ground. <i>Connector & terminal</i> <i>(B134) No. 19 (+) — Chassis ground (-):</i>	Is the voltage more than 4.95 V?	Go to step 6.	Replace the front oxygen (A/F) sensor. <Ref. to FU(H4DOTC)-45, Front Oxygen (A/F) Sensor.>
6 CHECK OUTPUT SIGNAL FOR ECM. Measure the voltage between ECM connector and chassis ground. <i>Connector & terminal</i> <i>(B134) No. 26 (+) — Chassis ground (-):</i>	Is the voltage more than 10 V?	Repair the battery short circuit in harness between ECM and front oxygen (A/F) sensor connector. After repair, replace the ECM. <Ref. to FU(H4DOTC)-50, Engine Control Module (ECM).>	Repair the poor contact in ECM connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

CP:DTC P1301 MISFIRE DETECTED (HIGH TEMPERATURE EXHAUST GAS)

DTC DETECTING CONDITION:

Immediately at fault recognition

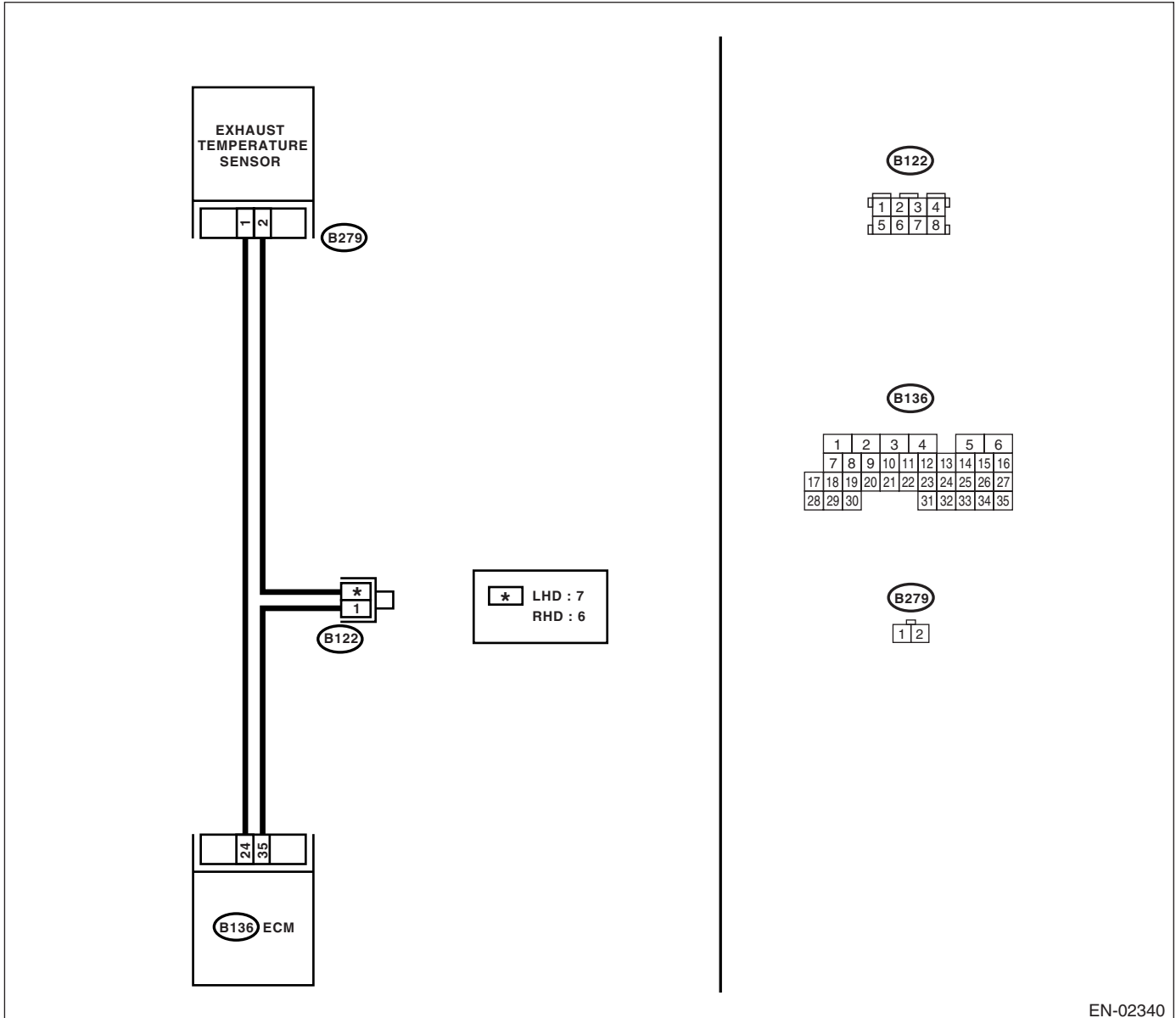
TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02340

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

	Step	Check	Yes	No
1	CHECK DTC. Conduct the troubleshooting for all DTC P0301, P0302, P0303 and P0304. <Ref. to EN(H4DOTC)-74, List of Diagnostic Trouble Code (DTC).>	Does failure for repair or replacement exist?	Repair or replace failure, then replace the precat-alytic converter.	Contact the SUB-ARU dealer. NOTE: Inspection by DTM is required, be-cause probable cause is deteriora-tion of multiple parts.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

CQ:DTC P1312 INTAKE AIR TEMPERATURE CIRCUIT RANGE/PERFORMANCE

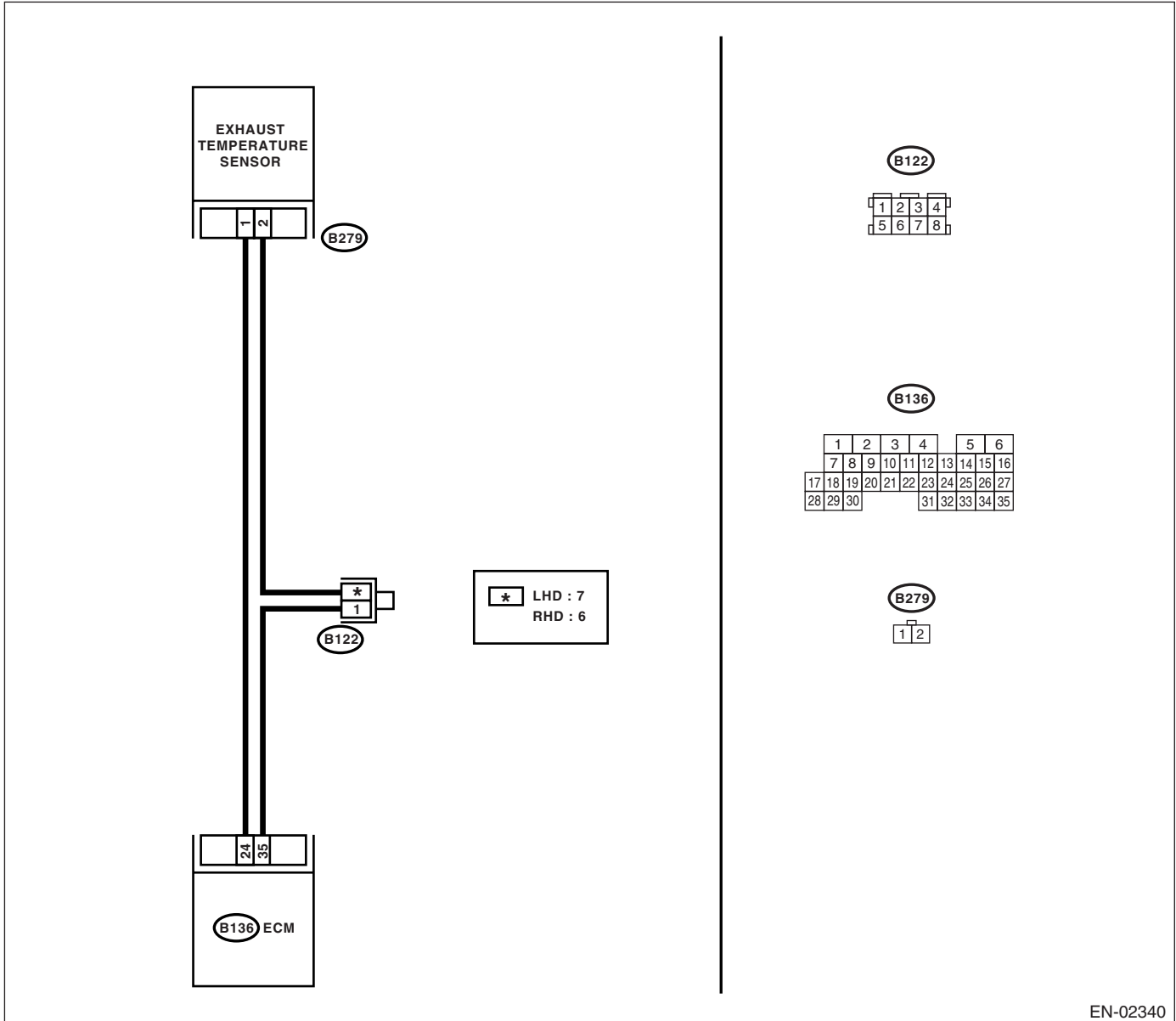
DTC DETECTING CONDITION:

Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02340

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4DOTC)-74, List of Diagnostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P1312.	Replace the exhaust temperature sensor. <Ref. to FU(H4DOTC)-49, Exhaust Temperature Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

CR:DTC P1518 STARTER SWITCH CIRCUIT LOW INPUT

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

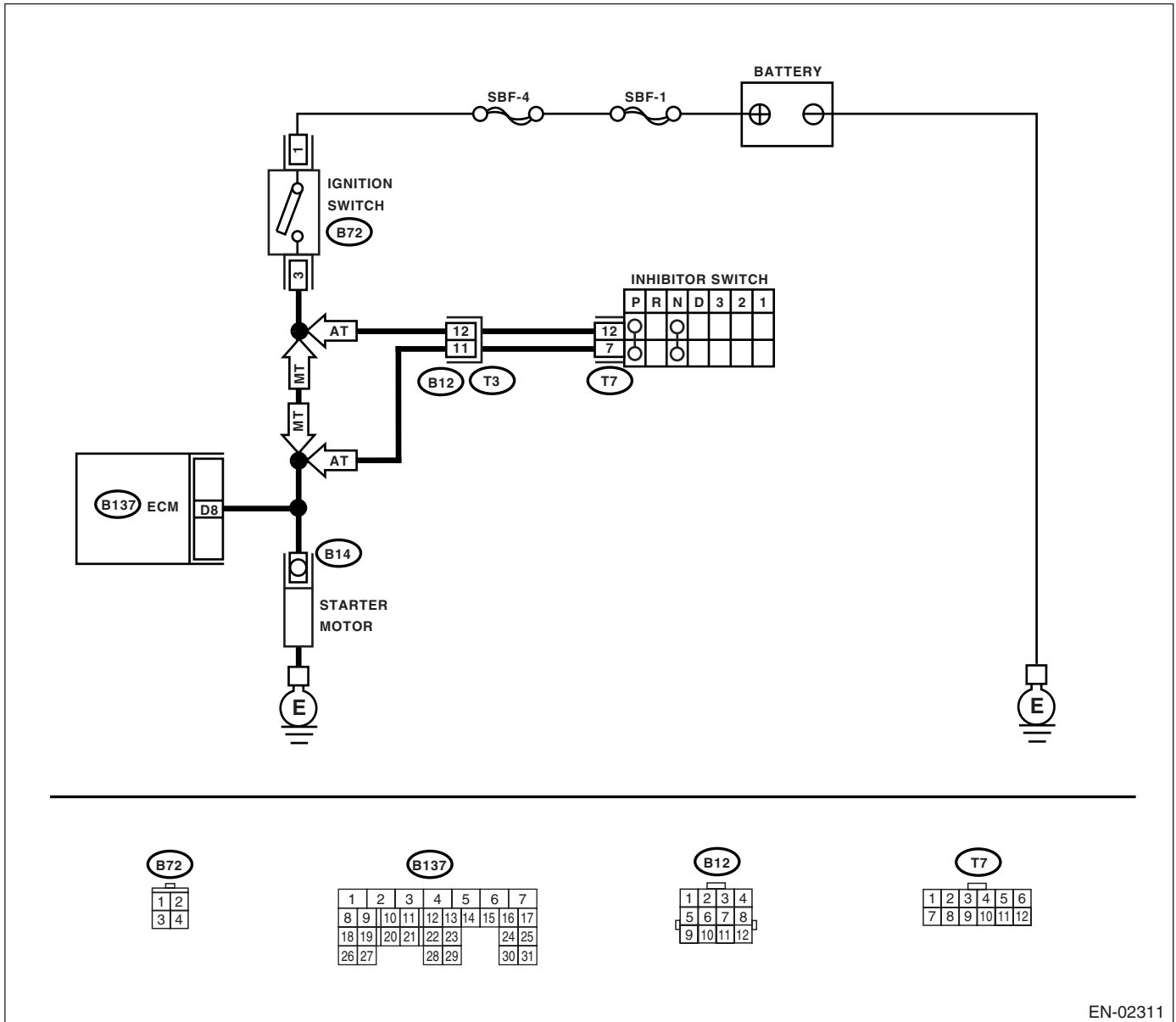
TROUBLE SYMPTOM:

Failure of engine to start

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



EN-02311

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK OPERATION OF STARTER MOTOR.	Does the starter motor operate when ignition switch to START?	Repair the harness and connector. NOTE: In this case repair the following: <ul style="list-style-type: none">• Open or ground short circuit in harness between ECM and starter motor connector.• Poor contact in ECM connector.	Check starter motor circuit. <Ref. to EN(H4DOTC)-60, STARTER MOTOR CIRCUIT, Diagnostics for Engine Starting Failure.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

CS:DTC P1544 EXHAUST GAS TEMPERATURE TOO HIGH

DTC DETECTING CONDITION:

Immediately at fault recognition

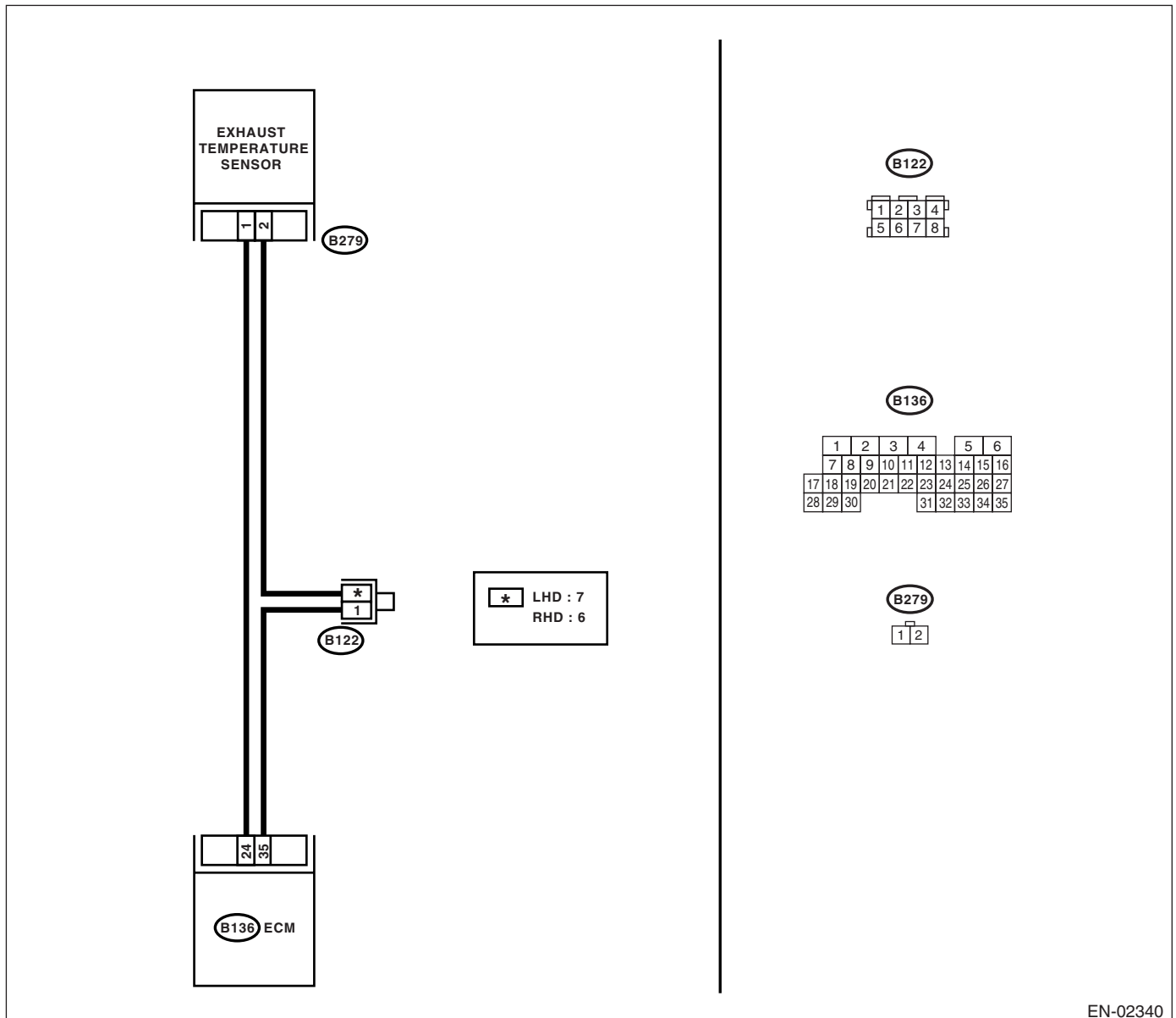
TROUBLE SYMPTOM:

- Erroneous idling
- Poor driving performance

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

WIRING DIAGRAM:



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(H4DOTC)-74, List of Diagnostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P1544.	Go to step 2.
2 CHECK EXHAUST SYSTEM. Check exhaust system parts. NOTE: Check the following items: <ul style="list-style-type: none">• Loose installation of exhaust manifold• Cracks or hole of exhaust manifold• Loose installation of front oxygen (A/F) sensor	Is there a fault in exhaust system?	Repair or replace failure, then replace the pre-catalytic converter.	Contact the SUBARU dealer. NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

CT:DTC P1560 BACK-UP VOLTAGE CIRCUIT MALFUNCTION

DTC DETECTING CONDITION:

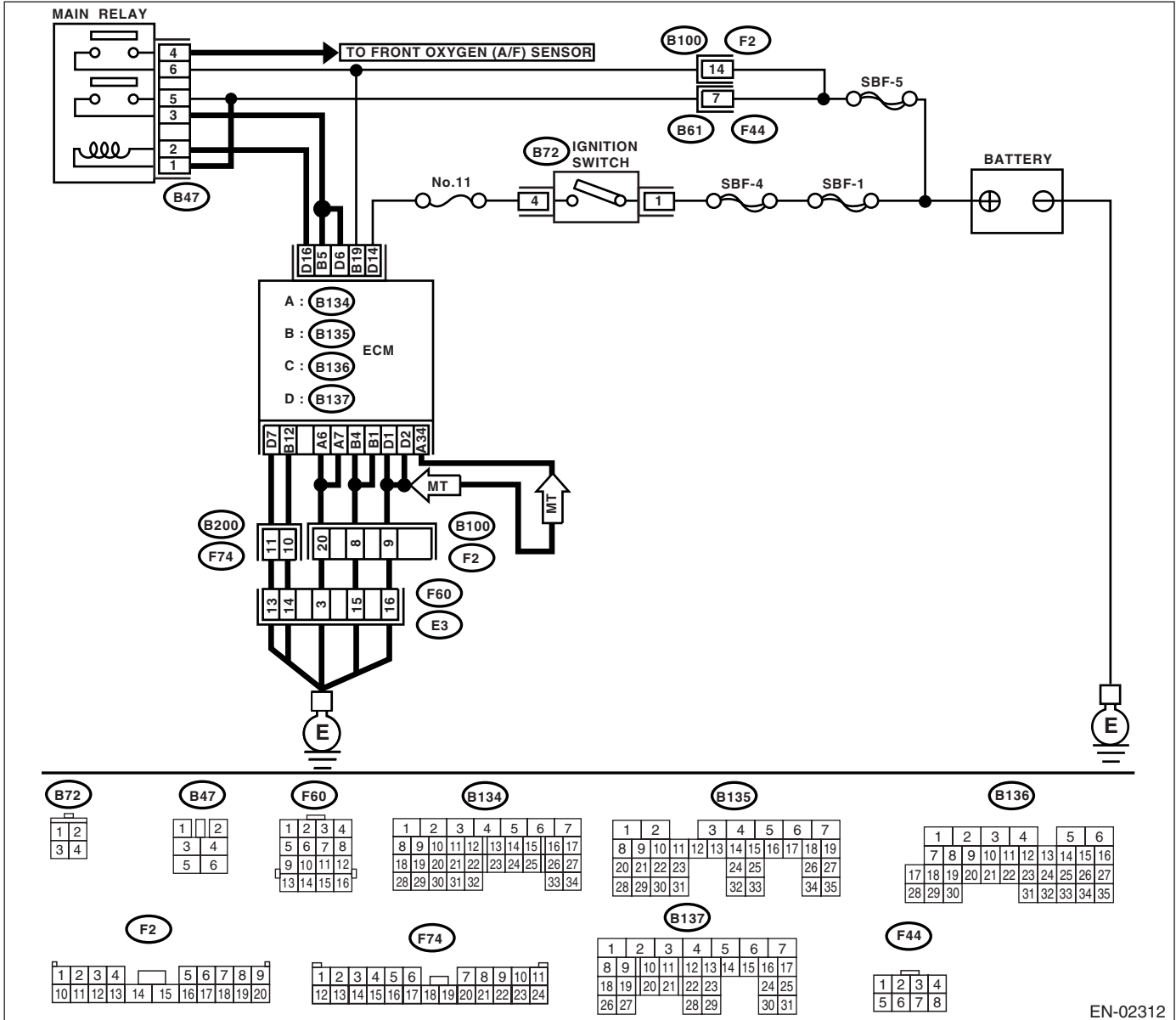
Immediately at fault recognition

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, Inspection Mode.>.

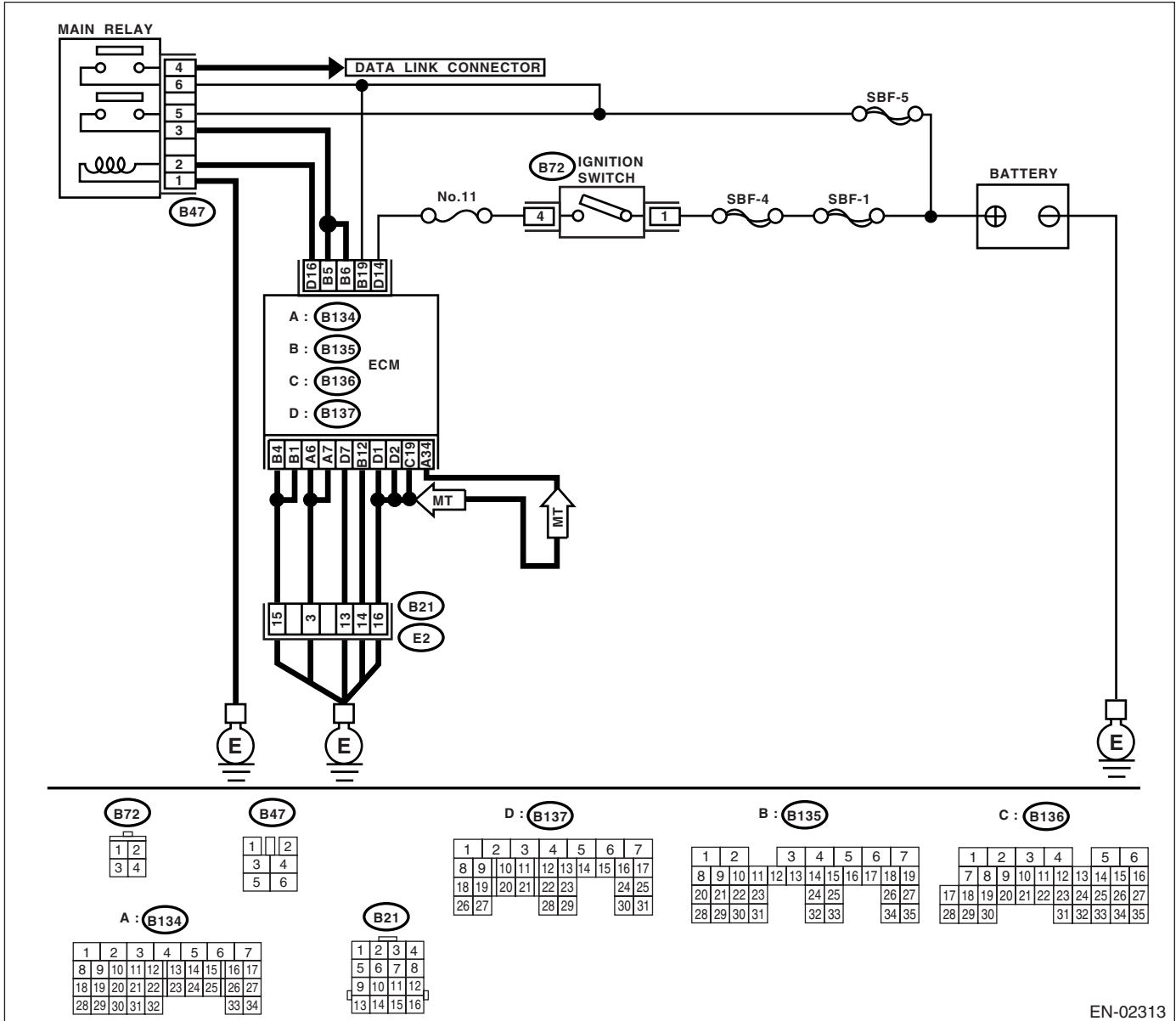
WIRING DIAGRAM:

- LHD model



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

• RHD model



EN-02313

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
1 CHECK INPUT SIGNAL FROM ECM. 1) Turn the ignition switch to OFF. 2) Measure the voltage between ECM and chassis ground. <i>Connector & terminal</i> <i>(B135) No. 19 (+) — Chassis ground (-):</i>	Is the voltage more than 10 V?	Repair the poor contact in ECM connector.	Go to step 2.
2 CHECK HARNESS BETWEEN ECM AND MAIN FUSE BOX CONNECTOR. 1) Disconnect the connector from ECM. 2) Measure the resistance of harness between ECM and chassis ground. <i>Connector & terminal</i> <i>(B135) No. 19 — Chassis ground:</i>	Is the resistance less than 10 Ω ?	Repair ground short circuit in harness between ECM connector and battery terminal.	Go to step 3.
3 CHECK FUSE SBF-5.	Is the fuse blown out?	Replace the fuse.	Repair the harness and connector. NOTE: In this case repair the following: <ul style="list-style-type: none"> • Open circuit in harness between ECM and battery • Poor contact in ECM connector. • Poor contact in battery terminal

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

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

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

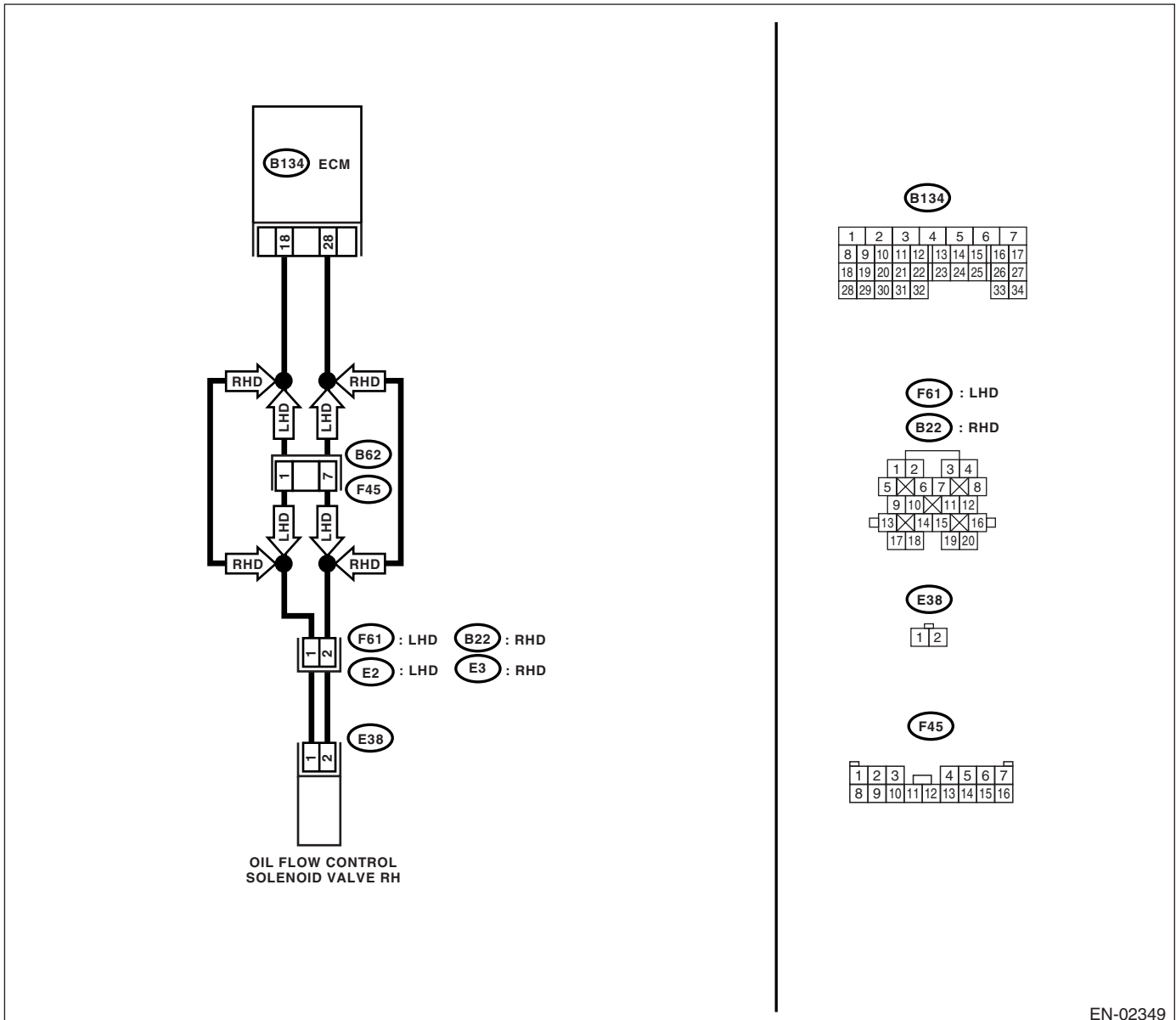
TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02349

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>1</p> <p>CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and oil flow control solenoid valve. 3) Measure the resistance between ECM and oil flow control solenoid valve.</p> <p>Connector & terminal (B134) No. 18 — (E38) No. 1: (B134) No. 28 — (E38) No. 2:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 2.</p>	<p>Repair open circuit in harness between ECM and oil flow control solenoid valve connector.</p> <p>NOTE: In this case, repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between ECM and oil flow control solenoid valve connector • Poor contact in coupling connector
<p>2</p> <p>CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE.</p> <p>Measure the resistance between ECM and oil flow control solenoid valve.</p> <p>Connector & terminal (E38) No. 1 — Engine ground: (E38) No. 2 — Engine ground:</p>	<p>Is the resistance more than 1 MΩ?</p>	<p>Go to step 3.</p>	<p>Repair short circuit between ECM and oil flow control solenoid valve connector.</p>
<p>3</p> <p>CHECK OIL FLOW CONTROL SOLENOID VALVE.</p> <p>1) Remove the oil flow control solenoid valve connector. 2) Measure the resistance between oil flow control solenoid valve terminals.</p> <p>Terminals No. 1 — No. 2:</p>	<p>Is the resistance 6 — 12 Ω?</p>	<p>Repair poor contact in ECM and oil flow control solenoid valve.</p>	<p>Replace the oil flow control solenoid valve. <Ref. to ME(H4DOTC)-68, Camshaft.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

CV:DTC P2089 OCV SOLENOID VALVE SIGNAL A CIRCUIT SHORT (BANK 1)

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

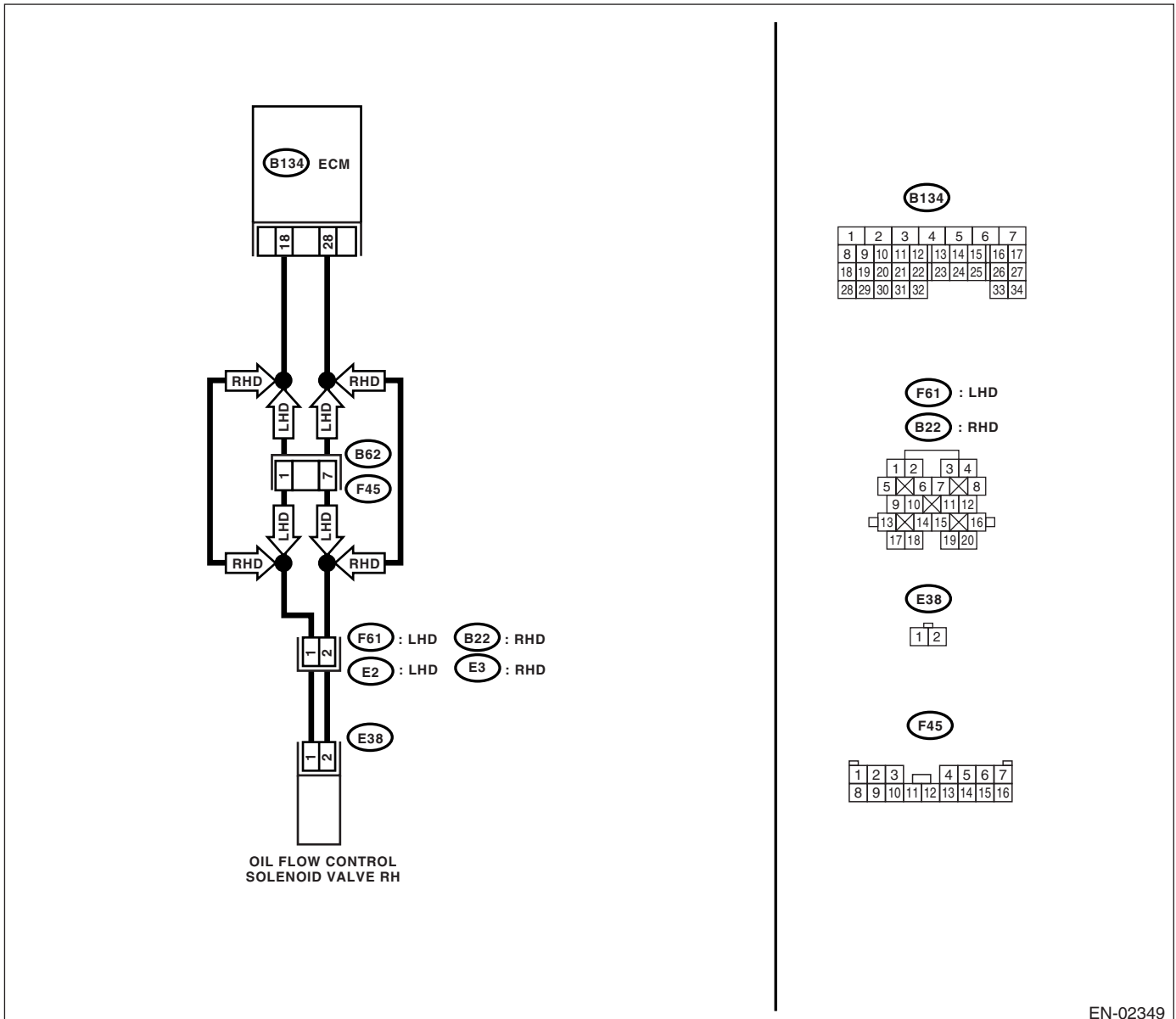
TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02349

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>1</p> <p>CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and oil flow control solenoid valve. 3) Measure the resistance between ECM and oil flow control solenoid valve.</p> <p>Connector & terminal (B134) No. 18 — (E38) No. 1: (B134) No. 28 — (E38) No. 2:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 2.</p>	<p>Repair open circuit in harness between ECM and oil flow control solenoid valve connector.</p> <p>NOTE: In this case, repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between ECM and oil flow control solenoid valve connector • Poor contact in coupling connector
<p>2</p> <p>CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and oil flow control solenoid valve. 3) Measure the resistance between ECM and oil flow control solenoid valve.</p> <p>Connector & terminal (E38) No. 1 — Engine ground: (E38) No. 2 — Engine ground:</p>	<p>Is the resistance more than 1 MΩ?</p>	<p>Go to step 3.</p>	<p>Repair short circuit between ECM and oil flow control solenoid valve connector.</p>
<p>3</p> <p>CHECK OIL FLOW CONTROL SOLENOID VALVE.</p> <p>1) Remove the oil flow control solenoid valve connector. 2) Measure the resistance between oil flow control solenoid valve terminals.</p> <p>Terminals No. 1 — No. 2:</p>	<p>Is the resistance 6 — 12 Ω?</p>	<p>Repair poor contact in ECM and oil flow control solenoid valve.</p>	<p>Replace the oil flow control solenoid valve. <Ref. to ME(H4DOTC)-68, Camshaft.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

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

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

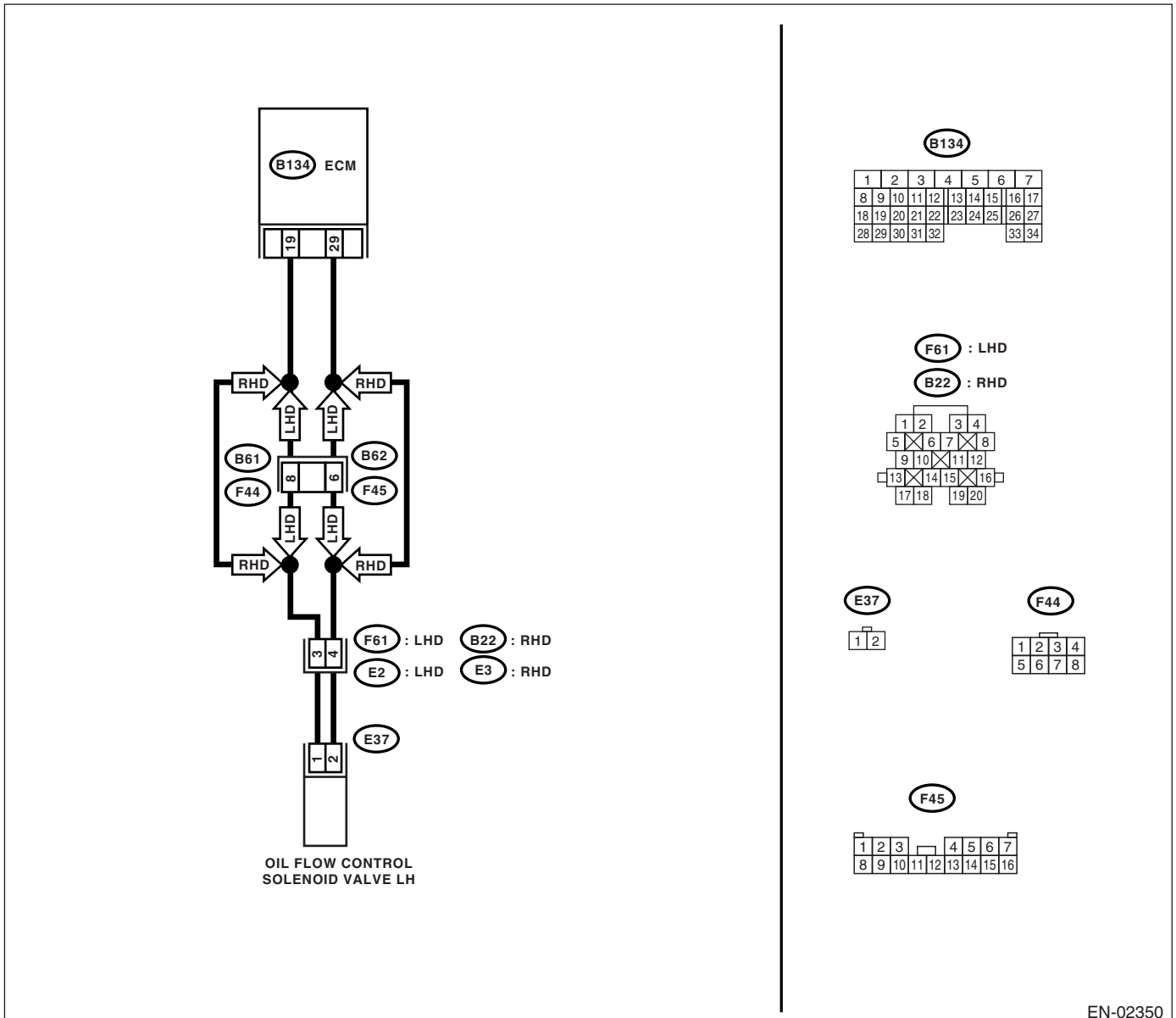
TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02350

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>1</p> <p>CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and oil flow control solenoid valve. 3) Measure the resistance between ECM and oil flow control solenoid valve.</p> <p>Connector & terminal (B134) No. 19 — (E37) No. 1: (B134) No. 29 — (E37) No. 2:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 2.</p>	<p>Repair open circuit in harness between ECM and oil flow control solenoid valve connector.</p> <p>NOTE: In this case, repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between ECM and oil flow control solenoid valve connector • Poor contact in coupling connector
<p>2</p> <p>CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE.</p> <p>Measure the resistance between ECM and oil flow control solenoid valve.</p> <p>Connector & terminal (E37) No. 1 — Engine ground: (E37) No. 2 — Engine ground:</p>	<p>Is the resistance more than 1 MΩ?</p>	<p>Go to step 3.</p>	<p>Repair short circuit between ECM and oil flow control solenoid valve connector.</p>
<p>3</p> <p>CHECK OIL FLOW CONTROL SOLENOID VALVE.</p> <p>1) Remove the oil flow control solenoid valve connector. 2) Measure the resistance between oil flow control solenoid valve terminals.</p> <p>Terminals No. 1 — No. 2:</p>	<p>Is the resistance 6 — 12 Ω?</p>	<p>Repair poor contact in ECM and oil flow control solenoid valve.</p>	<p>Replace the oil flow control solenoid valve. <Ref. to ME(H4DOTC)-68, Camshaft.></p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

CX:DTC P2093 OCV SOLENOID VALVE SIGNAL A CIRCUIT SHORT (BANK 2)

DTC DETECTING CONDITION:

Two consecutive driving cycles with fault

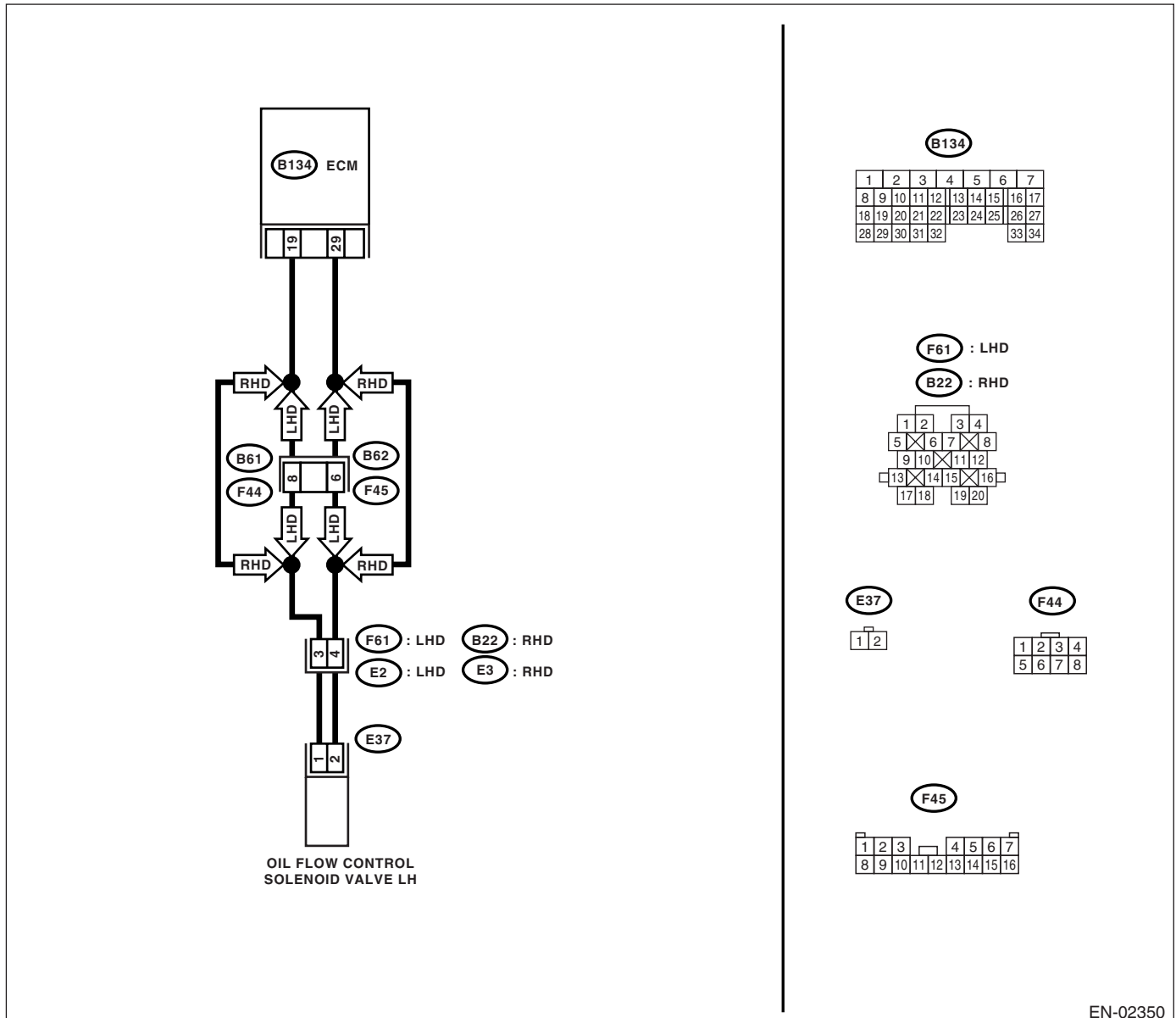
TROUBLE SYMPTOM:

Erroneous idling

CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(H4DOTC)-47, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(H4DOTC)-40, OPERATION, Inspection Mode.>.

WIRING DIAGRAM:



EN-02350

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ENGINE (DIAGNOSTIC)

Step	Check	Yes	No
<p>1</p> <p>CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and oil flow control solenoid valve. 3) Measure the resistance between ECM and oil flow control solenoid valve.</p> <p>Connector & terminal (B134) No. 19 — (E37) No. 1: (B134) No. 29 — (E37) No. 2:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 2.</p>	<p>Repair open circuit in harness between ECM and oil flow control solenoid valve connector.</p> <p>NOTE: In this case, repair the following:</p> <ul style="list-style-type: none"> • Open circuit in harness between ECM and oil flow control solenoid valve connector • Poor contact in coupling connector
<p>2</p> <p>CHECK HARNESS BETWEEN ECM AND OIL FLOW CONTROL SOLENOID VALVE.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and oil flow control solenoid valve. 3) Measure the resistance between ECM and oil flow control solenoid valve.</p> <p>Connector & terminal (E37) No. 1 — Engine ground: (E37) No. 2 — Engine ground:</p>	<p>Is the resistance more than 1 $M\Omega$?</p>	<p>Go to step 3.</p>	<p>Repair short circuit between ECM and oil flow control solenoid valve connector.</p>
<p>3</p> <p>CHECK OIL FLOW CONTROL SOLENOID VALVE.</p> <p>1) Remove the oil flow control solenoid valve connector. 2) Measure the resistance between oil flow control solenoid valve terminals.</p> <p>Terminals No. 1 — No. 2:</p>	<p>Is the resistance 6 — 12 Ω?</p>	<p>Repair poor contact in ECM and oil flow control solenoid valve.</p>	<p>Replace the oil flow control solenoid valve. <Ref. to ME(H4DOTC)-68, Camshaft.></p>

20. General Diagnostic Table

A: INSPECTION

1. ENGINE

NOTE:

Malfunction of parts other than those listed is also possible. <Ref. to ME(H4DOTC)-118, Engine Trouble in General.>

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

General Diagnostic Table

ENGINE (DIAGNOSTIC)

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

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

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

*3: Ensure the secure installation.

*4: Check fuel injector, fuel pressure regulator and fuel filter.

*5: Inspect air leak in air intake system.

*6: Adjust accelerator cable.