

## 19. Diagnostic Procedure with Diagnostic Trouble Code (DTC)

### A: DTC P0030 — HO2S HEATER CONTROL CIRCUIT (BANK 1 SENSOR 1) —

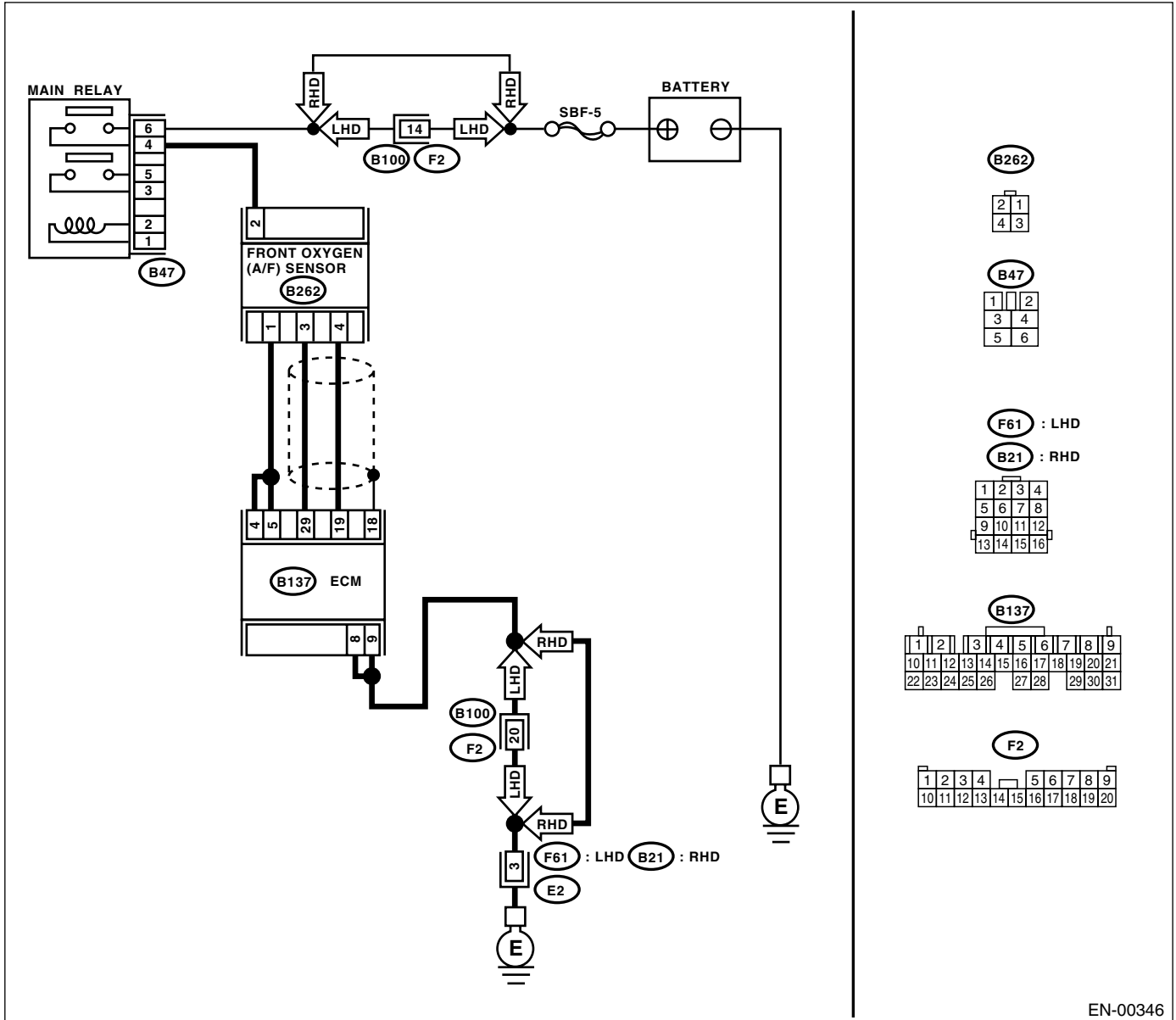
• **DTC DETECTING CONDITION:**

- Two consecutive driving cycles with fault

**CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

• **WIRING DIAGRAM:**



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>1</b></p> <p><b>CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.</b></p> <p>1)Start the engine and warm-up engine. 2)Turn the ignition switch to OFF. 3)Disconnect the connectors from ECM and front oxygen (A/F) sensor. 4)Measure the resistance of harness between ECM and front oxygen (A/F) sensor connector.</p> <p><b>Connector &amp; terminal</b> <b>(B137) No. 5 — (B262) No. 1:</b> <b>(B137) No. 4 — (B262) No. 1:</b></p> <p>Is the measured value less than specified value?</p>	1 Ω	Go to step 2.	Repair the open circuit in harness between ECM and front oxygen (A/F) sensor connector.
<p><b>2</b></p> <p><b>CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.</b></p> <p>Measure the resistance of harness between ECM and front oxygen (A/F) sensor connector.</p> <p><b>Connector &amp; terminal</b> <b>(B137) No. 19 — (B18) No. 4:</b> <b>(B137) No. 29 — (B18) No. 3:</b></p> <p>Is the measured value less than specified value?</p>	1 Ω	Go to step 3.	Repair the open circuit in harness between ECM and front oxygen (A/F) sensor connector.
<p><b>3</b></p> <p><b>CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.</b></p> <p>Measure the resistance of harness between main relay and front oxygen (A/F) sensor connector.</p> <p><b>Connector &amp; terminal</b> <b>(B47) No. 4 — (B262) No. 2:</b></p> <p>Is the measured value less than specified value?</p>	1 Ω	Go to step 4.	Repair the open circuit in harness between ECM and front oxygen (A/F) sensor connector.
<p><b>4</b></p> <p><b>CHECK FRONT OXYGEN (A/F) SENSOR.</b></p> <p>Measure the resistance between front oxygen (A/F) sensor connector terminals.</p> <p><b>Terminals</b> <b>No. 2 — No. 1:</b></p> <p>Is the measured value less than specified value?</p>	5 Ω	Go to step 5.	Replace the front oxygen (A/F) sensor. <Ref. to FU(TURBO)-43, Front Oxygen (A/F) Sensor.>
<p><b>5</b></p> <p><b>CHECK POOR CONTACT.</b></p> <p>Check the poor contact in ECM and front oxygen (A/F) sensor connector. Is there poor contact in ECM or front oxygen (A/F) sensor connector?</p>	Poor contact occurs.	Repair the poor contact in ECM or front oxygen (A/F) sensor connector.	Replace the front oxygen (A/F) sensor. <Ref. to FU(TURBO)-43, Front Oxygen (A/F) Sensor.>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

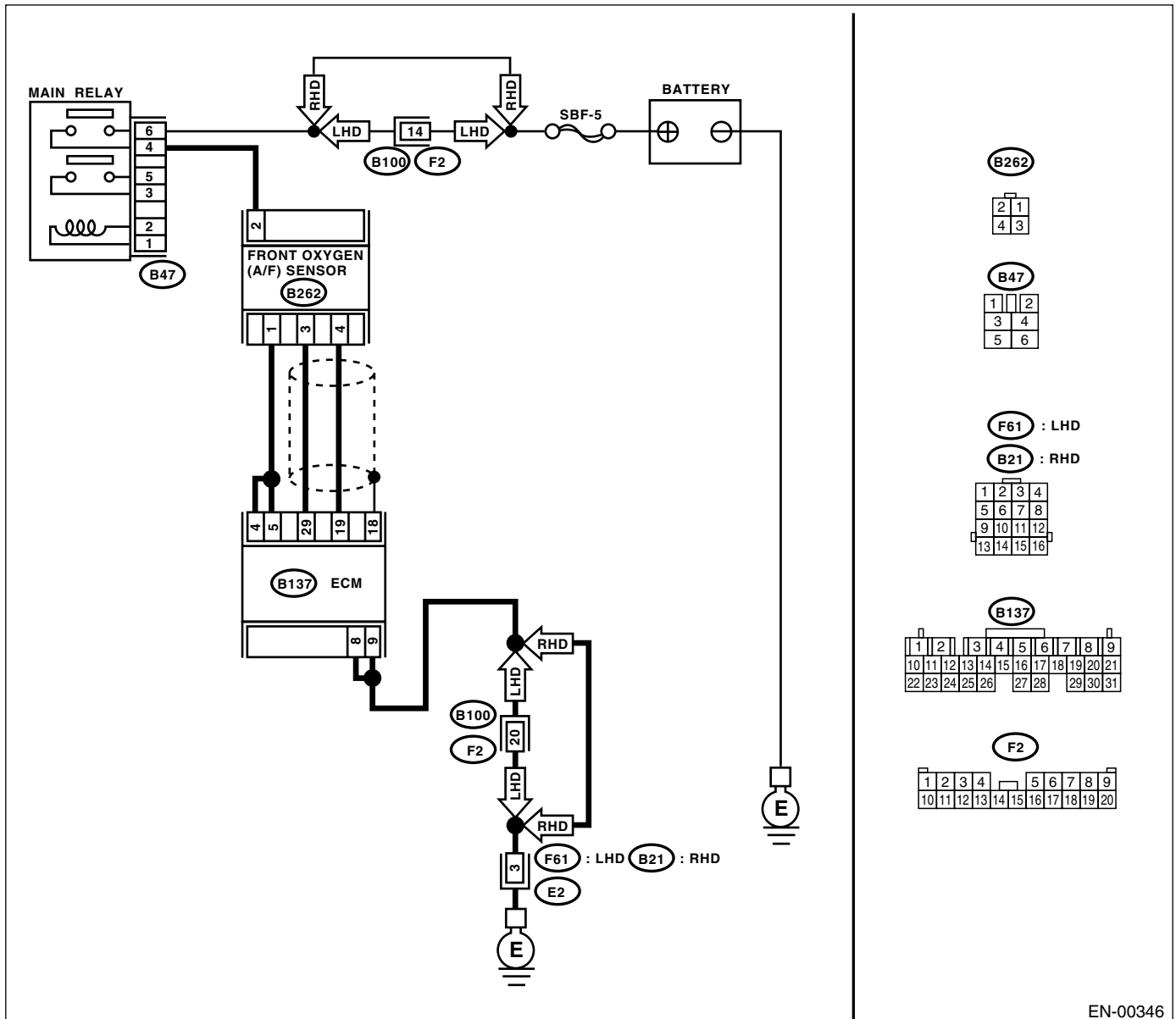
## B: DTC P0031 — HO2S HEATER CONTROL CIRCUIT LOW (BANK 1 SENSOR 1)

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition

**CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

- **WIRING DIAGRAM:**



EN-00346

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>1</b></p> <p><b>CHECK POWER SUPPLY TO FRONT OXYGEN (A/F) SENSOR.</b>                      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.</p> <p><b>Connector &amp; terminal</b>  <b>(B262) No. 2 (+) — Engine ground (-):</b>                      Is the measured value more than specified value?</p>	10 V	Go to step 2.	Repair the power supply line. NOTE: In this case, repair the following: <ul style="list-style-type: none"> <li>• Open circuit in harness between main relay and front oxygen (A/F) sensor connector</li> <li>• Poor contact in front oxygen (A/F) sensor connector</li> <li>• Poor contact in main relay connector</li> </ul>
<p><b>2</b></p> <p><b>CHECK GROUND CIRCUIT OF ECM.</b>                      Measure the resistance of harness between ECM connector and chassis ground.</p> <p><b>Connector &amp; terminal</b>  <b>(B137) No. 8 — Chassis ground:</b>  <b>(B137) No. 9 — Chassis ground:</b>                      Is the measured value less than specified value?</p>	5 Ω	Go to step 3.	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> <li>• Open circuit in harness between ECM and engine ground cable</li> <li>• Poor contact in ECM connector</li> <li>• Poor contact in coupling connector</li> </ul>
<p><b>3</b></p> <p><b>CHECK CURRENT DATA.</b>                      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.                      Is the measured value more than specified value?</p> <p>NOTE:                      • Subaru Select Monitor                      For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE".                      &lt;Ref. to EN(TURBO)-34, Subaru Select Monitor.&gt;                      • OBD-II scan tool                      For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</p>	0.2 A	Repair the poor contact in connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> <li>• Poor contact in front oxygen (A/F) sensor connector</li> <li>• Poor contact in ECM connector</li> </ul>	Go to step 4.
<p><b>4</b></p> <p><b>CHECK OUTPUT SIGNAL FROM ECM.</b>                      1) Start and idle the engine.                      2) Measure the voltage between ECM connector and chassis ground.</p> <p><b>Connector &amp; terminal</b>  <b>(B137) No. 4 (+) — Chassis ground (-):</b>                      Is the measured value less than specified value?</p>	1.0 V	Go to step 6.	Go to step 5.

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>5</b> <b>CHECK OUTPUT SIGNAL FROM ECM.</b> Measure the voltage between ECM connector and chassis ground. <i><b>Connector &amp; terminal</b></i> <i><b>(B137) No. 4 (+) — Chassis ground (-):</b></i> Shake the ECM harness and connector, while monitoring value of voltage meter. Is the voltage change less than specified value?	1.0 V	Repair the poor contact in ECM connector.	Go to step 6.
<b>6</b> <b>CHECK OUTPUT SIGNAL FROM ECM.</b> Measure the voltage between ECM connector and chassis ground. <i><b>Connector &amp; terminal</b></i> <i><b>(B137) No. 5 (+) — Chassis ground (-):</b></i> Is the measured value less than specified value?	1.0 V	Go to step 8.	Go to step 7.
<b>7</b> <b>CHECK OUTPUT SIGNAL FROM ECM.</b> Measure the voltage between ECM connector and chassis ground. <i><b>Connector &amp; terminal</b></i> <i><b>(B137) No. 5 (+) — Chassis ground (-):</b></i> Shake the ECM harness and connector, while monitoring value of voltage meter. Is the voltage change less than specified value?	1.0 V	Repair the poor contact in ECM connector.	Go to step 8.
<b>8</b> <b>CHECK FRONT OXYGEN (A/F) SENSOR.</b> 1) Turn the ignition switch to OFF. 2) Measure the resistance between front oxygen (A/F) sensor connector terminals. <i><b>Terminals</b></i> <i><b>No. 2 — No. 1:</b></i> Is the measured value less than specified value?	10 Ω	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> <li>• Open or ground short circuit in harness between front oxygen (A/F) sensor and ECM connector</li> <li>• Poor contact in front oxygen (A/F) sensor connector</li> <li>• Poor contact in ECM connector</li> </ul>	Replace the front oxygen (A/F) sensor. <Ref. to FU(TURBO)-43, Front Oxygen (A/F) Sensor.>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

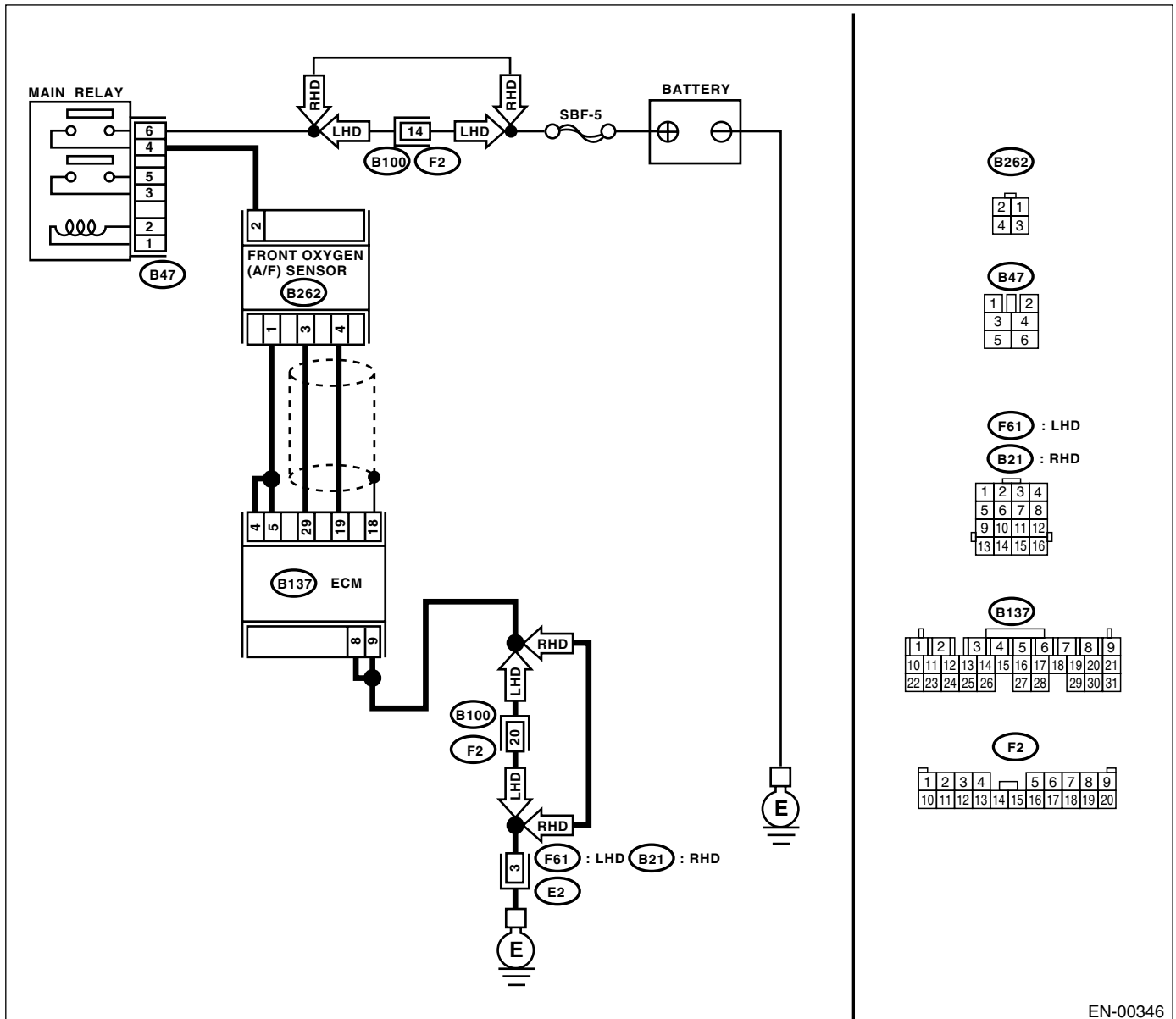
## C: DTC P0032 — HO2S HEATER CONTROL CIRCUIT HIGH (BANK 1 SENSOR 1) —

- DTC DETECTING CONDITION:
  - Immediately at fault recognition

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

- WIRING DIAGRAM:



EN-00346

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	<p><b>CHECK OUTPUT SIGNAL FROM ECM.</b>                      1) Turn the ignition switch to ON.                      2) Measure the voltage between ECM connector and chassis ground.  <b>Connector &amp; terminal</b>  <i>(B137) No. 4 (+) — Chassis ground (-):</i>  <i>(B137) No. 5 (+) — Chassis ground (-):</i>                      Is the measured value more than specified value?</p>	8 V	Go to step 3.	Go to step 2.
2	<p><b>CHECK FRONT OXYGEN (A/F) SENSOR HEATER CURRENT.</b>                      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 the OBD-II general scan tool.                      Is the measured value more than specified value?                      NOTE:                      •Subaru Select Monitor                      For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE".                      &lt;Ref. to EN(TURBO)-34, Subaru Select Monitor.&gt;                      •OBD-II general scan tool                      For detailed operation procedure, refer to the OBD-II General Scan Tool Instruction Manual.</p>	2.3 A	Replace the ECM. <Ref. to FU(TURBO)-48, Engine Control Module.>	END
3	<p><b>CHECK OUTPUT SIGNAL FROM ECM.</b>                      Measure the voltage between ECM connector and chassis ground.  <b>Connector &amp; terminal</b>  <i>(B137) No. 4 (+) — Chassis ground (-):</i>  <i>(B137) No. 5 (+) — Chassis ground (-):</i>                      Shake the ECM harness and connector, while monitoring value of voltage meter.                      Is the voltage change more than specified value?</p>	8 V	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 (DIAGNOSTICS)

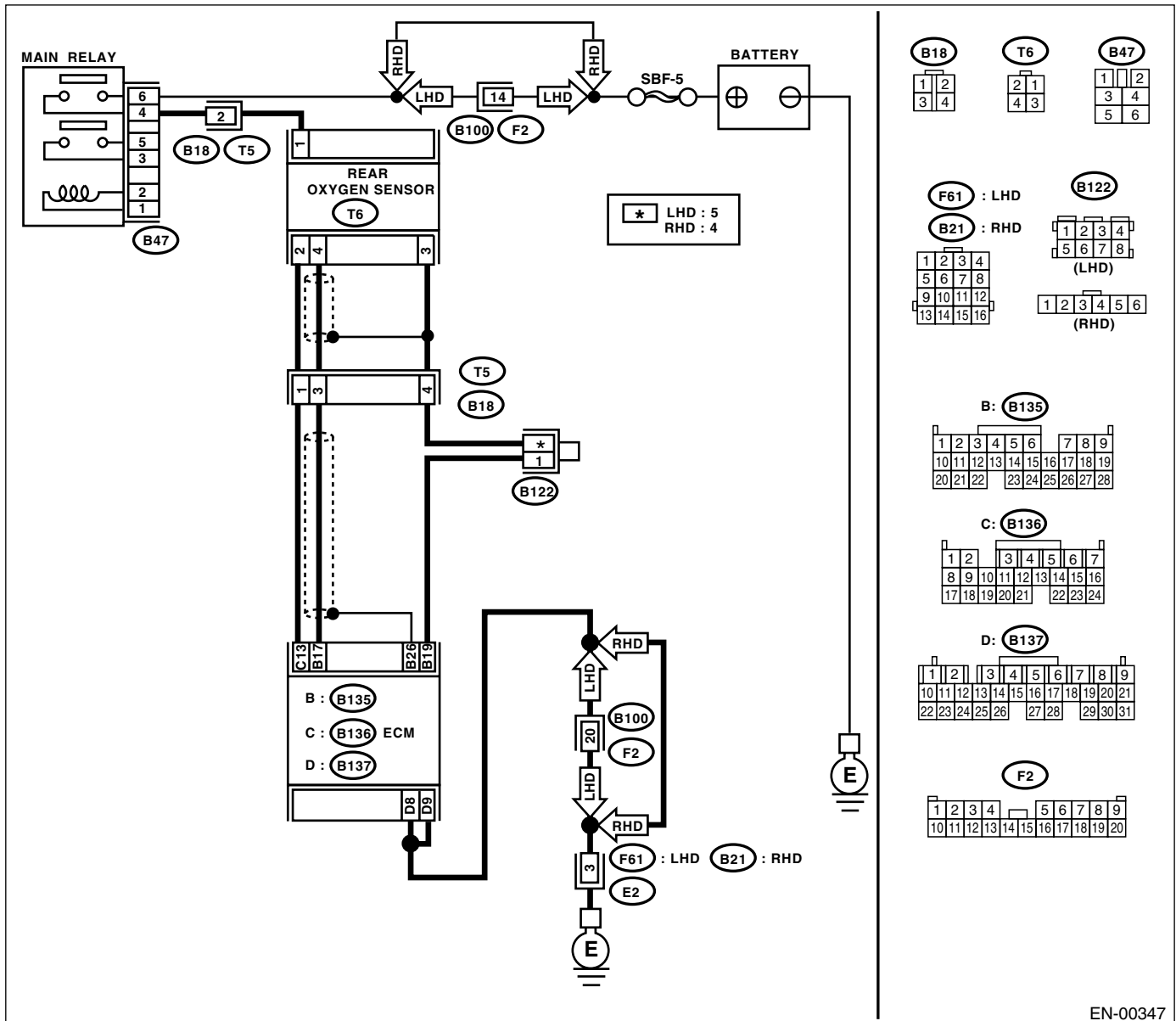
## D: DTC P0037 — HO2S HEATER CONTROL CIRCUIT LOW (BANK 1 SENSOR 2)

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

- **WIRING DIAGRAM:**





# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>1 CHECK GROUND CIRCUIT OF ECM.</b>            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><b>Connector &amp; terminal</b>  <b>(B137) No. 8 — Chassis ground:</b>  <b>(B137) No. 9 — Chassis ground:</b></p> <p>Is the measured value less than specified value?</p>	5 Ω	Go to step 2.	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> <li>• Open circuit in harness between ECM and engine ground cable</li> <li>• Poor contact in ECM connector</li> <li>• Poor contact in coupling connector</li> </ul>
<p><b>2 CHECK CURRENT DATA.</b>            1) Start the engine.            2) Read the data of rear oxygen sensor heater current using Subaru Select Monitor or OBD-II general scan tool.            Is the measured value more than specified value?</p> <p>NOTE:            • Subaru Select Monitor            For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE".            &lt;Ref. to EN(TURBO)-34, Subaru Select Monitor.&gt;            • OBD-II scan tool            For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</p>	0.2 A	Repair the connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> <li>• Poor contact in rear oxygen sensor connector</li> <li>• Poor contact in rear oxygen sensor connecting harness connector</li> <li>• Poor contact in ECM connector</li> </ul>	Go to step 3.
<p><b>3 CHECK OUTPUT SIGNAL FROM ECM.</b>            1) Start and idle the engine.            2) Measure the voltage between ECM connector and chassis ground.</p> <p><b>Connector &amp; terminal</b>  <b>(B136) No. 13 (+) — Chassis ground (-):</b></p> <p>Is the measured value less than specified value?</p>	1.0 V	Go to step 6.	Go to step 4.
<p><b>4 CHECK OUTPUT SIGNAL FROM ECM.</b>            Measure the voltage between ECM connector and chassis ground.</p> <p><b>Connector &amp; terminal</b>  <b>(B136) No. 13 (+) — Chassis ground (-):</b>            Shake the ECM harness and connector, while monitoring value of voltage meter.            Is the voltage change less than specified value?</p>	1.0 V	Repair the poor contact in ECM connector.	Go to step 5.
<p><b>5 CHECK OUTPUT SIGNAL FROM ECM.</b>            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.</p> <p><b>Connector &amp; terminal</b>  <b>(B136) No. 13 (+) — Chassis ground (-):</b></p> <p>Is the measured value less than specified value?</p>	1.0 V	Replace the ECM. <Ref. to FU(TURBO)-48, Engine Control Module.>	Repair the battery short circuit in harness between ECM and rear oxygen sensor connector. After repair, replace the ECM. <Ref. to FU(TURBO)-48, Engine Control Module.>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>6</b></p> <p><b>CHECK POWER SUPPLY TO REAR OXYGEN SENSOR.</b>                      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><b>Connector &amp; terminal</b>  <b>(T6) No. 1 (+) — Chassis ground (-):</b>                      Is the measured value more than specified value?</p>	10 V	Go to step 7.	Repair the power supply line. NOTE: In this case, repair the following: <ul style="list-style-type: none"> <li>• Open circuit in harness between main relay and rear oxygen sensor connector</li> <li>• Poor contact in rear oxygen sensor connector</li> <li>• Poor contact in coupling connector</li> </ul>
<p><b>7</b></p> <p><b>CHECK REAR OXYGEN SENSOR.</b>                      1) Turn the ignition switch to OFF.                      2) Measure the resistance between rear oxygen sensor connector terminals.</p> <p><b>Terminals</b>  <b>No. 1 — No. 2:</b>                      Is the measured value less than specified value?</p>	30 Ω	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> <li>• Open circuit in harness between rear oxygen sensor and ECM connector</li> <li>• Poor contact in rear oxygen sensor connector</li> <li>• Poor contact in ECM connector</li> <li>• Poor contact in coupling connector</li> </ul>	Replace the rear oxygen sensor. <Ref. to FU(TURBO)-45, Rear Oxygen Sensor.>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

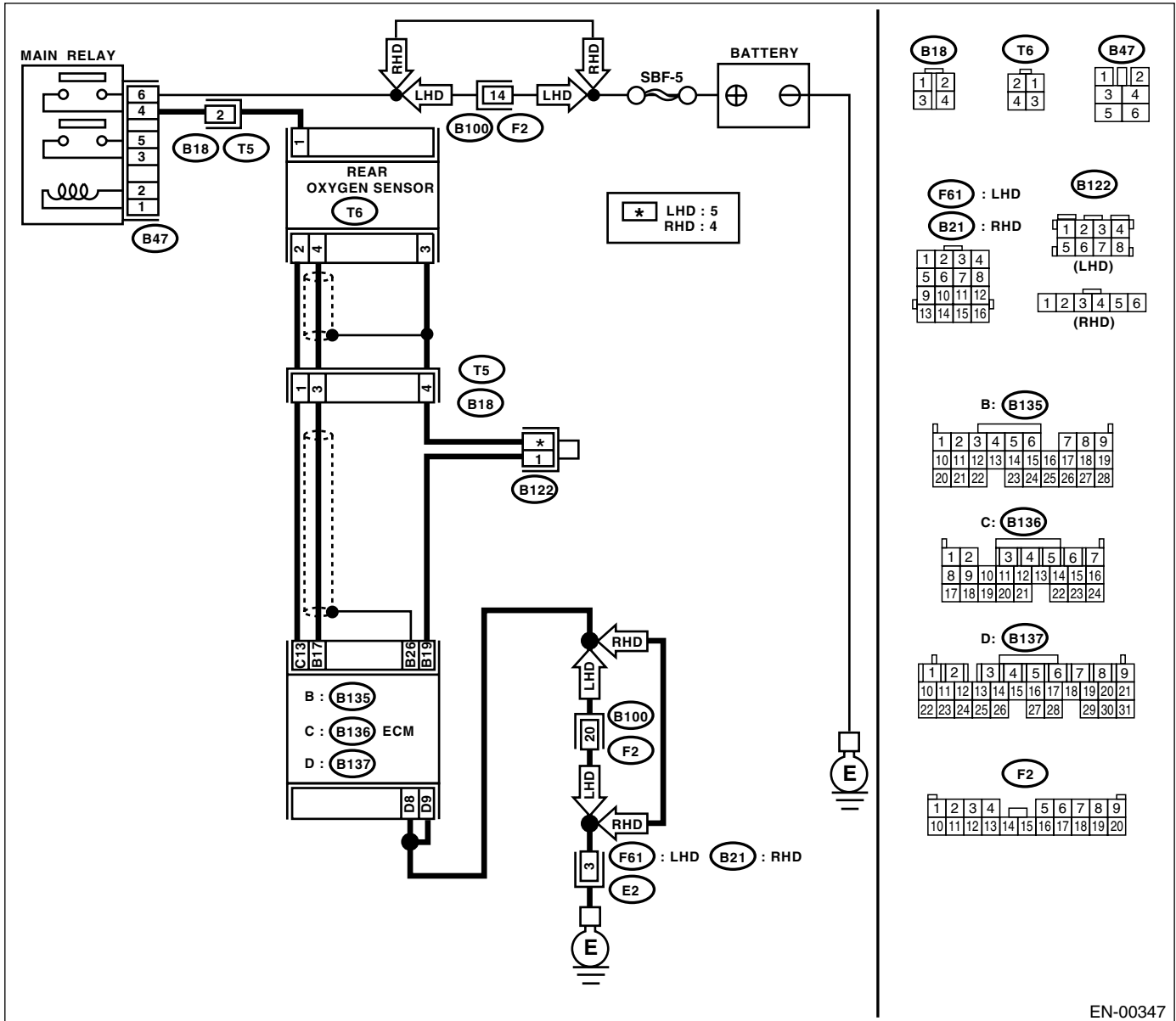
## E: DTC P0038 — HO2S HEATER CONTROL CIRCUIT HIGH (BANK 1 SENSOR 2) —

- DTC DETECTING CONDITION:
  - Immediately at fault recognition

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

- WIRING DIAGRAM:



EN-00347

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>1 CHECK INPUT SIGNAL FOR ECM.</b> 1) Turn the ignition switch to OFF. 2) Measure the voltage between ECM connector and chassis ground. <b>Connector &amp; terminal</b> <b>(B136) No. 13 (+) — Chassis ground (-):</b> Is the measured value more than specified value?	8 V	Go to step 2.	Go to step 3.
<b>2 CHECK CURRENT DATA.</b> 1) Repair the 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 sensor heater current using Subaru Select Monitor or the OBD-II general scan tool. Is the measured value more than specified value?  <b>NOTE:</b> • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <Ref. to EN(TURBO)-34, Subaru Select Monitor.> • OBD-II general scan tool For detailed operation procedure, refer to the OBD-II General Scan Tool Instruction Manual.	7 A	Replace the ECM. <Ref. to FU(TURBO)-48, Engine Control Module.>	END
<b>3 CHECK POOR CONTACT.</b> Check poor contact in ECM connector. Is there poor contact in ECM connector?	Poor contact occurs.	Repair the poor contact in ECM connector.	END

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

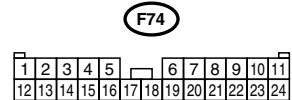
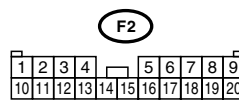
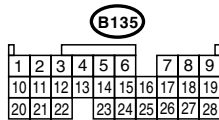
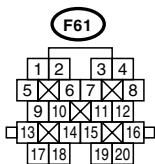
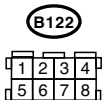
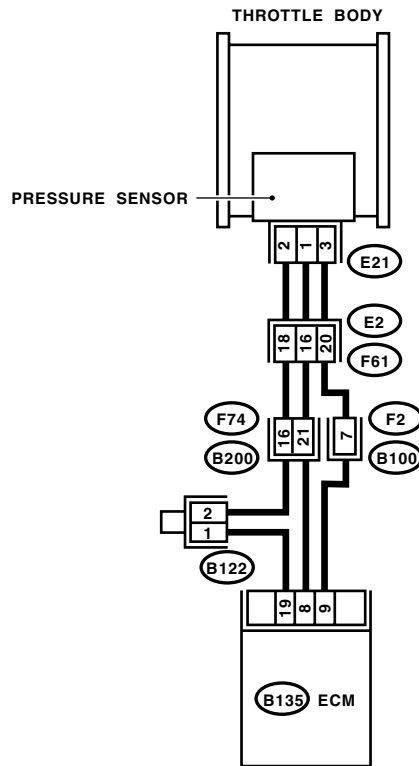
## F: DTC P0068 — MANIFOLD ABSOLUTE PRESSURE/BAROMETRIC PRESSURE CIRCUIT RANGE/PERFORMANCE —

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

- **WIRING DIAGRAM:**
- LHD model

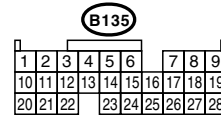
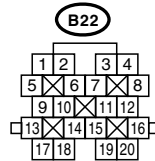
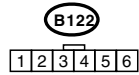
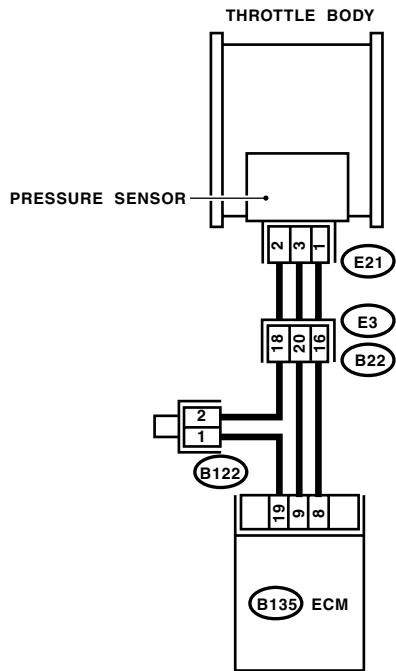


EN-00349

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

- RHD model



EN-00350

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>1</b> <b>CHECK IDLE SWITCH SIGNAL.</b> 1) Turn the ignition switch to ON. 2) Operate the LED operation mode for engine using Subaru Select Monitor. Does the LED of {Idle Switch Signal} come on?  NOTE: •Subaru Select Monitor For detailed operation procedure, refer to the "LED OPERATION MODE FOR ENGINE". <Ref. to EN(TURBO)-34, Subaru Select Monitor.>	LED illuminates.	Go to step 2.	Check the throttle position sensor circuit. <Ref. to EN(TURBO)-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.
<b>2</b> <b>CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.</b> Is any other DTC displayed?	Other DTC is displayed.	Inspect the relevant DTC. "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(TURBO)-77, List of Diagnostic Trouble Code (DTC).>  NOTE: In this case, it is not necessary to inspect DTC P0106.	Go to step 3.
<b>3</b> <b>CHECK CONDITION OF INTAKE MANIFOLD PRESSURE SENSOR.</b> Is the pressure sensor installation bolt tightened securely?	Bolt is tightened securely.	Go to step 4.	Tighten the pressure sensor installation bolt securely.
<b>4</b> <b>CHECK CONDITION OF THROTTLE BODY.</b> Is the throttle body installation bolt tightened securely?	Bolt is tightened securely.	Replace the pressure sensor. <Ref. to FU(TURBO)-34, Pressure Sensor.>	Tighten the throttle body installation bolt securely.

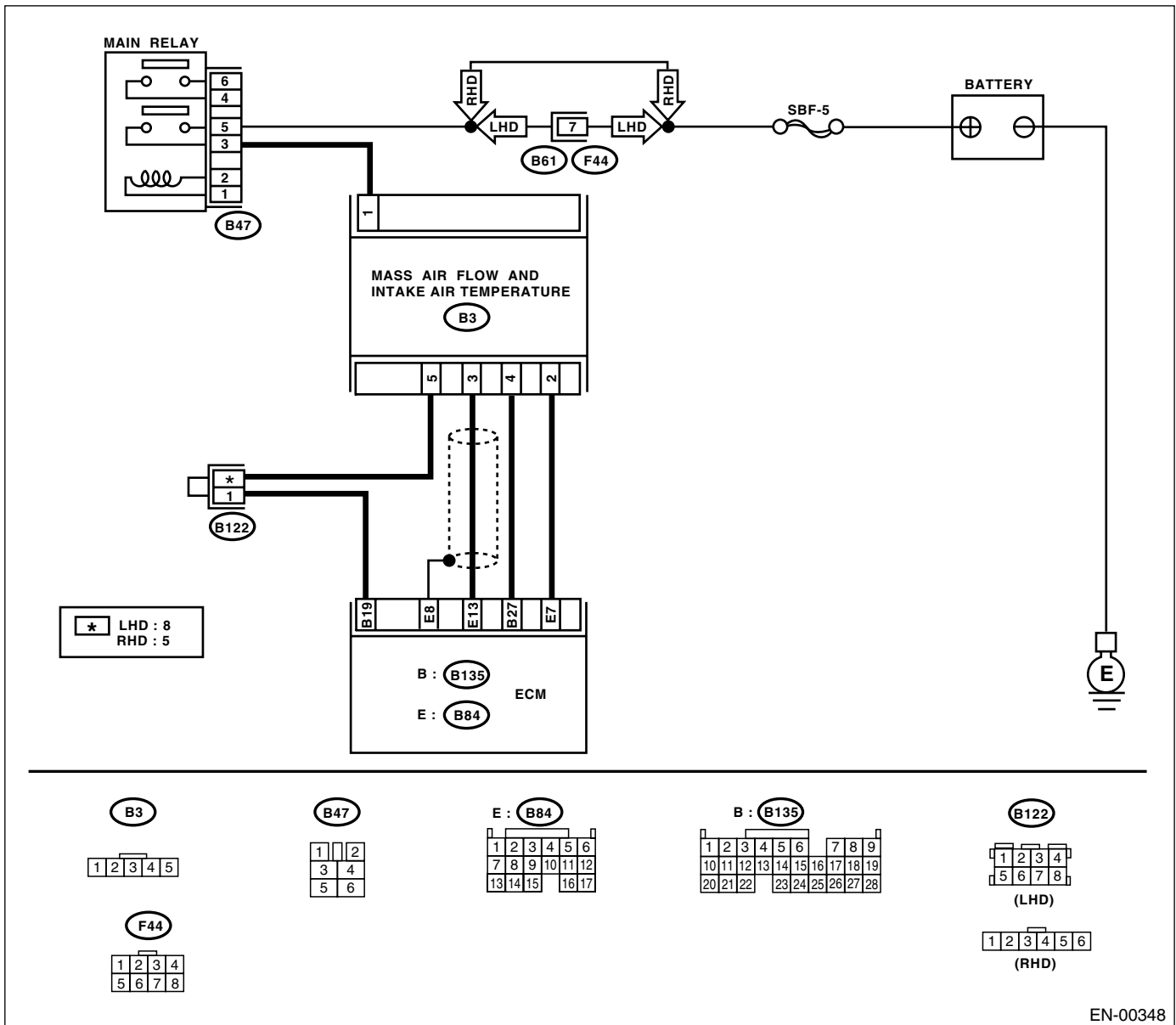
**G: DTC P0101 — MASS OR VOLUME AIR FLOW CIRCUIT RANGE/PERFORMANCE —**

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

• **WIRING DIAGRAM:**



EN-00348



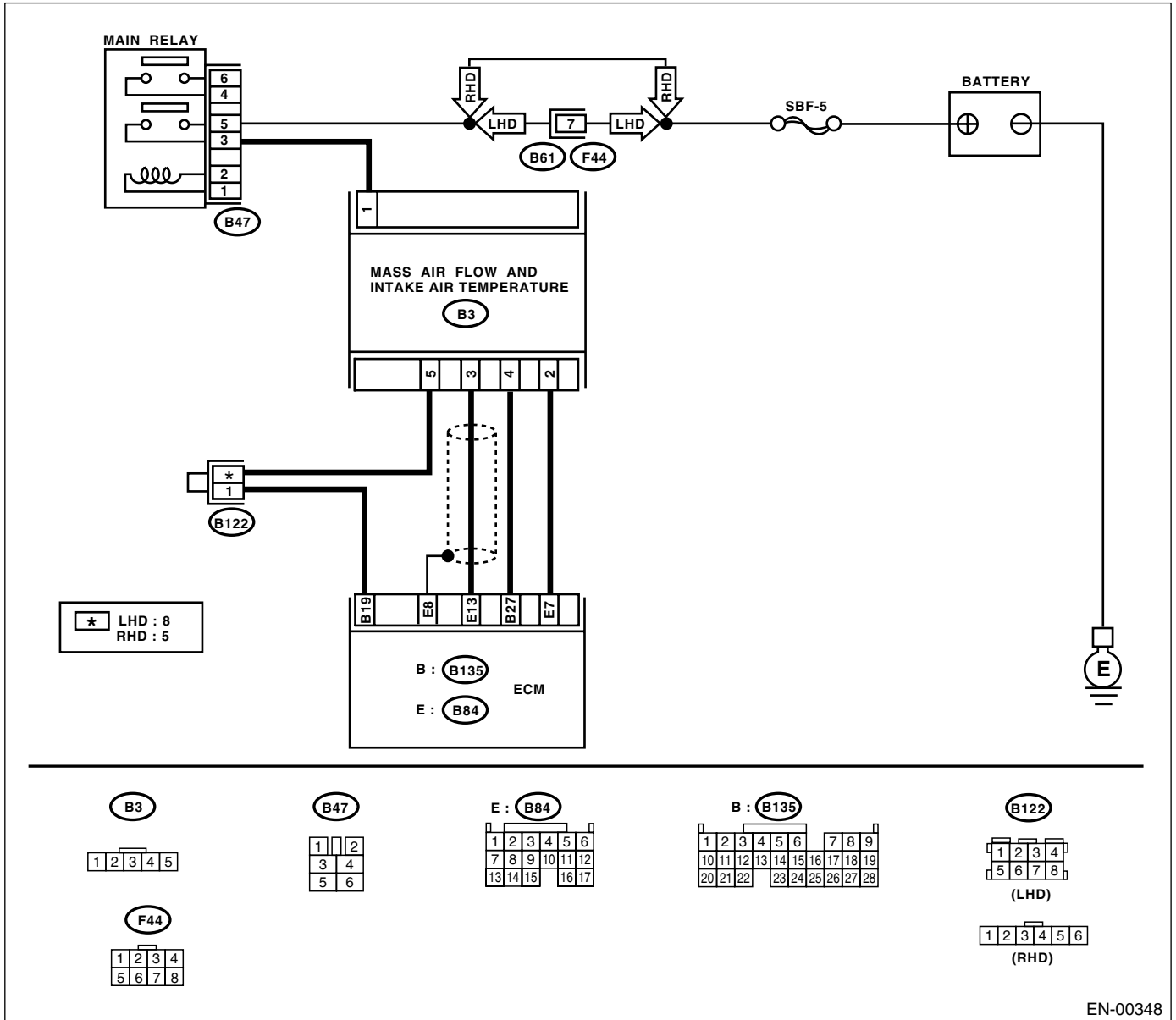
# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	<b>CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.</b> Is any other DTC displayed?	Other DTC is displayed.	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(TURBO)-77, 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(TURBO)-33, Mass Air Flow and Intake Air Temperature Sensor.>

**H: DTC P0102 — MASS OR VOLUME AIR FLOW CIRCUIT LOW INPUT —**

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition
- **TROUBLE SYMPTOM:**
  - Erroneous idling
  - Engine stalls.
  - Poor driving performance
- **WIRING DIAGRAM:**



EN-00348

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>1 CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.</b></p> <p>1) Turn the ignition switch to OFF.                  2) Connect the Subaru Select Monitor or OBD-II general scan tool to data link connector.                  3) Turn the ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON.                  4) Start the engine.                  5) Read the mass air flow sensor voltage using Subaru Select Monitor or OBD-II general scan tool.</p> <p>Is the measured value within specified value?</p> <p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>Subaru Select Monitor</li> </ul> <p>For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE".                  &lt;Ref. to EN(TURBO)-34, Subaru Select Monitor.&gt;</p> <ul style="list-style-type: none"> <li>OBD-II general scan tool</li> </ul> <p>For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</p>	0.2 — 4.7 V	<p>Even if MIL lights up, 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 the harness or connector in the mass air flow sensor.</p> <p><b>NOTE:</b>                  In this case, repair the following:</p> <ul style="list-style-type: none"> <li>Open or ground short circuit in harness between mass air flow sensor and ECM connector</li> <li>Poor contact in mass air flow sensor or ECM connector</li> </ul>	Go to step 2.
<p><b>2 CHECK INPUT SIGNAL FOR ECM.</b></p> <p>Measure the voltage between ECM connector and chassis ground while engine is idling.</p> <p><b>Connector &amp; terminal</b>  <b>(B84) No. 13 (+) — Chassis ground (-):</b></p> <p>Is the measured value less than specified value?</p>	0.2 V	Go to step 4.	Go to step 3.
<p><b>3 CHECK INPUT SIGNAL FOR ECM (USING SUBARU SELECT MONITOR).</b></p> <p>Measure the voltage between ECM connector and chassis ground while engine is idling. Shake the ECM harness and connector, while monitoring value of Subaru Select Monitor.</p> <p>Is the voltage change more than specified value?</p>	0.2 V	Repair the poor contact in ECM connector.	<p>Contact with your Subaru distributor service.</p> <p><b>NOTE:</b>                  Inspection by DTM is required, because probable cause is deterioration of multiple parts.</p>
<p><b>4 CHECK POWER SUPPLY TO MASS AIR FLOW SENSOR.</b></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 the voltage between mass air flow sensor connector and chassis ground.</p> <p><b>Connector &amp; terminal</b>  <b>(B3) No. 1 (+) — Chassis ground (-):</b></p> <p>Is the measured value more than specified value?</p>	5 V	Go to step 5.	Repair the open circuit between mass air flow sensor and main relay.

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>5</b></p> <p><b>CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW SENSOR CONNECTOR.</b>                      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.</p> <p><b>Connector &amp; terminal</b>  <b>(B84) No. 13 — (B3) No. 3:</b>  <b>(B84) No. 7 — (B3) No. 2:</b>  <b>(B135) No. 19 — (B3) No. 5:</b></p> <p>Is the measured value less than specified value?</p>	<p>1 Ω</p>	<p>Go to step 6.</p>	<p>Repair the open circuit between ECM and mass air flow sensor connector.</p>
<p><b>6</b></p> <p><b>CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW SENSOR CONNECTOR</b>                      Measure the resistance of harness between ECM and chassis ground.</p> <p><b>Connector &amp; terminal</b>  <b>(B84) No. 13 — Chassis ground:</b>  <b>(B84) No. 7 — Chassis ground:</b>  <b>(B135) No. 19 — Chassis ground:</b></p> <p>Is the measured value more than specified value?</p>	<p>1 MΩ</p>	<p>Go to step 7.</p>	<p>Repair the ground short circuit between ECM and mass air flow sensor connector.</p>
<p><b>7</b></p> <p><b>CHECK POOR CONTACT</b>                      Check poor contact in mass air flow sensor connector.                      Is there poor contact in mass air flow sensor connector?</p>	<p>Poor contact occurs.</p>	<p>Repair the poor contact in mass air flow sensor connector.</p>	<p>Replace the mass air flow and intake air temperature sensor. &lt;Ref. to FU(TURBO)-33, Mass Air Flow and Intake Air Temperature Sensor.&gt;</p>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

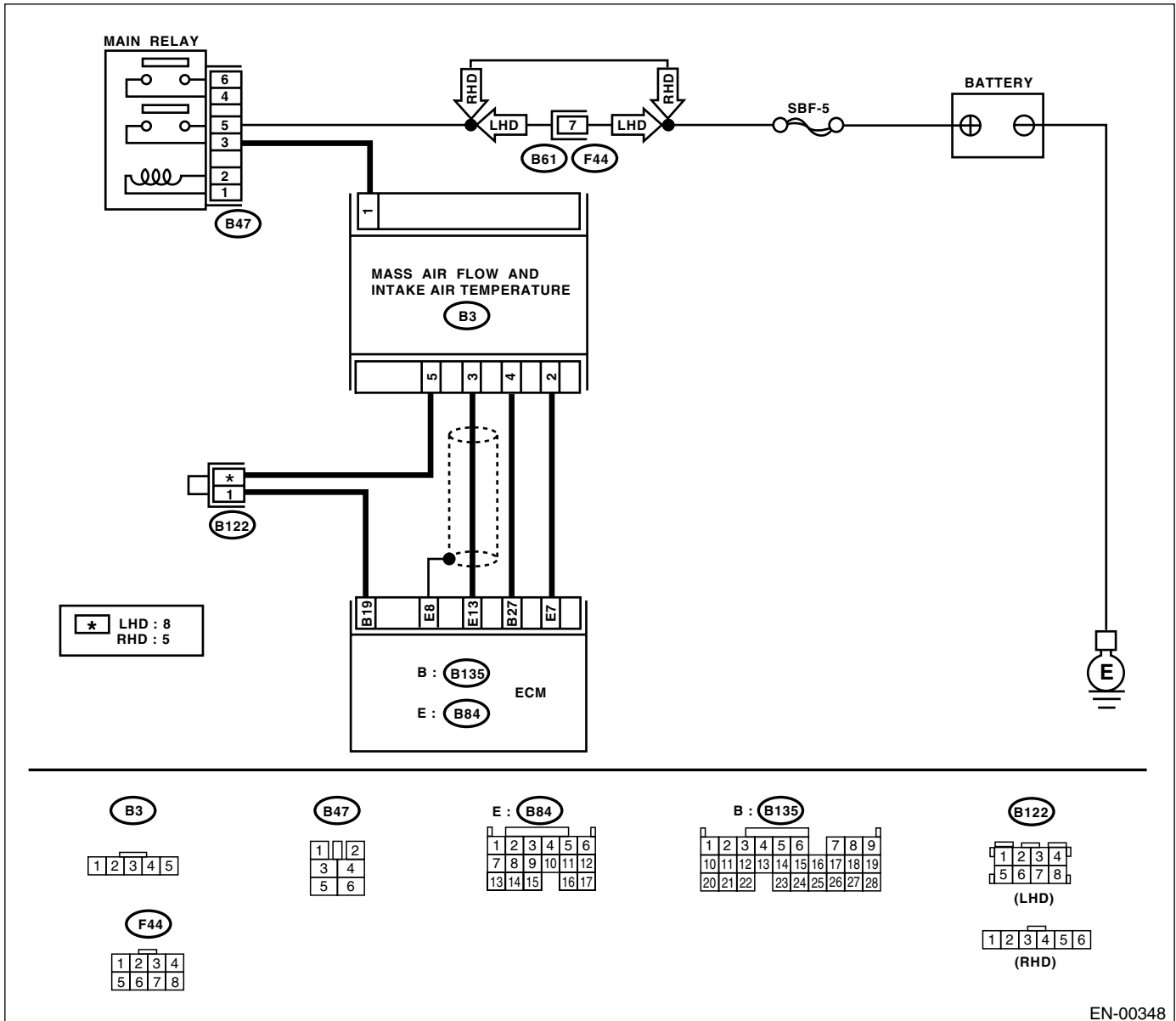
## I: DTC P0103 — MASS OR VOLUME AIR FLOW CIRCUIT HIGH INPUT —

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

### • WIRING DIAGRAM:



EN-00348

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>1 CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.</b></p> <p>1) Turn the ignition switch to OFF.                      2) Connect the Subaru Select Monitor or OBD-II general scan tool to data link connector.                      3) Turn the ignition switch to ON and Subaru Select Monitor or OBD-II general scan tool switch to ON.                      4) Start the engine.                      5) Read the mass air flow sensor voltage using Subaru Select Monitor or OBD-II general scan tool.</p> <p>Is the measured value within specified value?</p> <p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>• Subaru Select Monitor</li> </ul> <p>For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE".                      &lt;Ref. to EN(TURBO)-34, Subaru Select Monitor.&gt;</p> <ul style="list-style-type: none"> <li>• OBD-II general scan tool</li> </ul> <p>For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</p>	<p>0.2 — 4.7 V</p>	<p>Even if MIL lights up, the circuit has returned to a normal condition at this time.</p>	<p>Go to step 2.</p>
<p><b>2 CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW SENSOR CONNECTOR.</b></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 the voltage between mass air flow sensor connector and chassis ground.</p> <p><b>Connector &amp; terminal</b>  <b>(B3) No. 3 (+) — Chassis ground (-):</b></p> <p>Is the measured value more than specified value?</p>	<p>5 V</p>	<p>Repair the battery short of harness between mass air flow sensor connector and ECM connector.</p>	<p>Go to step 3.</p>
<p><b>3 CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW SENSOR CONNECTOR.</b></p> <p>1) Turn the ignition switch to OFF.                      2) Disconnect the connector from ECM.                      3) Measure the resistance between ECM connector and mass air flow sensor connector.</p> <p><b>Connector &amp; terminal</b>  <b>(B3) No. 2 — (B136) No. 7:</b></p> <p>Is the measured value less than specified value?</p>	<p>1 Ω</p>	<p>Replace the mass air flow sensor. &lt;Ref. to FU(TURBO)-33, Mass Air Flow and Intake Air Temperature Sensor.&gt;</p>	<p>Repair the open harness between mass air flow sensor connector and ECM connector.</p>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

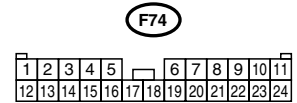
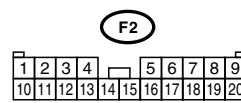
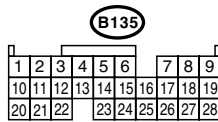
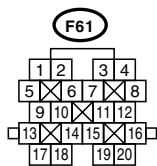
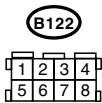
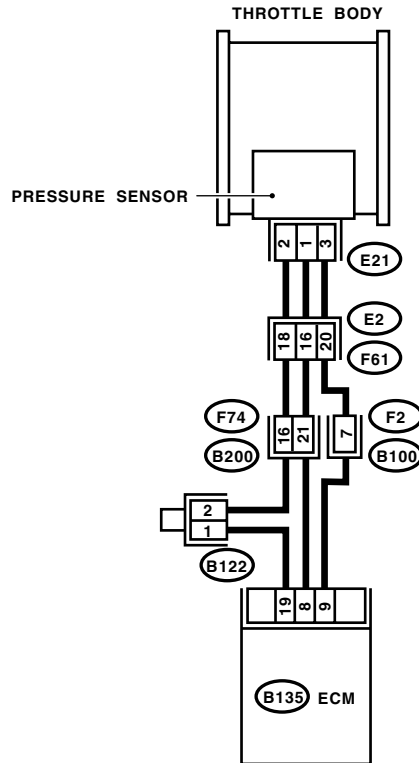
## J: DTC P0107 — MANIFOLD ABSOLUTE PRESSURE/BAROMETRIC PRESSURE CIRCUIT LOW INPUT —

- DTC DETECTING CONDITION:
  - Immediately at fault recognition

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

- WIRING DIAGRAM:
- LHD model

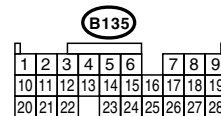
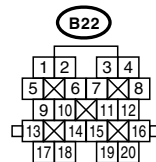
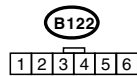
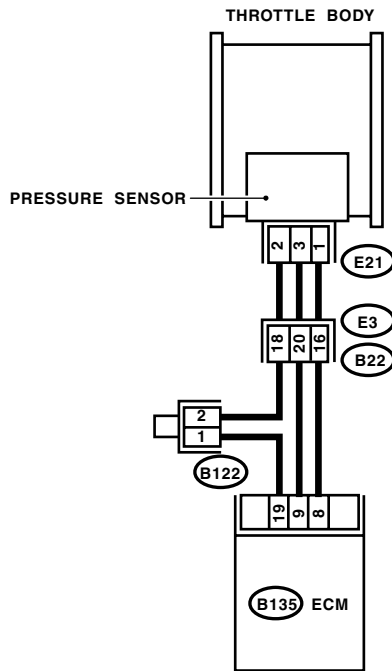


EN-00349

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

• RHD model



EN-00350

Step	Check	Yes	No
<p><b>1</b></p> <p><b>CHECK INPUT SIGNAL FOR ECM.</b>                      Measure the voltage between ECM connector and chassis ground.  <b>Connector &amp; terminal</b>  <b>(B135) No. 9 (+) — Chassis ground (-):</b>                      Is the measured value more than specified value?</p>	4.5 V	Go to step 3.	Go to step 2.
<p><b>2</b></p> <p><b>CHECK INPUT SIGNAL FOR ECM.</b>                      Measure the voltage between ECM connector and chassis ground.  <b>Connector &amp; terminal</b>  <b>(B135) No. 9 (+) — Chassis ground (-):</b>                      Shake the ECM harness and connector, while monitoring value of voltage meter.                      Is the voltage change more than specified value?</p>	4.5 V	Repair the poor contact in ECM connector.	Contact with your Subaru distributor service.  NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>3</b> <b>CHECK INPUT SIGNAL FOR ECM.</b> Measure the voltage between ECM and chassis ground. <i><b>Connector &amp; terminal</b></i> <i><b>(B135) No. 8 (+) — Chassis ground (-):</b></i> Is the measured value less than specified value?	0.7 V	Go to step 4.	Contact with your Subaru distributor service.  NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.
<b>4</b> <b>CHECK HARNESS BETWEEN ECM AND PRESSURE SENSOR CONNECTOR.</b> 1) Turn the ignition switch to OFF. 2) Disconnect the connector from pressure sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between pressure sensor connector and engine ground. <i><b>Connector &amp; terminal</b></i> <i><b>(E21) No. 3 (+) — Engine ground (-):</b></i> Is the measured value more than specified value?	4.5 V	Go to step 5.	Repair the open circuit in harness between ECM and pressure sensor connector.
<b>5</b> <b>CHECK HARNESS BETWEEN ECM AND PRESSURE SENSOR CONNECTOR.</b> 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM and intake manifold pressure sensor connector. <i><b>Connector &amp; terminal</b></i> <i><b>(B135) No. 19 — (E21) No. 2:</b></i> Is the measured value less than specified value?	1 $\Omega$	Go to step 6.	Repair the open circuit in harness between ECM and pressure sensor connector.
<b>6</b> <b>CHECK HARNESS BETWEEN ECM AND PRESSURE SENSOR CONNECTOR.</b> Measure the resistance of harness between intake manifold pressure sensor connector and engine ground. <i><b>Connector &amp; terminal</b></i> <i><b>(E21) No. 1 — Engine ground:</b></i> Is the measured value more than specified value?	1 M $\Omega$	Go to step 7.	Repair the ground short circuit in harness between ECM and pressure sensor connector.
<b>7</b> <b>CHECK POOR CONTACT.</b> Check poor contact in pressure sensor connector. Is there poor contact in pressure sensor connector?	Poor contact occurs.	Repair the poor contact in pressure sensor connector.	Replace the pressure sensor. <Ref. to FU(TURBO)-34, Pressure Sensor.>

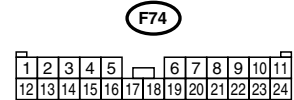
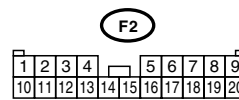
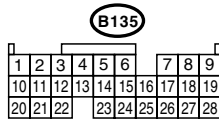
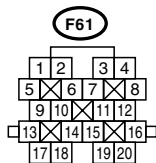
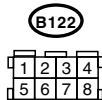
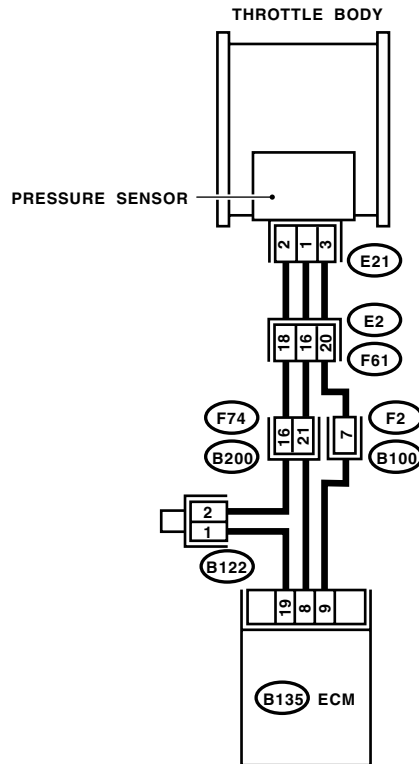
**K: DTC P0108 — MANIFOLD ABSOLUTE PRESSURE/BAROMETRIC PRESSURE CIRCUIT HIGH INPUT —**

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition

**CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

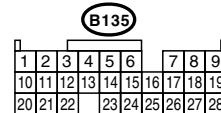
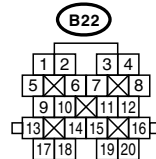
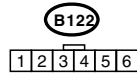
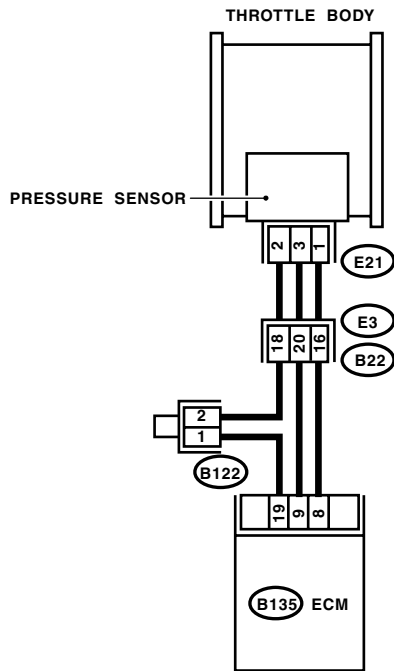
- **WIRING DIAGRAM:**
- LHD model



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

### • RHD model



EN-00350

Step	Check	Yes	No
<b>1</b> <b>CHECK INPUT SIGNAL FOR ECM.</b> Measure the voltage between ECM connector and chassis ground. <b>Connector &amp; terminal</b> <b>(B135) No. 9 (+) — Chassis ground (-):</b> Is the measured value more than specified value?	4.5 V	Go to step 3.	Go to step 2.
<b>2</b> <b>CHECK INPUT SIGNAL FOR ECM.</b> Measure the voltage between ECM connector and chassis ground. <b>Connector &amp; terminal</b> <b>(B135) No. 9 (+) — Chassis ground (-):</b> Shake the ECM harness and connector, while monitoring value of voltage meter. Is the voltage change more than specified value?	4.5 V	Repair the poor contact in ECM connector.	Contact with your Subaru distributor service.  NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>3 CHECK INPUT SIGNAL FOR ECM.</b> Measure the voltage between ECM connector and chassis ground. <i><b>Connector &amp; terminal</b></i> <i><b>(B135) No. 8 (+) — Chassis ground (-):</b></i> Is the measured value more than specified value?	4.5 V	Go to step 4.	Contact with your Subaru distributor service.  NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.
<b>4 CHECK HARNESS BETWEEN ECM AND PRESSURE SENSOR CONNECTOR.</b> 1) Turn the ignition switch to OFF. 2) Disconnect the connector from pressure sensor. 3) Turn the ignition switch to ON. 4) Measure the voltage between pressure sensor connector and engine ground. <i><b>Connector &amp; terminal</b></i> <i><b>(E21) No. 3 (+) — Engine ground (-):</b></i> Is the measured value more than specified value?	4.5 V	Go to step 5.	Repair the open circuit in harness between ECM and pressure sensor connector.
<b>5 CHECK HARNESS BETWEEN ECM AND PRESSURE SENSOR CONNECTOR.</b> 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM and pressure sensor connector. <i><b>Connector &amp; terminal</b></i> <i><b>(B135) No. 8 — (E21) No. 1:</b></i> Is the measured value less than specified value?	1 $\Omega$	Go to step 6.	Repair the open circuit in harness between ECM and pressure sensor connector.
<b>6 CHECK HARNESS BETWEEN ECM AND INTAKE MANIFOLD PRESSURE SENSOR CONNECTOR.</b> Measure the resistance of harness between ECM and pressure sensor connector. <i><b>Connector &amp; terminal</b></i> <i><b>(B135) No. 19 — (E21) No. 2:</b></i> Is the measured value less than specified value?	1 $\Omega$	Go to step 7.	Repair the open circuit in harness between ECM and pressure sensor connector.
<b>7 CHECK POOR CONTACT.</b> Check poor contact in pressure sensor connector. Is there poor contact in pressure sensor connector?	Poor contact occurs.	Repair the poor contact in pressure sensor connector.	Replace the intake manifold pressure sensor. <Ref. to FU(TURBO)-34, Pressure Sensor.>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

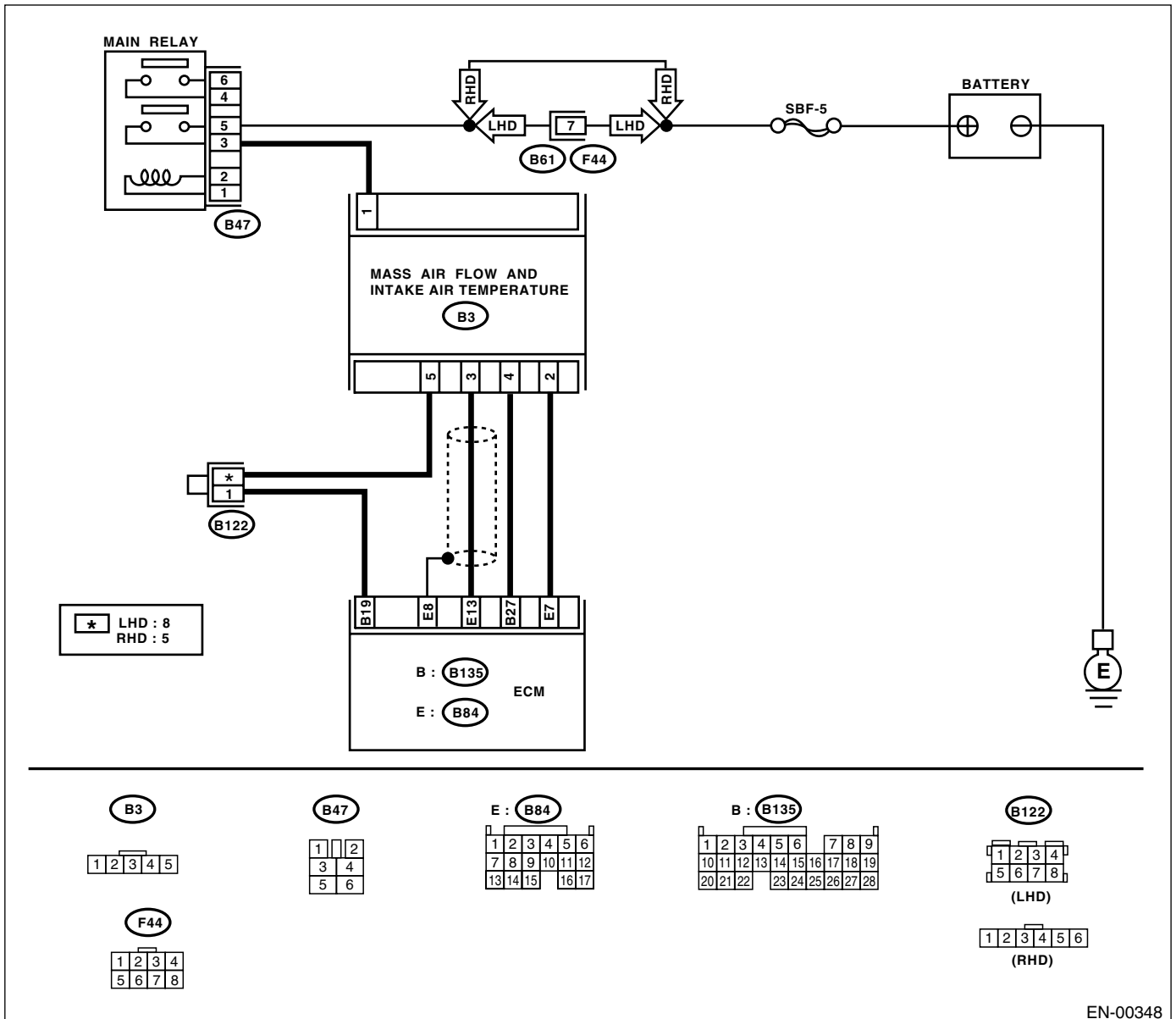
## L: DTC P0112 — INTAKE AIR TEMPERATURE CIRCUIT LOW INPUT —

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

### • WIRING DIAGRAM:



EN-00348

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>1</b></p> <p><b>CHECK CURRENT DATA.</b></p> <p>1)Start the engine. 2)Read the data of intake air temperature sensor signal using Subaru Select Monitor or the OBD-II general scan tool. Is the measured value more than specified value?</p> <p>NOTE: •Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". &lt;Ref. to EN(TURBO)-34, Subaru Select Monitor.&gt; •OBD-II general scan tool For detailed operation procedure, refer to the OBD-II General Scan Tool Instruction Manual.</p>	55°C (131°F)	Go to step 2.	<p>Repair the poor contact.</p> <p>NOTE: In this case, repair the following:</p> <ul style="list-style-type: none"> <li>• Poor contact mass air flow and intake air temperature sensor</li> <li>• Poor contact in ECM</li> <li>• Poor contact in joint connector</li> </ul>
<p><b>2</b></p> <p><b>CHECK HARNESS BETWEEN MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR.</b></p> <p>1)Turn the ignition switch to OFF. 2)Disconnect the connector from mass air flow and intake air temperature sensor. 3)Turn the ignition switch to ON. 4)Read the data of intake air temperature sensor signal using Subaru Select Monitor or the OBD-II general scan tool. Is the measured value less than specified value?</p> <p>NOTE: •Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". &lt;Ref. to EN(TURBO)-34, Subaru Select Monitor.&gt; •OBD-II general scan tool For detailed operation procedure, refer to the OBD-II General Scan Tool Instruction Manual.</p>	-36°C (-97°F)	Replace the mass air flow and intake air temperature sensor. <Ref. to FU(TURBO)-33, Mass Air Flow and Intake Air Temperature Sensor.>	<p>Repair the 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 (DIAGNOSTICS)

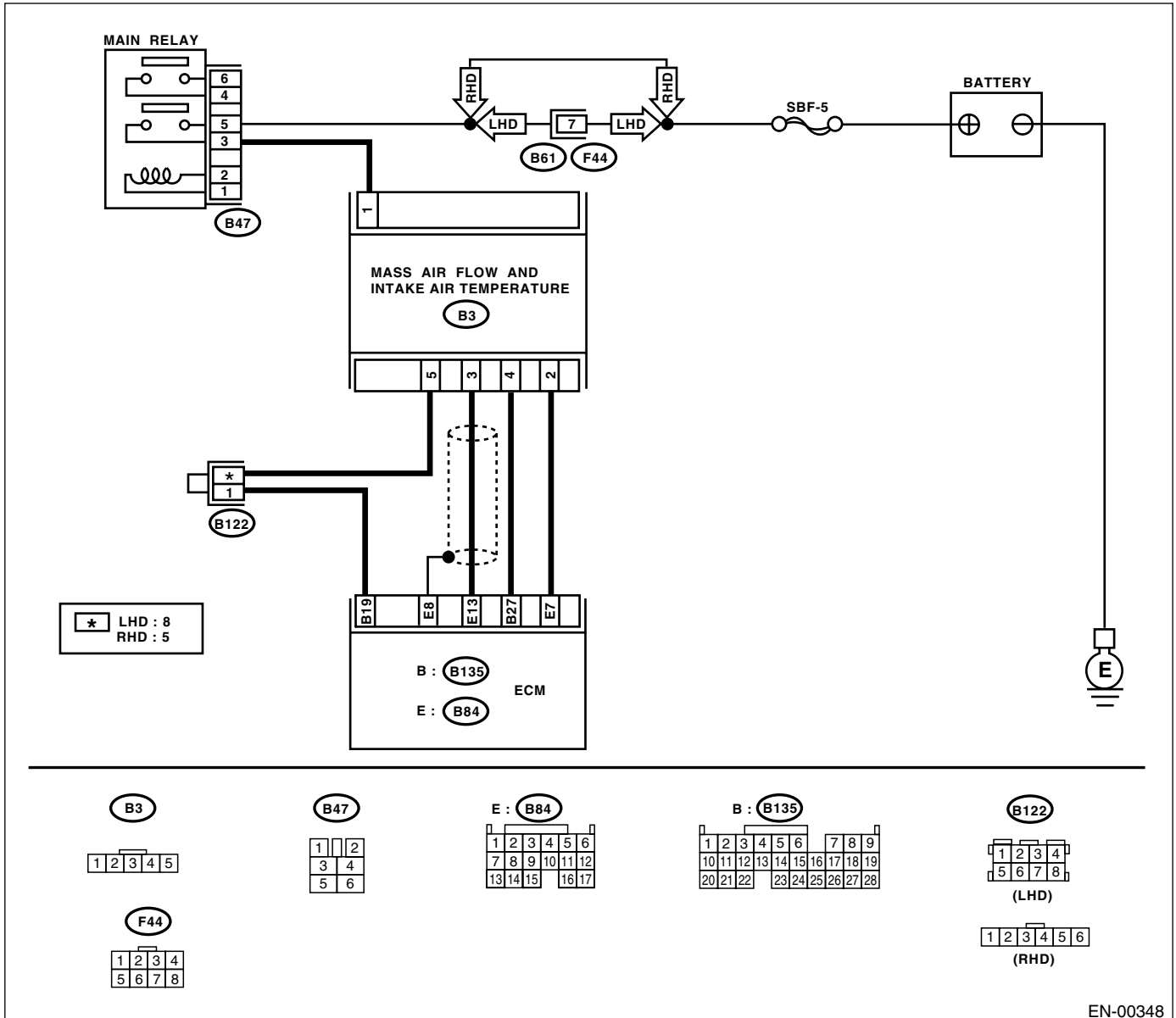
## M: DTC P0113 — INTAKE AIR TEMPERATURE CIRCUIT HIGH INPUT —

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

### • WIRING DIAGRAM:



EN-00348

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>1</b></p> <p><b>CHECK CURRENT DATA.</b>                      1)Start the engine.                      2)Read the data of intake air temperature sensor signal using Subaru Select Monitor or the OBD-II general scan tool.                      Is the measured value less than specified value?                      NOTE:                      •Subaru Select Monitor                      For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE".                      &lt;Ref. to EN(TURBO)-34, Subaru Select Monitor.&gt;                      •OBD-II general scan tool                      For detailed operation procedure, refer to the OBD-II General Scan Tool Instruction Manual.</p>	<p>-36°C (-97°F)</p>	<p>Go to step 2.</p>	<p>Repair the poor contact.                      NOTE:                      In this case, repair the following:</p> <ul style="list-style-type: none"> <li>• Poor contact in mass air flow and intake air temperature sensor</li> <li>• Poor contact in ECM</li> <li>• Poor contact in joint connector</li> </ul>
<p><b>2</b></p> <p><b>CHECK HARNESS BETWEEN MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR.</b>                      1)Turn the ignition switch to OFF.                      2)Disconnect the connector from mass air flow and intake air temperature sensor.                      3)Measure the voltage between mass air flow and intake air temperature sensor connector and engine ground.  <i>Connector &amp; terminal</i>  <i>(B3) No. 4 (+) — Engine ground (-):</i>                      Is the measured value more than specified value?</p>	<p>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><b>3</b></p> <p><b>CHECK HARNESS BETWEEN MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR.</b>                      1)Turn the ignition switch to ON.                      2)Measure the voltage between mass air flow and intake air temperature sensor connector and engine ground.  <i>Connector &amp; terminal</i>  <i>(B3) No. 4 (+) — Engine ground (-):</i>                      Is the measured value more than specified value?</p>	<p>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><b>4</b></p> <p><b>CHECK HARNESS BETWEEN MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR.</b>                      Measure the voltage between mass air flow and intake air temperature sensor and pressure sensor connector and engine ground.  <i>Connector &amp; terminal</i>  <i>(B3) No. 4 (+) — Engine ground (-):</i>                      Is the measured value more than specified value?</p>	<p>4 V</p>	<p>Go to step 5.</p>	<p>Repair the harness and connector.                      NOTE:                      In this case, repair the following:</p> <ul style="list-style-type: none"> <li>• Open circuit in harness between mass air flow and intake air temperature sensor and ECM connector</li> <li>• Poor contact in mass air flow and intake air temperature sensor</li> <li>• Poor contact in ECM</li> <li>• Poor contact in joint connector</li> </ul>



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>5</p> <p><b>CHECK HARNESS BETWEEN MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR AND ECM CONNECTOR.</b></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><b>Connector &amp; terminal</b></p> <p><b>(B3) No. 5 — Engine ground:</b></p> <p>Is the measured value less than specified value?</p>	<p>5 Ω</p>	<p>Replace the mass air flow and intake air temperature sensor. &lt;Ref. to FU(TURBO)-33, Mass Air Flow and Intake Air Temperature Sensor.&gt;</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"><li>• Open circuit in harness between mass air flow and intake air temperature sensor and ECM connector</li><li>• Poor contact in mass air flow and intake air temperature sensor</li><li>• Poor contact in ECM</li><li>• Poor contact in joint connector</li></ul>

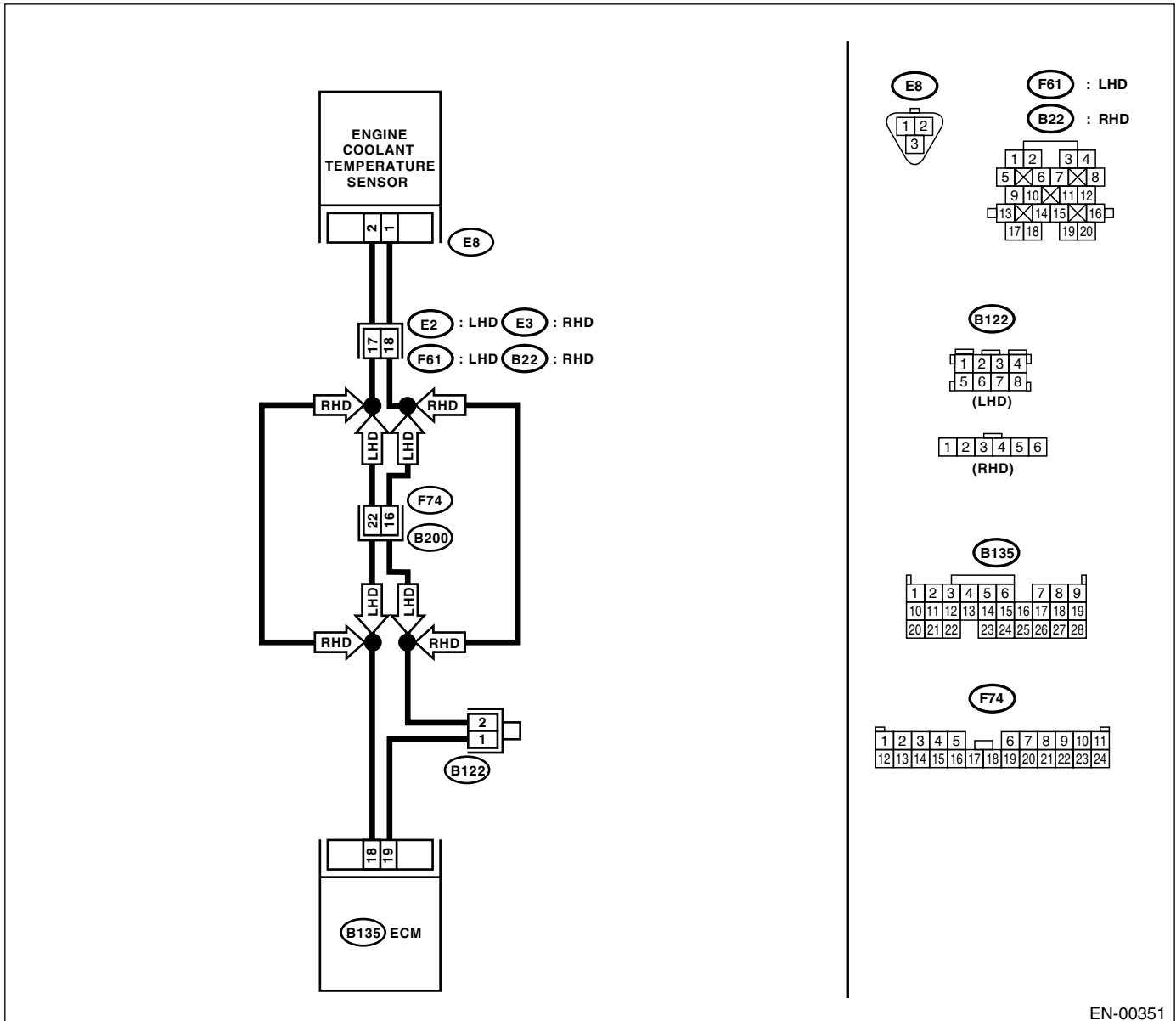
## N: DTC P0117 — ENGINE COOLANT TEMPERATURE CIRCUIT LOW INPUT —

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

• **WIRING DIAGRAM:**



EN-00351

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>1</b></p> <p><b>CHECK CURRENT DATA.</b></p> <p>1)Start the engine. 2)Read the data of engine coolant temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool. Is the measured value more than specified value?</p> <p>NOTE: •Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". &lt;Ref. to EN(TURBO)-34, Subaru Select Monitor.&gt; •OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</p>	<p>120°C (248°F)</p>	<p>Go to step 2.</p>	<p>Repair the poor contact.</p> <p>NOTE: In this case, repair the following:</p> <ul style="list-style-type: none"> <li>• Poor contact in engine coolant temperature sensor</li> <li>• Poor contact in ECM</li> <li>• Poor contact in coupling connector</li> <li>• Poor contact in joint connector</li> </ul>
<p><b>2</b></p> <p><b>CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.</b></p> <p>1)Turn the ignition switch to OFF. 2)Disconnect the connector from engine coolant temperature sensor. 3)Turn the ignition switch to ON. 4)Read the data of engine coolant temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool. Is the measured value less than specified value?</p> <p>NOTE: •Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". &lt;Ref. to EN(TURBO)-34, Subaru Select Monitor.&gt; •OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</p>	<p>-40°C (-40°F)</p>	<p>Replace the engine coolant temperature sensor. &lt;Ref. to FU(TURBO)-28, Engine Coolant Temperature Sensor.&gt;</p>	<p>Repair the ground short circuit in harness between engine coolant temperature sensor and ECM connector.</p>

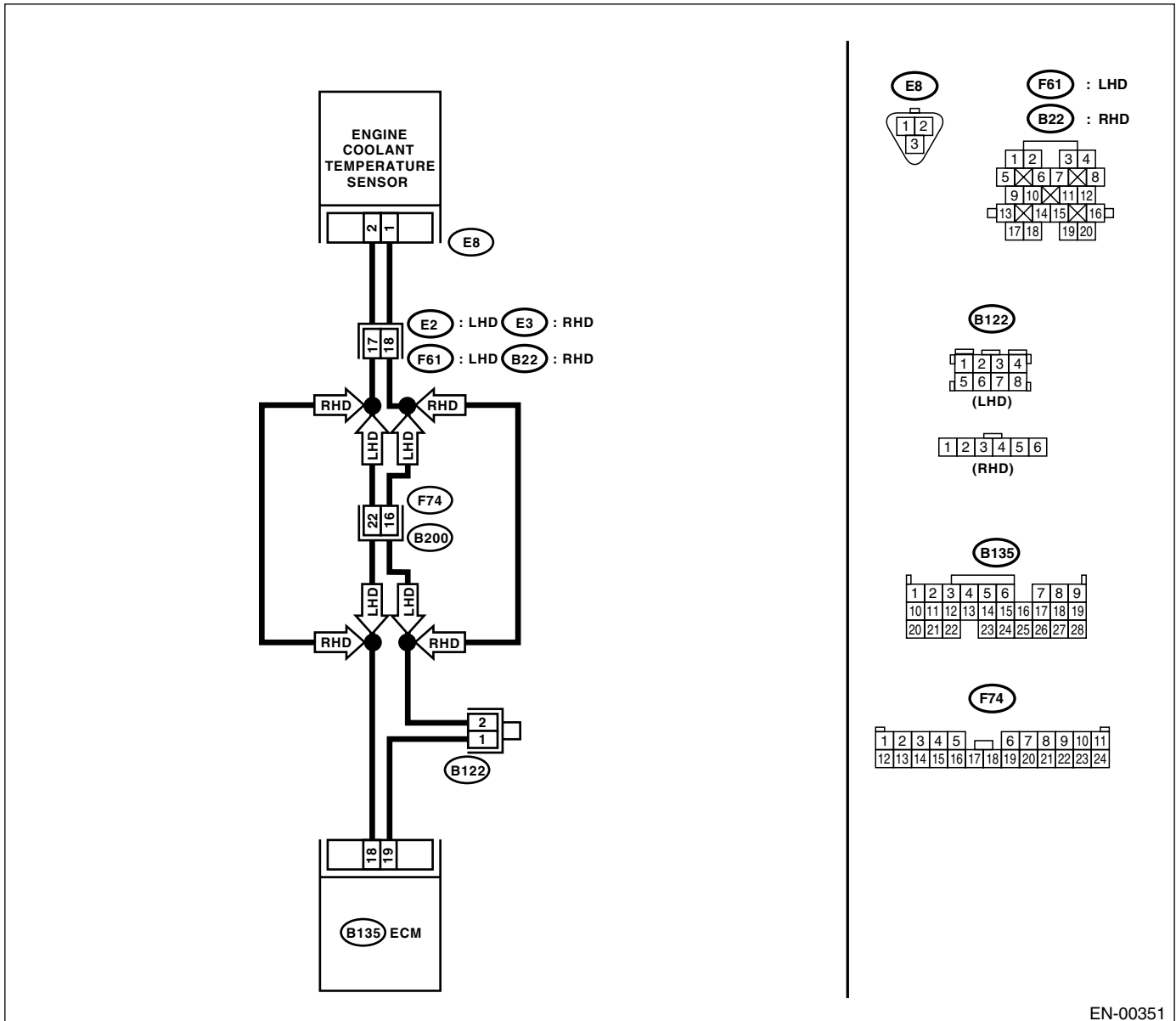
**O: DTC P0118 — ENGINE COOLANT TEMPERATURE CIRCUIT HIGH INPUT —**

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

• **WIRING DIAGRAM:**



EN-00351

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>1</b> <b>CHECK CURRENT DATA.</b> 1)Start the engine. 2)Read the data of engine coolant temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool. Is the measured value less than specified value? NOTE: •Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <Ref. to EN(TURBO)-34, Subaru Select Monitor.> •OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.	-40°C (-40°F)	Go to step 2.	Repair the poor contact. NOTE: In this case, repair the following: • Poor contact in engine coolant temperature sensor • Poor contact in ECM • Poor contact in coupling connector • Poor contact in joint connector
<b>2</b> <b>CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.</b> 1)Turn the ignition switch to OFF. 2)Disconnect the connector from engine coolant temperature sensor. 3)Measure the voltage between engine coolant temperature sensor connector and engine ground. <i>Connector &amp; terminal</i> <i>(E8) No. 2 (+) — Engine ground (-):</i> Is the measured value more than specified value?	10 V	Repair the battery short circuit in harness between ECM and engine coolant temperature sensor connector.	Go to step 3.
<b>3</b> <b>CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.</b> 1)Turn the ignition switch to ON. 2)Measure the voltage between engine coolant temperature sensor connector and engine ground. <i>Connector &amp; terminal</i> <i>(E8) No. 2 (+) — Engine ground (-):</i> Is the measured value more than specified value?	10 V	Repair the battery short circuit in harness between ECM and engine coolant temperature sensor connector.	Go to step 4.

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>4</b></p> <p><b>CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.</b>                      Measure the voltage between engine coolant temperature sensor connector and engine ground.  <i>Connector &amp; terminal</i>  <b>(E8) No. 2 (+) — Engine ground (-):</b>                      Is the measured value more than specified value?</p>	4 V	Go to step 5.	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> <li>• Open circuit in harness between ECM and engine coolant temperature sensor connector</li> <li>• Poor contact in engine coolant temperature sensor connector</li> <li>• Poor contact in ECM connector</li> <li>• Poor contact in coupling connector</li> <li>• Poor contact in joint connector</li> </ul>
<p><b>5</b></p> <p><b>CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.</b>                      1) Turn the ignition switch to OFF.                      2) Measure the resistance of harness between engine coolant temperature sensor connector and engine ground.  <i>Connector &amp; terminal</i>  <b>(E8) No. 1 — Engine ground:</b>                      Is the measured value less than specified value?</p>	5 Ω	Replace the engine coolant temperature sensor. <Ref. to FU(TURBO)-28, Engine Coolant Temperature Sensor.>	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> <li>• Open circuit in harness between ECM and engine coolant temperature sensor connector</li> <li>• Poor contact in engine coolant temperature sensor connector</li> <li>• Poor contact in ECM connector</li> <li>• Poor contact in coupling connector</li> <li>• Poor contact in joint connector</li> </ul>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

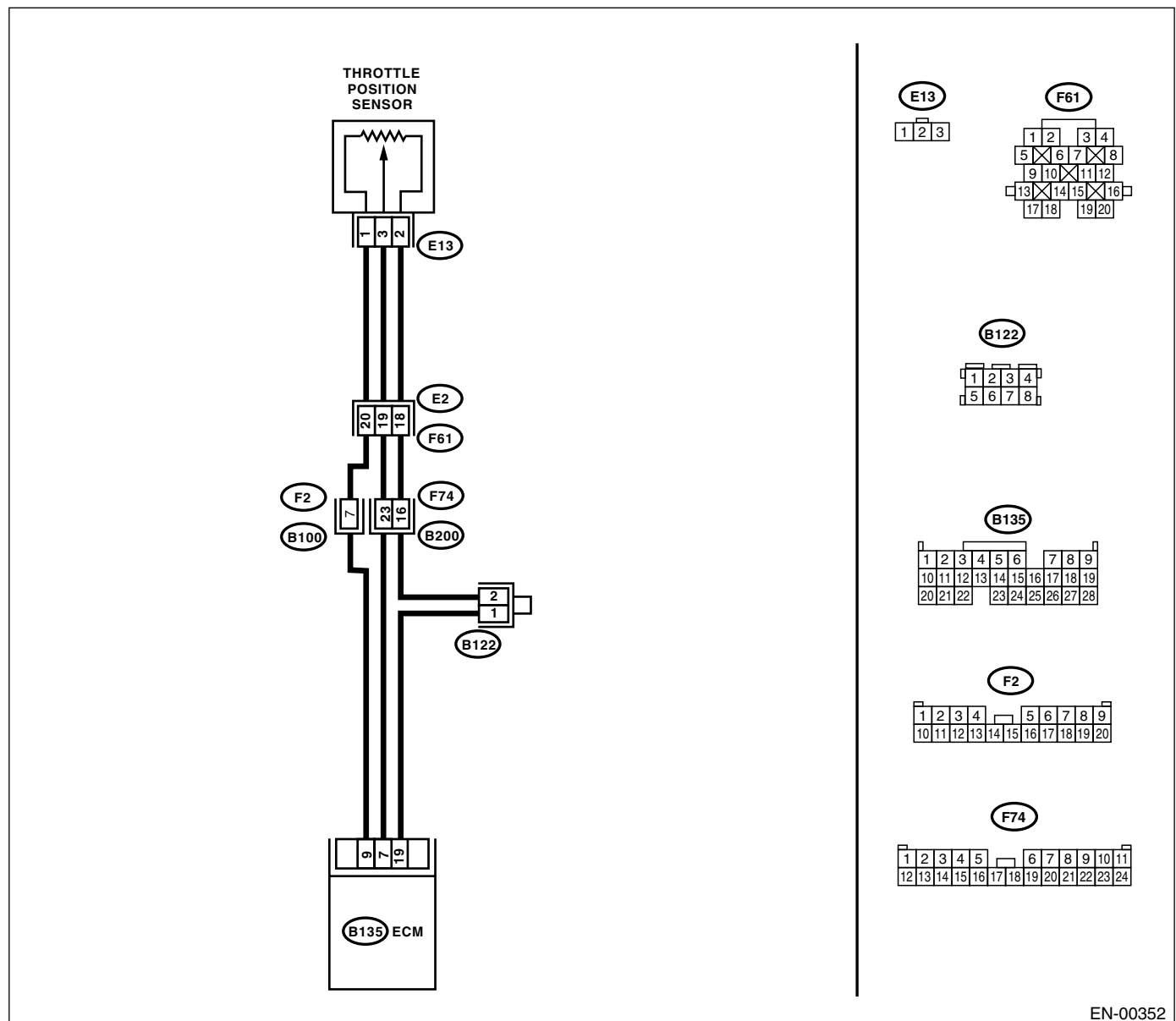
## P: DTC P0121 — THROTTLE/PEDAL POSITION SENSOR/SWITCH “A” CIRCUIT RANGE/PERFORMANCE —

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

- **WIRING DIAGRAM:**
- LHD model

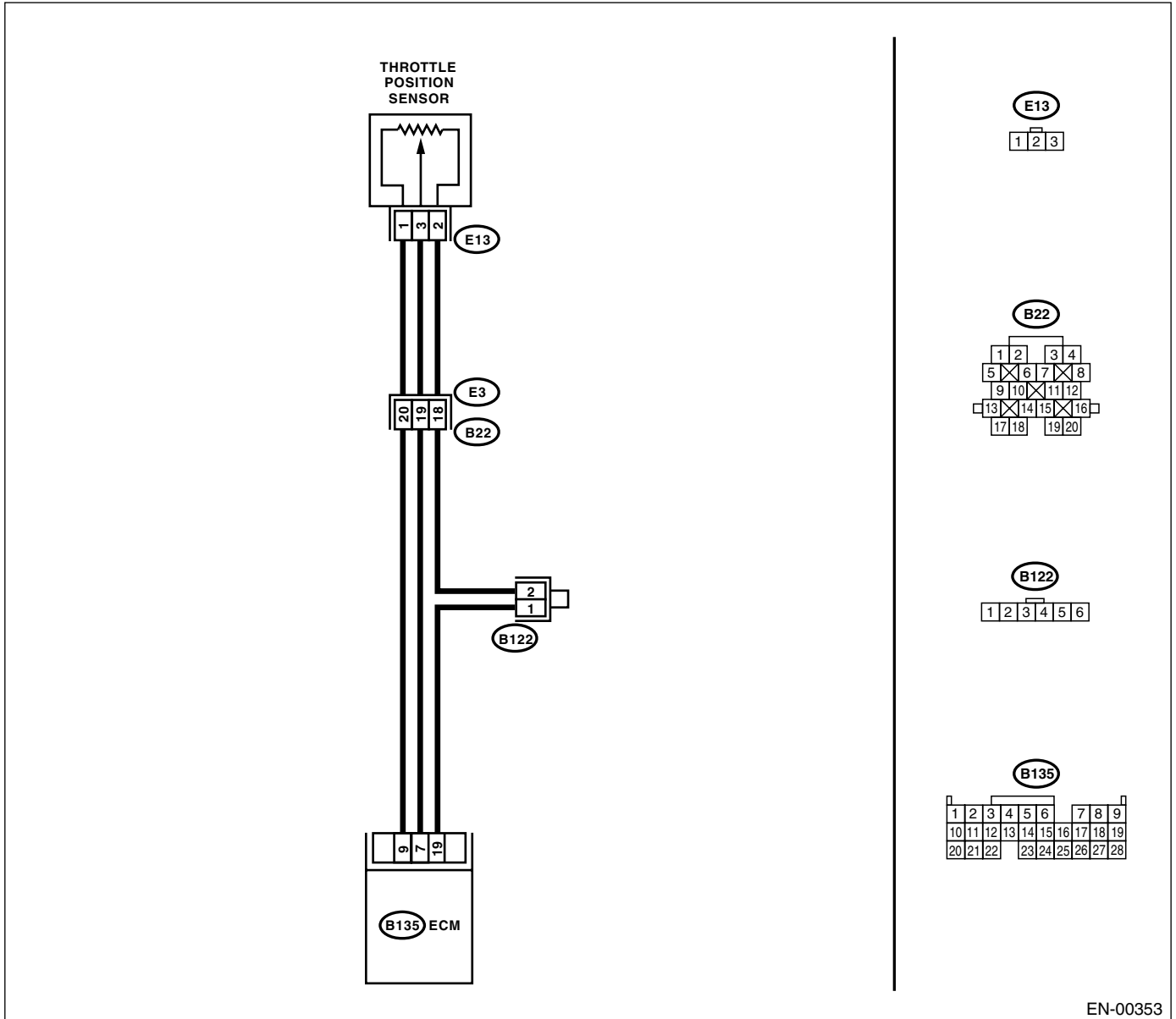


EN-00352

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

- RHD model



EN-00353

Step	Check	Yes	No	
1	<p><b>CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.</b></p> <p>Is any other DTC displayed?</p>	<p>Other DTC is displayed.</p>	<p>Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". &lt;Ref. to EN(TURBO)-77, List of Diagnostic Trouble Code (DTC).&gt;</p> <p>NOTE: In this case, it is not necessary to inspect DTC P0121.</p>	<p>Replace the throttle position sensor. &lt;Ref. to FU(TURBO)-32, Throttle Position Sensor.&gt;</p>



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

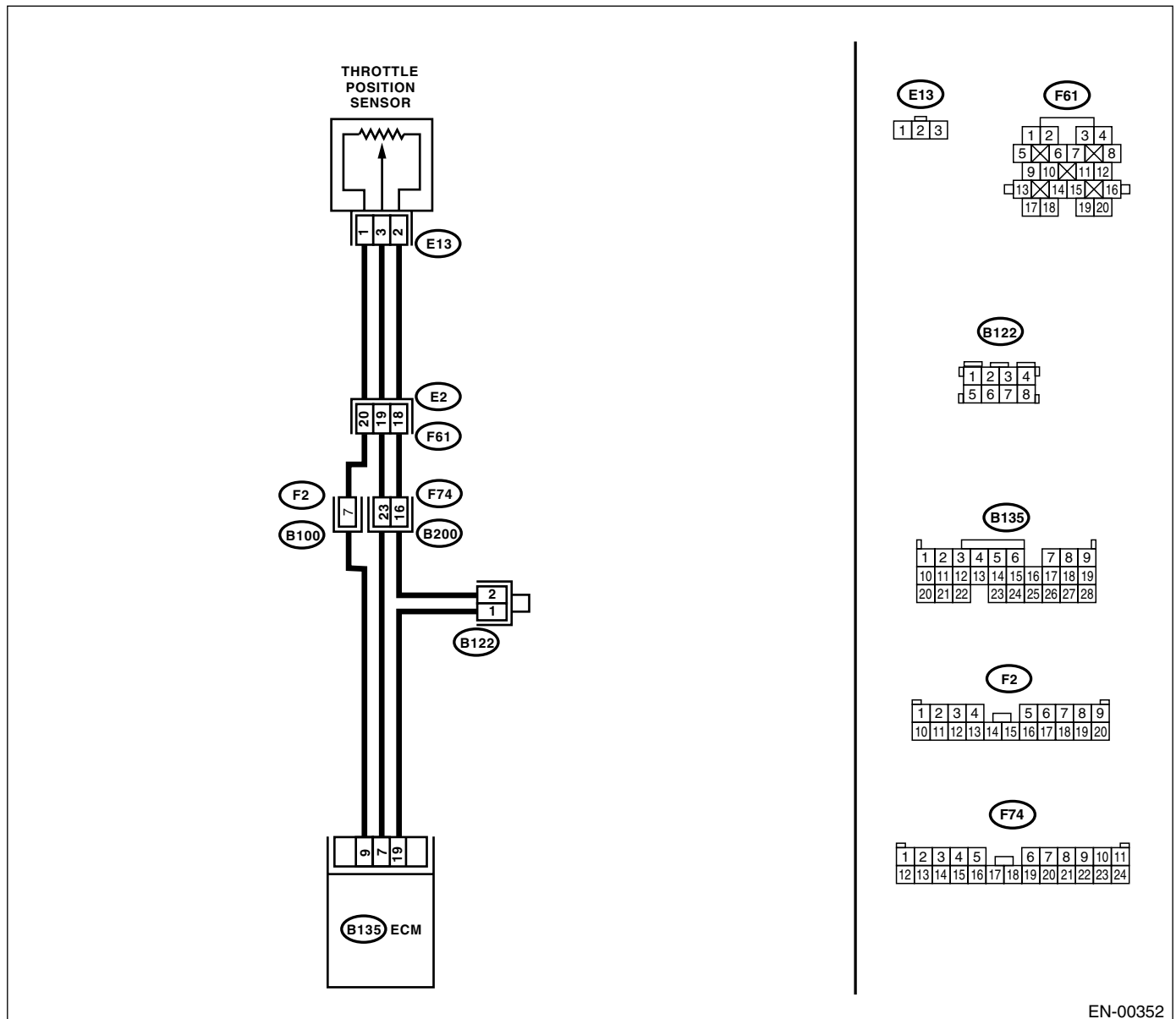
## Q: DTC P0122 — THROTTLE/PEDAL POSITION SENSOR/SWITCH “A” CIRCUIT LOW INPUT —

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

- **WIRING DIAGRAM:**
- LHD model

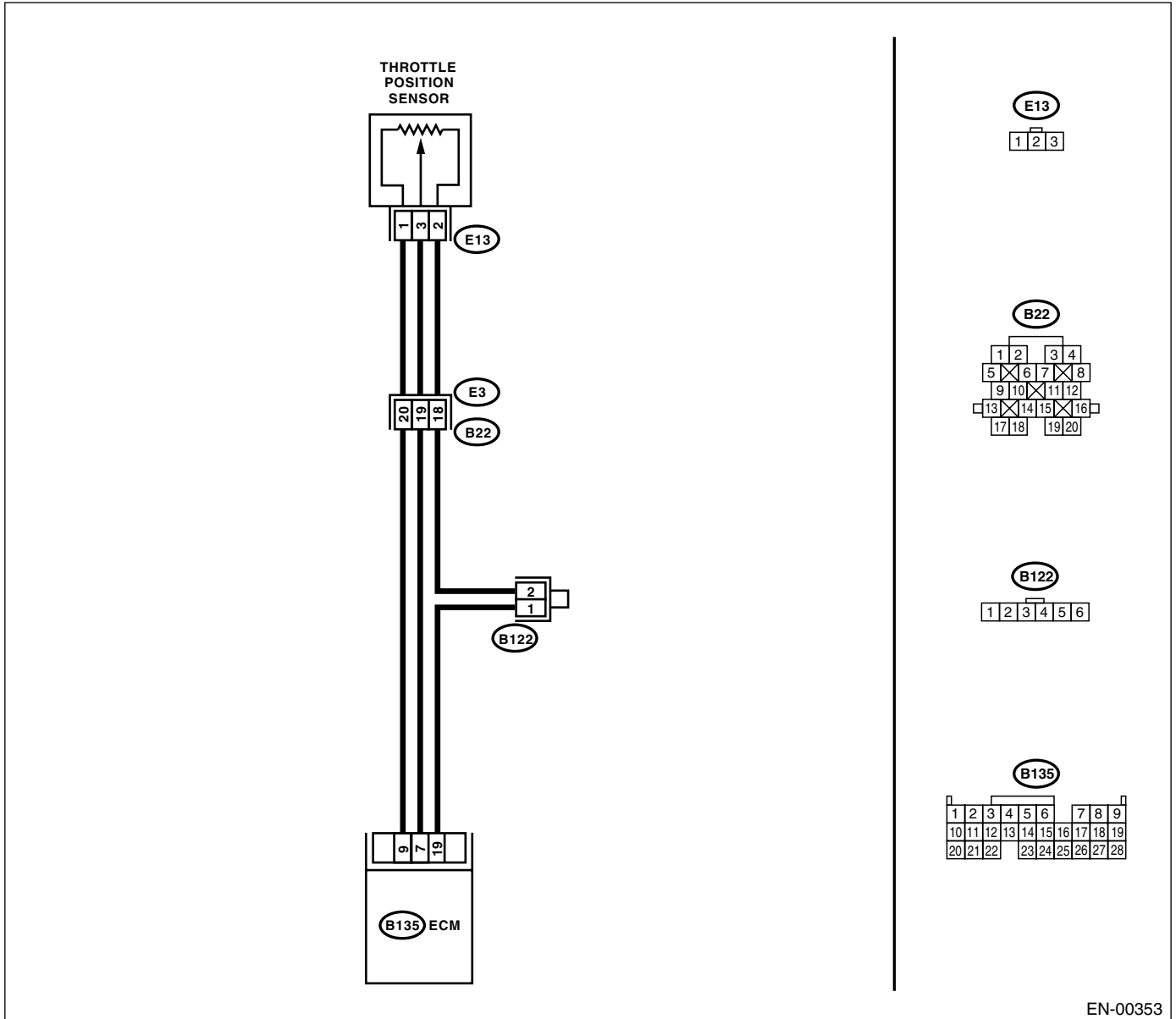


EN-00352

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

- RHD model



EN-00353

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>1</b> <b>CHECK CURRENT DATA.</b> 1)Start the engine. 2)Read the data of throttle position sensor signal using Subaru Select Monitor or OBD-II general scan tool. Is the measured value less than specified value? NOTE: •Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <Ref. to EN(TURBO)-34, Subaru Select Monitor.> •OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.	0.15 V	Go to step 2.	Even if MIL lights up, 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
<b>2</b> <b>CHECK INPUT SIGNAL FOR ECM.</b> Measure the voltage between ECM connector and chassis ground while throttle valve is fully closed. <b>Connector &amp; terminal</b> <b>(B135) No. 9 (+) — Chassis ground (-):</b> Is the measured value more than specified value?	4.5 V	Go to step 4.	Go to step 3.
<b>3</b> <b>CHECK INPUT SIGNAL FOR ECM.</b> Measure the voltage between ECM connector and chassis ground. <b>Connector &amp; terminal</b> <b>(B135) No. 9 (+) — Chassis ground (-):</b> Shake the ECM harness and connector, while monitoring value of voltage meter. Is the voltage change more than specified value?	4.5 V	Repair the poor contact in ECM connector.	Contact with your Subaru distributor service. NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.
<b>4</b> <b>CHECK INPUT SIGNAL FOR ECM.</b> Measure the voltage between ECM connector and chassis ground. <b>Connector &amp; terminal</b> <b>(B135) No. 7 (+) — Chassis ground (-):</b> Is the measured value less than specified value?	0.15 V	Go to step 6.	Go to step 5.
<b>5</b> <b>CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR.)</b> Measure the voltage between ECM connector and chassis ground. Shake the ECM harness and connector, while monitoring value of Subaru Select Monitor. Is the voltage change more than specified value?	0.15 V	Repair the poor contact in ECM connector.	Go to step 6.

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>6</b></p> <p><b>CHECK HARNESS BETWEEN ECM AND THROTTLE POSITION SENSOR CONNECTOR.</b></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><b>Connector &amp; terminal</b>  <b>(E13) No. 1 (+) — Engine ground (-):</b></p> <p>Is the measured value more than specified value?</p>	4.5 V	Go to step 7.	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> <li>• Open circuit in harness between throttle position sensor and ECM connector</li> <li>• Poor contact in throttle position sensor connector</li> <li>• Poor contact in ECM connector</li> <li>• Poor contact in coupling connector</li> <li>• Poor contact in joint connector</li> </ul>
<p><b>7</b></p> <p><b>CHECK HARNESS BETWEEN ECM AND THROTTLE POSITION SENSOR CONNECTOR.</b></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><b>Connector &amp; terminal</b>  <b>(B135) No. 7 — (E13) No. 3:</b></p> <p>Is the measured value less than specified value?</p>	1 Ω	Go to step 8.	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> <li>• Open circuit in harness between throttle position sensor and ECM connector</li> <li>• Poor contact in ECM connector</li> <li>• Poor contact in throttle position sensor connector</li> <li>• Poor contact in coupling connector</li> </ul>
<p><b>8</b></p> <p><b>CHECK HARNESS BETWEEN ECM AND THROTTLE POSITION SENSOR CONNECTOR.</b></p> <p>Measure the resistance of harness between throttle position sensor connector and engine ground.</p> <p><b>Connector &amp; terminal</b>  <b>(E13) No. 3 — Engine ground:</b></p> <p>Is the measured value less than specified value?</p>	10 Ω	Repair the ground short circuit in harness between throttle position sensor and ECM connector.	Go to step 9.
<p><b>9</b></p> <p><b>CHECK POOR CONTACT.</b></p> <p>Check poor contact in throttle position sensor connector.                      Is there poor contact in throttle position sensor connector?</p>	Poor contact occurs.	Repair the poor contact in throttle position sensor connector.	Replace the throttle position sensor. <Ref. to FU(TURBO)-32, Throttle Position Sensor.>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

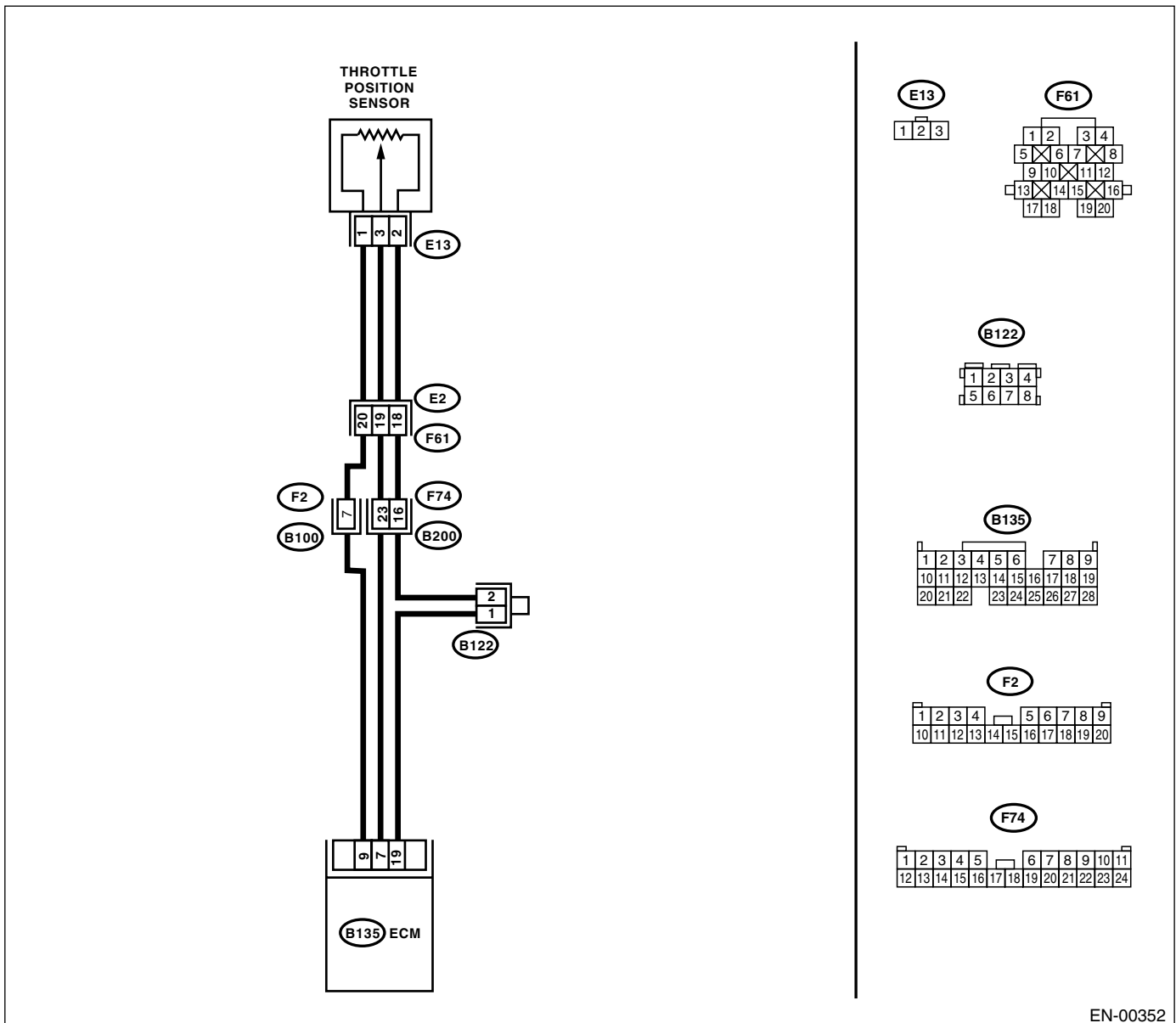
## R: DTC P0123 — THROTTLE/PEDAL POSITION SENSOR/SWITCH “A” CIRCUIT HIGH INPUT —

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

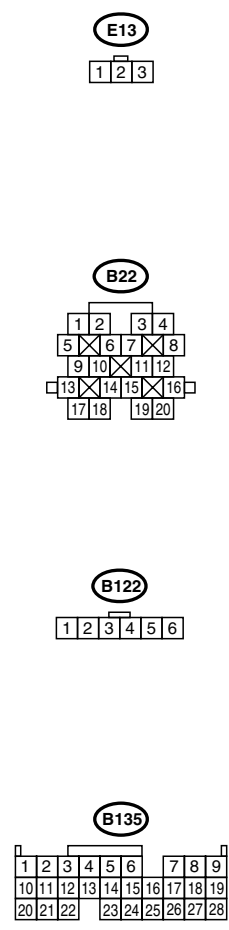
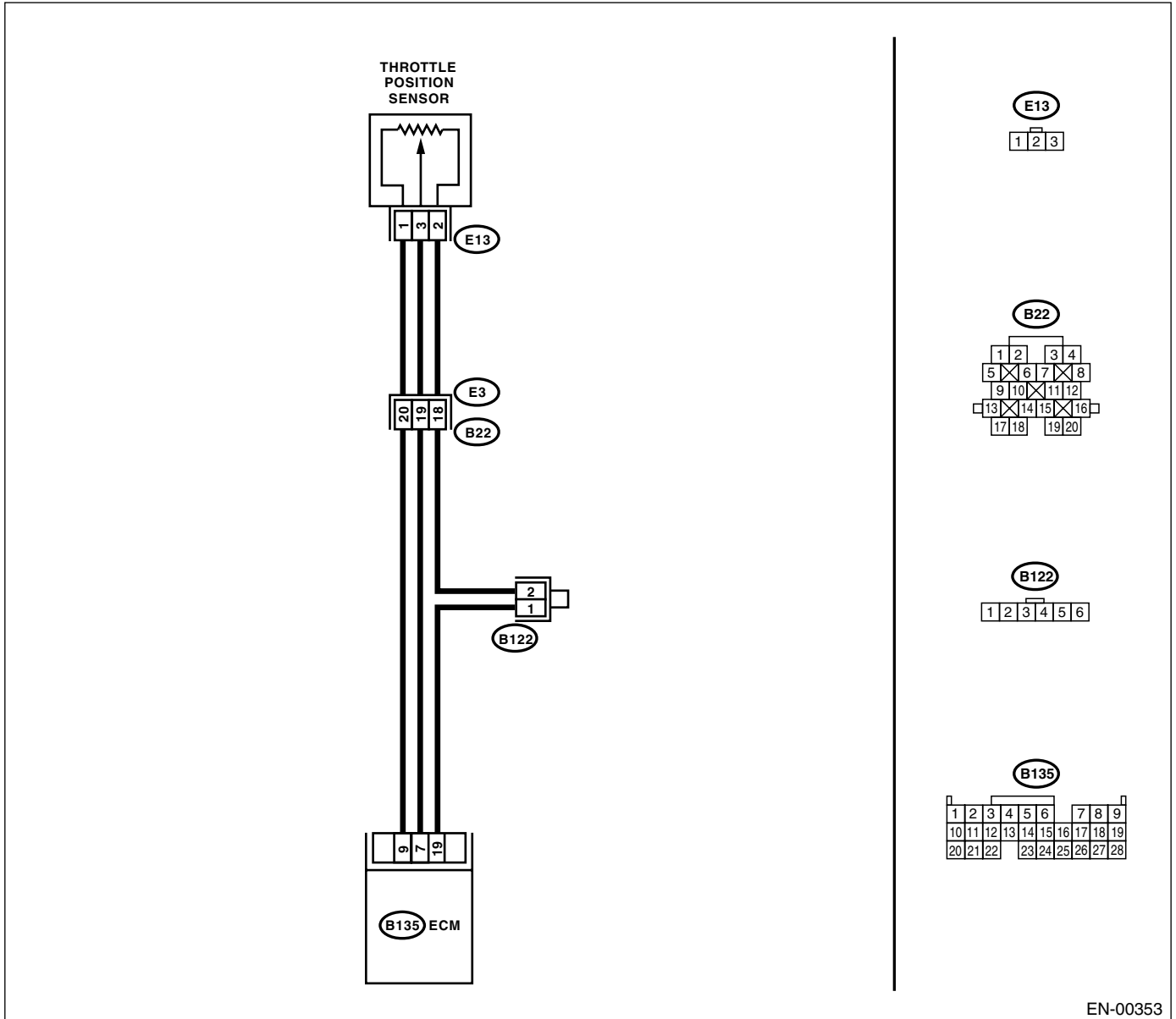
- **WIRING DIAGRAM:**
- LHD model



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

- RHD model



EN-00353

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>1</b></p> <p><b>CHECK CURRENT DATA.</b></p> <p>1)Start the engine. 2)Read the data of throttle position sensor signal using Subaru Select Monitor or OBD-II general scan tool. Is the measured value more than specified value?</p> <p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>•Subaru Select Monitor</li> </ul> <p>For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". &lt;Ref. to EN(TURBO)-34, Subaru Select Monitor.&gt;</p> <ul style="list-style-type: none"> <li>•OBD-II general scan tool</li> </ul> <p>For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</p>	4.7 V	Go to step 2.	<p>Even if MIL lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause.</p> <p><b>NOTE:</b></p> <p>In this case, repair the following:</p> <ul style="list-style-type: none"> <li>• Poor contact in throttle position sensor connector</li> <li>• Poor contact in ECM connector</li> <li>• Poor contact in coupling connector</li> </ul>
<p><b>2</b></p> <p><b>CHECK HARNESS BETWEEN THROTTLE POSITION SENSOR AND ECM CONNECTOR.</b></p> <p>1)Turn the ignition switch to OFF. 2)Disconnect the connector from throttle position sensor. 3)Measure the resistance of harness between throttle position sensor connector and engine ground.</p> <p><b>Connector &amp; terminal</b> <b>(E13) No. 2 — Engine ground:</b></p> <p>Is the measured value less than specified value?</p>	5 Ω	Go to step 3.	<p>Repair the harness and connector.</p> <p><b>NOTE:</b></p> <p>In this case, repair the following:</p> <ul style="list-style-type: none"> <li>• Open circuit in harness between throttle position sensor and ECM connector</li> <li>• Poor contact in coupling connector</li> <li>• Poor contact in joint connector</li> </ul>
<p><b>3</b></p> <p><b>CHECK HARNESS BETWEEN THROTTLE POSITION SENSOR AND ECM CONNECTOR.</b></p> <p>1)Turn the ignition switch to ON. 2)Measure the voltage between throttle position sensor connector and engine ground.</p> <p><b>Connector &amp; terminal</b> <b>(E13) No. 3 (+) — Engine ground (-):</b></p> <p>Is the measured value more than specified value?</p>	4.7 V	Repair the battery short circuit in harness between throttle position sensor and ECM connector. After repair, replace the ECM. <Ref. to FU(TURBO)-48, Engine Control Module.>	Replace the throttle position sensor. <Ref. to FU(TURBO)-32, Throttle Position Sensor.>

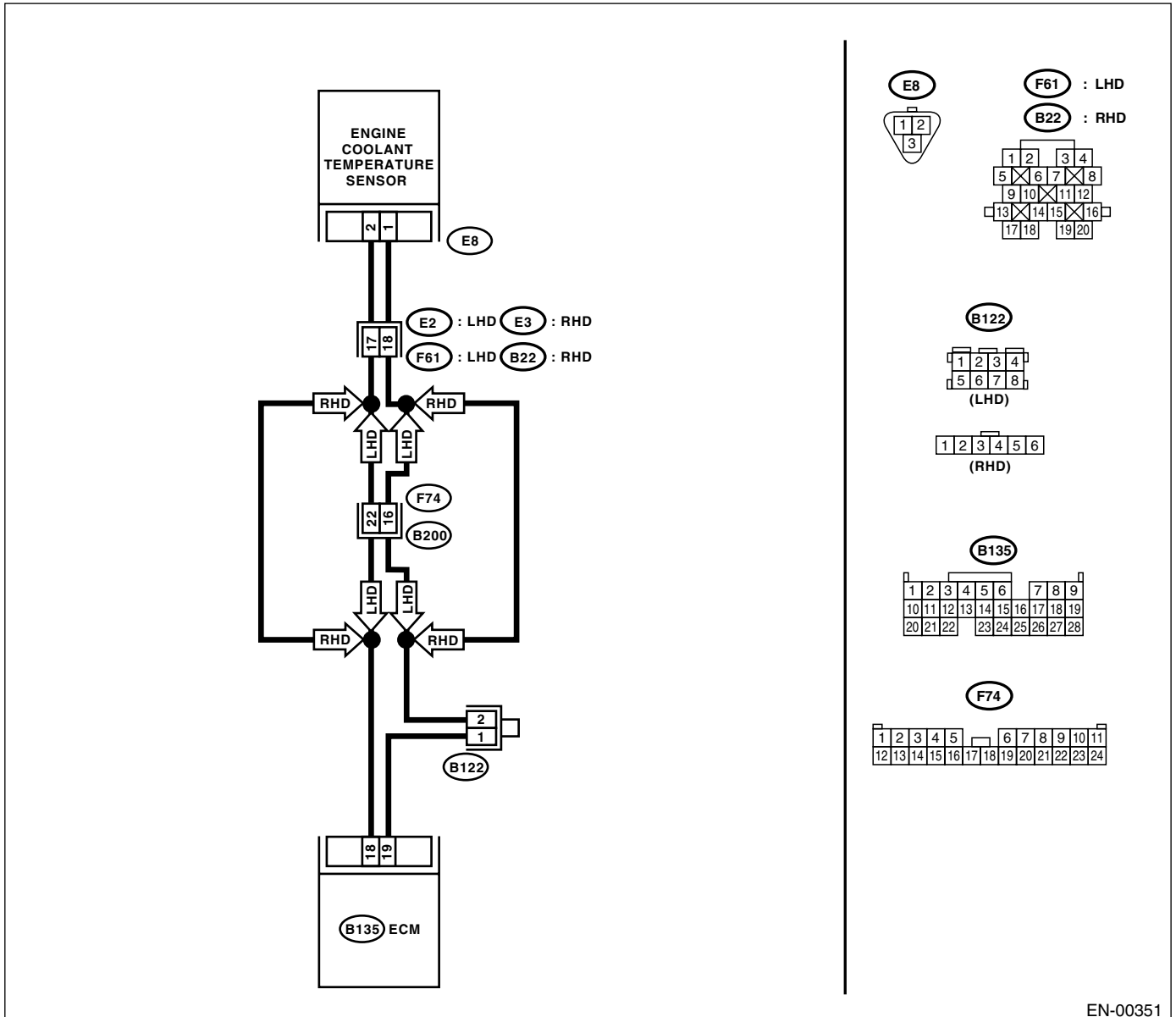
**S: DTC P0125 — INSUFFICIENT COOLANT TEMPERATURE FOR CLOSED LOOP FUEL CONTROL —**

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Engine will not return to idling.

**CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

- **WIRING DIAGRAM:**



EN-00351



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>1</b> <b>CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.</b> Is any other DTC displayed?	Other DTC is displayed.	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(TURBO)-77, List of Diagnostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0125.	Go to step 2.
<b>2</b> <b>CHECK ENGINE COOLING SYSTEM.</b> NOTE: Check the following items. •Thermostat open stuck •Coolant level •Coolant freeze •Tire diameter Is there a fault in engine cooling system?	There is a fault.	Replace the thermostat. <Ref. to CO(SOHC)-25, Thermostat.>	Replace the engine coolant temperature sensor. <Ref. to FU(TURBO)-28, Engine Coolant Temperature Sensor.>

### T: DTC P0129 — ATMOSPHERIC PRESSURE 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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

Step	Check	Yes	No
<b>1</b> <b>CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.</b> Is any other DTC displayed?	Other DTC is displayed.	Replace the ECM. <Ref. to FU(TURBO)-48, Engine Control Module.> NOTE: Atmospheric pressure sensor is built into ECM.	It is not necessary to inspect DTC P0129

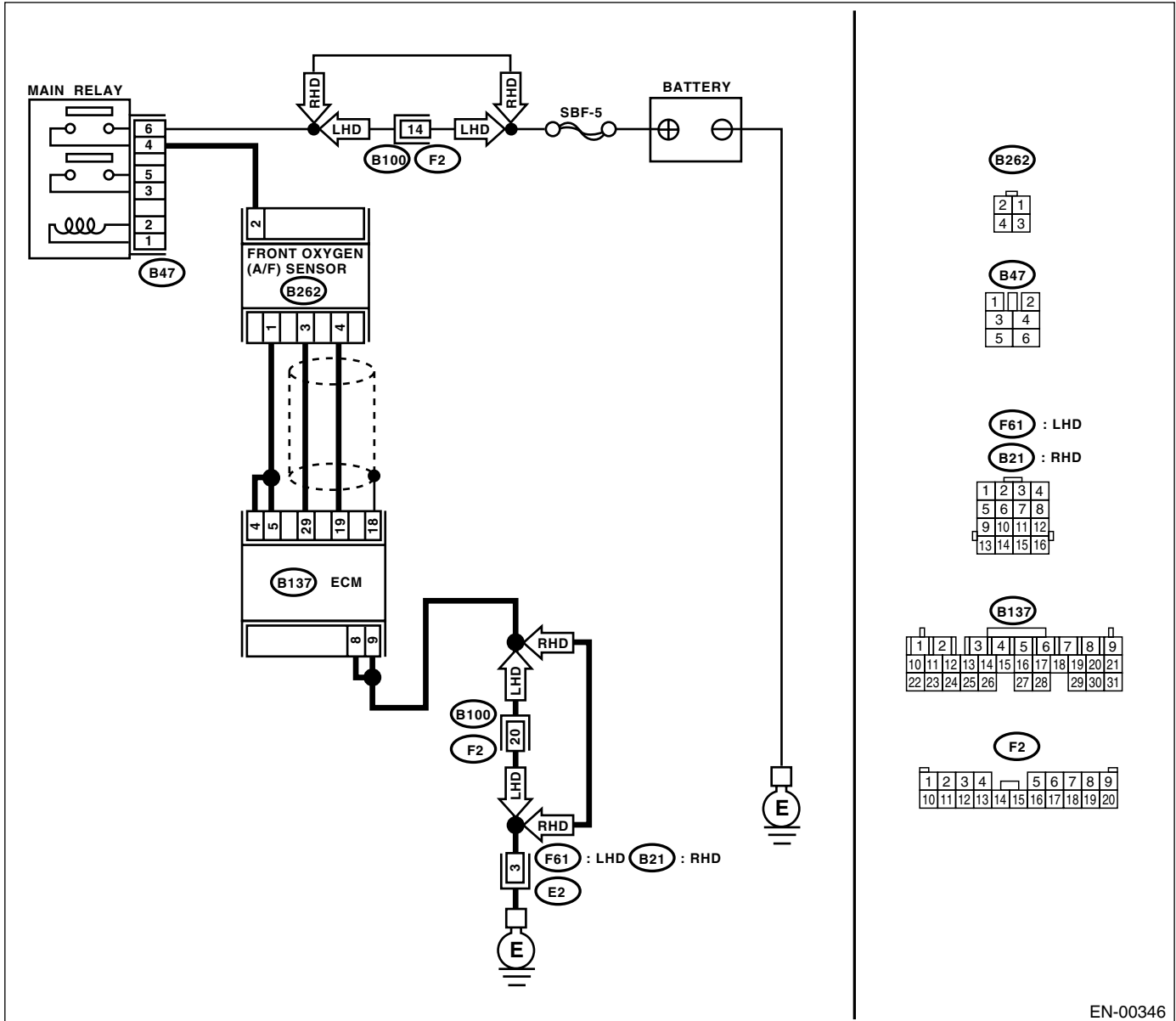
**U: DTC P0130 — O<sub>2</sub> SENSOR CIRCUIT (BANK 1 SENSOR 1) —**

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition

**CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

- **WIRING DIAGRAM:**



EN-00346

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>1 CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.</b> Is any other DTC displayed?	Other DTC is displayed.	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(TURBO)-77, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
<b>2 CHECK FRONT (A/F) OXYGEN SENSOR DATA.</b> 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. Is the measured value within specified value? NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <Ref. to EN(TURBO)-34, Subaru Select Monitor.> • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.	0.85 — 1.15 (In idling)	Go to step 3.	Go to step 4.
<b>3 CHECK REAR OXYGEN SENSOR SIGNAL.</b> 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. Does the LED of {Rear O <sub>2</sub> Rich Signal} blink? NOTE: • Subaru Select Monitor For detailed operation procedure, refer to the "LED OPERATION MODE FOR ENGINE". <Ref. to EN(TURBO)-34, Subaru Select Monitor.>	LED illuminates.	Repair the poor contact in front oxygen (A/F) sensor and rear oxygen sensor connector.	Check the rear oxygen sensor circuit. <Ref. to FU(TURBO)-45, Rear Oxygen Sensor.>
<b>4 CHECK EXHAUST SYSTEM.</b> Check the exhaust system parts. NOTE: Check the following items. • Loose installation of portions • Damage (crack, hole etc.) of parts • Looseness of front oxygen (A/F) sensor • Looseness and ill fitting of parts between front oxygen (A/F) sensor and rear oxygen sensor Is there a fault in exhaust system?	There is a fault.	Repair or replace the faulty parts.	Replace the front oxygen (A/F) sensor. <Ref. to FU(TURBO)-43, Front Oxygen (A/F) Sensor.>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

## V: DTC P0133 — O<sub>2</sub> SENSOR CIRCUIT SLOW RESPONSE (BANK 1 SENSOR 1)

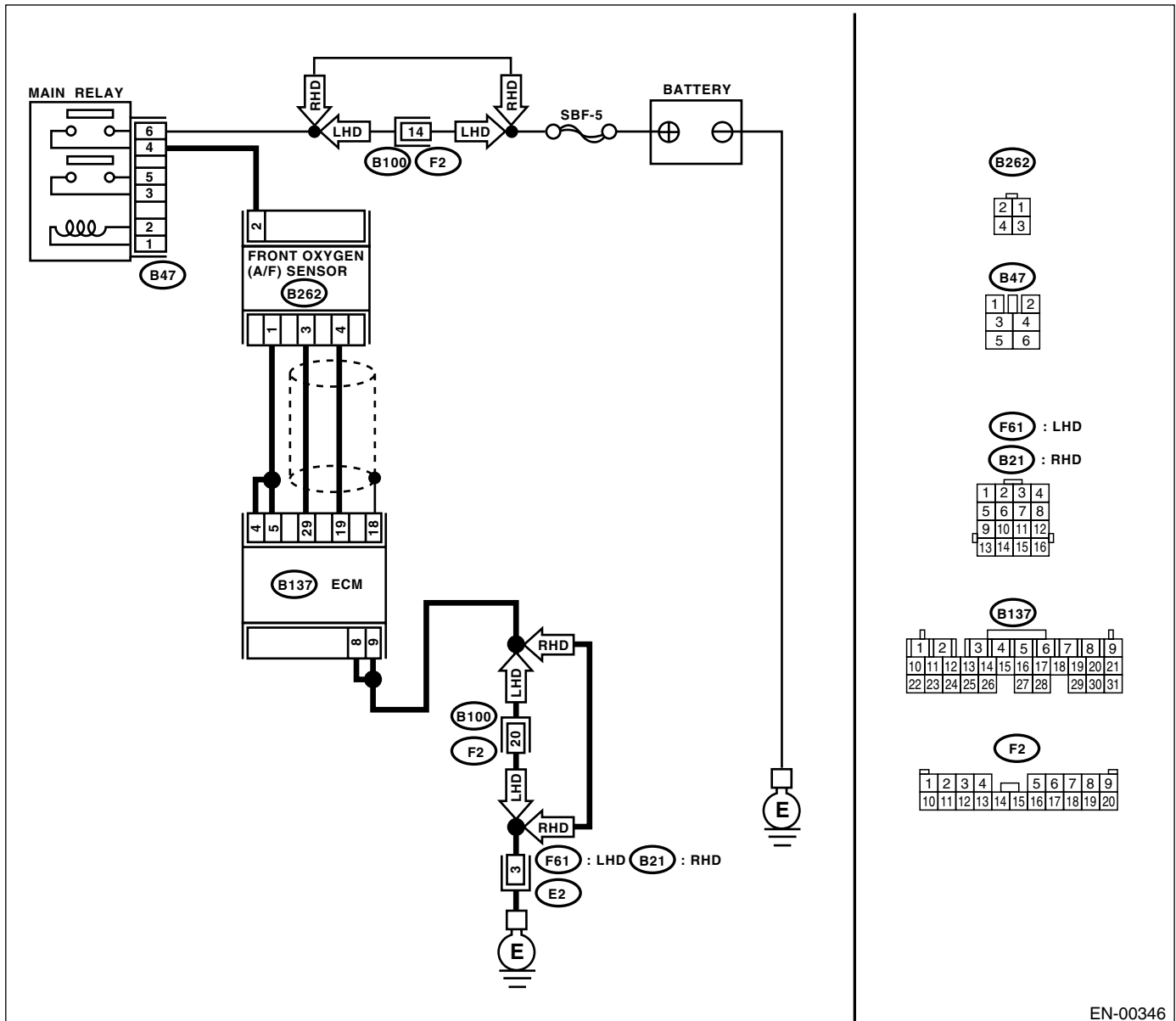
### • DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

### • WIRING DIAGRAM:



EN-00346

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>1</b> <b>CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.</b> Is any other DTC displayed?	Other DTC is displayed.	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(TURBO)-77, List of Diagnostic Trouble Code (DTC).> <b>NOTE:</b> In this case, it is not necessary to inspect DTC P0133.	Go to step 2.
<b>2</b> <b>CHECK EXHAUST SYSTEM.</b> <b>NOTE:</b> Check the following items. <ul style="list-style-type: none"><li>•Loose installation of front portion of exhaust pipe onto cylinder heads</li><li>•Loose connection between front exhaust pipe and front catalytic converter</li><li>•Damage of exhaust pipe resulting in a hole</li></ul> Is there a fault in exhaust system?	There is a fault.	Repair the exhaust system.	Replace the front oxygen (A/F) sensor. <Ref. to FU(TURBO)-43, Front Oxygen (A/F) Sensor.>

## W: DTC P0134 — O<sub>2</sub> SENSOR CIRCUIT NO ACTIVITY DETECTED (BANK 1 SENSOR 1) —

**NOTE:**

For the diagnostic procedure, refer to DTC P0130. <Ref. to EN(TURBO)-133, DTC P0130 — O<sub>2</sub> SENSOR CIRCUIT (BANK 1 SENSOR 1) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

## X: DTC P0137 — O<sub>2</sub> SENSOR CIRCUIT LOW VOLTAGE (BANK 1 SENSOR 2) —

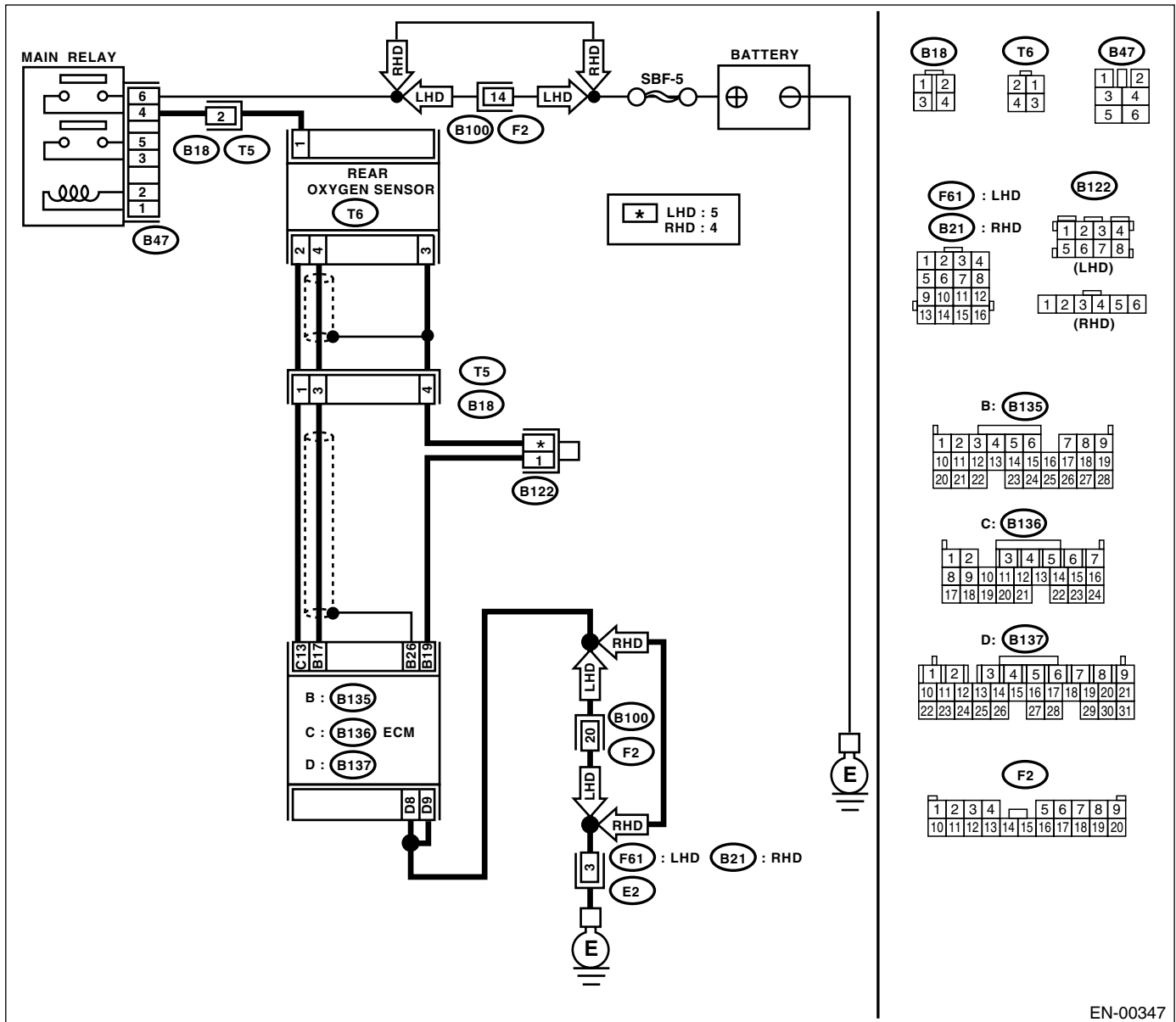
### • DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

### • WIRING DIAGRAM:



EN-00347

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>1 CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.</b> Is any other DTC displayed?	Other DTC is displayed.	Using the list of diagnostic trouble code (DTC), check the appropriate DTC. <Ref. to EN(TURBO)-77, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
<b>2 CHECK REAR OXYGEN SENSOR DATA.</b> 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 2 minutes. 2)Read the data of rear oxygen sensor signal using Subaru Select Monitor or OBD-II general scan tool. Does the value fluctuate? NOTE: •Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to EN(TURBO)-34, Subaru Select Monitor.> •OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.	Value fluctuates.	Go to step 6.	Go to step 3.
<b>3 CHECK REAR OXYGEN SENSOR DATA.</b> Read the data of rear oxygen sensor signal using Subaru Select Monitor or OBD-II general scan tool. Is the measured value within specified value?	0.2 — 0.4 V	Go to step 4.	Replace the rear oxygen sensor. <Ref. to FU(TURBO)-45, Rear Oxygen Sensor.>
<b>4 CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR.</b> 1)Turn the ignition switch to OFF. 2)Disconnect the connectors from ECM and rear oxygen sensor. 3)Measure the resistance of harness between ECM and rear oxygen sensor connector. <b>Connector &amp; terminal</b> <b>(B135) No. 17 — (T6) No. 4:</b> Is the measured value more than specified value?	3 Ω	Repair the open circuit in harness between ECM and rear oxygen sensor connector.	Go to step 5.
<b>5 CHECK HARNESS BETWEEN REAR OXYGEN SENSOR AND ECM CONNECTOR.</b> 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. <b>Connector &amp; terminal</b> <b>(T6) No. 4 (+) — Engine ground (-):</b> Is the measured value more than specified value?	0.2 V	Replace the rear oxygen sensor. <Ref. to FU(TURBO)-45, Rear Oxygen Sensor.>	Repair the harness and connector. NOTE: In this case, repair the following: • 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 (DIAGNOSTICS)

Step	Check	Yes	No
<b>6</b> <b>CHECK EXHAUST SYSTEM.</b> Check the exhaust system parts. NOTE: Check the following items. <ul style="list-style-type: none"><li>•Loose installation of portions</li><li>•Damage (crack, hole etc.) of parts</li><li>•Looseness and ill fitting of parts between front oxygen (A/F) sensor and rear oxygen sensor</li></ul> Is there a fault in exhaust system?	There is a fault.	Repair or replace the faulty parts.	Replace the rear oxygen sensor. <Ref. to FU(TURBO)-45, Rear Oxygen Sensor.>



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

## Y: DTC P0138 — O<sub>2</sub> SENSOR CIRCUIT HIGH VOLTAGE (BANK 1 SENSOR 2) —

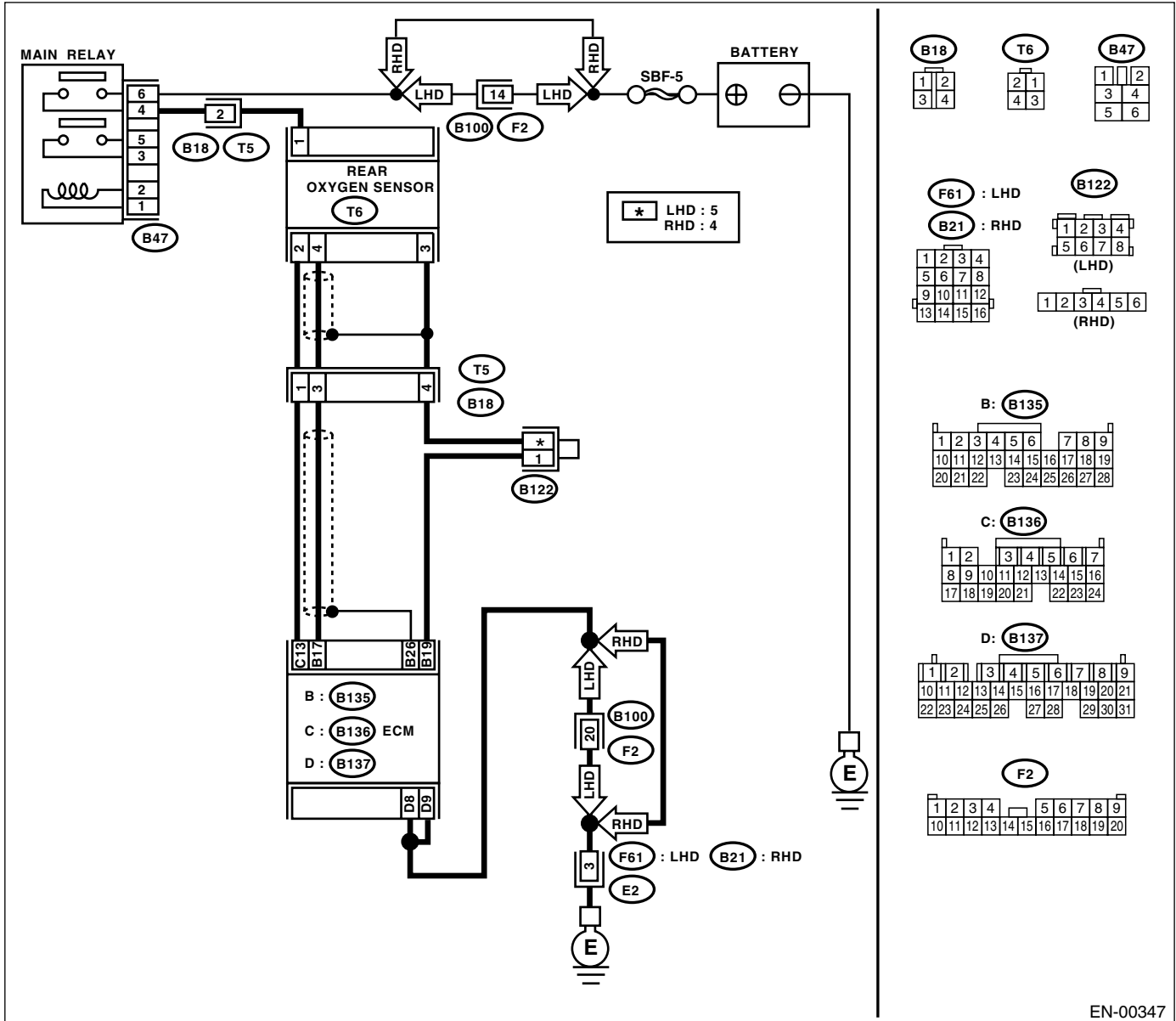
### • DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

### • WIRING DIAGRAM:



EN-00347

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>1</b></p> <p><b>CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.</b> Is any other DTC displayed?</p>	Other DTC is displayed.	Using the list of diagnostic trouble code (DTC), check the appropriate DTC. <Ref. to EN(TURBO)-77, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
<p><b>2</b></p> <p><b>CHECK REAR OXYGEN SENSOR DATA.</b> 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 2 minutes. 2) Read the data of rear oxygen sensor signal using Subaru Select Monitor or OBD-II general scan tool. Does the value fluctuate? <b>NOTE:</b> • Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". &lt;Ref. to EN(TURBO)-34, Subaru Select Monitor.&gt; • OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</p>	Value fluctuates.	Go to step 6.	Go to step 3.
<p><b>3</b></p> <p><b>CHECK REAR OXYGEN SENSOR DATA.</b> Read the data of rear oxygen sensor signal using Subaru Select Monitor or OBD-II general scan tool. Is the measured value within specified value?</p>	0.2 — 0.4 V	Go to step 4.	Replace the rear oxygen sensor. <Ref. to FU(TURBO)-45, Rear Oxygen Sensor.>
<p><b>4</b></p> <p><b>CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR.</b> 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and rear oxygen sensor. 3) Measure the resistance of harness between ECM and rear oxygen sensor connector. <b>Connector &amp; terminal</b> <b>(B135) No. 17 — (T6) No. 4:</b> Is the measured value more than specified value?</p>	3 Ω	Repair the open circuit in harness between ECM and rear oxygen sensor connector.	Go to step 5.
<p><b>5</b></p> <p><b>CHECK HARNESS BETWEEN REAR OXYGEN SENSOR AND ECM CONNECTOR.</b> 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. <b>Connector &amp; terminal</b> <b>(T6) No. 4 (+) — Engine ground (-):</b> Is the measured value more than specified value?</p>	0.2 V	Replace the rear oxygen sensor. <Ref. to FU(TURBO)-45, Rear Oxygen Sensor.>	Repair the harness and connector. <b>NOTE:</b> In this case, repair the following: • 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 (DIAGNOSTICS)

Step	Check	Yes	No
<b>6</b> <b>CHECK EXHAUST SYSTEM.</b> Check the exhaust system parts. NOTE: Check the following items. <ul style="list-style-type: none"><li>•Loose installation of portions</li><li>•Damage (crack, hole etc.) of parts</li><li>•Looseness and ill fitting of parts between front oxygen (A/F) sensor and rear oxygen sensor</li></ul> Is there a fault in exhaust system?	There is a fault.	Repair or replace the faulty parts.	Replace the rear oxygen sensor. <Ref. to FU(TURBO)-45, Rear Oxygen Sensor.>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

## Z: DTC P0139 — O<sub>2</sub> SENSOR CIRCUIT SLOW RESPONSE (BANK 1 SENSOR 2)

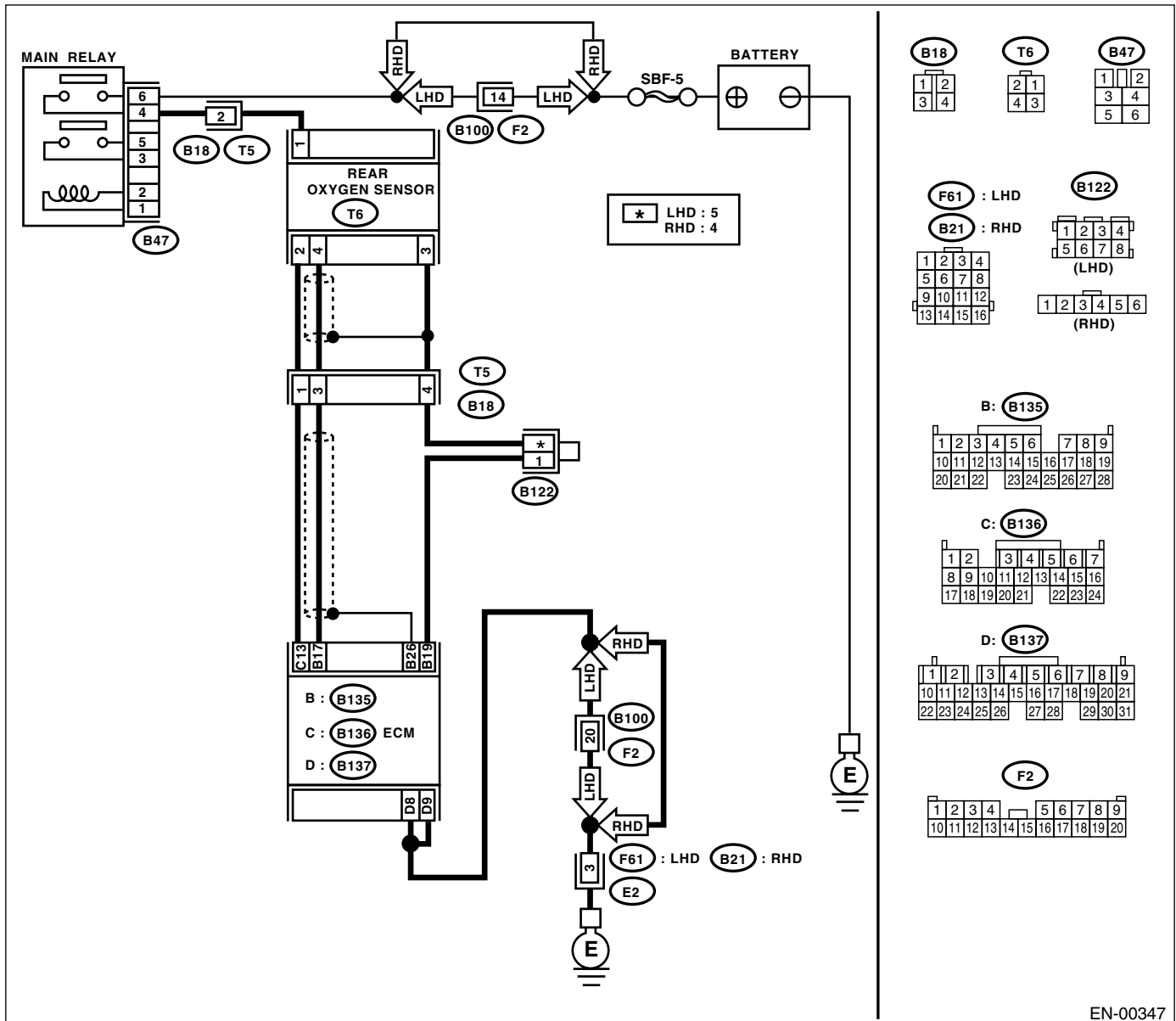
### • DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

### • WIRING DIAGRAM:



EN-00347

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	<b>CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.</b> Is any other DTC displayed?	Other DTC is displayed.	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(TURBO)-77, List of Diagnostic Trouble Code (DTC).> <b>NOTE:</b> In this case, it is not necessary to inspect DTC P0139.	Replace the rear oxygen sensor. <Ref. to FU(TURBO)-45, Rear Oxygen Sensor.>

## AA:DTC P0171 — SYSTEM TOO LEAN (BANK 1) —

NOTE:

For the diagnostic procedure, refer to DTC P0172. <Ref. to EN(TURBO)-145, DTC P0172 — SYSTEM TOO RICH (BANK 1) —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

## AB: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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .**

Step	Check	Yes	No
<b>1</b> <b>CHECK EXHAUST SYSTEM.</b> Are there holes or loose bolts on exhaust system?	There are not holes or loose bolts.	Go to step 2.	Repair the exhaust system.
<b>2</b> <b>CHECK AIR INTAKE SYSTEM.</b> Are there holes, loose bolts or disconnection of hose on air intake system?	There are not holes or loose bolts.	Go to step 3.	Repair the air intake system.
<b>3</b> <b>CHECK FUEL PRESSURE.</b> <b>Warning:</b> •Place “NO FIRE” signs near the working area. •Be careful not to spill fuel on the floor. 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 5 more seconds. (4) Turn the ignition switch to OFF. 2)Connect the connector to fuel pump relay. 3)Disconnect the fuel delivery hose from fuel filter, and connect fuel pressure gauge. 4)Install the fuel filler cap. 5)Start the engine and idle while gear position is neutral. 6)Measure the fuel pressure while disconnecting pressure regulator vacuum hose from intake manifold. Is the measured value within specified value? <b>Warning:</b> Before removing the fuel pressure gauge, release fuel pressure. NOTE: If the fuel pressure does not increase, squeeze fuel return hose 2 to 3 times, then measure fuel pressure again.	284 — 314 kPa (2.9 — 3.2 kg/cm <sup>2</sup> , 41 — 46 psi)	Go to step 4.	Repair the following items. Fuel pressure too high: <ul style="list-style-type: none"> <li>• Clogged fuel return line or bent hose</li> </ul> Fuel pressure too low: <ul style="list-style-type: none"> <li>• Improper fuel pump discharge</li> <li>• Clogged fuel supply line</li> </ul>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>4</b>     <b>CHECK FUEL PRESSURE.</b> After connecting the pressure regulator vacuum hose, measure fuel pressure. Is the measured value within specified value?</p> <p><b>Warning:</b> <b>Before removing the fuel pressure gauge, release fuel pressure.</b></p> <p><b>NOTE:</b> •If the 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 the pressure regulator and pressure regulator vacuum hose.</p>	<p>206 — 235 kPa (2.1 — 2.4 kg/cm<sup>2</sup>, 30 — 34 psi)</p>	<p>Go to step 5.</p>	<p>Repair the following items. Fuel pressure too high:</p> <ul style="list-style-type: none"> <li>• Faulty pressure regulator</li> <li>• Clogged fuel return line or bent hose</li> </ul> <p>Fuel pressure too low:</p> <ul style="list-style-type: none"> <li>• Faulty pressure regulator</li> <li>• Improper fuel pump discharge</li> <li>• Clogged fuel supply line</li> </ul>
<p><b>5</b>     <b>CHECK ENGINE COOLANT TEMPERATURE SENSOR.</b> 1)Start the engine and warm-up completely. 2)Read the data of engine coolant temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool. Is the measured value more than specified value?</p> <p><b>NOTE:</b> •Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". &lt;Ref. to EN(TURBO)-34, Subaru Select Monitor.&gt; •OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</p>	<p>60°C (140°F)</p>	<p>Go to step 6.</p>	<p>Replace the engine coolant temperature sensor. &lt;Ref. to FU(TURBO)-28, Engine Coolant Temperature Sensor.&gt;</p>
<p><b>6</b>     <b>CHECK MASS AIR FLOW AND INTAKE AIR TEMPERATURE.</b> 1)Start the engine and warm-up engine until 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 OBD-II general scan tool. Is the measured value within specified value?</p> <p><b>NOTE:</b> •Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". &lt;Ref. to EN(TURBO)-34, Subaru Select Monitor.&gt; •OBD-II general scan tool For detailed operation procedure, refer to the OBD-II General Scan Tool Instruction Manual.</p>	<p>Ignition ON: 73.3 — 106.6 kPa (550 — 800 mmHg, 21.65 — 31.50 inHg) Idling: 24.0 — 41.3 kPa (180 — 310 mmHg, 7.09 — 12.20 inHg)</p>	<p>Go to step 7.</p>	<p>Replace the mass air flow and intake air temperature sensor. &lt;Ref. to FU(TURBO)-33, Mass Air Flow and Intake Air Temperature Sensor.&gt;</p>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
7	<p><b>CHECK MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR.</b></p> <p>1) Start the engine and warm-up engine until 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 front 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 OBD-II general scan tool. Subtract ambient temperature from intake air temperature.</p> <p>Is the obtained value within specified value?</p> <p>NOTE:</p> <ul style="list-style-type: none"> <li>• Subaru Select Monitor</li> </ul> <p>For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE".</p> <p>&lt;Ref. to EN(TURBO)-34, Subaru Select Monitor.&gt;</p> <ul style="list-style-type: none"> <li>• OBD-II general scan tool</li> </ul> <p>For detailed operation procedure, refer to the OBD-II General Scan Tool Instruction Manual.</p>	-10°C (14°F) — 50°C (122°F)	<p>Contact with your Subaru distributor service.</p> <p>NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.</p>	<p>Check the mass air flow and intake air temperature sensor. &lt;Ref. to FU(TURBO)-33, Mass Air Flow and Intake Air Temperature Sensor.&gt;</p>



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

## AC:DTC P0230 — FUEL PUMP PRIMARY CIRCUIT —

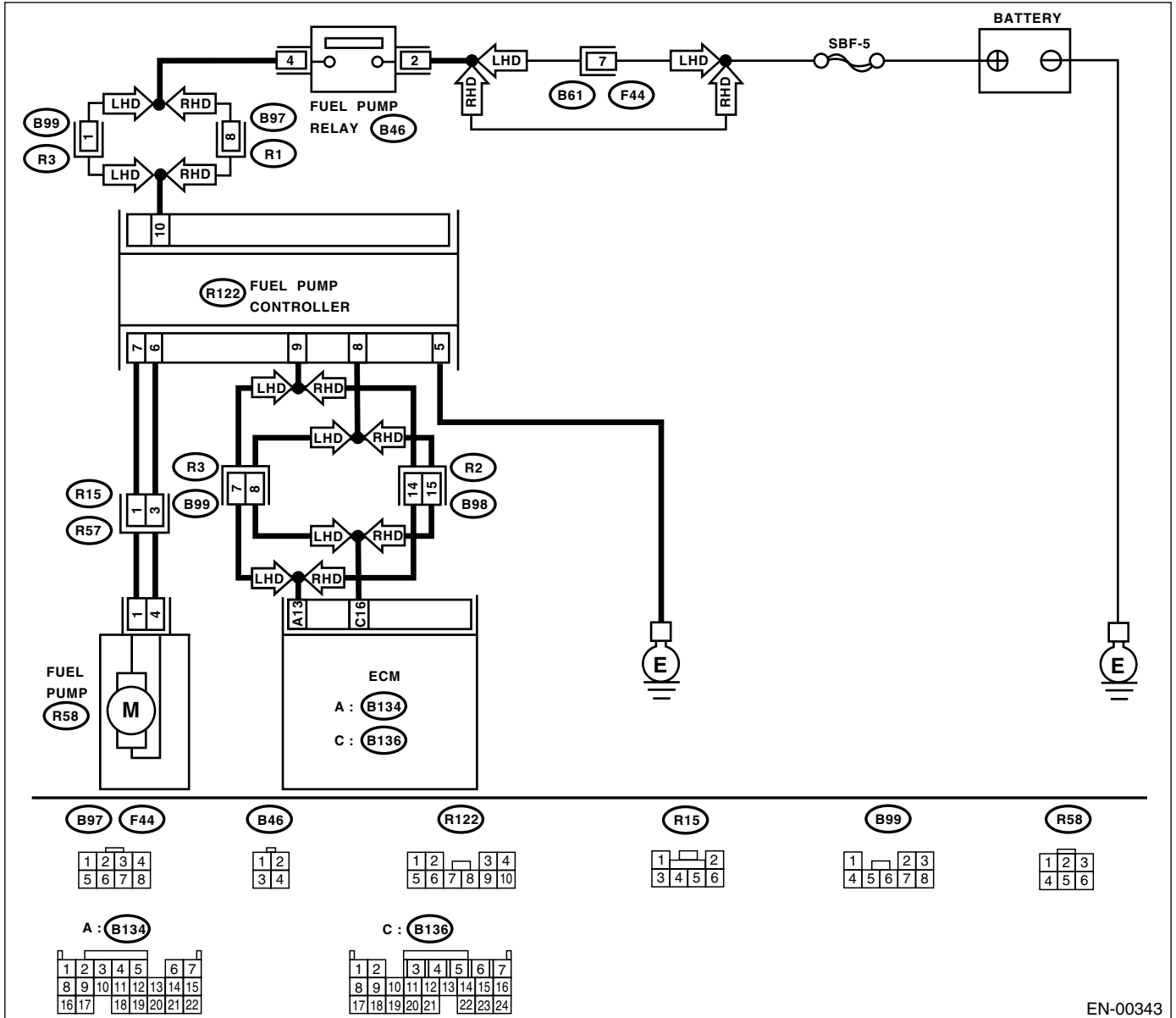
**DTC DETECTING CONDITION:**

- Immediately at fault recognition

**CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

**• WIRING DIAGRAM:**



EN-00343

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

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

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>5</b>      <b>CHECK HARNESS BETWEEN FUEL PUMP CONTROLLER AND ECM CONNECTOR.</b>            1) Turn the ignition switch to OFF.            2) Disconnect the connector from ECM.            3) Measure the resistance of harness between fuel pump controller and ECM connector.  <b>Connector &amp; terminal</b>  <b>(R122) No. 9 — (B134) No. 13:</b>  <b>(R122) No. 8 — (B136) No. 16:</b>            Is the measured value less than specified value?</p>	<p>1 Ω</p>	<p>Go to step 6.</p>	<p>Repair the harness and connector.  <b>NOTE:</b>            In this case, repair the following:            • Open circuit between fuel pump controller and ECM            • Poor contact in fuel pump controller and ECM connector</p>
<p><b>6</b>      <b>CHECK HARNESS BETWEEN FUEL PUMP CONTROLLER AND ECM CONNECTOR.</b>            Measure the resistance of harness between fuel pump controller and chassis ground.  <b>Connector &amp; terminal</b>  <b>(R122) No. 9 — Chassis ground:</b>  <b>(R122) No. 8 — Chassis ground:</b>            Is the measured value more than specified value?</p>	<p>1 MΩ</p>	<p>Go to step 7.</p>	<p>Repair the ground short circuit between fuel pump controller and ECM.</p>
<p><b>7</b>      <b>CHECK POOR CONTACT.</b>            Check poor contact in ECM and fuel pump controller connector.            Is there poor contact in ECM and fuel pump controller connector?</p>	<p>Poor contact occurs.</p>	<p>Repair the poor contact in ECM and fuel pump controller.</p>	<p>Replace the fuel pump controller.            &lt;Ref. to FU(TURBO)-51, Fuel Pump Controller.&gt;</p>

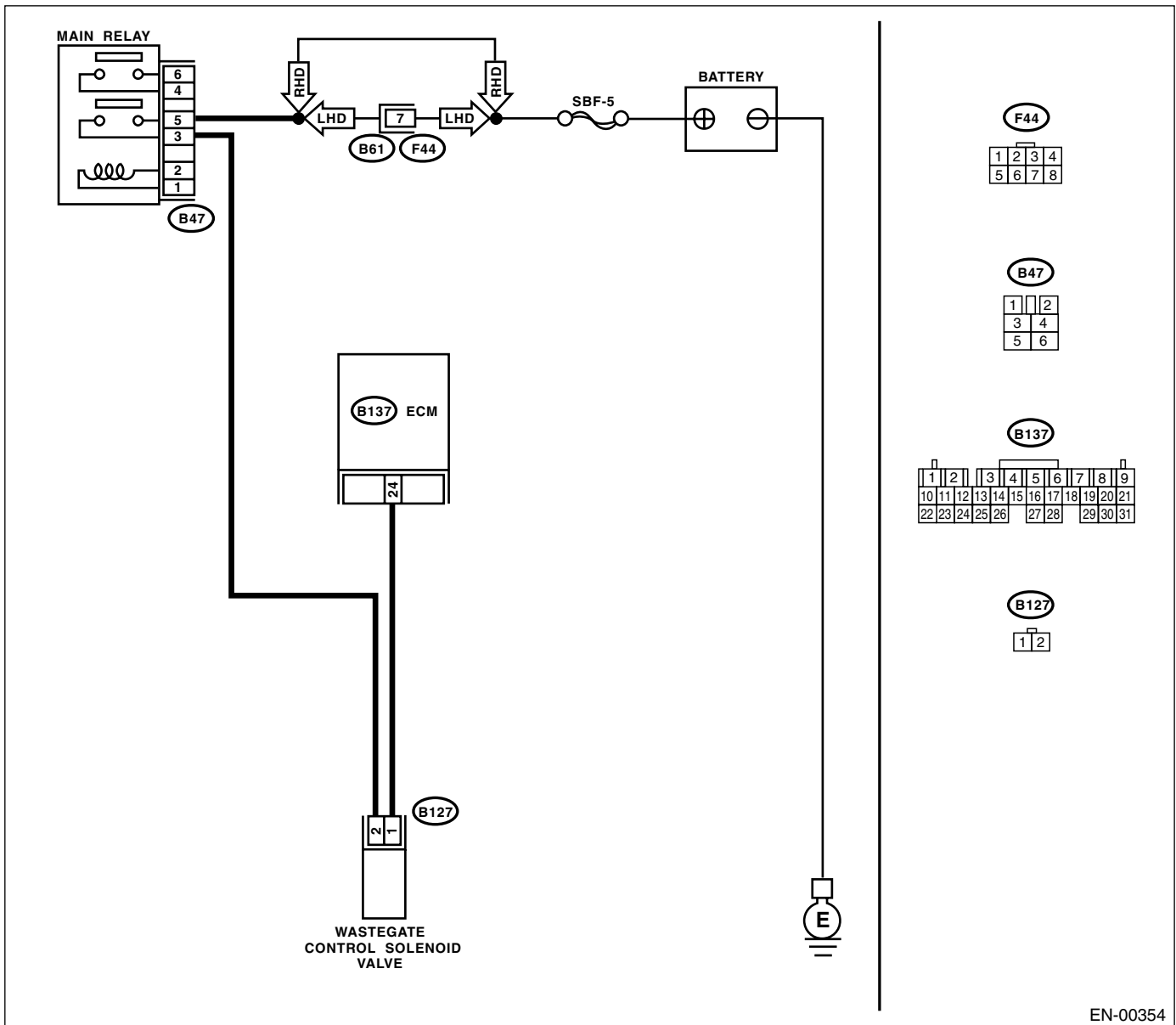
## AD:DTC P0244 — TURBO/SUPER CHARGER WASTEGATE SOLENOID “A” RANGE/PERFORMANCE —

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

• **WIRING DIAGRAM:**



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>1</b> <b>CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.</b> Is any other DTC displayed?	Other DTC is displayed.	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(TURBO)-77, 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(TURBO)-42, Wastegate Control Solenoid Valve.>

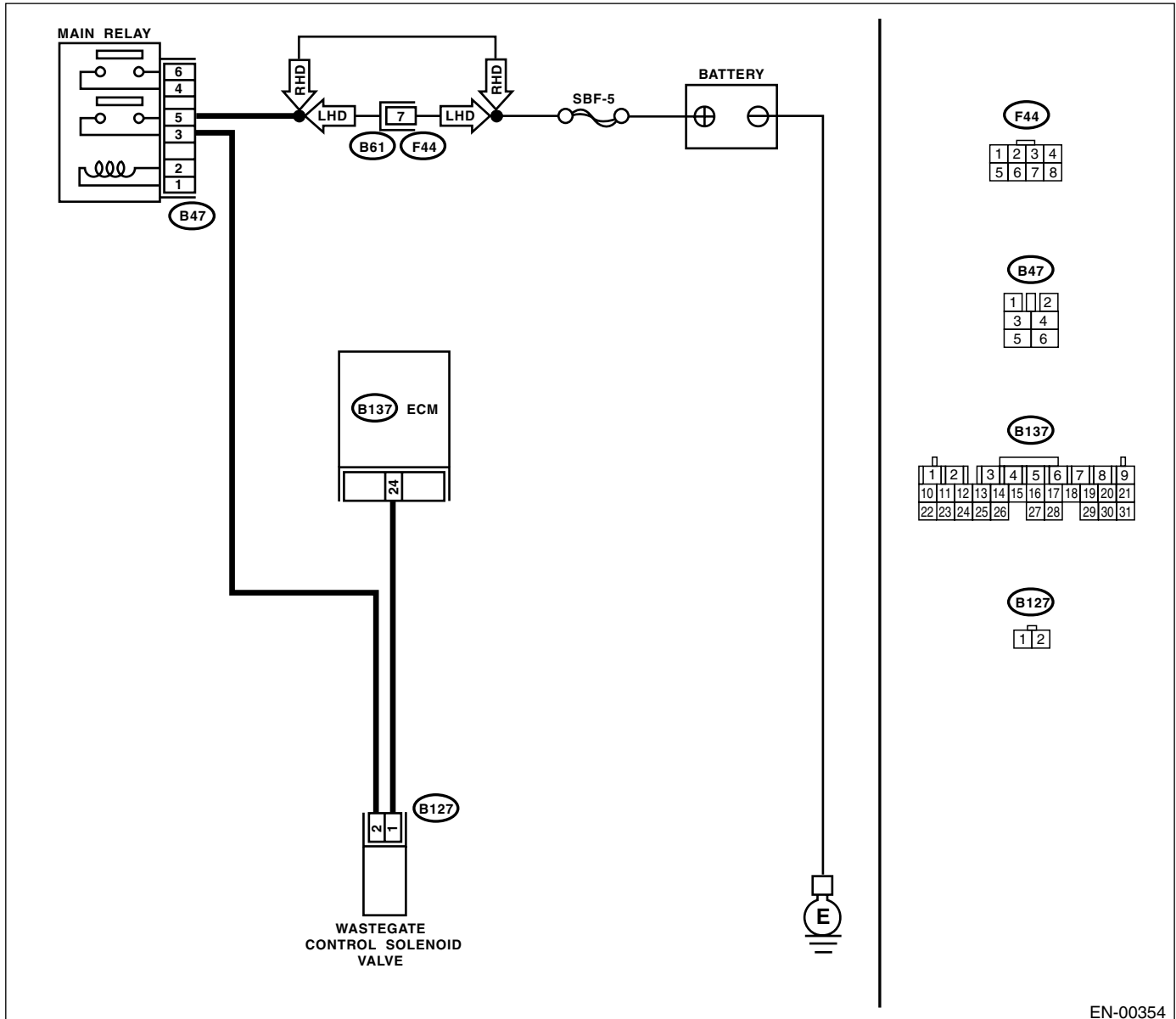
**AE:DTC P0245 — TURBO/SUPER CHARGER WASTEGATE SOLENOID “A” LOW —**

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

• **WIRING DIAGRAM:**



EN-00354

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>1</b></p> <p><b>CHECK OUTPUT SIGNAL FROM ECM.</b>                      1) Turn the ignition switch to ON.                      2) Measure the voltage between ECM and chassis ground.</p> <p><b>Connector &amp; terminal</b>  <b>(B137) No. 24 (+) — Chassis ground (-):</b>                      Is the measured value more than specified value?</p>	10 V	Even if MIL lights up, the circuit has returned to a normal condition at this time. Contact with your Subaru distributor service.  NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.	Go to step 2.
<p><b>2</b></p> <p><b>CHECK HARNESS BETWEEN WASTEGATE CONTROL SOLENOID VALVE AND ECM CONNECTOR.</b>                      1) Turn the ignition switch to OFF.                      2) Disconnect the connectors from wastegate control solenoid valve and ECM.                      3) Measure the resistance of harness between wastegate control solenoid valve connector and engine ground.</p> <p><b>Connector &amp; terminal</b>  <b>(B127) No. 1 — Engine ground:</b>                      Is the measured value less than specified value?</p>	10 Ω	Repair the ground short circuit in harness between ECM and wastegate control solenoid valve connector.	Go to step 3.
<p><b>3</b></p> <p><b>CHECK HARNESS BETWEEN WASTEGATE CONTROL SOLENOID VALVE AND ECM CONNECTOR.</b>                      Measure the resistance of harness between ECM and wastegate control solenoid valve of harness connector.</p> <p><b>Connector &amp; terminal</b>  <b>(B137) No. 24 — (B127) No. 1:</b>                      Is the measured value less than specified value?</p>	1 Ω	Go to step 4.	Repair the open circuit in harness between ECM and wastegate control solenoid valve connector.  NOTE: In this case, repair the following: • Open circuit in harness between ECM and wastegate control solenoid valve connector
<p><b>4</b></p> <p><b>CHECK WASTEGATE CONTROL SOLENOID VALVE.</b>                      1) Remove the wastegate control solenoid valve.                      2) Measure the resistance between wastegate control solenoid valve terminals.</p> <p><b>Terminals</b>  <b>No. 1 — No. 2:</b>                      Is the measured value within specified value?</p>	30 — 34 Ω	Go to step 5.	Replace the wastegate control solenoid valve. <Ref. to FU(TURBO)-42, Wastegate Control Solenoid Valve.>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>5</b> <b>CHECK POWER SUPPLY TO WASTEGATE CONTROL SOLENOID VALVE.</b> 1) Turn the ignition switch to ON. 2) Measure the voltage between wastegate control solenoid valve and engine ground. <b>Connector &amp; terminal</b> <b>(B127) No. 2 (+) — Engine ground (-):</b> Is the measured value more than specified value?	10 V	Go to step 6.	Repair the open circuit in harness between main relay and wastegate control solenoid valve connector.
<b>6</b> <b>CHECK POOR CONTACT.</b> Check poor contact in wastegate control solenoid valve connector. Is there poor contact in wastegate control solenoid valve connector?	Poor contact occurs.	Repair the poor contact in wastegate control solenoid valve connector.	Contact with your Subaru distributor service. <b>NOTE:</b> Inspection by DTM is required, because probable cause is deterioration of multiple parts.



**DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)**  
 ENGINE (DIAGNOSTICS)

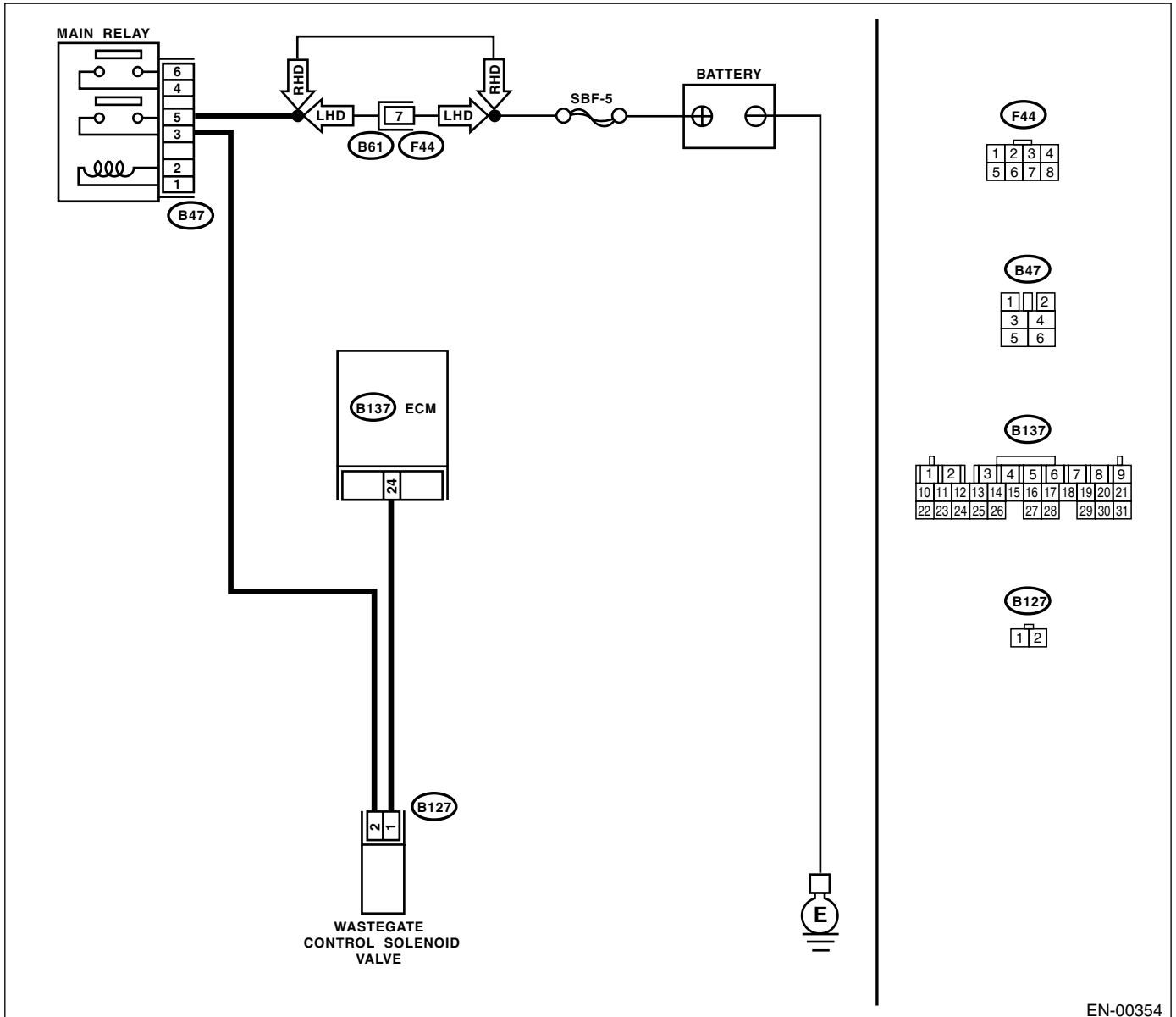
**AF:DTC P0246 — TURBO/SUPER CHARGER WASTEGATE SOLENOID “A” HIGH —**

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

• **WIRING DIAGRAM:**



EN-00354

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>1 CHECK OUTPUT SIGNAL FROM ECM.</b> 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. <b>Connector &amp; terminal</b> <b>(B137) No. 24 (+) — Chassis ground (-):</b> Is the measured value more than specified value?	10 V	Go to step 3.	Go to step 2.
<b>2 CHECK POOR CONTACT.</b> Check poor contact in ECM connector. Is there poor contact in ECM connector?	Poor contact occurs.	Repair the poor contact in ECM connector.	Replace the ECM. <Ref. to FU(TURBO)-48, Engine Control Module.>
<b>3 CHECK HARNESS BETWEEN WASTEGATE CONTROL SOLENOID VALVE AND ECM CONNECTOR.</b> 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. <b>Connector &amp; terminal</b> <b>(B137) No. 24 (+) — Chassis ground (-):</b> Is the measured value more than specified value?	10 V	Repair the battery short circuit in harness between ECM and wastegate control solenoid valve connector. After repair, replace the ECM. <Ref. to FU(TURBO)-48, Engine Control Module.>	Go to step 4.
<b>4 CHECK WASTEGATE CONTROL SOLENOID VALVE.</b> 1) Turn the ignition switch to OFF. 2) Measure the resistance between wastegate control solenoid valve terminals. <b>Terminals</b> <b>No. 1 — No. 2:</b> Is the measured value less than specified value?	1 $\Omega$	Replace the wastegate control solenoid valve <Ref. to FU(TURBO)-42, Wastegate Control Solenoid Valve.> and ECM <Ref. to FU(TURBO)-48, Engine Control Module.>	Go to step 5.
<b>5 CHECK POOR CONTACT.</b> Check poor contact in ECM connector. Is there poor contact in ECM connector?	Poor contact occurs.	Repair the poor contact in ECM connector.	Replace the ECM. <Ref. to FU(TURBO)-48, Engine Control Module.>

## **DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)**

ENGINE (DIAGNOSTICS)

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### **AG:DTC P0301 — CYLINDER 1 MISFIRE DETECTED —**

NOTE:

For the diagnostic procedure, refer to DTC P0304. <Ref. to EN(TURBO)-159, DTC P0304 — CYLINDER 4 MISFIRE DETECTED —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

### **AH:DTC P0302 — CYLINDER 2 MISFIRE DETECTED —**

NOTE:

For the diagnostic procedure, refer to DTC P0304. <Ref. to EN(TURBO)-159, DTC P0304 — CYLINDER 4 MISFIRE DETECTED —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

### **AI: DTC P0303 — CYLINDER 3 MISFIRE DETECTED —**

NOTE:

For the diagnostic procedure, refer to DTC P0304. <Ref. to EN(TURBO)-159, DTC P0304 — CYLINDER 4 MISFIRE DETECTED —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

**AJ: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

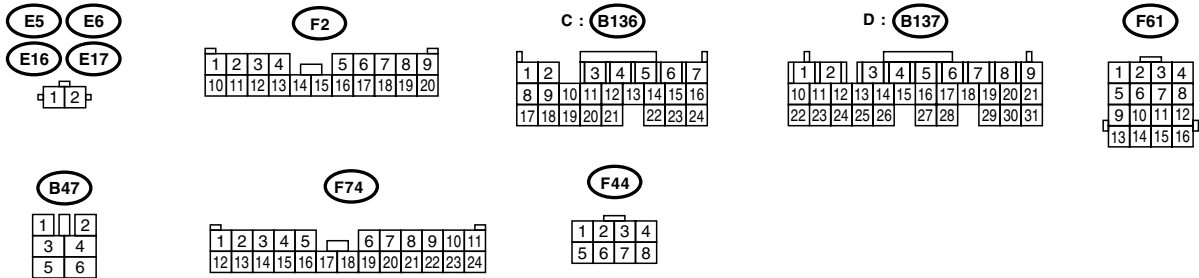
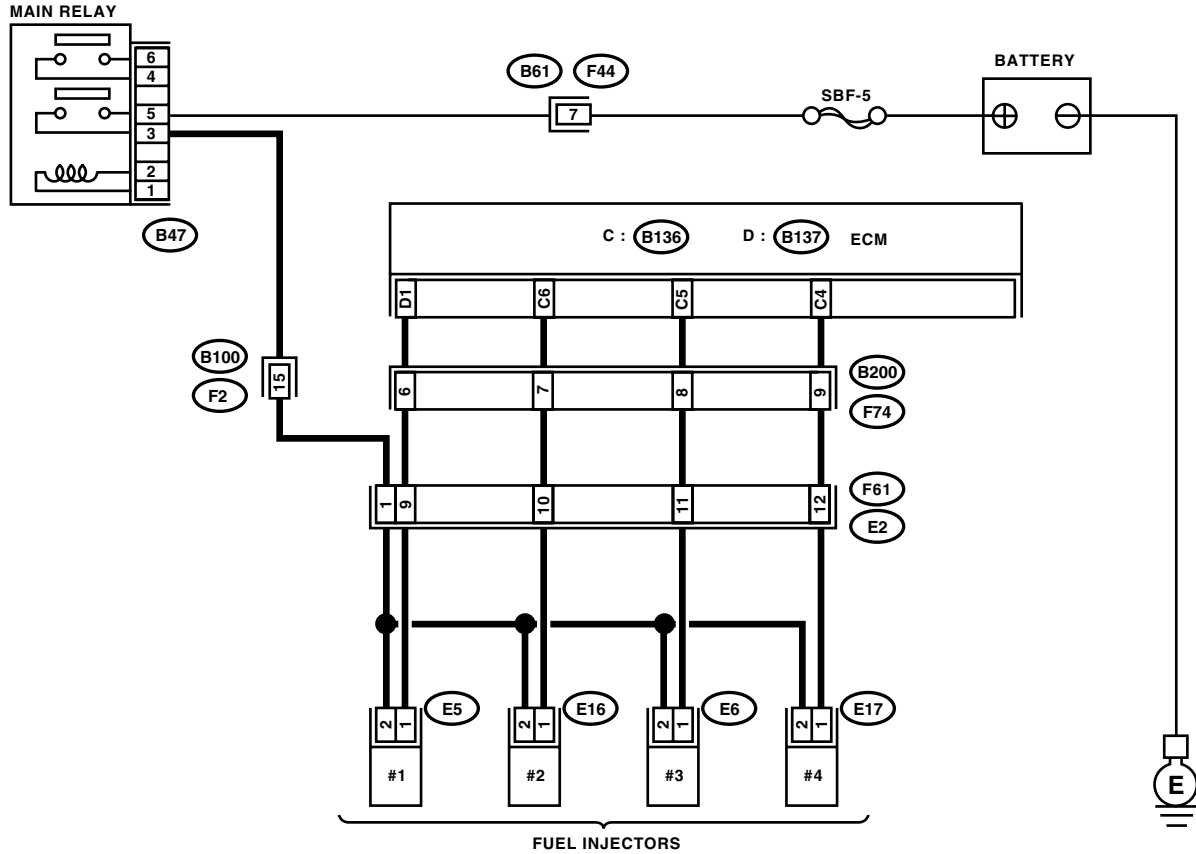
**CAUTION:**

**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .**

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

- WIRING DIAGRAM:
- LHD model

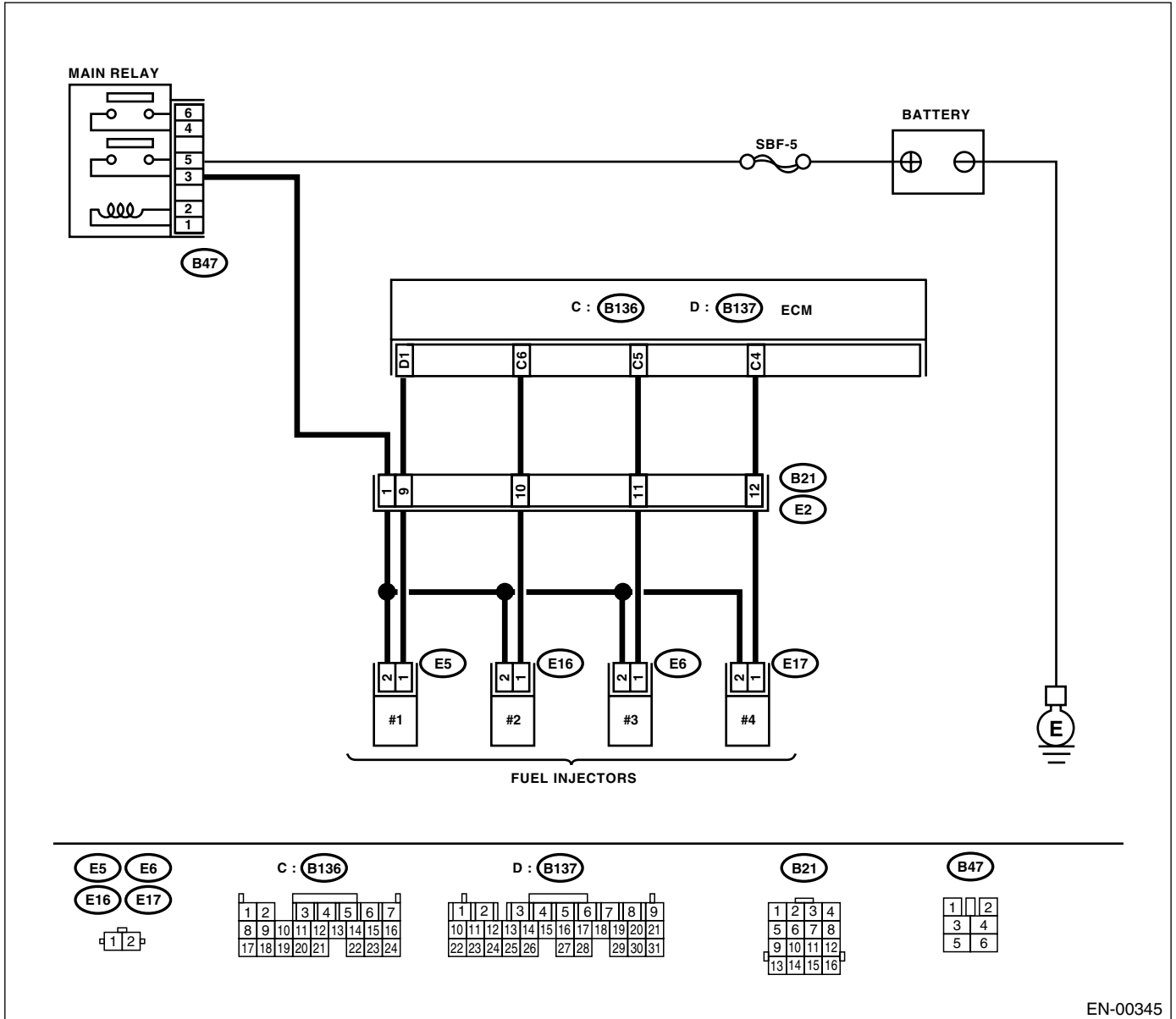


EN-00344

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

• RHD model



EN-00345

Step	Check	Yes	No
1	<p><b>CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.</b></p> <p>Is any other DTC displayed?</p>	<p>Other DTC is displayed.</p>	<p>Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". &lt;Ref. to EN(TURBO)-77, List of Diagnostic Trouble Code (DTC).&gt;</p>
			<p>Go to step 2.</p>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>2</b></p> <p><b>CHECK OUTPUT SIGNAL FROM ECM.</b>                      1) Turn the ignition switch to ON.                      2) Measure the voltage between ECM connector and chassis ground on faulty cylinders.</p> <p><b>Connector &amp; terminal</b>  <b>#1 (B137) No. 1 (+) — Chassis ground (-):</b>  <b>#2 (B136) No. 6 (+) — Chassis ground (-):</b>  <b>#3 (B136) No. 5 (+) — Chassis ground (-):</b>  <b>#4 (B136) No. 4 (+) — Chassis ground (-):</b></p> <p>Is the measured value more than specified value?</p>	10 V	Go to step 7.	Go to step 3.
<p><b>3</b></p> <p><b>CHECK HARNESS BETWEEN FUEL INJECTOR AND ECM CONNECTOR.</b>                      1) Turn the ignition switch to OFF.                      2) Disconnect the connector from fuel injector on faulty cylinders.                      3) Disconnect the connector from ECM.                      4) Measure the resistance between ECM connector and engine ground on faulty cylinders.</p> <p><b>Connector &amp; terminal</b>  <b>#1 (E5) No. 1 — Engine ground:</b>  <b>#2 (E16) No. 1 — Engine ground:</b>  <b>#3 (E6) No. 1 — Engine ground:</b>  <b>#4 (E17) No. 1 — Engine ground:</b></p> <p>Is the measured value less than specified value?</p>	10 Ω	Repair the ground short circuit in harness between fuel injector and ECM connector.	Go to step 4.
<p><b>4</b></p> <p><b>CHECK HARNESS BETWEEN FUEL INJECTOR AND ECM CONNECTOR.</b>                      Measure the resistance of harness connector between ECM connector and fuel injector on faulty cylinders.</p> <p><b>Connector &amp; terminal</b>  <b>#1 (B137) No. 1 — (E5) No. 1:</b>  <b>#2 (B136) No. 6 — (E16) No. 1:</b>  <b>#3 (B136) No. 5 — (E6) No. 1:</b>  <b>#4 (B136) No. 4 — (E17) No. 1:</b></p> <p>Is the measured value less than specified value?</p>	1 Ω	Go to step 5.	Repair the harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between ECM and fuel injector connector • Poor contact in coupling connector
<p><b>5</b></p> <p><b>CHECK FUEL INJECTOR.</b>                      Measure the resistance between fuel injector terminals on faulty cylinder.</p> <p><b>Terminals</b>  <b>No. 1 — No. 2:</b></p> <p>Is the measured value within specified value?</p>	5 — 20 Ω	Go to step 6.	Replace the faulty fuel injector. <Ref. to FU(TURBO)-36, Fuel Injector.>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>6</b></p> <p><b>CHECK POWER SUPPLY LINE.</b>                      1) Turn the ignition switch to ON.                      2) Measure the voltage between fuel injector and engine ground on faulty cylinders.</p> <p><b>Connector &amp; terminal</b>  <b>#1 (E5) No. 2 (+) — Engine ground (-):</b>  <b>#2 (E16) No. 2 (+) — Engine ground (-):</b>  <b>#3 (E6) No. 2 (+) — Engine ground (-):</b>  <b>#4 (E17) No. 2 (+) — Engine ground (-):</b></p> <p>Is the measured value more than specified value?</p>	10 V	Repair the poor contact in all connectors in fuel injector circuit.	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> <li>• Open circuit in harness between main relay and fuel injector connector on faulty cylinders</li> <li>• Poor contact in coupling connector</li> <li>• Poor contact in main relay connector</li> <li>• Poor contact in fuel injector connector on faulty cylinders</li> </ul>
<p><b>7</b></p> <p><b>CHECK HARNESS BETWEEN FUEL INJECTOR AND ECM CONNECTOR.</b>                      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.</p> <p><b>Connector &amp; terminal</b>  <b>#1 (B137) No. 1 (+) — Chassis ground (-):</b>  <b>#2 (B136) No. 6 (+) — Chassis ground (-):</b>  <b>#3 (B136) No. 5 (+) — Chassis ground (-):</b>  <b>#4 (B136) No. 4 (+) — Chassis ground (-):</b></p> <p>Is the measured value more than specified value?</p>	10 V	Repair the battery short circuit in harness between ECM and fuel injector. After repair, replace the ECM. <Ref. to FU(TURBO)-48, Engine Control Module.>	Go to step 8.
<p><b>8</b></p> <p><b>CHECK FUEL INJECTOR.</b>                      1) Turn the ignition switch to OFF.                      2) Measure the resistance between fuel injector terminals on faulty cylinder.</p> <p><b>Terminals</b>  <b>No. 1 — No. 2:</b></p> <p>Is the measured value less than specified value?</p>	1 $\Omega$	Replace the faulty fuel injector <Ref. to FU(TURBO)-36, Fuel Injector.> and ECM <Ref. to FU(TURBO)-48, Engine Control Module.>	Go to step 9.
<p><b>9</b></p> <p><b>CHECK INSTALLATION OF CAMSHAFT POSITION SENSOR/CRANKSHAFT POSITION SENSOR.</b>                      Is the camshaft position sensor or crankshaft position sensor loosely installed?</p>	Camshaft position sensor or crankshaft position sensor is loosely installed.	Tighten the camshaft position sensor or crankshaft position sensor.	Go to step 10.
<p><b>10</b></p> <p><b>CHECK CRANKSHAFT SPROCKET.</b>                      Remove the timing belt cover.                      Is the crankshaft sprocket rusted or does it have broken teeth?</p>	Crankshaft sprocket is rusted or it has broken teeth.	Replace the crankshaft sprocket. <Ref. to ME(TURBO)-57, Crankshaft Sprocket.>	Go to step 11.



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>11 CHECK INSTALLATION CONDITION OF TIMING BELT.</b> Turn the crankshaft, and align alignment mark on crankshaft sprocket with alignment mark on cylinder block. Is the timing belt dislocated from its proper position?	Timing belt is dislocated from its proper position.	Repair the installation condition of timing belt. <Ref. to ME(TURBO)-48, Timing Belt Assembly.>	Go to step <b>12</b> .
<b>12 CHECK FUEL LEVEL.</b> Is the fuel meter indication higher than the "Lower" level?	Fuel meter indication is higher than the "Lower" level.	Go to step <b>13</b> .	Replenish the fuel so fuel meter indication is higher than the "Lower" level. After replenishing fuel; Go to step <b>13</b> .
<b>13 CHECK STATUS OF CHECK ENGINE MALFUNCTION INDICATOR LAMP (MIL).</b> 1)Clear the memory using Subaru Select Monitor. <Ref. to EN(TURBO)-49, Clear Memory Mode.> 2)Start the engine, and drive the vehicle more than 10 minutes. Is the MIL coming on or blinking?	MIL is coming on or blinking.	Go to step <b>15</b> .	Go to step <b>14</b> .
<b>14 CHECK CAUSE OF MISFIRE DIAGNOSED.</b> Was the cause of misfire diagnosed when the engine is running?	Cause of misfire was diagnosed.	Finish the 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"> <li>• Poor contact in ignition coil connector</li> <li>• Poor contact in fuel injector connector on faulty cylinders</li> <li>• Poor contact in ECM connector</li> <li>• Poor contact in coupling connector</li> </ul>
<b>15 CHECK AIR INTAKE SYSTEM.</b> Is there a fault in air intake system?	There is a fault.	Repair the air intake system. NOTE: Check the following items: <ul style="list-style-type: none"> <li>• Are there air leaks or air suction caused by loose or dislocated nuts and bolts?</li> <li>• Are there cracks or any disconnection of hoses?</li> </ul>	Go to step <b>16</b> .

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
16 <b>CHECK CYLINDER</b> Is there a fault in that cylinder?	There is a fault.	Repair or replace the faulty parts. NOTE: Check the following items. <ul style="list-style-type: none"><li>• Spark plug</li><li>• Fuel injector</li><li>• Compression pressure</li></ul>	Go to DTC P0171 and P0172. <Ref. to EN(TURBO)-144, DTC P0171 — SYSTEM TOO LEAN (BANK 1) — , Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

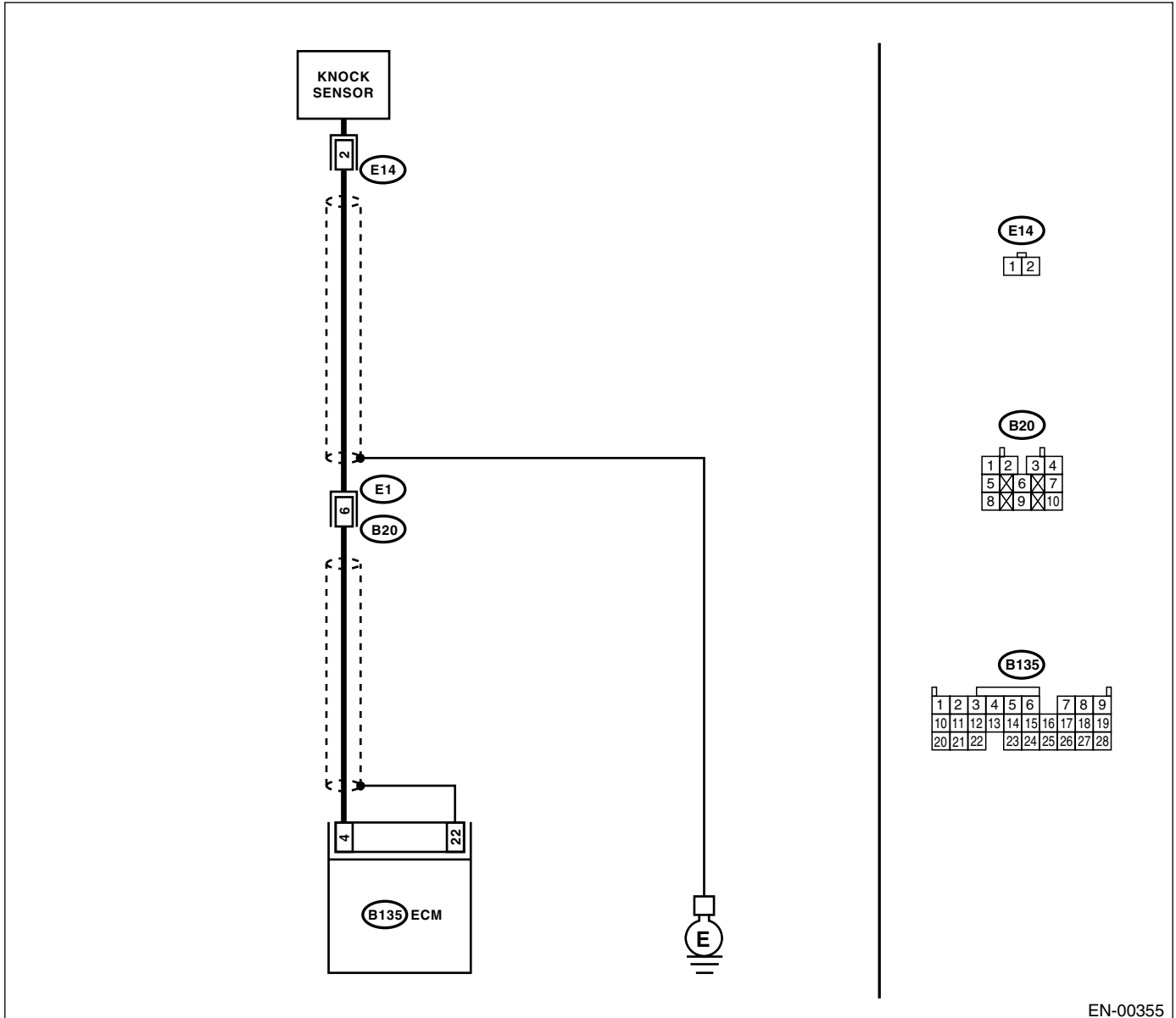
## AK:DTC P0327 — KNOCK SENSOR 1 CIRCUIT LOW INPUT (BANK 1 OR SINGLE SENSOR) —

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

- **WIRING DIAGRAM:**



EN-00355

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>1</b></p> <p><b>CHECK HARNESS BETWEEN KNOCK SENSOR AND ECM CONNECTOR.</b>                      1) Turn the ignition switch to OFF.                      2) Disconnect the connector from ECM.                      3) Measure the resistance between ECM harness connector and chassis ground.  <b>Connector &amp; terminal</b>  <b>(B135) No. 4 — Chassis ground:</b>                      Is the measured value more than specified value?</p>	700 kΩ	Go to step 2.	Repair the harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between knock sensor and ECM connector • Poor contact in knock sensor connector • Poor contact in coupling connector
<p><b>2</b></p> <p><b>CHECK KNOCK SENSOR.</b>                      1) Disconnect the connector from knock sensor.                      2) Measure the resistance between knock sensor connector terminal and engine ground.  <b>Terminal</b>  <b>No. 2 — Engine ground:</b>                      Is the measured value more than specified value?</p>	700 kΩ	Go to step 3.	Repair the harness and connector. NOTE: In this case, repair the following: • Poor contact in knock sensor connector • Poor contact in coupling connector
<p><b>3</b></p> <p><b>CHECK CONDITION OF KNOCK SENSOR INSTALLATION.</b>                      Is the knock sensor installation bolt tightened securely?</p>	Bolt is tightened securely.	Replace the knock sensor. <Ref. to FU(TURBO)-31, Knock Sensor.>	Tighten the knock sensor installation bolt securely.

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

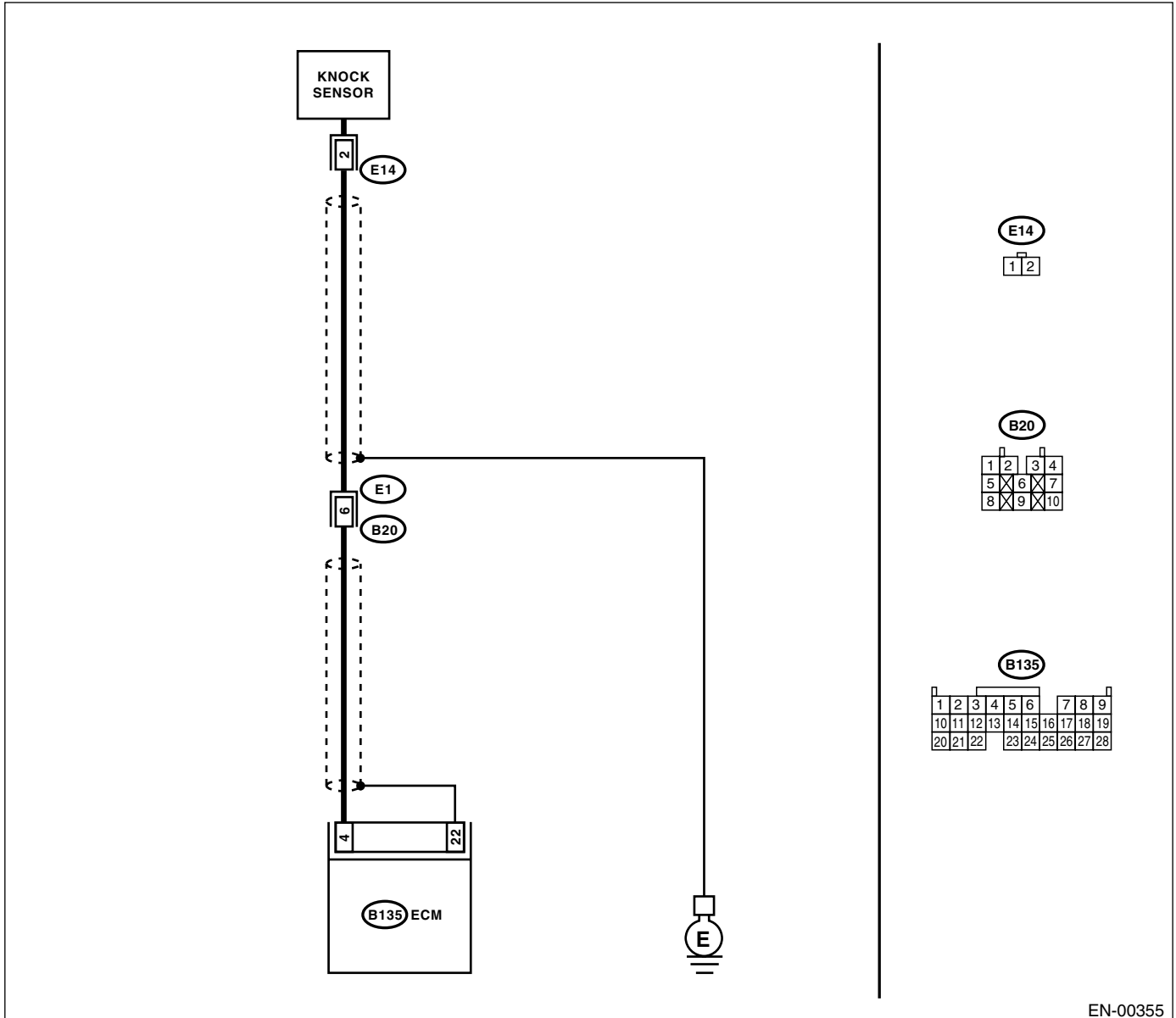
## AL:DTC P0328 — KNOCK SENSOR 1 CIRCUIT HIGH INPUT (BANK 1 OR SINGLE SENSOR) —

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

- **WIRING DIAGRAM:**



EN-00355

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>1</b></p> <p><b>CHECK HARNESS BETWEEN KNOCK SENSOR AND ECM CONNECTOR.</b>                      Measure the resistance of harness between ECM connector and chassis ground.  <i><b>Connector &amp; terminal</b></i>  <i><b>(B135) No. 4 — Chassis ground:</b></i>                      Is the measured value less than specified value?</p>	400 kΩ	Go to step 2.	Go to step 3.
<p><b>2</b></p> <p><b>CHECK KNOCK SENSOR.</b>                      1)Disconnect the connector from knock sensor.                      2)Measure the resistance between knock sensor connector terminal and engine ground.  <i><b>Terminal</b></i>  <i><b>No. 2 — Engine ground:</b></i>                      Is the measured value less than specified value?</p>	400 kΩ	Replace the knock sensor. <Ref. to FU(TURBO)-31, Knock Sensor.>	Repair the ground short circuit in harness between knock sensor connector and ECM connector.  NOTE: The harness between both connectors is shielded. Repair the short circuit of harness together with shield.
<p><b>3</b></p> <p><b>CHECK INPUT SIGNAL FOR ECM.</b>                      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><b>Connector &amp; terminal</b></i>  <i><b>(B135) No. 4 (+) — Chassis ground (-):</b></i>                      Is the measured value more than specified value?</p>	2 V	Even if MIL lights up, 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: • Poor contact in knock sensor connector • Poor contact in ECM connector • Poor contact in coupling connector	Repair the poor contact in ECM connector.

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

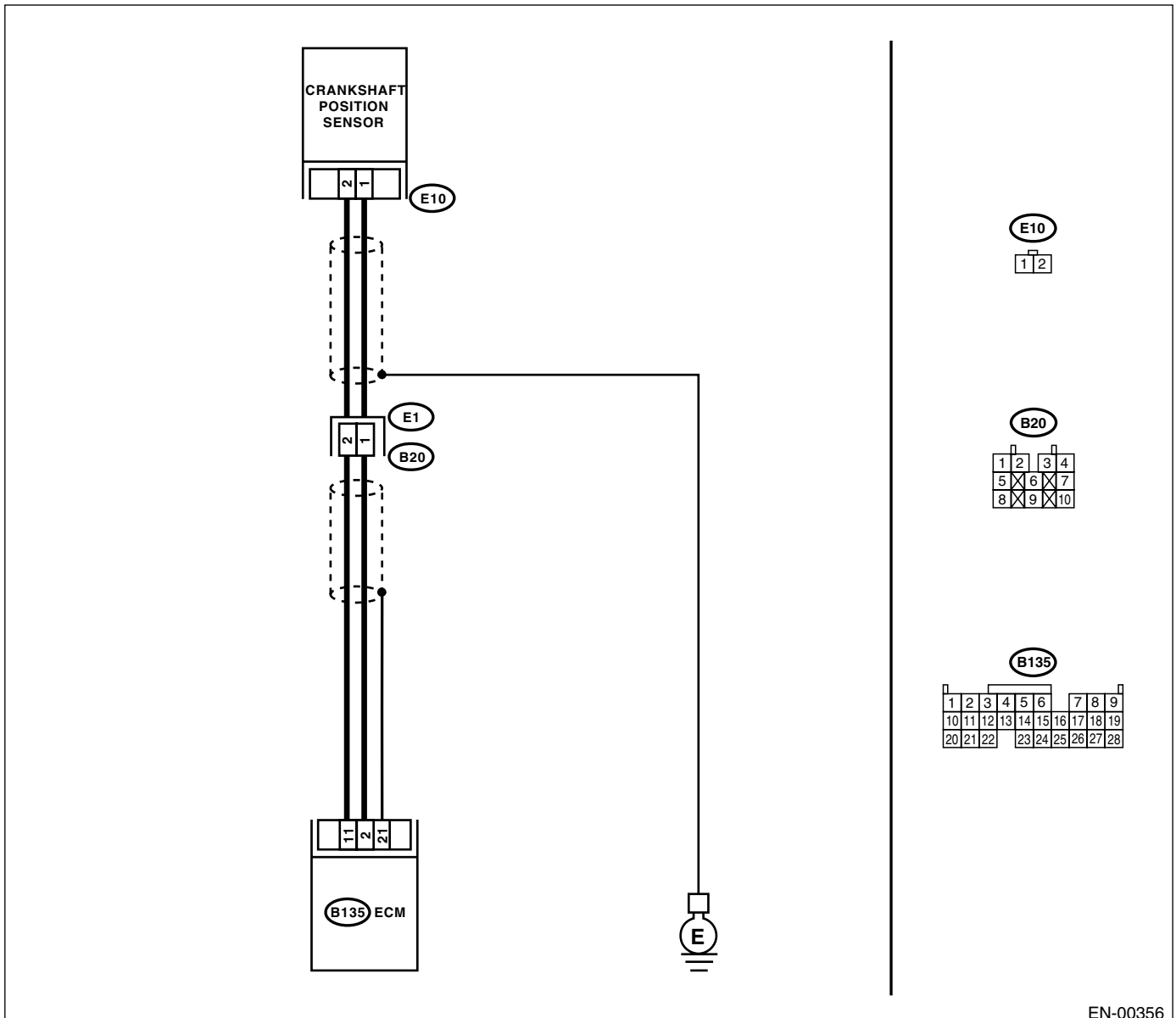
## AM:DTC P0335 — CRANKSHAFT POSITION SENSOR “A” CIRCUIT —

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

### • WIRING DIAGRAM:



EN-00356

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>1</b></p> <p><b>CHECK HARNESS BETWEEN CRANKSHAFT POSITION SENSOR AND ECM CONNECTOR.</b>                      1) Turn the ignition switch to OFF.                      2) Disconnect the connector from crankshaft position sensor.                      3) Measure the resistance of harness between crankshaft position sensor connector and engine ground.</p> <p><b>Connector &amp; terminal</b>  <b>(E10) No. 1 — Engine ground:</b>                      Is the measured value more than specified value?</p>	100 kΩ	Repair the harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between crankshaft position sensor and ECM connector • Poor contact in ECM connector • Poor contact in coupling connector	Go to step 2.
<p><b>2</b></p> <p><b>CHECK HARNESS BETWEEN CRANKSHAFT POSITION SENSOR AND ECM CONNECTOR.</b>                      Measure the resistance of harness between crankshaft position sensor connector and engine ground.</p> <p><b>Connector &amp; terminal</b>  <b>(E10) No. 1 — Engine ground:</b>                      Is the measured value less than specified value?</p>	10 Ω	Repair the ground short circuit in harness between crankshaft position sensor and ECM connector. NOTE: The harness between both connectors are shielded. Repair ground short circuit in harness together with shield.	Go to step 3.
<p><b>3</b></p> <p><b>CHECK HARNESS BETWEEN CRANKSHAFT POSITION SENSOR AND ECM CONNECTOR.</b>                      Measure the resistance of harness between crankshaft position sensor connector and engine ground.</p> <p><b>Connector &amp; terminal</b>  <b>(E10) No. 2 — Engine ground:</b>                      Is the measured value less than specified value?</p>	5 Ω	Go to step 4.	Repair the harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between crankshaft position sensor and ECM connector • Poor contact in ECM connector • Poor contact in coupling connector
<p><b>4</b></p> <p><b>CHECK CONDITION OF CRANKSHAFT POSITION SENSOR.</b>                      Is the crankshaft position sensor installation bolt tightened securely?</p>	Bolt is tightened securely.	Go to step 5.	Tighten the crankshaft position sensor installation bolt securely.
<p><b>5</b></p> <p><b>CHECK CRANKSHAFT POSITION SENSOR.</b>                      1) Remove the crankshaft position sensor.                      2) Measure the resistance between connector terminals of crankshaft position sensor.</p> <p><b>Terminals</b>  <b>No. 1 — No. 2:</b>                      Is the measured value within specified value?</p>	1 — 4 kΩ	Repair the poor contact in crankshaft position sensor connector.	Replace the crankshaft position sensor. <Ref. to FU(TURBO)-29, Crankshaft Position Sensor.>



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

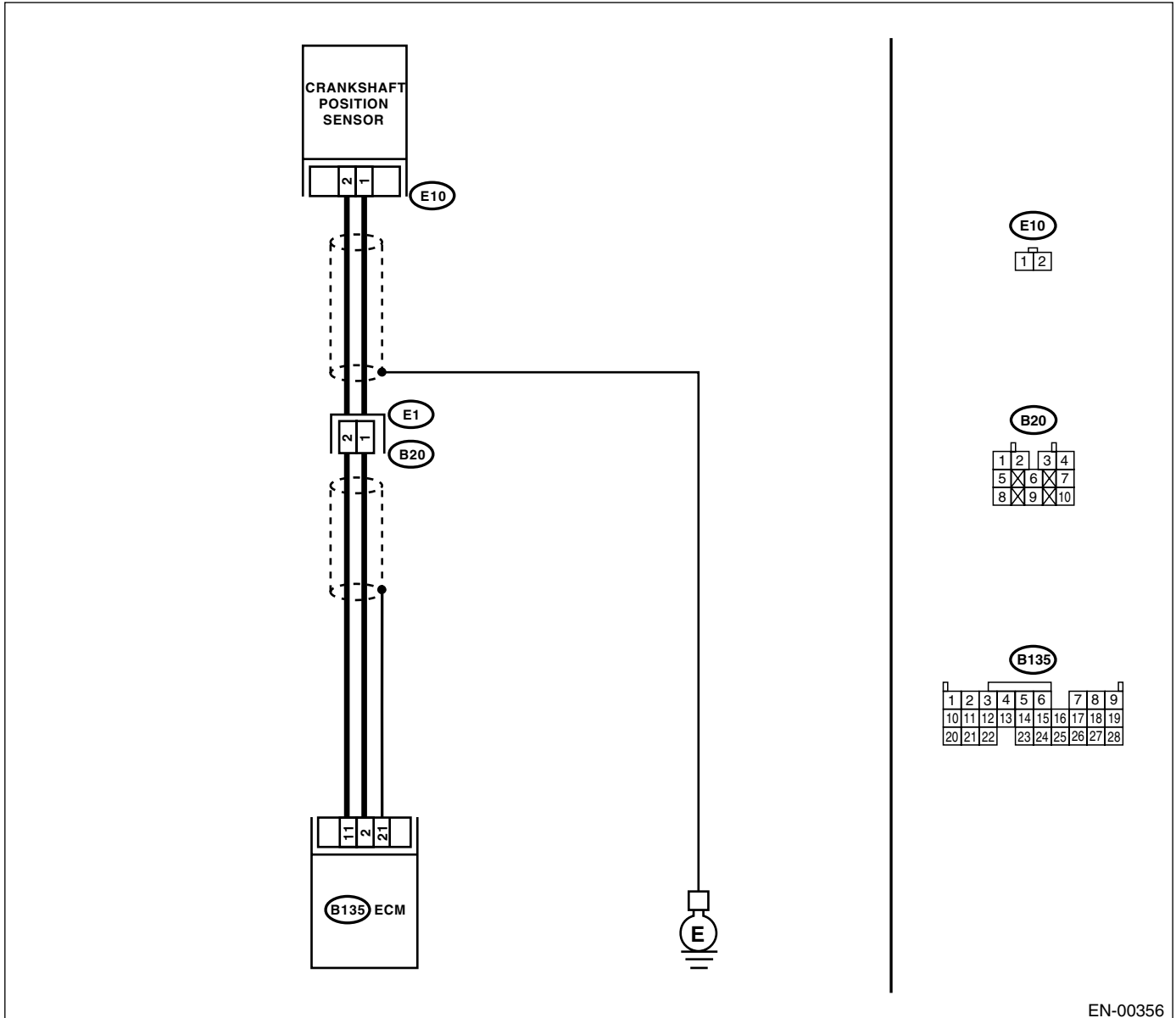
## AN:DTC P0336 — CRANKSHAFT POSITION SENSOR “A” CIRCUIT RANGE/ PERFORMANCE —

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

- **WIRING DIAGRAM:**



EN-00356

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>1</b> <b>CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.</b> Is any other DTC displayed?	Other DTC is displayed.	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(TURBO)-77, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
<b>2</b> <b>CHECK CONDITION OF CRANKSHAFT POSITION SENSOR.</b> Turn the ignition switch to OFF. Is the crankshaft position sensor installation bolt tightened securely?	Bolt is tightened securely.	Go to step 3.	Tighten the crankshaft position sensor installation bolt securely.
<b>3</b> <b>CHECK CRANKSHAFT SPROCKET.</b> Remove the front belt cover. Are the crankshaft sprocket teeth cracked or damaged?	Crankshaft sprocket teeth are cracked or damaged.	Replace the crankshaft sprocket. <Ref. to FU(TURBO)-29, Crankshaft Position Sensor.>	Go to step 4.
<b>4</b> <b>CHECK INSTALLATION CONDITION OF TIMING BELT.</b> Turn the crankshaft, and align alignment mark on crankshaft sprocket with alignment mark on cylinder block. Is the timing belt dislocated from its proper position?	Timing belt is dislocated from its proper position.	Repair the installation condition of timing belt. <Ref. to ME(TURBO)-48, Timing Belt Assembly.>	Replace the crankshaft position sensor. <Ref. to FU(TURBO)-29, Crankshaft Position Sensor.>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

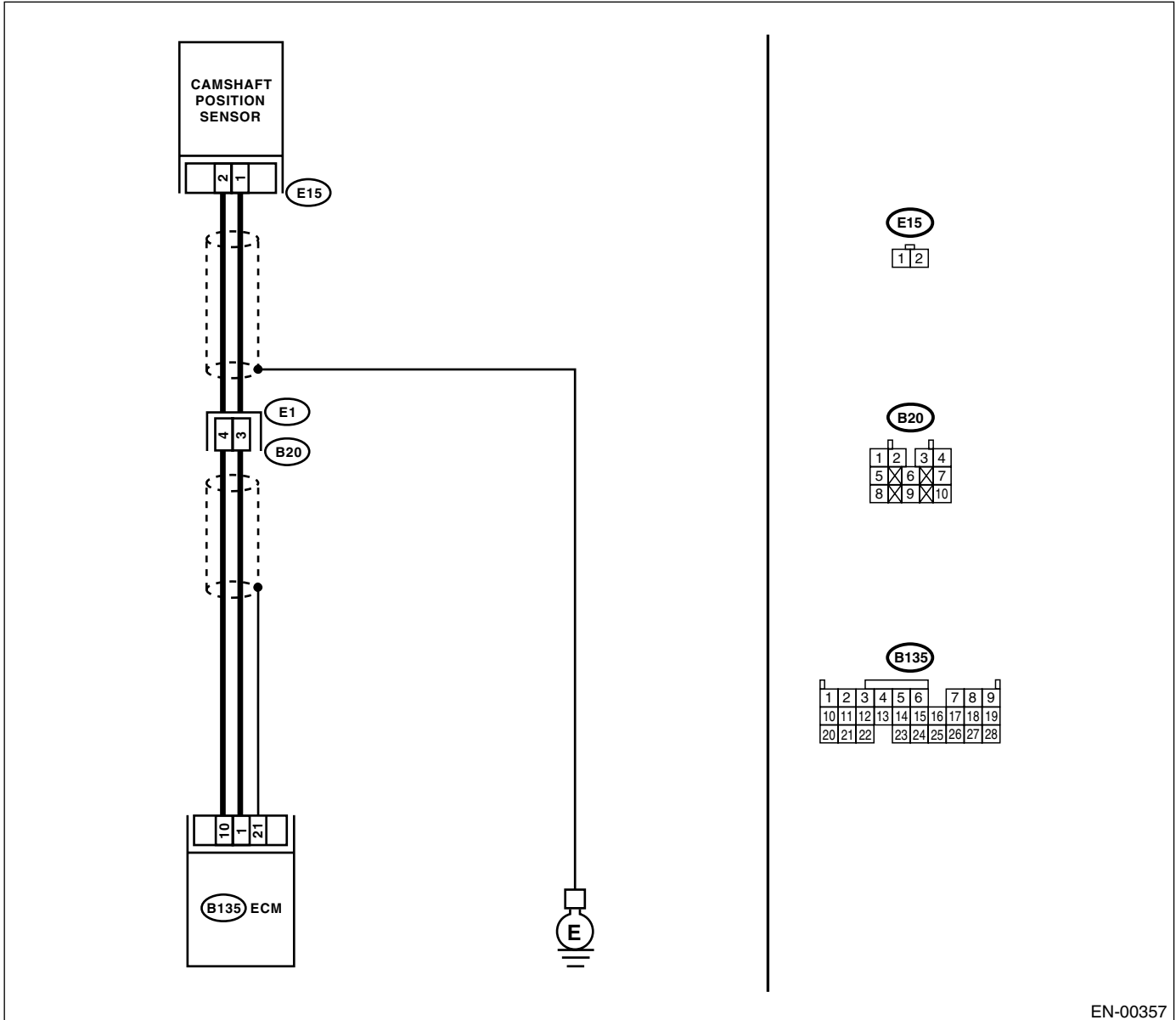
## AO:DTC P0340 — CAMSHAFT POSITION SENSOR “A” CIRCUIT (BANK 1 OR SINGLE SENSOR) —

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

- **WIRING DIAGRAM:**



EN-00357

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>1</b></p> <p><b>CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR.</b></p> <p>1) Turn the ignition switch to OFF.                      2) Disconnect the connector from camshaft position sensor.                      3) Measure the resistance of harness between camshaft position sensor connector and engine ground.</p> <p><b>Connector &amp; terminal</b>  <b>(E15) No. 1 — Engine ground:</b></p> <p>Is the measured value more than specified value?</p>	100 k $\Omega$	Repair the harness and connector.  NOTE: In this case, repair the following: <ul style="list-style-type: none"> <li>• Open circuit in harness between camshaft position sensor and ECM connector</li> <li>• Poor contact in ECM connector</li> <li>• Poor contact in coupling connector</li> </ul>	Go to step 2.
<p><b>2</b></p> <p><b>CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR.</b></p> <p>Measure the resistance of harness between camshaft position sensor connector and engine ground.</p> <p><b>Connector &amp; terminal</b>  <b>(E15) No. 1 — Engine ground:</b></p> <p>Is the measured value less than specified value?</p>	10 $\Omega$	Repair the ground short circuit in harness between camshaft position sensor and ECM connector.  NOTE: The harness between both connectors are shielded. Repair the ground short circuit in harness together with shield.	Go to step 3.
<p><b>3</b></p> <p><b>CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR.</b></p> <p>Measure the resistance of harness between camshaft position sensor connector and engine ground.</p> <p><b>Connector &amp; terminal</b>  <b>(E15) No. 2 — Engine ground:</b></p> <p>Is the measured value less than specified value?</p>	5 $\Omega$	Go to step 4.	Repair the harness and connector.  NOTE: In this case, repair the following: <ul style="list-style-type: none"> <li>• Open circuit in harness between camshaft position sensor and ECM connector</li> <li>• Poor contact in ECM connector</li> <li>• Poor contact in coupling connector</li> </ul>
<p><b>4</b></p> <p><b>CHECK CONDITION OF CAMSHAFT POSITION SENSOR.</b></p> <p>Is the camshaft position sensor installation bolt tightened securely?</p>	Bolt is tightened securely.	Go to step 5.	Tighten the camshaft position sensor installation bolt securely.
<p><b>5</b></p> <p><b>CHECK CAMSHAFT POSITION SENSOR.</b></p> <p>1) Remove the camshaft position sensor.                      2) Measure the resistance between connector terminals of camshaft position sensor.</p> <p><b>Terminals</b>  <b>No. 1 — No. 2:</b></p> <p>Is the measured value within specified value?</p>	1 — 4 k $\Omega$	Repair the poor contact in camshaft position sensor connector.	Replace the camshaft position sensor. <Ref. to FU(TURBO)-30, Camshaft Position Sensor.>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

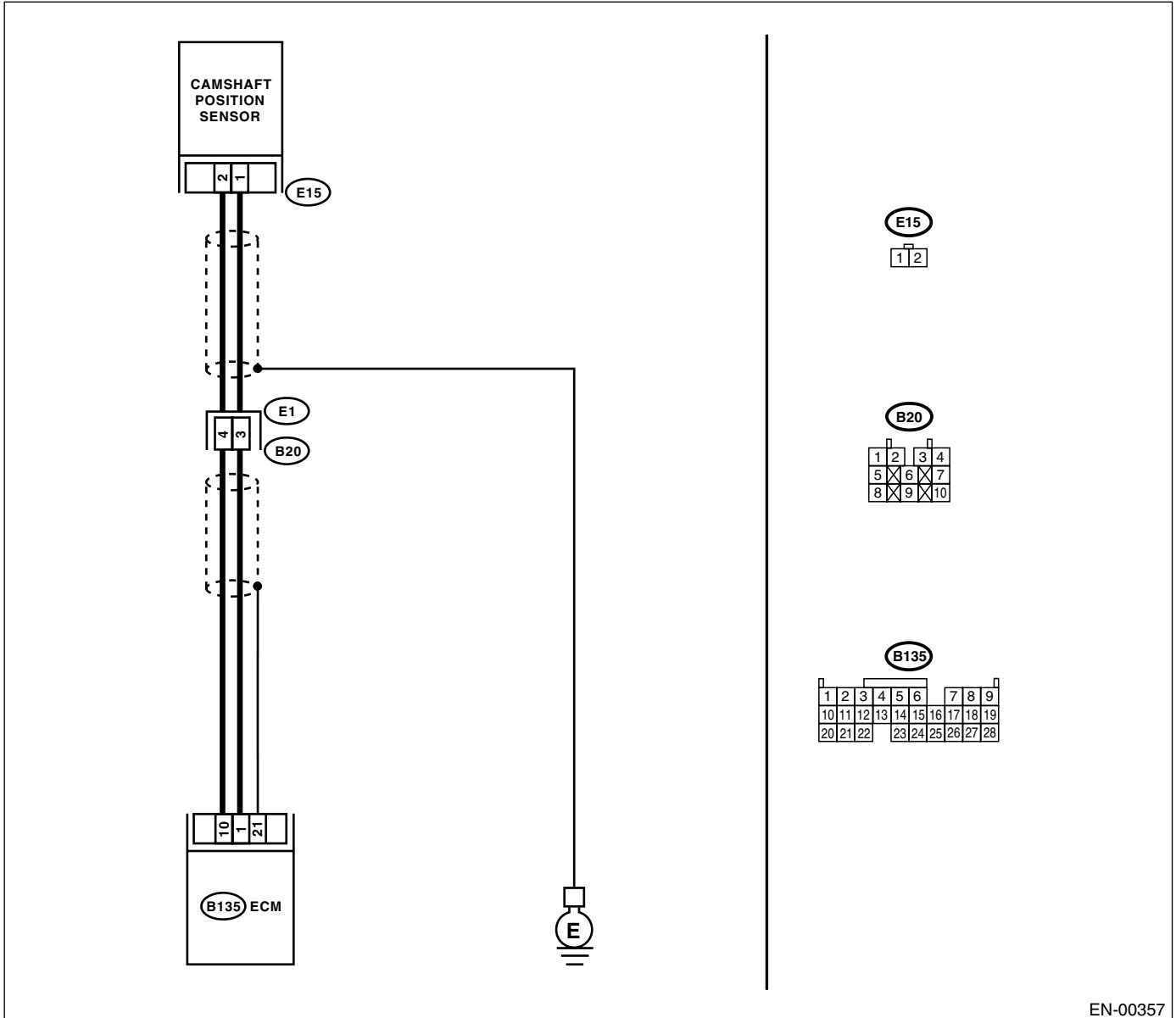
## AP:DTC P0341 — CAMSHAFT POSITION SENSOR “A” CIRCUIT RANGE/PERFORMANCE (BANK 1 OR SINGLE SENSOR) —

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

- **WIRING DIAGRAM:**



EN-00357

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>1</b></p> <p><b>CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.</b> Is any other DTC displayed?</p>	Other DTC is displayed.	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(TURBO)-77, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
<p><b>2</b></p> <p><b>CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR.</b> 1) Turn the ignition switch to OFF. 2) Disconnect the connector from camshaft position sensor. 3) Measure the resistance of harness between camshaft position sensor connector and engine ground. <b>Connector &amp; terminal</b> <b>(E15) No. 1 — Engine ground:</b> Is the measured value more than specified value?</p>	100 k $\Omega$	Repair the harness and connector. <b>NOTE:</b> In this case, repair the following: • Open circuit in harness between camshaft position sensor and ECM connector • Poor contact in ECM connector • Poor contact in coupling connector	Go to step 3.
<p><b>3</b></p> <p><b>CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR.</b> Measure the resistance of harness between camshaft position sensor connector and engine ground. <b>Connector &amp; terminal</b> <b>(E15) No. 1 — Engine ground:</b> Is the measured value less than specified value?</p>	10 $\Omega$	Repair the ground short circuit in harness between camshaft position sensor and ECM connector. <b>NOTE:</b> The harness between both connectors are shielded. Repair ground short circuit in harness together with shield.	Go to step 4.
<p><b>4</b></p> <p><b>CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR.</b> Measure the resistance of harness between camshaft position sensor connector and engine ground. <b>Connector &amp; terminal</b> <b>(E15) No. 2 — Engine ground:</b> Is the measured value less than specified value?</p>	5 $\Omega$	Go to step 5.	Repair the harness and connector. <b>NOTE:</b> In this case, repair the following: • Open circuit in harness between camshaft position sensor and ECM connector • Poor contact in ECM connector • Poor contact in coupling connector
<p><b>5</b></p> <p><b>CHECK CONDITION OF CAMSHAFT POSITION SENSOR.</b> Is the camshaft position sensor installation bolt tightened securely?</p>	Bolt is tightened securely.	Go to step 6.	Tighten the camshaft position sensor installation bolt securely.

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>6 CHECK CAMSHAFT POSITION SENSOR.</b> 1)Remove the camshaft position sensor. 2)Measure the resistance between connector terminals of camshaft position sensor. <b>Terminals</b> <b>No. 1 — No. 2:</b> Is the measured value within specified value?	1 — 4 kΩ	Go to step 7.	Replace the camshaft position sensor. <Ref. to FU(TURBO)-30, Camshaft Position Sensor.>
<b>7 CHECK CONDITION OF CAMSHAFT POSITION SENSOR.</b> Turn the ignition switch to OFF. Is the camshaft position sensor installation bolt tightened securely?	Bolt is tightened securely.	Go to step 8.	Tighten the camshaft position sensor installation bolt securely.
<b>8 CHECK CAMSHAFT SPROCKET.</b> Remove the front belt cover. <Ref. to ME(SOHC)-45, Belt Cover.> Are the camshaft sprocket teeth cracked or damaged?	Camshaft sprocket teeth are cracked or damaged.	Replace the camshaft sprocket. <Ref. to ME(TURBO)-56, Camshaft Sprocket.>	Go to step 9.
<b>9 CHECK INSTALLATION CONDITION OF TIMING BELT.</b> Turn the camshaft, and align alignment mark on camshaft sprocket with alignment mark on timing belt cover LH. Is the timing belt dislocated from its proper position?	Timing belt is dislocated from its proper position.	Repair the installation condition of timing belt. <Ref. to ME(TURBO)-48, Timing Belt Assembly.>	Replace the camshaft position sensor. <Ref. to FU(TURBO)-30, Camshaft Position Sensor.>

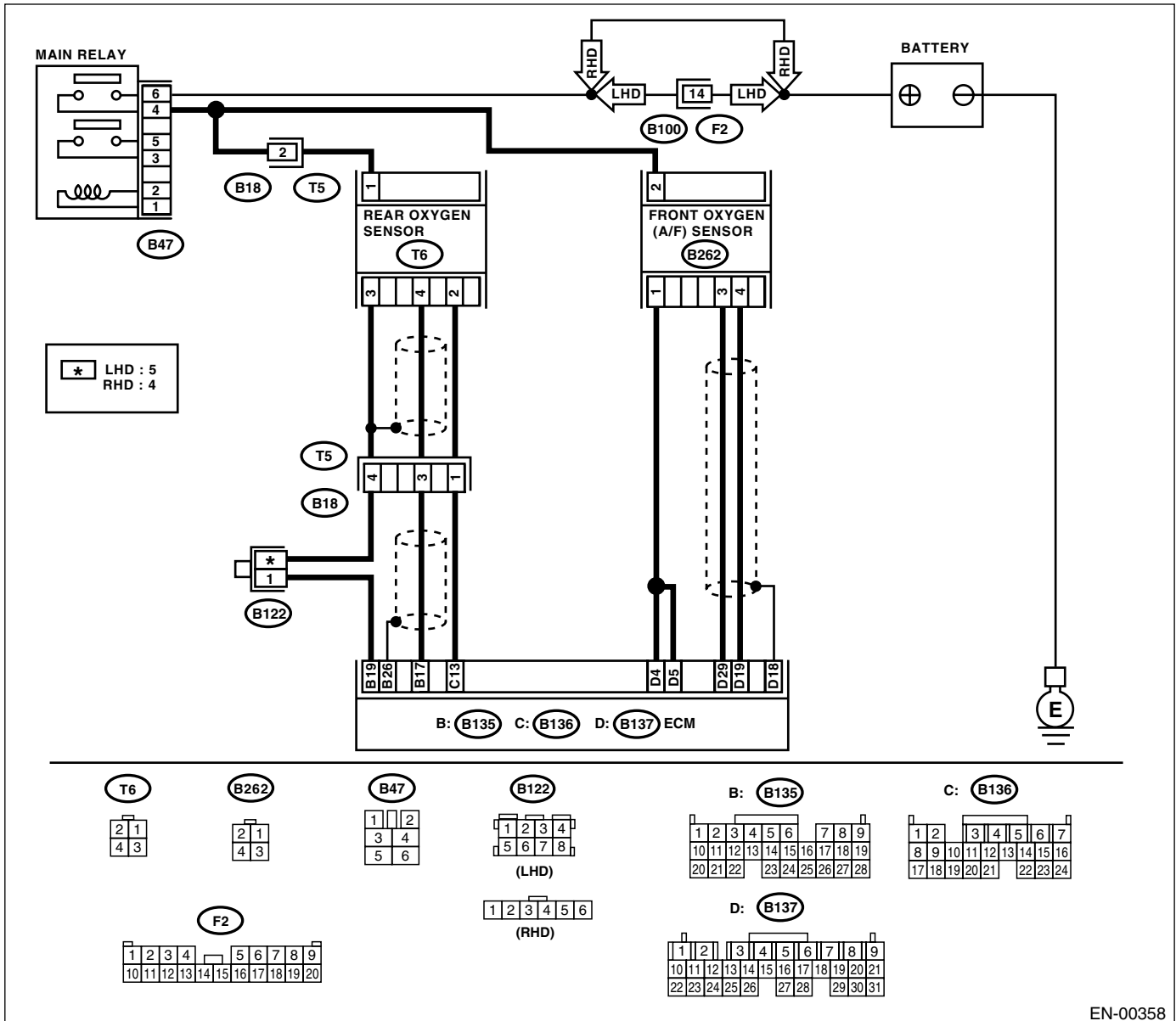
## AQ:DTC P0420 — CATALYST SYSTEM EFFICIENCY BELOW THRESHOLD (BANK 1) —

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

• **WIRING DIAGRAM:**



EN-00358



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>1</b> <b>CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.</b> Is any other DTC displayed?	Other DTC is displayed.	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(TURBO)-77, List of Diagnostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0420.	Go to step 2.
<b>2</b> <b>CHECK EXHAUST SYSTEM.</b> 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"> <li>•Between cylinder head and front exhaust pipe</li> <li>•Between front exhaust pipe and front catalytic converter</li> <li>•Between front catalytic converter and rear catalytic converter</li> </ul> Is there a fault in exhaust system?	There is a fault.	Repair or replace the exhaust system. <Ref. to EX(TURBO)-2, General Description.>	Go to step 3.
<b>3</b> <b>CHECK REAR CATALYTIC CONVERTER.</b> Separate the rear catalytic converter from rear exhaust pipe. Is there damage at rear face of rear catalyst?	There is damage.	Replace the front catalytic converter. <Ref. to EC(TURBO)-3, Front Catalytic Converter.> and rear catalytic converter <Ref. to EC(TURBO)-4, Rear Catalytic Converter.>	Go to step 4.
<b>4</b> <b>CHECK FRONT CATALYTIC CONVERTER.</b> Remove the front catalytic converter. Is there damage at rear face or front face of front catalyst?	There is damage.	Replace the front catalytic converter. <Ref. to EC(TURBO)-3, Front Catalytic Converter.>	Contact with your Subaru distributor service. NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.

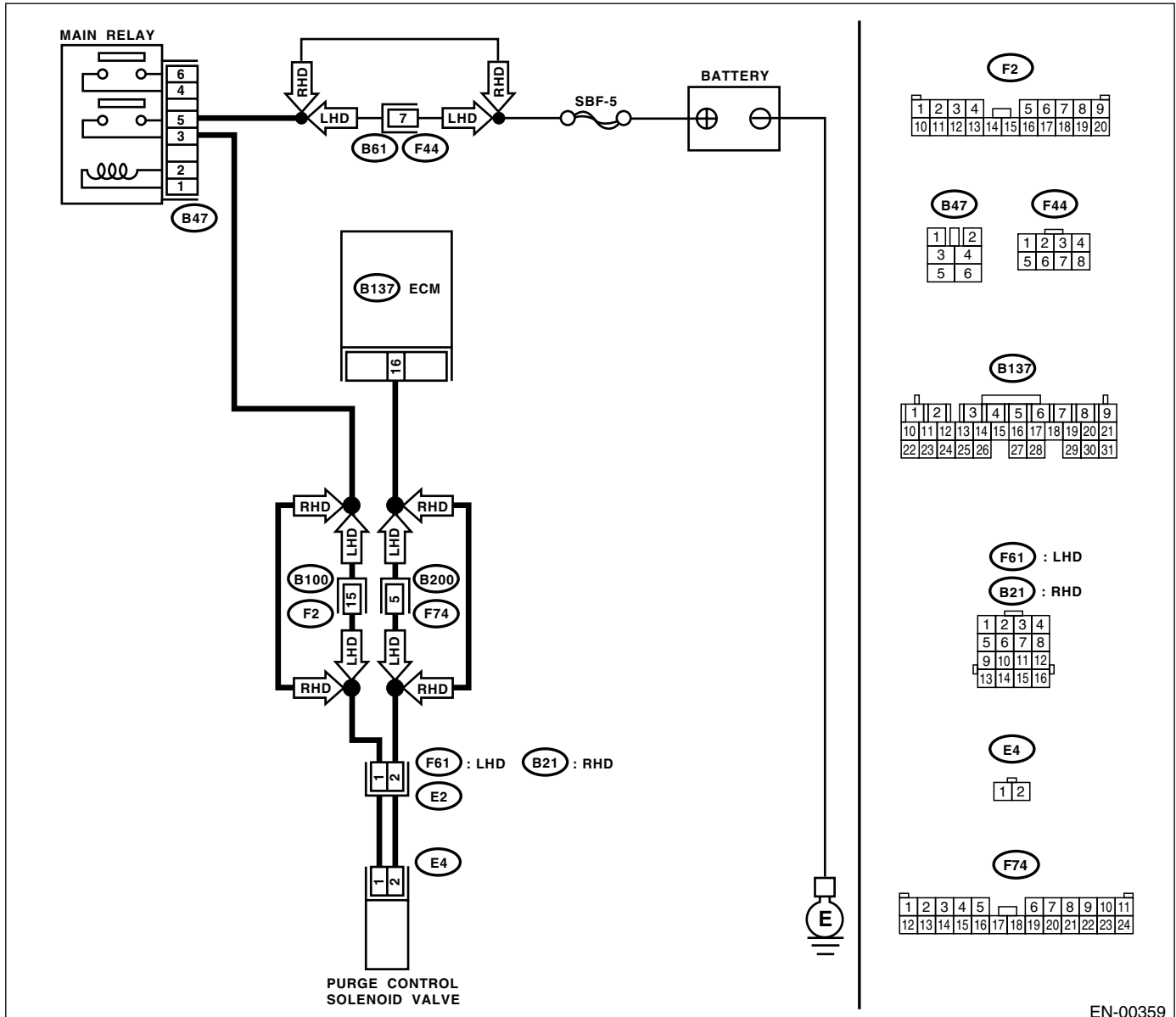
## AR:DTC P0458 — EVAPORATIVE EMISSION CONTROL SYSTEM PURGE CONTROL VALVE CIRCUIT LOW —

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

• **WIRING DIAGRAM:**



EN-00359

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>1</b></p> <p><b>CHECK OUTPUT SIGNAL FROM ECM.</b>                      1) Turn the ignition switch to ON.                      2) Measure the voltage between ECM and chassis ground.</p> <p><b>Connector &amp; terminal</b>  <b>(B137) No. 16 (+) — Chassis ground (-):</b>                      Is the measured value more than specified value?</p>	10 V	Even if MIL lights up, the circuit has returned to a normal condition at this time. Contact with your Subaru distributor service.  <b>NOTE:</b> Inspection by DTM is required, because probable cause is deterioration of multiple parts.	Go to step 2.
<p><b>2</b></p> <p><b>CHECK HARNESS BETWEEN PURGE CONTROL SOLENOID VALVE AND ECM CONNECTOR.</b>                      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.</p> <p><b>Connector &amp; terminal</b>  <b>(E4) No. 2 — Engine ground:</b>                      Is the measured value less than specified value?</p>	10 Ω	Repair the ground short circuit in harness between ECM and purge control solenoid valve connector.	Go to step 3.
<p><b>3</b></p> <p><b>CHECK HARNESS BETWEEN PURGE CONTROL SOLENOID VALVE AND ECM CONNECTOR.</b>                      Measure the resistance of harness between ECM and purge control solenoid valve of harness connector.</p> <p><b>Connector &amp; terminal</b>  <b>(B137) No. 16 — (E4) No. 2:</b>                      Is the measured value less than specified value?</p>	1 Ω	Go to step 4.	Repair the open circuit in harness between ECM and purge control solenoid valve connector.  <b>NOTE:</b> In this case, repair the following: <ul style="list-style-type: none"> <li>• Open circuit in harness between ECM and purge control solenoid valve connector</li> <li>• Poor contact in coupling connector</li> </ul>
<p><b>4</b></p> <p><b>CHECK PURGE CONTROL SOLENOID VALVE.</b>                      1) Remove the purge control solenoid valve.                      2) Measure the resistance between purge control solenoid valve terminals.</p> <p><b>Terminals</b>  <b>No. 1 — No. 2:</b>                      Is the measured value within specified value?</p>	10 — 100 Ω	Go to step 5.	Replace the purge control solenoid valve. <Ref. to EC(TURBO)-7, Purge Control Solenoid Valve.>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>5</b> <b>CHECK POWER SUPPLY TO PURGE CONTROL SOLENOID VALVE.</b> 1) Turn the ignition switch to ON. 2) Measure the voltage between purge control solenoid valve and engine ground. <b>Connector &amp; terminal</b> <b>(E4) No. 1 (+) — Engine ground (-):</b> Is the measured value more than specified value?	10 V	Go to step 6.	Repair the open circuit in harness between main relay and purge control solenoid valve connector.
<b>6</b> <b>CHECK POOR CONTACT.</b> Check poor contact in purge control solenoid valve connector. Is there poor contact in purge control solenoid valve connector?	Poor contact occurs.	Repair the poor contact in purge control solenoid valve connector.	Contact with your Subaru distributor service. <b>NOTE:</b> Inspection by DTM is required, because probable cause is deterioration of multiple parts.

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

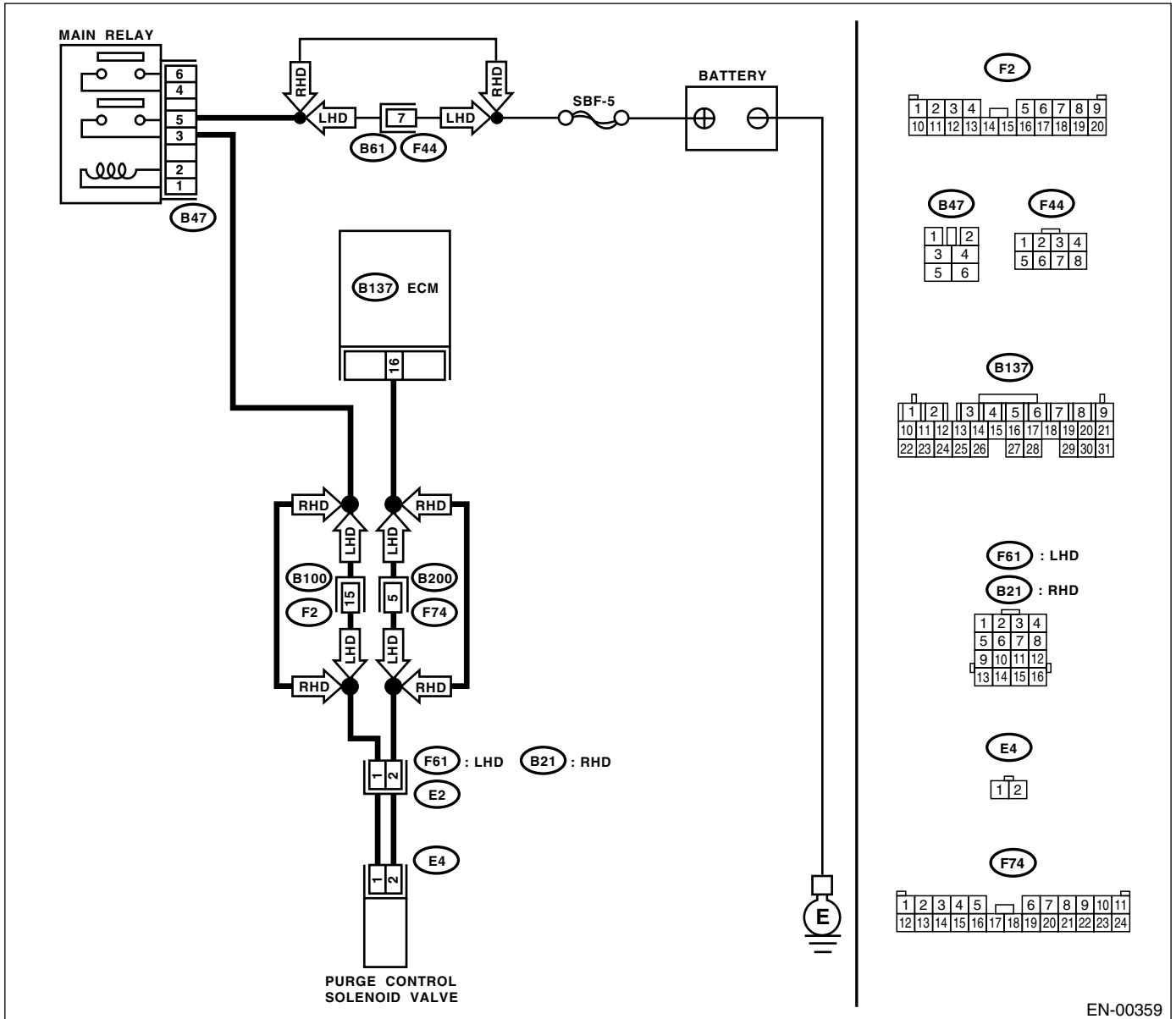
## AS:DTC P0459 — EVAPORATIVE EMISSION CONTROL SYSTEM PURGE CONTROL VALVE CIRCUIT HIGH —

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

• **WIRING DIAGRAM:**



EN-00359

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>1 CHECK OUTPUT SIGNAL FROM ECM.</b>                      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 the voltage between ECM and chassis ground.</p> <p><b>NOTE:</b>                      Purge control solenoid valve operation can be executed using the Subaru Select Monitor. For procedure, refer to "Compulsory Valve Operation Check Mode". &lt;Ref. to EN(TURBO)-50, Compulsory Valve Operation Check Mode.&gt;</p> <p><b>Connector &amp; terminal</b>  <b>(B137) No. 16 (+) — Chassis ground (-):</b>                      Is the measured value within specified value?</p>	0 — 13 V	Go to step 2.	Even if MIL lights up, the circuit has returned to a normal condition at this time. In this case, repair the poor contact in ECM connector.
<p><b>2 CHECK OUTPUT SIGNAL FROM ECM.</b>                      1) Turn the ignition switch to ON.                      2) Measure the voltage between ECM and chassis ground.</p> <p><b>Connector &amp; terminal</b>  <b>(B137) No. 16 (+) — Chassis ground (-):</b>                      Is the measured value more than specified value?</p>	10 V	Go to step 4.	Go to step 3.
<p><b>3 CHECK POOR CONTACT.</b>                      Check the poor contact in ECM connector.                      Is there poor contact in ECM connector?</p>	Poor contact occurs.	Repair the poor contact in ECM connector.	Replace the ECM. <Ref. to FU(TURBO)-48, Engine Control Module.>
<p><b>4 CHECK HARNESS BETWEEN PURGE CONTROL SOLENOID VALVE AND ECM CONNECTOR.</b>                      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.</p> <p><b>Connector &amp; terminal</b>  <b>(B137) No. 16 (+) — Chassis ground (-):</b>                      Is the measured value more than specified value?</p>	10 V	Repair the battery short circuit in harness between ECM and purge control solenoid valve connector. After repair, replace the ECM. <Ref. to FU(TURBO)-48, Engine Control Module.>	Go to step 5.
<p><b>5 CHECK PURGE CONTROL SOLENOID VALVE.</b>                      1) Turn the ignition switch to OFF.                      2) Measure the resistance between purge control solenoid valve terminals.</p> <p><b>Terminals</b>  <b>No. 1 — No. 2:</b>                      Is the measured value less than specified value?</p>	1 $\Omega$	Replace the purge control solenoid valve <Ref. to EC(TURBO)-7, Purge Control Solenoid Valve.> and ECM <Ref. to FU(TURBO)-48, Engine Control Module.>	Go to step 6.
<p><b>6 CHECK POOR CONTACT.</b>                      Check poor contact in ECM connector.                      Is there poor contact in ECM connector?</p>	Poor contact occurs.	Repair the poor contact in ECM connector.	Replace the ECM. <Ref. to FU(TURBO)-48, Engine Control Module.>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

## AT:DTC P0461 — FUEL LEVEL SENSOR CIRCUIT RANGE/PERFORMANCE —

### • DTC DETECTING CONDITION:

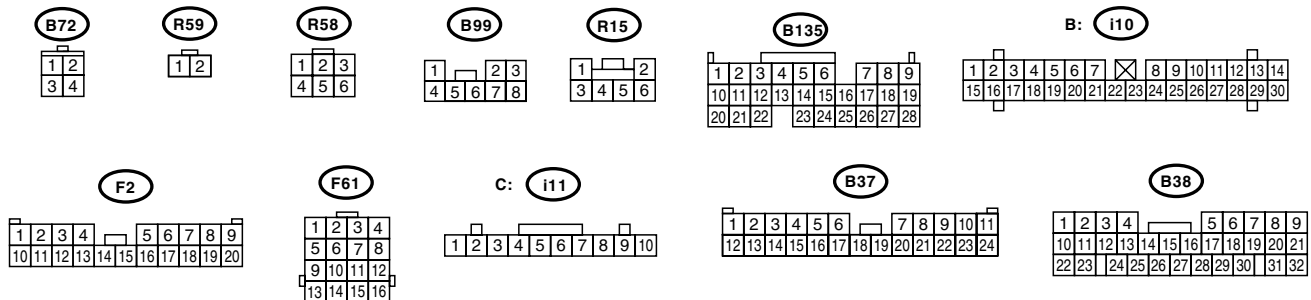
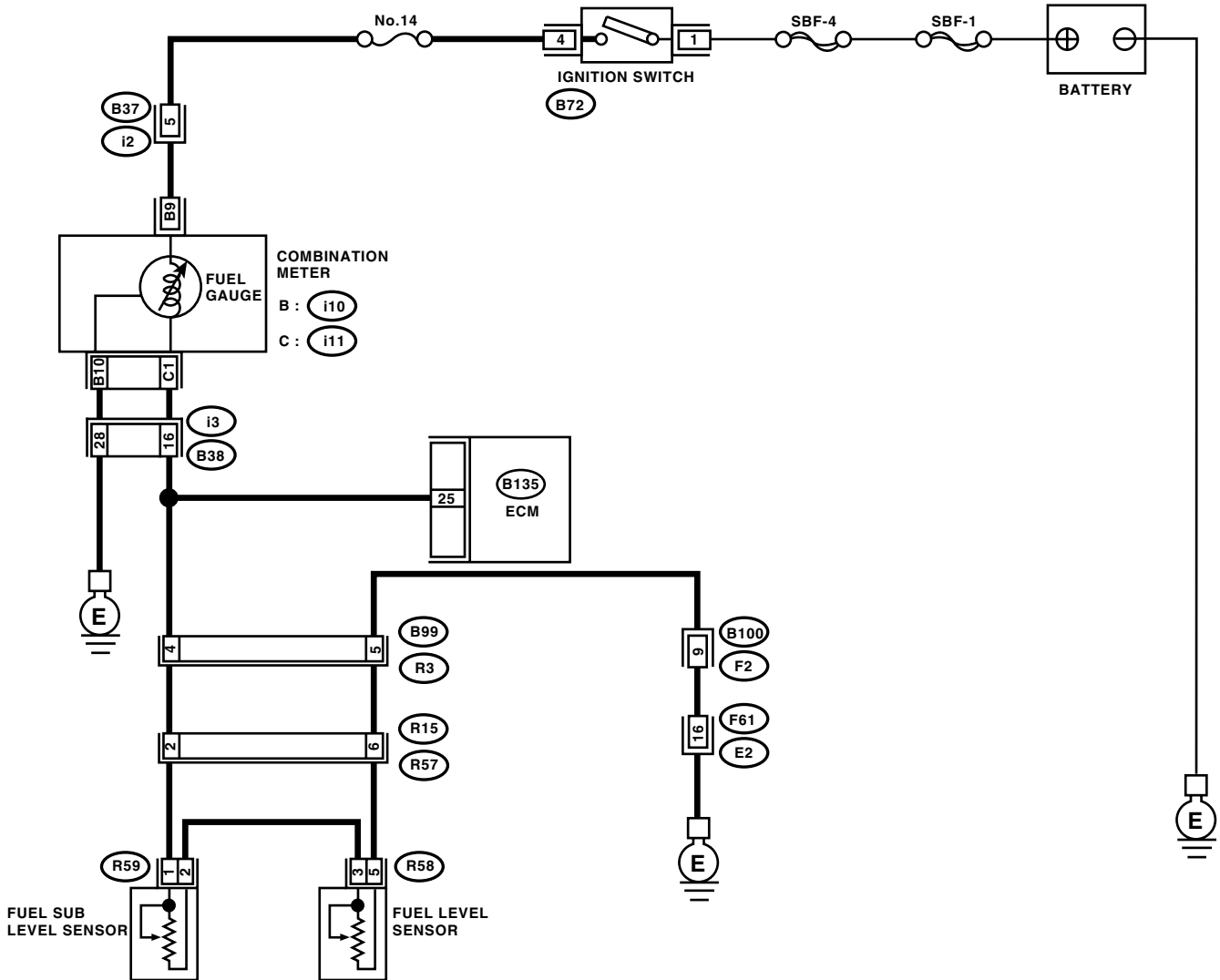
- Two consecutive driving cycles with fault

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

### • WIRING DIAGRAM:

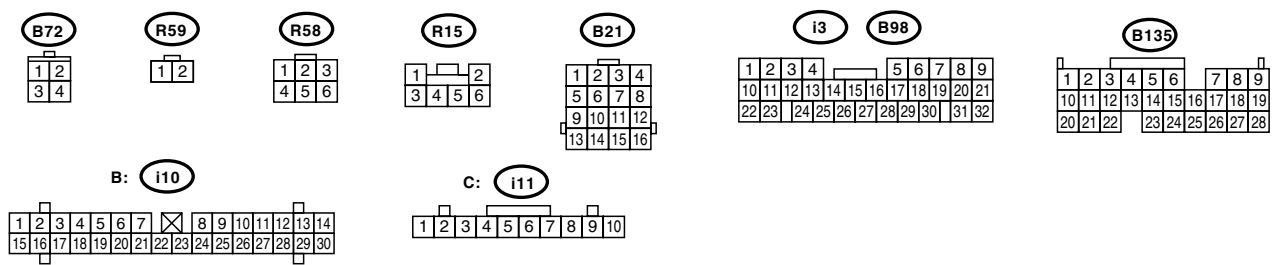
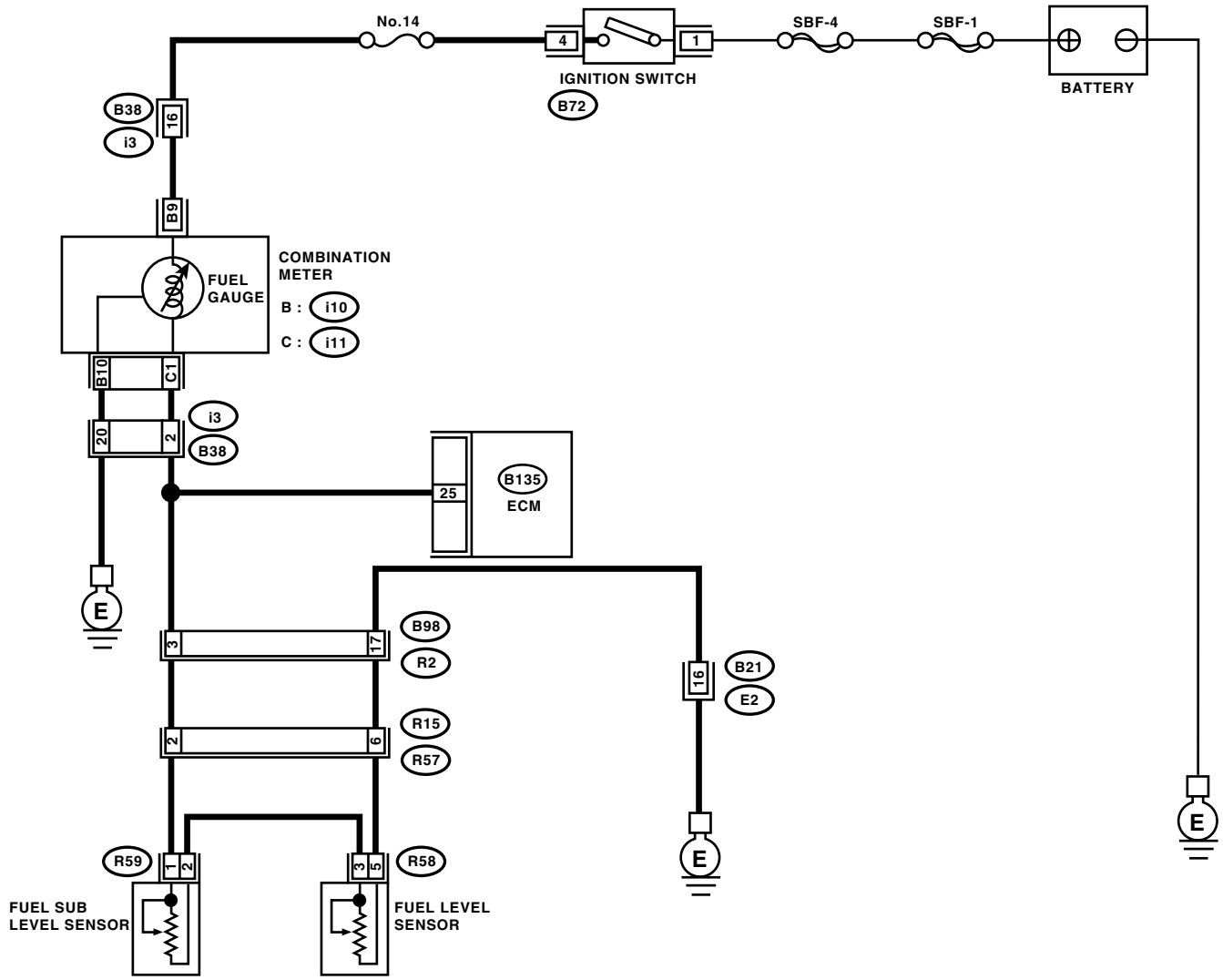
- LHD model



EN-00360

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC) ENGINE (DIAGNOSTICS)

• RHD model



EN-00361



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>1</b> <b>CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.</b> Is any other DTC displayed?	Other DTC is displayed.	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(TURBO)-77, List of Diagnostic Trouble Code (DTC).>  NOTE: In this case, it is not necessary to inspect DTC P0461.	Replace the fuel level sensor. <Ref. to FU(TURBO)-61, Fuel Level Sensor.> and fuel sub level sensor <Ref. to FU(TURBO)-62, Fuel Sub Level Sensor.>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

## AU:DTC P0462 — FUEL LEVEL SENSOR CIRCUIT LOW INPUT —

### • DTC DETECTING CONDITION:

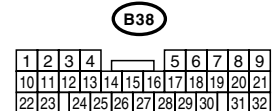
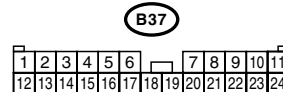
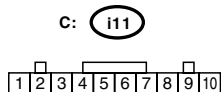
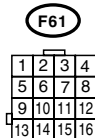
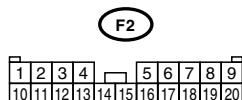
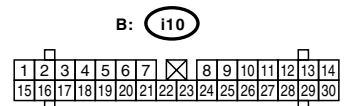
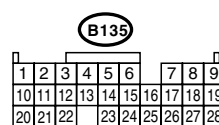
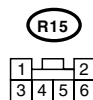
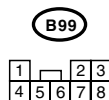
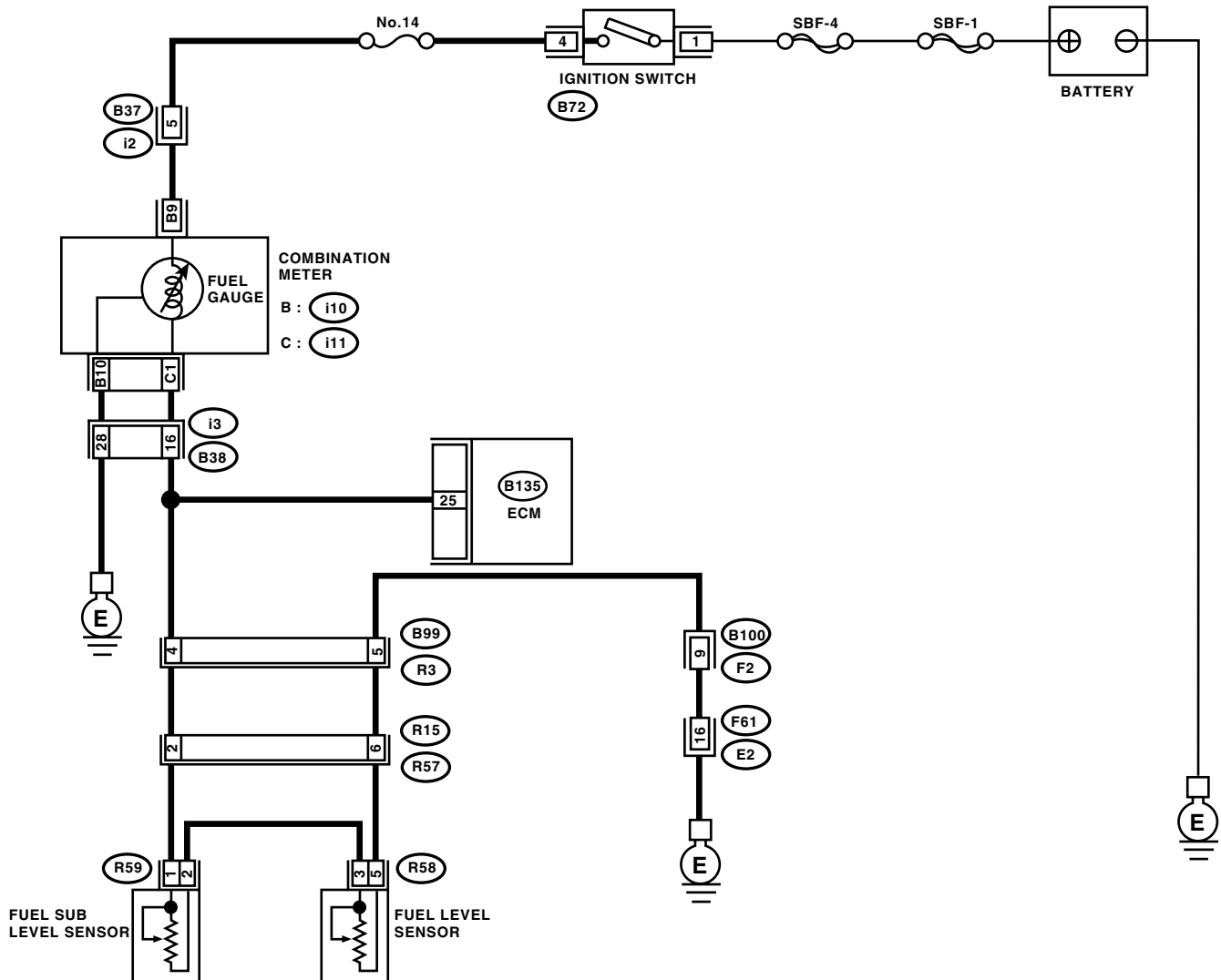
- Two consecutive driving cycles with fault

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

### • WIRING DIAGRAM:

- LHD model

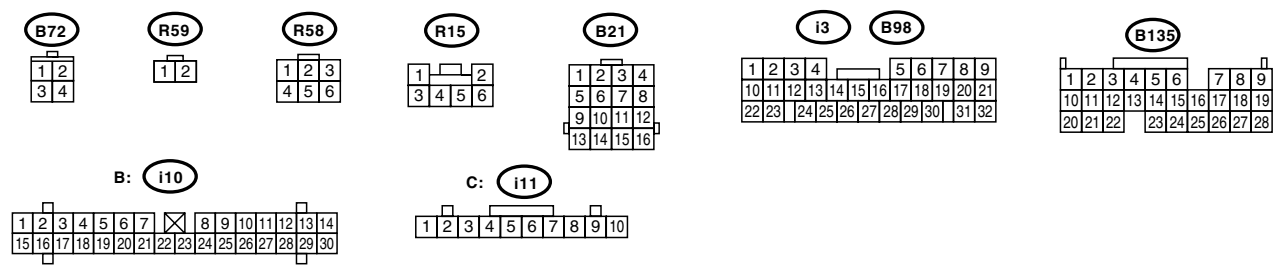
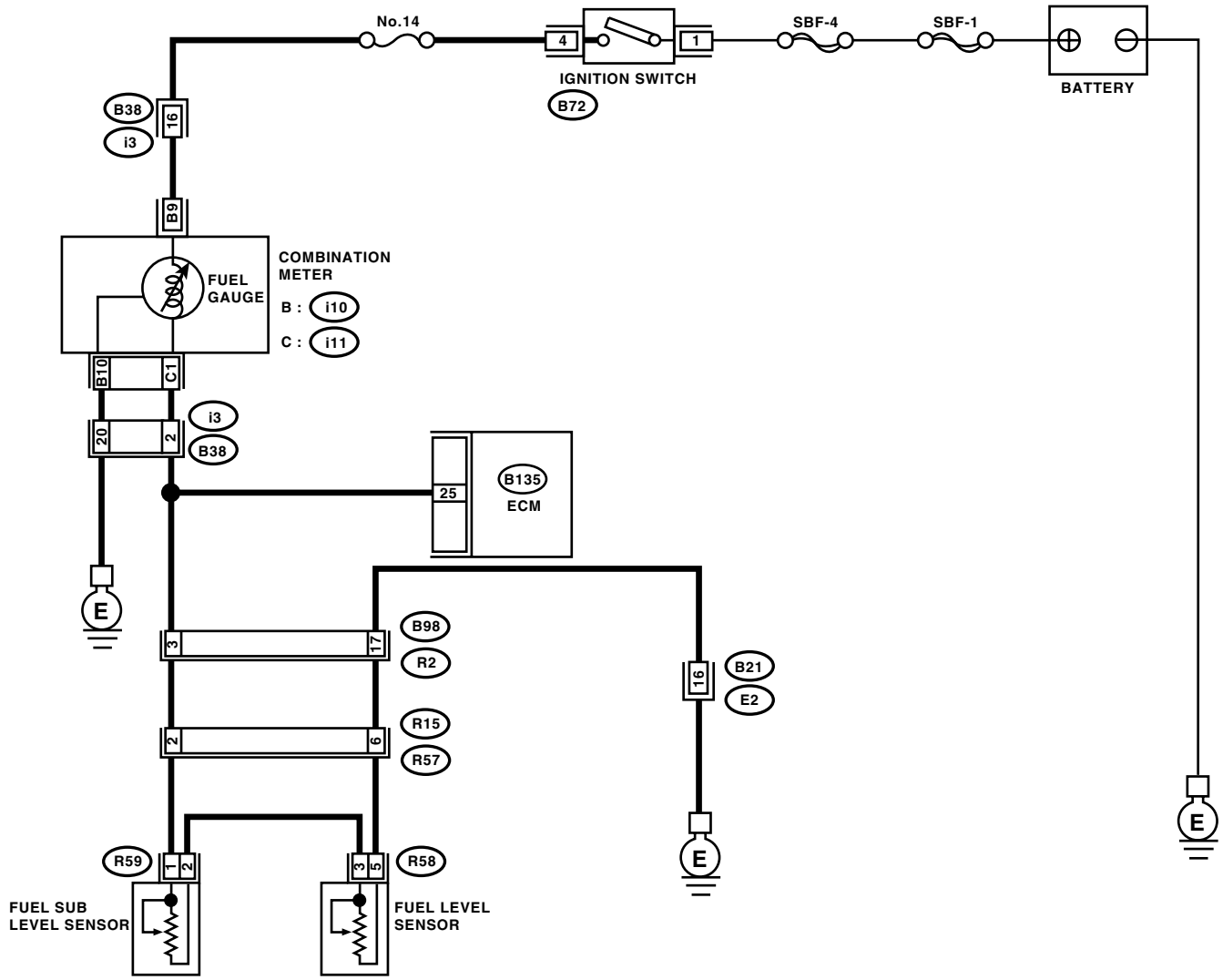


EN-00360

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

### • RHD model



EN-00361

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No	
1	<p><b>CHECK SPEEDOMETER AND TACHOMETER OPERATION IN COMBINATION METER.</b> Does the speedometer and tachometer operate normally?</p>	Speedometer and tachometer operate normally.	Go to step 2.	Repair or replace the combination meter. <Ref. to IDI-3, Combination Meter System.>
2	<p><b>CHECK INPUT SIGNAL FOR ECM.</b> 1)Turn the ignition switch to ON. (engine OFF) 2)Measure the voltage between ECM connector and chassis ground. <b>Connector &amp; terminal</b> <b>(B135) No. 25 (+) — Chassis ground (-):</b> Is the measured value less than specified value?</p>	0.12 V	Go to step 4.	Go to step 3.
3	<p><b>CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR.)</b> Read the data of fuel level sensor signal using Subaru Select Monitor. <b>NOTE:</b> •Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". &lt;Ref. to EN(TURBO)-34, Subaru Select Monitor.&gt; Shake the ECM harness and connector, while monitoring value of Subaru Select Monitor. Is the voltage change less than specified value?</p>	0.12 V	Repair the poor contact in ECM connector.	Even if MIL lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause. <b>NOTE:</b> In this case, repair the following: • Poor contact in combination meter connector • Poor contact in ECM connector • Poor contact in coupling connectors
4	<p><b>CHECK INPUT VOLTAGE OF ECM.</b> 1)Turn the ignition switch to OFF. 2)Separate the 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. <b>Connector &amp; terminal</b> <b>(B135) No. 25 (+) — Chassis ground (-):</b> Is the measured value more than specified value?</p>	0.12 V	Go to step 5.	Go to step 6.
5	<p><b>CHECK HARNESS BETWEEN ECM AND COMBINATION METER.</b> 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. <b>Connector &amp; terminal</b> <b>(B135) No. 25 — Chassis ground:</b> Is the measured value more than specified value?</p>	1 MΩ	Go to step 7.	Repair the ground short circuit in harness between ECM and combination meter connector.

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>6 CHECK HARNESS BETWEEN ECM AND COMBINATION METER.</b> Measure the resistance between ECM and combination meter connector. <b>Connector &amp; terminal</b> <b>(B135) No. 25 — (i12) No. 1:</b> Is the measured value less than specified value?	10 Ω	Repair or replace the combination meter. <Ref. to IDI-3, Combination Meter System.>	Repair the open circuit between ECM and combination meter connector.  NOTE: In this case, repair the following: Poor contact in coupling connector
<b>7 CHECK FUEL TANK CORD.</b> 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. <b>Connector &amp; terminal</b> <b>(R59) No. 1 — Chassis ground:</b> Is the measured value more than specified value?	1 MΩ	Go to step 8.	Repair the ground short circuit in fuel tank cord.
<b>8 CHECK FUEL TANK CORD.</b> 1) Disconnect the connector from fuel pump assembly. 2) Measure the resistance between fuel pump assembly and chassis ground. <b>Connector &amp; terminal</b> <b>(R59) No. 2 — Chassis ground:</b> Is the measured value more than specified value?	1 MΩ	Go to step 9.	Repair the ground short circuit in fuel tank cord.
<b>9 CHECK FUEL LEVEL SENSOR.</b> 1) Remove the fuel pump assembly. <Ref. to FU(TURBO)-59, Fuel Pump.> 2) Measure the resistance between fuel level sensor and terminals with its float set to the full position. <b>Terminals</b> <b>No. 3 — No. 5:</b> Is the measured value within specified value?	0.5 — 2.5 Ω	Go to step 10.	Replace the fuel level sensor.
<b>10 CHECK FUEL SUB LEVEL SENSOR.</b> 1) Remove the fuel sub level sensor. <Ref. to FU(TURBO)-62, Fuel Sub Level Sensor.> 2) Measure the resistance between fuel sub level sensor and terminals with its float set to the full position. <b>Terminals</b> <b>No. 1 — No. 2:</b> Is the measured value within specified value?	0.5 — 2.5 Ω	Repair the poor contact in harness between ECM and combination meter connector.	Replace the fuel sub level sensor.

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

## AV:DTC P0463 — FUEL LEVEL SENSOR CIRCUIT HIGH INPUT —

### • DTC DETECTING CONDITION:

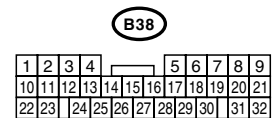
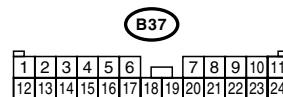
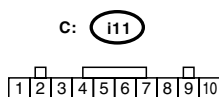
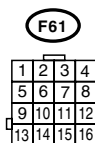
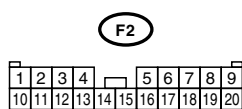
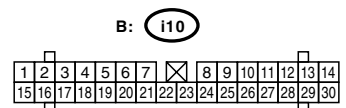
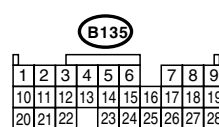
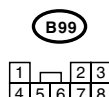
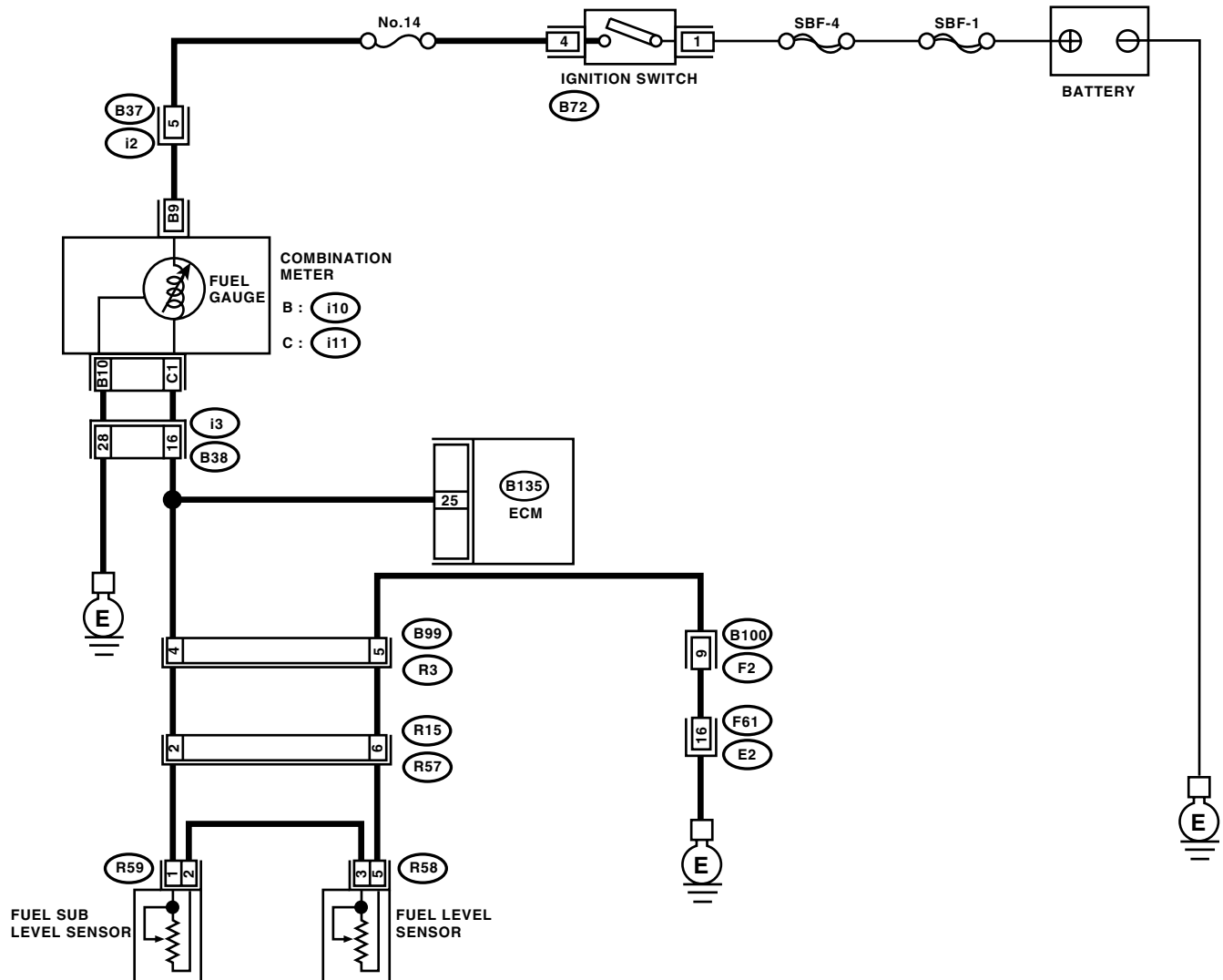
- Two consecutive driving cycles with fault

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

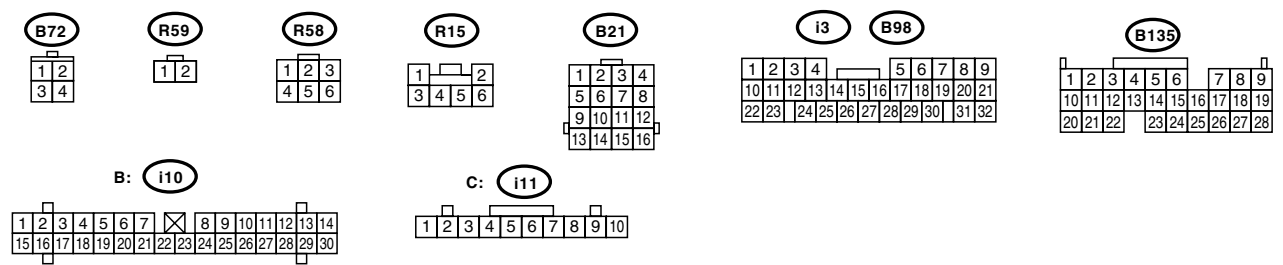
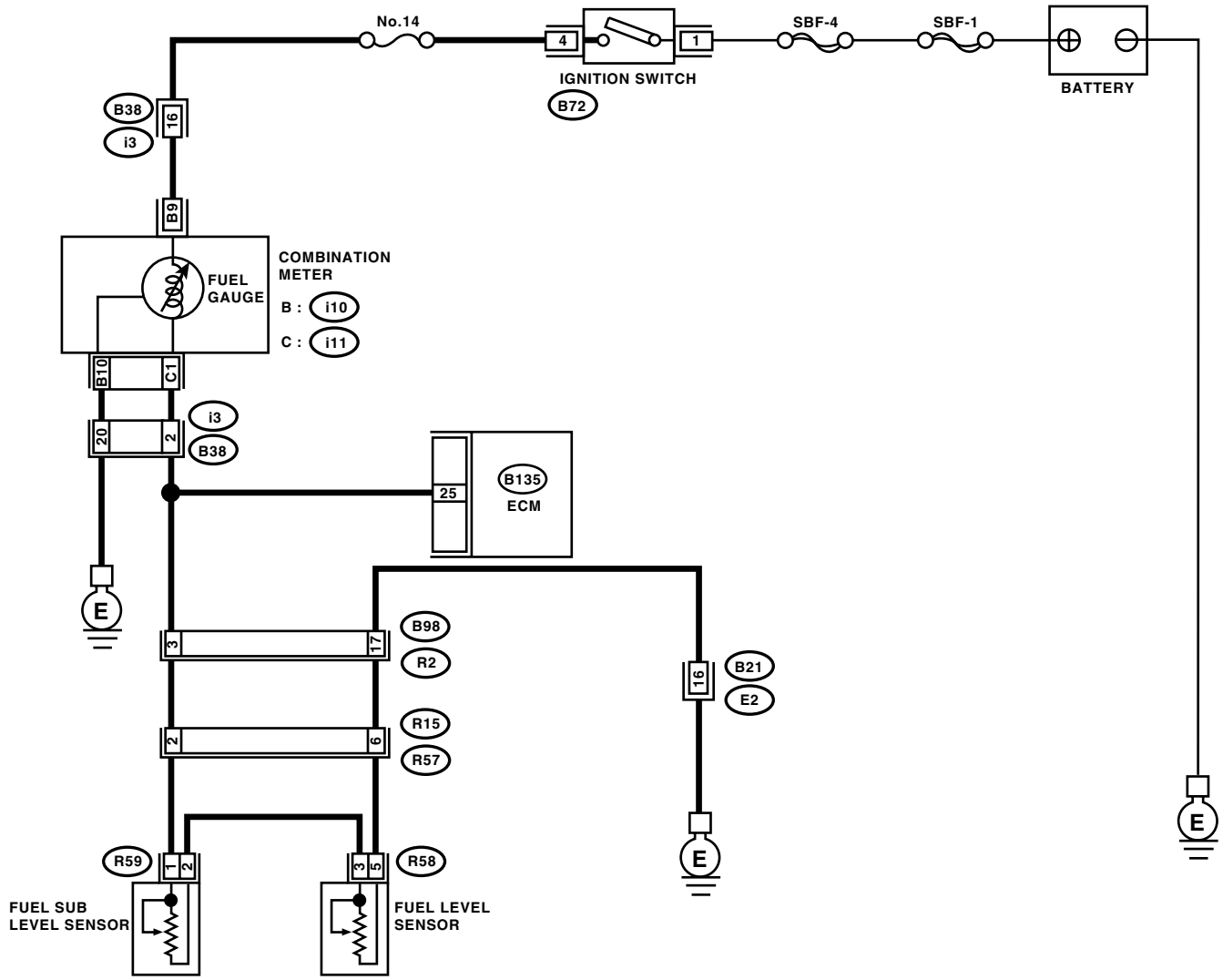
### • WIRING DIAGRAM:

- LHD model



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC) ENGINE (DIAGNOSTICS)

## • RHD model



EN-00361

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No	
1	<p><b>CHECK SPEEDOMETER AND TACHOMETER OPERATION IN COMBINATION METER.</b> Does the speedometer and tachometer operate normally?</p>	Speedometer and tachometer operate normally.	Go to step 2.	Repair or replace the combination meter. <Ref. to IDI-3, Combination Meter System.>
2	<p><b>CHECK INPUT SIGNAL FOR ECM.</b> 1)Turn the ignition switch to ON. (engine OFF) 2)Measure the voltage between ECM connector and chassis ground. <b>Connector &amp; terminal</b> <b>(B135) No. 25 (+) — Chassis ground (-):</b> Is the measured value more than specified value?</p>	4.75 V	Go to step 3.	Even if MIL lights up, 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"> <li>• Poor contact in fuel pump connector</li> <li>• Poor contact in coupling connector</li> </ul>
3	<p><b>CHECK INPUT VOLTAGE OF ECM.</b> 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. <b>Connector &amp; terminal</b> <b>(B135) No. 25 (+) — Chassis ground (-):</b> Is the measured value more than specified value?</p>	4.75 V	Go to step 4.	Repair the battery short circuit between ECM and combination meter connector.
4	<p><b>CHECK HARNESS BETWEEN ECM AND FUEL TANK CORD.</b> 1)Turn the ignition switch to OFF. 2)Separate the fuel tank cord connector (R57) and rear wiring harness connector (R15). 3)Measure the resistance between ECM and fuel tank cord. <b>Connector &amp; terminal</b> <b>(B135) No. 25 — (R15) No. 2:</b> Is the measured value less than specified value?</p>	5 Ω	Go to step 5.	Repair the open circuit between ECM and fuel tank cord.
5	<p><b>CHECK HARNESS BETWEEN FUEL TANK CORD AND CHASSIS GROUND.</b> Measure the resistance between fuel tank cord and chassis ground. <b>Connector &amp; terminal</b> <b>(R15) No. 6 — Chassis ground:</b> Is the measured value less than specified value?</p>	5 Ω	Go to step 6.	Repair the open circuit between fuel tank cord and chassis ground.  NOTE: In this case, repair the following: Poor contact in coupling connectors



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>6 CHECK FUEL TANK CORD.</b> 1)Disconnect the connector from fuel level sensor. 2)Measure the resistance between fuel level sensor and coupling connector. <b>Connector &amp; terminal</b> <b>(R57) No. 6 — (R58) No. 5:</b> Is the measured value less than specified value?	10 Ω	Go to step 7.	Repair the open circuit between coupling connector and fuel level sensor.
<b>7 CHECK FUEL TANK CORD.</b> 1)Disconnect the connector from fuel sub level sensor. 2)Measure the resistance between fuel level sensor and fuel sub level sensor. <b>Connector &amp; terminal</b> <b>(R58) No. 3 — (R59) No. 2:</b> Is the measured value less than specified value?	10 Ω	Go to step 8.	Repair the open circuit between fuel level sensor and fuel sub level sensor.
<b>8 CHECK FUEL TANK CORD.</b> Measure the resistance between fuel sub level sensor and coupling connector. <b>Connector &amp; terminal</b> <b>(R57) No. 2 — (R59) No. 1:</b> Is the measured value less than specified value?	10 Ω	Go to step 9.	Repair the open circuit between coupling connector and fuel sub level sensor.
<b>9 CHECK FUEL LEVEL SENSOR.</b> 1)Remove the fuel pump assembly. <Ref. to FU(TURBO)-59, Fuel Pump.> 2)While moving the fuel level sensor float up and down, measure the resistance between fuel level sensor terminals. <b>Terminals</b> <b>No. 3 — No. 5:</b> Is the measured value more than specified value?	53 Ω	Replace the fuel level sensor. <Ref. to FU(TURBO)-61, Fuel Level Sensor.>	Go to step 10.
<b>10 CHECK FUEL SUB LEVEL SENSOR.</b> 1)Remove the fuel sub level sensor. <Ref. to FU(TURBO)-62, Fuel Sub Level Sensor.> 2)While moving the fuel sub level sensor float up and down, measure the resistance between fuel sub level sensor terminals. <b>Terminals</b> <b>No. 1 — No. 2:</b> Is the measured value more than specified value?	45 Ω	Replace the fuel sub level sensor. <Ref. to FU(TURBO)-62, Fuel Sub Level Sensor.>	Replace the combination meter. <Ref. to IDI-12, Combination Meter Assembly.>

**AW:DTC P0483 — COOLING FAN RATIONALITY CHECK —**

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Occurrence of noise
  - Overheating

**CAUTION:**

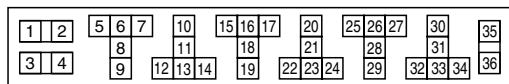
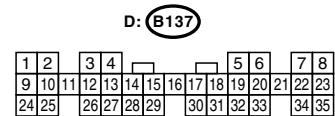
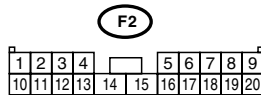
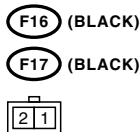
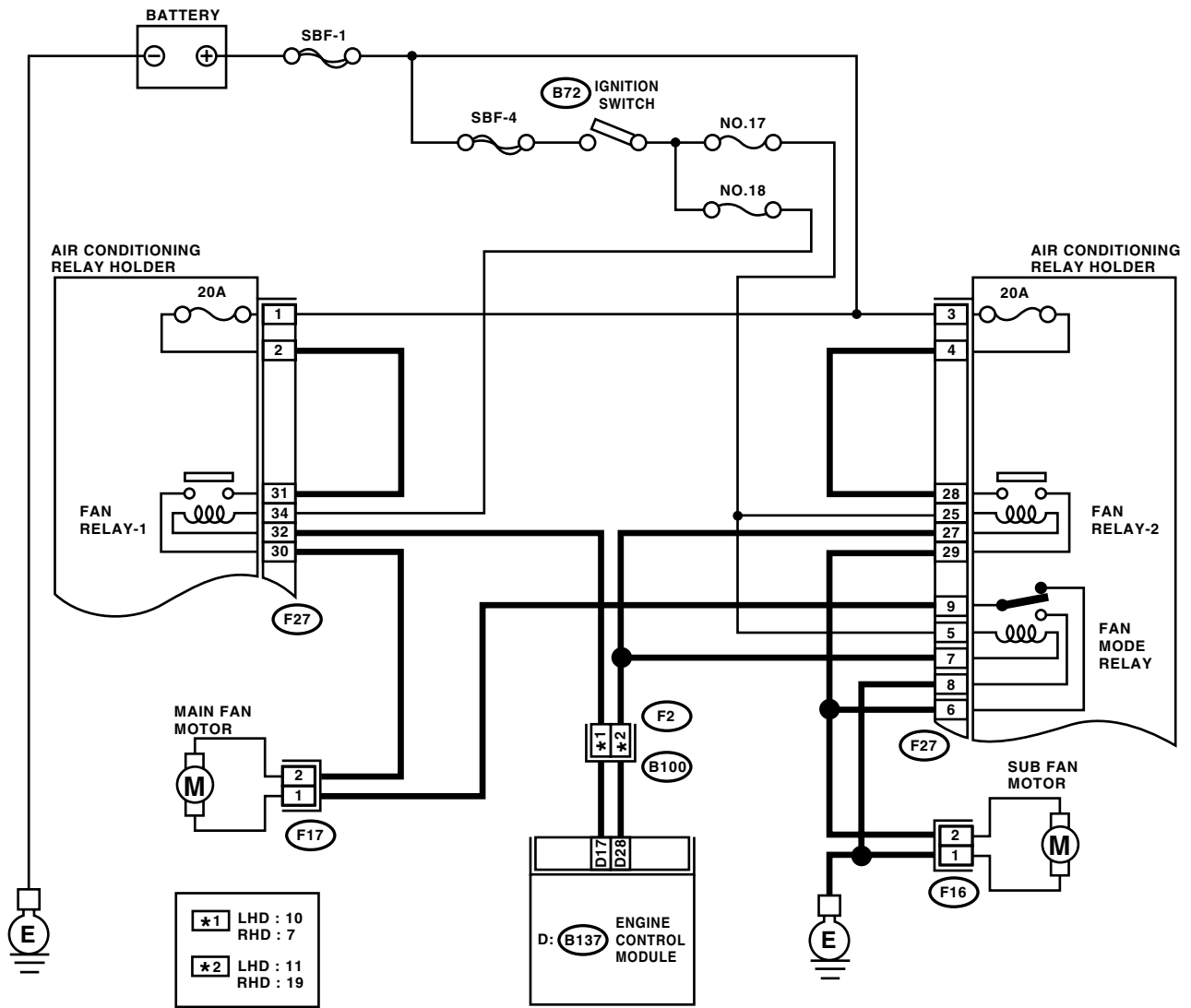
**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .**

**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 (DIAGNOSTICS)

## • WIRING DIAGRAM:



RELAY HOLDER (BLACK)

EN-00362

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	<b>CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.</b> Is any other DTC displayed?	Other DTC is displayed.	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(TURBO)-77, List of Diagnostic Trouble Code (DTC).>	Check the radiator fan, fan motor and thermostat. <Ref. to CO(SOHC)-34, Radiator Main Fan and Fan Motor.> and <Ref. to CO(SOHC)-40, Radiator Sub Fan and Fan Motor.> If thermostat is stuck, replace thermostat.

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

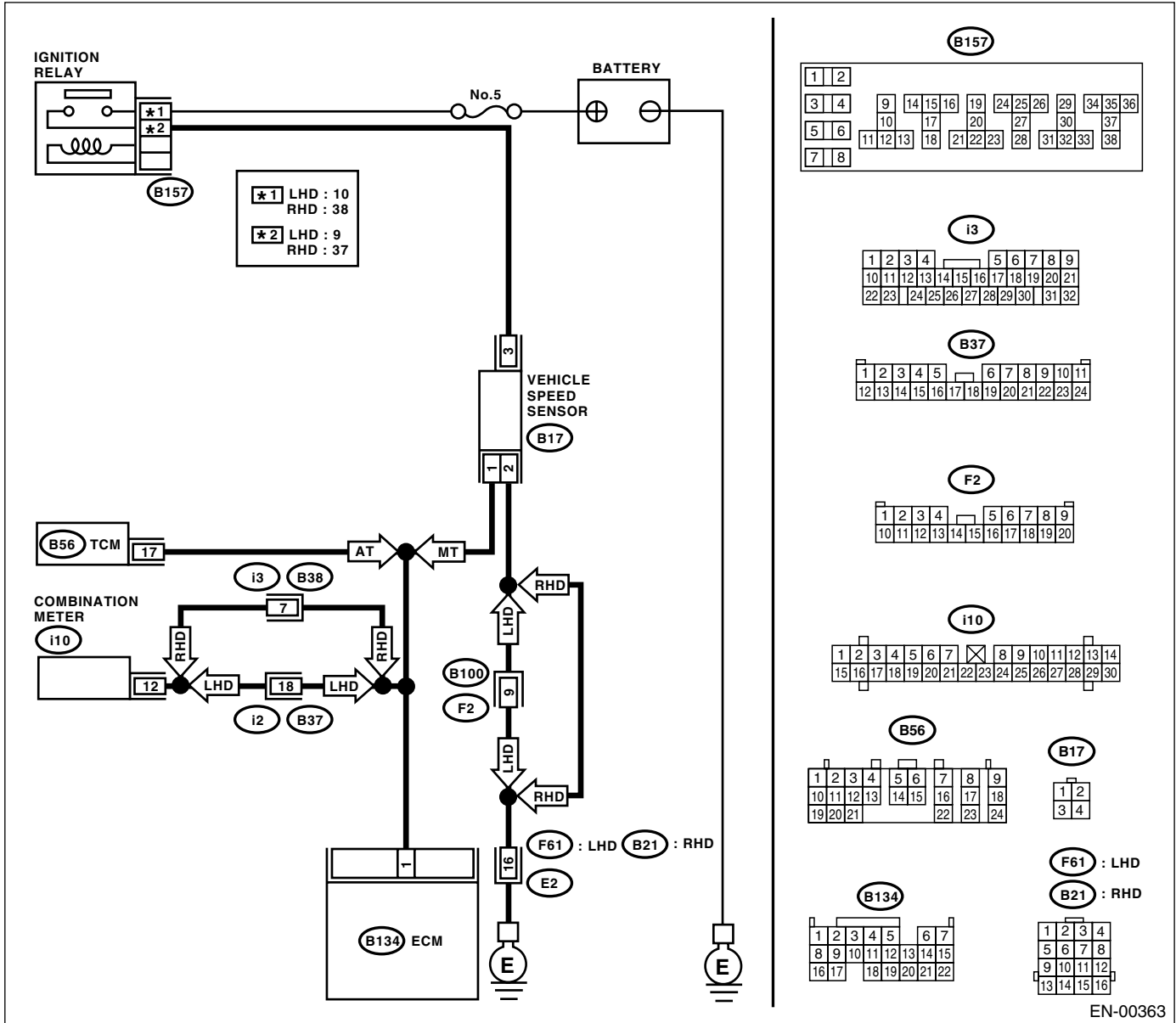
## AX:DTC P0502 — VEHICLE SPEED SENSOR CIRCUIT LOW INPUT —

- DTC DETECTING CONDITION:
  - Immediately at fault recognition

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

- WIRING DIAGRAM:



EN-00363

Step	Check	Yes	No
1	<b>CHECK TRANSMISSION TYPE.</b> Is the transmission type AT?	Go to step 2.	Go to step 4.

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>2</b> <b>CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.</b> 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and TCM. 3) Measure the resistance of harness between TCM connector and chassis ground. <b>Connector &amp; terminal</b> <b>(B56) No. 17 — Chassis ground:</b> Is the measured value more than specified value?	1 MΩ	Go to step 3.	Repair the ground short circuit in harness between ECM and TCM connector.
<b>3</b> <b>CHECK POOR CONTACT</b> Check poor contact in TCM connector. Is there poor contact in TCM connector?	Poor contact occurs.	Repair poor contact in TCM connector.	Contact with your Subaru distributor service.
<b>4</b> <b>CHECK HARNESS BETWEEN VEHICLE SPEED SENSOR AND ECM CONNECTOR.</b> 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from vehicle speed sensor and ECM. 3) Measure the resistance of harness between vehicle speed sensor connector and chassis ground. <b>Connector &amp; terminal</b> <b>(B17) No. 1 — Chassis ground:</b> Is the measured value more than specified value?	1 MΩ	Go to step 5.	Repair the ground short circuit in harness between vehicle speed sensor and ECM connector.
<b>5</b> <b>CHECK POOR CONTACT</b> Check poor contact in the vehicle speed sensor connector. Is there poor contact in the vehicle speed sensor connector?	Poor contact occurs.	Repair poor contact in the vehicle speed sensor connector.	Replace the vehicle speed sensor. <Ref. to MT-46, Vehicle Speed Sensor.>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

## AY:DTC P0503 — VEHICLE SPEED SENSOR INTERMITTENT/ERRATIC/HIGH —

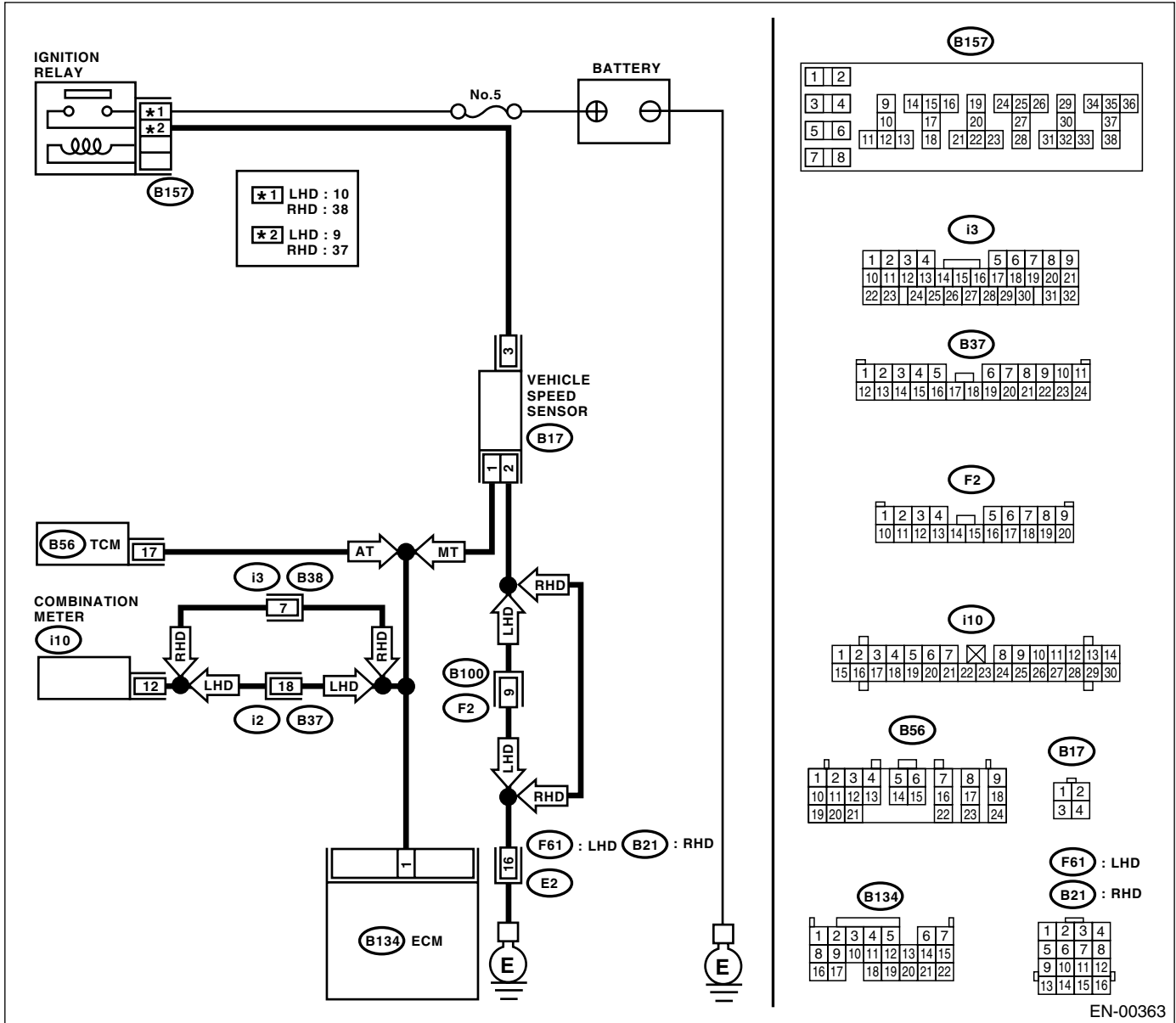
### • DTC DETECTING CONDITION:

- Immediately at fault recognition

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

### • WIRING DIAGRAM:



EN-00363

Step	Check	Yes	No
1	<b>CHECK TRANSMISSION TYPE.</b> Is the transmission type AT?	Go to step 2.	Go to step 3.

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>2</b>      <b>CHECK DTC P0720 ON DISPLAY.</b> Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0720?</p>	<p>DTC P0720 is indicated.</p>	<p>Check the front vehicle speed sensor signal circuit. &lt;Ref. to AT-54, DTC 33 FRONT VEHICLE SPEED SENSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).&gt;</p>	<p>Go to step 3.</p>
<p><b>3</b>      <b>CHECK SPEEDOMETER OPERATION IN COMBINATION METER.</b> Does the speedometer operate normally?</p>	<p>Speedometer operates normally.</p>	<p>Go to step 4.</p>	<p>Check the speedometer. &lt;Ref. to IDI-15, Speedometer.&gt;</p>
<p><b>4</b>      <b>CHECK HARNESS BETWEEN ECM AND COMBINATION METER CONNECTOR.</b> 1) Turn the ignition switch to OFF. 2) Disconnect the connector from combination meter. 3) Measure the resistance between ECM and combination meter. <b>Connector &amp; terminal</b> <b>(B134) No. 1 — (i10) No. 12:</b> Is the measured value less than specified value?</p>	<p>10 Ω</p>	<p>Repair the poor contact in ECM connector.</p>	<p>Repair the harness and connector. <b>NOTE:</b> In this case, repair the following:</p> <ul style="list-style-type: none"> <li>• Open circuit in harness between ECM and combination meter connector</li> <li>• Poor contact in ECM connector</li> <li>• Poor contact in combination meter connector</li> <li>• Poor contact in coupling connector</li> </ul>



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

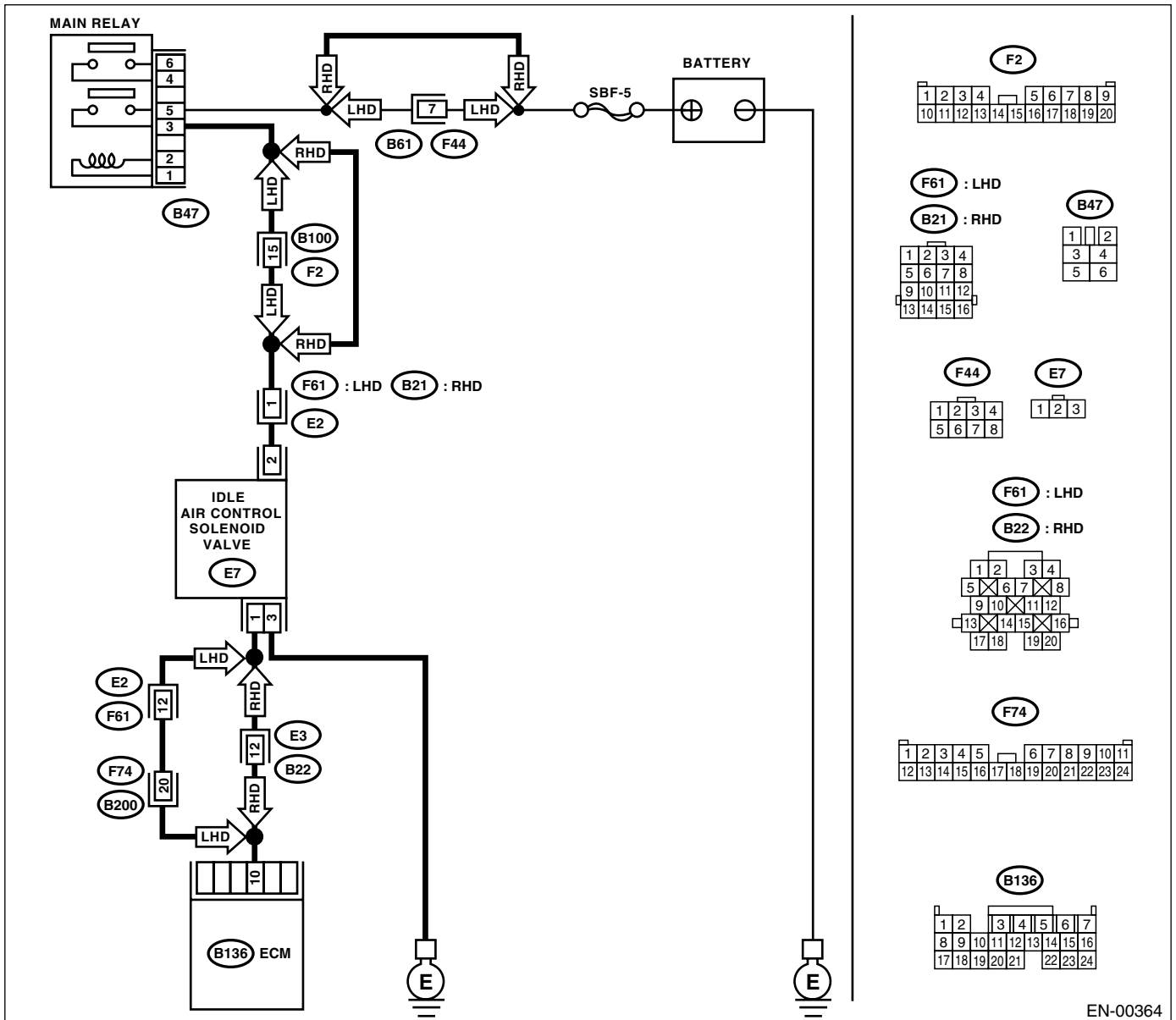
## AZ:DTC P0506 — IDLE CONTROL SYSTEM RPM LOWER THAN EXPECTED —

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

• **WIRING DIAGRAM:**



EN-00364

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>1 CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.</b> Is any other DTC displayed?	Other DTC is displayed.	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(TURBO)-77, List of Diagnostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0506.	Go to step 2.
<b>2 CHECK IDLE AIR CONTROL SOLENOID VALVE.</b> 1)Turn the ignition switch to OFF. 2)Remove the idle air control solenoid valve from throttle body. <Ref. to FU(TURBO)-35, 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?	Air flows out.	Go to step 4.	Replace the idle air control solenoid valve. <Ref. to FU(TURBO)-35, Idle Air Control Solenoid Valve.> After replace, Go to step 3.
<b>3 CHECK IDLE AIR CONTROL SOLENOID VALVE DUTY RATIO.</b> 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 valve duty ratio using Subaru Select Monitor or OBD-II general scan tool. Is the measured value more than specified value? NOTE: •Subaru Select Monitor For detailed operation procedures, refer to the "READ CURRENT DATA FOR ENGINE". <Ref. to EN(TURBO)-34, Subaru Select Monitor.> •OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.	60 %	Go to step 4.	END.
<b>4 CHECK BY-PASS AIR LINE.</b> 1)Turn the ignition switch to OFF. 2)Remove the idle air control solenoid valve from throttle body. <Ref. to FU(TURBO)-35, REMOVAL, Idle Air Control Solenoid Valve.> 3)Remove the throttle body to intake manifold. <Ref. to FU(TURBO)-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?	Air flows out.	Replace the idle air control solenoid valve. <Ref. to FU(TURBO)-35, Idle Air Control Solenoid Valve.>	Replace the throttle body. <Ref. to FU(TURBO)-13, Throttle Body.>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

## BA:DTC P0507 — IDLE CONTROL SYSTEM RPM HIGHER THAN EXPECTED —

### • DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

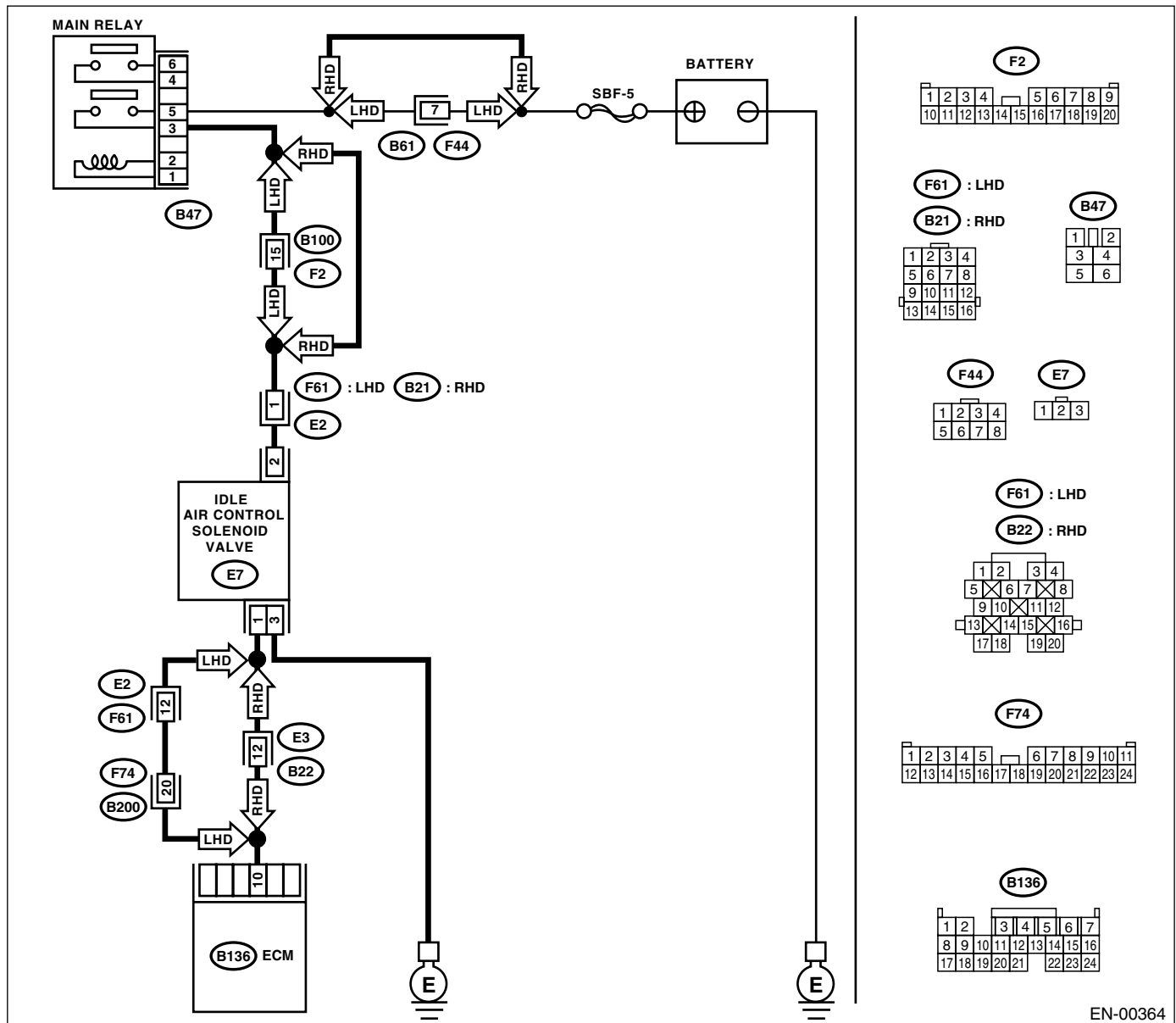
### • TROUBLE SYMPTOM:

- 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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

### • WIRING DIAGRAM:



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>1</b> <b>CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.</b> Is any other DTC displayed?	Other DTC is displayed.	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(TURBO)-77, List of Diagnostic Trouble Code (DTC).> <b>NOTE:</b> In this case, it is not necessary to inspect DTC P0507.	Go to step 2.
<b>2</b> <b>CHECK THROTTLE CABLE.</b> Does the throttle cable have play for adjustment?	Throttle cable has play.	Go to step 3.	Adjust the throttle cable. <Ref. to SP(SOHC)-9, INSTALLATION, Accelerator Control Cable.>
<b>3</b> <b>CHECK AIR INTAKE SYSTEM.</b> 1) Turn the ignition switch to ON. 2) Start the engine, and idle it. 3) Check the following items. • Loose installation of intake manifold, idle air control solenoid valve and throttle body • Cracks of intake manifold gasket, idle air control solenoid valve gasket and throttle body gasket • Disconnections of vacuum hoses Is there a fault in air intake system?	There is a fault.	Repair the air suction and leaks.	Replace the idle air control solenoid valve. <Ref. to FU(TURBO)-35, Idle Air Control Solenoid Valve.>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

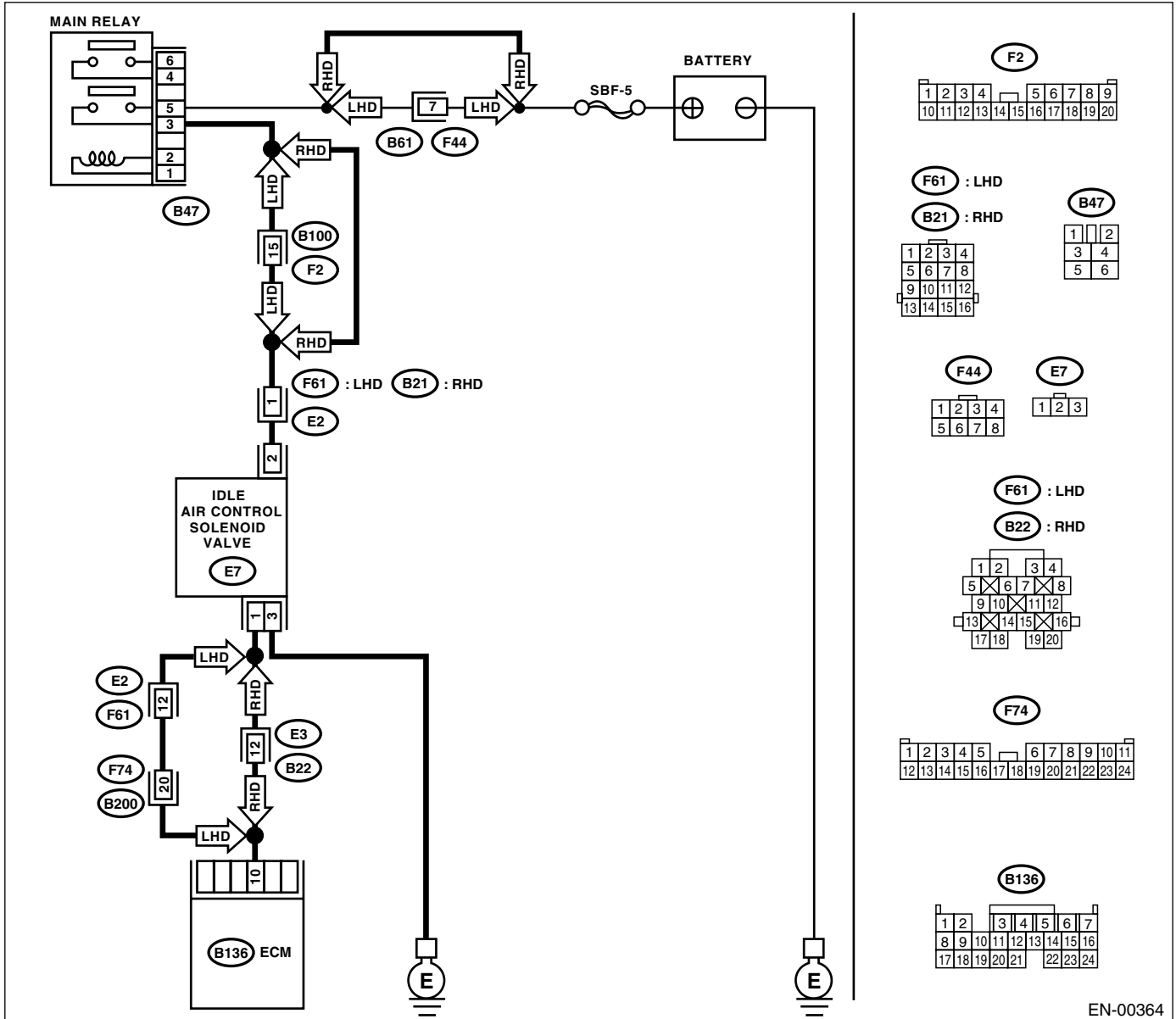
## BB:DTC P0508 — IDLE CONTROL SYSTEM CIRCUIT LOW —

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

### • WIRING DIAGRAM:



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>1</b></p> <p><b>CHECK OUTPUT SIGNAL FROM ECM.</b>                      1) Turn the ignition switch to ON.                      2) Measure the voltage between ECM and chassis ground.  <i>Connector &amp; terminal</i>  <i>(B136) No. 10 (+) — Chassis ground (-):</i>                      Is the measured value more than specified value?</p>	3 V	Repair the poor contact in ECM connector.	Go to step 2.
<p><b>2</b></p> <p><b>CHECK POWER SUPPLY TO IDLE AIR CONTROL SOLENOID VALVE.</b>                      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 &amp; terminal</i>  <i>(E7) No. 2 (+) — Engine ground (-):</i>                      Is the measured value more than specified value?</p>	10 V	Go to step 3.	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> <li>• Open circuit in harness between idle air control solenoid valve and main relay connector</li> <li>• Poor contact in coupling connector</li> </ul>
<p><b>3</b></p> <p><b>CHECK HARNESS BETWEEN ECM AND IDLE AIR CONTROL SOLENOID VALVE CONNECTOR.</b>                      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 &amp; terminal</i>  <i>(B136) No. 10 — (E7) No. 1:</i>                      Is the measured value less than specified value?</p>	1 Ω	Go to step 4.	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> <li>• Open circuit in harness between ECM and idle air control solenoid valve connector</li> <li>• Poor contact in coupling connector</li> </ul>
<p><b>4</b></p> <p><b>CHECK HARNESS BETWEEN ECM AND IDLE AIR CONTROL SOLENOID VALVE CONNECTOR.</b>                      Measure the resistance of harness between ECM and chassis ground.  <i>Connector &amp; terminal</i>  <i>(B136) No. 10 — Chassis ground:</i>                      Is the measured value less than specified value?</p>	10 Ω	Repair the ground short circuit in harness between ECM and idle air control solenoid valve connector.	Go to step 5.
<p><b>5</b></p> <p><b>CHECK GROUND CIRCUIT OF IDLE AIR CONTROL SOLENOID VALVE.</b>                      Measure the resistance of harness between idle air control solenoid valve connector and engine ground.  <i>Connector &amp; terminal</i>  <i>(E7) No. 3 — Engine ground:</i>                      Is the measured value less than specified value?</p>	5 Ω	Go to step 6.	Repair the open circuit in harness between idle air control solenoid valve connector and engine ground cable.
<p><b>6</b></p> <p><b>CHECK POOR CONTACT.</b>                      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?</p>	Poor contact occurs.	Repair the poor contact in ECM and idle air control solenoid valve connectors.	Replace the idle air control solenoid valve. <Ref. to FU(TURBO)-35, Idle Air Control Solenoid Valve.>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

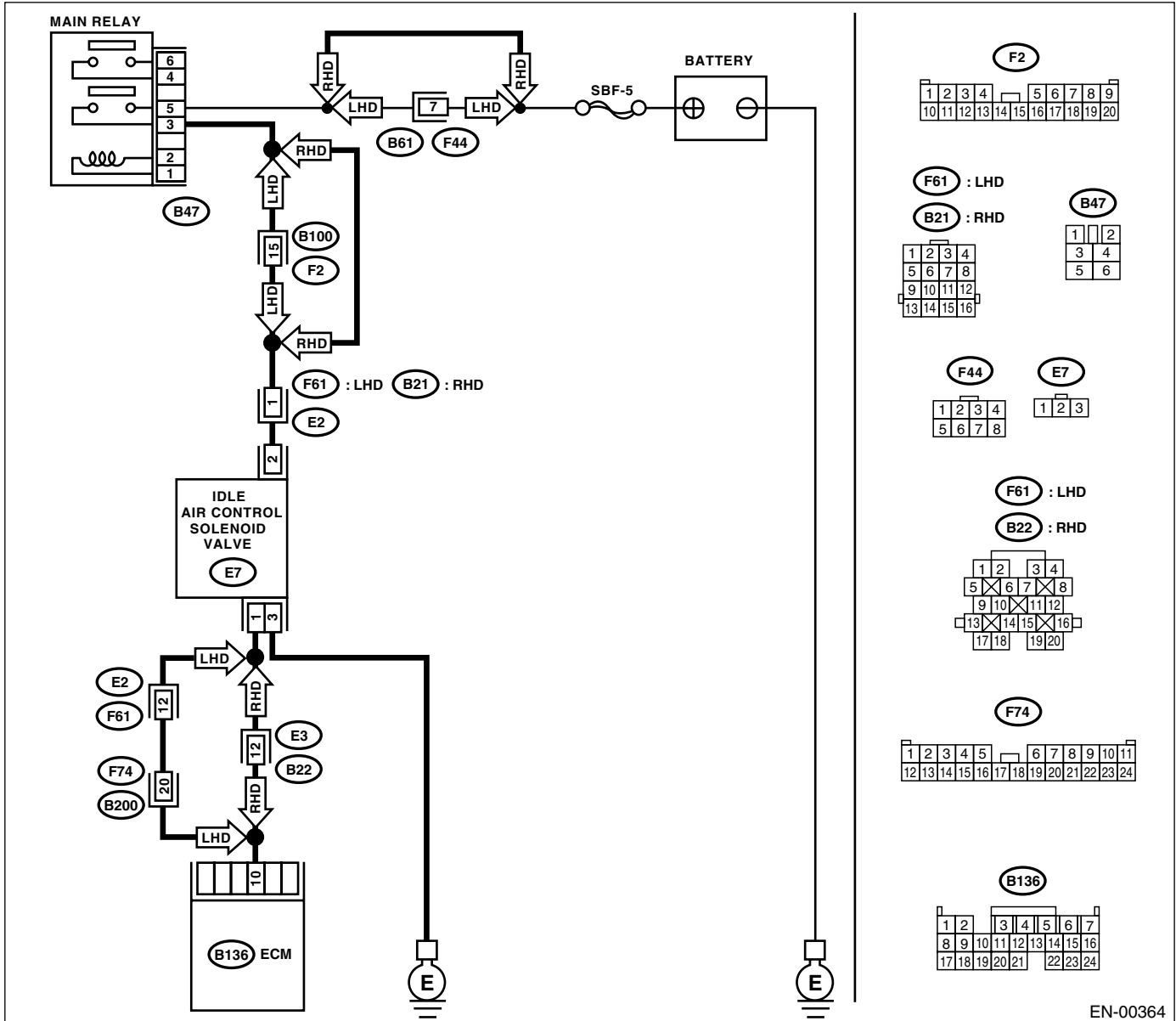
## BC:DTC P0509 — IDLE CONTROL SYSTEM CIRCUIT HIGH —

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

• **WIRING DIAGRAM:**



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>1</b> <b>CHECK THROTTLE CABLE.</b> Does the throttle cable have play for adjustment?	Throttle cable has play.	Go to step 2.	Adjust the throttle cable. <Ref. to SP(SOHC)-9, INSTALLATION, Accelerator Control Cable.>
<b>2</b> <b>CHECK OUTPUT SIGNAL FROM ECM.</b> 1)Turn the ignition switch to ON. 2)Measure the voltage between ECM and chassis ground. <b>Connector &amp; terminal</b> <b>(B136) No. 10 (+) — Chassis ground (-):</b> Is the measured value more than specified value?	10 V	Go to step 3.	Go to step 4.
<b>3</b> <b>CHECK OUTPUT SIGNAL FROM ECM.</b> 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. <b>Connector &amp; terminal</b> <b>(B136) No. 10 (+) — Chassis ground (-):</b> Is the measured value more than specified value?	10 V	Repair the battery short circuit in harness between ECM and idle air control solenoid valve connector. After repair, replace the ECM. <Ref. to FU(TURBO)-48, Engine Control Module.>	Replace the idle air control solenoid valve. <Ref. to FU(TURBO)-35, Idle Air Control Solenoid Valve.> and ECM <Ref. to FU(TURBO)-48, Engine Control Module.>
<b>4</b> <b>CHECK OUTPUT SIGNAL FROM ECM.</b> Measure the voltage between ECM and chassis ground. <b>Connector &amp; terminal</b> <b>(B136) No. 10 (+) — Chassis ground (-):</b> Shake the ECM harness and connector, while monitoring value of voltage meter. Is the voltage change more than specified value?	10 V	Repair the battery short circuit in harness between ECM and idle air control solenoid valve connector. After repair, replace the ECM. <Ref. to FU(TURBO)-48, Engine Control Module.>	Contact with your Subaru distributor service.  NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

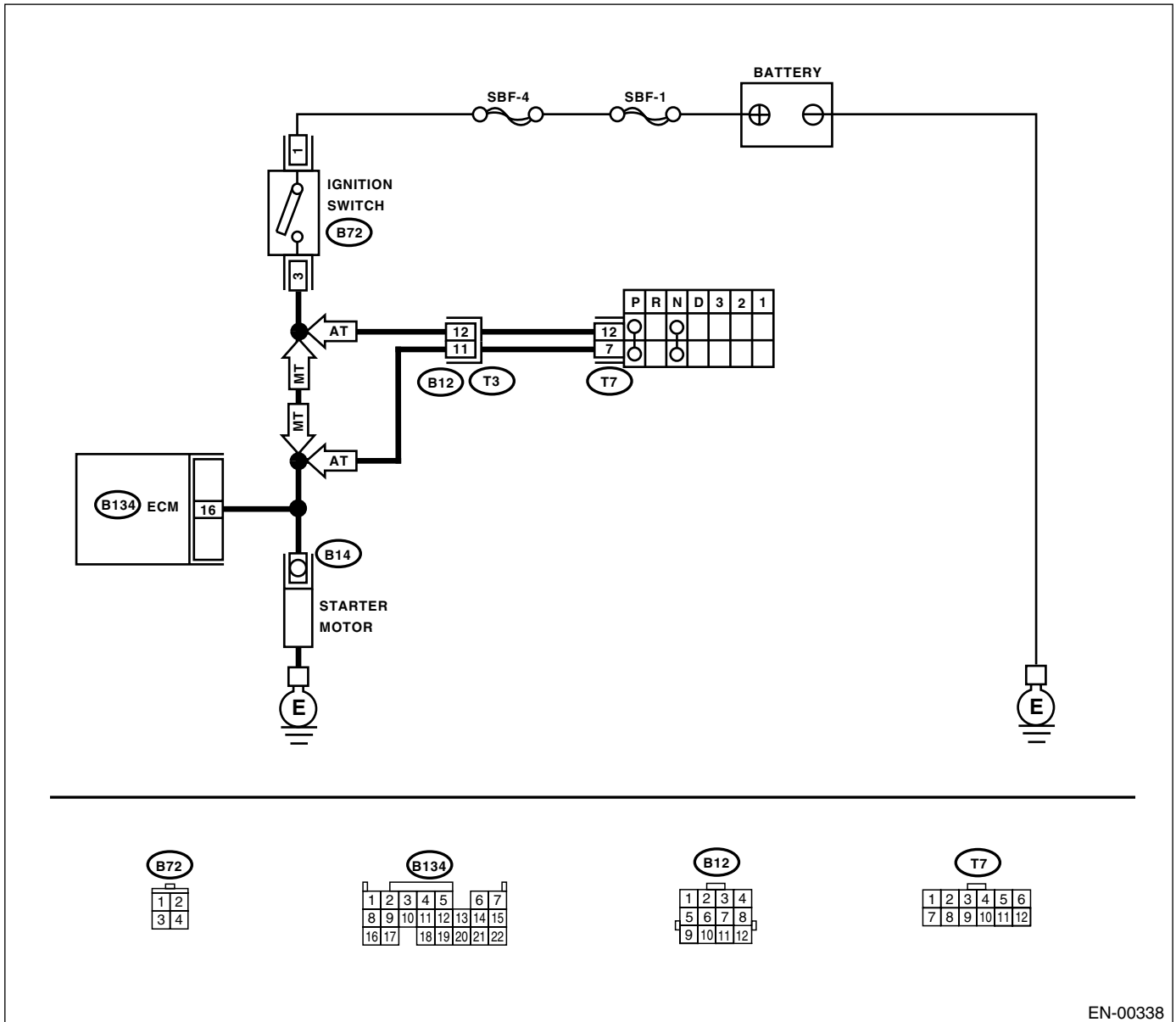
## BD:DTC P0512 — STARTER SWITCH CIRCUIT HIGH INPUT —

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

- **WIRING DIAGRAM:**



EN-00338

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	<b>CHECK OPERATION OF STARTER MOTOR.</b> Does the starter motor operate when ignition switch is turned to ON?	Starter motor operates.	Repair the battery short circuit in starter motor circuit. After repair, replace the ECM. <Ref. to FU(TURBO)-48, Engine Control Module.>	Check the starter motor circuit. <Ref. to EN(TURBO)-62, STARTER MOTOR CIRCUIT, Diagnostics for Engine Starting Failure.>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

## BE:DTC P0518 — STARTER SWITCH CIRCUIT LOW INPUT —

### • DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

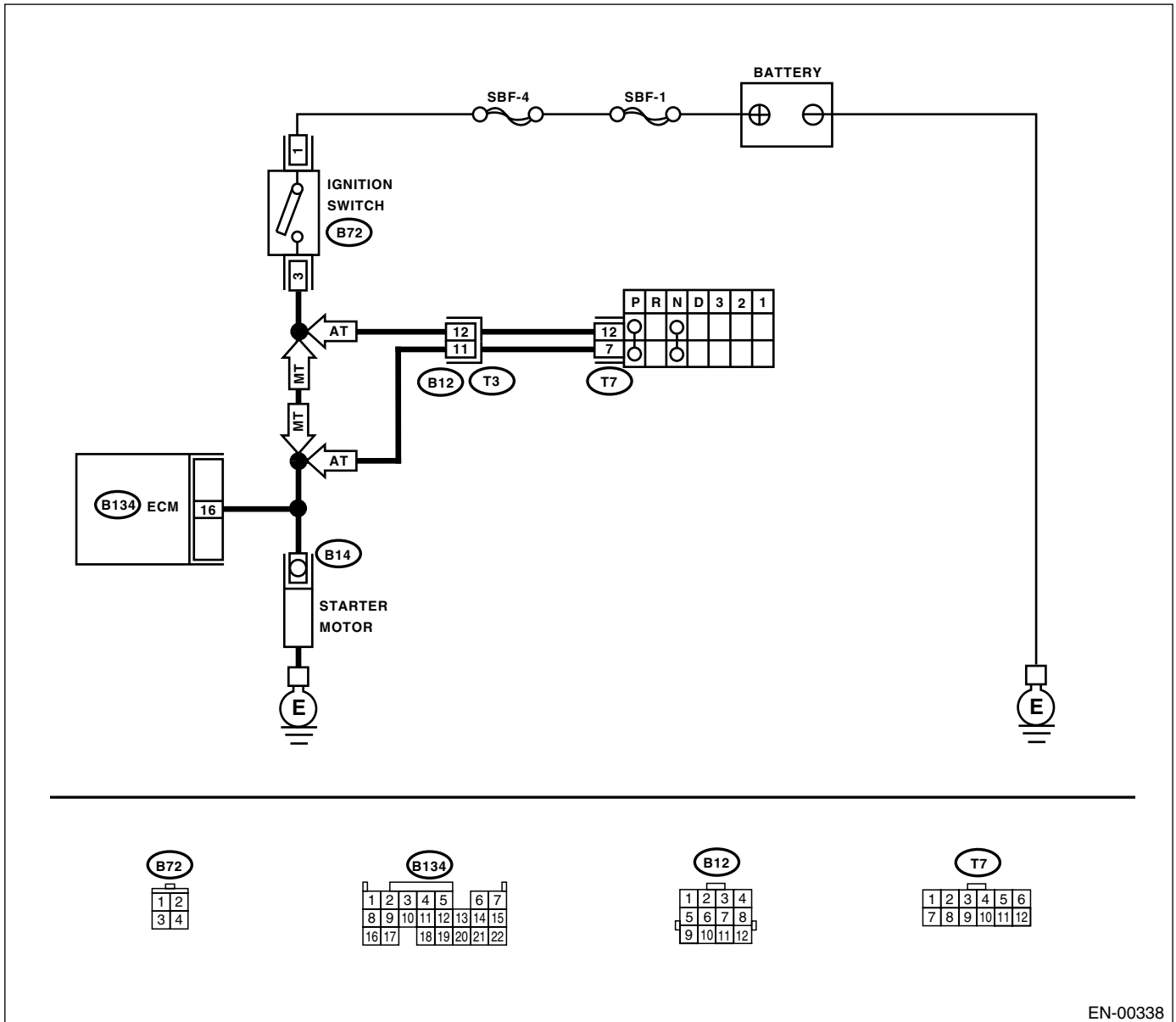
### • TROUBLE SYMPTOM:

- Failure of engine to start

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

### • WIRING DIAGRAM:



EN-00338

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>1</b> <b>CHECK OPERATION OF STARTER MOTOR.</b> Does the starter motor operate when ignition switch is turned to START?	Starter motor operates.	Repair the harness and connector. <b>NOTE:</b> In this case, repair the following: <ul style="list-style-type: none"><li>• Open or ground short circuit in harness between ECM and starter motor connector</li><li>• Poor contact in ECM connector</li></ul>	Check the starter motor circuit. <Ref. to EN(TURBO)-62, STARTER MOTOR CIRCUIT, Diagnostics for Engine Starting Failure.>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

## BF:DTC P0519 — IDLE CONTROL SYSTEM MALFUNCTION (FAIL-SAFE) —

### • DTC DETECTING CONDITION:

- Immediately at fault recognition

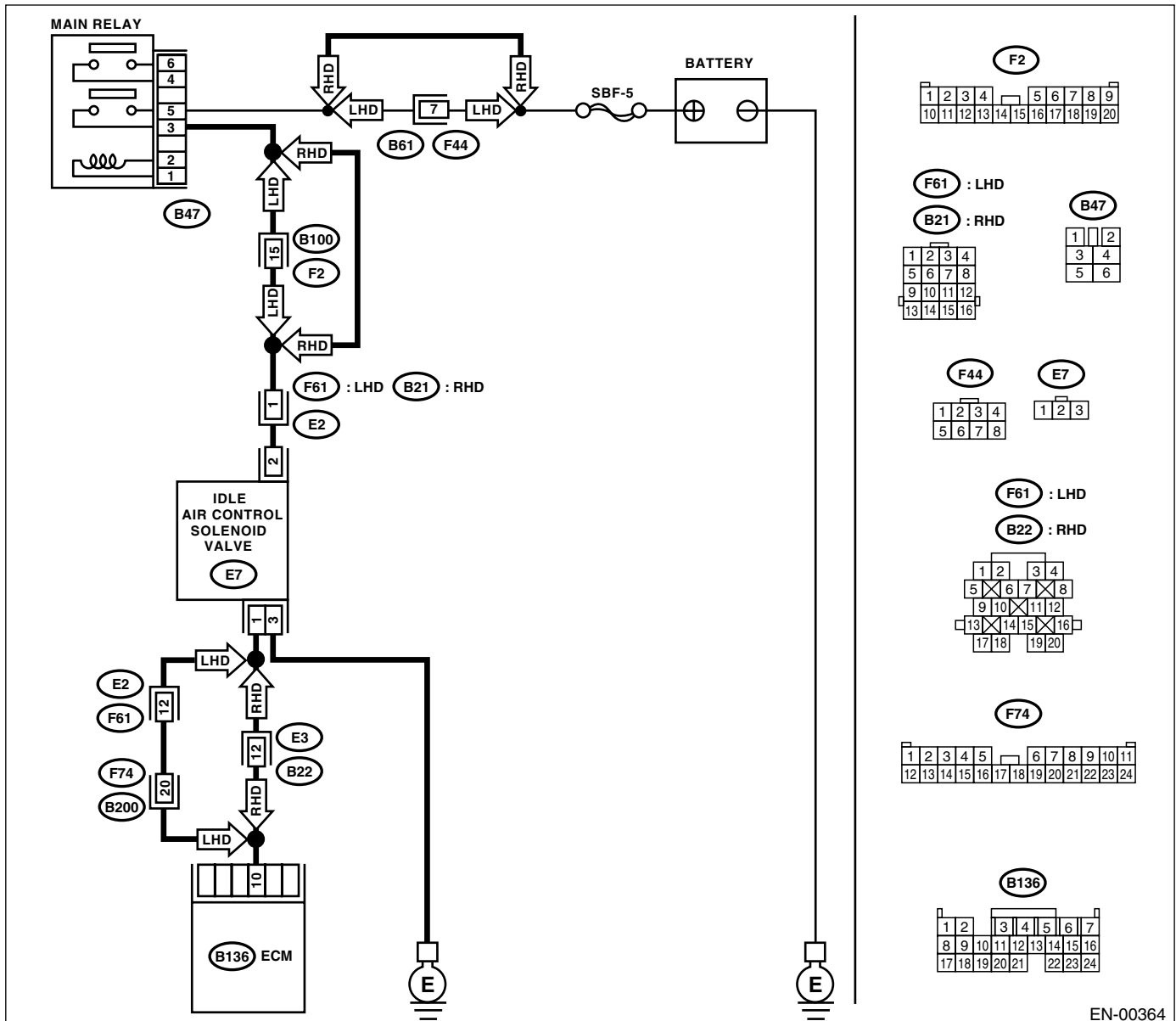
### • TROUBLE SYMPTOM:

- 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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

### • WIRING DIAGRAM:



EN-00364

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>1</b> <b>CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.</b> Is any other DTC displayed?	Other DTC is displayed.	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(TURBO)-77, List of Diagnostic Trouble Code (DTC).> NOTE: In this case, it is not necessary to inspect DTC P0519.	Go to step 2.
<b>2</b> <b>CHECK AIR INTAKE SYSTEM.</b> 1)Turn the ignition switch to ON. 2)Start the engine, and idle it. 3)Check the following items. •Loose installation of intake manifold, idle air control solenoid valve and throttle body •Cracks of intake manifold gasket, idle air control solenoid valve gasket and throttle body gasket •Disconnections of vacuum hoses Is there a fault in air intake system?	There is a fault.	Repair the air suction and leaks.	Go to step 3.
<b>3</b> <b>CHECK THROTTLE CABLE.</b> Does the throttle cable have play for adjustment?	Throttle cable has play.	Go to step 4.	Adjust the throttle cable. <Ref. to SP(SOHC)-9, INSTALLATION, Accelerator Control Cable.>
<b>4</b> <b>CHECK AIR BY-PASS LINE.</b> 1)Turn the ignition switch to OFF. 2)Remove the idle air control solenoid valve from throttle body. <Ref. to FU(TURBO)-35, 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?	Foreign particles are in by-pass air line.	Remove the foreign particles from by-pass air line.	Replace the idle air control solenoid valve. <Ref. to FU(TURBO)-35, Idle Air Control Solenoid Valve.>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

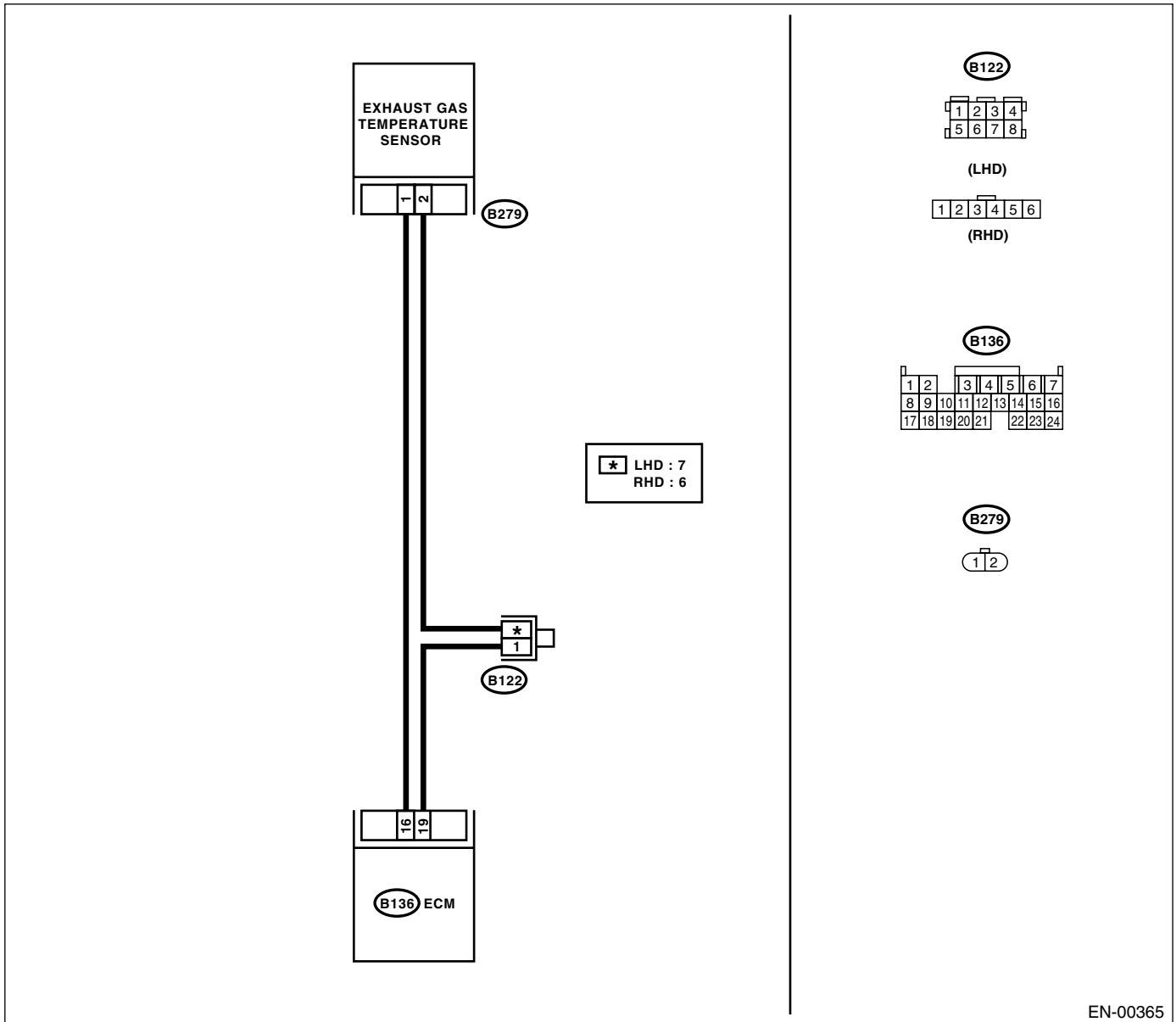
## BG:DTC P0545 — EXHAUST GAS TEMPERATURE SENSOR CIRCUIT LOW INPUT —

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

- **WIRING DIAGRAM:**



EN-00365

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>1</b></p> <p><b>CHECK CURRENT DATA.</b></p> <p>1)Start the engine. 2)Read the data of exhaust gas temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool. Is the measured value more than specified value?</p> <p>NOTE: •Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". &lt;Ref. to EN(TURBO)-34, Subaru Select Monitor.&gt; •OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</p>	<p>1200°C (2192°F)</p>	<p>Go to step 2.</p>	<p>Repair the poor contact.</p> <p>NOTE: In this case, repair the following:</p> <ul style="list-style-type: none"> <li>• Poor contact in exhaust gas temperature sensor</li> <li>• Poor contact in ECM</li> <li>• Poor contact in joint connector</li> </ul>
<p><b>2</b></p> <p><b>CHECK HARNESS BETWEEN EXHAUST GAS TEMPERATURE SENSOR AND ECM CONNECTOR.</b></p> <p>1)Turn the ignition switch to OFF. 2)Disconnect the connector from exhaust gas temperature sensor. 3)Turn the ignition switch to ON. 4)Read the data of exhaust gas temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool. Is the measured value less than specified value?</p> <p>NOTE: •Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". &lt;Ref. to EN(TURBO)-34, Subaru Select Monitor.&gt; •OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</p>	<p>372°C (702°F)</p>	<p>Replace the exhaust gas temperature sensor. &lt;Ref. to FU(TURBO)-47, Exhaust Temperature Sensor.&gt;</p>	<p>Repair the ground short circuit in harness between exhaust gas temperature sensor and ECM connector.</p>



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

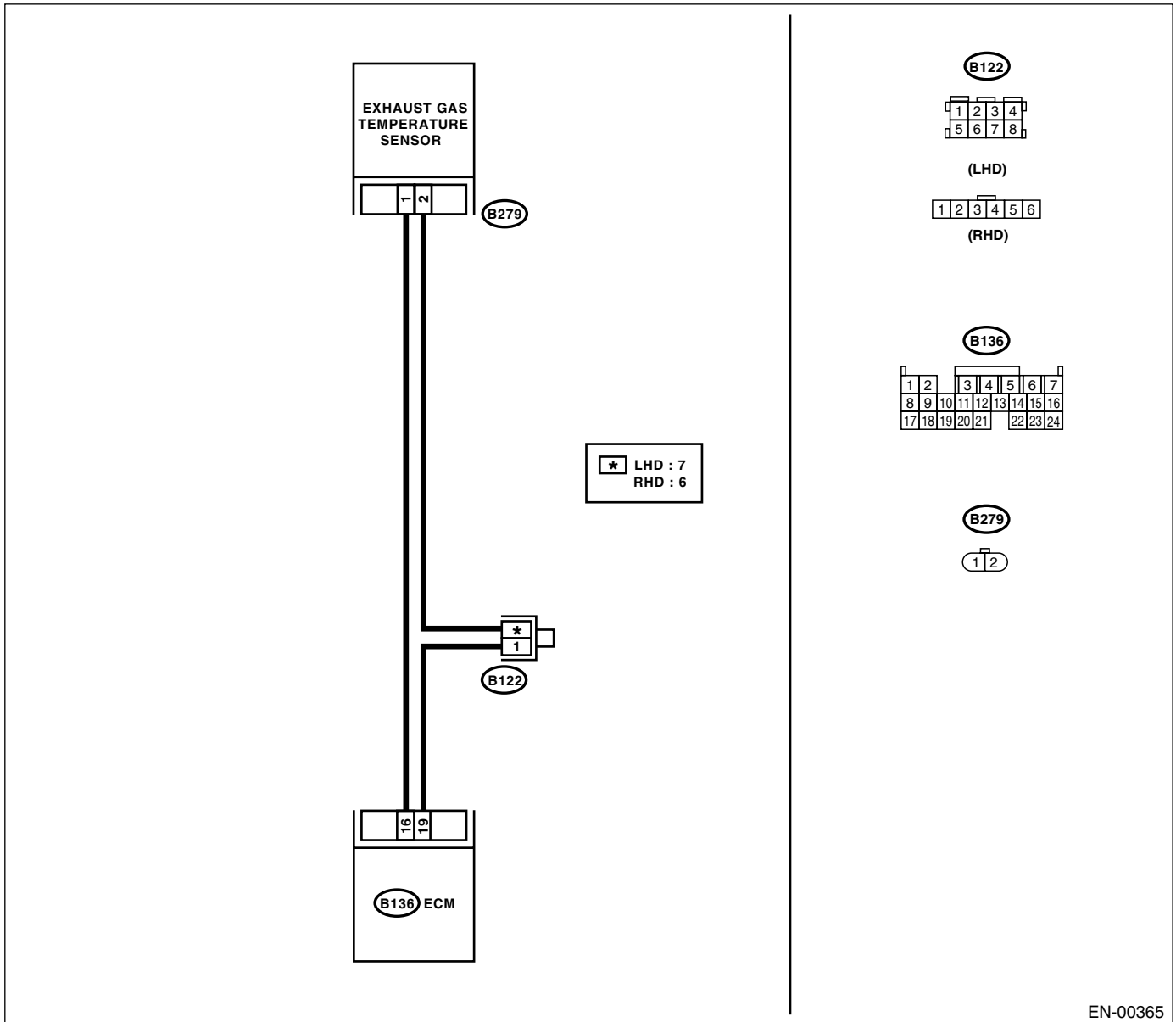
## BH:DTC P0546 — EXHAUST GAS TEMPERATURE SENSOR CIRCUIT HIGH INPUT —

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

- **WIRING DIAGRAM:**



EN-00365

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>1</b></p> <p><b>CHECK CURRENT DATA.</b>                      1)Start the engine.                      2)Read the data of exhaust gas temperature sensor signal using Subaru Select Monitor or OBD-II general scan tool.                      Is the measured value less than specified value?                      NOTE:                      •Subaru Select Monitor                      For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE".                      &lt;Ref. to EN(TURBO)-34, Subaru Select Monitor.&gt;                      •OBD-II general scan tool                      For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</p>	372°C (702°F)	Go to step 2.	Repair the poor contact. NOTE: In this case, repair the following: • Poor contact in exhaust gas temperature sensor • Poor contact in ECM • Poor contact in joint connector
<p><b>2</b></p> <p><b>CHECK HARNESS BETWEEN EXHAUST GAS TEMPERATURE SENSOR AND ECM CONNECTOR.</b>                      1)Turn the ignition switch to OFF.                      2)Disconnect the connector from exhaust gas temperature sensor.                      3)Measure the voltage between exhaust gas temperature sensor connector and engine ground.  <i>Connector &amp; terminal</i>  <i>(B279) No. 1 (+) — Engine ground (-):</i>                      Is the measured value more than specified value?</p>	10 V	Repair the battery short circuit in harness between ECM and exhaust gas temperature sensor connector.	Go to step 3.
<p><b>3</b></p> <p><b>CHECK HARNESS BETWEEN EXHAUST GAS TEMPERATURE SENSOR AND ECM CONNECTOR.</b>                      1)Turn the ignition switch to ON.                      2)Measure the voltage between exhaust gas temperature sensor connector and engine ground.  <i>Connector &amp; terminal</i>  <i>(B279) No. 1 (+) — Engine ground (-):</i>                      Is the measured value more than specified value?</p>	10 V	Repair the battery short circuit in harness between ECM and exhaust gas temperature sensor connector.	Go to step 4.
<p><b>4</b></p> <p><b>CHECK HARNESS BETWEEN EXHAUST GAS TEMPERATURE SENSOR AND ECM CONNECTOR.</b>                      Measure the voltage between exhaust gas temperature sensor connector and engine ground.  <i>Connector &amp; terminal</i>  <i>(B279) No. 1 (+) — Engine ground (-):</i>                      Is the measured value more than specified value?</p>	4 V	Go to step 5.	Repair the harness and connector. NOTE: In this case, repair the following: • Open circuit in harness between ECM and exhaust gas temperature sensor connector • Poor contact in exhaust gas temperature sensor connector • Poor contact in ECM connector • Poor contact in joint connector

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p>5</p> <p><b>CHECK HARNESS BETWEEN EXHAUST GAS TEMPERATURE SENSOR AND ECM CONNECTOR.</b></p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Measure the resistance of harness between exhaust gas temperature sensor connector and engine ground.</p> <p><b>Connector &amp; terminal</b> <b>(B279) No. 2 — Engine ground:</b></p> <p>Is the measured value less than specified value?</p>	<p>5 Ω</p>	<p>Replace the exhaust gas temperature sensor. &lt;Ref. to FU(TURBO)-47, Exhaust Temperature Sensor.&gt;</p>	<p>Repair the harness and connector.</p> <p>NOTE: In this case, repair the following:</p> <ul style="list-style-type: none"><li>• Open circuit in harness between ECM and exhaust gas temperature sensor connector</li><li>• Poor contact in exhaust gas temperature sensor connector</li><li>• Poor contact in ECM connector</li><li>• Poor contact in joint connector</li></ul>

**BI: DTC P0558 — GENERATOR CIRCUIT LOW INPUT —**

**CAUTION:**

For diagnostic procedure, refer to DTC P0559. <Ref. to EN(TURBO)-224, DTC P0559 — GENERATOR CIRCUIT HIGH INPUT —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>.

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

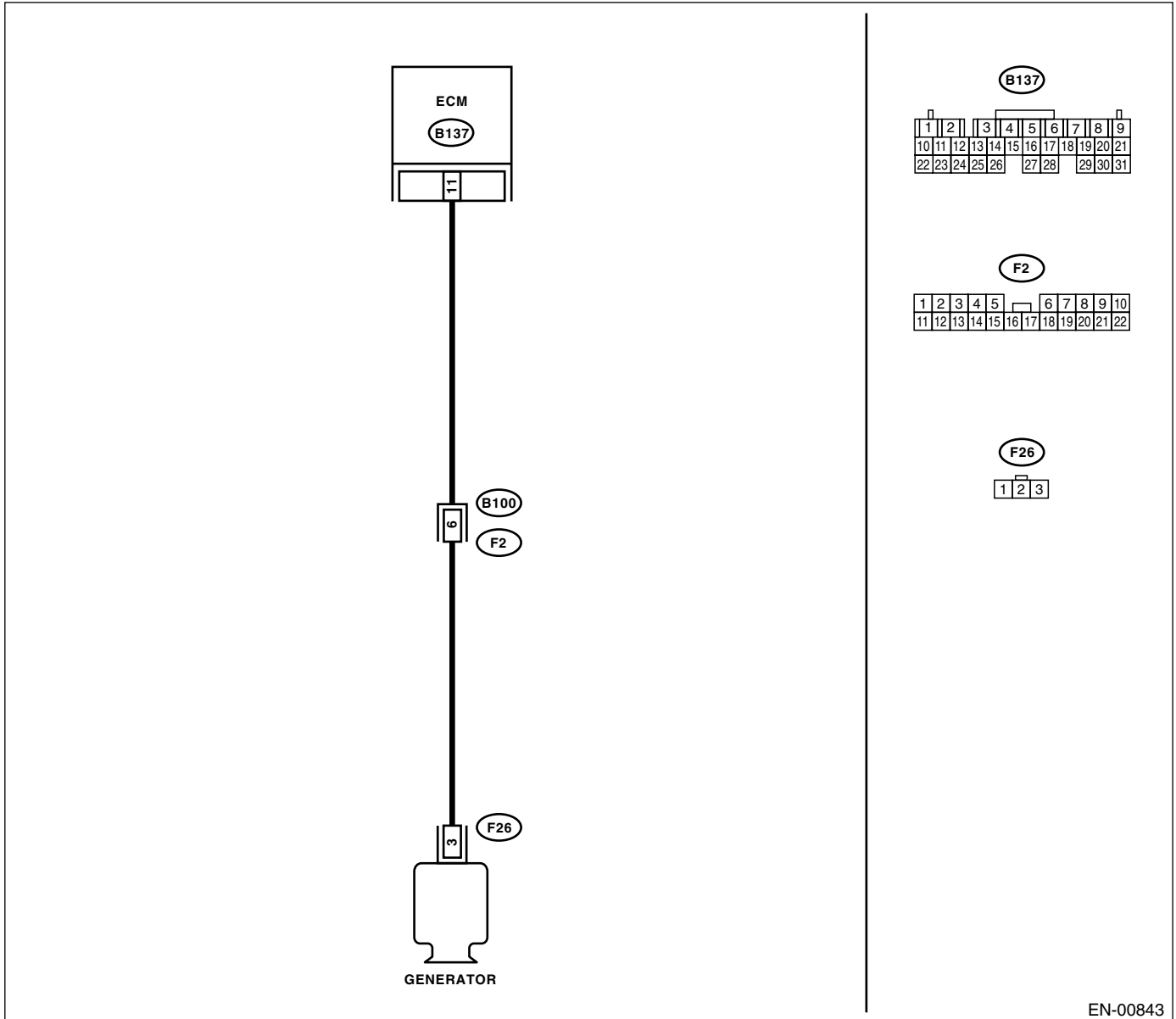
## BJ:DTC P0559 — GENERATOR CIRCUIT HIGH INPUT —

- DTC DETECTING CONDITION:
  - Immediately at fault recognition

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

- WIRING DIAGRAM:



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	<p><b>CHECK HARNESS BETWEEN GENERATOR AND ECM CONNECTOR.</b></p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connectors from generator and ECM.</p> <p>3) Measure the resistance of harness between generator connector and engine ground.</p> <p><b>Connector &amp; terminal</b> <b>(F26) No. 3 — Engine ground:</b></p> <p>Is the measured value more than specified value?</p>	1 MΩ	Go to step 2.	Repair the ground short circuit in harness between ECM and purge control solenoid valve connector.
2	<p><b>CHECK HARNESS BETWEEN GENERATOR AND ECM CONNECTOR.</b></p> <p>Measure the resistance of harness between ECM and generator of harness connector.</p> <p><b>Connector &amp; terminal</b> <b>(B137) No. 11 — (F26) No. 3:</b></p> <p>Is the measured value less than specified value?</p>	1 Ω	Repair poor contact in connector.	<p>Repair the 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"> <li>• Open circuit in harness between ECM and generator connector</li> <li>• Poor contact in coupling connector</li> </ul>

## **DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)**

ENGINE (DIAGNOSTICS)

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### **BK:DTC P0604 — INTERNAL CONTROL MODULE RANDOM ACCESS MEMORY (RAM) ERROR —**

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition
- **TROUBLE SYMPTOM:**
  - Engine does not start.
  - Engine stalls.

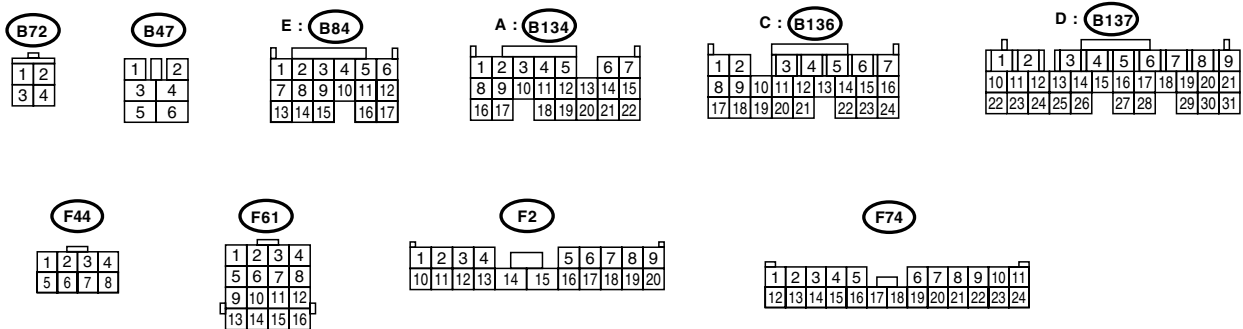
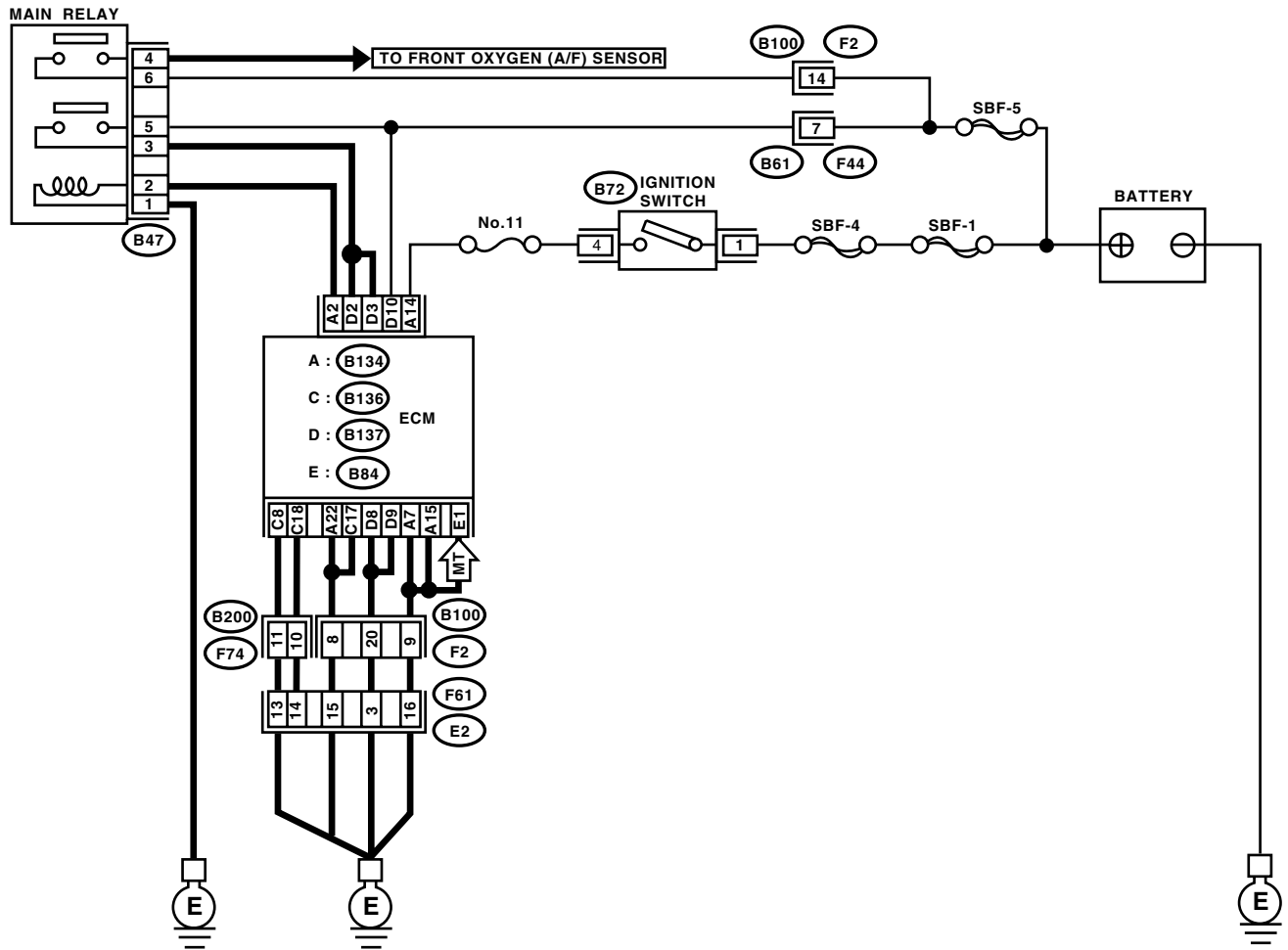
#### **CAUTION:**

**After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .**

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

- WIRING DIAGRAM:
- LHD model

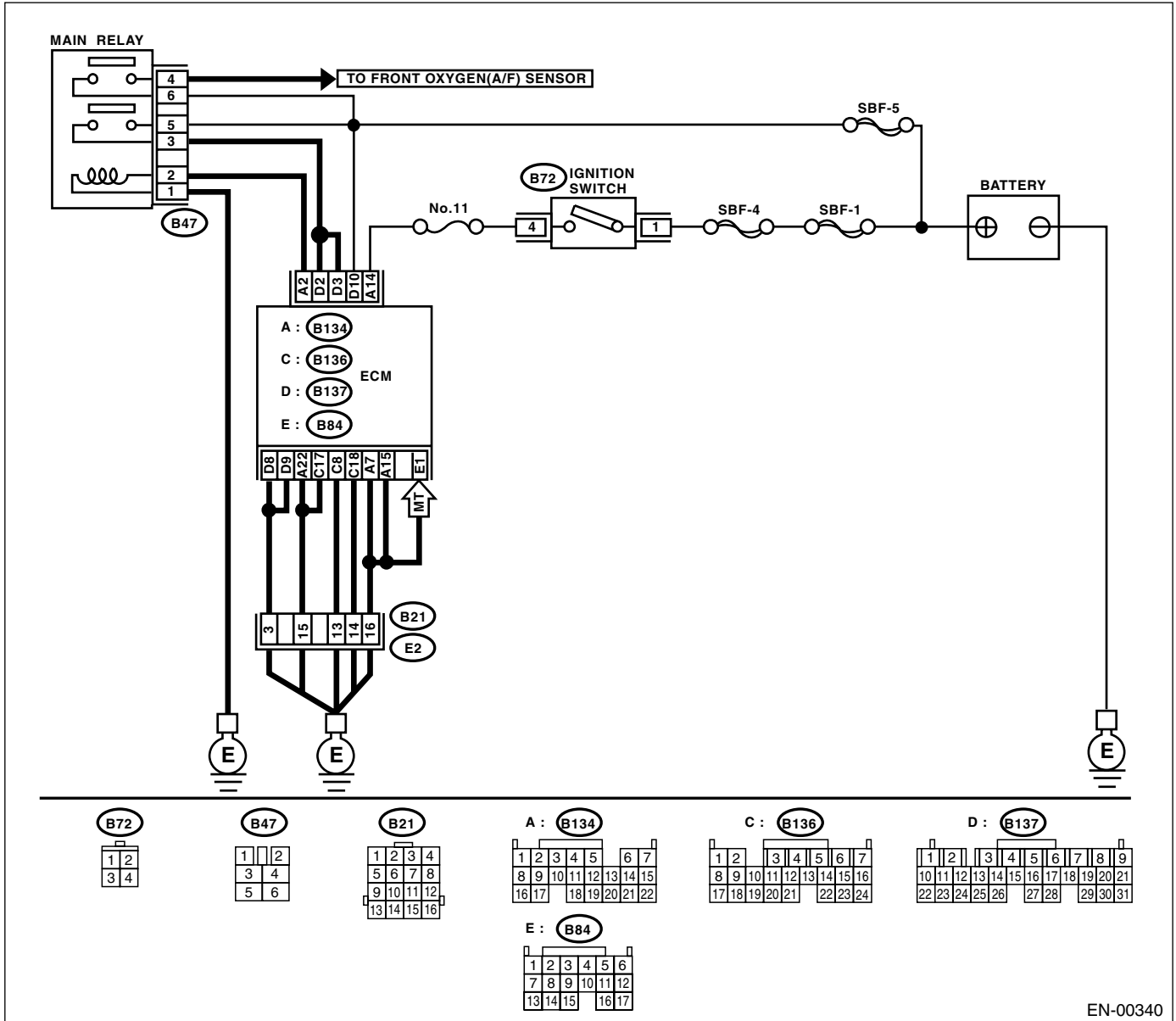


EN-00339



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC) ENGINE (DIAGNOSTICS)

## • RHD model



Step	Check	Yes	No	
1	<p><b>CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.</b></p> <p>Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0604?</p>	<p>DTC P0604 is indicated.</p>	<p>Replace the ECM. &lt;Ref. to FU(TURBO)-48, Engine Control Module.&gt;</p>	<p>A temporary poor contact.</p>

**BL:DTC P0691 — COOLING FAN 1 CONTROL CIRCUIT LOW —**

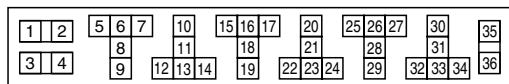
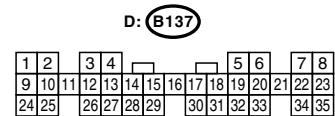
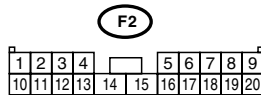
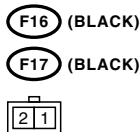
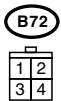
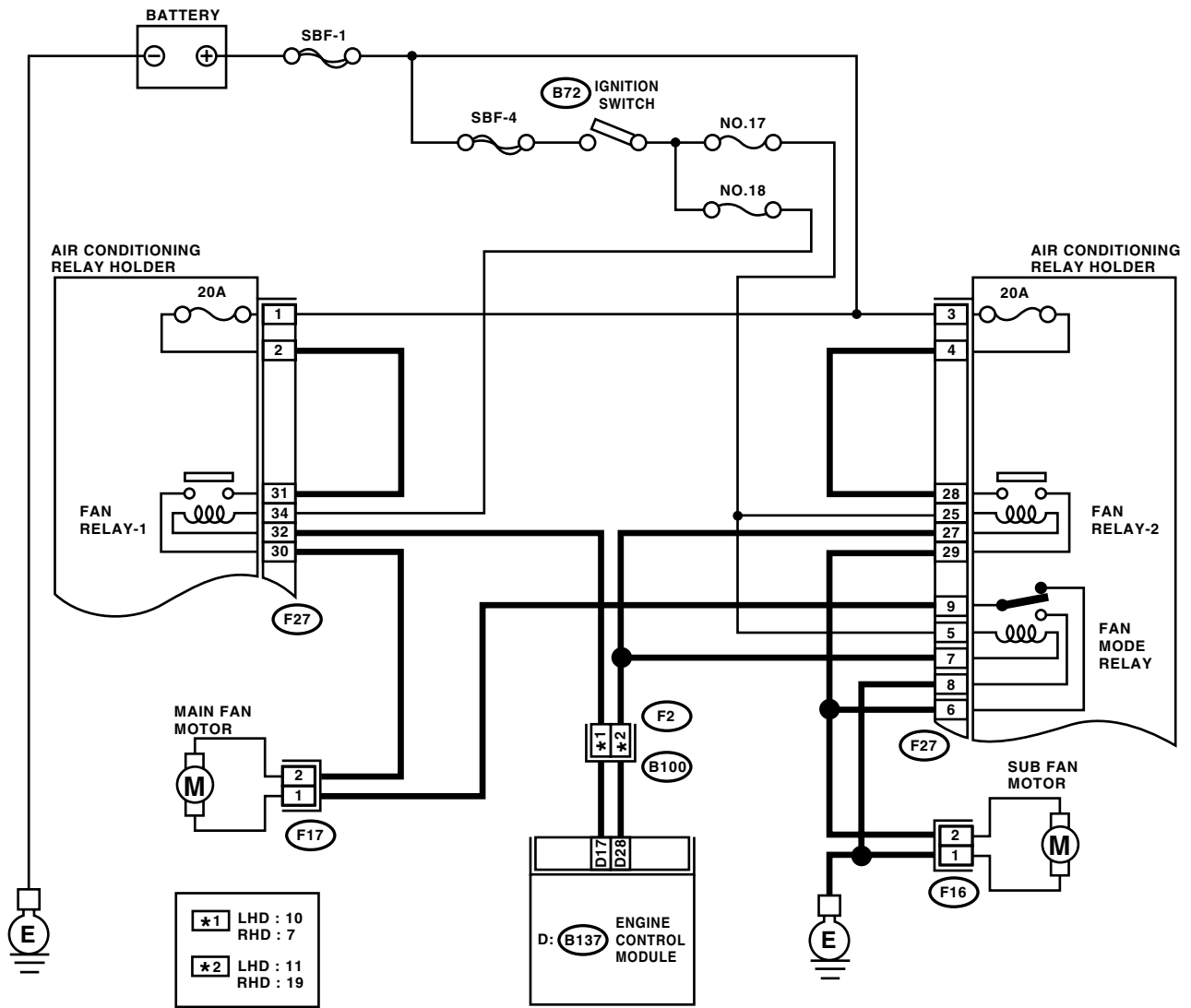
- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Radiator fan does not operate properly.
  - Overheating

**CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, OPERATION, Inspection Mode.>.

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC) ENGINE (DIAGNOSTICS)

## • WIRING DIAGRAM:



RELAY HOLDER (BLACK)

EN-00362

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>1 CHECK OUTPUT SIGNAL FROM ECM.</b>                      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". &lt;Ref. to EN(TURBO)-34, Subaru Select Monitor.&gt;</p> <p><b>Connector &amp; terminal</b>                      (B137) No. 17 (+) — Chassis ground (-):                      (B137) No. 28 (+) — Chassis ground (-):</p> <p>Is the change of measured value within specified value?</p>	0 — 10 V	Repair poor contact in ECM connector.	Go to step 2.
<p><b>2 CHECK GROUND SHORT CIRCUIT IN RADIATOR FAN RELAY CONTROL CIRCUIT.</b>                      1) Turn the ignition switch to OFF.                      2) Disconnect the connectors from ECM.                      3) Measure the resistance of harness between ECM connector and chassis ground.</p> <p><b>Connector &amp; terminal</b>                      (B137) No. 17 (+) — Chassis ground (-):                      (B137) No. 28 (+) — Chassis ground (-):</p> <p>Is the measured value less than specified value?</p>	10 Ω	Repair ground short circuit in radiator fan relay control circuit.	Go to step 3.
<p><b>3 CHECK POWER SUPPLY FOR RELAY.</b>                      1) Remove the fan relay 1 and fan relay 2 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><b>Connector &amp; terminal</b>                      (F27) No. 34 (+) — Chassis ground (-):                      (F27) No. 25 (+) — Chassis ground (-):</p> <p>Is the measured value more than specified value?</p>	10 V	Go to step 4.	Repair open circuit in harness between ignition switch and fuse and relay box (F/B) connector.
<p><b>4 CHECK FAN RELAY 1.</b>                      1) Turn the ignition switch to OFF.                      2) Measure the resistance between fan relay 1 terminals.</p> <p><b>Terminal</b>                      No. 32 — No. 34:</p> <p>Is the measured value within specified value?</p>	87 — 107 Ω	Go to step 5.	Replace the fan relay 1.
<p><b>5 CHECK FAN RELAY 2.</b>                      1) Turn the ignition switch to OFF.                      2) Measure the resistance between fan relay 2 terminals.</p> <p><b>Terminal</b>                      No. 25 — No. 27:</p> <p>Is the measured value within specified value?</p>	87 — 107 Ω	Go to step 6.	Replace the fan relay 2.

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
6	<b>CHECK OPEN CIRCUIT IN FAN RELAY CONTROL CIRCUIT.</b> Measure the resistance of harness between ECM and fan relay connector. <b>Connector &amp; terminal</b> <b>(B137) No. 17 — (F27) No. 32:</b> <b>(B137) No. 28 — (F27) No. 27:</b> Is the measured value less than specified value?	1 $\Omega$	Go to step 7.	Repair harness and connector. <b>NOTE:</b> In this case, repair the following: <ul style="list-style-type: none"><li>• Open circuit in harness between ECM and fan relay connector</li><li>• Poor contact in coupling connector</li></ul>
7	<b>CHECK POOR CONTACT.</b> Check poor contact in ECM or fan relay connector. Is there poor contact in ECM or fan relay connector?	Poor contact occurs.	Repair poor contact in ECM or fan relay connector.	Contact with SOA (distributor) service.

**BM: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.
  - Overheating

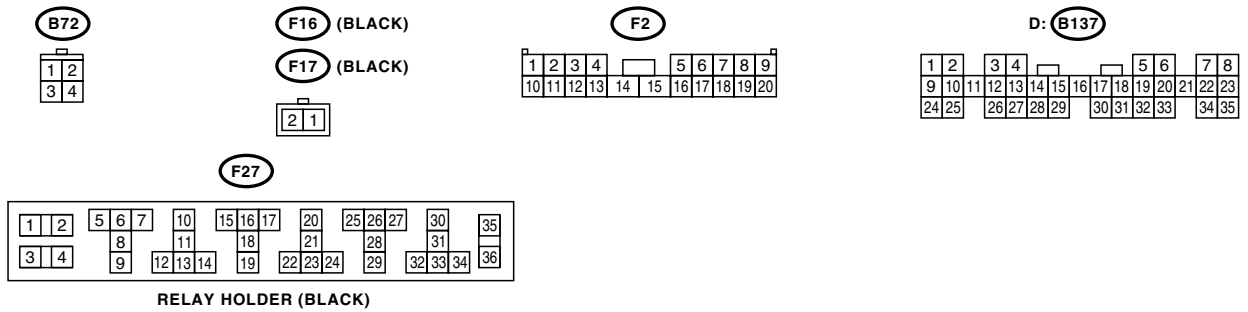
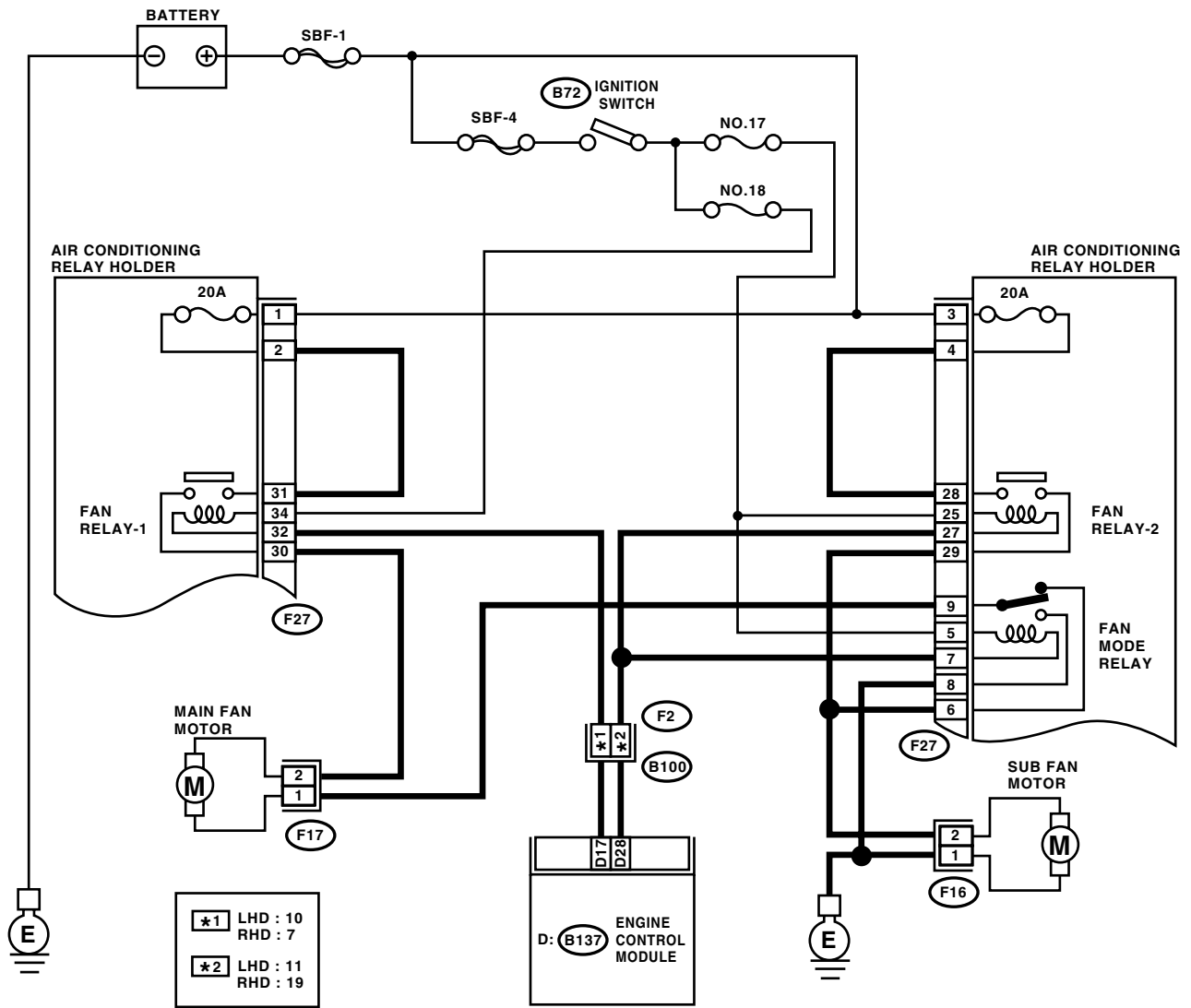
**CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, Operation.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

### • WIRING DIAGRAM:



EN-00362

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>1 CHECK OUTPUT SIGNAL FROM ECM.</b>                      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 the voltage between ECM and chassis ground.</p> <p><b>NOTE:</b>                      Radiator fan relay operation can be executed using the Subaru Select Monitor. For procedure, refer to "Compulsory Valve Operation Check Mode". &lt;Ref. to EN(TURBO)-50, Compulsory Valve Operation Check Mode.&gt;</p> <p><b>Connector &amp; terminal</b>  <b>(B137) No. 17 (+) — Chassis ground (-):</b>  <b>(B137) No. 28 (+) — Chassis ground (-):</b></p> <p>Dose the measured value change within specified value?</p>	0 — 10 V	Even if MIL lights up, the circuit has returned to a normal condition at this time. In this case, repair the poor contact in ECM connector.	Go to step 2.
<p><b>2 CHECK SHORT CIRCUIT IN RADIATOR FAN RELAY CONTROL CIRCUIT.</b>                      1) Turn the ignition switch to OFF.                      2) Remove the fan relay 1, fan relay 2 and fan mode relay. (with A/C models)                      3) Disconnect the test mode connector.                      4) Turn the ignition switch to ON.                      5) Measure the voltage between ECM and chassis ground.</p> <p><b>Connector &amp; terminal</b>  <b>(B137) No. 17 (+) — Chassis ground (-):</b>  <b>(B137) No. 28 (+) — Chassis ground (-):</b></p> <p>Is the measured value more than specified value?</p>	10 V	Repair the battery short circuit in radiator fan relay control circuit. After repair, replace the ECM. <Ref. to FU(TURBO)-48, Engine Control Module.>	Go to step 3.
<p><b>3 CHECK FAN RELAY 1.</b>                      1) Turn the ignition switch to OFF.                      2) Remove the fan relay 1.                      3) Measure the resistance between fan relay 1 terminals.</p> <p><b>Terminal</b>  <b>No. 30 — No. 31:</b></p> <p>Is the measured value less than specified value?</p>	1 Ω	Replace the fan relay 1 and ECM. <Ref. to FU(TURBO)-48, Engine Control Module.>	Go to step 4.
<p><b>4 CHECK FAN RELAY 2.</b>                      1) Remove the fan relay 2.                      2) Measure the resistance between fan relay 2 terminals.</p> <p><b>Terminal</b>  <b>No. 28 — No. 29:</b></p> <p>Is the measured value less than specified value?</p>	1 Ω	Replace the fan relay 2 and ECM. <Ref. to FU(TURBO)-48, Engine Control Module.>	Go to step 5.
<p><b>5 CHECK POOR CONTACT.</b>                      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(TURBO)-48, Engine Control Module.>



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

## BN:DTC P0703 — TORQUE CONVERTER/BRAKE SWITCH “B” CIRCUIT —

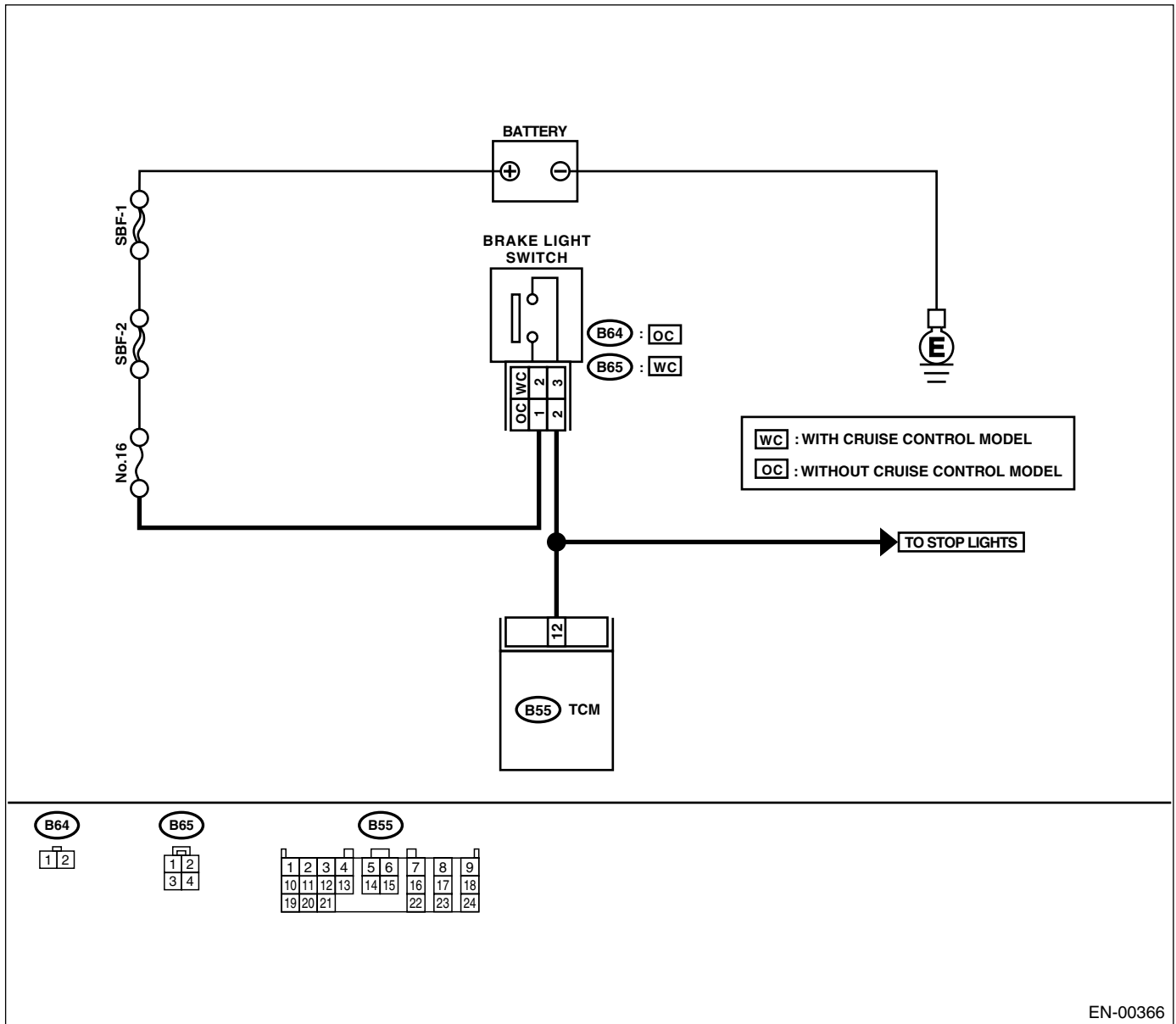
**DTC DETECTING CONDITION:**

- Two consecutive driving cycles with fault

**CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.>.

**• WIRING DIAGRAM:**



Step	Check	Yes	No
1 <b>CHECK OPERATION OF BRAKE LIGHT.</b> Does the brake light come on when depressing the brake pedal?	Brake light comes on.	Go to step 2.	Repair or replace the brake light circuit.

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>2</b></p> <p><b>CHECK HARNESS BETWEEN TCM AND BRAKE LIGHT SWITCH CONNECTOR.</b>                      1) Disconnect the connectors from TCM and brake light switch.                      2) Measure the resistance of harness between TCM and brake light switch connector.  <i>Connector &amp; terminal</i>  <b>WITH CRUISE CONTROL MODEL</b>  <b>(B55) No. 12 — (B65) No. 3:</b>  <b>WITHOUT CRUISE CONTROL MODEL</b>  <b>(B55) No. 12 — (B64) No. 2:</b></p> <p>Is the measured value less than specified value?</p>	1 Ω	Go to step 3.	Repair or replace the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> <li>• Open circuit in harness between TCM and brake light switch connector</li> <li>• Poor contact in TCM connector</li> <li>• Poor contact in brake light switch connector</li> </ul>
<p><b>3</b></p> <p><b>CHECK HARNESS BETWEEN TCM AND BRAKE LIGHT SWITCH CONNECTOR.</b>                      Measure the resistance of harness between TCM and chassis ground.  <i>Connector &amp; terminal</i>  <b>(B55) No. 12 — Chassis ground:</b></p> <p>Is the measured value more than specified value?</p>	1 MΩ	Go to step 4.	Repair the ground short circuit in harness between TCM and brake light switch connector.
<p><b>4</b></p> <p><b>CHECK INPUT SIGNAL FOR TCM.</b>                      1) Connect the connectors to TCM and brake light switch.                      2) Measure the voltage between TCM and chassis ground.  <i>Connector &amp; terminal</i>  <b>(B55) No. 12 (+) — Chassis ground (-):</b></p> <p>Is the measured value less than specified value when releasing the brake pedal?</p>	1 V	Go to step 5.	Adjust or replace the brake light switch. <Ref. to LI-8, STOP LIGHT SWITCH, INSPECTION, Stop Light System.>
<p><b>5</b></p> <p><b>CHECK INPUT SIGNAL FOR TCM.</b>                      Measure the voltage between TCM and chassis ground.  <i>Connector &amp; terminal</i>  <b>(B55) No. 12 (+) — Chassis ground (-):</b></p> <p>Is the measured value more than specified value when depressing the brake pedal?</p>	10 V	Go to step 6.	Adjust or replace the brake light switch. <Ref. to LI-8, STOP LIGHT SWITCH, INSPECTION, Stop Light System.>
<p><b>6</b></p> <p><b>CHECK POOR CONTACT.</b>                      Check poor contact in TCM connector.                      Is there poor contact in TCM connector?</p>	Poor contact occurs.	Repair the poor contact in TCM connector.	Replace the TCM. <Ref. to AT-70, Transmission Control Module (TCM).>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

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## **BO:DTC P0731 — GEAR 1 INCORRECT RATIO —**

NOTE:

For the diagnostic procedure, refer to DTC P0734. <Ref. to EN(TURBO)-239, DTC P0734 — GEAR 4 INCORRECT RATIO —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

## **BP:DTC P0732 — GEAR 2 INCORRECT RATIO —**

NOTE:

For the diagnostic procedure, refer to DTC P0734. <Ref. to EN(TURBO)-239, DTC P0734 — GEAR 4 INCORRECT RATIO —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

## **BQ:DTC P0733 — GEAR 3 INCORRECT RATIO —**

NOTE:

For the diagnostic procedure, refer to DTC P0734. <Ref. to EN(TURBO)-239, DTC P0734 — GEAR 4 INCORRECT RATIO —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

## BR:DTC P0734 — GEAR 4 INCORRECT RATIO —

### • DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

### • TROUBLE SYMPTOM:

- Shift point too high or too low; engine brake not effective in “3” range; excessive shift shock; excessive tight corner “braking”

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.>.

### • WIRING DIAGRAM:

Step	Check	Yes	No	
1	<b>CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.</b> Is any other DTC displayed?	Other DTC is displayed.	Inspect the relevant DTC using “List of Diagnostic Trouble Code (DTC)”. <Ref. to EN(TURBO)-77, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2	<b>CHECK THROTTLE POSITION SENSOR CIRCUIT.</b> Check the throttle position sensor circuit. <Ref. to AT-47, DTC 31 THROTTLE POSITION SENSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> Is there any trouble in throttle position sensor circuit?	There is a fault.	Repair or replace the throttle position sensor circuit.	Go to step 3.
3	<b>CHECK FRONT VEHICLE SPEED SENSOR CIRCUIT.</b> Check the front vehicle speed sensor circuit. <Ref. to AT-54, DTC 33 FRONT VEHICLE SPEED SENSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> Is there any trouble in front vehicle speed sensor circuit?	There is a fault.	Repair or replace the vehicle speed sensor 2 circuit.	Go to step 4.
4	<b>CHECK TORQUE CONVERTER TURBINE SPEED SENSOR CIRCUIT.</b> Check the torque converter turbine speed sensor circuit. <Ref. to AT-59, DTC 36 TORQUE CONVERTER TURBINE SPEED SENSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> Is there any trouble in torque converter turbine speed sensor circuit?	There is a fault.	Repair or replace the torque converter turbine speed sensor circuit.	Go to step 5.
5	<b>CHECK POOR CONTACT.</b> Check poor contact in TCM connector. Is there poor contact in TCM connector?	Poor contact occurs.	Repair the poor contact in TCM connector.	Go to step 6.
6	<b>CHECK MECHANICAL TROUBLE.</b> Check mechanical trouble in automatic transmission. Is there any mechanical trouble in automatic transmission?	There is trouble.	Repair or replace the automatic transmission. <Ref. to AT-31, INSPECTION, Road Test.>	Replace the TCM. <Ref. to AT-70, Transmission Control Module (TCM).>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

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

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - No lock-up (after engine warm-up)
  - No shift or excessive tight corner “braking”

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.>.

Step	Check	Yes	No	
1	<b>CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.</b> Is any other DTC displayed?	Other DTC is displayed.	Inspect the relevant DTC using “List of Diagnostic Trouble Code (DTC)”. <Ref. to EN(TURBO)-77, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2	<b>CHECK LOCK-UP DUTY SOLENOID CIRCUIT.</b> Check the lock-up duty solenoid circuit. <Ref. to AT-87, DTC 77 LOCK-UP DUTY SOLENOID, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> Is there any trouble in lock-up duty solenoid circuit?	There is a fault.	Repair or replace the lock-up duty solenoid circuit.	Go to step 3.
3	<b>CHECK THROTTLE POSITION SENSOR CIRCUIT.</b> Check the throttle position sensor circuit. <Ref. to AT-47, DTC 31 THROTTLE POSITION SENSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> Is there any trouble in throttle position sensor circuit?	There is a fault.	Repair or replace the throttle position sensor circuit.	Go to step 4.
4	<b>CHECK TORQUE CONVERTER TURBINE SPEED SENSOR CIRCUIT.</b> Check the torque converter turbine speed sensor circuit. <Ref. to AT-59, DTC 36 TORQUE CONVERTER TURBINE SPEED SENSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> Is there any trouble in torque converter turbine speed sensor circuit?	There is a fault.	Repair or replace the torque converter turbine speed sensor circuit.	Go to step 5.
5	<b>CHECK ENGINE SPEED INPUT CIRCUIT.</b> Check the engine speed input circuit. <Ref. to AT-38, DTC 11 ENGINE SPEED SIGNAL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> Is there any trouble in engine speed input circuit?	There is a fault.	Repair or replace the engine speed input circuit.	Go to step 6.

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No	
<b>6</b>	<b>CHECK INHIBITOR SWITCH CIRCUIT.</b> Check the inhibitor switch circuit. <Ref. to AT-114, CHECK INHIBITOR SWITCH., Diagnostic Procedure for No-diagnostic Trouble Code (DTC).> Is there any trouble in inhibitor switch circuit?	There is a fault.	Repair or replace the inhibitor switch circuit.	Go to step 7.
<b>7</b>	<b>CHECK BRAKE LIGHT SWITCH CIRCUIT.</b> Check the brake light switch circuit. <Ref. to AT-106, CHECK BRAKE SWITCH., Diagnostic Procedure for No-diagnostic Trouble Code (DTC).> Is there any trouble in brake light switch circuit?	There is a fault.	Repair or replace the brake light switch circuit.	Go to step 8.
<b>8</b>	<b>CHECK ATF TEMPERATURE SENSOR CIRCUIT.</b> Check the ATF temperature sensor circuit. <Ref. to AT-43, DTC 27 ATF TEMPERATURE SENSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> Is there any trouble in ATF temperature sensor circuit?	There is a fault.	Repair or replace the ATF temperature sensor circuit.	Go to step 9.
<b>9</b>	<b>CHECK POOR CONTACT.</b> Check poor contact in TCM connector. Is there poor contact in TCM connector?	Poor contact occurs.	Repair the poor contact in TCM connector.	Go to step 10.
<b>10</b>	<b>CHECK MECHANICAL TROUBLE.</b> Check mechanical trouble in automatic transmission. Is there any mechanical trouble in automatic transmission?	There is trouble.	Repair or replace the automatic transmission. <Ref. to AT-31, INSPECTION, Road Test.>	Replace the TCM. <Ref. to AT-70, Transmission Control Module (TCM).>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

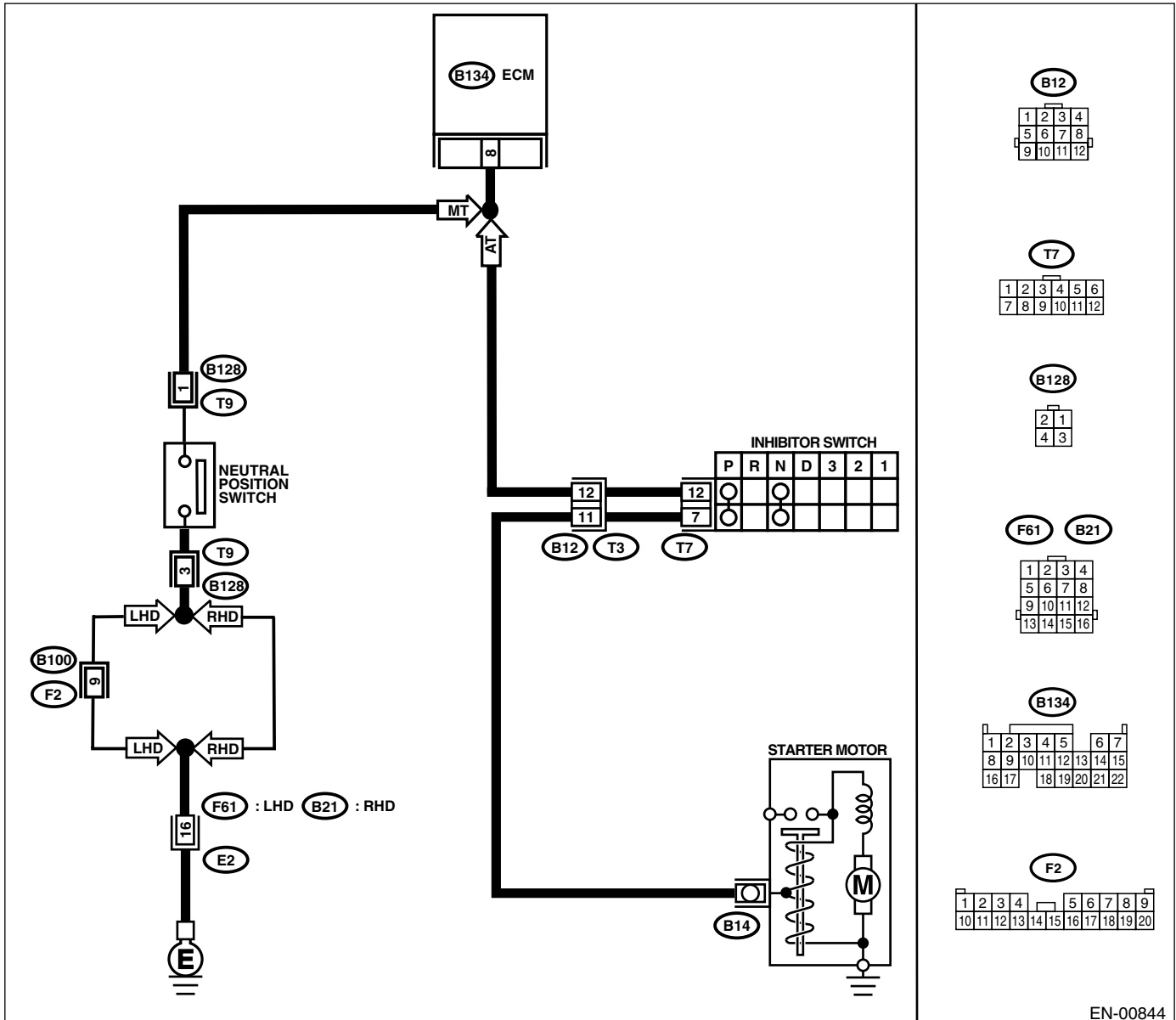
## BT:DTC P0851 — NEUTRAL SWITCH INPUT CIRCUIT LOW (AT VEHICLES) —

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, OPERATION, Inspection Mode.>.

• **WIRING DIAGRAM:**



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>1 CHECK DTC P0705 ON DISPLAY.</b> Is DTC P0705 indicated?	DTC P0705 is indicated.	Inspect DTC P0705 using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(TURBO)-77, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
<b>2 CHECK INPUT SIGNAL FOR ECM.</b> 1) Turn the ignition switch to ON. 2) Place the select lever except for "N" and "P" positions. 3) Measure the voltage between ECM and chassis ground. <i><b>Connector &amp; terminal</b></i> <i><b>(B134) No. 8 (+) — Chassis ground (-):</b></i> Is the measured value within specified value?	4.5 — 5.5 V	Even if MIL lights up, the circuit has returned to a normal condition at this time.	Go to step 3.
<b>3 CHECK HARNESS BETWEEN ECM AND TRANSMISSION HARNESS CONNECTOR.</b> 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><b>Connector &amp; terminal</b></i> <i><b>(B134) No. 8 — Chassis ground:</b></i> Is the measured value more than specified value?	1 MΩ	Go to step 4.	Repair ground short circuit in harness between ECM and transmission harness connector.
<b>4 CHECK TRANSMISSION HARNESS CONNECTOR.</b> 1) Disconnect the connector from inhibitor switch. 2) Measure the resistance of harness between transmission harness connector and engine ground. <i><b>Connector &amp; terminal</b></i> <i><b>(T3) No. 12 — Engine ground:</b></i> Is the measured value more than specified value?	1 MΩ	Go to step 5.	Repair ground short circuit in harness between transmission harness and inhibitor switch connector.
<b>5 CHECK INHIBITOR SWITCH.</b> Measure the resistance between inhibitor switch connector the receptacle's terminals in selector lever except for "N" position. <i><b>Terminals</b></i> <i><b>No. 7 — No. 12:</b></i> Is the measured value more than specified value?	1 MΩ	Go to step 6.	Replace the inhibitor switch. <Ref. to AT-48, Inhibitor Switch.>
<b>6 CHECK SELECTOR CABLE CONNECTION.</b> Is there any fault in selector cable connection to inhibitor switch?	There is a fault.	Repair selector cable connection. <Ref. to CS-10, INSPECTION, Select Cable.>	Contact with SOA (distributor) service. NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

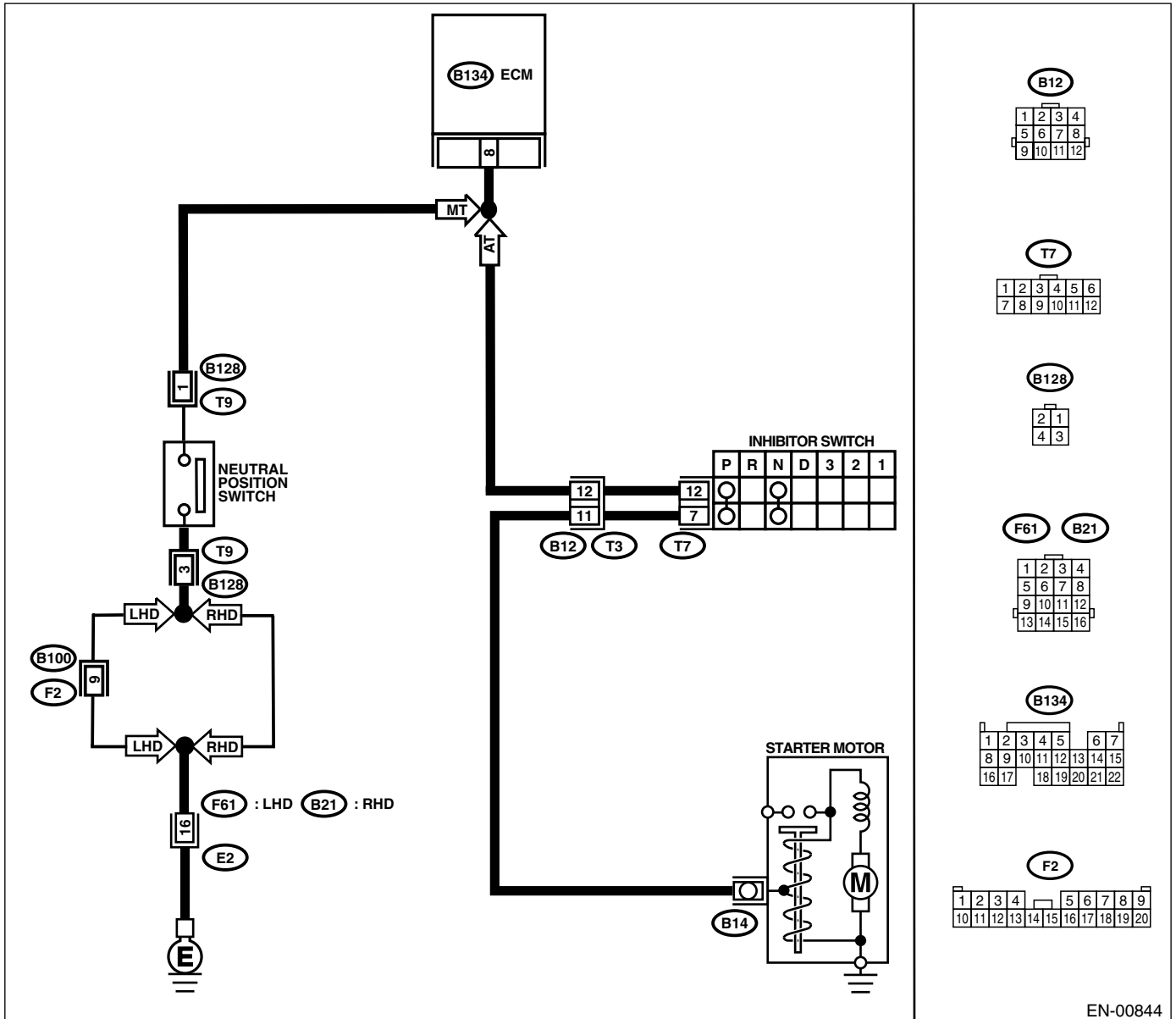
## BU:DTC P0851 — NEUTRAL SWITCH INPUT CIRCUIT LOW (MT VEHICLES) —

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, OPERATION, Inspection Mode.>.

• **WIRING DIAGRAM:**



EN-00844

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>1</b></p> <p><b>CHECK INPUT SIGNAL FOR ECM.</b>                      1) Turn the ignition switch to ON.                      2) Place the shift lever in neutral.                      3) Measure the voltage between ECM and chassis ground.</p> <p><b>Connector &amp; terminal</b>  <b>(B134) No. 8 (+) — Chassis ground (-):</b>                      Is the measured value more than specified value?</p>	10 V	Go to step 2.	Go to step 4.
<p><b>2</b></p> <p><b>CHECK INPUT SIGNAL FOR ECM.</b>                      1) Place the shift lever in a position except for neutral.                      2) Measure the voltage between ECM and chassis ground.</p> <p><b>Connector &amp; terminal</b>  <b>(B134) No. 8 (+) — Chassis ground (-):</b>                      Is the measured value less than specified value?</p>	1 V	Go to step 3.	Go to step 4.
<p><b>3</b></p> <p><b>CHECK POOR CONTACT.</b>                      Check poor contact in ECM connector.                      Is there poor contact in ECM connector?</p>	Poor contact occurs.	Repair poor contact in ECM connector.	Contact with SOA (distributor) service.
<p><b>4</b></p> <p><b>CHECK NEUTRAL POSITION SWITCH.</b>                      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.</p> <p><b>Connector &amp; terminal</b>  <b>(T9) No. 1 — No. 3:</b>                      Is the measured value more than specified value?</p>	1 M $\Omega$	Go to step 5.	Repair short circuit in transmission harness or replace neutral position switch.
<p><b>5</b></p> <p><b>CHECK NEUTRAL POSITION SWITCH.</b>                      1) Place the shift lever in a position except for neutral.                      2) Measure the resistance between transmission harness connector terminals.                      Is the measured value less than specified value?</p>	1 $\Omega$	Go to step 6.	Repair short circuit in transmission harness or replace neutral position switch.
<p><b>6</b></p> <p><b>CHECK HARNESS BETWEEN ECM AND NEUTRAL POSITION SWITCH CONNECTOR.</b>                      Measure the resistance between ECM and chassis ground.</p> <p><b>Connector &amp; terminal</b>  <b>(B134) No. 8 — Chassis ground:</b>                      Is the measured value more than specified value?</p>	1 M $\Omega$	Go to step 7.	Repair ground short circuit in harness between ECM and transmission harness connector.
<p><b>7</b></p> <p><b>CHECK HARNESS BETWEEN ECM AND NEUTRAL POSITION SWITCH CONNECTOR.</b>                      1) Disconnect the connector from ECM.                      2) Measure the resistance of harness between ECM and transmission harness connector.</p> <p><b>Connector &amp; terminal</b>  <b>(B134) No. 8 — (B128) No. 1:</b>                      Is the measured value less than specified value?</p>	1 $\Omega$	Go to step 8.	Repair open circuit in harness between ECM and transmission harness connector.

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
8	<b>CHECK HARNESS BETWEEN ECM AND NEUTRAL POSITION SWITCH CONNECTOR.</b> Measure the resistance of harness between transmission harness connector and engine ground. <b>Connector &amp; terminal</b> <b>(B128) No. 1 — Engine ground:</b> Is the measured value less than specified value?	5 $\Omega$	Go to step 9.	Repair open circuit between transmission harness connector and engine ground terminal.
9	<b>CHECK POOR CONTACT.</b> Check poor contact in transmission harness connector. Is there poor contact in transmission harness connector?	Poor contact occurs.	Repair poor contact in transmission harness connector.	Contact with SOA (distributor) service.

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

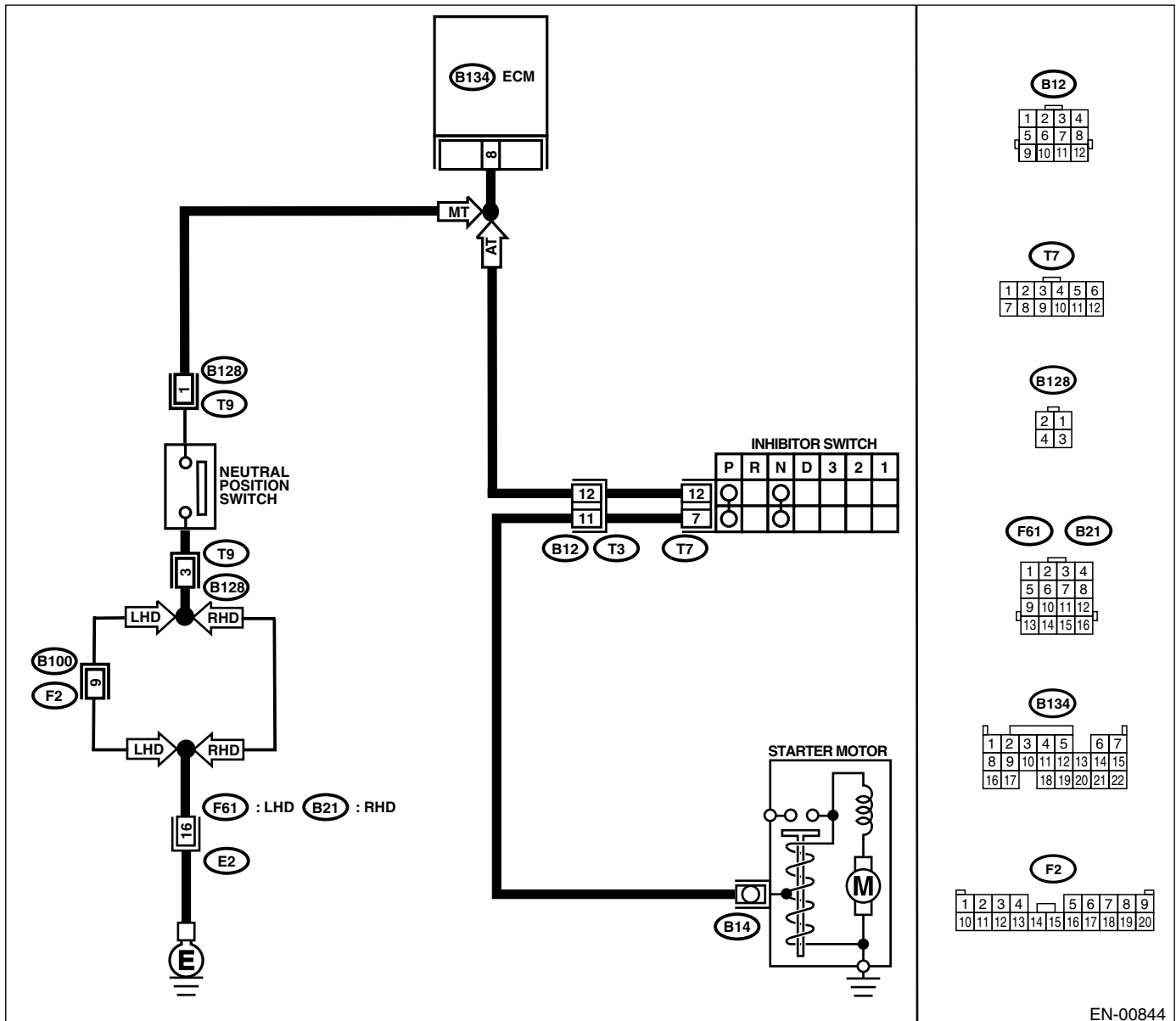
## BV:DTC P0852 — NEUTRAL SWITCH INPUT CIRCUIT HIGH (AT VEHICLES) —

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, OPERATION, Inspection Mode.>.

• **WIRING DIAGRAM:**



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>1 CHECK DTC P0705 ON DISPLAY.</b> Is DTC P0705 indicated?	DTC P0705 is indicated.	Inspect DTC P0705 using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(TURBO)-77, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
<b>2 CHECK INPUT SIGNAL FOR ECM.</b> 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground in selector lever "N" and "P" positions. <b>Connector &amp; terminal</b> <b>(B134) No. 8 (+) — Chassis ground (-):</b> Is the measured value less than specified value?	1 V	Go to step 3.	Go to step 5.
<b>3 CHECK INPUT SIGNAL FOR ECM.</b> Measure the voltage between ECM and chassis ground in selector lever except for "N" and "P" positions. <b>Connector &amp; terminal</b> <b>(B134) No. 8 (+) — Chassis ground (-):</b> Is the measured value within specified value?	4.5 — 5.5 V	Go to step 4.	Go to step 5.
<b>4 CHECK POOR CONTACT.</b> Check poor contact in ECM connector. Is there poor contact in ECM connector?	Poor contact occurs.	Repair poor contact in ECM connector.	Contact with SOA (distributor) service. NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.
<b>5 CHECK INPUT SIGNAL FOR ECM.</b> Measure the voltage between ECM and chassis ground. <b>Connector &amp; terminal</b> <b>(B134) No. 8 (+) — Chassis ground (-):</b> Is the measured value more than specified value?	10 V	Repair battery short circuit in harness between ECM and inhibitor switch connector.	Go to step 6.
<b>6 CHECK HARNESS BETWEEN ECM AND INHIBITOR SWITCH CONNECTOR.</b> 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. <b>Connector &amp; terminal</b> <b>(B134) No. 8 — (T7) No. 12:</b> Is the measured value less than specified value?	1 Ω	Go to step 7.	Repair harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> <li>• Open circuit in harness between ECM and inhibitor switch connector</li> <li>• Poor contact in coupling connector</li> <li>• Poor contact in inhibitor switch connector</li> <li>• Poor contact in ECM connector</li> </ul>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>7</b></p> <p><b>CHECK INHIBITOR SWITCH GROUND LINE.</b>                      Measure the resistance of harness between inhibitor switch connector and engine ground.  <i><b>Connector &amp; terminal</b></i>  <i><b>(T7) No. 7 — Engine ground:</b></i>                      Is the measured value less than specified value?</p>	<p>5 Ω</p>	<p>Go to step 8.</p>	<p>Repair open circuit in harness between inhibitor switch connector and starter motor ground line.</p> <p>NOTE:                      In this case, repair the following:</p> <ul style="list-style-type: none"> <li>• Open circuit in harness between inhibitor switch connector and starter motor ground line</li> <li>• Poor contact in starter motor connector</li> <li>• Poor contact in starter motor ground</li> <li>• Starter motor</li> </ul>
<p><b>8</b></p> <p><b>CHECK INHIBITOR SWITCH.</b>                      Measure the resistance between inhibitor switch connector receptacle's terminals in selector lever "N" and "P" positions.  <i><b>Terminals</b></i>  <i><b>No. 7 — No. 12:</b></i>                      Is the measured value less than specified value?</p>	<p>1 Ω</p>	<p>Go to step 9.</p>	<p>Replace the inhibitor switch. &lt;Ref. to AT-48, Inhibitor Switch.&gt;</p>
<p><b>9</b></p> <p><b>CHECK SELECTOR CABLE CONNECTION.</b>                      Is there any fault in selector cable connection to inhibitor switch?</p>	<p>There is a fault.</p>	<p>Repair selector cable connection.                      &lt;Ref. to CS-10, INSPECTION, Select Cable.&gt;</p>	<p>Contact with SOA (distributor) service.</p> <p>NOTE:                      Inspection by DTM is required, because probable cause is deterioration of multiple parts.</p>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

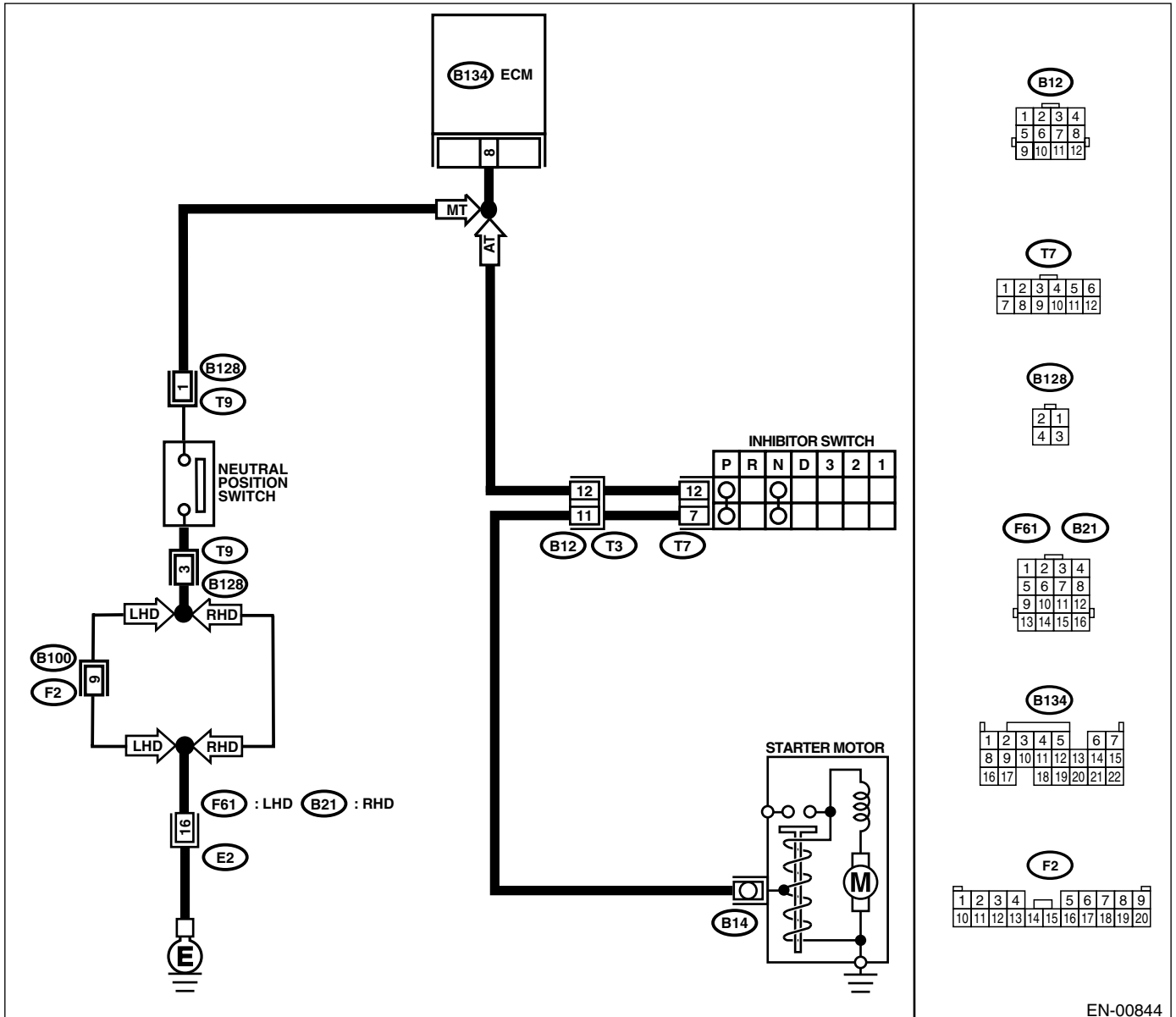
## BW:DTC P0852 — NEUTRAL SWITCH INPUT CIRCUIT HIGH (MT VEHICLES) —

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, OPERATION, Inspection Mode.>.

• **WIRING DIAGRAM:**



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>1 CHECK INPUT SIGNAL FOR ECM.</b> 1) Turn the ignition switch to ON. 2) Select the selector lever to except "N" range. 3) Measure the voltage between ECM and chassis ground. <b>Connector &amp; terminal</b> <b>(B134) No. 8 (+) — Chassis ground (-):</b> Is the measured value less than specified value?	1 V	Go to step 2.	Go to step 4.
<b>2 CHECK INPUT SIGNAL FOR ECM.</b> 1) Select the selector lever to "N" range. 2) Measure the voltage between ECM and chassis ground. <b>Connector &amp; terminal</b> <b>(B134) No. 8 (+) — Chassis ground (-):</b> Is the measured value more than specified value?	10 V	Go to step 3.	Go to step 4.
<b>3 CHECK POOR CONTACT.</b> Check poor contact in ECM connector. Is there poor contact in ECM connector?	Poor contact occurs.	Repair the poor contact in ECM connector.	Contact with your Subaru distributor service.
<b>4 CHECK INPUT SIGNAL FOR ECM.</b> 1) Disconnect ECM connector from ECM. 2) Measure the voltage between ECM and chassis ground. <b>Connector &amp; terminal</b> <b>(B134) No. 8 (+) — Chassis ground (-):</b> Is the measured value more than specified value?	10 V	Repair the battery short circuit in harness between ECM and transmission connector.	Go to step 5.
<b>5 CHECK HARNESS BETWEEN ECM AND TRANSMISSION HARNESS CONNECTOR.</b> 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. <b>Connector &amp; terminal</b> <b>(B134) No. 8 — (B128) No. 1:</b> Is the measured value less than specified value?	1 $\Omega$	Go to step 6.	Repair the harness and connector.  NOTE: In this case, repair the following: <ul style="list-style-type: none"> <li>• Open circuit in harness between ECM and transmission harness</li> <li>• Poor contact in transmission harness connector</li> <li>• Poor contact in ECM connector</li> </ul>
<b>6 CHECK NEUTRAL POSITION SWITCH GROUND LINE.</b> Measure the resistance of harness between transmission harness connector and engine ground. <b>Connector &amp; terminal</b> <b>(B128) No. 3 — Engine ground:</b> Is the measured value less than specified value?	5 $\Omega$	Go to step 7.	Repair the open circuit in harness of neutral position switch ground line.



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
7	<b>CHECK NEUTRAL POSITION SWITCH.</b> 1)Select the selector lever to except "N" range. 2)Measure the resistance between transmission harness connector receptacle's terminals. <b>Terminals</b> <b>No. 1 — No. 3:</b> Is the measured value less than specified value?	1 $\Omega$	Go to step 8.  Replace the neutral position switch.
8	<b>CHECK POOR CONTACT.</b> Check poor contact in the transmission harness connector. Is there poor contact in the transmission harness connector?	Poor contact occurs.	Repair poor contact in transmission harness connector.  Contact with your Subaru distributor service.

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

## BX:DTC P0864 — TCM COMMUNICATION CIRCUIT RANGE/PERFORMANCE —

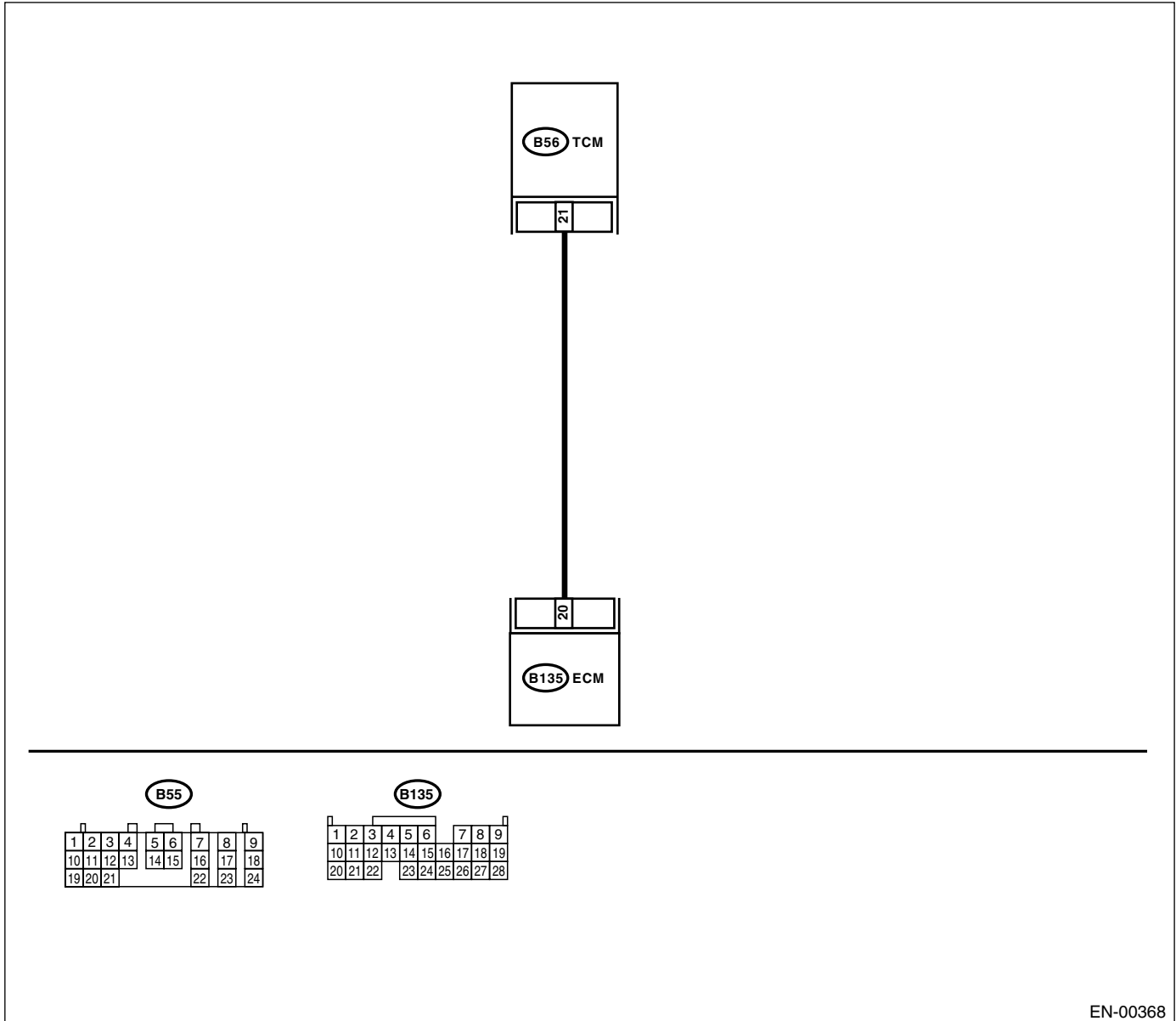
### • DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.>.

### • WIRING DIAGRAM:



Step	Check	Yes	No
1	<b>CHECK DRIVING CONDITION.</b> 1)Start and warm-up the engine until the radiator fan makes one complete rotation. 2)Drive the vehicle. Is the AT shift control functioning properly?	Go to step 2.	Replace the TCM. <Ref. to AT-70, Transmission Control Module (TCM).>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
2	<b>CHECK ACCESSORY.</b> Are car phone and/or CB installed on vehicle?	Car phone and/or CB are installed on vehicle.	Repair the grounding line of car phone or CB system.	Replace the TCM. <Ref. to AT-70, Transmission Control Module (TCM).>

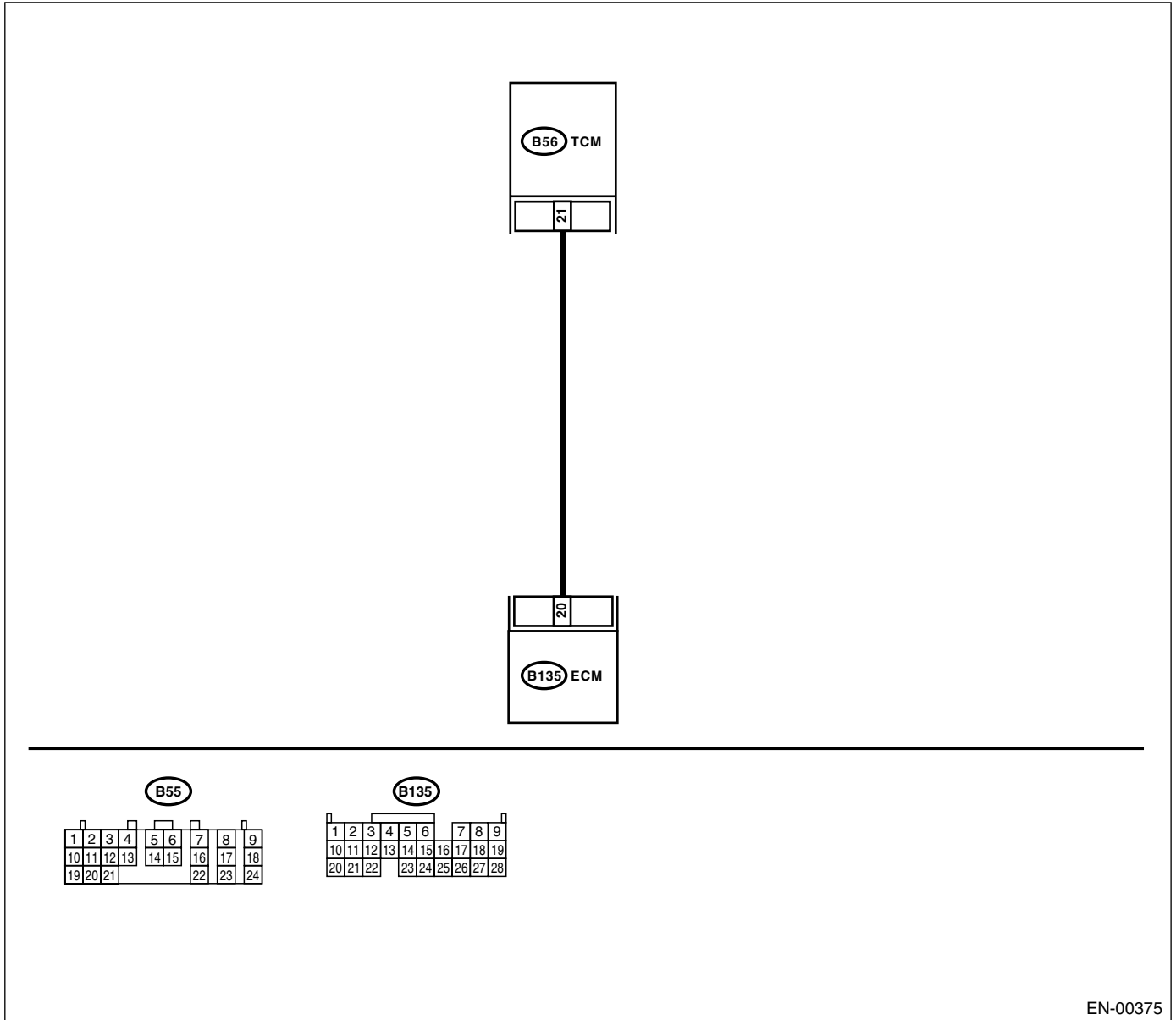
**BY:DTC P0865 — AT DIAGNOSIS INPUT SIGNAL CIRCUIT LOW INPUT —**

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

**CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.>.

- **WIRING DIAGRAM:**



EN-00375

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>1 CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.</b> 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. <b>Connector &amp; terminal</b> <b>(B135) No. 20 (+) — Chassis ground (-):</b> Is the measured value less than specified value?	1 V	Go to step 2.	Even if MIL lights up, the circuit has returned to a normal condition at this time.  NOTE: In this case, repair the following: <ul style="list-style-type: none"> <li>• Poor contact in ECM connector</li> <li>• Poor contact in TCM connector</li> </ul>
<b>2 CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.</b> 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and TCM. 3) Measure the resistance of harness between ECM and chassis ground. <b>Connector &amp; terminal</b> <b>(B135) No. 20 — Chassis ground:</b> Is the measured value less than specified value?	10 Ω	Repair the ground short circuit in harness between ECM and TCM connector.	Go to step 3.
<b>3 CHECK OUTPUT SIGNAL FOR ECM.</b> 1) Connect the connector to ECM. 2) Turn the ignition switch to ON. 3) Measure the voltage between ECM and chassis ground. <b>Connector &amp; terminal</b> <b>(B135) No. 20 (+) — Chassis ground (-):</b> Is the measured value more than specified value?	5 V	Go to step 4.	Repair the poor contact in ECM connector.
<b>4 CHECK TROUBLE CODE FOR AUTOMATIC TRANSMISSION.</b> Read the DTC for automatic transmission. <Ref. to AT-20, Read Diagnostic Trouble Code (DTC).> Does the DTC appear for automatic transmission?	DTC appears for automatic transmission.	Inspect the DTC for automatic transmission. <Ref. to AT-38, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>	Replace the TCM. <Ref. to AT-70, Transmission Control Module (TCM).>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

## BZ:DTC P0866 — AT DIAGNOSIS INPUT SIGNAL CIRCUIT HIGH INPUT —

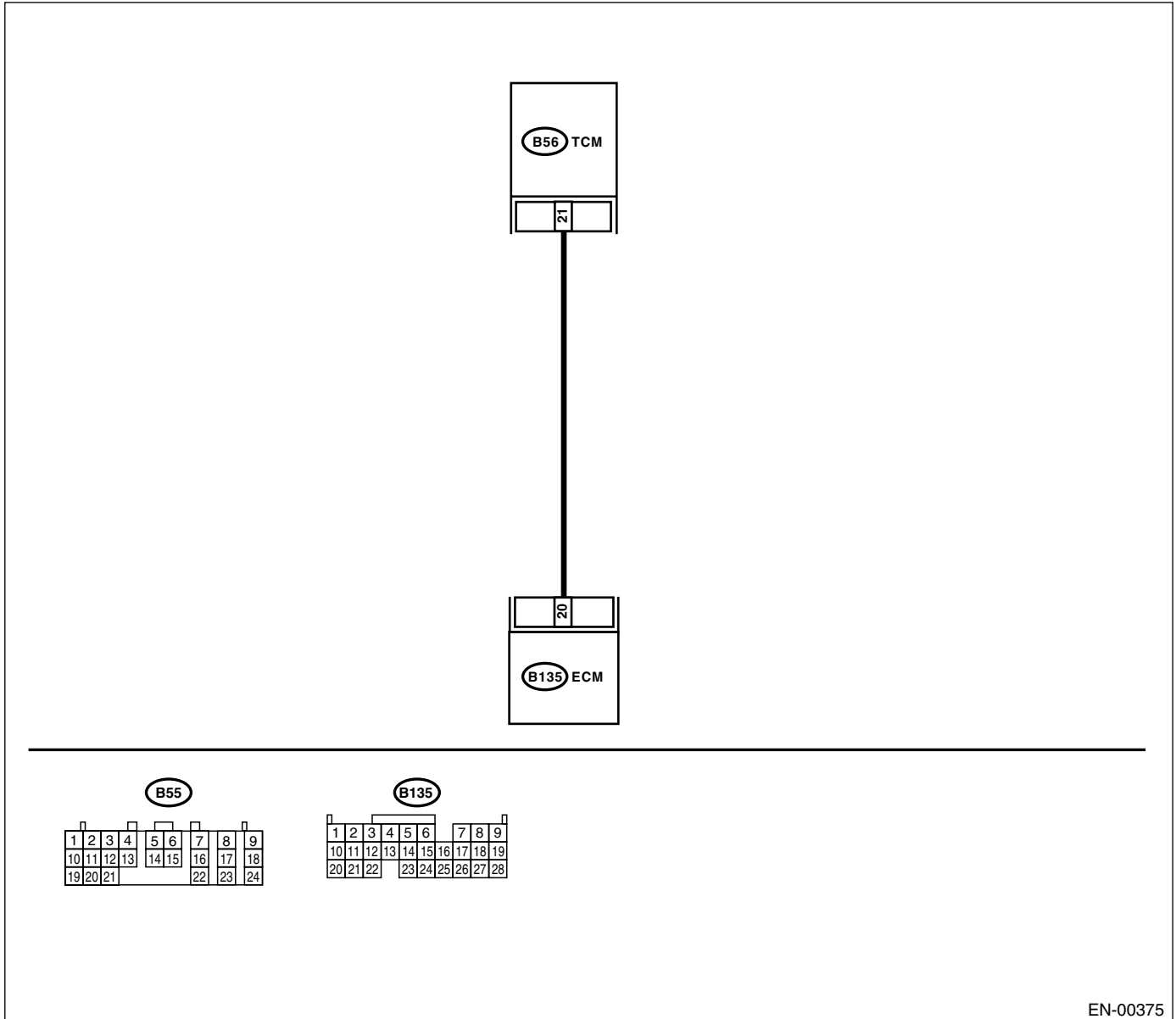
### • DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.>.

### • WIRING DIAGRAM:



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>1 CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.</b> 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. <i><b>Connector &amp; terminal</b></i> <i><b>(B135) No. 20 (+) — Chassis ground (-):</b></i> Is the measured value more than specified value?	10 V	Repair the battery short circuit in harness between ECM and TCM connector. After repair, replace the ECM. <Ref. to FU(TURBO)-48, Engine Control Module.>	Go to step 2.
<b>2 CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.</b> Measure the voltage between ECM connector and chassis ground. <i><b>Connector &amp; terminal</b></i> <i><b>(B135) No. 20 (+) — Chassis ground (-):</b></i> Is the measured value more than specified value?	4 V	Go to step 5.	Go to step 3.
<b>3 CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.</b> Measure the voltage between ECM connector and chassis ground. <i><b>Connector &amp; terminal</b></i> <i><b>(B135) No. 20 (+) — Chassis ground (-):</b></i> Is the measured value less than specified value?	1 V	Repair the poor contact in ECM connector.	Go to step 4.
<b>4 CHECK OUTPUT SIGNAL FROM ECM.</b> Measure the voltage between ECM and chassis ground. <i><b>Connector &amp; terminal</b></i> <i><b>(B135) No. 20 (+) — Chassis ground (-):</b></i> Does the voltage change from specified value while monitoring the value with voltage meter?	1 — 4 V	Even if MIL lights up, the circuit has returned to a normal condition at this time. NOTE: In this case, repair the following: • Poor contact in ECM connector • Poor contact in TCM connector	Contact with your Subaru distributor service. NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.
<b>5 CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.</b> Measure the voltage between TCM and chassis ground. <i><b>Connector &amp; terminal</b></i> <i><b>(B56) No. 20 (+) — Chassis ground (-):</b></i> Is the measured value more than specified value?	4 V	Go to step 6.	Repair the open circuit in harness between ECM and TCM connector.
<b>6 CHECK POOR CONTACT.</b> Check poor contact in TCM connector. Is there poor contact in TCM connector?	Poor contact occurs.	Repair the poor contact in TCM connector.	Check the TCM power supply line and grounding line.

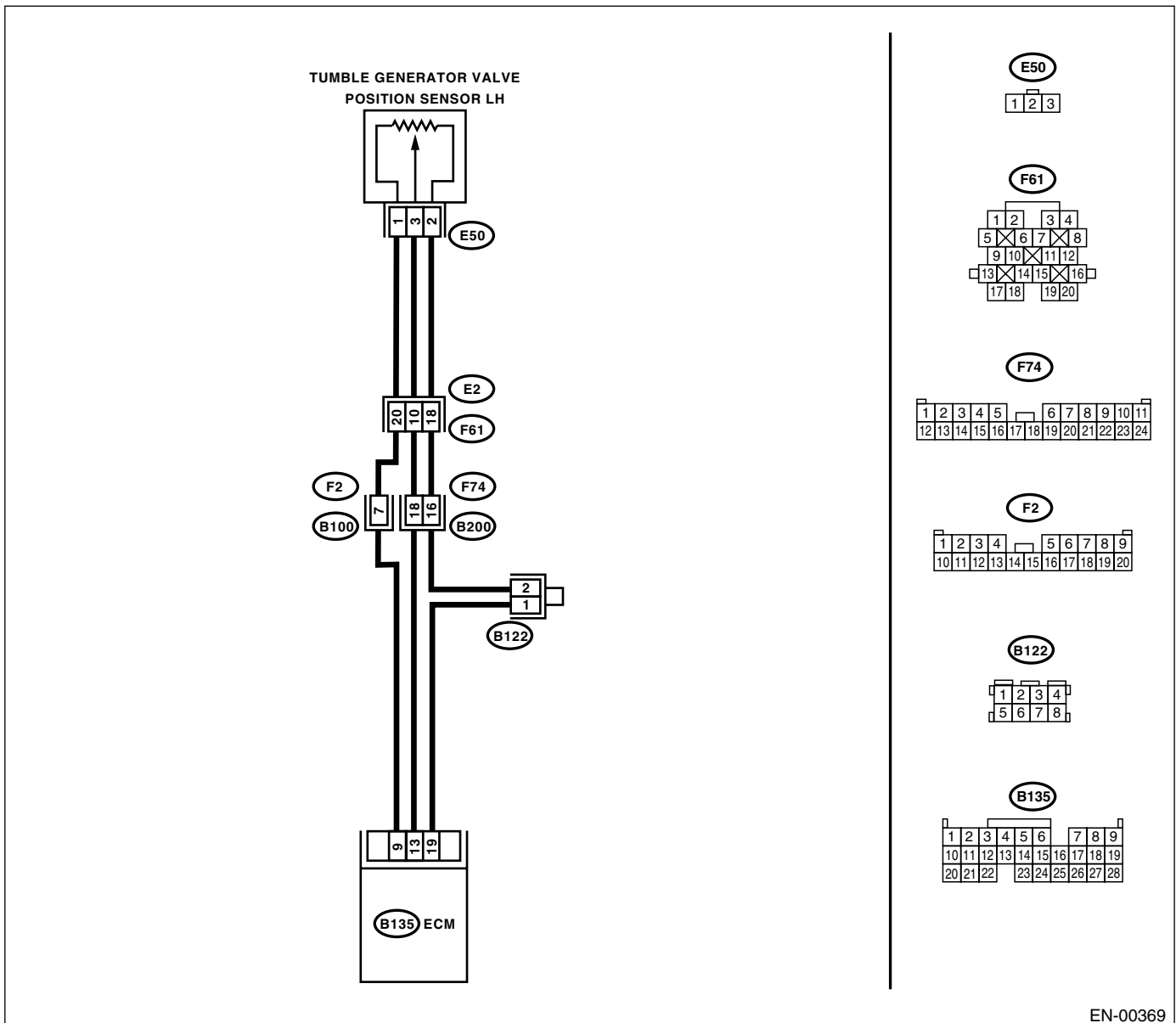
## CA: DTC P1086 — TUMBLE GENERATED VALVE POSITION SENSOR 2 CIRCUIT LOW —

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

- **WIRING DIAGRAM:**
- LHD model

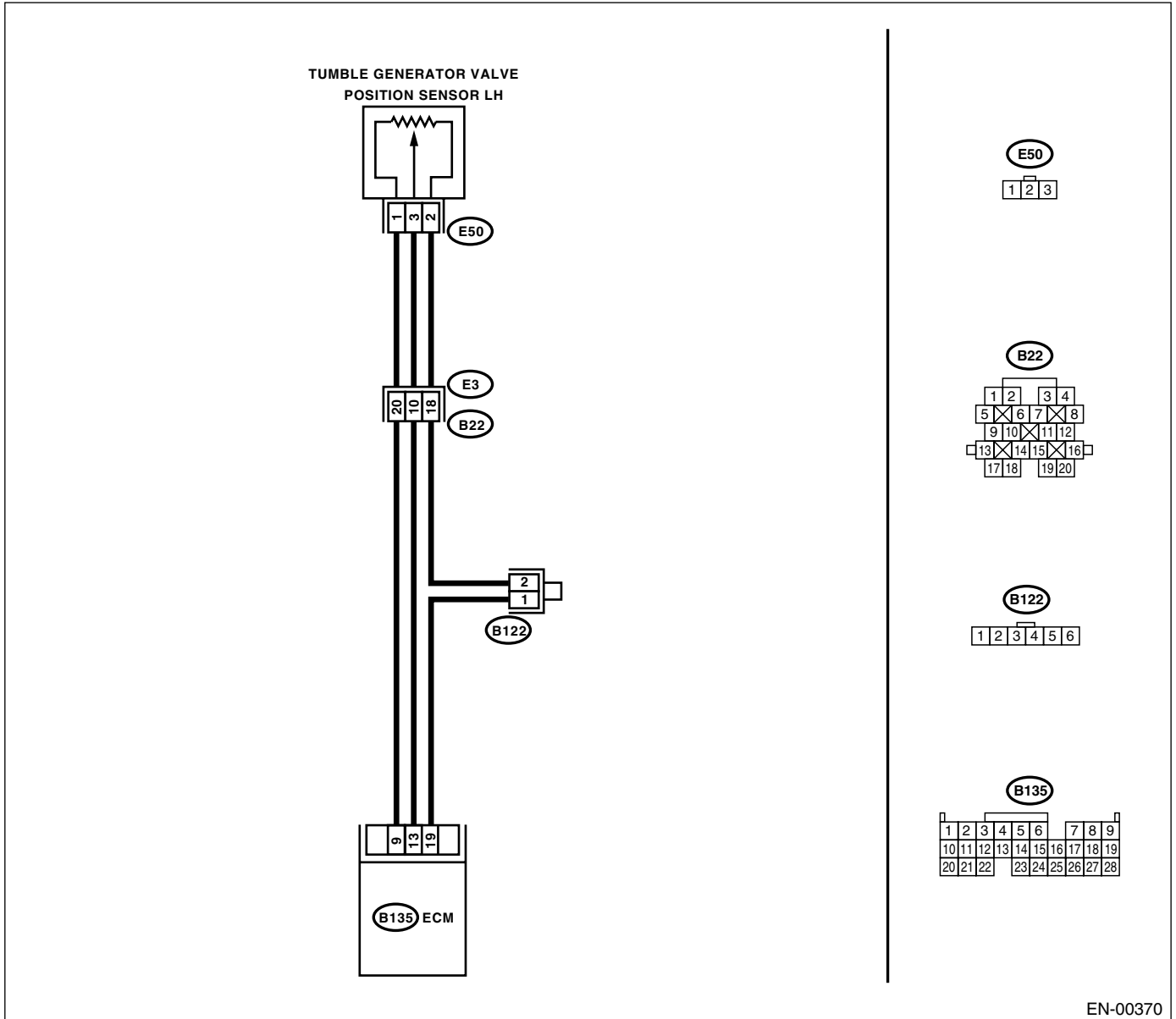




# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

- RHD model



EN-00370

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>1</b></p> <p><b>CHECK CURRENT DATA.</b>                      1)Start the engine.                      2)Read the data of throttle position sensor signal using Subaru Select Monitor or OBD-II general scan tool.                      Is the measured value less than specified value?                      NOTE:                      •Subaru Select Monitor                      For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE".                      &lt;Ref. to EN(TURBO)-34, Subaru Select Monitor.&gt;                      •OBD-II general scan tool                      For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</p>	0.1 V	Go to step 2.	Even if MIL lights up, 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
<p><b>2</b></p> <p><b>CHECK INPUT SIGNAL FOR ECM.</b>                      Measure the voltage between ECM connector and chassis ground while tumble generator valve is fully closed.  <b>Connector &amp; terminal</b>  <b>(B135) No. 9 (+) — Chassis ground (-):</b>                      Is the measured value more than specified value?</p>	4.5 V	Go to step 4.	Go to step 3.
<p><b>3</b></p> <p><b>CHECK INPUT SIGNAL FOR ECM.</b>                      Measure the voltage between ECM connector and chassis ground.  <b>Connector &amp; terminal</b>  <b>(B135) No. 9 (+) — Chassis ground (-):</b>                      Shake the ECM harness and connector, while monitoring value of voltage meter.                      Is the voltage change more than specified value?</p>	4.5 V	Repair the poor contact in ECM connector.	Contact with your Subaru distributor service. NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.
<p><b>4</b></p> <p><b>CHECK INPUT SIGNAL FOR ECM.</b>                      Measure the voltage between ECM connector and chassis ground.  <b>Connector &amp; terminal</b>  <b>(B135) No. 13 (+) — Chassis ground (-):</b>                      Is the measured value less than specified value?</p>	0.1 V	Go to step 6.	Go to step 5.
<p><b>5</b></p> <p><b>CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR.)</b>                      Measure the voltage between ECM connector and chassis ground.                      Shake the ECM harness and connector, while monitoring value of Subaru Select Monitor.                      Is the voltage change more than specified value?</p>	0.1 V	Repair the poor contact in ECM connector.	Go to step 6.

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>6</b></p> <p><b>CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE POSITION SENSOR CONNECTOR.</b></p> <p>1) Turn the ignition switch to OFF.                      2) Disconnect the connectors 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><b>Connector &amp; terminal</b>  <b>(E50) No. 1 (+) — Engine ground (-):</b></p> <p>Is the measured value more than specified value?</p>	4.5 V	Go to step 7.	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> <li>• Open circuit in harness between tumble generator valve position sensor and ECM connector</li> <li>• Poor contact in tumble generator valve position sensor connector</li> <li>• Poor contact in ECM connector</li> <li>• Poor contact in coupling connector</li> <li>• Poor contact in joint connector</li> </ul>
<p><b>7</b></p> <p><b>CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE POSITION SENSOR CONNECTOR.</b></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><b>Connector &amp; terminal</b>  <b>(B135) No. 13 — (E50) No. 3:</b></p> <p>Is the measured value less than specified value?</p>	1 Ω	Go to step 8.	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> <li>• Open circuit in harness between tumble generator valve position sensor and ECM connector</li> <li>• Poor contact in ECM connector</li> <li>• Poor contact in tumble generator valve position sensor connector</li> <li>• Poor contact in coupling connector</li> </ul>
<p><b>8</b></p> <p><b>CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE POSITION SENSOR CONNECTOR.</b></p> <p>Measure the resistance of harness between tumble generator valve position sensor connector and engine ground.</p> <p><b>Connector &amp; terminal</b>  <b>(E50) No. 3 — Engine ground:</b></p> <p>Is the measured value less than specified value?</p>	10 Ω	Repair the ground short circuit in harness between tumble generator valve position sensor and ECM connector.	Go to step 9.
<p><b>9</b></p> <p><b>CHECK POOR CONTACT.</b></p> <p>Check poor contact in tumble generator valve position sensor connector.                      Is there poor contact in tumble generator valve position sensor connector?</p>	Poor contact occurs.	Repair the poor contact in tumble generator valve position sensor connector.	Replace the tumble generator valve assembly. <Ref. to FU(TURBO)-40, Tumble Generator Valve Assembly.>

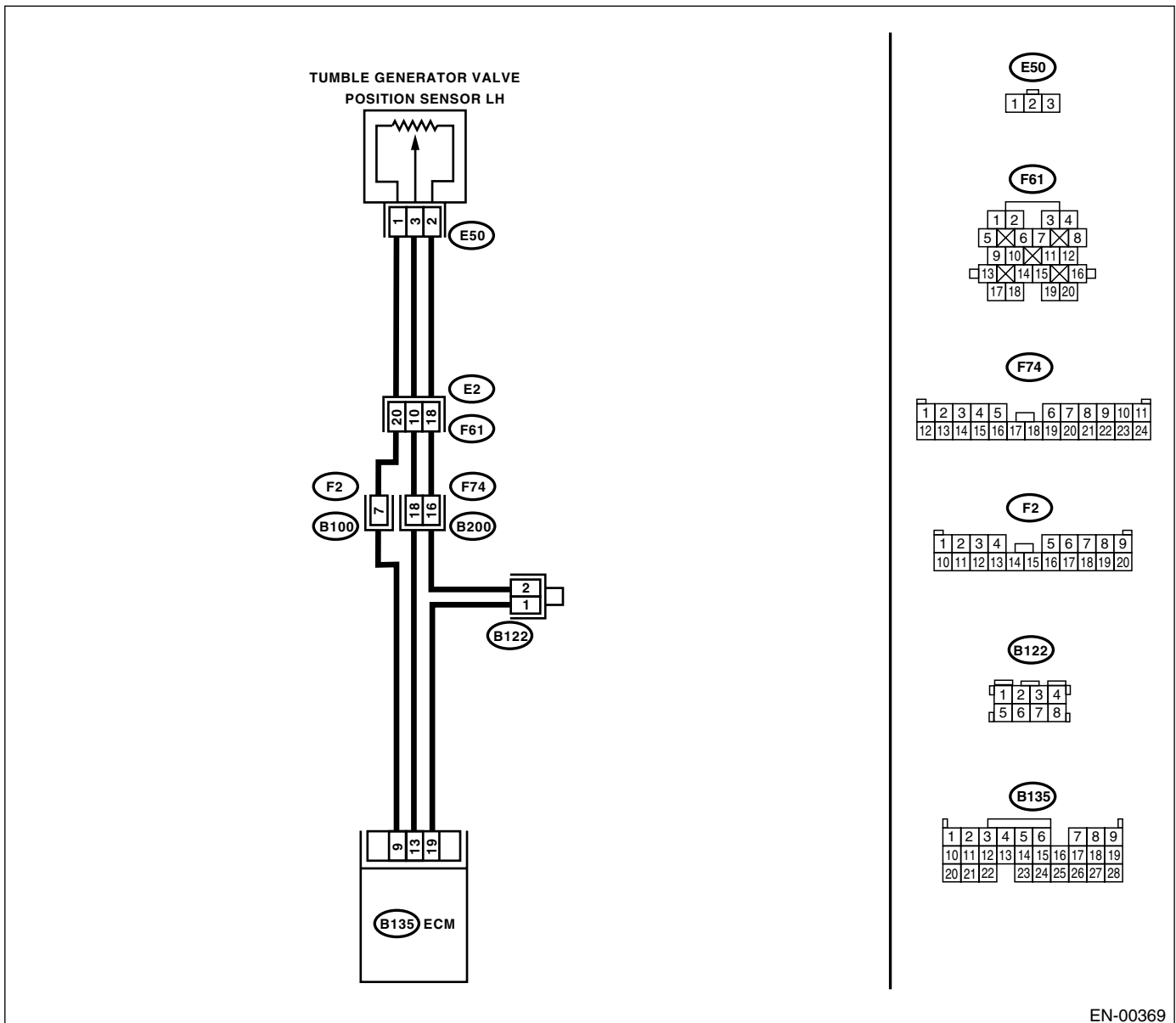
## CB:DTC P1087 — TUMBLE GENERATED VALVE POSITION SENSOR 2 CIRCUIT HIGH —

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

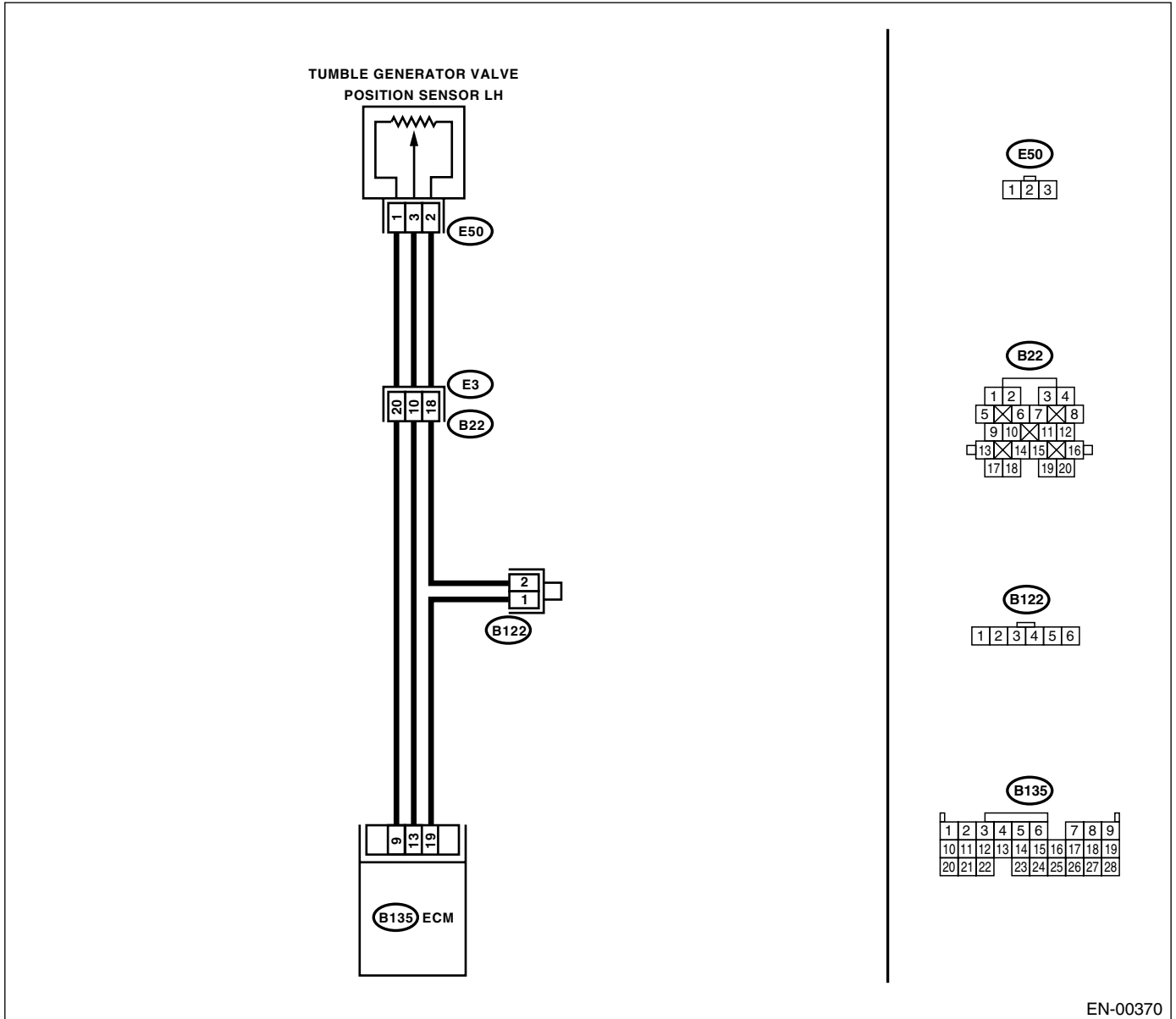
- **WIRING DIAGRAM:**
- LHD model



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

- RHD model



EN-00370

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>1</b></p> <p><b>CHECK CURRENT DATA.</b></p> <p>1)Start the engine. 2)Read the data of throttle position sensor signal using Subaru Select Monitor or OBD-II general scan tool. Is the measured value more than specified value?</p> <p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>•Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". &lt;Ref. to EN(TURBO)-34, Subaru Select Monitor.&gt;</li> <li>•OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</li> </ul>	4.9 V	Go to step 2.	<p>Even if MIL lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause.</p> <p><b>NOTE:</b> In this case, repair the following:</p> <ul style="list-style-type: none"> <li>• Poor contact in tumble generator valve position sensor connector</li> <li>• Poor contact in ECM connector</li> <li>• Poor contact in coupling connector</li> </ul>
<p><b>2</b></p> <p><b>CHECK HARNESS BETWEEN TUMBLE GENERATOR VALVE POSITION SENSOR AND ECM CONNECTOR.</b></p> <p>1)Turn the ignition switch to OFF. 2)Disconnect the connector from throttle position sensor. 3)Measure the resistance of harness between throttle position sensor connector and engine ground.</p> <p><b>Connector &amp; terminal</b> <b>(E50) No. 2 — Engine ground:</b></p> <p>Is the measured value less than specified value?</p>	5 Ω	Go to step 3.	<p>Repair the harness and connector.</p> <p><b>NOTE:</b> In this case, repair the following:</p> <ul style="list-style-type: none"> <li>• Open circuit in harness between tumble generator valve position sensor and ECM connector</li> <li>• Poor contact in coupling connector</li> <li>• Poor contact in joint connector</li> </ul>
<p><b>3</b></p> <p><b>CHECK HARNESS BETWEEN THROTTLE POSITION SENSOR AND ECM CONNECTOR.</b></p> <p>1)Turn the ignition switch to ON. 2)Measure the voltage between throttle position sensor connector and engine ground.</p> <p><b>Connector &amp; terminal</b> <b>(E50) No. 3 (+) — Engine ground (-):</b></p> <p>Is the measured value more than specified value?</p>	4.9 V	Repair the battery short circuit in harness between tumble generator valve position sensor and ECM connector. After repair, replace the ECM. <Ref. to FU(TURBO)-48, Engine Control Module.>	Replace the tumble generator valve assembly. <Ref. to FU(TURBO)-40, Tumble Generator Valve Assembly.>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

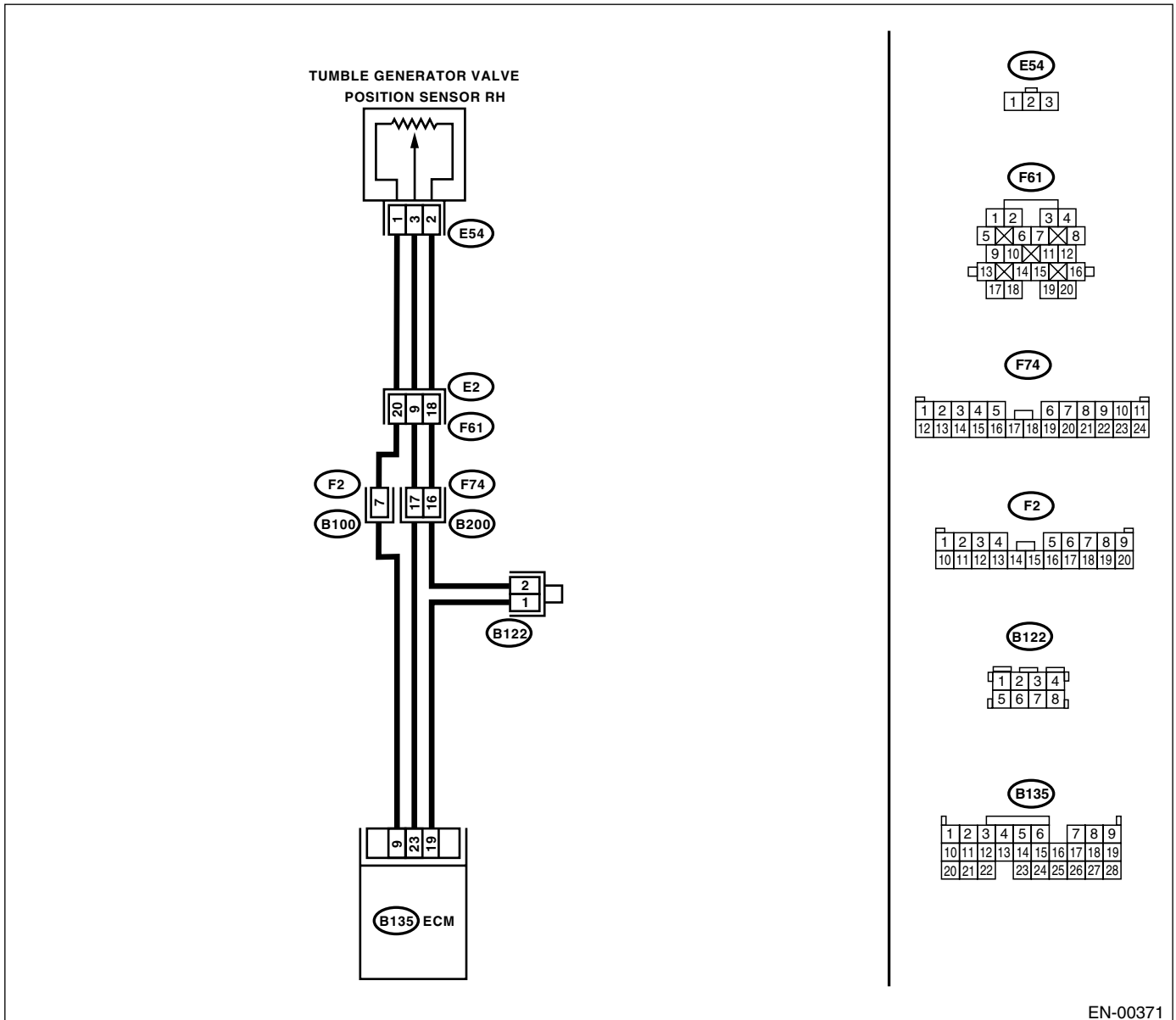
## CC: DTC P1088 — TUMBLE GENERATED VALVE POSITION SENSOR 1 CIRCUIT LOW —

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

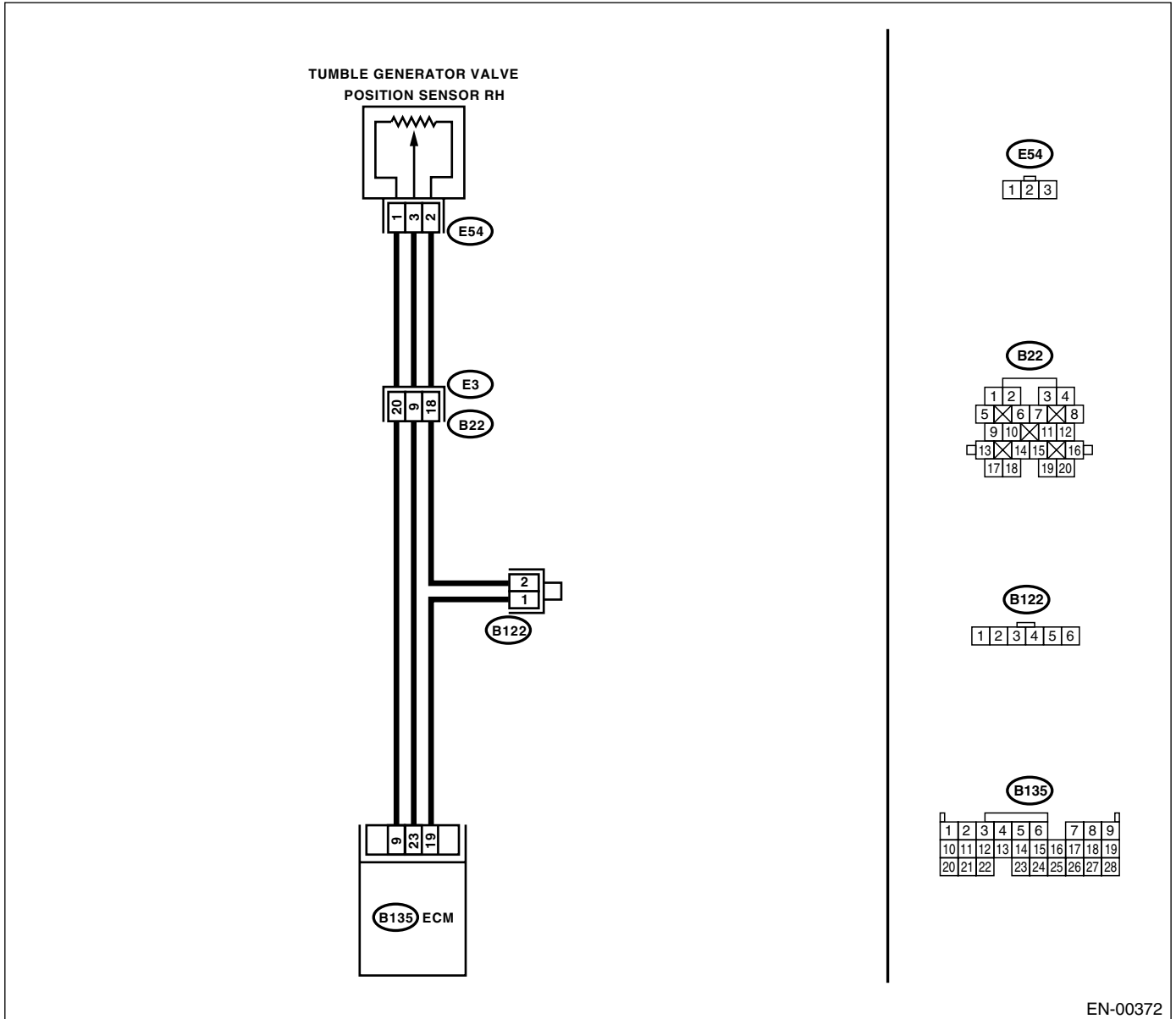
- **WIRING DIAGRAM:**
- LHD model



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

- RHD model



EN-00372



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>1</b> <b>CHECK CURRENT DATA.</b> 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. Is the measured value less than specified value? NOTE: •Subaru Select Monitor For detailed operation procedure, refer to the "READ CURRENT DATA FOR ENGINE". <Ref. to EN(TURBO)-34, Subaru Select Monitor.> •OBD-II general scan tool For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.	0.1 V	Go to step 2.	Even if MIL lights up, 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 tumble generator valve position sensor connector • Poor contact in ECM connector • Poor contact in coupling connector
<b>2</b> <b>CHECK INPUT SIGNAL FOR ECM.</b> Measure the voltage between ECM connector and chassis ground while throttle valve is fully closed. <b>Connector &amp; terminal</b> <b>(B135) No. 9 (+) — Chassis ground (-):</b> Is the measured value more than specified value?	4.5 V	Go to step 4.	Go to step 3.
<b>3</b> <b>CHECK INPUT SIGNAL FOR ECM.</b> Measure the voltage between ECM connector and chassis ground. <b>Connector &amp; terminal</b> <b>(B135) No. 9 (+) — Chassis ground (-):</b> Shake the ECM harness and connector, while monitoring value of voltage meter. Is the voltage change more than specified value?	4.5 V	Repair the poor contact in ECM connector.	Contact with your Subaru distributor service. NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.
<b>4</b> <b>CHECK INPUT SIGNAL FOR ECM.</b> Measure the voltage between ECM connector and chassis ground. <b>Connector &amp; terminal</b> <b>(B135) No. 23 (+) — Chassis ground (-):</b> Is the measured value less than specified value?	0.1 V	Go to step 6.	Go to step 5.
<b>5</b> <b>CHECK INPUT SIGNAL FOR ECM. (USING SUBARU SELECT MONITOR.)</b> Measure the voltage between ECM connector and chassis ground. Shake the ECM harness and connector, while monitoring value of Subaru Select Monitor. Is the voltage change more than specified value?	0.1 V	Repair the poor contact in ECM connector.	Go to step 6.

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>6</b></p> <p><b>CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE POSITION SENSOR CONNECTOR.</b>                      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><b>Connector &amp; terminal</b>  <b>(E54) No. 1 (+) — Engine ground (-):</b>                      Is the measured value more than specified value?</p>	4.5 V	Go to step 7.	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> <li>• Open circuit in harness between tumble generator valve position sensor and ECM connector</li> <li>• Poor contact in throttle position sensor connector</li> <li>• Poor contact in ECM connector</li> <li>• Poor contact in coupling connector</li> <li>• Poor contact in joint connector</li> </ul>
<p><b>7</b></p> <p><b>CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE POSITION SENSOR CONNECTOR.</b>                      1) Turn the ignition switch to OFF.                      2) Measure the resistance of harness between ECM connector and throttle position sensor connector.</p> <p><b>Connector &amp; terminal</b>  <b>(B135) No. 23 — (E54) No. 3:</b>                      Is the measured value less than specified value?</p>	1 Ω	Go to step 8.	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"> <li>• Open circuit in harness between tumble generator valve position sensor and ECM connector</li> <li>• Poor contact in ECM connector</li> <li>• Poor contact in tumble generator valve position sensor connector</li> <li>• Poor contact in coupling connector</li> </ul>
<p><b>8</b></p> <p><b>CHECK HARNESS BETWEEN ECM AND THROTTLE POSITION SENSOR CONNECTOR.</b>                      Measure the resistance of harness between tumble generator valve position sensor connector and engine ground.</p> <p><b>Connector &amp; terminal</b>  <b>(E54) No. 3 — Engine ground:</b>                      Is the measured value less than specified value?</p>	10 Ω	Repair the ground short circuit in harness between tumble generator valve position sensor and ECM connector.	Go to step 9.
<p><b>9</b></p> <p><b>CHECK POOR CONTACT.</b>                      Check poor contact in tumble generator valve position sensor connector.                      Is there poor contact in tumble generator valve position sensor connector?</p>	Poor contact occurs.	Repair the poor contact in tumble generator valve position sensor connector.	Replace the tumble generator valve assembly. <Ref. to FU(TURBO)-40, Tumble Generator Valve Assembly.>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

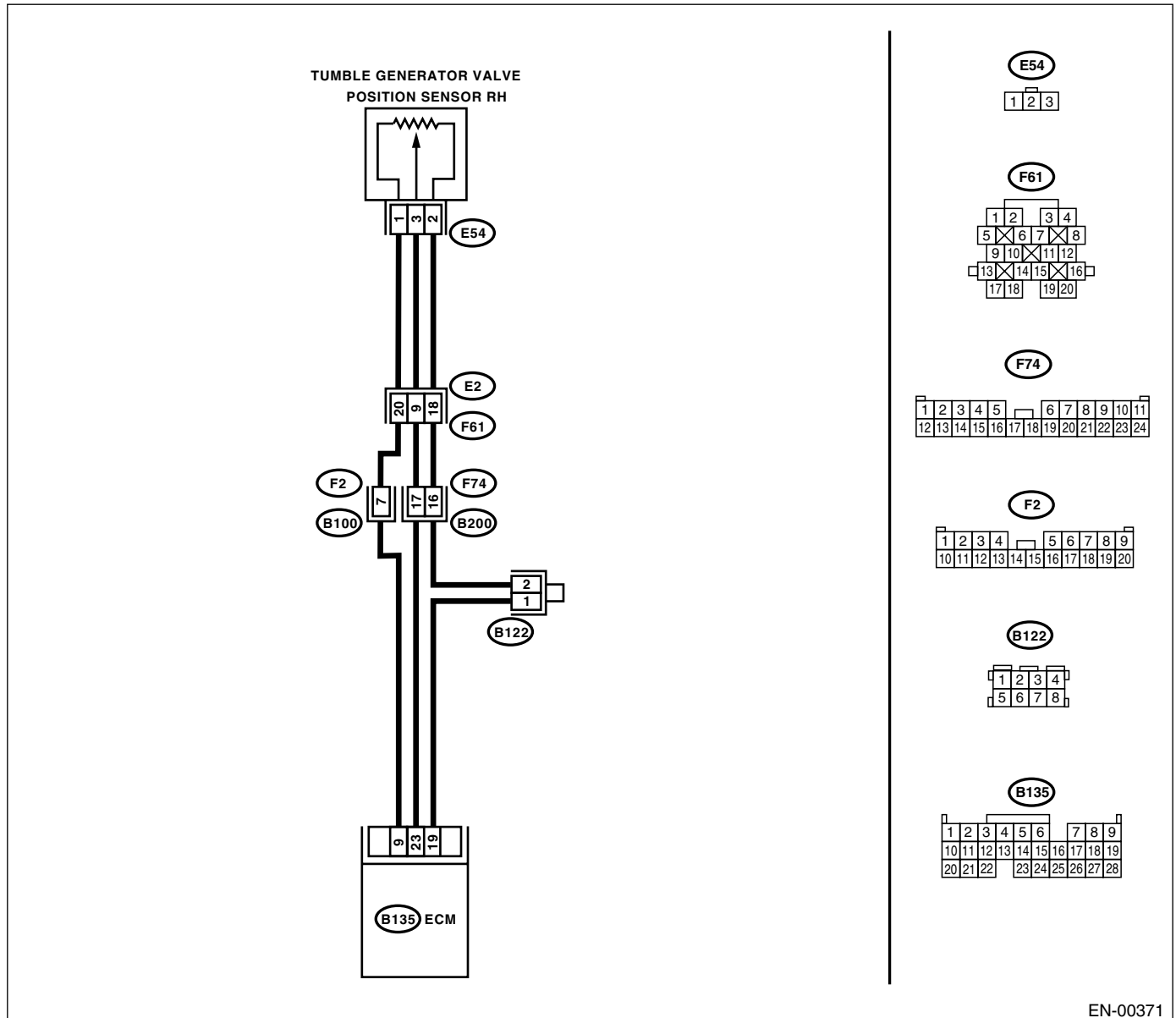
## CD:DTC P1089 — TUMBLE GENERATED VALVE POSITION SENSOR 1 CIRCUIT HIGH —

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

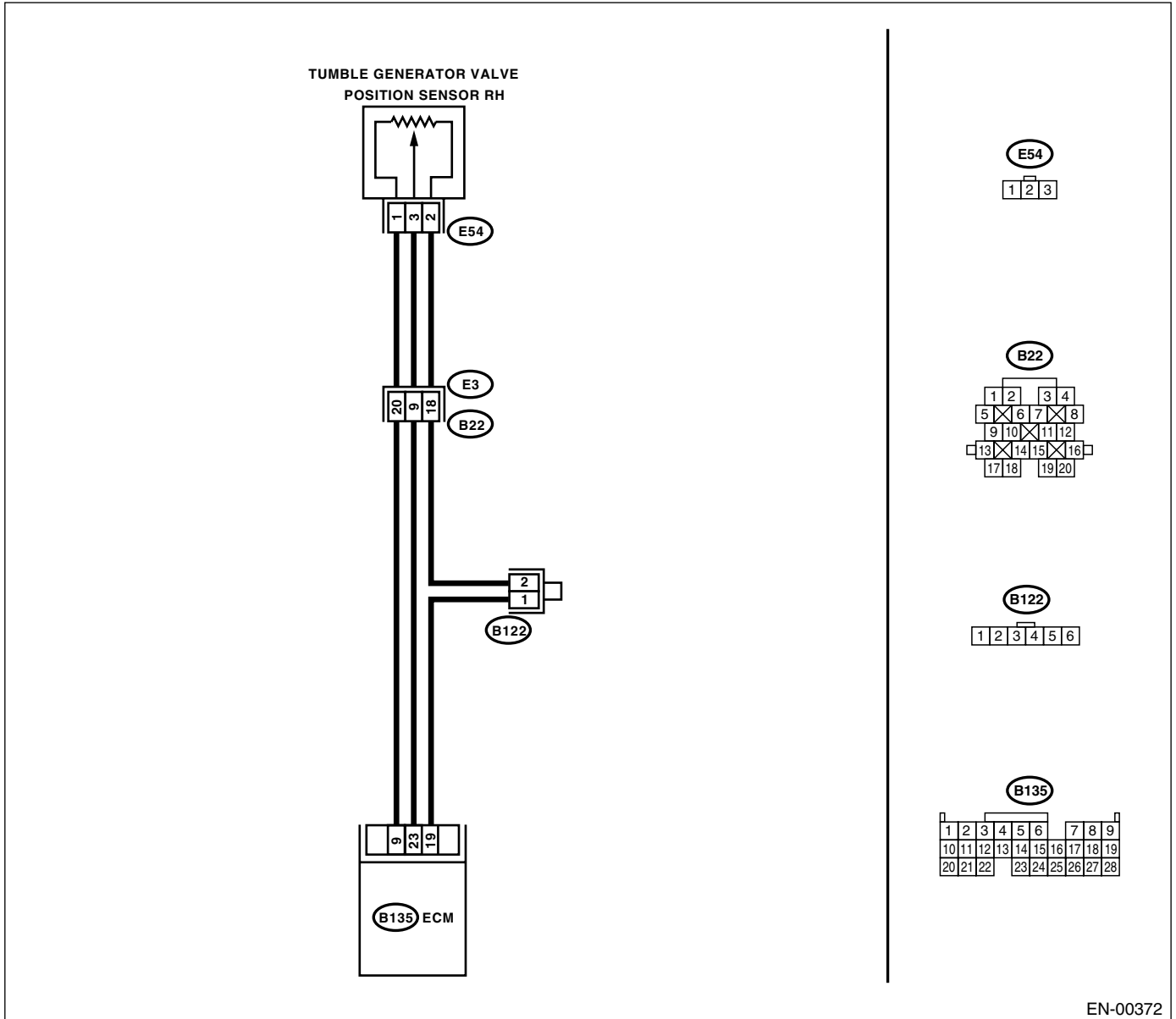
- **WIRING DIAGRAM:**
- LHD model



EN-00371

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC) ENGINE (DIAGNOSTICS)

- RHD model



EN-00372

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>1</b></p> <p><b>CHECK CURRENT DATA.</b></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>Is the measured value more than specified value?</p> <p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>•Subaru Select Monitor</li> </ul> <p>For detailed operation procedure, refer to the “READ CURRENT DATA FOR ENGINE”.</p> <p>&lt;Ref. to EN(TURBO)-34, Subaru Select Monitor.&gt;</p> <ul style="list-style-type: none"> <li>•OBD-II general scan tool</li> </ul> <p>For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.</p>	<p>4.9 V</p>	<p>Go to step 2.</p>	<p>Even if MIL lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause.</p> <p><b>NOTE:</b></p> <p>In this case, repair the following:</p> <ul style="list-style-type: none"> <li>• Poor contact in tumble generator valve position sensor connector</li> <li>• Poor contact in ECM connector</li> <li>• Poor contact in coupling connector</li> </ul>
<p><b>2</b></p> <p><b>CHECK HARNESS BETWEEN TUMBLE GENERATOR VALVE POSITION SENSOR AND ECM CONNECTOR.</b></p> <p>1)Turn the ignition switch to OFF.</p> <p>2)Disconnect the connector from throttle position sensor.</p> <p>3)Measure the resistance of harness between tumble generator valve position sensor connector and engine ground.</p> <p><b>Connector &amp; terminal</b></p> <p><b>(E54) No. 2 — Engine ground:</b></p> <p>Is the measured value less than specified value?</p>	<p>5 Ω</p>	<p>Go to step 3.</p>	<p>Repair the harness and connector.</p> <p><b>NOTE:</b></p> <p>In this case, repair the following:</p> <ul style="list-style-type: none"> <li>• Open circuit in harness between tumble generator valve position sensor and ECM connector</li> <li>• Poor contact in coupling connector</li> <li>• Poor contact in joint connector</li> </ul>
<p><b>3</b></p> <p><b>CHECK HARNESS BETWEEN TUMBLE GENERATOR VALVE POSITION SENSOR AND ECM CONNECTOR.</b></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><b>Connector &amp; terminal</b></p> <p><b>(E54) No. 3 (+) — Engine ground (-):</b></p> <p>Is the measured value more than specified value?</p>	<p>4.9 V</p>	<p>Repair the battery short circuit in harness between tumble generator valve position sensor and ECM connector. After repair, replace the ECM.</p> <p>&lt;Ref. to FU(TURBO)-48, Engine Control Module.&gt;</p>	<p>Replace the tumble generator valve assembly. &lt;Ref. to FU(TURBO)-40, Tumble Generator Valve Assembly.&gt;</p>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

## CE: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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

Step	Check	Yes	No
1 <b>CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.</b> Is any other DTC displayed?	Other DTC is displayed.	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)" <Ref. to EN(TURBO)-77, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 <b>CHECK TUMBLE GENERATOR VALVE RH</b> 1)Remove the tumble generator valve assembly. 2)Check the tumble generator valve body. Does the tumble generator valve move smoothly? (No dirt or foreign materials clogged)	Tumble generator valve moves smoothly.	Replace the tumble generator valve assembly. <Ref. to FU(TURBO)-40, Tumble Generator Valve Assembly.>	Clean the tumble generator valve.

## CF: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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

Step	Check	Yes	No
1 <b>CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.</b> Is any other DTC displayed?	Other DTC is displayed.	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)" <Ref. to EN(TURBO)-77, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 <b>CHECK TUMBLE GENERATOR VALVE RH</b> 1)Remove the tumble generator valve assembly. 2)Check the tumble generator valve body. Does the tumble generator valve move smoothly? (No dirt or foreign materials clogged)	Tumble generator valve moves smoothly.	Replace the tumble generator valve assembly. <Ref. to FU(TURBO)-40, Tumble Generator Valve Assembly.>	Clean the tumble generator valve.

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

## CG: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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

Step	Check	Yes	No
1 <b>CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.</b> Is any other DTC displayed?	Other DTC is displayed.	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)" <Ref. to EN(TURBO)-77, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 <b>CHECK TUMBLE GENERATOR VALVE RH</b> 1)Remove the tumble generator valve assembly. 2)Check the tumble generator valve body. Does the tumble generator valve move smoothly? (No dirt or foreign materials clogged)	Tumble generator valve moves smoothly.	Replace the tumble generator valve assembly. <Ref. to FU(TURBO)-40, Tumble Generator Valve Assembly.>	Clean the tumble generator valve.

## CH: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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

Step	Check	Yes	No
1 <b>CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.</b> Is any other DTC displayed?	Other DTC is displayed.	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)" <Ref. to EN(TURBO)-77, List of Diagnostic Trouble Code (DTC).>	Go to step 2.
2 <b>CHECK TUMBLE GENERATOR VALVE RH</b> 1)Remove the tumble generator valve assembly. 2)Check the tumble generator valve body. Does the tumble generator valve move smoothly? (No dirt or foreign materials clogged)	Tumble generator valve moves smoothly.	Replace the tumble generator valve assembly. <Ref. to FU(TURBO)-40, Tumble Generator Valve Assembly.>	Clean the tumble generator valve.

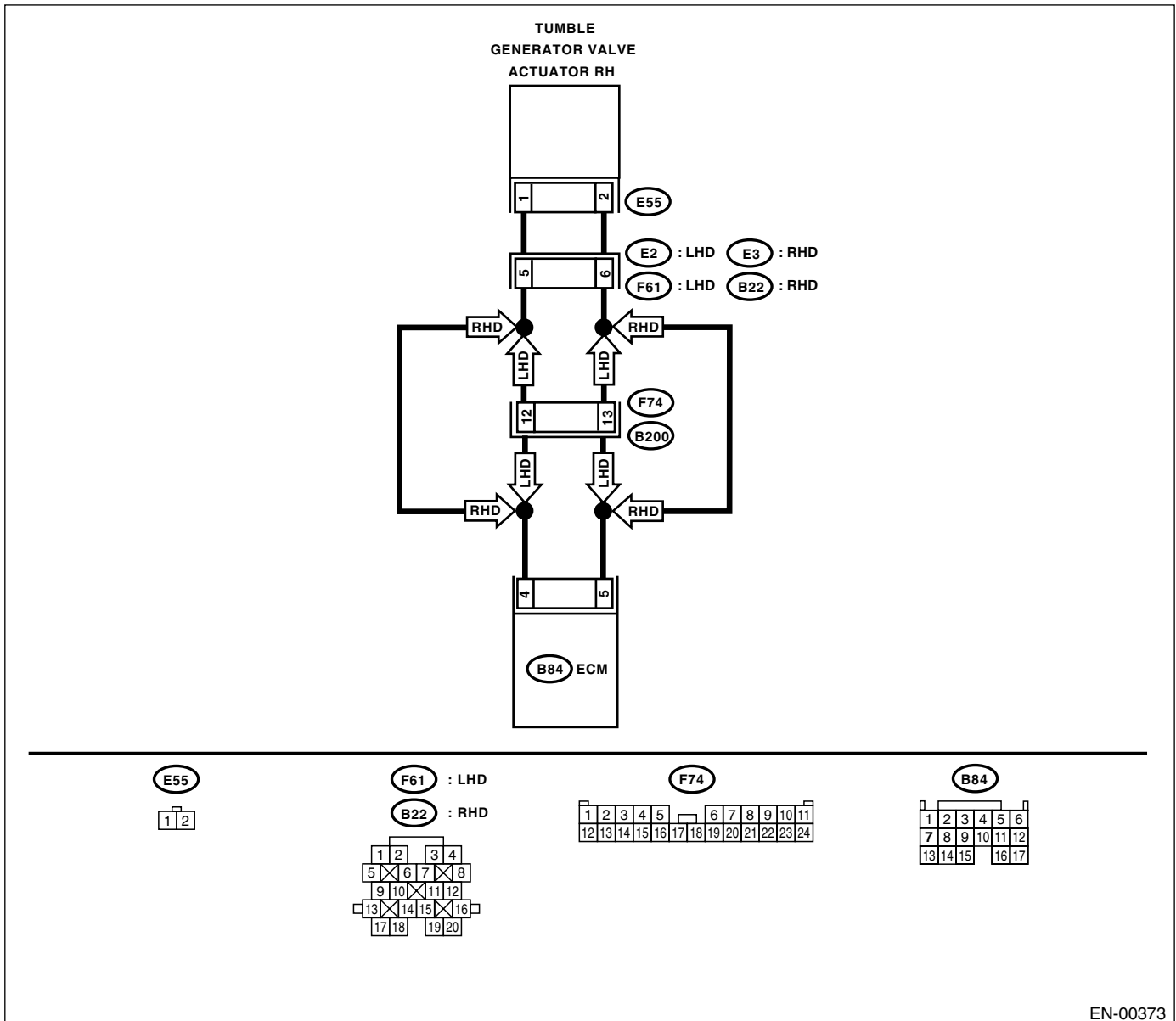
## CI: DTC P1094 — TUMBLE GENERATED VALVE SIGNAL 1 CIRCUIT MALFUNCTION (OPEN) —

- DTC DETECTING CONDITION:
  - Immediately at fault recognition

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

- WIRING DIAGRAM:



EN-00373



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>1</b></p> <p><b>CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ACTUATOR CONNECTOR.</b></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><b>Connector &amp; terminal</b>  <b>(E55) No. 1 — (B84) No.4:</b>  <b>(E55) No. 2 — (B84) No.5:</b></p> <p>Is the measured value less than specified value?</p>	<p>1 Ω</p>	<p>Go to step 2.</p>	<p>Repair the open circuit between ECM and tumble generator valve connector.</p> <p><b>NOTE:</b>                  In this case, repair the following:</p> <ul style="list-style-type: none"> <li>• Open circuit in harness between ECM and tumble generator valve actuator connector.</li> <li>• Poor contact in coupling connector.</li> </ul>
<p><b>2</b></p> <p><b>CHECK POOR CONTACT.</b></p> <p>Check poor contact in tumble generator valve actuator connector.                  Is there poor contact in tumble generator valve actuator connector?</p>	<p>Poor contact occurs.</p>	<p>Repair the poor contact in tumble generator valve actuator connector.</p>	<p>Replace the tumble generator valve assembly. &lt;Ref. to FU(TURBO)-40, Tumble Generator Valve Assembly.&gt;</p>

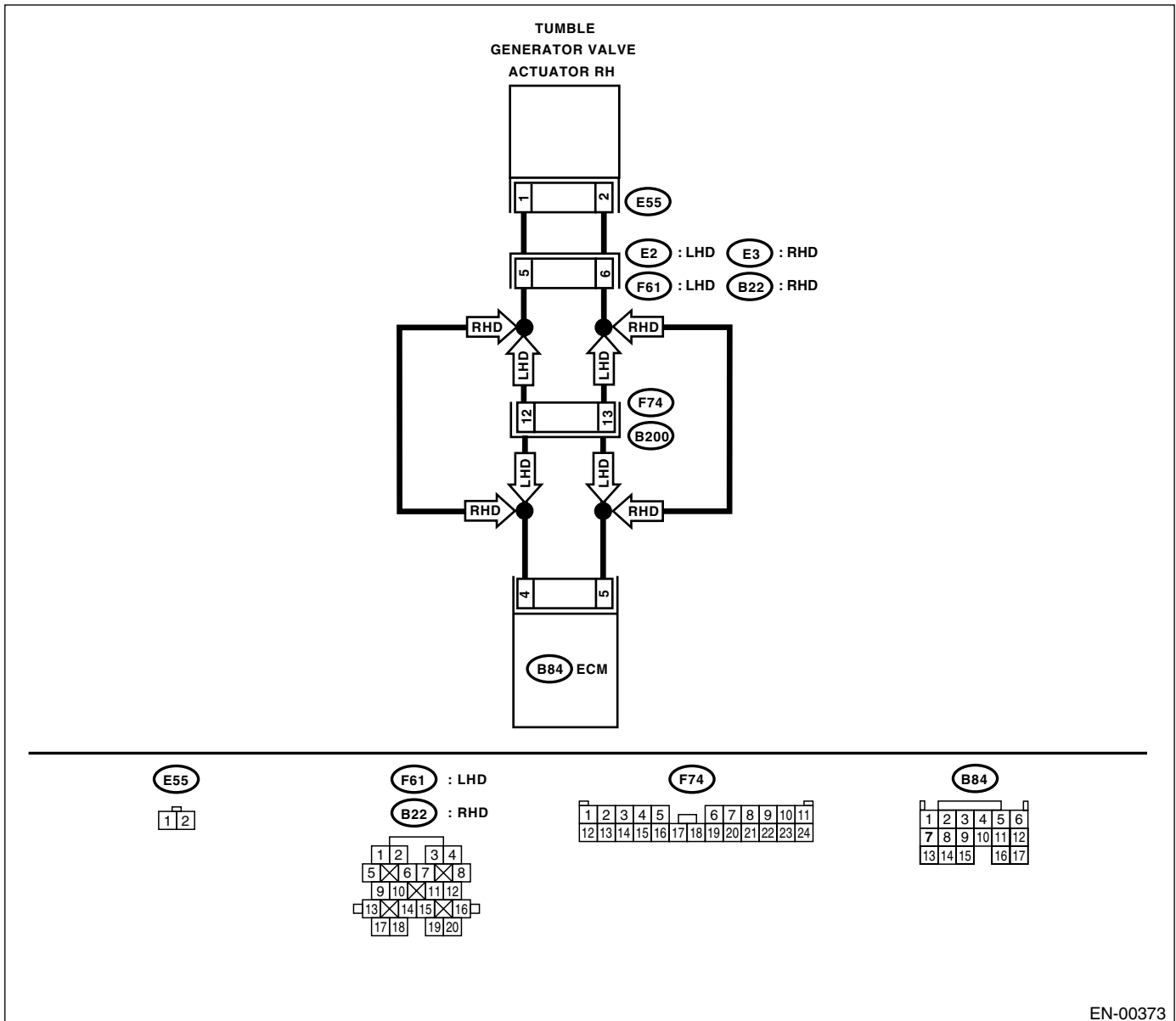
## CJ:DTC P1095 — TUMBLE GENERATED VALVE SIGNAL 1 CIRCUIT MALFUNCTION (SHORT) —

- DTC DETECTING CONDITION:
  - Immediately at fault recognition

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

- WIRING DIAGRAM:



EN-00373

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
1	<p><b>CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ACTUATOR CONNECTOR.</b></p> <p>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.</p> <p><b>Connector &amp; terminal</b> <b>(E55) No. 1 (+) — Chassis ground (-):</b> <b>(E55) No. 2 (+) — Chassis ground (-):</b></p> <p>Is the measured value less than specified value?</p>	5 V	Replace the tumble generator valve assembly. <Ref. to FU(TURBO)-40, Tumble Generator Valve Assembly.>	Repair the battery short circuit between ECM and tumble generator valve actuator.

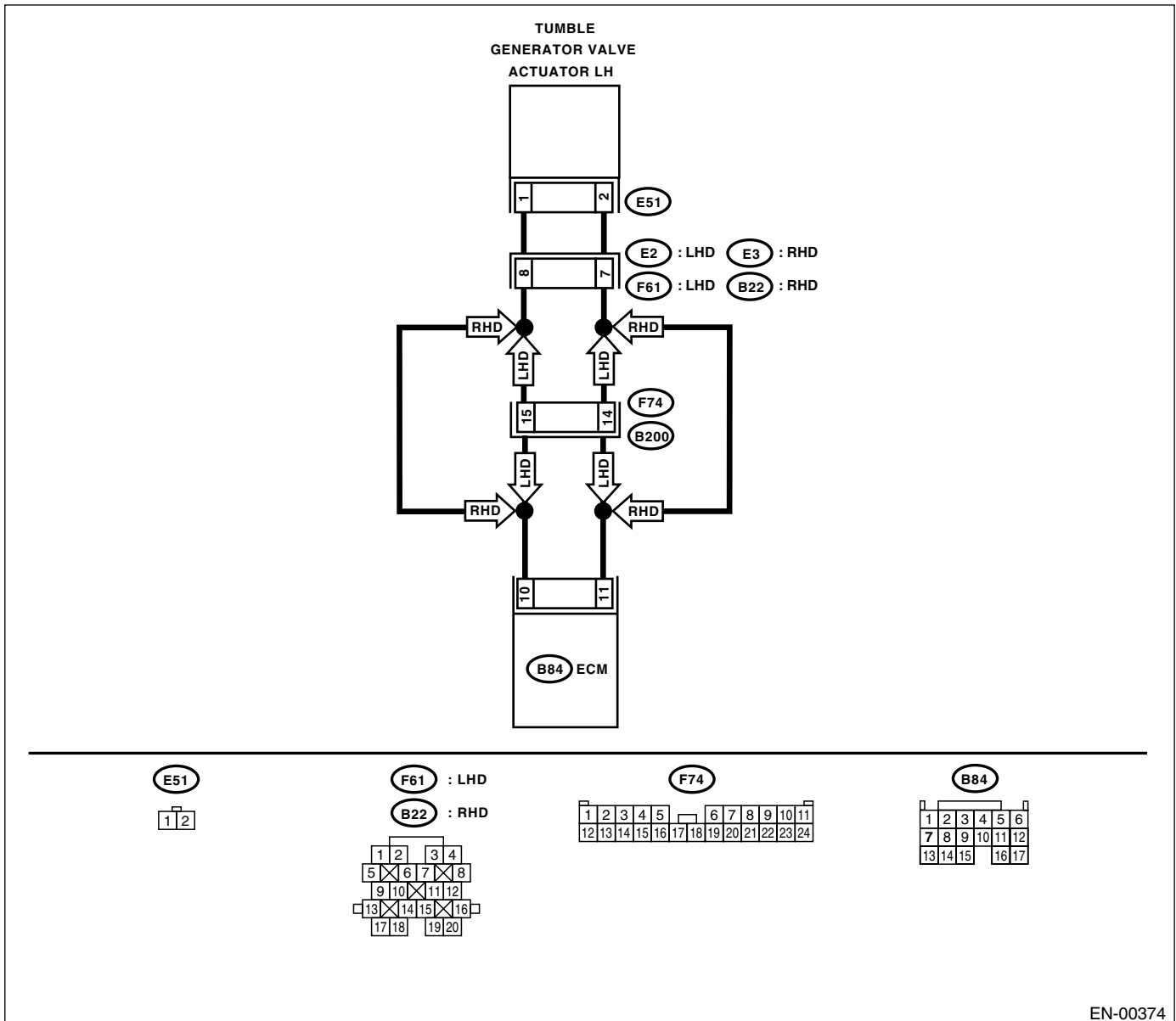
## CK:DTC P1096 — TUMBLE GENERATED VALVE SIGNAL 2 CIRCUIT MALFUNCTION (OPEN) —

- DTC DETECTING CONDITION:
  - Immediately at fault recognition

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

- WIRING DIAGRAM:



EN-00374

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>1</b></p> <p><b>CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ACTUATOR CONNECTOR.</b></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><b>Connector &amp; terminal</b>  <b>(E51) No. 1 — (B84) No. 10:</b>  <b>(E51) No. 2 — (B84) No. 11:</b></p> <p>Is the measured value less than specified value?</p>	<p>1 <math>\Omega</math></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"> <li>• Open circuit in harness between ECM and tumble generator valve actuator connector.</li> <li>• Poor contact in coupling connector.</li> </ul>
<p><b>2</b></p> <p><b>CHECK POOR CONTACT.</b></p> <p>Check poor contact in tumble generator valve actuator connector.                      Is there poor contact in tumble generator valve actuator connector?</p>	<p>Poor contact occurs.</p>	<p>Repair the poor contact in tumble generator valve actuator connector.</p>	<p>Replace the tumble generator valve assembly. &lt;Ref. to FU(TURBO)-40, Tumble Generator Valve Assembly.&gt;</p>

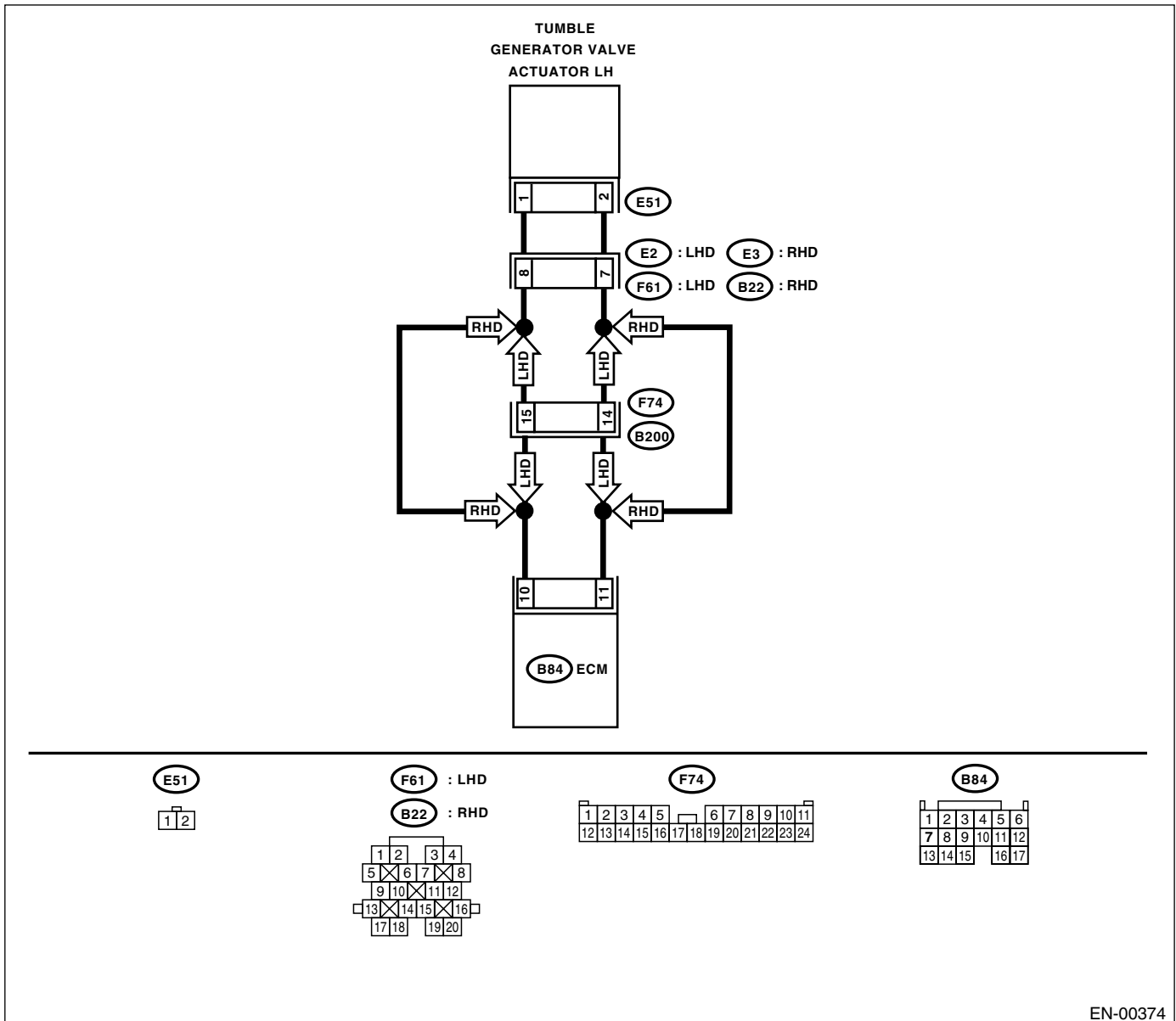
## CL:DTC P1097 — TUMBLE GENERATED VALVE SIGNAL 2 CIRCUIT MALFUNCTION (SHORT) —

- DTC DETECTING CONDITION:
  - Immediately at fault recognition

**CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

- WIRING DIAGRAM:



EN-00374

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>1 CHECK HARNESS BETWEEN ECM AND TUMBLE GENERATOR VALVE ACTUATOR CONNECTOR.</b> 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. <b>Connector &amp; terminal</b> <b>(E51) No. 1 (+) — Chassis ground (-):</b> <b>(E51) No. 2 (+) — Chassis ground (-):</b> Is the measured value less than specified value?	5 V	Replace the tumble generator valve assembly. <Ref. to FU(TURBO)-40, Tumble Generator Valve Assembly.>	Repair the battery short circuit between ECM and tumble generator valve actuator.

### CM: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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

Step	Check	Yes	No
<b>1 CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.</b> Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1110?	DTC P1110 is indicated.	Replace the ECM. <Ref. to FU(TURBO)-48, Engine Control Module.>  NOTE: Atmospheric pressure sensor is built into ECM.	A temporary poor contact.

### CN: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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

Step	Check	Yes	No
<b>1 CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.</b> Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1111?	DTC P1111 is indicated.	Replace the ECM. <Ref. to FU(TURBO)-48, Engine Control Module.>  NOTE: Atmospheric pressure sensor is built into ECM.	A temporary poor contact.

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

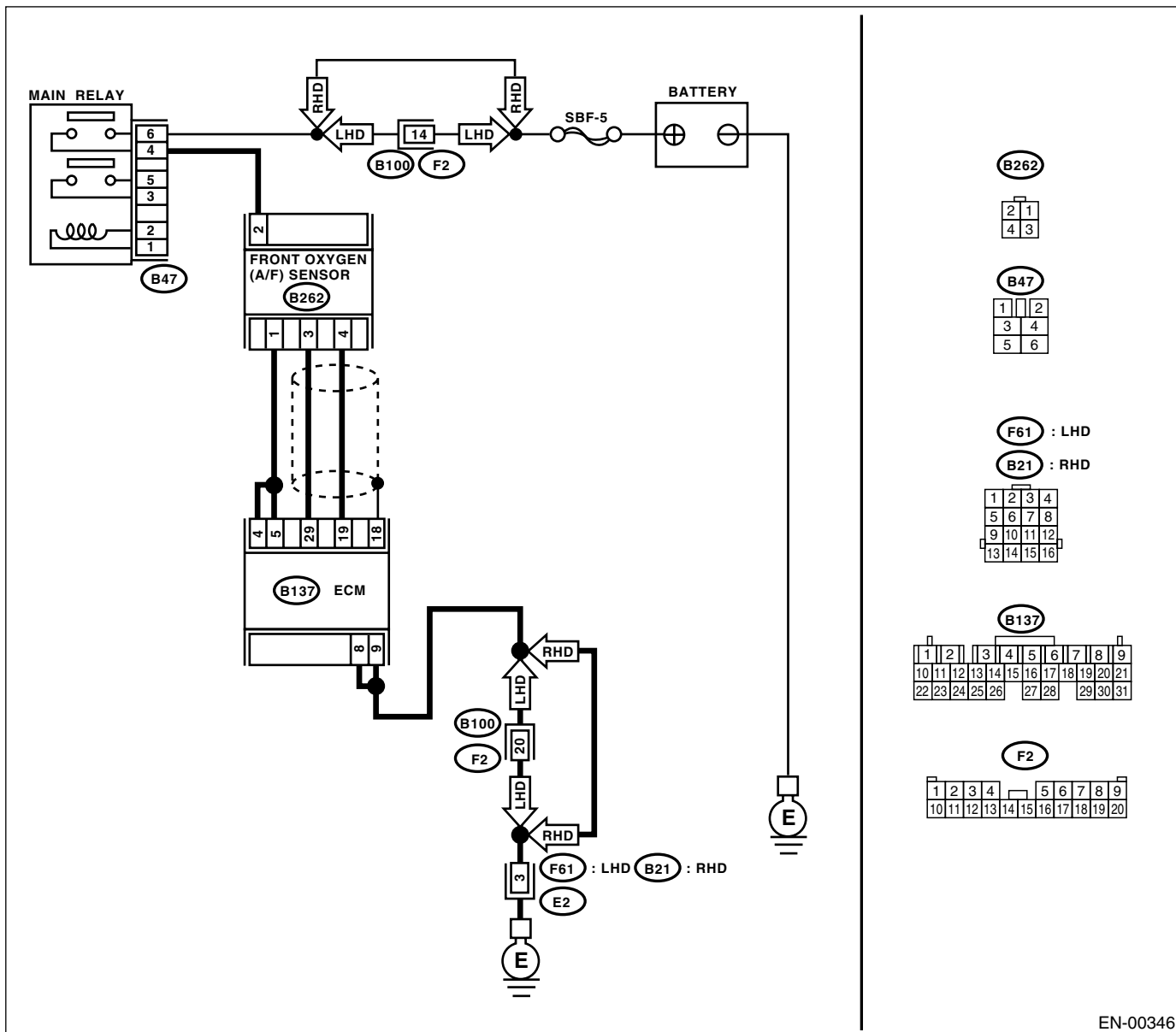
## CO:DTC P1134 — A/F SENSOR MICRO-COMPUTER PROBLEM —

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition

**CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

- **WIRING DIAGRAM:**



EN-00346

Step	Check	Yes	No
1	<b>CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.</b> Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1134?	Replace the ECM. <Ref. to FU(TURBO)-48, Engine Control Module.>	A temporary poor contact.



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

## CP: DTC P1152 — O<sub>2</sub> SENSOR CIRCUIT RANGE/PERFORMANCE (LOW) (BANK1 SENSOR1) —

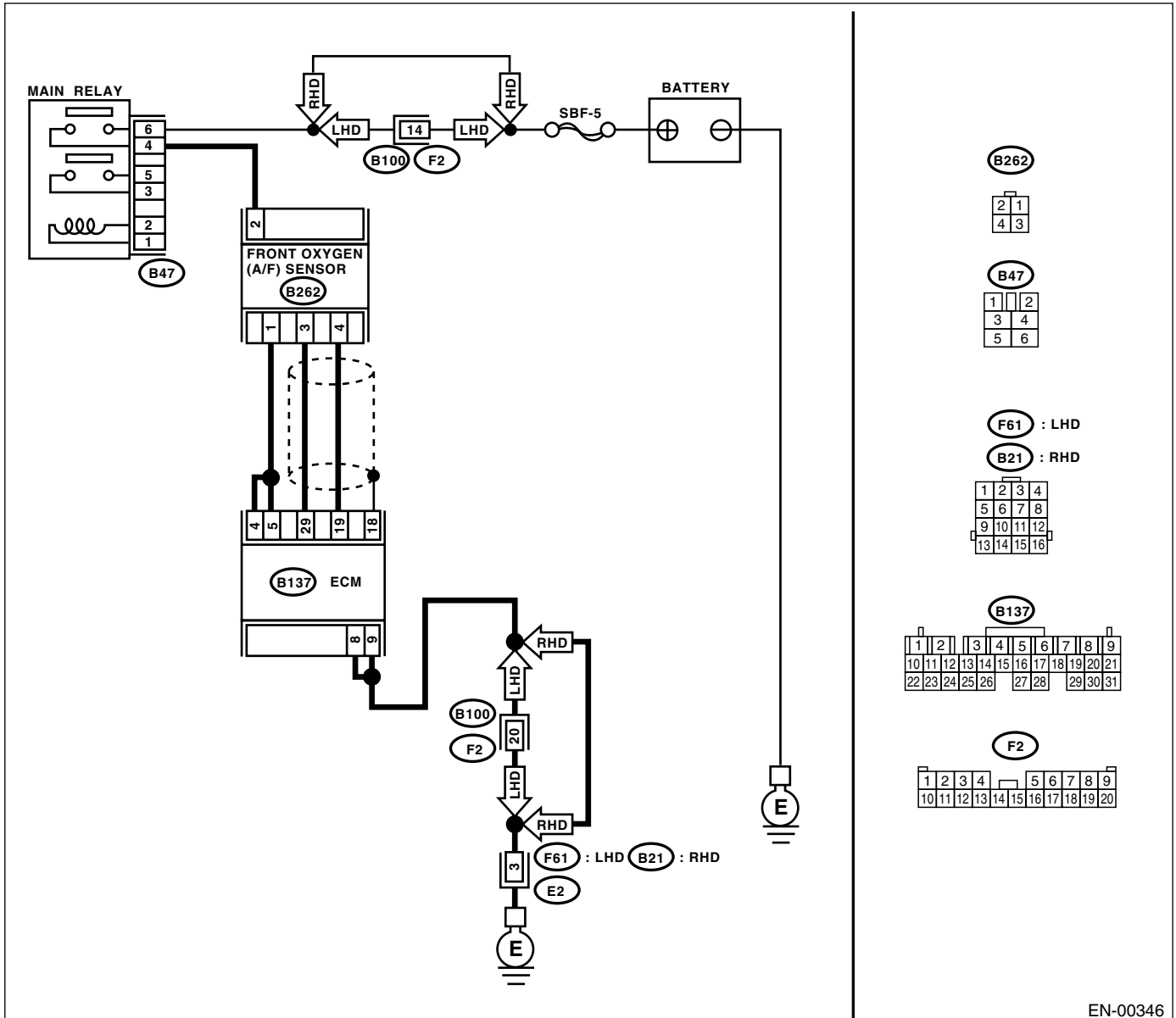
### • DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

### • WIRING DIAGRAM:



EN-00346

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>1</b></p> <p><b>CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.</b></p> <p>1) Turn the ignition switch to OFF.                  2) Disconnect the connectors from ECM and front oxygen (A/F) sensor connector.                  3) Measure the resistance of harness between ECM and front oxygen (A/F) sensor connector.</p> <p><b>Connector &amp; terminal</b>  <b>(B137) No. 29 — (B262) No. 3:</b>  <b>(B137) No. 19 — (B262) No. 4:</b></p> <p>Is the measured value less than specified value?</p>	<p>Is the resistance less than 1 <math>\Omega</math>?</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"> <li>• Open circuit in harness between ECM and front oxygen (A/F) sensor connector</li> <li>• Poor contact in front oxygen (A/F) sensor connector</li> <li>• Poor contact in ECM connector</li> </ul>
<p><b>2</b></p> <p><b>CHECK POOR CONTACT.</b></p> <p>Check poor contact in front oxygen (A/F) sensor connector.                  Is there poor contact in front oxygen (A/F) sensor connector?</p>	<p>Poor contact occurs.</p>	<p>Repair the poor contact in front oxygen (A/F) sensor connector.</p>	<p>Replace the front oxygen (A/F) sensor. &lt;Ref. to FU(TURBO)-43, Front Oxygen (A/F) Sensor.&gt;</p>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

## CQ: DTC P1153 — O<sub>2</sub> SENSOR CIRCUIT RANGE/PERFORMANCE (HIGH) (BANK1 SENSOR1) —

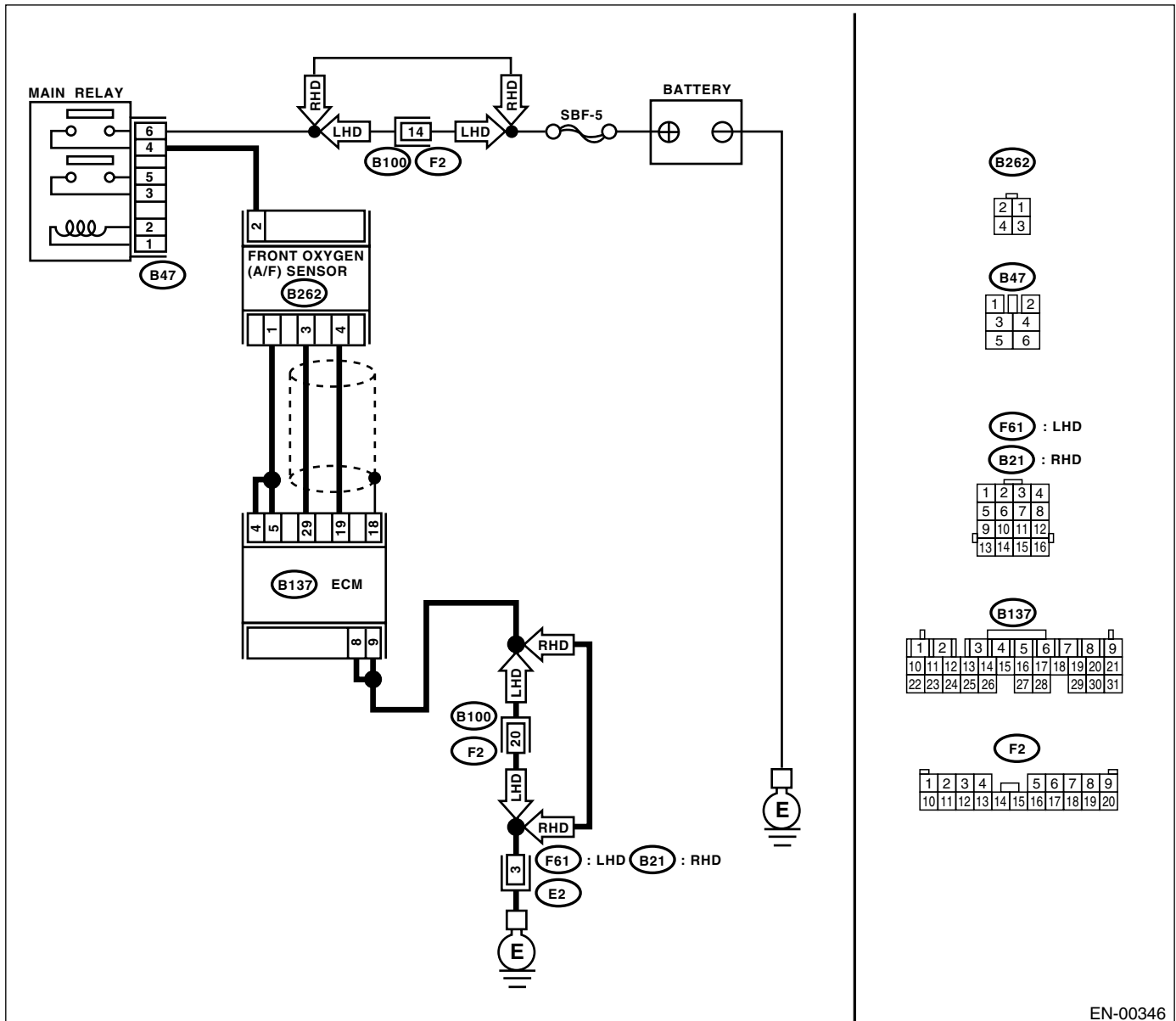
### • DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

### • WIRING DIAGRAM:



EN-00346

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>1</b> <b>CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.</b> 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM connector and chassis ground. <i><b>Connector &amp; terminal</b></i> <i><b>(B137) No. 19 — Chassis ground:</b></i> Is the measured value more than specified value?	10 Ω	Go to step 2.	Repair the ground short circuit in harness between ECM and front oxygen (A/F) sensor connector.
<b>2</b> <b>CHECK HARNESS BETWEEN ECM AND FRONT OXYGEN (A/F) SENSOR CONNECTOR.</b> Measure the resistance of harness between ECM connector and chassis ground. <i><b>Connector &amp; terminal</b></i> <i><b>(B137) No. 29 — Chassis ground:</b></i> Is the measured value more than specified value?	10 Ω	Go to step 3.	Repair the ground short circuit in harness between ECM and front oxygen (A/F) sensor connector.
<b>3</b> <b>CHECK OUTPUT SIGNAL FOR ECM.</b> 1) Connect the connector to ECM. 2) Turn the ignition switch to ON. 3) Measure the voltage between ECM connector and chassis ground. <i><b>Connector &amp; terminal</b></i> <i><b>(B137) No. 19 (+) — Chassis ground (-):</b></i> Is the measured value more than specified value?	4.5 V	Go to step 4.	Go to step 5.
<b>4</b> <b>CHECK OUTPUT SIGNAL FOR ECM.</b> Measure the voltage between ECM connector and chassis ground. <i><b>Connector &amp; terminal</b></i> <i><b>(B137) No. 19 (+) — Chassis ground (-):</b></i> Is the measured value more than specified value?	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(TURBO)-48, Engine Control Module.>	Repair the poor contact in ECM connector.
<b>5</b> <b>CHECK OUTPUT SIGNAL FOR ECM.</b> Measure the voltage between ECM connector and chassis ground. <i><b>Connector &amp; terminal</b></i> <i><b>(B137) No. 29 (+) — Chassis ground (-):</b></i> Is the measured value more than specified value?	4.95 V	Go to step 6.	Replace the front oxygen (A/F) sensor. <Ref. to FU(TURBO)-43, Front Oxygen (A/F) Sensor.>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
6	<p><b>CHECK OUTPUT SIGNAL FOR ECM.</b> Measure the voltage between ECM connector and chassis ground. <b>Connector &amp; terminal</b> <b>(B137) No. 29 (+) — Chassis ground (-):</b> Is the measured value more than specified value?</p>	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(TURBO)-48, Engine Control Module.>	Repair the poor contact in ECM connector.

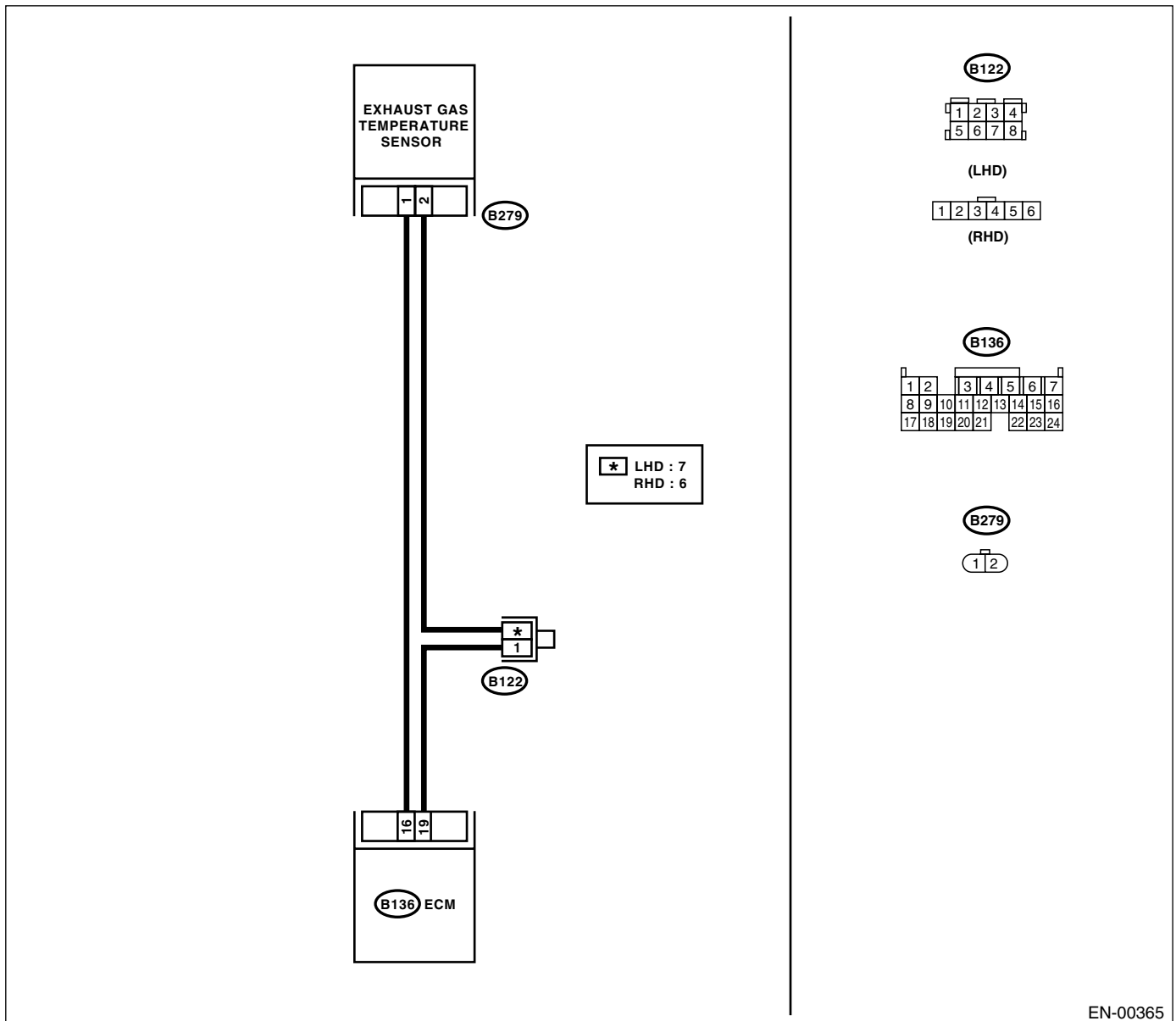
**CR:DTC P1301 — MISFIRE DITECTED (HIGH TEMPERATURE EXHAUST GAS)**

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

• **WIRING DIAGRAM:**



EN-00365

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>1</b> <b>CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC).</b> Conduct the troubleshooting for all DTC P0301, P0302, P0303 and P0304. <Ref. to EN(TURBO)-77, List of Diagnostic Trouble Code (DTC).> Does failure for repair or replacement exist?	Failure for repair or replacement exists.	Repair or replace the failure, then replace pre-catalytic converter.	Contact with your Subaru distributor service. <b>NOTE:</b> Inspection by DTM is required, because probable cause is deterioration of multiple parts.

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

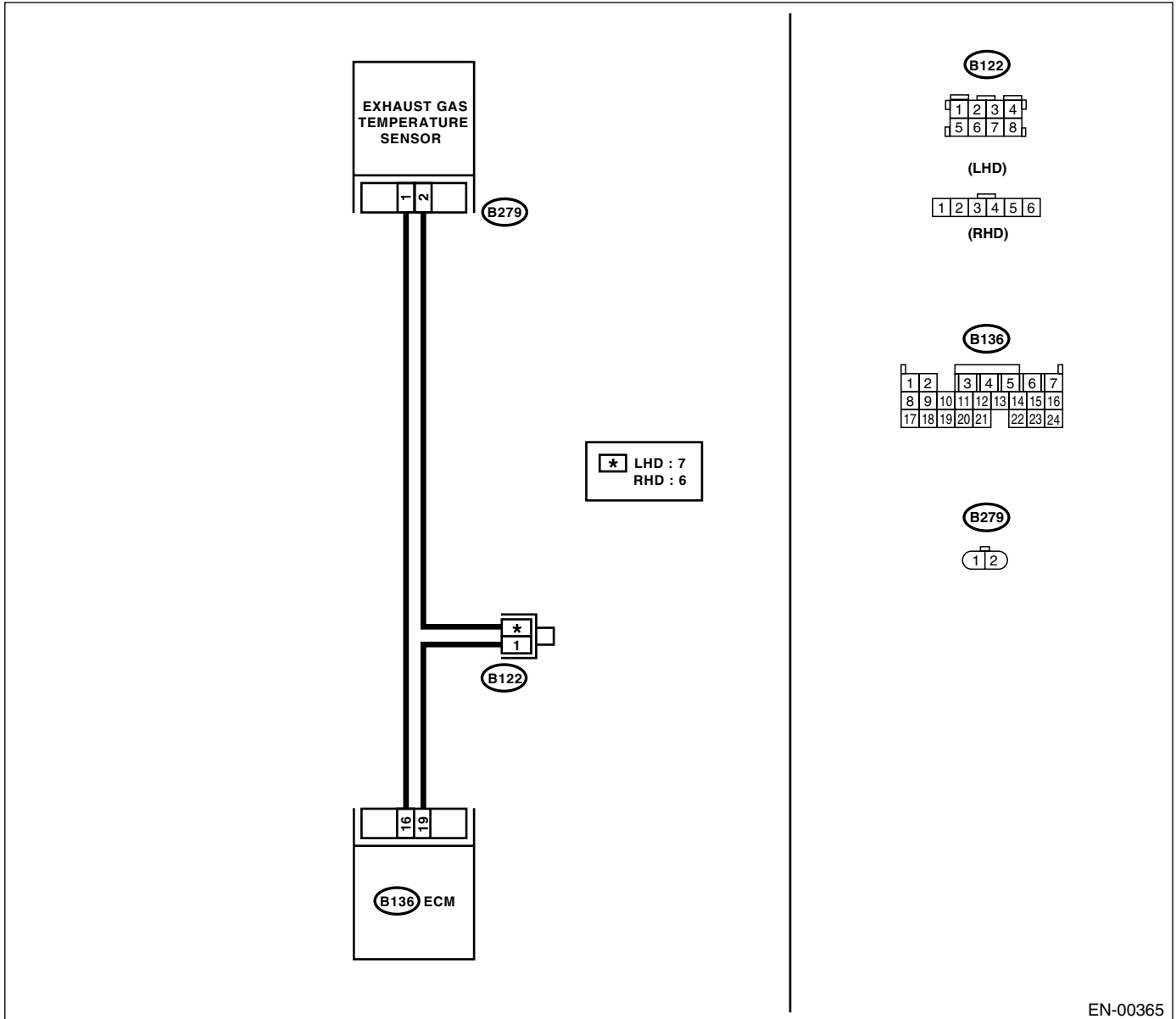
## CS:DTC P1312 — EXHAUST GAS TEMPERATURE SENSOR MALFUNCTION —

- DTC DETECTING CONDITION:
  - Immediately at fault recognition

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

- WIRING DIAGRAM:





# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
1 <b>CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.</b> Is any other DTC displayed?	Other DTC is displayed.	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(TURBO)-77, List of Diagnostic Trouble Code (DTC).>  NOTE: In this case, it is not necessary to inspect DTC P1312.	Replace the exhaust gas temperature sensor. <Ref. to FU(TURBO)-47, Exhaust Temperature Sensor.>

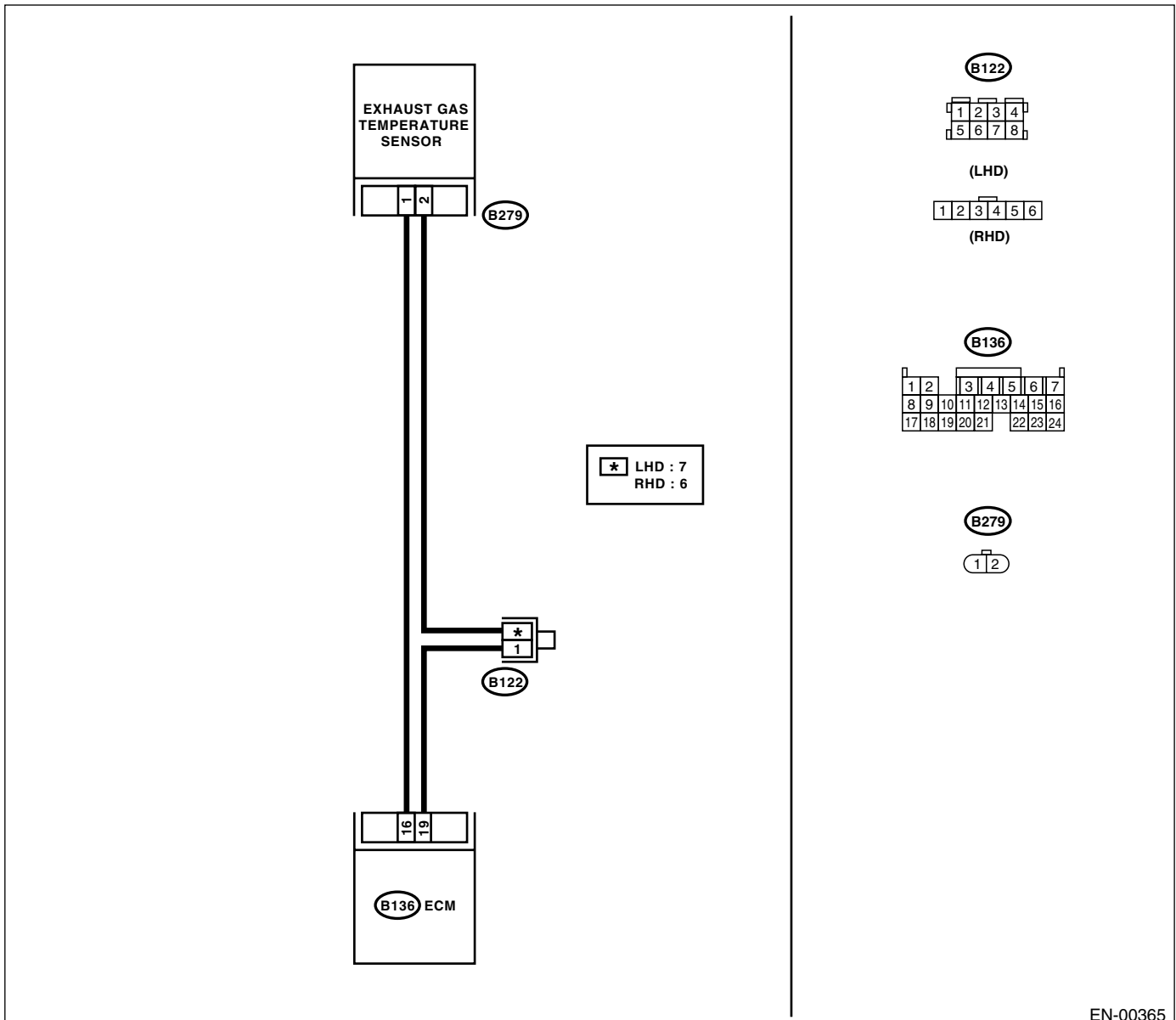
**CT:DTC P1544 — EXHAUST GAS TEMPERATURE TOO HIGH —**

- **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(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

• **WIRING DIAGRAM:**



EN-00365

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>1</b> <b>CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.</b> Is any other DTC displayed?	Other DTC is displayed.	Inspect the relevant DTC using "List of Diagnostic Trouble Code (DTC)". <Ref. to EN(TURBO)-77, List of Diagnostic Trouble Code (DTC).> <b>NOTE:</b> In this case, it is not necessary to inspect DTC P1544.	Go to step 2.
<b>2</b> <b>CHECK EXHAUST SYSTEM.</b> Check the exhaust system parts. <b>NOTE:</b> Check the following items. <ul style="list-style-type: none"><li>•Loose installation of exhaust manifold</li><li>•Cracks or hole of exhaust manifold</li><li>•Loose installation of front oxygen (A/F) sensor</li></ul> Is there a fault in exhaust system?	There is a fault.	Repair or replace the failure, then replace pre-catalytic converter.	Contact with your Subaru distributor service. <b>NOTE:</b> Inspection by DTM is required, because probable cause is deterioration of multiple parts.

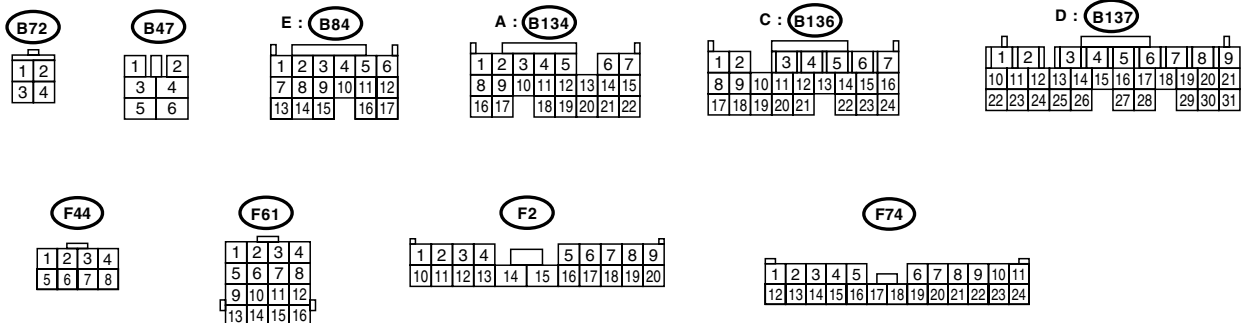
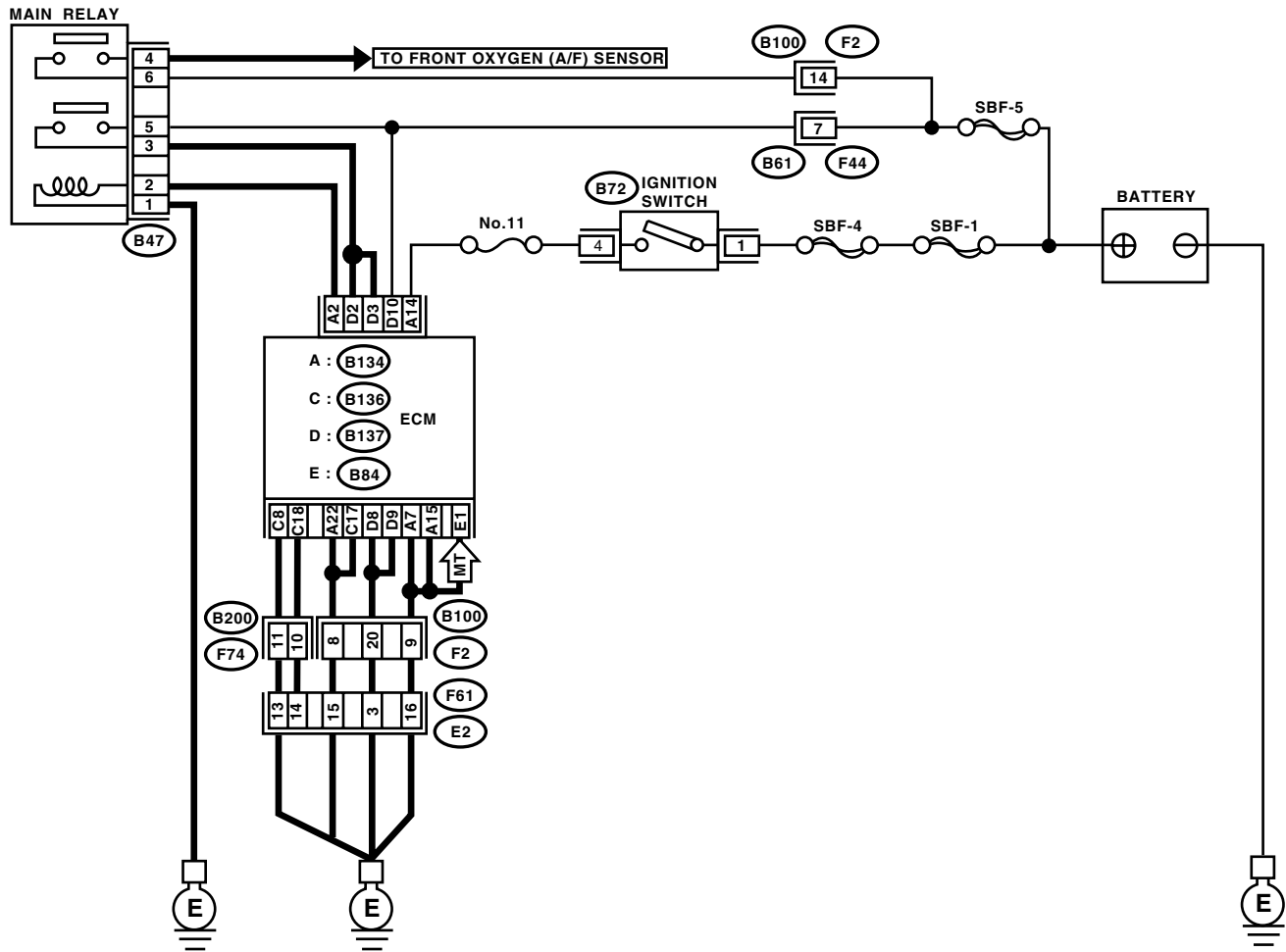
**CU:DTC P1560 — BACK-UP VOLTAGE CIRCUIT MALFUNCTION —**

- **DTC DETECTING CONDITION:**
  - Immediately at fault recognition

**CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

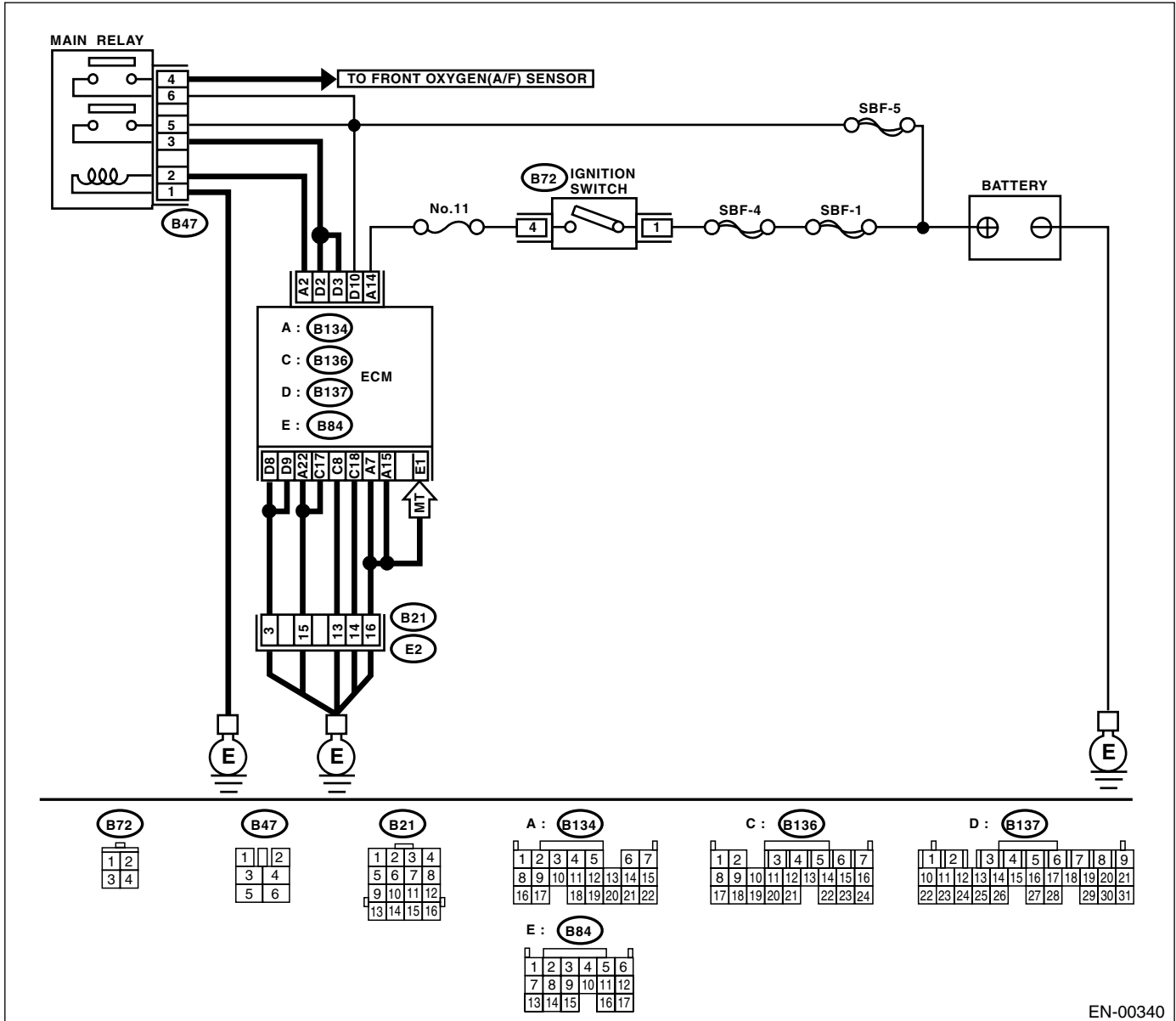
- **WIRING DIAGRAM:**
- LHD model



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

## ENGINE (DIAGNOSTICS)

### • RHD model



EN-00340

Step	Check	Yes	No
<b>1 CHECK INPUT SIGNAL FOR ECM.</b> 1) Turn the ignition switch to OFF. 2) Measure the voltage between ECM and chassis ground. <b>Connector &amp; terminal</b> <b>(B137) No. 10 (+) — Chassis ground (-):</b> Is the measured value more than specified value?	10 V	Repair the poor contact in ECM connector.	Go to step 2.
<b>2 CHECK HARNESS BETWEEN ECM AND MAIN FUSE BOX CONNECTOR.</b> 1) Disconnect the connector from ECM. 2) Measure the resistance of harness between ECM and chassis ground. <b>Connector &amp; terminal</b> <b>(B137) No. 10 — Chassis ground:</b> Is the measured value less than specified value?	10 Ω	Repair the ground short circuit in harness between ECM connector and battery terminal.	Go to step 3.

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

	Step	Check	Yes	No
3	<b>CHECK FUSE SBF-5.</b> Is the fuse blown?	Fuse is blown out.	Replace the fuse.	Repair the harness and connector. NOTE: In this case, repair the following: <ul style="list-style-type: none"><li>• Open circuit in harness between ECM and battery</li><li>• Poor contact in ECM connector</li><li>• Poor contact in battery terminal</li></ul>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

## CV:DTC P1698 — ENGINE TORQUE CONTROL CUT SIGNAL CIRCUIT LOW INPUT —

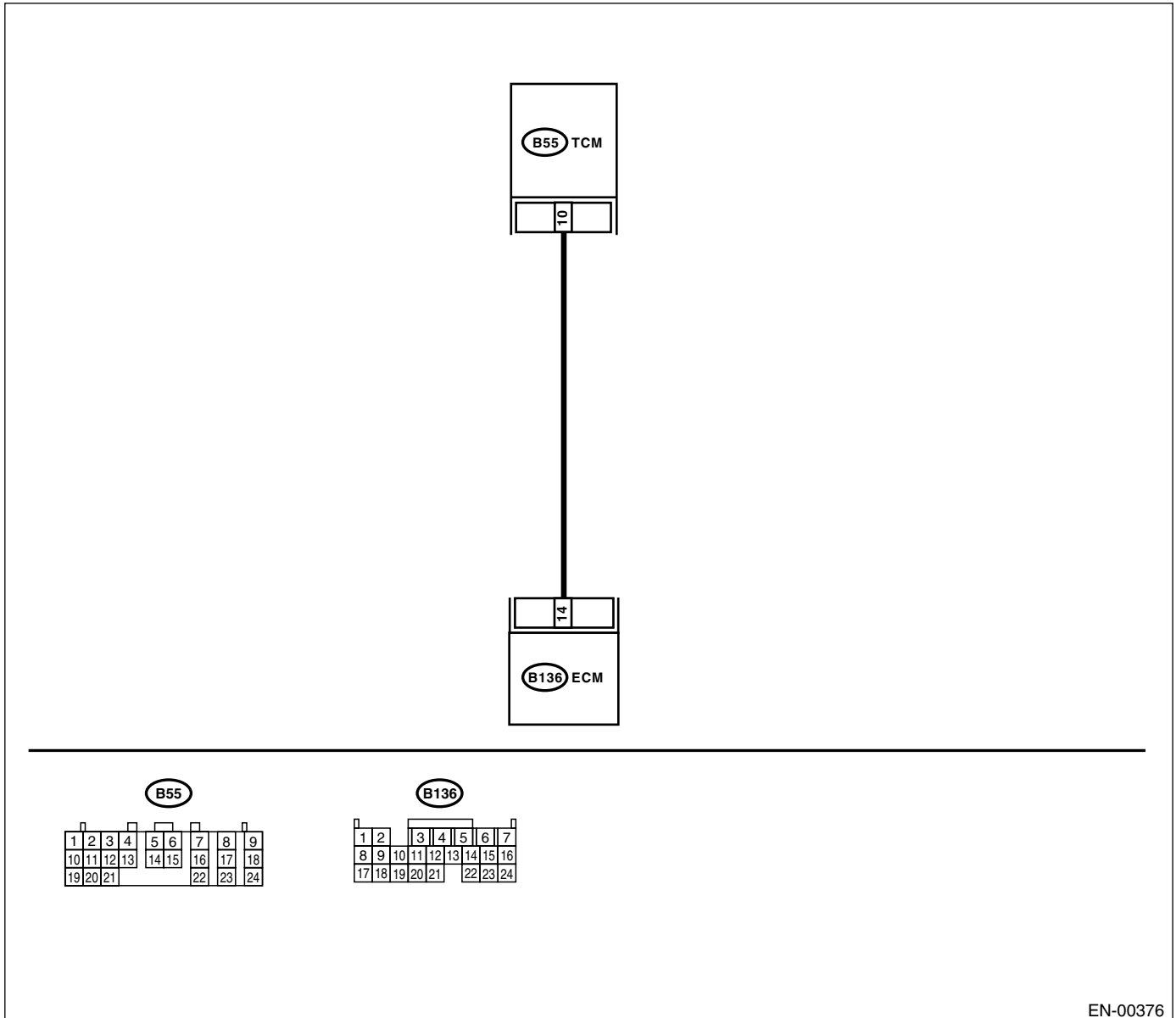
### • DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.>.

### • WIRING DIAGRAM:



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>1</b></p> <p><b>CHECK OUTPUT SIGNAL FROM ECM.</b>                      1)Start the engine and warm-up engine.                      2)Turn the ignition switch to OFF.                      3)Turn the ignition switch to ON.                      4)Measure the voltage between ECM and chassis ground.</p> <p><b>Connector &amp; terminal</b>  <b>(B136) No. 14 (+) — Chassis ground (-):</b>                      Is the measured value more than specified value?</p>	3 V	Repair the poor contact in ECM connector.	Go to step 2.
<p><b>2</b></p> <p><b>CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.</b>                      1)Turn the ignition switch to OFF.                      2)Disconnect the connectors from ECM and TCM.                      3)Measure the resistance of harness between ECM and chassis ground.</p> <p><b>Connector &amp; terminal</b>  <b>(B136) No. 14 — Chassis ground:</b>                      Is the measured value less than specified value?</p>	10 Ω	Repair the ground short circuit in harness between ECM and TCM connector.	Go to step 3.
<p><b>3</b></p> <p><b>CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.</b>                      Measure the resistance of harness between ECM and TCM connector.</p> <p><b>Connector &amp; terminal</b>  <b>(B136) No. 14 — (B55) No. 20:</b>                      Is the measured value less than specified value?</p>	1 Ω	Repair the poor contact in ECM or TCM connector.	Repair the open circuit in harness between ECM and TCM connector.



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

## CW:DTC P1699 — ENGINE TORQUE CONTROL CUT SIGNAL CIRCUIT HIGH INPUT —

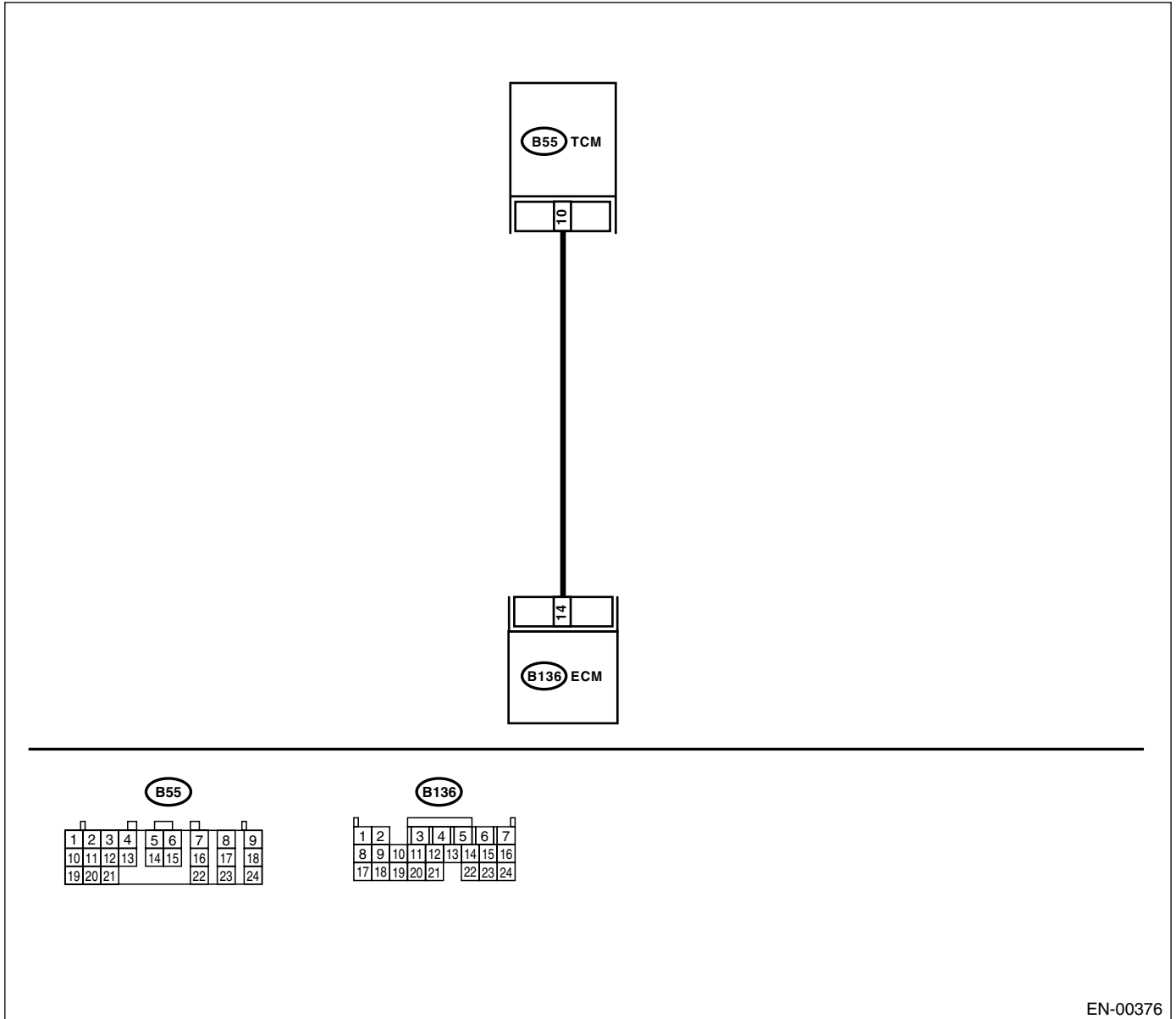
### • DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.>.

### • WIRING DIAGRAM:



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>1</b></p> <p><b>CHECK OUTPUT SIGNAL FROM ECM.</b>                      1)Start the engine and warm-up engine.                      2)Turn the ignition switch to OFF.                      3)Disconnect the connector from TCM.                      4)Turn the ignition switch to ON.                      5)Measure the voltage between ECM and chassis ground.</p> <p><b>Connector &amp; terminal</b>  <b>(B136) No. 14 (+) — Chassis ground (-):</b>                      Is the measured value less than specified value?</p>	3 V	Go to step 2.	Repair the battery short circuit in harness between ECM and TCM connector. After repair, replace the ECM. <Ref. to FU(TURBO)-48, Engine Control Module.>
<p><b>2</b></p> <p><b>CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.</b>                      1)Turn the ignition switch to OFF.                      2)Measure the voltage between ECM and chassis ground.</p> <p><b>Connector &amp; terminal</b>  <b>(B136) No. 14 (+) — Chassis ground (-):</b>                      Shake the ECM harness and connector, while monitoring value of voltage meter.                      Is the voltage change more than specified value?</p>	10 V	Repair the battery short circuit in harness between ECM and TCM connector. After repair, replace the ECM. <Ref. to FU(TURBO)-48, Engine Control Module.>	Contact with your Subaru distributor service. NOTE: Inspection by DTM is required, because probable cause is deterioration of multiple parts.

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

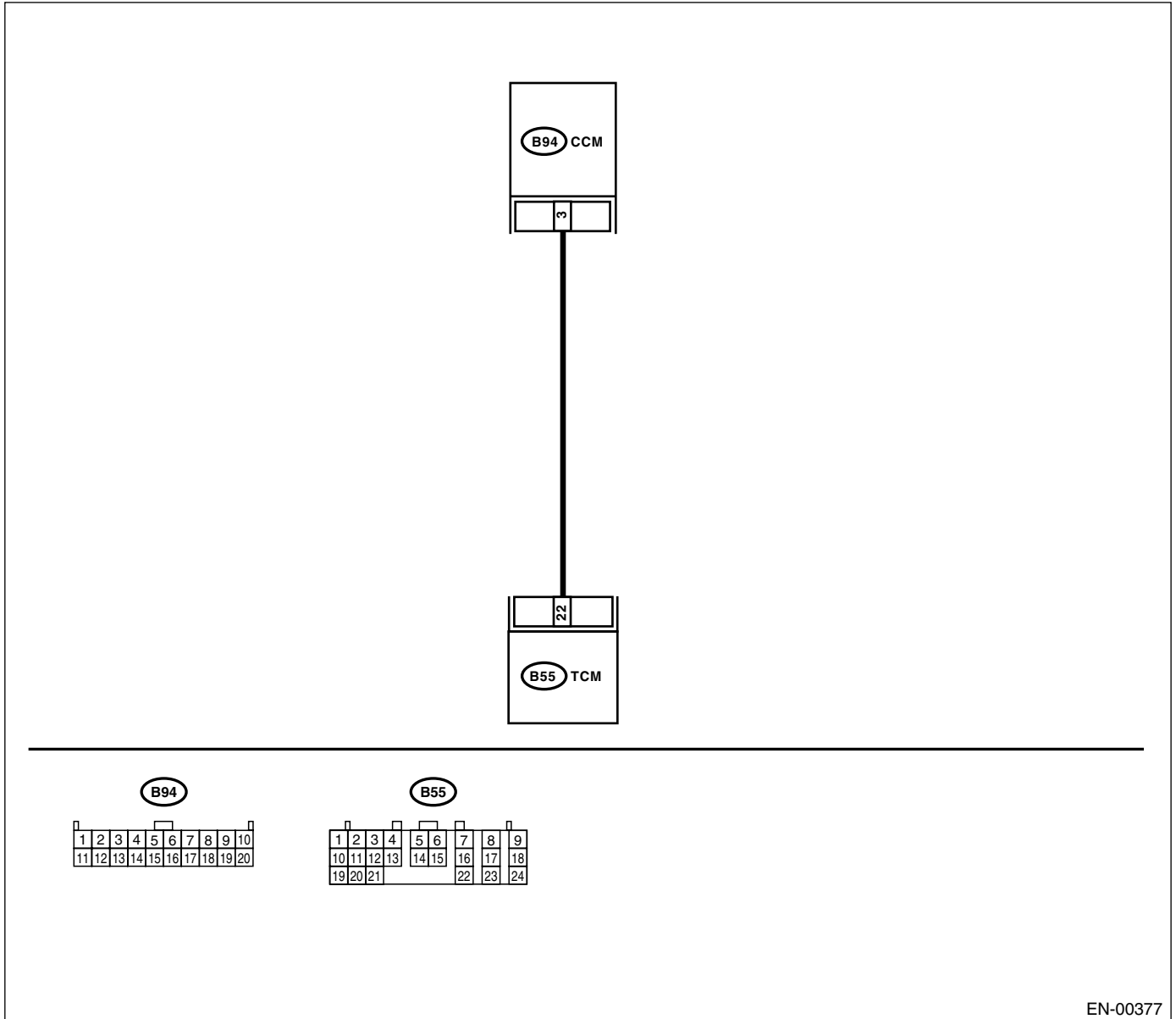
## CX:DTC P1701 — CRUISE CONTROL SET SIGNAL CIRCUIT MALFUNCTION FOR AUTOMATIC TRANSMISSION —

- DTC DETECTING CONDITION:
  - Two consecutive driving cycles with fault

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.>.

- WIRING DIAGRAM:



EN-00377

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<p><b>1</b></p> <p><b>CHECK HARNESS BETWEEN TCM AND CCM CONNECTOR.</b>                      1) Turn the ignition switch to OFF.                      2) Disconnect the connectors from TCM and CCM.                      3) Measure the resistance of harness between TCM and CCM connector.  <b>Connector &amp; terminal</b>  <b>(B55) No. 22 — (B94) No. 3:</b>                      Is the measured value less than specified value?</p>	1 Ω	Go to step 2.	Repair the open circuit in harness between TCM and CCM connector.
<p><b>2</b></p> <p><b>CHECK HARNESS BETWEEN TCM AND CCM CONNECTOR.</b>                      Measure the resistance of harness between TCM and chassis ground.  <b>Connector &amp; terminal</b>  <b>(B55) No. 22 — Chassis ground:</b>                      Is the measured value less than specified value?</p>	10 Ω	Repair the short circuit in harness between TCM and CCM connector.	Go to step 3.
<p><b>3</b></p> <p><b>CHECK INPUT SIGNAL FOR TCM.</b>                      1) Connect the connector to TCM and CCM.                      2) Lift-up the vehicle or set the vehicle on free rollers.  <b>CAUTION:</b>  <b>On AWD models, raise all wheels off ground.</b>                      3) Start the engine.                      4) Turn the cruise control main switch to ON.                      5) Move the selector lever to "D" range and slowly increase vehicle speed to 50 km/h (31 MPH).                      6) Turn the cruise control command switch to ON.                      7) Measure the voltage between TCM and chassis ground.  <b>Connector &amp; terminal</b>  <b>(B55) No. 22 (+) — Chassis ground (-):</b>                      Is the measured value less than specified value?</p>	1 V	Go to step 4.	Check the cruise control command switch circuit. <Ref. to CC-8, INSPECTION, Cruise Control Command Switch.>
<p><b>4</b></p> <p><b>CHECK POOR CONTACT.</b>                      Check poor contact in TCM connector.                      Is there poor contact in TCM connector?</p>	Poor contact occurs.	Repair the poor contact in TCM connector.	Replace the TCM. <Ref. to AT-70, Transmission Control Module (TCM).>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

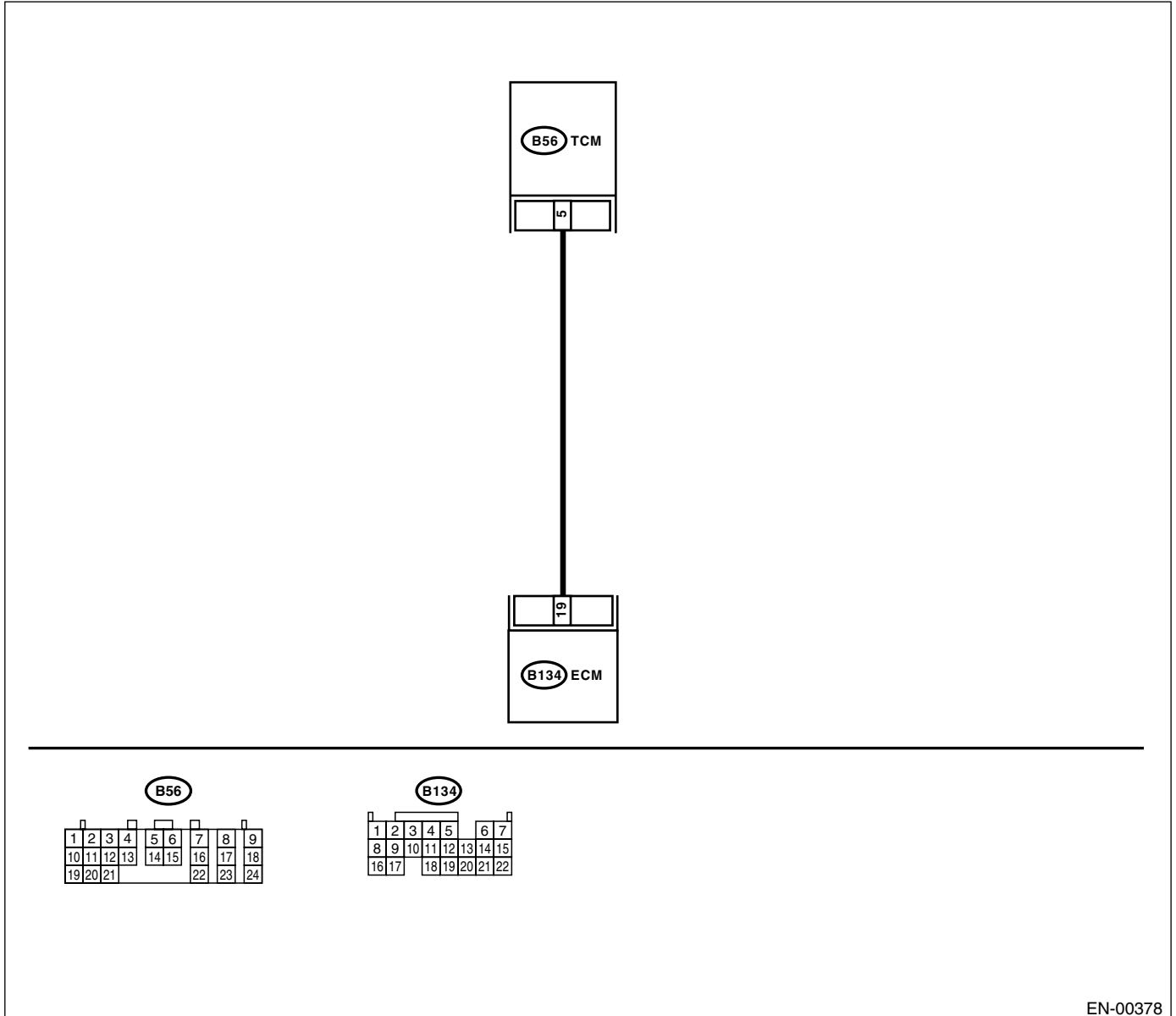
## CY:DTC P1711 — ENGINE TORQUE CONTROL SIGNAL 1 CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Excessive shift shock

**CAUTION:**

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.>.

- **WIRING DIAGRAM:**



# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>1 CHECK INPUT SIGNAL FOR ECM.</b> 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. <b>Connector &amp; terminal</b> <b>(B134) No. 19 (+) — Chassis ground (-):</b> Is the measured value more than specified value?	4.5 V	Go to step 2.	Go to step 4.
<b>2 CHECK INPUT SIGNAL FOR ECM.</b> Measure the voltage between ECM and chassis ground. <b>Connector &amp; terminal</b> <b>(B134) No. 19 (+) — Chassis ground (-):</b> Is the measured value more than specified value?	10 V	Repair the battery short circuit in harness between ECM and TCM connector.	Go to step 3.
<b>3 CHECK POOR CONTACT.</b> Check poor contact in ECM connector. Is there poor contact in ECM connector?	Poor contact occurs.	Repair the poor contact in ECM connector.	Replace the ECM. <Ref. to FU(TURBO)-48, Engine Control Module.>
<b>4 CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.</b> 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and TCM. 3) Measure the resistance of harness between ECM and TCM connector. <b>Connector &amp; terminal</b> <b>(B134) No. 19 — (B56) No. 5:</b> Is the measured value less than specified value?	1 $\Omega$	Go to step 5.	Repair the open circuit in harness between ECM and TCM connector.
<b>5 CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.</b> Measure the resistance of harness between ECM and chassis ground. <b>Connector &amp; terminal</b> <b>(B134) No. 19 — Chassis ground:</b> Is the measured value less than specified value?	10 $\Omega$	Repair the ground short circuit in harness between ECM and TCM connector.	Go to step 6.
<b>6 CHECK POOR CONTACT.</b> Check poor contact in TCM connector. Is there poor contact in TCM connector?	Poor contact occurs.	Repair the poor contact in TCM connector.	Replace the TCM. <Ref. to AT-70, Transmission Control Module (TCM).>

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

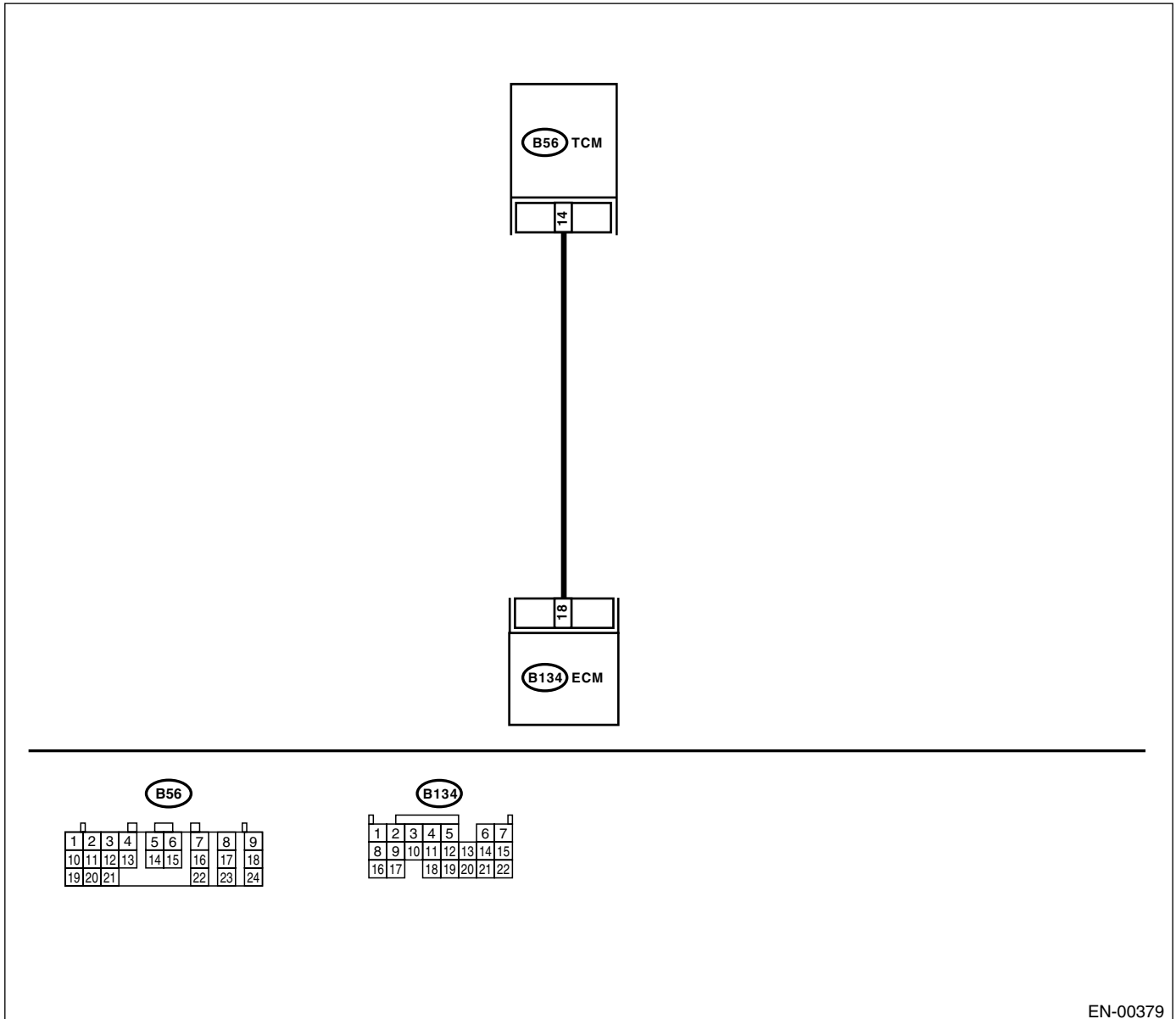
## CZ:DTC P1712 — ENGINE TORQUE CONTROL SIGNAL 2 CIRCUIT MALFUNCTION —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault
- **TROUBLE SYMPTOM:**
  - Excessive shift shock

### CAUTION:

After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-49, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.>.

- **WIRING DIAGRAM:**



EN-00379

# DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ENGINE (DIAGNOSTICS)

Step	Check	Yes	No
<b>1 CHECK INPUT SIGNAL FOR ECM.</b> 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM and chassis ground. <b>Connector &amp; terminal</b> <b>(B134) No. 18 (+) — Chassis ground (-):</b> Is the measured value more than specified value?	4.5 V	Go to step 2.	Go to step 4.
<b>2 CHECK INPUT SIGNAL FOR ECM.</b> Measure the voltage between ECM and chassis ground. <b>Connector &amp; terminal</b> <b>(B134) No. 18 (+) — Chassis ground (-):</b> Is the measured value more than specified value?	10 V	Repair the battery short circuit in harness between ECM and TCM connector.	Go to step 3.
<b>3 CHECK POOR CONTACT.</b> Check poor contact in ECM connector. Is there poor contact in ECM connector?	Poor contact occurs.	Repair the poor contact in ECM connector.	Replace the ECM. <Ref. to FU(TURBO)-48, Engine Control Module.>
<b>4 CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.</b> 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM and TCM. 3) Measure the resistance of harness between ECM and TCM connector. <b>Connector &amp; terminal</b> <b>(B134) No. 18 — (B56) No. 4:</b> Is the measured value less than specified value?	1 Ω	Go to step 5.	Repair the open circuit in harness between ECM and TCM connector.
<b>5 CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.</b> Measure the resistance of harness between ECM and chassis ground. <b>Connector &amp; terminal</b> <b>(B134) No. 18 — Chassis ground:</b> Is the measured value less than specified value?	10 Ω	Repair the ground short circuit in harness between ECM and TCM connector.	Go to step 6.
<b>6 CHECK POOR CONTACT.</b> Check poor contact in TCM connector. Is there poor contact in TCM connector?	Poor contact occurs.	Repair the poor contact in TCM connector.	Replace the TCM. <Ref. to AT-70, Transmission Control Module (TCM).>



# GENERAL DIAGNOSTIC TABLE

ENGINE (DIAGNOSTICS)

## 20. General Diagnostic Table

### A: INSPECTION

#### 1. ENGINE

NOTE:

Malfunction of parts other than those listed is also possible. <Ref. to ME(TURBO)-91, Engine Trouble in General.>

Symptom	Problem parts
1. Engine stalls during idling.	1) Idle air control solenoid valve 2) Pressure sensor 3) Mass air flow and intake 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) Pressure sensor 3) Mass air flow and intake 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) Pressure sensor 6) Mass air flow sensor
4. Poor acceleration	1) Pressure sensor 2) Mass air flow and intake 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) Pressure sensor 2) Mass air flow and intake 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 (DIAGNOSTICS)

Symptom	Problem parts
6. Surge	<ol style="list-style-type: none"><li>1) Pressure sensor</li><li>2) Mass air flow and intake temperature sensor</li><li>3) Engine coolant temperature sensor (*2)</li><li>4) Crankshaft position sensor (*3)</li><li>5) Camshaft position sensor (*3)</li><li>6) Fuel injection parts (*4)</li><li>7) Throttle position sensor</li><li>8) Fuel pump and fuel pump relay</li></ol>
7. Spark knock	<ol style="list-style-type: none"><li>1) Pressure sensor</li><li>2) Mass air flow and intake temperature sensor</li><li>3) Engine coolant temperature sensor</li><li>4) Knock sensor</li><li>5) Fuel injection parts (*4)</li><li>6) Fuel pump and fuel pump relay</li></ol>
8. After burning in exhaust system	<ol style="list-style-type: none"><li>1) Pressure sensor</li><li>2) Mass air flow and intake temperature sensor</li><li>3) Engine coolant temperature sensor (*2)</li><li>4) Fuel injection parts (*4)</li><li>5) Fuel pump and fuel pump relay</li></ol>

\*1: Check ignition coil & ignitor assembly 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.

# GENERAL DIAGNOSTIC TABLE

ENGINE (DIAGNOSTICS)

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