

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

13. Diagnostics Procedure with Diagnostic Trouble Code (DTC)

A: COMMUNICATION FOR INITIALIZING IMPOSSIBLE

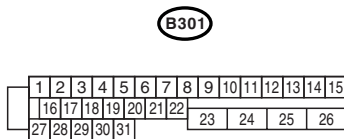
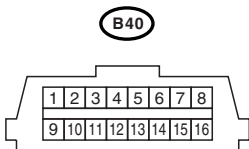
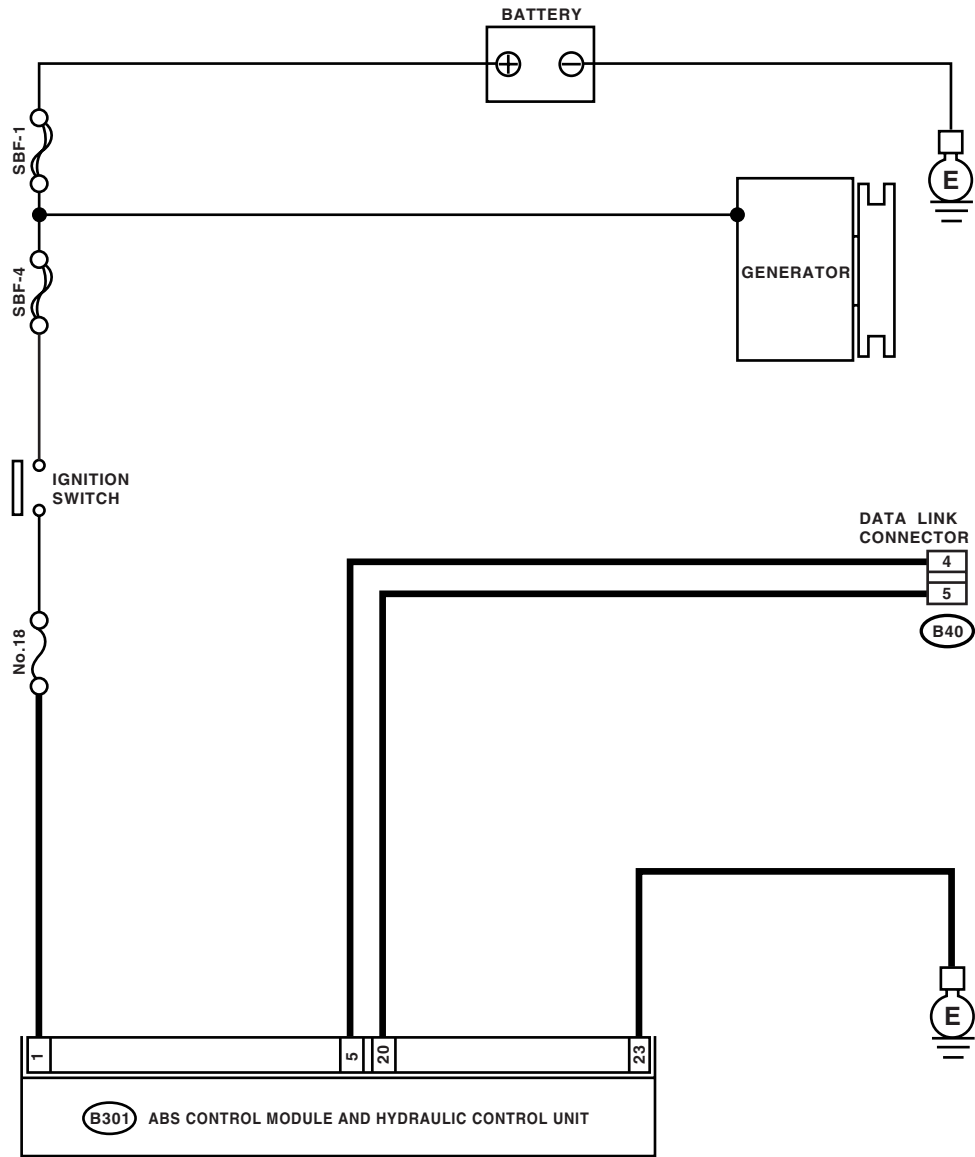
DIAGNOSIS:

Faulty harness connector

TROUBLE SYMPTOM:

ABS warning light remains on.

WIRING DIAGRAM:



ABS00128

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Step	Check	Yes	No
1	CHECK IGNITION SWITCH.	Go to step 2.	Turn the ignition switch to ON, and select ABS mode using SUBARU select monitor.
2	CHECK BATTERY. 1) Turn the ignition switch to OFF. 2) Measure the battery voltage.	Go to step 3.	Charge or replace the battery.
3	CHECK BATTERY TERMINAL.	Repair or tighten the battery terminal.	Go to step 4.
4	CHECK COMMUNICATION OF SELECT MONITOR. 1) Turn the ignition switch to ON. 2) Using the select monitor, check whether communication to other system can be executed normally.	Go to step 7.	Go to step 5.
5	CHECK COMMUNICATION OF SELECT MONITOR. 1) Turn the ignition switch to OFF. 2) Disconnect the ABSCM&H/U connector. 3) Turn the ignition switch to ON. 4) Check whether communication to other systems can be executed normally.	Go to step 7.	Go to step 6.
6	CHECK HARNESS CONNECTOR BETWEEN EACH CONTROL MODULE AND DATA LINK CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the ABSCM&H/U, ECM and TCM connectors. 3) Measure the resistance between data link connector and chassis ground. Connector & terminal (B40) No. 5 — Chassis ground: (B40) No. 4 — Chassis ground:	Go to step 7.	Repair the harness and connector between each control module and data link connector.
7	CHECK OUTPUT SIGNAL FOR ABSCM&H/U. 1) Turn the ignition switch to ON. 2) Measure the voltage between ABSCM&H/U and chassis ground. Connector & terminal (B40) No. 5 (+) — Chassis ground (-): (B40) No. 4 (+) — Chassis ground (-):	Go to step 8.	Repair the harness and connector between each control module and data link connector.
8	CHECK HARNESS/CONNECTOR BETWEEN ABSCM&H/U AND DATA LINK CONNECTOR. Measure the resistance between ABSCM&H/U connector and data link connector. Connector & terminal (B301) No. 20 — (B40) No. 5: (B301) No. 5 — (B40) No. 4:	Repair the harness and connector between ABSCM&H/U and data link connector.	Go to step 9.
9	CHECK INSTALLATION OF ABSCM&H/U CONNECTOR. Turn the ignition switch to OFF.	Go to step 10.	Insert the ABSCM&H/U connector into ABSCM&H/U.

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Step	Check	Yes	No
10 CHECK POWER SUPPLY CIRCUIT. 1) Turn the ignition switch to ON (engine OFF). 2) Measure the ignition power supply voltage between ABSCM&H/U connector and chassis ground. <i>Connector & terminal</i> <i>(B301) No. 1 (+) — Chassis ground (-):</i>	Is the voltage more than 10 V?	Go to step 11.	Repair the open circuit in harness between ABSCM&H/U and battery.
11 CHECK HARNESS CONNECTOR BETWEEN ABSCM&H/U AND CHASSIS GROUND. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ABSCM&H/U and transmission. 3) Measure the resistance of harness between ABSCM&H/U and chassis ground. <i>Connector & terminal</i> <i>(B301) No. 23 — Chassis ground:</i>	Is the resistance less than 1 Ω ?	Go to step 12.	Repair the open circuit in harness between ABSCM&H/U and inhibitor side connector, and poor contact in coupling connector.
12 CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in control module power supply, ground line and data link connector?	Repair the connector.	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>

B: NO TROUBLE CODE

DIAGNOSIS:

ABS warning light circuit is shorted.

TROUBLE SYMPTOM:

- ABS warning light remains on.
- NO TROUBLE CODE displayed on the select monitor.

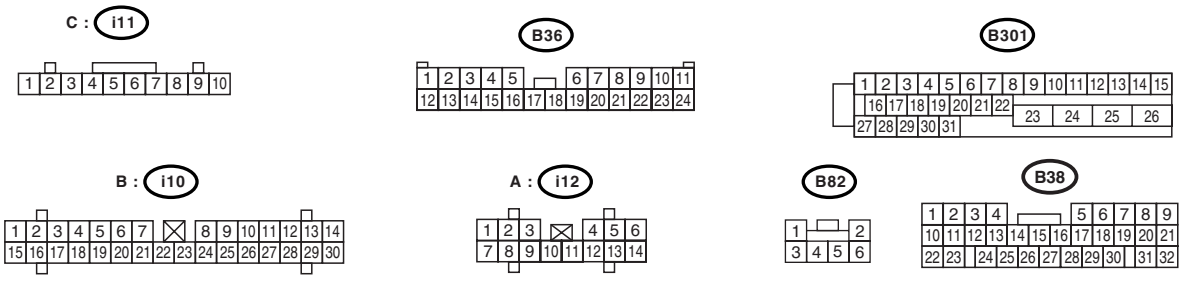
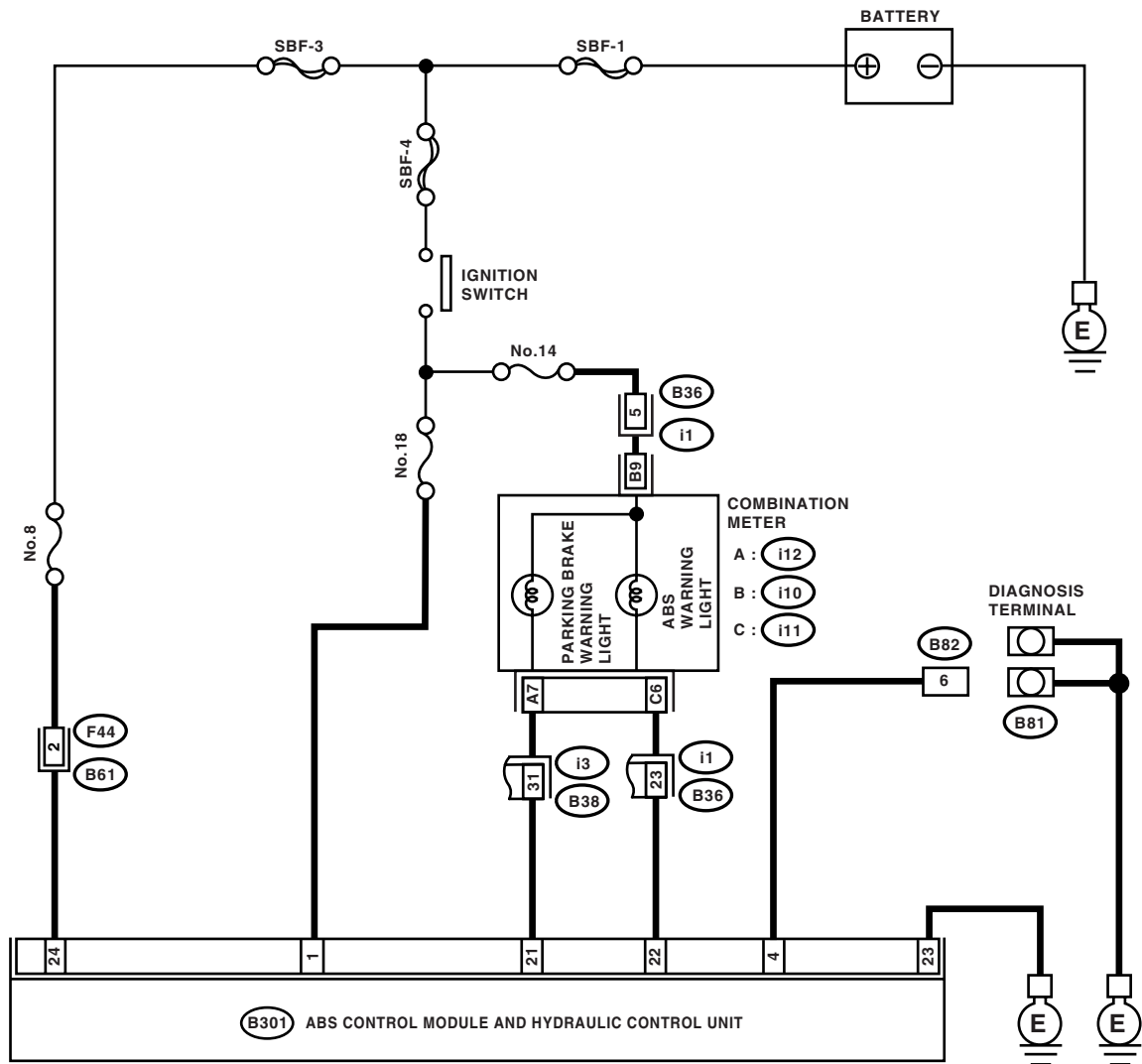
NOTE:

When the ABS warning light is OFF and “NO TROUBLE CODE” is displayed on select monitor, the system is in normal condition.

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

WIRING DIAGRAM:



ABS00393

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK WIRING HARNESS. 1) Turn the ignition switch to OFF. 2) Disconnect the connector (i3) from connector (B38). 3) Turn ignition switch to ON.	Does the ABS warning light turn on?	Go to step 2.	Repair the front wiring harness.
2 CHECK PROJECTION AT ABSCM&H/U. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ABSCM&H/U. NOTE: For detail of connector switch, refer to following. <Ref. to ABS-14, ELECTRICAL SPECIFICATION, Control Module I/O Signal.>	Is there any damage on projection which switches connector switch? <Ref. to ABS-14, ELECTRICAL SPECIFICATION, Control Module I/O Signal.>	Go to step 3.	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>
3 CHECK ABSCM&H/U. Measure the resistance between ABSCM&H/U terminals. <i>Terminals</i> <i>(B301) No. 22 — (B301) No. 23:</i>	Is the resistance more than 1 M Ω ?	Go to step 4.	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>
4 CHECK WIRING HARNESS. Measure the resistance between connector and chassis ground. <i>Connector & terminal</i> <i>(B301) No. 22 — Chassis ground:</i>	Is the resistance less than 0.5 Ω ?	Go to step 5.	Repair the harness.
5 CHECK WIRING HARNESS. 1) Connect the connector to ABSCM&H/U. 2) Measure the resistance between connector and chassis ground. <i>Connector & terminal</i> <i>(B301) No. 22 — Chassis ground:</i>	Is the resistance more than 1 M Ω ?	Go to step 6.	Repair the harness.
6 CHECK POOR CONTACT IN ABSCM&H/U CONNECTOR.	Is there poor contact in ABSCM&H/U connector?	Repair the connector.	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

C: DTC 21

— OPEN OR SHORT CIRCUIT IN FRONT RIGHT ABS SENSOR CIRCUIT —

NOTE:

For the diagnostic procedure, refer to DTC 27. <Ref. to ABS-87, DTC 27 — OPEN OR SHORT CIRCUIT IN REAR LEFT ABS SENSOR CIRCUIT —, Diagnostics Procedure with Diagnostic Trouble Code (DTC).>

D: DTC 23

— OPEN OR SHORT CIRCUIT IN FRONT LEFT ABS SENSOR CIRCUIT —

NOTE:

For the diagnostic procedure, refer to DTC 27. <Ref. to ABS-87, DTC 27 — OPEN OR SHORT CIRCUIT IN REAR LEFT ABS SENSOR CIRCUIT —, Diagnostics Procedure with Diagnostic Trouble Code (DTC).>

E: DTC 25

— OPEN OR SHORT CIRCUIT IN REAR RIGHT ABS SENSOR CIRCUIT —

NOTE:

For the diagnostic procedure, refer to DTC 27. <Ref. to ABS-87, DTC 27 — OPEN OR SHORT CIRCUIT IN REAR LEFT ABS SENSOR CIRCUIT —, Diagnostics Procedure with Diagnostic Trouble Code (DTC).>

F: DTC 27
— OPEN OR SHORT CIRCUIT IN REAR LEFT ABS SENSOR CIRCUIT —

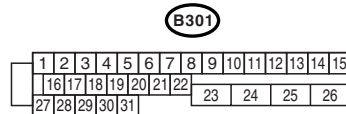
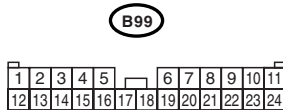
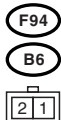
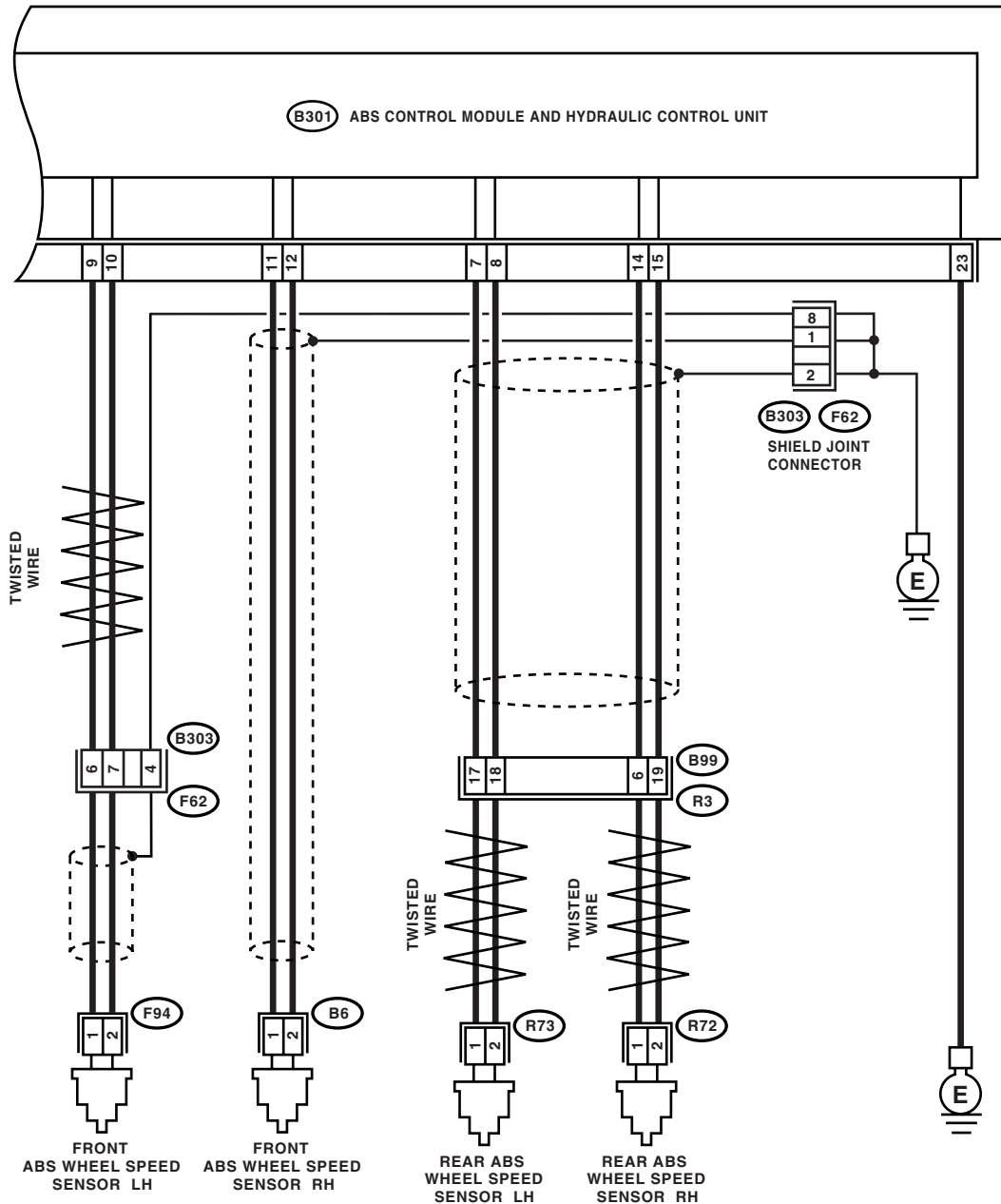
DIAGNOSIS:

- Faulty ABS wheel speed sensor (Broken wire, input voltage too high)
- Faulty harness connector

TROUBLE SYMPTOM:

ABS does not operate.

WIRING DIAGRAM:



DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK OUTPUT OF ABS WHEEL SPEED SENSOR USING SELECT MONITOR. 1) Select "Current data display & Save" on the select monitor. 2) Read the ABS wheel speed sensor output corresponding to faulty system in the select monitor data display mode.	Does the speed indicated on display change in response to speedometer reading during acceleration/deceleration when the steering wheel is in straight-ahead position?	Go to step 2.	Go to step 8.
2 CHECK INSTALLATION OF ABS WHEEL SPEED SENSOR.	Are the ABS wheel speed sensor installation bolts tightened 33 N·m (3.4 kgf-m, 24.6 ft-lb)?	Go to step 3.	Tighten the ABS wheel speed sensor installation bolts securely.
3 CHECK ABS WHEEL SPEED SENSOR GAP. Measure the tone wheel to ABS wheel speed sensor piece gap over entire perimeter of the wheel.	Is the gap the following value? Front wheel: 0.3 — 0.8 mm (0.012 — 0.031 in) Rear wheel 0.7 — 1.2 mm (0.028 — 0.047 in)	Go to step 4.	Adjust the gap. NOTE: Adjust the gap using spacers (Part No. 26755AA000). If the spacers cannot correct gap, replace worn ABS wheel speed sensor or worn tone wheel.
4 CHECK TONE WHEEL RUNOUT. Measure the tone wheel runout.	Is the runout less than 0.05 mm (0.0020 in)?	Go to step 5.	Replace the tone wheel. Front: <Ref. to ABS-20, Front Tone Wheel.> Rear: <Ref. to ABS-21, Rear Tone Wheel.>
5 CHECK POOR CONTACT IN CONNECTORS. Turn the ignition switch to OFF.	Is there poor contact in connectors between ABSCM&H/U and ABS wheel speed sensor?	Repair the connector.	Go to step 6.
6 CHECK ABSCM&H/U. 1) Connect all connectors. 2) Erase the memory. 3) Perform the inspection mode. 4) Read out the DTC.	Is the same DTC as in the current diagnosis still being output?	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>	Go to step 7.
7 CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES (DTCs) APPEARANCE.	Are other DTCs being output?	Proceed with the diagnosis corresponding to DTC.	A temporary poor contact. NOTE: Check the harness and connectors between ABSCM&H/U and ABS wheel speed sensor.
8 CHECK ABS WHEEL SPEED SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ABS wheel speed sensor. 3) Measure the resistance of ABS wheel speed sensor connector terminals while shaking the harness lightly. Terminal Front RH No. 1 — No. 2: Front LH No. 1 — No. 2: Rear RH No. 1 — No. 2: Rear LH No. 1 — No. 2:	Is the resistance the following value? Front: 1 — 1.5 kΩ Rear: 1.025 — 1.265 kΩ	Go to step 9.	Replace the ABS wheel speed sensor. Front: <Ref. to ABS-14, Front ABS Wheel Speed Sensor.> Rear: <Ref. to ABS-17, Rear ABS Wheel Speed Sensor.>

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Step	Check	Yes	No
<p>9 CHECK BATTERY SHORT OF ABS WHEEL SPEED SENSOR. 1) Disconnect the connector from ABSCM&H/U. 2) Measure the voltage between ABS wheel speed sensor and chassis ground. <i>Terminal</i> <i>Front RH No. 1 (+) — Chassis ground (-):</i> <i>Front LH No. 1 (+) — Chassis ground (-):</i> <i>Rear RH No. 1 (+) — Chassis ground (-):</i> <i>Rear LH No. 1 (+) — Chassis ground (-):</i></p>	<p>Is the voltage less than 1 V?</p>	<p>Go to step 10.</p>	<p>Replace the ABS wheel speed sensor. Front: <Ref. to ABS-14, Front ABS Wheel Speed Sensor.> Rear: <Ref. to ABS-17, Rear ABS Wheel Speed Sensor.></p>
<p>10 CHECK BATTERY SHORT OF ABS WHEEL SPEED SENSOR. 1) Turn the ignition switch to ON. 2) Measure the voltage between ABS wheel speed sensor and chassis ground. <i>Terminal</i> <i>Front RH No. 1 (+) — Chassis ground (-):</i> <i>Front LH No. 1 (+) — Chassis ground (-):</i> <i>Rear RH No. 1 (+) — Chassis ground (-):</i> <i>Rear LH No. 1 (+) — Chassis ground (-):</i></p>	<p>Is the voltage less than 1 V?</p>	<p>Go to step 11.</p>	<p>Replace the ABS wheel speed sensor. Front: <Ref. to ABS-14, Front ABS Wheel Speed Sensor.> Rear: <Ref. to ABS-17, Rear ABS Wheel Speed Sensor.></p>
<p>11 CHECK HARNESS/CONNECTOR BETWEEN ABSCM&H/U AND ABS WHEEL SPEED SENSOR. 1) Turn the ignition switch to OFF. 2) Connect the connector to ABS wheel speed sensor. 3) Measure the resistance between ABSCM&H/U connector terminals. <i>Connector & terminal</i> <i>DTC 21 /</i> <i>(B301) No. 11 — No. 12:</i> <i>DTC 23 /</i> <i>(B301) No. 9 — No. 10:</i> <i>DTC 25 /</i> <i>(B301) No. 14 — No. 15:</i> <i>DTC 27 /</i> <i>(B301) No. 7 — No. 8:</i></p>	<p>Is the resistance the following value? Front: 1 — 1.5 kΩ Rear: 1.025 — 1.265 kΩ</p>	<p>Go to step 12.</p>	<p>Repair the harness/connector between ABSCM&H/U and ABS wheel speed sensor.</p>
<p>12 CHECK BATTERY SHORT OF HARNESS. Measure the voltage between ABSCM&H/U connector and chassis ground. <i>Connector & terminal</i> <i>DTC 21 /</i> <i>(B301) No. 11 (+) — Chassis ground (-):</i> <i>DTC 23 /</i> <i>(B301) No. 9 (+) — Chassis ground (-):</i> <i>DTC 25 /</i> <i>(B301) No. 14 (+) — Chassis ground (-):</i> <i>DTC 27 /</i> <i>(B301) No. 7 (+) — Chassis ground (-):</i></p>	<p>Is the voltage less than 1 V?</p>	<p>Go to step 13.</p>	<p>Repair the harness between ABSCM&H/U and ABS wheel speed sensor.</p>

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Step	Check	Yes	No
13 CHECK BATTERY SHORT OF HARNESS. 1) Turn the ignition switch to ON. 2) Measure the voltage between ABSCM&H/U connector and chassis ground. Connector & terminal DTC 21 / (B301) No. 11 (+) — Chassis ground (-): DTC 23 / (B301) No. 9 (+) — Chassis ground (-): DTC 25 / (B301) No. 14 (+) — Chassis ground (-): DTC 27 / (B301) No. 7 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Go to step 14.	Repair the harness between ABSCM&H/U and ABS wheel speed sensor.
14 CHECK INSTALLATION OF ABS WHEEL SPEED SENSOR.	Are the ABS wheel speed sensor installation bolts tightened 33 N·m (3.4 kgf·m, 24.6 ft·lb)?	Go to step 15.	Tighten the ABS wheel speed sensor installation bolts securely.
15 CHECK ABS WHEEL SPEED SENSOR GAP. Measure the tone wheel to ABS wheel speed sensor piece gap over entire perimeter of the wheel.	Is the gap the following value? Front wheel: 0.3 — 0.8 mm (0.012 — 0.031 in) Rear wheel: 0.7 — 1.2 mm (0.028 — 0.047 in)	Go to step 16.	Adjust the gap. NOTE: Adjust the gap using spacers (Part No. 26755AA000). If the spacers cannot correct gap, replace worn ABS wheel speed sensor or worn tone wheel.
16 CHECK TONE WHEEL RUNOUT. Measure the tone wheel runout.	Is the runout less than 0.05 mm (0.0020 in)?	Go to step 17.	Replace the tone wheel. Front: <Ref. to ABS-20, Front Tone Wheel.> Rear: <Ref. to ABS-21, Rear Tone Wheel.>
17 CHECK GROUND SHORT OF ABS WHEEL SPEED SENSOR. 1) Turn the ignition switch to ON. 2) Measure the resistance between ABS wheel speed sensor and chassis ground. Terminal Front RH No. 1 — Chassis ground: Front LH No. 1 — Chassis ground: Rear RH No. 1 — Chassis ground: Rear LH No. 1 — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 18.	Replace the ABS wheel speed sensor and ABSCM&H/U. Front: <Ref. to ABS-14, Front ABS Wheel Speed Sensor.> Rear: <Ref. to ABS-17, Rear ABS Wheel Speed Sensor.> <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Step	Check	Yes	No
18 CHECK GROUND SHORT OF HARNESS. 1) Turn the ignition switch to OFF. 2) Connect the connector to ABS wheel speed sensor. 3) Measure the resistance between ABSCM&H/U connector terminal and chassis ground. <i>Connector & terminal</i> <i>DTC 21 /</i> <i>(B301) No. 11 — Chassis ground:</i> <i>DTC 23 /</i> <i>(B301) No. 9 — Chassis ground:</i> <i>DTC 25 /</i> <i>(B301) No. 14 — Chassis ground:</i> <i>DTC 27 /</i> <i>(B301) No. 7 — Chassis ground:</i>	Is the resistance more than 1 MΩ?	Go to step 19.	Repair the harness between ABSCM&H/U and ABS wheel speed sensor. And replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>
19 CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in connectors between ABSCM&H/U and ABS wheel speed sensor?	Repair the connector.	Go to step 20.
20 CHECK ABSCM&H/U. 1) Connect all connectors. 2) Erase the memory. 3) Perform the inspection mode. 4) Read out the DTC.	Is the same DTC as in current diagnosis still being output?	Replace the ABSCM&H/U.	Go to step 21.
21 CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES (DTCs) APPEARANCE.	Are other DTCs being output?	Proceed with the diagnosis corresponding to DTC.	A temporary poor contact. NOTE: Check the harness and connectors between ABSCM&H/U and ABS wheel speed sensor.

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

G: DTC 22

— FRONT RIGHT ABNORMAL ABS SENSOR SIGNAL —

NOTE:

For the diagnostic procedure, refer to DTC 28. <Ref. to ABS-93, DTC 28 — REAR LEFT ABNORMAL ABS SENSOR SIGNAL —, Diagnostics Procedure with Diagnostic Trouble Code (DTC).>

H: DTC 24

— FRONT LEFT ABNORMAL ABS SENSOR SIGNAL —

NOTE:

For the diagnostic procedure, refer to DTC 28. <Ref. to ABS-93, DTC 28 — REAR LEFT ABNORMAL ABS SENSOR SIGNAL —, Diagnostics Procedure with Diagnostic Trouble Code (DTC).>

I: DTC 26

— REAR RIGHT ABNORMAL ABS SENSOR SIGNAL —

NOTE:

For the diagnostic procedure, refer to DTC 28. <Ref. to ABS-93, DTC 28 — REAR LEFT ABNORMAL ABS SENSOR SIGNAL —, Diagnostics Procedure with Diagnostic Trouble Code (DTC).>

J: DTC 28
— REAR LEFT ABNORMAL ABS SENSOR SIGNAL —

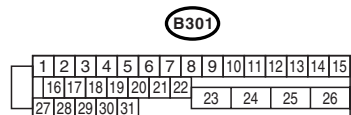
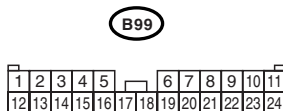
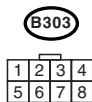
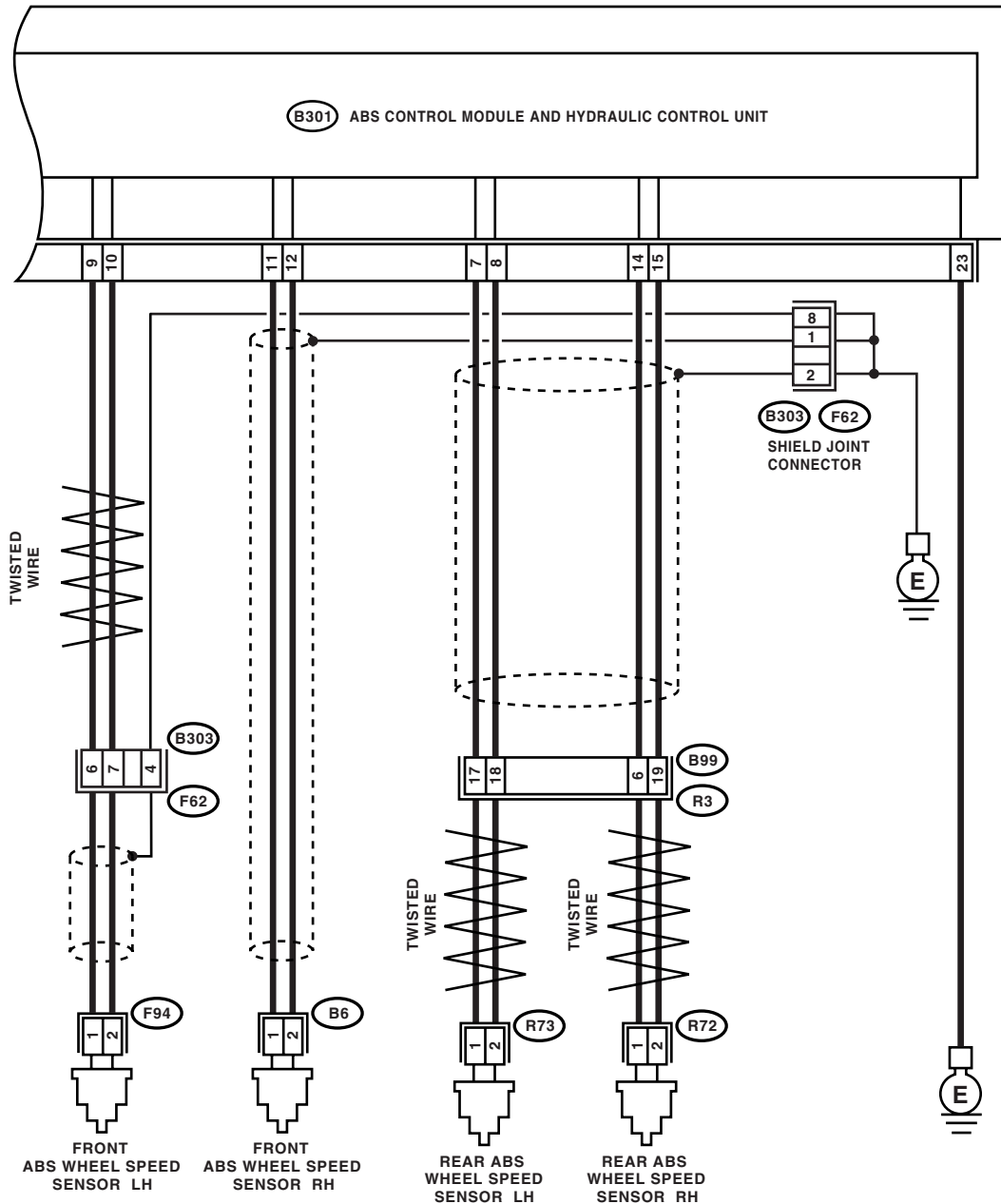
DIAGNOSIS:

- Faulty ABS wheel speed sensor signal (noise, irregular signal, etc.)
- Faulty harness/connector

TROUBLE SYMPTOM:

ABS does not operate.

WIRING DIAGRAM:



DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Step	Check	Yes	No	
1	CHECK OUTPUT OF ABS WHEEL SPEED SENSOR USING SELECT MONITOR. 1) Select "Current data display & Save" on the select monitor. 2) Read the ABS wheel speed sensor output corresponding to faulty system in the select monitor data display mode.	Does the speed indicated on display change in response to speedometer reading during acceleration/deceleration when the steering wheel is in straight-ahead position?	Go to step 2.	Go to step 8.
2	CHECK POOR CONTACT IN CONNECTORS. Turn the ignition switch to OFF.	Is there poor contact in connectors between ABSCM&H/U and ABS wheel speed sensor?	Repair the connector.	Go to step 3.
3	CHECK SOURCES OF SIGNAL NOISE.	Is the car telephone or wireless transmitter properly installed?	Go to step 4.	Properly install the car telephone or wireless transmitter.
4	CHECK SOURCES OF SIGNAL NOISE.	Are noise sources (such as an antenna) installed near the sensor harness?	Install the noise sources apart from sensor harness.	Go to step 5.
5	CHECK SHIELD CIRCUIT. 1) Turn the ignition switch to OFF. 2) Connect all connectors. 3) Measure the resistance between shield connector and chassis ground. Connector & terminal DTC 22 / (B303) No. 1 — Chassis ground: DTC 24 / (B303) No. 8 — Chassis ground: DTC 26 / (B303) No. 2 — Chassis ground: DTC 28 / (B303) No. 2 — Chassis ground:	Is the resistance less than 0.5 Ω?	Go to step 6.	Repair the shield harness.
6	CHECK ABSCM&H/U. 1) Connect all connectors. 2) Erase the memory. 3) Perform the inspection mode. 4) Read out the DTC.	Is the same DTC as in the current diagnosis still being output?	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>	Go to step 7.
7	CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES (DTCs) APPEARANCE.	Are other DTCs being output?	Proceed with the diagnosis corresponding to DTC.	A temporary noise interference.
8	CHECK INSTALLATION OF ABS WHEEL SPEED SENSOR.	Are the ABS wheel speed sensor installation bolts tightened 33 N·m (3.4 kgf-m, 24.6 ft-lb)?	Go to step 9.	Tighten the ABS wheel speed sensor installation bolts securely.
9	CHECK ABS WHEEL SPEED SENSOR GAP. Measure the tone wheel to ABS wheel speed sensor piece gap over entire perimeter of wheel.	Is the gap the following value? Front wheel: 0.3 — 0.8 mm (0.012 — 0.031 in) Rear wheel: 0.7 — 1.2 mm (0.028 — 0.047 in)	Go to step 10.	Adjust the gap. NOTE: Adjust the gap using spacer (Part No. 26755AA000). If the spacers cannot correct gap, replace worn ABS wheel speed sensor or worn tone wheel.
10	PREPARE OSCILLOSCOPE.	Is an oscilloscope available?	Go to step 11.	Go to step 12.

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Step	Check	Yes	No
<p>11 CHECK ABS WHEEL SPEED SENSOR SIGNAL.</p> <p>1) Raise all four wheels off ground. 2) Turn the ignition switch to OFF. 3) Connect the oscilloscope to the connector. 4) Turn the ignition switch to ON. 5) Rotate the wheels and measure voltage at specified frequency. <Ref. to ABS-17, WAVEFORM, Control Module I/O Signal.></p> <p>NOTE: When this inspection is completed, the ABS-CM&H/U sometimes stores DTC 29 or DTC 56.</p> <p>Connector & terminal DTC 22 / (B6) No. 1 (+) — No. 2 (-): DTC 24 / (B303) No. 6 (+) — No. 7 (-): DTC 26 / (B99) No. 6 (+) — No. 19 (-): DTC 28 / (B99) No. 17 (+) — No. 18 (-):</p>	<p>Is oscilloscope pattern as shown in the figure?</p>	<p>Go to step 15.</p>	<p>Go to step 12.</p>
<p>12 CHECK CONTAMINATION OF ABS WHEEL SPEED SENSOR OR TONE WHEEL.</p> <p>Remove the disc rotor or drum from hub in accordance with DTC.</p>	<p>Is the ABS wheel speed sensor piece or tone wheel contaminated by dirt or other foreign matter?</p>	<p>Thoroughly remove dirt or other foreign matter.</p>	<p>Go to step 13.</p>
<p>13 CHECK DAMAGE OF ABS WHEEL SPEED SENSOR OR TONE WHEEL.</p>	<p>Are there broken or damaged in the ABS wheel speed sensor piece or tone wheel?</p>	<p>Go to step 14.</p>	<p>Replace the ABS wheel speed sensor or tone wheel. Front: <Ref. to ABS-14, Front ABS Wheel Speed Sensor.> Rear: <Ref. to ABS-17, Rear ABS Wheel Speed Sensor.> and Front: <Ref. to ABS-20, Front Tone Wheel.> Rear: <Ref. to ABS-21, Rear Tone Wheel.></p>
<p>14 CHECK TONE WHEEL RUNOUT.</p> <p>Measure the tone wheel runout.</p>	<p>Is the runout less than 0.05 mm (0.0020 in)?</p>	<p>Go to step 15.</p>	<p>Replace the tone wheel. Front: <Ref. to ABS-20, Front Tone Wheel.> Rear: <Ref. to ABS-21, Rear Tone Wheel.></p>
<p>15 CHECK RESISTANCE OF ABS WHEEL SPEED SENSOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from ABS wheel speed sensor. 3) Measure the resistance between ABS wheel speed sensor connector terminals while shaking the harness lightly.</p> <p>Terminal Front RH No. 1 — No. 2: Front LH No. 1 — No. 2: Rear RH No. 1 — No. 2: Rear LH No. 1 — No. 2:</p>	<p>Is the resistance the following value? Front: 1 — 1.5 kΩ Rear: 1.025 — 1.265 kΩ</p>	<p>Go to step 16.</p>	<p>Replace the ABS wheel speed sensor. Front: <Ref. to ABS-14, Front ABS Wheel Speed Sensor.> Rear: <Ref. to ABS-17, Rear ABS Wheel Speed Sensor.></p>

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Step	Check	Yes	No
16 CHECK GROUND SHORT OF ABS WHEEL SPEED SENSOR. Measure the resistance between ABS wheel speed sensor and chassis ground. <i>Terminal</i> <i>Front RH No. 1 — Chassis ground:</i> <i>Front LH No. 1 — Chassis ground:</i> <i>Rear RH No. 1 — Chassis ground:</i> <i>Rear LH No. 1 — Chassis ground:</i>	Is the resistance more than 1 M Ω ?	Go to step 17.	Replace the ABS wheel speed sensor. Front: <Ref. to ABS-14, Front ABS Wheel Speed Sensor.> Rear: <Ref. to ABS-17, Rear ABS Wheel Speed Sensor.>
17 CHECK HARNESS/CONNECTOR BETWEEN ABSCM&H/U AND ABS WHEEL SPEED SENSOR. 1) Connect the connector to ABS wheel speed sensor. 2) Disconnect the connector from ABSCM&H/U. 3) Measure the resistance at ABSCM&H/U connector terminals. <i>Connector & terminal</i> <i>DTC 22 /</i> <i>(B301) No. 11 — No. 12:</i> <i>DTC 24 /</i> <i>(B301) No. 9 — No. 10:</i> <i>DTC 26 /</i> <i>(B301) No. 14 — No. 15:</i> <i>DTC 28 /</i> <i>(B301) No. 7 — No. 8:</i>	Is the resistance the following value? Front: 1 — 1.5 k Ω Rear: 1.025 — 1.265 k Ω	Go to step 18.	Repair the harness/connector between ABSCM&H/U and ABS wheel speed sensor.
18 CHECK GROUND SHORT OF HARNESS. Measure the resistance between ABSCM&H/U connector and chassis ground. <i>Connector & terminal</i> <i>DTC 22 /</i> <i>(B301) No. 11 — Chassis ground:</i> <i>DTC 24 /</i> <i>(B301) No. 9 — Chassis ground:</i> <i>DTC 26 /</i> <i>(B301) No. 14 — Chassis ground:</i> <i>DTC 28 /</i> <i>(B301) No. 7 — Chassis ground:</i>	Is the resistance more than 1 M Ω ?	Go to step 19.	Repair the harness/connector between ABSCM&H/U and ABS wheel speed sensor.
19 CHECK GROUND CIRCUIT OF ABSCM&H/U. Measure the resistance between ABSCM&H/U and chassis ground. <i>Connector & terminal</i> <i>(B301) No. 23 — Chassis ground:</i>	Is the resistance less than 0.5 Ω ?	Go to step 20.	Repair the ABSCM&H/U ground harness.
20 CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in connectors between ABSCM&H/U and ABS wheel speed sensor?	Repair the connector.	Go to step 21.
21 CHECK SOURCES OF SIGNAL NOISE.	Is the car telephone or the wireless transmitter properly installed?	Go to step 22.	Properly install the car telephone or wireless transmitter.
22 CHECK SOURCES OF SIGNAL NOISE.	Are noise sources (such as an antenna) installed near the sensor harness?	Install the noise sources apart from sensor harness.	Go to step 23.

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Step	Check	Yes	No
23 CHECK SHIELD CIRCUIT. 1) Connect all connectors. 2) Measure the resistance between shield connector and chassis ground. Connector & terminal <i>DTC 22 / (B303) No. 1 — Chassis ground:</i> <i>DTC 24 / (B303) No. 8 — Chassis ground:</i> <i>DTC 26 / (B303) No. 2 — Chassis ground:</i> <i>DTC 28 / (B303) No. 2 — Chassis ground:</i>	Is the resistance less than 0.5 Ω?	Go to step 24 .	Repair the shield harness.
24 CHECK ABSCM&H/U. 1) Connect all connectors. 2) Erase the memory. 3) Perform the inspection mode. 4) Read out the DTC.	Is the same DTC as in the current diagnosis still being output?	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>	Go to step 25 .
25 CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES (DTCs) APPEARANCE.	Are other DTCs being output?	Proceed with the diagnosis corresponding to DTC.	A temporary noise interference. NOTE: Although the ABS warning light remains illuminating at this point, this is a normal condition. Vehicle must be driven at approx. 12 km/h (7.46 MPH) or faster to turn off ABS warning light. Make sure that the ABS warning light goes off after driving vehicle.

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

K: DTC 29

— ABNORMAL ABS SENSOR SIGNAL ON ANY ONE OF FOUR SENSOR —

DIAGNOSIS:

- Faulty ABS wheel speed sensor signal (noise, irregular signal, etc.)
- Faulty tone wheel
- Wheels turning freely for a long time

TROUBLE SYMPTOM:

- ABS does not operate.
- EBD does not operate.

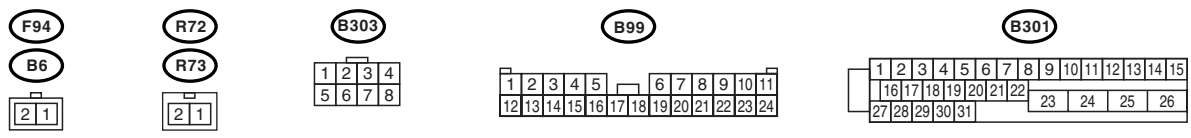
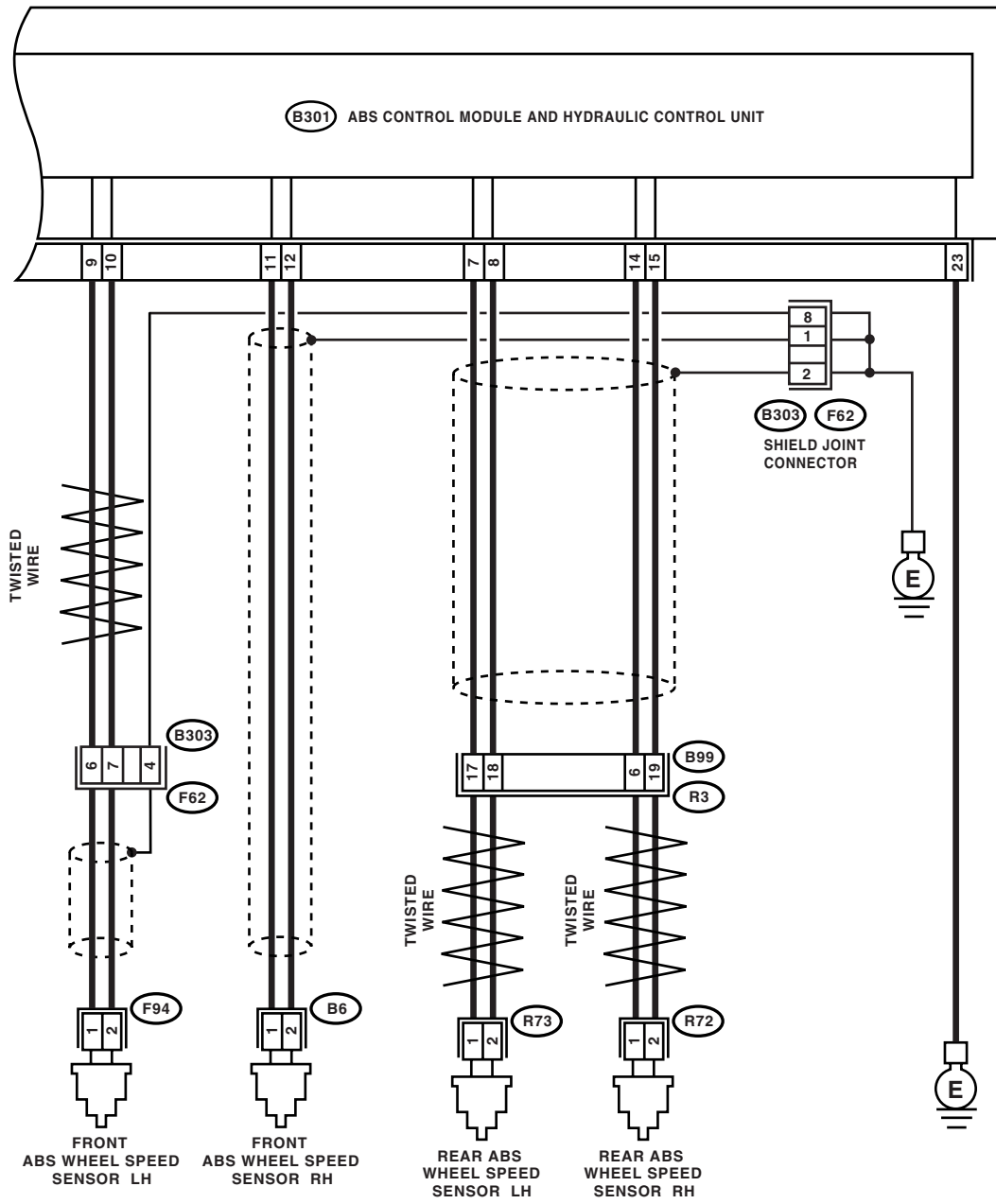
NOTE:

In addition to the ABS warning light, brake warning light illuminates.

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

WIRING DIAGRAM:



ABS00395

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Step	Check	Yes	No
1	CHECK IF THE WHEELS HAVE TURNED FREELY FOR A LONG TIME.	Check if the wheels have been turned freely for more than one minute, such as when vehicle is jacked-up, under full-lock cornering or when tire is not in contact with road surface. Did the wheels turn freely?	The ABS is normal. Erase the DTC. NOTE: When the wheels turn freely for a long time, such as when vehicle is towed or jacked-up, or when steering wheel is continuously turned all way, this trouble code may sometimes occur.
2	CHECK TIRE SPECIFICATIONS. Turn the ignition switch to OFF.	Are the tire specifications correct?	Go to step 3.
3	CHECK WEAR OF TIRE.	Is the tire worn excessively?	Replace the tire.
4	CHECK TIRE PRESSURE.	Is the tire pressure correct?	Go to step 5.
5	CHECK INSTALLATION OF ABS WHEEL SPEED SENSOR.	Are the ABS wheel speed sensor installation bolts tightend 33 N·m (3.4 kgf·m, 24.6 ft·lb)	Go to step 6.
6	CHECK ABS WHEEL SPEED SENSOR GAP. Measure the tone wheel to ABS wheel speed sensor piece gap over entire perimeter of the wheel.	Is the gap the following value? Front wheel: 0.3 — 0.8 mm (0.012 — 0.031 in) Rear wheel: 0.7 — 1.2 mm (0.028 — 0.047 in)	Go to step 7.
7	PREPARE OSCILLOSCOPE.	Is an oscilloscope available?	Go to step 8.
8	CHECK ABS WHEEL SPEED SENSOR SIGNAL. 1) Raise all four wheels off ground. 2) Turn the ignition switch to OFF. 3) Connect the oscilloscope to connector (B6), (B99) or (F94) in accordance with DTC. 4) Turn the ignition switch to ON. 5) Rotate the wheels and measure voltage at specified frequency. <Ref. to ABS-17, WAVEFORM, Control Module I/O Signal.> NOTE: When this inspection is completed, ABSCM&H/U sometimes stores the DTC 29. Connector & terminal Front RH (B6) No. 1 (+) — No. 2 (-): Front LH (B303) No. 6 (+) — No. 7 (-): Rear RH (B99) No. 6 (+) — No. 19 (-): Rear LH (B99) No. 17 (+) — No. 18 (-):	Is an oscilloscope pattern the same as shown in the figure?	Go to step 12.
9	CHECK CONTAMINATION OF ABS WHEEL SPEED SENSOR OR TONE WHEEL. Remove the disc rotor or drum from hub.	Is the ABS wheel speed sensor piece or tone wheel contaminated by dirt or other foreign matter?	Thoroughly remove dirt or other foreign matter.

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Step	Check	Yes	No
10 CHECK DAMAGE OF ABS WHEEL SPEED SENSOR OR TONE WHEEL.	Are there broken or damaged teeth in the ABS wheel speed sensor piece or tone wheel?	Replace the ABS wheel speed sensor or tone wheel. Front: <Ref. to ABS-14, Front ABS Wheel Speed Sensor.> Rear: <Ref. to ABS-17, Rear ABS Wheel Speed Sensor.> and Front: <Ref. to ABS-20, Front Tone Wheel.> Rear: <Ref. to ABS-21, Rear Tone Wheel.>	Go to step 11.
11 CHECK TONE WHEEL RUNOUT. Measure the tone wheel runout.	Is the runout less than 0.05 mm (0.0020 in)?	Go to step 12.	Replace the tone wheel. Front: <Ref. to ABS-20, Front Tone Wheel.> Rear: <Ref. to ABS-21, Rear Tone Wheel.>
12 CHECK ABSCM&H/U. 1) Turn the ignition switch to OFF. 2) Connect all connectors. 3) Erase the memory. 4) Perform the inspection mode. 5) Read out the DTC.	Is the same DTC as in the current diagnosis still being output?	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>	Go to step 13.
13 CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES (DTCs) APPEARANCE.	Are other DTCs being output?	Proceed with the diagnosis corresponding to DTC.	A temporary poor contact.

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

L: DTC 31

— FRONT RIGHT INLET VALVE MALFUNCTION —

NOTE:

For the diagnostic procedure, refer to DTC 37. <Ref. to ABS-103, DTC 37 — REAR LEFT INLET VALVE MALFUNCTION —, Diagnostics Procedure with Diagnostic Trouble Code (DTC).>

M: DTC 33

— FRONT LEFT INLET VALVE MALFUNCTION —

NOTE:

For the diagnostic procedure, refer to DTC 37. <Ref. to ABS-103, DTC 37 — REAR LEFT INLET VALVE MALFUNCTION —, Diagnostics Procedure with Diagnostic Trouble Code (DTC).>

N: DTC 35

— REAR RIGHT INLET VALVE MALFUNCTION —

NOTE:

For the diagnostic procedure, refer to DTC 37. <Ref. to ABS-103, DTC 37 — REAR LEFT INLET VALVE MALFUNCTION —, Diagnostics Procedure with Diagnostic Trouble Code (DTC).>

O: DTC 37
— REAR LEFT INLET VALVE MALFUNCTION —

DIAGNOSIS:

- Faulty harness connector
- Faulty inlet solenoid valve

TROUBLE SYMPTOM:

- ABS does not operate.
- EBD does not operate.

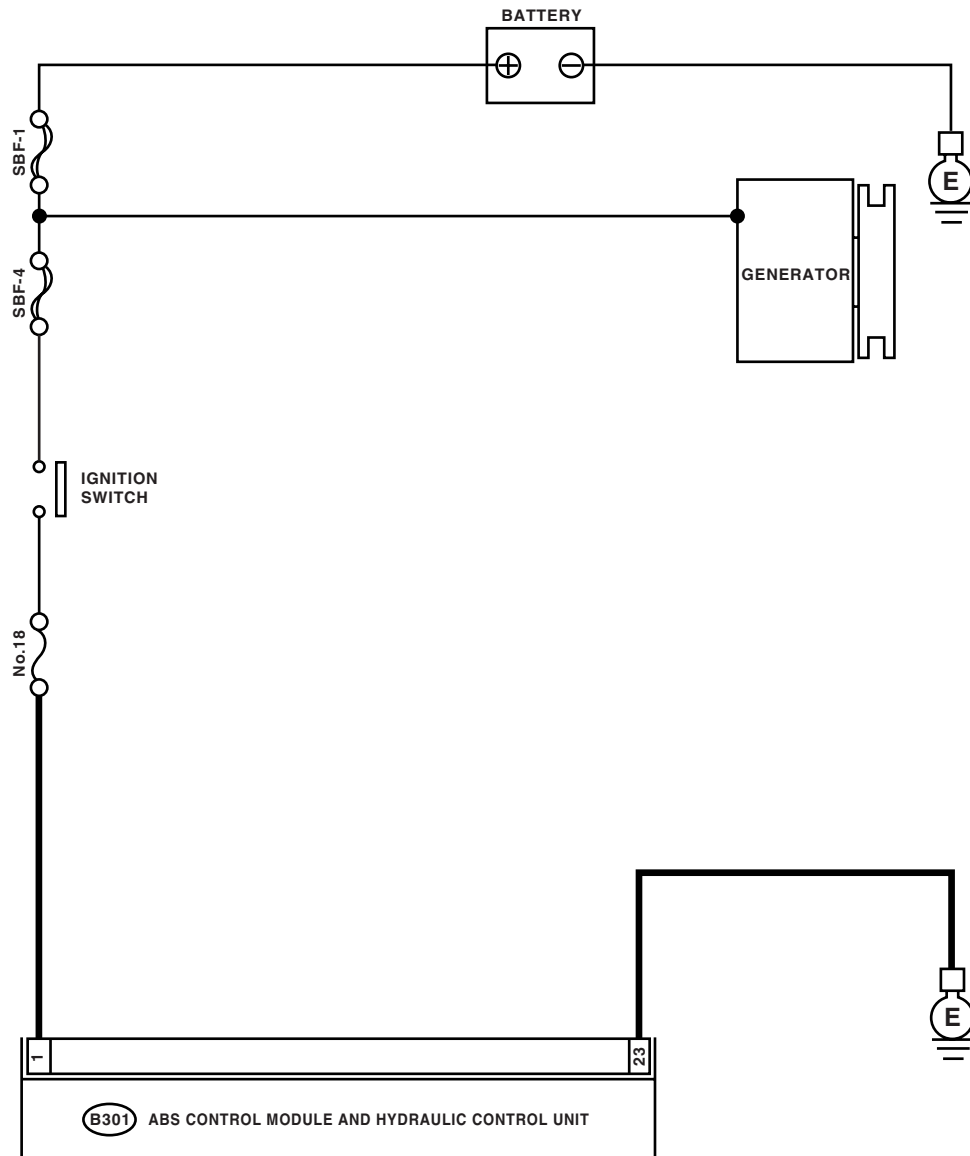
NOTE:

In addition to the ABS warning light, brake warning light illuminates.

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

WIRING DIAGRAM:



(B301)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
16	17	18	19	20	21	22	23	24	25	26				
27	28	29	30	31										

ABS00121

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK INPUT VOLTAGE OF ABSCM&H/U. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ABSCM&H/U. 3) Run the engine at idle. 4) Measure the voltage between ABSCM&H/U connector and chassis ground. Connector & terminal (B301) No. 1 (+) — Chassis ground (-):	Is the voltage 10 — 15 V?	Go to step 2.	Repair the harness connector between battery, ignition switch and ABSCM&H/U.
2 CHECK GROUND CIRCUIT OF ABSCM&H/U. 1) Turn the ignition switch to OFF. 2) Measure the resistance between ABSCM&H/U connector and chassis ground. Connector & terminal (B301) No. 23 — Chassis ground:	Is the resistance less than 0.5 Ω ?	Go to step 3.	Repair the ABSCM&H/U ground harness.
3 CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in connectors between generator, battery and ABSCM&H/U?	Repair the connector.	Go to step 4.
4 CHECK ABSCM&H/U. 1) Connect all connectors. 2) Erase the memory. 3) Perform the inspection mode. 4) Read out the DTC.	Is the same DTC as in the current diagnosis still being output?	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>	Go to step 5.
5 CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES (DTCs) APPEARANCE.	Are other DTCs being output?	Proceed with the diagnosis corresponding to DTC.	A temporary poor contact.

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

P: DTC 32

— FRONT RIGHT OUTLET VALVE MALFUNCTION —

NOTE:

For the diagnostic procedure, refer to DTC 38. <Ref. to ABS-107, DTC 38 — REAR LEFT OUTLET VALVE MALFUNCTION —, Diagnostics Procedure with Diagnostic Trouble Code (DTC).>

Q: DTC 34

— FRONT LEFT OUTLET VALVE MALFUNCTION —

NOTE:

For the diagnostic procedure, refer to DTC 38. <Ref. to ABS-107, DTC 38 — REAR LEFT OUTLET VALVE MALFUNCTION —, Diagnostics Procedure with Diagnostic Trouble Code (DTC).>

R: DTC 36

— REAR RIGHT OUTLET VALVE MALFUNCTION —

NOTE:

For the diagnostic procedure, refer to DTC 38. <Ref. to ABS-107, DTC 38 — REAR LEFT OUTLET VALVE MALFUNCTION —, Diagnostics Procedure with Diagnostic Trouble Code (DTC).>

S: DTC 38
— REAR LEFT OUTLET VALVE MALFUNCTION —

DIAGNOSIS:

- Faulty harness connector
- Faulty outlet solenoid valve

TROUBLE SYMPTOM:

- ABS does not operate.
- EBD does not operate.

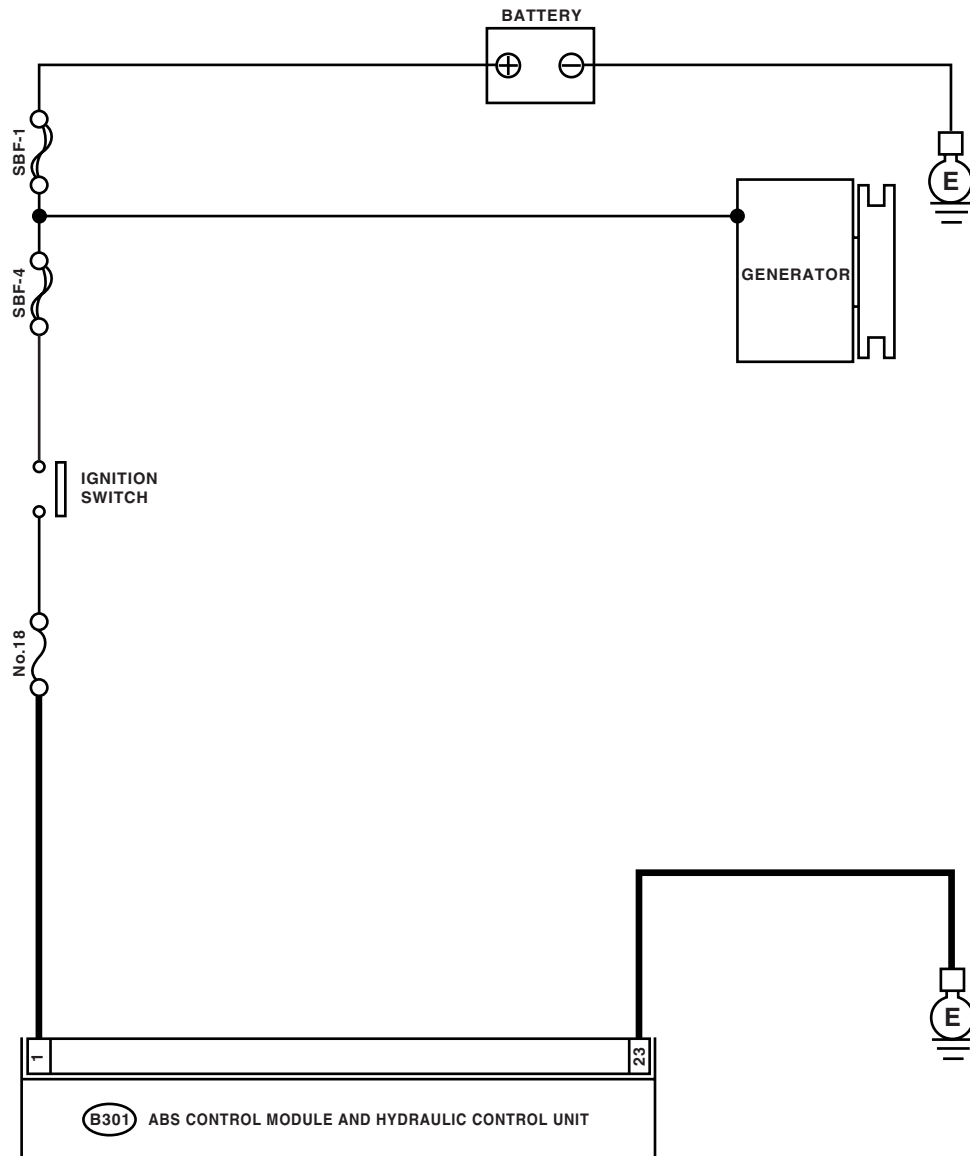
NOTE:

In addition to the ABS warning light, brake warning light illuminates.

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

WIRING DIAGRAM:



(B301)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
16	17	18	19	20	21	22	23	24	25	26				
27	28	29	30	31										

ABS00121

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK INPUT VOLTAGE OF ABSCM&H/U. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ABSCM&H/U. 3) Run the engine at idle. 4) Measure the voltage between ABSCM&H/U connector and chassis ground. Connector & terminal (B301) No. 1 (+) — Chassis ground (-):	Is the voltage 10 — 15 V?	Go to step 2.	Repair the harness connector between battery, ignition switch and ABSCM&H/U.
2 CHECK GROUND CIRCUIT OF ABSCM&H/U. 1) Turn the ignition switch to OFF. 2) Measure the resistance between ABSCM&H/U connector and chassis ground. Connector & terminal (B301) No. 23 — Chassis ground:	Is the resistance less than 0.5 Ω?	Go to step 3.	Repair the ABSCM&H/U ground harness.
3 CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in connectors between generator, battery and ABSCM&H/U?	Repair the connector.	Go to step 4.
4 CHECK ABSCM&H/U. 1) Connect all connectors. 2) Erase the memory. 3) Perform the inspection mode. 4) Read out the DTC.	Is the same DTC as in the current diagnosis still being output?	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>	Go to step 5.
5 CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES (DTCs) APPEARANCE.	Are other DTCs being output?	Proceed with the diagnosis corresponding to DTC.	A temporary poor contact.

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

T: DTC 41

— ABS CONTROL MODULE MALFUNCTION —

DIAGNOSIS:

Faulty ABSCM&H/U

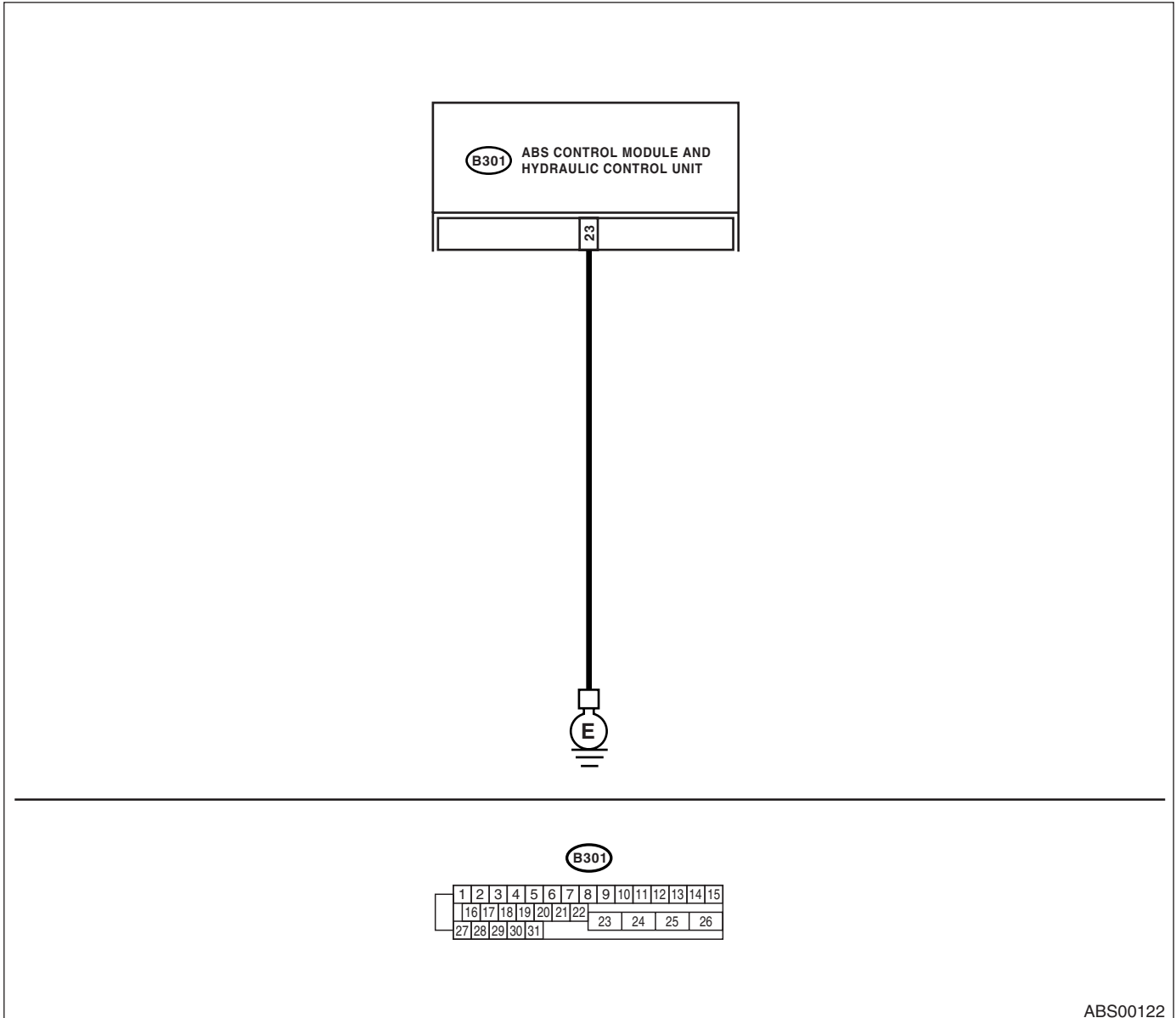
TROUBLE SYMPTOM:

- ABS does not operate.
- EBD does not operate.

NOTE:

In addition to the ABS warning light, brake warning light illuminates.

WIRING DIAGRAM:



ABS00122

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK GROUND CIRCUIT OF ABSCM&H/U. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ABSCM&H/U. 3) Measure the resistance between ABSCM&H/U and chassis ground. <i>Connector & terminal</i> <i>(B301) No. 23 — Chassis ground:</i>	Is the resistance less than 0.5 Ω ?	Go to step 2.	Repair the ABSCM&H/U ground harness.
2 CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in connectors among battery, ignition switch and ABSCM&H/U?	Repair the connector.	Go to step 3.
3 CHECK SOURCES OF SIGNAL NOISE.	Is the car telephone or wireless transmitter properly installed?	Go to step 4.	Properly install the car telephone or wireless transmitter.
4 CHECK SOURCES OF SIGNAL NOISE.	Are noise sources (such as an antenna) installed near the sensor harness?	Install the noise sources apart from sensor harness.	Go to step 5.
5 CHECK ABSCM&H/U. 1) Turn the ignition switch to OFF. 2) Connect all connectors. 3) Erase the memory. 4) Perform the inspection mode. 5) Read out the DTC.	Is the same DTC as in current diagnosis still being output?	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>	Go to step 6.
6 CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES (DTCs) APPEARANCE.	Are other DTCs being output?	Proceed with the diagnosis corresponding to DTC.	A temporary poor contact.

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

U: DTC 42

— POWER SUPPLY VOLTAGE TOO LOW —

DIAGNOSIS:

Power source voltage of the ABSCM&H/U is low.

TROUBLE SYMPTOM:

- ABS does not operate.
- EBD does not operate.

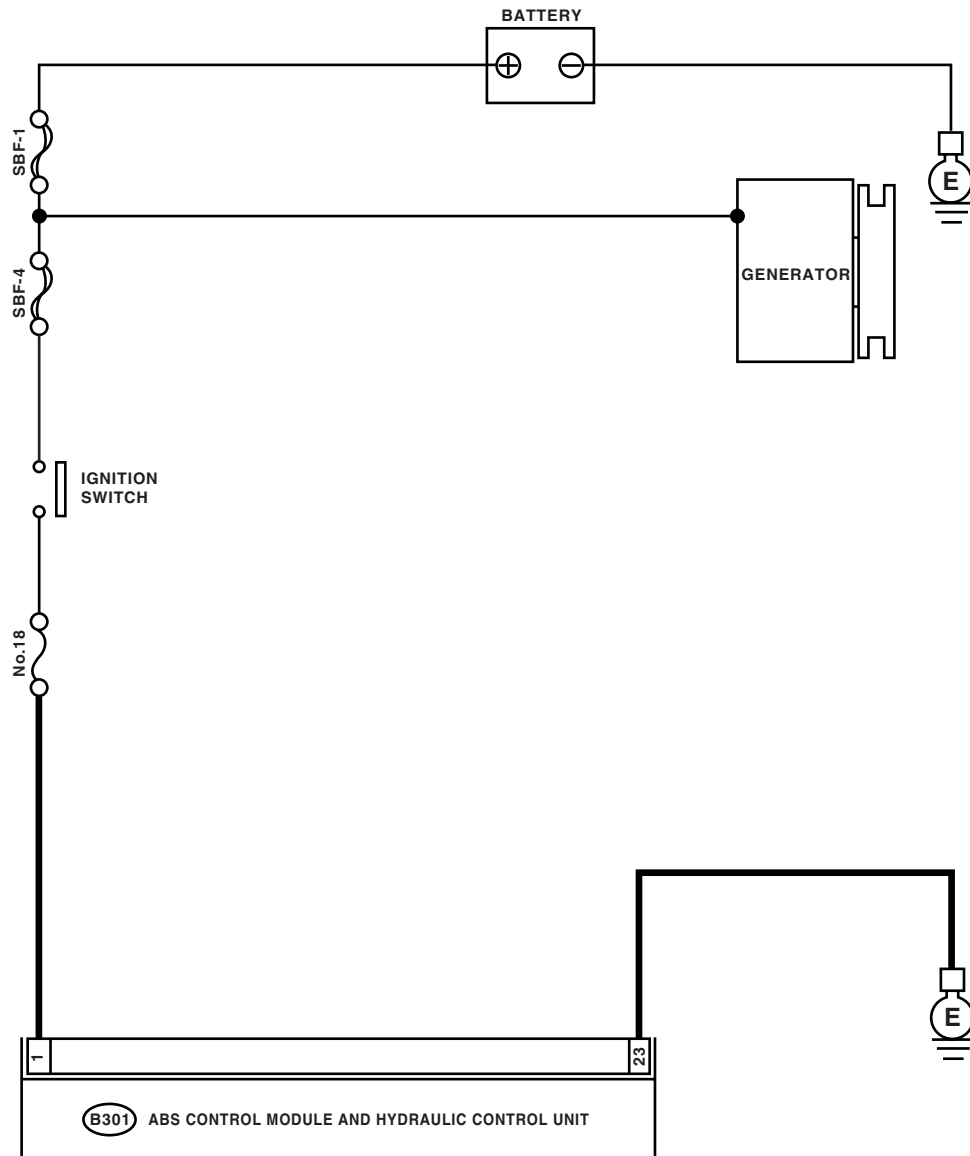
NOTE:

In addition to the ABS warning light, brake warning light illuminates temporarily. Both warning lights go off on the recovery of voltage.

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

WIRING DIAGRAM:



(B301)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
16	17	18	19	20	21	22	23	24	25	26				
27	28	29	30	31										

ABS00121

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK GENERATOR. 1) Start the engine. 2) Idle after warm-up. 3) Measure the voltage between generator B terminal and chassis ground. Terminal Generator B terminal (+) — Chassis ground (-):	Is the voltage 10 — 15 V?	Go to step 2.	Repair the generator. <Ref. to SC(H4SO)-15, Generator.>
2 CHECK BATTERY TERMINAL. Turn the ignition switch to OFF.	Are the positive and negative battery terminals tightly clamped?	Go to step 3.	Tighten the clamp of terminal.
3 CHECK INPUT VOLTAGE OF ABSCM&H/U. 1) Disconnect the connector from ABSCM&H/U. 2) Run the engine at idle. 3) Operate the electric load applying devices, such as the headlight, A/C, and defogger. 4) Measure the voltage between ABSCM&H/U connector and chassis ground. Connector & terminal (B301) No. 1 (+) — Chassis ground (-):	Is the voltage 10 — 15 V?	Go to step 4.	Repair the harness connector between battery, ignition switch and ABSCM&H/U.
4 CHECK GROUND CIRCUIT OF ABSCM&H/U. 1) Turn the ignition switch to OFF. 2) Measure the resistance between ABSCM&H/U connector and chassis ground. Connector & terminal (B301) No. 23 — Chassis ground:	Is the resistance less than 0.5 Ω ?	Go to step 5.	Repair the ABSCM&H/U ground harness.
5 CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in connectors between generator, battery and ABSCM&H/U?	Repair the connector.	Go to step 6.
6 CHECK ABSCM&H/U. 1) Connect all connectors. 2) Erase the memory. 3) Perform the inspection mode. 4) Read out the DTC.	Is the same DTC as in the current diagnosis still being output?	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>	Go to step 7.
7 CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES (DTCs) APPEARANCE.	Are other DTCs being output?	Proceed with the diagnosis corresponding to DTC.	A temporary poor contact.

V: DTC 42

— POWER SUPPLY VOLTAGE TOO HIGH —

DIAGNOSIS:

Power source voltage of the ABSCM&H/U is high.

TROUBLE SYMPTOM:

- ABS does not operate.
- EBD does not operate.

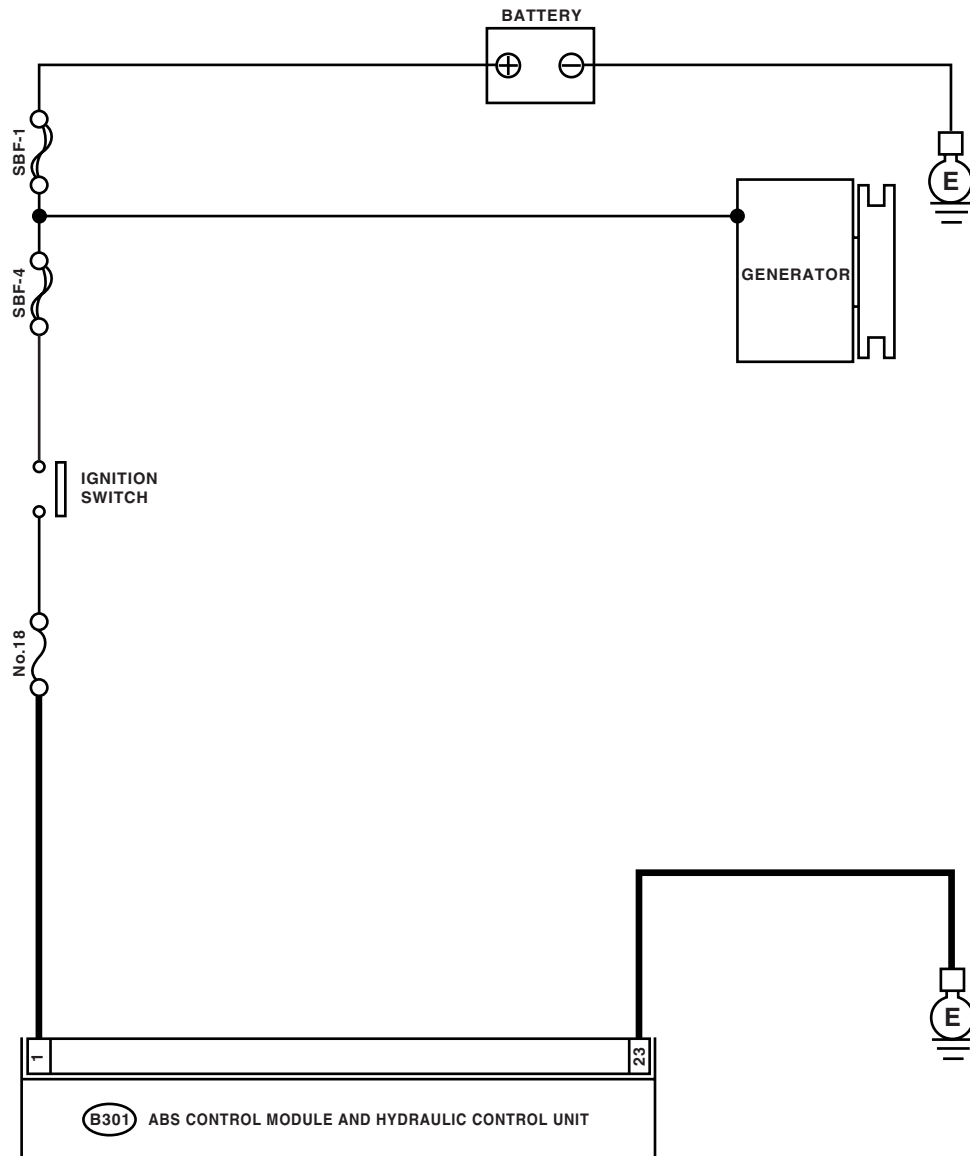
NOTE:

In addition to the ABS warning light, brake warning light illuminates temporarily. Both warning lights go off on the recovery of voltage.

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

WIRING DIAGRAM:



(B301)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
16	17	18	19	20	21	22	23	24	25	26				
27	28	29	30	31										

ABS00121

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK GENERATOR. 1) Start the engine. 2) Idle after warm-up. 3) Measure the voltage between generator B terminal and chassis ground. <i>Terminal</i> <i>Generator B terminal (+) — Chassis ground (-):</i>	Is the voltage 10 — 17 V?	Go to step 2.	Repair the generator. <Ref. to SC(H4SO)-15, Generator.>
2 CHECK BATTERY TERMINAL. Turn the ignition switch to OFF.	Are the positive and negative battery terminals tightly clamped?	Go to step 3.	Tighten the clamp of terminal.
3 CHECK INPUT VOLTAGE OF ABSCM&H/U. 1) Disconnect the connector from ABSCM&H/U. 2) Run the engine at idle. 3) Operate the electric load applying devices, such as the headlight, A/C, and defogger. 4) Measure the voltage between ABSCM&H/U connector and chassis ground. <i>Connector & terminal</i> <i>(B301) No. 1 (+) — Chassis ground (-):</i>	Is the voltage 10 — 17 V?	Go to step 4.	Repair the harness connector between battery, ignition switch and ABSCM&H/U.
4 CHECK GROUND CIRCUIT OF ABSCM&H/U. 1) Turn the ignition switch to OFF. 2) Measure the resistance between ABSCM&H/U connector and chassis ground. <i>Connector & terminal</i> <i>(B301) No. 23 — Chassis ground:</i>	Is the resistance less than 0.5 Ω ?	Go to step 5.	Repair the ABSCM&H/U ground harness.
5 CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in connectors between generator, battery and ABSCM&H/U?	Repair the connector.	Go to step 6.
6 CHECK ABSCM&H/U. 1) Connect all connectors. 2) Erase the memory. 3) Perform the inspection mode. 4) Read out the DTC.	Is the same DTC as in the current diagnosis still being output?	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>	Go to step 7.
7 CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES (DTCs) APPEARANCE.	Are other DTCs being output?	Proceed with the diagnosis corresponding to DTC.	A temporary poor contact.

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

W: DTC 44

— ABS-AT CONTROL (NON CONTROLLED) —

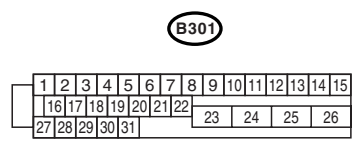
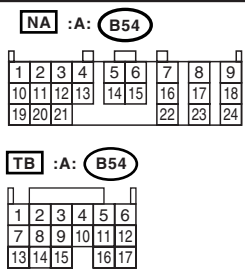
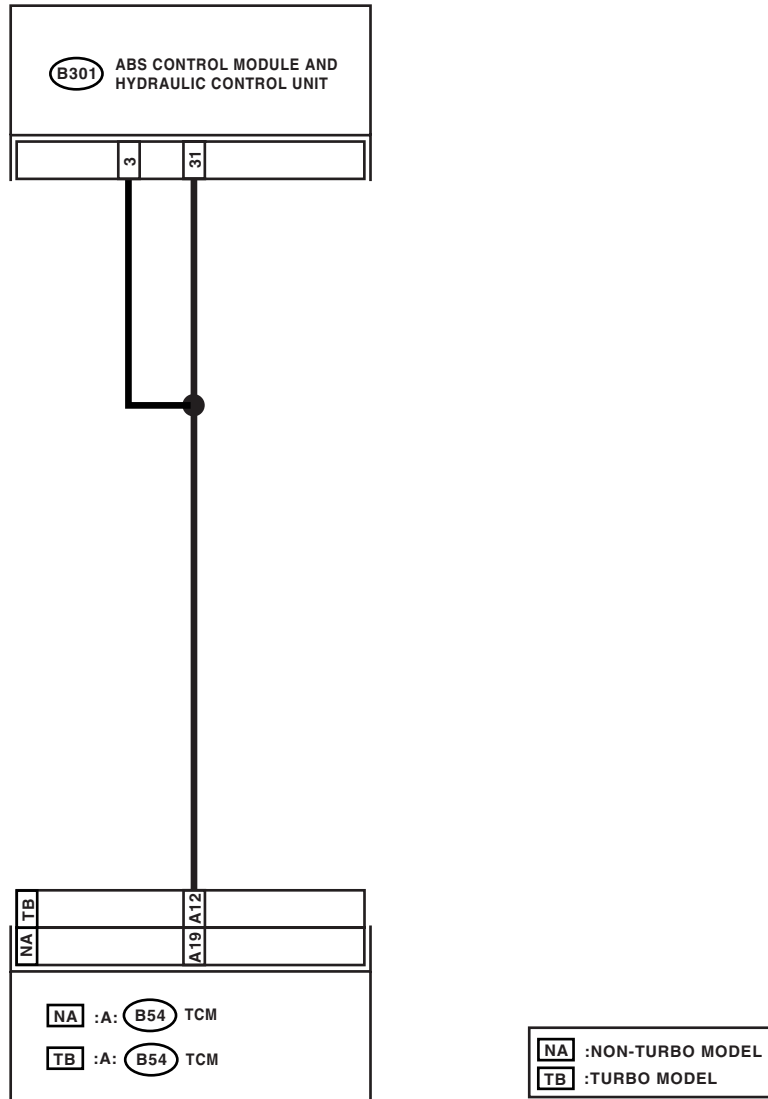
DIAGNOSIS:

Combination of AT control faults

TROUBLE SYMPTOM:

ABS does not operate.

WIRING DIAGRAM:



ABS00396

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK SPECIFICATIONS OF THE AB-SCM&H/U. Check specifications of the mark on the ABSCM&H/U. <i>CO: AT</i> <i>CP: MT</i>	Does the vehicle specification and ABSCM&H/U specification match?	Go to step 2.	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>
2 CHECK GROUND SHORT OF HARNESS. 1) Turn the ignition switch to OFF. 2) Disconnect the two connectors from TCM. 3) Disconnect the connector from ABSCM&H/U. 4) Measure the resistance between ABSCM&H/U connector and chassis ground. <i>Connector & terminal</i> <i>(B301) No. 3 — Chassis ground:</i>	Is the resistance more than 1 MΩ?	Go to step 3.	Repair the harness between TCM and ABSCM&H/U.
3 CHECK TCM. 1) Connect all connectors to TCM. 2) Turn the ignition switch to ON. 3) Measure the voltage between TCM connector terminal and chassis ground. <i>Connector & terminal</i> <i>Non-turbo Model:</i> <i>(B54) No. 19 (+) — Chassis ground (-):</i> <i>Turbo Model:</i> <i>(B54) No. 12 (+) — Chassis ground (-):</i>	Is the voltage 10 — 15 V?	Go to step 5.	Go to step 4.
4 CHECK AT.	Is the AT functioning normally?	Replace the TCM.	Repair the AT.
5 CHECK OPEN CIRCUIT OF HARNESS. Measure the voltage between ABSCM&H/U connector and chassis ground. <i>Connector & terminal</i> <i>(B301) No. 3 (+) — Chassis ground (-):</i> <i>(B301) No. 31 (+) — Chassis ground (-):</i>	Is the voltage more than 10 V?	Go to step 6.	Repair the harness/connector between TCM and ABSCM&H/U.
6 CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in connectors between TCM and ABSCM&H/U?	Repair the connector.	Go to step 7.
7 CHECK ABSCM&H/U. 1) Connect all connectors. 2) Erase the memory. 3) Perform the inspection mode. 4) Read out the DTC.	Is the same DTC as in the current diagnosis still being output?	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>	Go to step 8.
8 CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES (DTCs) APPEARANCE.	Are other DTCs being output?	Proceed with the diagnosis corresponding to DTC.	A temporary poor contact.

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

X: DTC 44

— ABS-AT CONTROL (CONTROLLED) —

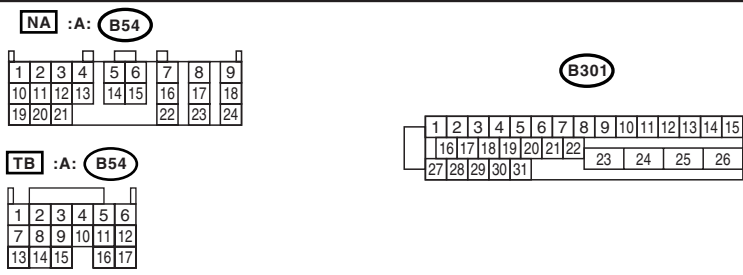
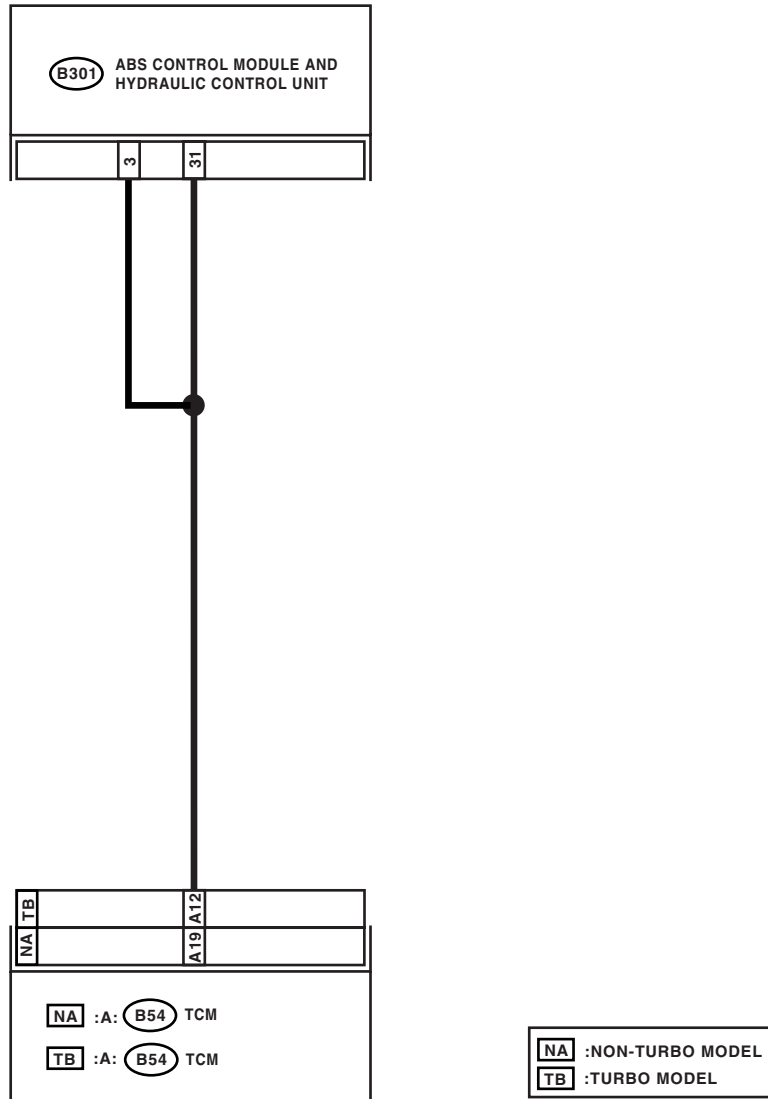
DIAGNOSIS:

Combination of AT control faults

TROUBLE SYMPTOM:

ABS does not operate.

WIRING DIAGRAM:



ABS00396

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK BATTERY SHORT OF HARNESS. 1) Turn the ignition switch to OFF. 2) Disconnect all connectors from TCM. 3) Disconnect the connector from ABSCM&H/U. 4) Measure the voltage between ABSCM&H/U connector and chassis ground. <i>Connector & terminal</i> <i>(B301) No. 3 (+) — Chassis ground (-):</i>	Is the voltage less than 1 V?	Go to step 2.	Repair the harness between TCM and ABSCM&H/U.
2 CHECK BATTERY SHORT OF HARNESS. 1) Turn the ignition switch to ON. 2) Measure the voltage between ABSCM&H/U connector and chassis ground. <i>Connector & terminal</i> <i>(B301) No. 3 (+) — Chassis ground (-):</i>	Is the voltage less than 1 V?	Go to step 3.	Repair the harness between TCM and ABSCM&H/U.
3 CHECK OPEN CIRCUIT OF HARNESS. 1) Turn the ignition switch to OFF. 2) Connect all connectors to TCM. 3) Turn the ignition switch to ON. 4) Measure the voltage between ABSCM&H/U connector and chassis ground. <i>Connector & terminal</i> <i>(B301) No. 3 (+) — Chassis ground (-):</i> <i>(B301) No. 31 (+) — Chassis ground (-):</i>	Is the voltage 10 — 13 V?	Go to step 4.	Repair the harness/connector between TCM and ABSCM&H/U.
4 CHECK POOR CONTACT IN CONNECTORS. Turn the ignition switch to OFF.	Is there poor contact in connectors between TCM and ABSCM&H/U?	Repair the connector.	Go to step 5.
5 CHECK ABSCM&H/U. 1) Connect all connectors. 2) Erase the memory. 3) Perform the inspection mode. 4) Read out the DTC.	Is the same DTC as in current diagnosis still being output?	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>	Go to step 6.
6 CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES (DTCs) APPEARANCE.	Are other DTCs being output?	Proceed with the diagnosis corresponding to DTC.	A temporary poor contact.

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Y: DTC 51

— VALVE RELAY MALFUNCTION —

DIAGNOSIS:

Faulty valve relay

TROUBLE SYMPTOM:

- ABS does not operate.
- EBD does not operate.

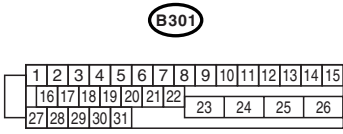
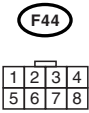
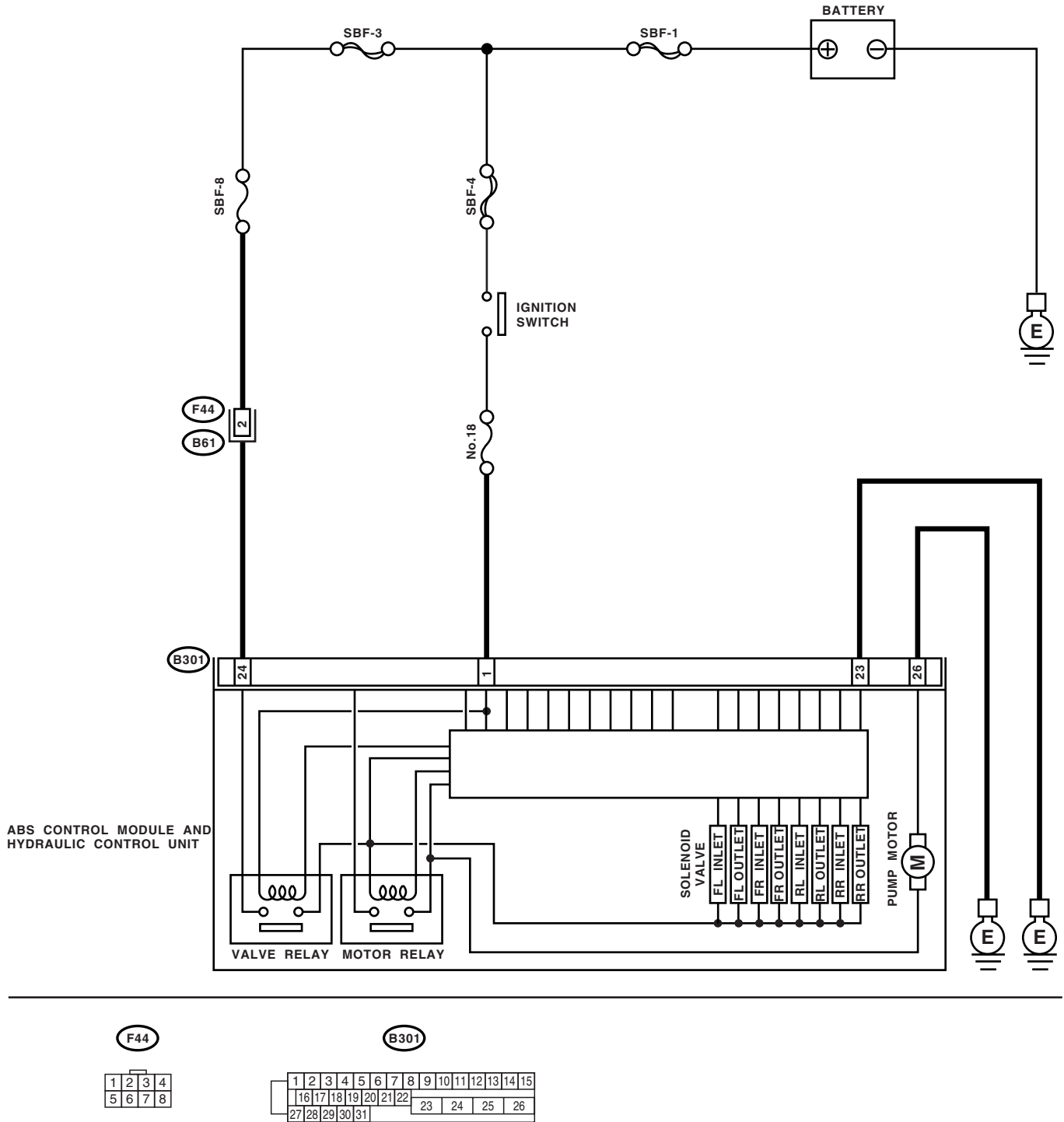
NOTE:

In addition to the ABS warning light, brake warning light illuminates.

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

WIRING DIAGRAM:



ABS00124

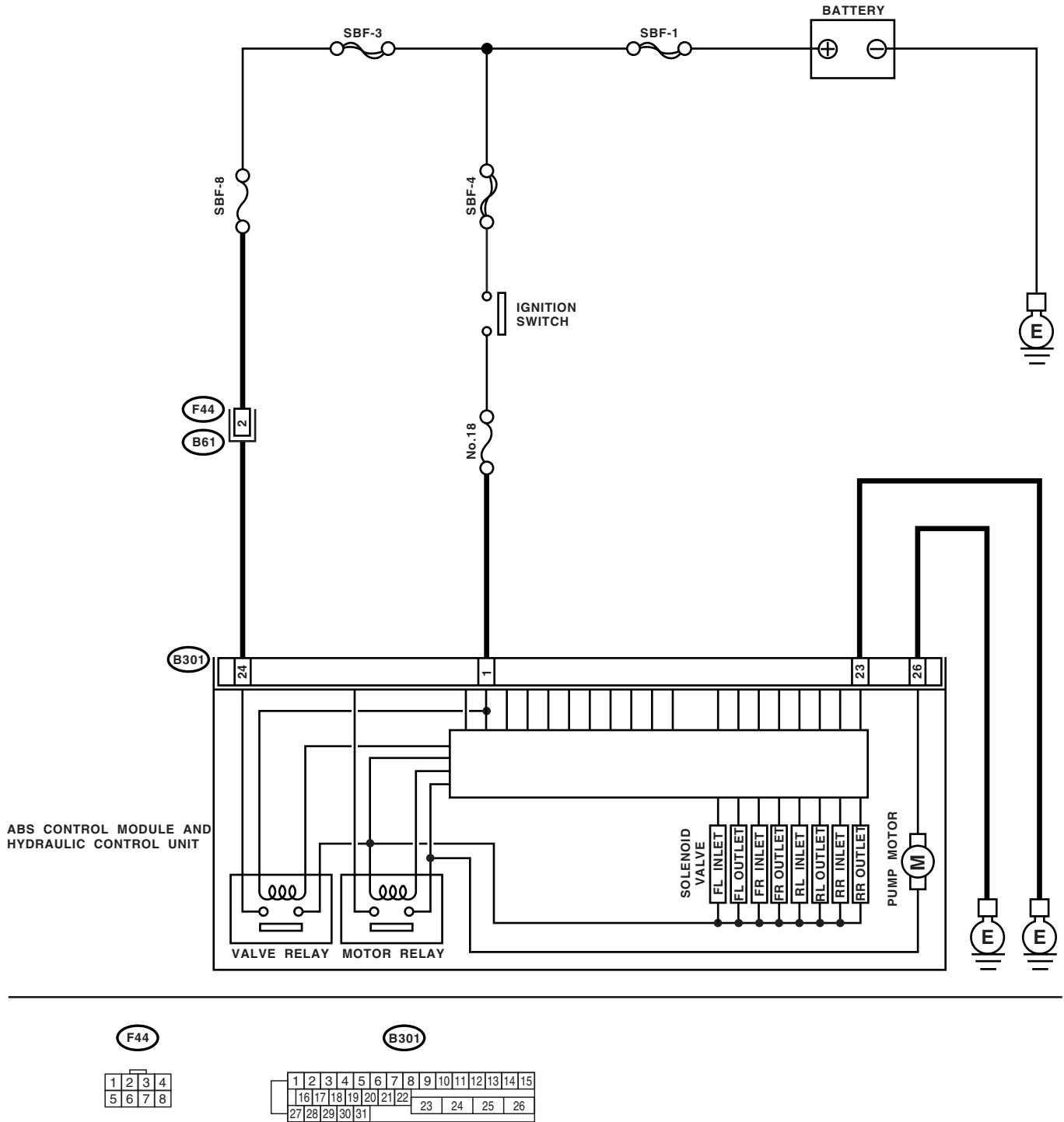
DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK INPUT VOLTAGE OF ABSCM&H/U. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ABSCM&H/U. 3) Run the engine at idle. 4) Measure the voltage between ABSCM&H/U connector and chassis ground. Connector & terminal (B301) No. 1 (+) — Chassis ground (-): (B301) No. 24 (+) — Chassis ground (-):	Is the voltage 10 — 15 V?	Go to step 2.	Repair the harness connector between battery and ABSCM&H/U.
2 CHECK GROUND CIRCUIT OF ABSCM&H/U. 1) Turn the ignition switch to OFF. 2) Measure the resistance between ABSCM&H/U connector and chassis ground. Connector & terminal (B301) No. 23 — Chassis ground:	Is the resistance less than 0.5 Ω?	Go to step 3.	Repair the ABSCM&H/U ground harness.
3 CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in connectors between generator, battery and ABSCM&H/U?	Repair the connector.	Go to step 4.
4 CHECK ABSCM&H/U. 1) Connect all connectors. 2) Erase the memory. 3) Perform the inspection mode. 4) Read out the DTC.	Is the same DTC as in current diagnosis still being output?	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>	Go to step 5.
5 CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES (DTCs) APPEARANCE.	Are other DTCs being output?	Proceed with the diagnosis corresponding to DTC.	A temporary poor contact.

Z: DTC 51
— VALVE RELAY ON FAILURE —

DIAGNOSIS:
 Faulty valve relay
TRouble SYMPTOM:
 ABS does not operate.
WIRING DIAGRAM:



ABS00124

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

	Step	Check	Yes	No
1	CHECK VALVE RELAY IN ABSCM&H/U. 1) Disconnect the connector from ABSCM&H/U. 2) Measure the resistance between ABSCM&H/U terminals. <i>Terminals</i> <i>(B301) No. 23 — (B301) No. 24:</i>	Is the resistance more than 1 MΩ?	Go to step 2.	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>
2	CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in connectors between generator, battery and ABSCM&H/U?	Repair the connector.	Go to step 3.
3	CHECK ABSCM&H/U. 1) Connect all connectors. 2) Erase the memory. 3) Perform the inspection mode. 4) Read out the DTC.	Is the same DTC as in current diagnosis still being output?	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>	Go to step 4.
4	CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES (DTCs) APPEARANCE.	Are other DTCs being output?	Proceed with the diagnosis corresponding to DTC.	A temporary poor contact.

AA:DTC 52
— OPEN CIRCUIT IN MOTOR RELAY CIRCUIT —

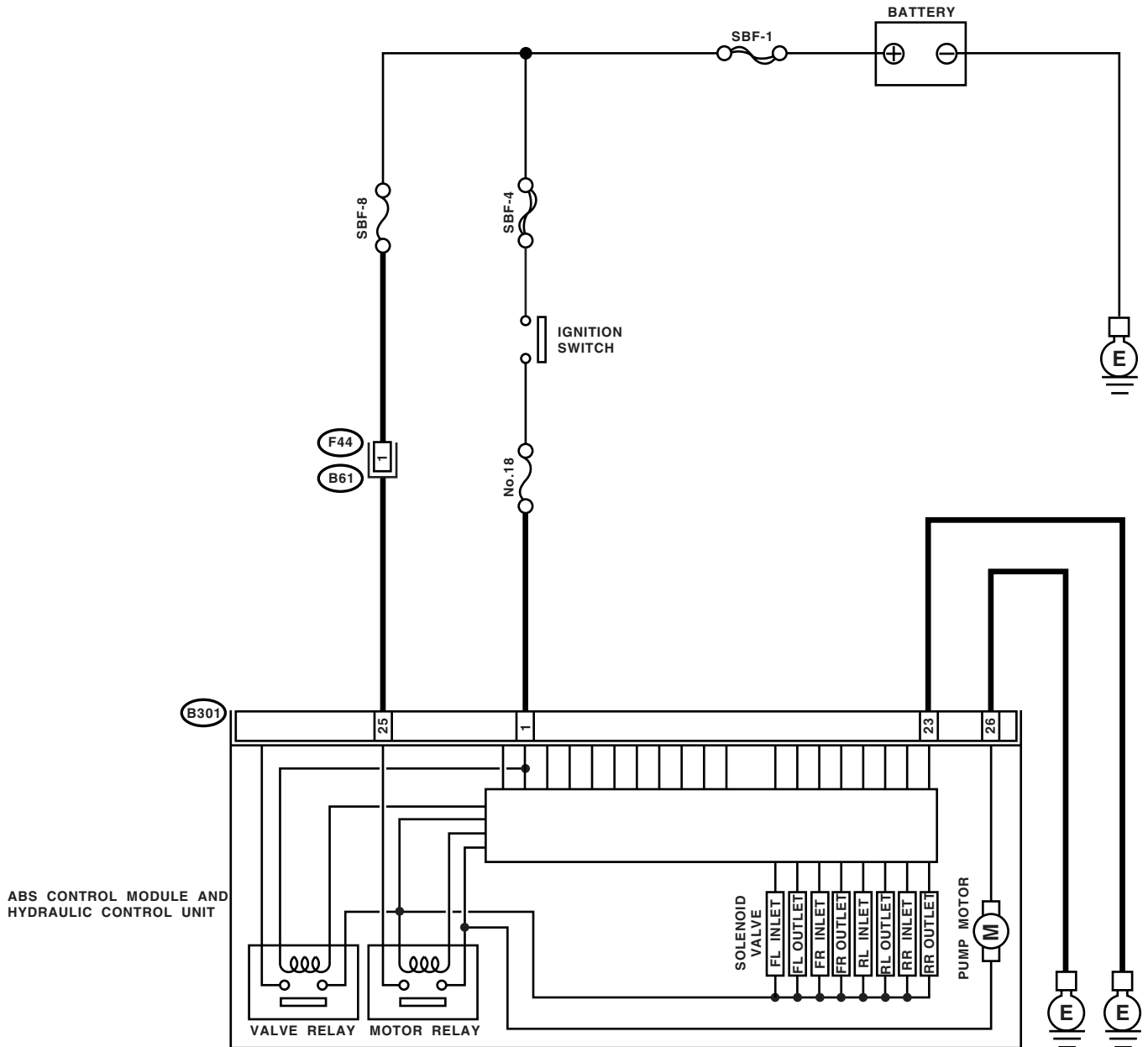
DIAGNOSIS:

- Faulty motor
- Faulty motor relay
- Faulty harness connector

TROUBLE SYMPTOM:

ABS does not operate.

WIRING DIAGRAM:



F44

1	2	3	4
5	6	7	8

B301

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
16	17	18	19	20	21	22								
27	28	29	30	31				23	24	25	26			

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK INPUT VOLTAGE OF ABSCM&H/U. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ABSCM&H/U. 3) Turn the ignition switch to ON. 4) Measure the voltage between ABSCM&H/U connector and chassis ground. Connector & terminal (B301) No. 25 (+) — Chassis ground (-):	Is the voltage 10 — 13 V?	Go to step 2.	Repair the harness/connector between battery and ABSCM&H/U and check fuse SBF8.
2 CHECK GROUND CIRCUIT OF MOTOR. 1) Turn the ignition switch to OFF. 2) Measure the resistance between ABSCM&H/U connector and chassis ground. Connector & terminal (B301) No. 26 — Chassis ground:	Is the resistance less than 0.5 Ω ?	Go to step 3.	Repair the ABSCM&H/U ground harness.
3 CHECK MOTOR OPERATION. Operate the sequence control. <Ref. to ABS-10, ABS Sequence Control.> NOTE: Use the diagnosis connector to operate sequence control.	Can motor revolution noise (buzz) be heard when carrying out the check sequence?	Go to step 4.	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>
4 CHECK POOR CONTACT IN CONNECTORS. Turn the ignition switch to OFF.	Is there poor contact in connector between generator, battery and ABSCM&H/U?	Repair the connector.	Go to step 5.
5 CHECK ABSCM&H/U. 1) Connect all connectors. 2) Erase the memory. 3) Perform the inspection mode. 4) Read out the DTC.	Is the same DTC as in current diagnosis still being output?	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>	Go to step 6.
6 CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES (DTCs) APPEARANCE.	Are other DTCs being output?	Proceed with the diagnosis corresponding to DTC.	A temporary poor contact. NOTE: Although the ABS warning light remains illuminating at this point, this is a normal condition. Vehicle must be driven at approx. 12 km/h (7.46 MPH) or faster to turn off ABS warning light. Make sure that the ABS warning light goes off after driving vehicle.

AB:DTC 52
— MOTOR RELAY ON FAILURE —

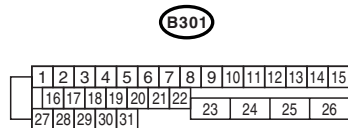
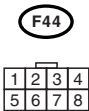
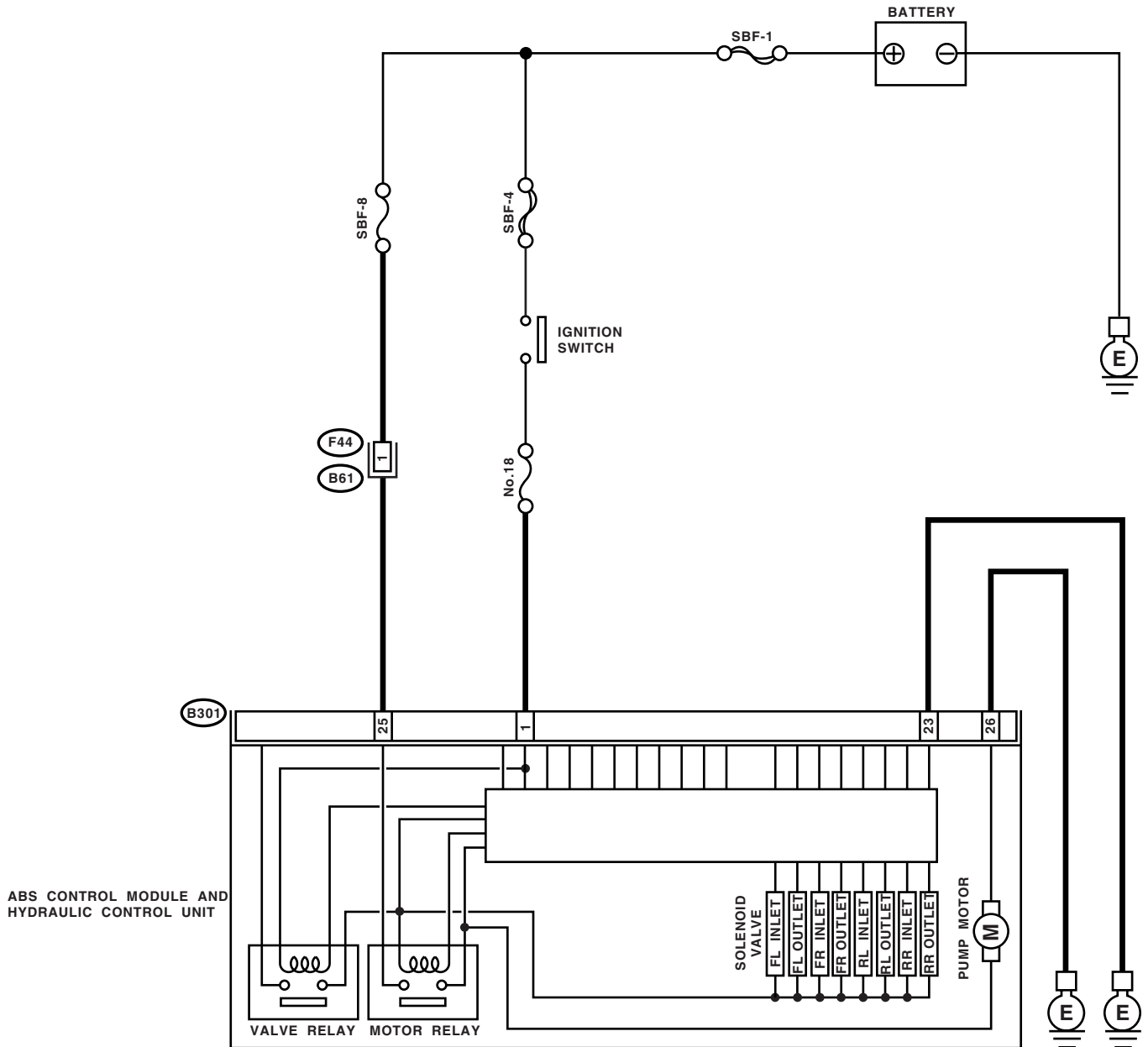
DIAGNOSIS:

- Faulty motor
- Faulty motor relay
- Faulty harness connector

TROUBLE SYMPTOM:

ABS does not operate.

WIRING DIAGRAM:



DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK MOTOR RELAY IN ABSCM&H/U. 1) Disconnect the connector from ABSCM&H/U. 2) Measure the resistance between ABSCM&H/U terminals. Terminals (B301) No. 25 — (B301) No. 26:	Is the resistance more than 1 MΩ?	Go to step 2.	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>
2 CHECK MOTOR OPERATION. Operate the sequence control. <Ref. to ABS-10, ABS Sequence Control.> NOTE: Use the diagnosis connector to operate sequence control.	Can motor revolution noise (buzz) be heard when carrying out the sequence control?	Go to step 3.	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>
3 CHECK POOR CONTACT IN CONNECTORS. Turn the ignition switch to OFF.	Is there poor contact in connector between generator, battery and ABSCM&H/U?	Repair the connector.	Go to step 4.
4 CHECK ABSCM&H/U. 1) Connect all connectors. 2) Erase the memory. 3) Perform the inspection mode. 4) Read out the DTC.	Is the same DTC as in current diagnosis still being output?	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>	Go to step 5.
5 CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES (DTCs) APPEARANCE.	Are other DTCs being output?	Proceed with the diagnosis corresponding to DTC.	A temporary poor contact. NOTE: Although the ABS warning light remains illuminating at this point, this is a normal condition. Vehicle must be driven at approx. 12 km/h (7.46 MPH) or faster to turn off ABS warning light. Make sure that the ABS warning light goes off after driving vehicle.

AC:DTC 52
— MOTOR MALFUNCTION —

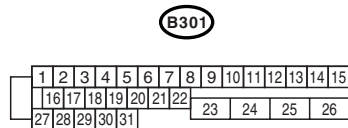
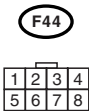
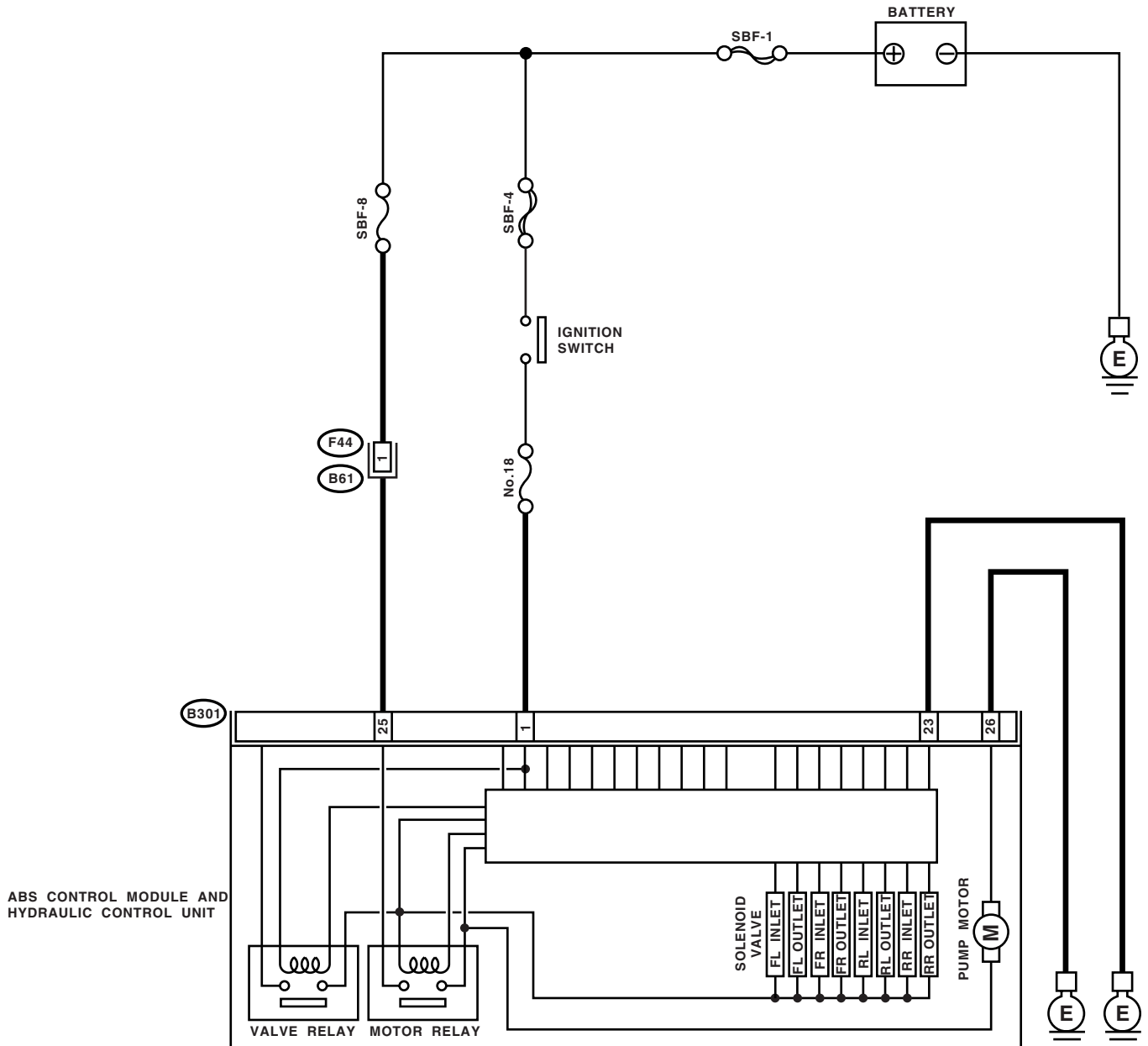
DIAGNOSIS:

- Faulty motor
- Faulty motor relay
- Faulty harness connector

TROUBLE SYMPTOM:

ABS does not operate.

WIRING DIAGRAM:



DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK INPUT VOLTAGE OF ABSCM&H/U. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ABSCM&H/U. 3) Turn the ignition switch to ON. 4) Measure the voltage between ABSCM&H/U connector and chassis ground. Connector & terminal (B301) No. 25 (+) — Chassis ground (-):	Is the voltage 10 — 13 V?	Go to step 2.	Repair the harness/connector between battery and ABSCM&H/U and check fuse SBF8.
2 CHECK GROUND CIRCUIT OF MOTOR. 1) Turn the ignition switch to OFF. 2) Measure the resistance between ABSCM&H/U connector and chassis ground. Connector & terminal (B301) No. 26 — Chassis ground:	Is the resistance less than 0.5 Ω ?	Go to step 3.	Repair the ABSCM&H/U ground harness.
3 CHECK INPUT VOLTAGE OF ABSCM&H/U. 1) Run the engine at idle. 2) Measure the voltage between ABSCM&H/U connector and chassis ground. Connector & terminal (B301) No. 1 (+) — Chassis ground (-):	Is the voltage 10 — 15 V?	Go to step 4.	Repair the harness connector between battery, ignition switch and ABSCM&H/U.
4 CHECK GROUND CIRCUIT OF ABSCM&H/U. 1) Turn the ignition switch to OFF. 2) Measure the resistance between ABSCM&H/U connector and chassis ground. Connector & terminal (B301) No. 23 — Chassis ground:	Is the resistance less than 0.5 Ω ?	Go to step 5.	Repair the ABSCM&H/U ground harness.
5 CHECK MOTOR OPERATION. Operate the sequence control. <Ref. to ABS-10, ABS Sequence Control.> NOTE: Use the diagnosis connector to operate sequence control.	Can motor revolution noise (buzz) be heard when carrying out the sequence control?	Go to step 6.	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>
6 CHECK POOR CONTACT IN CONNECTORS. Turn the ignition switch to OFF.	Is there poor contact in connector between generator, battery and ABSCM&H/U?	Repair the connector.	Go to step 7.
7 CHECK ABSCM&H/U. 1) Connect all connectors. 2) Erase the memory. 3) Perform the inspection mode. 4) Read out the DTC.	Is the same DTC as in current diagnosis still being output?	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>	Go to step 8.

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)
 ABS (DIAGNOSTICS)

Step	Check	Yes	No
8 CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES (DTCs) APPEARANCE.	Are other DTCs being output?	Proceed with the diagnosis corresponding to DTC.	A temporary poor contact. NOTE: Although the ABS warning light remains illuminating at this point, this is a normal condition. Vehicle must be driven at approx. 12 km/h (7.46 MPH) or faster to turn off ABS warning light. Make sure that the ABS warning light goes off after driving vehicle.

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

AD:DTC 54

— STOP LIGHT SWITCH SIGNAL CIRCUIT MALFUNCTION —

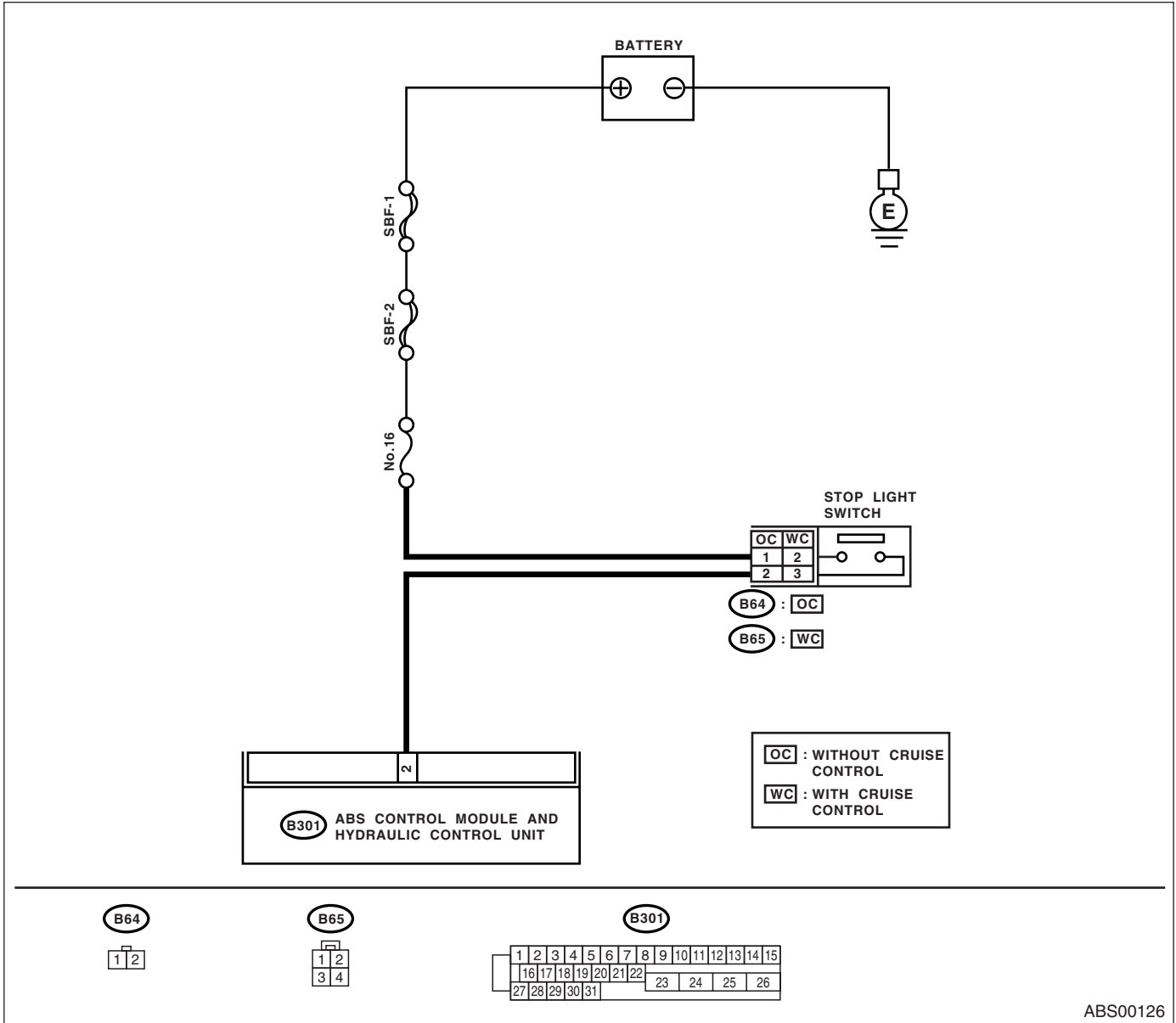
DIAGNOSIS:

Faulty stop light switch

TROUBLE SYMPTOM:

ABS does not operate.

WIRING DIAGRAM:



ABS00126

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK OUTPUT OF STOP LIGHT SWITCH USING SUBARU SELECT MONITOR. 1) Select "Current data display & Save" on the SUBARU select monitor. 2) Release the brake pedal. 3) Read the stop light switch output in select monitor data display.	Is the reading indicated on monitor display less than 1.5 V?	Go to step 2.	Go to step 3.
2 CHECK OUTPUT OF STOP LIGHT SWITCH USING SELECT MONITOR. 1) Depress the brake pedal. 2) Read the stop light switch output in SUBARU select monitor data display.	Is the reading indicated on monitor display 10 — 15 V?	Go to step 5.	Go to step 3.
3 CHECK IF STOP LIGHTS COME ON. Depress the brake pedal.	Do the stop lights turn on?	Go to step 4.	Repair the stop lights circuit.
4 CHECK OPEN CIRCUIT IN HARNESS. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ABSCM&H/U. 3) Depress the brake pedal. 4) Measure the voltage between ABSCM&H/U connector and chassis ground. Connector & terminal (B301) No. 2 (+) — Chassis ground (-):	Is the voltage 10 — 15 V?	Go to step 5.	Repair the harness between stop light switch and ABSCM&H/U connector.
5 CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in connector between stop light switch and ABSCM&H/U?	Repair the connector.	Go to step 6.
6 CHECK ABSCM&H/U. 1) Connect all connectors. 2) Erase the memory. 3) Perform the inspection mode. 4) Read out the DTC.	Is the same DTC as in current diagnosis still being output?	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>	Go to step 7.
7 CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES (DTCs) APPEARANCE.	Are other DTCs being output?	Proceed with the diagnosis corresponding to DTC.	A temporary poor contact.

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

AE:DTC 56

— OPEN OR SHORT CIRCUIT IN G SENSOR CIRCUIT —

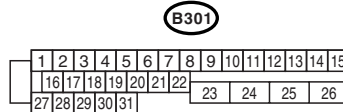
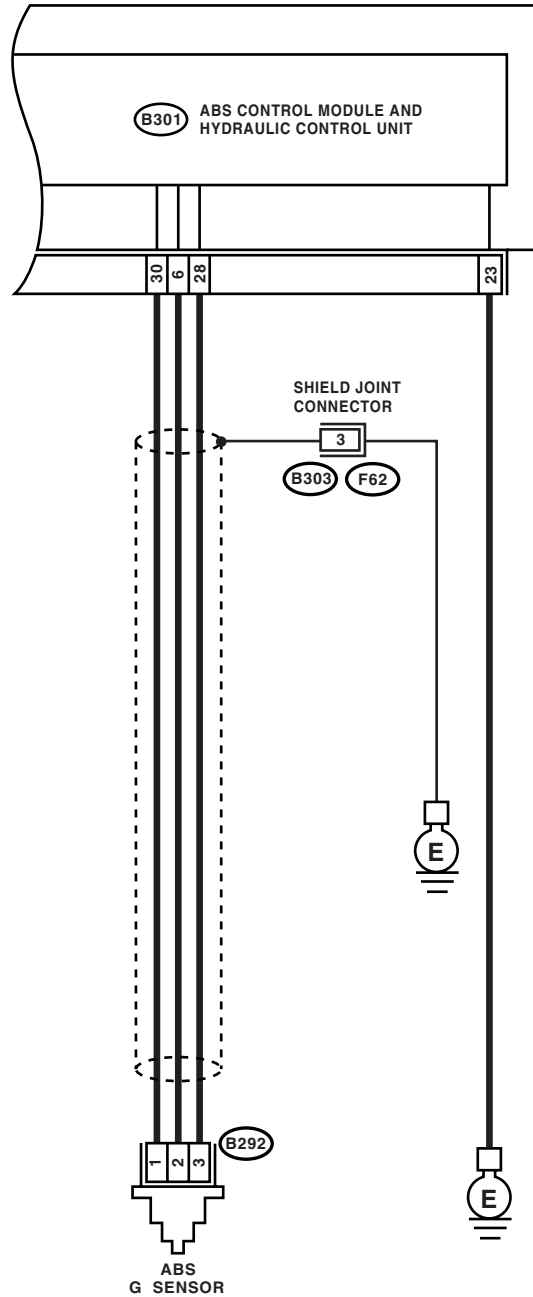
DIAGNOSIS:

Faulty G sensor output voltage

TROUBLE SYMPTOM:

ABS does not operate.

WIRING DIAGRAM:



ABS00398

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK OUTPUT OF G SENSOR USING SELECT MONITOR. 1) Select "Current data display & Save" on the select monitor. 2) Read the G sensor output in select monitor data display.	Is the G sensor output on monitor display 2.1 — 2.5 V when G sensor is in horizontal position?	Go to step 2.	Go to step 5.
2 CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in connector between ABSCM&H/U and G sensor?	Repair the connector.	Go to step 3.
3 CHECK ABSCM&H/U. 1) Connect all connectors. 2) Erase the memory. 3) Perform the inspection mode. 4) Read out the DTC.	Is the same DTC as in the current diagnosis still being output?	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>	Go to step 4.
4 CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES (DTCs) APPEARANCE.	Are other DTCs being output?	Proceed with the diagnosis corresponding to DTC.	A temporary poor contact.
5 CHECK INPUT VOLTAGE OF G SENSOR. 1) Turn the ignition switch to OFF. 2) Remove the console box. 3) Remove the G sensor from vehicle. (Do not disconnect connector.) 4) Turn the ignition switch to ON. 5) Measure the voltage between G sensor connector terminals. <i>Connector & terminal</i> <i>(B292) No. 1 (+) — No. 3 (-):</i>	Is the voltage 4.75 — 5.25 V?	Go to step 6.	Repair the harness/connector between G sensor and ABSCM&H/U.
6 CHECK OPEN CIRCUIT IN G SENSOR OUTPUT HARNESS AND GROUND HARNESS. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ABSCM&H/U. 3) Measure the resistance between ABSCM&H/U connector terminals. <i>Connector & terminal</i> <i>(B301) No. 6 — No. 28:</i>	Is the resistance 5.0 — 5.6 k Ω ?	Go to step 7.	Repair the harness/connector between G sensor and ABSCM&H/U.
7 CHECK GROUND SHORT IN G SENSOR OUTPUT HARNESS. 1) Disconnect the connector from G sensor. 2) Measure the resistance between ABSCM&H/U connector and chassis ground. <i>Connector & terminal</i> <i>(B301) No. 6 — Chassis ground:</i>	Is the resistance more than 1 M Ω ?	Go to step 8.	Repair the harness between G sensor and ABSCM&H/U.
8 CHECK G SENSOR. 1) Connect the connector to G sensor. 2) Connect the connector to ABSCM&H/U. 3) Turn the ignition switch to ON. 4) Measure the voltage between G sensor connector terminals. <i>Connector & terminal</i> <i>(B292) No. 2 (+) — No. 3 (-):</i>	Is the voltage 2.1 — 2.5 V when G sensor is in horizontal position?	Go to step 9.	Replace the G sensor. <Ref. to ABS-22, G Sensor.>
9 CHECK G SENSOR. Measure the voltage between G sensor connector terminals. <i>Connector & terminal</i> <i>(B292) No. 2 (+) — No. 3 (-):</i>	Is the voltage 3.7 — 4.1 V when G sensor is inclined forwards to 90°?	Go to step 10.	Replace the G sensor. <Ref. to ABS-22, G Sensor.>

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Step	Check	Yes	No
10 CHECK G SENSOR. Measure the voltage between G sensor connector terminals. Connector & terminal (B292) No. 2 (+) — No. 3 (-):	Is the voltage 0.5 — 0.9 V when G sensor is inclined backwards to 90°?	Go to step 11.	Replace the G sensor. <Ref. to ABS-22, G Sensor.>
11 CHECK POOR CONTACT IN CONNECTORS. Turn the ignition switch to OFF.	Is there poor contact in connector between ABSCM&H/U and G sensor?	Repair the connector.	Go to step 12.
12 CHECK ABSCM&H/U. 1) Connect all connectors. 2) Erase the memory. 3) Perform the inspection mode. 4) Read out the DTC.	Is the same DTC as in current diagnosis still being output?	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>	Go to step 13.
13 CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES (DTCs) APPEARANCE.	Are other DTCs being output?	Proceed with the diagnosis corresponding to DTC.	A temporary poor contact.

AF:DTC 56
— BATTERY SHORT IN G SENSOR CIRCUIT —

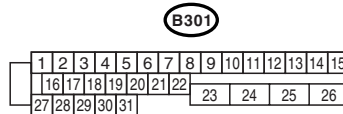
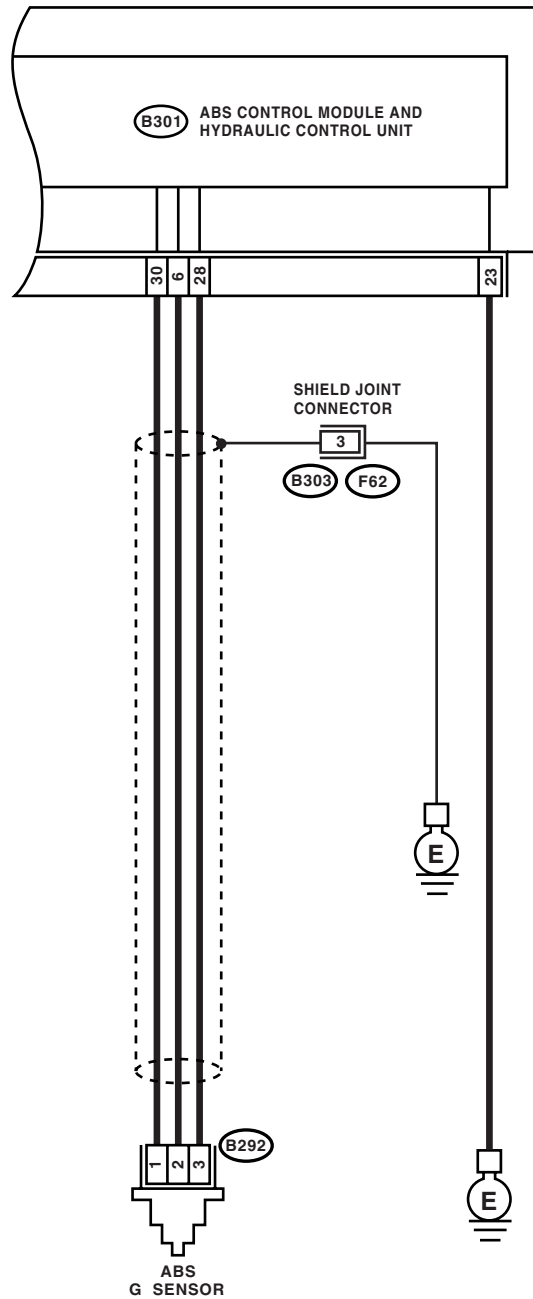
DIAGNOSIS:

Faulty G sensor output voltage

TROUBLE SYMPTOM:

ABS does not operate.

WIRING DIAGRAM:



DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Step	Check	Yes	No	
1	CHECK OUTPUT OF G SENSOR USING SELECT MONITOR. 1) Select "Current data display & Save" on the select monitor. 2) Read the G sensor output in select monitor data display.	Is the voltage 2.1 — 2.5 V when G sensor is in horizontal position?	Go to step 2.	Go to step 5.
2	CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in connector between ABSCM&H/U and G sensor?	Repair the connector.	Go to step 3.
3	CHECK ABSCM&H/U. 1) Connect all connectors. 2) Erase the memory. 3) Perform the inspection mode. 4) Read out the DTC.	Is the same DTC as in current diagnosis still being output?	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>	Go to step 4.
4	CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES (DTCs) APPEARANCE.	Are other DTCs being output?	Proceed with the diagnosis corresponding to DTC.	A temporary poor contact.
5	CHECK FREEZE FRAME DATA. 1) Select "Freeze frame data" on the select monitor. 2) Read front right wheel speed on the select monitor display.	Is the front right wheel speed on monitor display 0 km/h (0 MPH)?	Go to step 6.	Go to step 16.
6	CHECK FREEZE FRAME DATA. Read front left wheel speed on the select monitor display.	Is the front left wheel speed on monitor display 0 km/h (0 MPH)?	Go to step 7.	Go to step 16.
7	CHECK FREEZE FRAME DATA. Read rear right wheel speed on the select monitor display.	Is the rear right wheel speed on monitor display 0 km/h (0 MPH)?	Go to step 8.	Go to step 16.
8	CHECK FREEZE FRAME DATA. Read rear left wheel speed on the select monitor display.	Is the rear left wheel speed on monitor display 0 km/h (0 MPH)?	Go to step 9.	Go to step 16.
9	CHECK FREEZE FRAME DATA. Read G sensor output on the select monitor display.	Is the G sensor output on monitor display more than 3.65 V?	Go to step 10.	Go to step 16.
10	CHECK OPEN CIRCUIT IN G SENSOR OUTPUT HARNESS AND GROUND HARNESS. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ABSCM&H/U. 3) Measure the resistance between ABSCM&H/U connector terminals. Connector & terminal (B301) No. 6 — No. 28:	Is the resistance 4.3 — 4.9 kΩ?	Go to step 11.	Repair the harness/connector between G sensor and ABSCM&H/U.
11	CHECK BATTERY SHORT OF HARNESS. 1) Turn the ignition switch to OFF. 2) Remove the console box. 3) Disconnect the connector from G sensor. 4) Disconnect the connector from ABSCM&H/U. 5) Measure the voltage between ABSCM&H/U connector and chassis ground. Connector & terminal (B301) No. 6 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Go to step 12.	Repair the harness between G sensor and ABSCM&H/U.

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Step	Check	Yes	No
12 CHECK BATTERY SHORT OF HARNESS. 1) Turn the ignition switch to ON. 2) Measure the voltage between ABSCM&H/U connector and chassis ground. <i>Connector & terminal</i> <i>(B301) No. 6 (+) — Chassis ground (-):</i>	Is the voltage less than 1 V?	Go to step 13.	Repair the harness between G sensor and ABSCM&H/U.
13 CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in connector between ABSCM&H/U and G sensor?	Repair the connector.	Go to step 14.
14 CHECK ABSCM&H/U. 1) Connect all connectors. 2) Erase the memory. 3) Perform the inspection mode. 4) Read out the DTC.	Is the same DTC as in current diagnosis still being output?	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>	Go to step 15.
15 CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES (DTCs) APPEARANCE.	Are other DTCs being output?	Proceed with the diagnosis corresponding to DTC.	A temporary poor contact.
16 CHECK INPUT VOLTAGE OF G SENSOR. 1) Turn the ignition switch to OFF. 2) Remove the console box. 3) Remove the G sensor from vehicle. (Do not disconnect connector.) 4) Turn the ignition switch to ON. 5) Measure the voltage between G sensor connector terminals. <i>Connector & terminal</i> <i>(B292) No. 1 (+) — No. 3 (-):</i>	Is the voltage 4.75 — 5.25 V?	Go to step 17.	Repair the harness/connector between G sensor and ABSCM&H/U.
17 CHECK OPEN CIRCUIT IN G SENSOR OUTPUT HARNESS AND GROUND HARNESS. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ABSCM&H/U. 3) Measure the resistance between ABSCM&H/U connector terminals. <i>Connector & terminal</i> <i>(B301) No. 6 — No. 28:</i>	Is the resistance 5.0 — 5.6 k Ω ?	Go to step 18.	Repair the harness/connector between G sensor and ABSCM&H/U.
18 CHECK G SENSOR. 1) Connect the connector to G sensor. 2) Connect the connector to ABSCM&H/U. 3) Turn the ignition switch to ON. 4) Measure the voltage between G sensor connector terminals. <i>Connector & terminal</i> <i>(B292) No. 2 (+) — No. 3 (-):</i>	Is the voltage 2.1 — 2.5 V when G sensor is in horizontal position?	Go to step 19.	Replace the G sensor. <Ref. to ABS-22, G Sensor.>
19 CHECK G SENSOR. Measure the voltage between G sensor connector terminals. <i>Connector & terminal</i> <i>(B292) No. 2 (+) — No. 3 (-):</i>	Is the voltage 3.7 — 4.1 V when G sensor is inclined forwards to 90°?	Go to step 20.	Replace the G sensor. <Ref. to ABS-22, G Sensor.>
20 CHECK G SENSOR. Measure the voltage between G sensor connector terminals. <i>Connector & terminal</i> <i>(B292) No. 2 (+) — No. 3 (-):</i>	Is the voltage 0.5 — 0.9 V when G sensor is inclined backwards to 90°?	Go to step 21.	Replace the G sensor. <Ref. to ABS-22, G Sensor.>
21 CHECK POOR CONTACT IN CONNECTORS. Turn the ignition switch to OFF.	Is there poor contact in connector between ABSCM&H/U and G sensor?	Repair the connector.	Go to step 22.

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Step	Check	Yes	No
22 CHECK ABSCM&H/U. 1) Connect all connectors. 2) Erase the memory. 3) Perform the inspection mode. 4) Read out the DTC.	Is the same DTC as in current diagnosis still being output?	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>	Go to step 23 .
23 CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES (DTCs) APPEARANCE.	Are other DTCs being output?	Proceed with the diagnosis corresponding to DTC.	A temporary poor contact.

AG:DTC 56
— ABNORMAL G SENSOR HIGH μ OUTPUT —

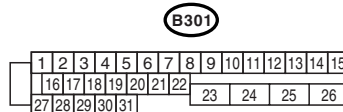
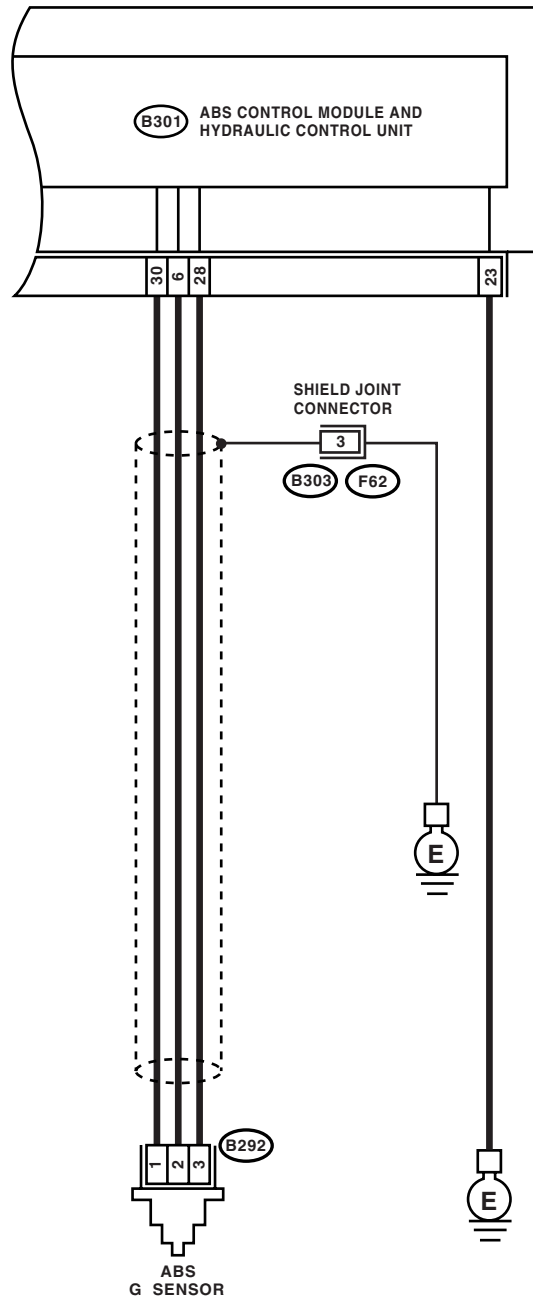
DIAGNOSIS:

Faulty G sensor output voltage

TROUBLE SYMPTOM:

ABS does not operate.

WIRING DIAGRAM:



ABS00398

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Step	Check	Yes	No	
1	CHECK OUTPUT OF G SENSOR USING SELECT MONITOR. 1) Select "Current data display & Save" on the select monitor. 2) Read G sensor output on the select monitor display.	Is the voltage 2.1 — 2.5 V when G sensor is in horizontal position?	Go to step 2.	Go to step 6.
2	CHECK POOR CONTACT IN CONNECTORS. Turn the ignition switch to OFF.	Is there poor contact in connector between ABSCM&H/U and G sensor?	Repair the connector.	Go to step 3.
3	CHECK ABSCM&H/U. 1) Connect all connectors. 2) Erase the memory. 3) Perform the inspection mode. 4) Read out the DTC.	Is the same DTC as in current diagnosis still being output?	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>	Go to step 4.
4	CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES (DTCs) APPEARANCE.	Are other DTCs being output?	Proceed with the diagnosis corresponding to DTC.	A temporary poor contact.
5	CHECK OPEN CIRCUIT IN G SENSOR OUTPUT HARNESS AND GROUND HARNESS. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ABSCM&H/U. 3) Measure the resistance between ABSCM&H/U connector terminals. Connector & terminal (B301) No. 6 — No. 28:	Is the resistance 5.0 — 5.6 kΩ?	Go to step 6.	Repair the harness/connector between G sensor and ABSCM&H/U.
6	CHECK GROUND SHORT OF HARNESS. Measure the resistance between ABSCM&H/U connector and chassis ground. Connector & terminal (B301) No. 28 — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 7.	Repair the harness between G sensor and ABSCM&H/U. Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>
7	CHECK G SENSOR. 1) Remove the console box. 2) Remove the G sensor from vehicle. 3) Connect the connector to G sensor. 4) Connect the connector to ABSCM&H/U. 5) Turn the ignition switch to ON. 6) Measure the voltage between G sensor connector terminals. Connector & terminal (B292) No. 2 (+) — No. 3 (-):	Is the voltage 2.1 — 2.5 V when G sensor is in horizontal position?	Go to step 8.	Replace the G sensor. <Ref. to ABS-22, G Sensor.>
8	CHECK G SENSOR. Measure the voltage between G sensor connector terminals. Connector & terminal (B292) No. 2 (+) — No. 3 (-):	Is the voltage 3.7 — 4.1 V when G sensor is inclined forwards to 90°?	Go to step 9.	Replace the G sensor. <Ref. to ABS-22, G Sensor.>
9	CHECK G SENSOR. Measure the voltage between G sensor connector terminals. Connector & terminal (B292) No. 2 (+) — No. 3 (-):	Is the voltage 0.5 — 0.9 V when G sensor is inclined backwards to 90°?	Go to step 10.	Replace the G sensor. <Ref. to ABS-22, G Sensor.>

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Step	Check	Yes	No
10 CHECK ABSCM&H/U. 1) Turn the ignition switch to OFF. 2) Connect all connectors. 3) Erase the memory. 4) Perform the inspection mode. 5) Read out the DTC.	Is the same DTC as in current diagnosis still being output?	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>	Go to step 11.
11 CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES (DTCs) APPEARANCE.	Are other DTCs being output?	Proceed with the diagnosis corresponding to DTC.	A temporary poor contact.

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

AH:DTC 56 — DETECTION OF G SENSOR STICK —

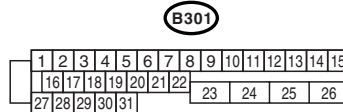
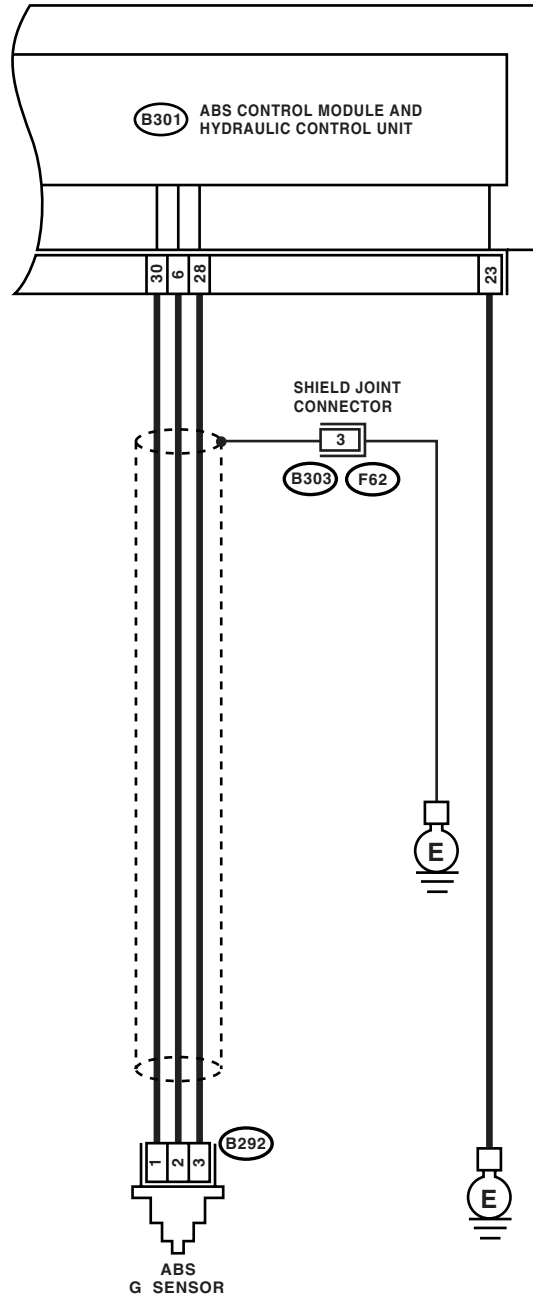
DIAGNOSIS:

Faulty G sensor output voltage

TROUBLE SYMPTOM:

ABS does not operate.

WIRING DIAGRAM:



ABS00398

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Step	Check	Yes	No
1	CHECK ALL FOUR WHEELS FOR FREE TURNING.	The ABS is normal. Erase the DTC.	Go to step 2.
2	CHECK OUTPUT OF G SENSOR USING SELECT MONITOR. 1) Select "Current data display & Save" on the select monitor. 2) Read the select monitor display.	Go to step 3.	Go to step 8.
3	CHECK OUTPUT OF G SENSOR USING SELECT MONITOR. 1) Turn the ignition switch to OFF. 2) Remove the console box. 3) Remove the G sensor from vehicle. (Do not disconnect the connector.) 4) Turn the ignition switch to ON. 5) Select "Current data display & Save" on the select monitor. 6) Read the select monitor display.	Go to step 4.	Replace the G sensor. <Ref. to ABS-22, G Sensor.>
4	CHECK OUTPUT OF G SENSOR USING SELECT MONITOR. Read the select monitor display.	Go to step 5.	Replace the G sensor. <Ref. to ABS-22, G Sensor.>
5	CHECK POOR CONTACT IN CONNECTORS. Turn the ignition switch to OFF.	Repair the connector.	Go to step 6.
6	CHECK ABSCM&H/U. 1) Connect all connectors. 2) Erase the memory. 3) Perform the inspection mode. 4) Read out the DTC.	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>	Go to step 7.
7	CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES (DTCs) APPEARANCE.	Proceed with the diagnosis corresponding to DTC.	A temporary poor contact.
8	CHECK OPEN CIRCUIT IN G SENSOR OUTPUT HARNESS AND GROUND HARNESS. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ABSCM&H/U. 3) Measure the resistance between ABSCM&H/U connector terminals. Connector & terminal (B301) No. 6 — No. 28:	Go to step 9.	Repair the harness/connector between G sensor and ABSCM&H/U.
9	CHECK G SENSOR. 1) Remove the console box. 2) Remove the G sensor from vehicle. 3) Connect the connector to G sensor. 4) Connect the connector to ABSCM&H/U. 5) Turn the ignition switch to ON. 6) Measure the voltage between G sensor connector terminals. Connector & terminal (B292) No. 2 (+) — No. 3 (-):	Go to step 10.	Replace the G sensor. <Ref. to ABS-22, G Sensor.>

DIAGNOSTICS PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

ABS (DIAGNOSTICS)

Step	Check	Yes	No
10 CHECK G SENSOR. Measure the voltage between G sensor connector terminals. <i>Connector & terminal</i> <i>(B292) No. 2 (+) — No. 3 (-):</i>	Is the voltage 3.7 — 4.1 V when G sensor is inclined forwards to 90°?	Go to step 11 .	Replace the G sensor. <Ref. to ABS-22, G Sensor.>
11 CHECK G SENSOR. Measure the voltage between G sensor connector terminals. <i>Connector & terminal</i> <i>(B292) No. 2 (+) — No. 3 (-):</i>	Is the voltage 0.5 — 0.9 V when G sensor is inclined to backwards to 90°?	Go to step 12 .	Replace the G sensor. <Ref. to ABS-22, G Sensor.>
12 CHECK ABSCM&H/U. 1) Turn the ignition switch to OFF. 2) Connect all connectors. 3) Erase the memory. 4) Perform the inspection mode. 5) Read out the DTC.	Is the same DTC as in current diagnosis still being output?	Replace the ABSCM&H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>	Go to step 13 .
13 CHECK ANY OTHER DIAGNOSTIC TROUBLE CODES (DTCs) APPEARANCE.	Are other DTCs being output?	Proceed with the diagnosis corresponding to DTC.	A temporary poor contact.