12.Diagnosis Chart with Diagnosis connector

A: ABS WARNING LIGHT DOES NOT COME ON.

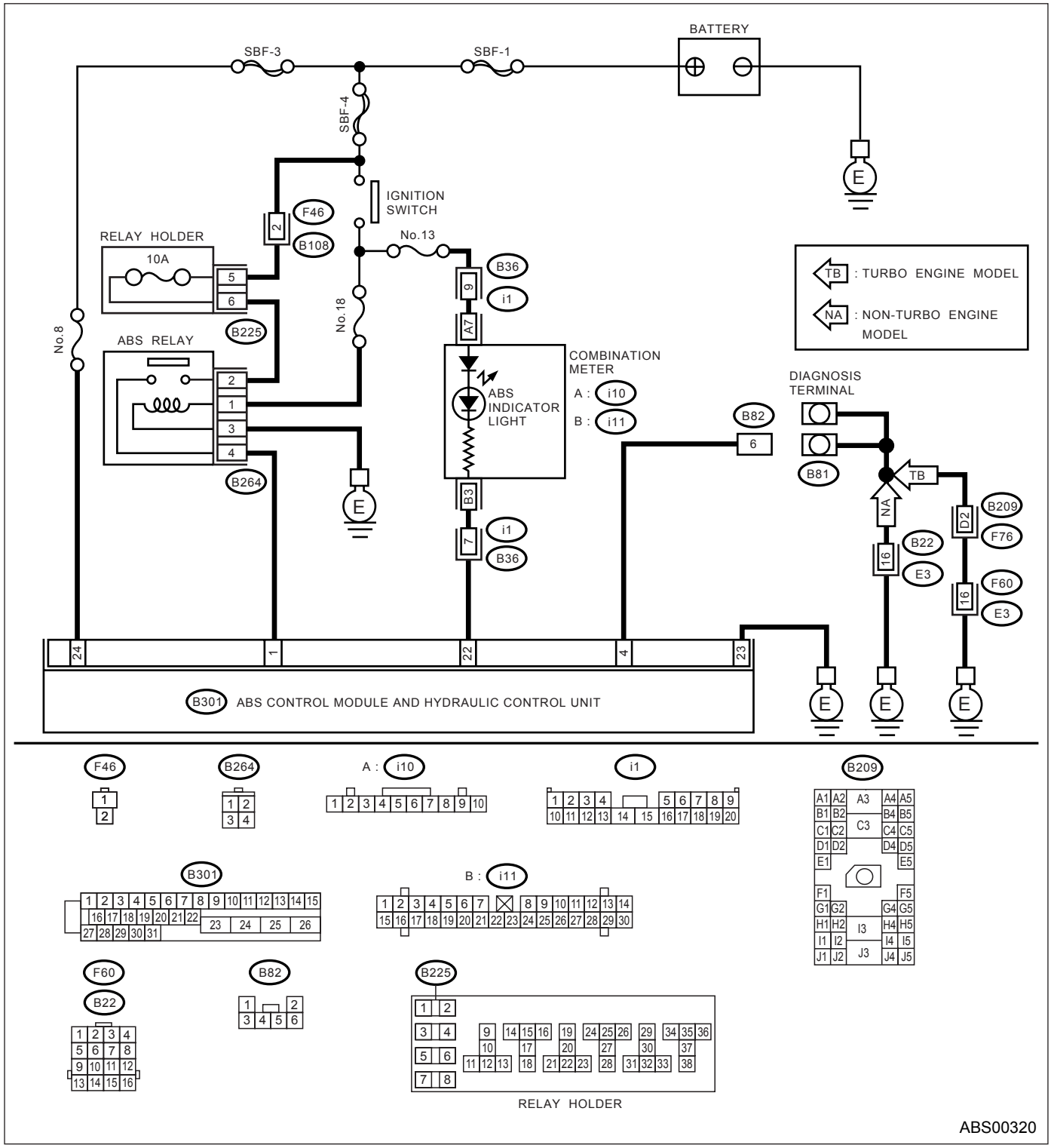
DIAGNOSIS:

- ABS warning light circuit is open or shorted.

TROUBLE SYMPTOM:

- When the ignition switch is turned to ON (engine OFF), ABS warning light does not come on.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK IF OTHER WARNING LIGHTS TURN ON.** Turn ignition switch to ON (engine OFF). Are other warning lights turned on?	Other warning lights are turned on.	Go to step **2.**	Repair the combination meter. <Ref. to IDI-12, Combination Meter Assembly.>
2	**CHECK ABS WARNING LIGHT BULB.** 1)Turn ignition switch to OFF. 2)Remove the combination meter. 3)Remove the ABS warning light and brake warning light. Is the ABS warning light bulb blown out?	The bulb is not blown out.	Go to step **3.**	Replace the ABS and brake warning light bulb. <Ref. to IDI-12, Combination Meter Assembly.>
3	**CHECK SHORT CIRCUIT TO BATTERY IN ABS WARNING LIGHT HARNESS.** 1)Disconnect connector (i1) from connector (B36). 2)Measure the voltage between connector (i1) and chassis ground. ***Connector & terminal*** ***(i1) No. 7 (+) — Chassis ground (–):*** Is the measured value less than the specified value?	3 V	Go to step **4.**	Repair the warning light harness.
4	**CHECK SHORT CIRCUIT TO BATTERY IN ABS WARNING LIGHT HARNESS.** 1)Turn ignition switch to ON. 2)Measure the voltage between connector (i1) and chassis ground. ***Connector & terminal*** ***(i1) No. 7 (+) — Chassis ground (–):*** Is the measured value less than the specified value?	3 V	Go to step **5.**	Repair the warning light harness.
5	**CHECK WIRING HARNESS.** 1)Turn ignition switch to OFF. 2)Install the combination meter. 3)Turn ignition switch to ON. 4)Measure the voltage between connector (i1) and chassis ground. ***Connector & terminal*** ***(i1) No. 7 (+) — Chassis ground (–):*** Is the measured value within the specified range?	10 — 15 V	Go to step **6.**	Repair the wiring harness.
6	**CHECK SHORT CIRCUIT TO BATTERY IN ABS WARNING LIGHT HARNESS.** 1)Turn ignition switch to OFF. 2)Measure the voltage between connector (B36) and chassis ground. ***Connector & terminal*** ***(B36) No. 7 (+) — Chassis ground (–):*** Is the measured value less than the specified value?	3 V	Go to step **7.**	Repair the wiring harness.
7	**CHECK SHORT CIRCUIT TO BATTERY IN ABS WARNING LIGHT HARNESS.** 1)Turn ignition switch to ON. 2)Measure the voltage between connector (B36) and chassis ground. ***Connector & terminal*** ***(B36) No. 7 (+) — Chassis ground (–):*** Is the measured value less than the specified value?	3 V	Go to step **8.**	Repair the wiring harness.

	Step	Check	Yes	No
8	**CHECK GROUND CIRCUIT OF ABSCM & H/U.** 1)Turn ignition switch to OFF. 2)Disconnect the connector from ABSCM & H/U. 3)Measure the resistance between ABSCM & H/U and chassis ground. ***Connector & terminal*** ***(B301) No. 23 — Chassis ground:*** Is the measured value less than the specified value?	0.5 Ω	Go to step **9.**	Repair the ABSCM & H/U ground harness.
9	**CHECK WIRING HARNESS.** Measure the resistance between connector (B36) and chassis ground. ***Connector & terminal*** ***(B36) No. 23 — Chassis ground:*** Is the measured value less than the specified value?	0.5 Ω	Go to step **10.**	Repair the harness/connector.
10	**CHECK FOR POOR CONTACT IN CONNECTORS.** Turn ignition switch to OFF. Is there poor contact in connectors between combination meter and ABSCM & H/U?	There is no poor contact.	Replace the ABSCM & H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>	Repair the connector.

B: ABS WARNING LIGHT DOES NOT GO OFF.

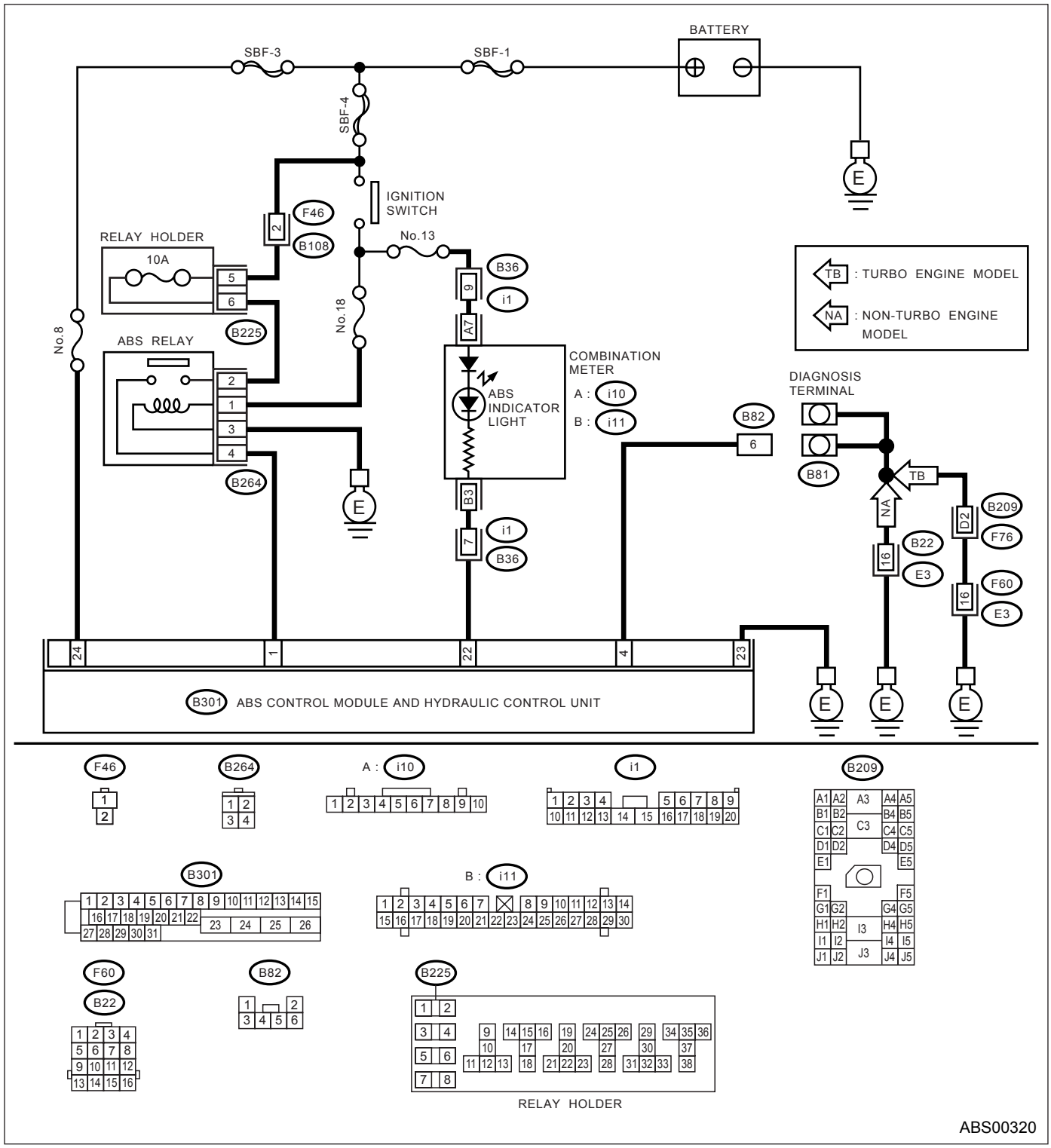
DIAGNOSIS:

- ABS warning light circuit is open or shorted.

TROUBLE SYMPTOM:

- When starting the engine, ABS warning light is kept ON.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK INSTALLATION OF ABSCM & H/U CONNECTOR.** Turn ignition switch to OFF. Is the ABSCM & H/U connector inserted into ABSCM until the clamp locks onto it?	Connector is inserted securely.	Go to step **2.**	Insert the ABSCM & H/U connector into ABSCM until the clamp locks onto it.
2	**CHECK DIAGNOSIS TERMINALS.** Measure the resistance between diagnosis terminals (B81) and chassis ground. ***Terminal*** ***Diagnosis terminal (A) — Chassis ground:*** ***Diagnosis terminal (B) — Chassis ground:*** Is the measured value less than the specified value?	0.5 Ω	Go to step **3.**	Repair the diagnosis terminal harness.
3	**CHECK DIAGNOSIS LINE.** 1)Connect the diagnosis terminal (B81) to diagnosis connector (B82) No. 6. 2)Disconnect the connector from ABSCM & H/U. 3)Measure the resistance between ABSCM & H/U connector and chassis ground. ***Connector & terminal*** ***(B301) No. 4 — Chassis ground:*** Is the measured value less than the specified value?	0.5 Ω	Go to step **4.**	Repair the harness connector between ABSCM & H/U and diagnosis connector.
4	**CHECK GENERATOR.** 1)Start the engine. 2)Idle the engine. 3)Measure the voltage between generator and chassis ground. ***Terminal*** ***Generator B terminal (+) — Chassis ground (−):*** Is the measured value within the specified range?	10 — 15 V	Go to step **5.**	Repair the generator. <Ref. to SC(H4SO)-13, Generator.>
5	**CHECK BATTERY TERMINALS.** Turn ignition switch to OFF. Is there poor contact at battery terminals?	There is no poor contact.	Go to step **6.**	Repair or tighten battery terminals.
6	**CHECK POWER SUPPLY OF ABSCM.** 1)Start the engine. 2)Idle the engine. 3)Measure the voltage between ABSCM & H/U connector and chassis ground. ***Connector & terminal*** ***(B301) No. 1 (+) — Chassis ground (−):*** Is the measured value within the specified range?	10 — 15 V	Go to step **7.**	Repair the ABSCM & H/U power supply circuit.
7	**CHECK WIRING HARNESS.** 1)Disconnect connector (i1) from connector (B36). 2)Turn ignition switch to ON. Does the ABS warning light turn on?	ABS warning light does not turn on.	Go to step **8.**	Repair the front or body wiring harness.

	Step	Check	Yes	No
8	**CHECK TERMINAL AT ABSCM & H/U.** 1)Turn ignition switch to OFF. 2)Check for damage at ABSCM & H/U terminals. Is there any damage on terminals?	There is no damage on terminals.	Go to step **9.**	Replace the ABSCM & H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>
9	**CHECK ABSCM & H/U.** Measure the resistance between ABSCM & H/U terminals. ***Terminal*** ***No. 22 — No. 23:*** Is the measured value more than the specified value?	1 MΩ	Go to step **10.**	Replace the ABSCM & H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>
10	**CHECK WIRING HARNESS.** Measure the resistance between connector (B36) and chassis ground. ***Connector & terminal*** ***(B36) No. 7 — Chassis ground:*** Is the measured value less than the specified value?	0.5 Ω	Go to step **11.**	Repair the harness.
11	**CHECK WIRING HARNESS.** 1)Connect the connector to ABSCM & H/U. 2)Measure the resistance between connector (B36) and chassis ground. ***Connector & terminal*** ***(B36) No. 7 — Chassis ground:*** Is the measured value more than the specified value?	1 MΩ	Go to step **12.**	Repair the harness.
12	**CHECK FOR POOR CONTACT IN ABSCM & H/U CONNECTOR.** Is there poor contact in ABSCM & H/U connector?	There is no poor contact.	Replace the ABSCM & H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>	Repair the connector.

C: DIAGNOSTIC TROUBLE CODE (DTC) DOES NOT APPEAR.

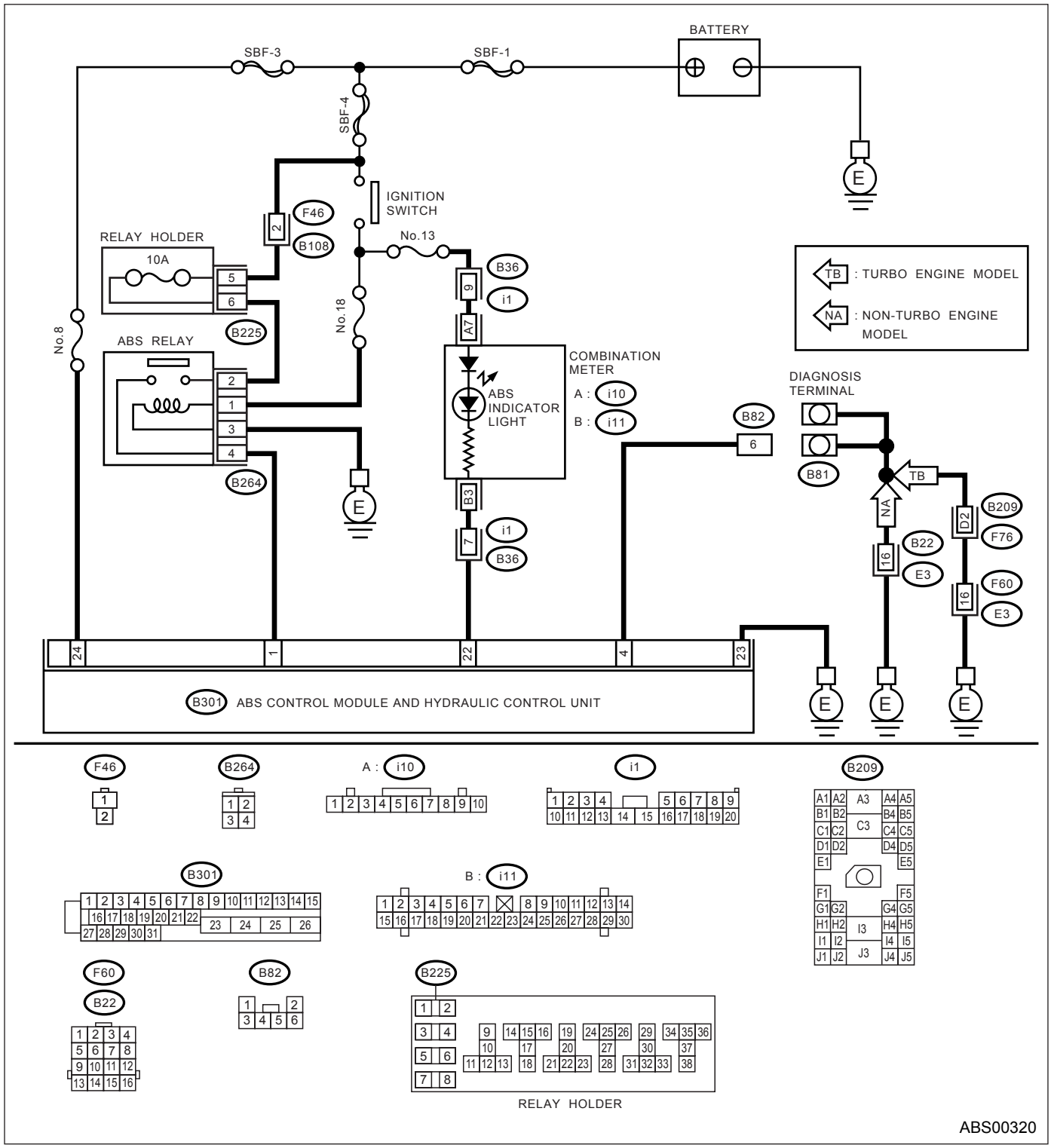
DIAGNOSIS:

- Diagnosis circuit is open.

TROUBLE SYMPTOM:

- The ABS warning light turns on or off normally but the start code cannot be read out in diagnostic mode.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK DIAGNOSIS TERMINALS.** 1)Turn ignition switch to OFF. 2)Measure the resistance between diagnosis terminals (B81) and chassis ground. ***Terminal*** ***Diagnosis terminal (A) — Chassis ground:*** ***Diagnosis terminal (B) — Chassis ground:*** Is the measured value less than the specified value?	0.5 Ω	Go to step **2.**	Repair the diagnosis terminal harness.
2	**CHECK DIAGNOSIS LINE.** 1)Connect the diagnosis terminal (B81) to diagnosis connector (B82) No. 6. 2)Disconnect the connector from ABSCM & H/U. 3)Measure the resistance between ABSCM & H/U connector and chassis ground. ***Connector & terminal*** ***(B301) No. 4 — Chassis ground:*** Is the measured value less than the specified value?	0.5 Ω	Go to step **3.**	Repair the harness connector between ABSCM & H/U and diagnosis connector.
3	**CHECK FOR POOR CONTACT IN ABSCM & H/U CONNECTOR.** Is there poor contact in ABSCM & H/U connector?	There is no poor contact.	Replace the ABSCM & H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>	Repair the connector.

D: DTC 21 — ABNORMAL FRONT ABS SENSOR RH (OPEN CIRCUIT OR INPUT VOLTAGE TOO HIGH) —

NOTE:
For the diagnostic procedure, refer to DTC 27. <Ref. to ABS-40, DTC 27 — ABNORMAL REAR ABS SENSOR LH (OPEN CIRCUIT OR INPUT VOLTAGE TOO HIGH) —, Diagnosis Chart with Diagnosis connector.>

E: DTC 23 — ABNORMAL FRONT ABS SENSOR LH (OPEN CIRCUIT OR INPUT VOLTAGE TOO HIGH) —

NOTE:
For the diagnostic procedure, refer to DTC 27. <Ref. to ABS-40, DTC 27 — ABNORMAL REAR ABS SENSOR LH (OPEN CIRCUIT OR INPUT VOLTAGE TOO HIGH) —, Diagnosis Chart with Diagnosis connector.>

F: DTC 25 — ABNORMAL REAR ABS SENSOR RH (OPEN CIRCUIT OR INPUT VOLTAGE TOO HIGH) —

NOTE:
For the diagnostic procedure, refer to DTC 27. <Ref. to ABS-40, DTC 27 — ABNORMAL REAR ABS SENSOR LH (OPEN CIRCUIT OR INPUT VOLTAGE TOO HIGH) —, Diagnosis Chart with Diagnosis connector.>

G: DTC 27 — ABNORMAL REAR ABS SENSOR LH (OPEN CIRCUIT OR INPUT VOLTAGE TOO HIGH) —

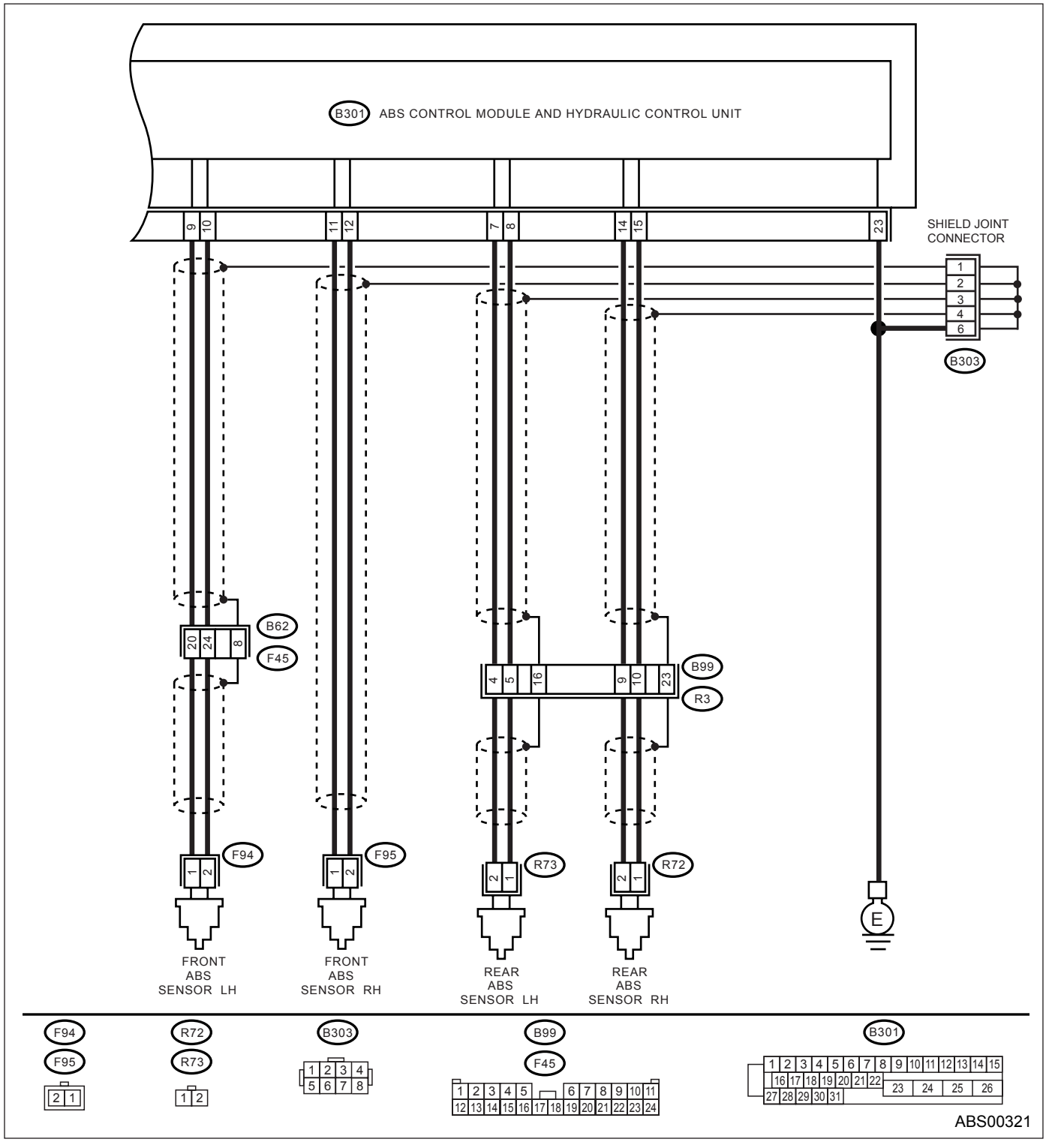
DIAGNOSIS:

- Faulty ABS sensor (broken wire, input voltage too high)
- Faulty harness connector

TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK ABS SENSOR.** 1)Turn ignition switch to OFF. 2)Disconnect the connector from ABS sensor. 3)Measure the resistance of ABS 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 measured value within the specified range?	Front: 1 — 1.5 kΩ Rear: 1.025 — 1.265 kΩ	Go to step **2.**	Replace the ABS sensor. Front: <Ref. to ABS-14, Front ABS Sensor.> Rear: <Ref. to ABS-18, Rear ABS Sensor.>
2	**CHECK SHORT CIRCUIT TO BATTERY IN ABS SENSOR.** 1)Disconnect the connector from ABSCM & H/U. 2)Measure the voltage between ABS 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 measured value less than the specified value?	1 V	Go to step **3.**	Replace the ABS sensor. Front: <Ref. to ABS-14, Front ABS Sensor.> Rear: <Ref. to ABS-18, Rear ABS Sensor.>
3	**CHECK SHORT CIRCUIT TO BATTERY IN ABS SENSOR.** 1)Turn ignition switch to ON. 2)Measure the voltage between ABS 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 measured value less than the specified value?	1 V	Go to step **4.**	Replace the ABS sensor. Front: <Ref. to ABS-14, Front ABS Sensor.> Rear: <Ref. to ABS-18, Rear ABS Sensor.>
4	**CHECK HARNESS/CONNECTOR BETWEEN ABSCM & H/U AND ABS SENSOR.** 1)Turn ignition switch to OFF. 2)Connect the connector to ABS sensor. 3)Measure the resistance between ABSCM & H/U connector terminals. ***Connector & terminal*** ***DTC 21 / (B301) No. 11 — No. 12:*** ***DTC 23 / (B301) No. 9 — No. 10:*** ***DTC 25 / (B301) No. 14 — No. 15:*** ***DTC 27 / (B301) No. 7 — No. 8:*** Is the measured value within the specified range?	Front: 1 — 1.5 kΩ Rear: 1.025 — 1.265 kΩ	Go to step **5.**	Repair the harness/connector between ABSCM & H/U and ABS sensor.

	Step	Check	Yes	No
5	**CHECK FOR SHORT CIRCUIT TO BATTERY IN HARNESS.** 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 measured value less than the specified value?	1 V	Go to step **6.**	Repair the harness between ABSCM & H/U and ABS sensor.
6	**CHECK FOR SHORT CIRCUIT TO BATTERY IN HARNESS.** 1)Turn 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 measured value less than the specified value?	1 V	Go to step **7.**	Repair the harness between ABSCM & H/U and ABS sensor.
7	**CHECK INSTALLATION OF ABS SENSOR.** Turn ignition switch to OFF. Are the ABS sensor installation bolts tightened securely?	33 N·m (3.4 kgf-m, 24.6 ft-lb)	Go to step **8.**	Tighten the ABS sensor installation bolts securely.
8	**CHECK ABS SENSOR GAP.** Measure the gap between ABS sensor projection and tone wheel. Is the measured value within the specified range?	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 **9.**	Adjust the gap. NOTE: Adjust the gap using spacer (Part No. 26755AA000). If the gap cannot be corrected with spacers, replace damaged sensor or tone wheel.
9	**CHECK TONE WHEEL RUNOUT.** Measure the tone wheel runout. Is the measured value less than the specified value?	0.05 mm (0.0020 in)	Go to step **10.**	Replace the tone wheel. Front: <Ref. to ABS-21, Front Tone Wheel.> Rear:<Ref. to ABS-22, Rear Tone Wheel.>

	Step	Check	Yes	No
10	**CHECK FOR SHORT CIRCUIT TO GROUND IN ABS SENSOR.** 1)Turn ignition switch to ON. 2)Measure the resistance between ABS 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 measured value more than the specified value?	1 MΩ	Go to step **11.**	Replace the ABSCM & H/U and ABS sensor. Front: <Ref. to ABS-14, Front ABS Sensor.> Rear:<Ref. to ABS-18, Rear ABS Sensor.> and <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>
11	**CHECK FOR SHORT CIRCUIT TO GROUND IN HARNESS.** 1)Turn ignition switch to OFF. 2)Connect the connector to ABS sensor. 3)Measure the resistance between ABSCM & H/U connector terminal 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 measured value more than the specified value?	1 MΩ	Go to step **12.**	Repair the harness between ABSCM & H/U and ABS sensor. Replace the ABSCM & H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>
12	**CHECK FOR POOR CONTACT IN CONNECTORS.** Is there poor contact in connectors between ABSCM & H/U and ABS sensor?	There is no poor contact.	Go to step **13.**	Repair the connector.
13	**CHECK ABSCM & H/U.** 1)Connect all connectors. 2)Clear the memory. 3)Perform the inspection mode. 4)Read out DTC. Is the same DTC still being output?	Same DTC is not output.	Go to step **14.**	Replace the ABSCM & H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>
14	**CHECK FOR OTHER DIAGNOSTIC TROUBLE CODES (DTCs) .** Are other DTCs being output?	Other DTC is not output.	There was a temporary poor contact. NOTE: Check the harness and connectors between ABSCM & H/U and ABS sensor.	Proceed with the diagnosis corresponding to DTC.

H: DTC 22 — FAULTY FRONT ABS SENSOR RH (ABNORMAL ABS SENSOR SIGNAL) —

NOTE:
For the diagnostic procedure, refer to DTC 28. <Ref. to ABS-46, DTC 28 — FAULTY REAR ABS SENSOR LH (ABNORMAL ABS SENSOR SIGNAL) —, Diagnosis Chart with Diagnosis connector.>

I: DTC 24 — FAULTY FRONT ABS SENSOR LH (ABNORMAL ABS SENSOR SIGNAL) —

NOTE:
For the diagnostic procedure, refer to DTC 28. <Ref. to ABS-46, DTC 28 — FAULTY REAR ABS SENSOR LH (ABNORMAL ABS SENSOR SIGNAL) —, Diagnosis Chart with Diagnosis connector.>

J: DTC 26 — FAULTY REAR ABS SENSOR RH (ABNORMAL ABS SENSOR SIGNAL) —

NOTE:
For the diagnostic procedure, refer to DTC 28. <Ref. to ABS-46, DTC 28 — FAULTY REAR ABS SENSOR LH (ABNORMAL ABS SENSOR SIGNAL) —, Diagnosis Chart with Diagnosis connector.>

K: DTC 28 — FAULTY REAR ABS SENSOR LH (ABNORMAL ABS SENSOR SIGNAL) —

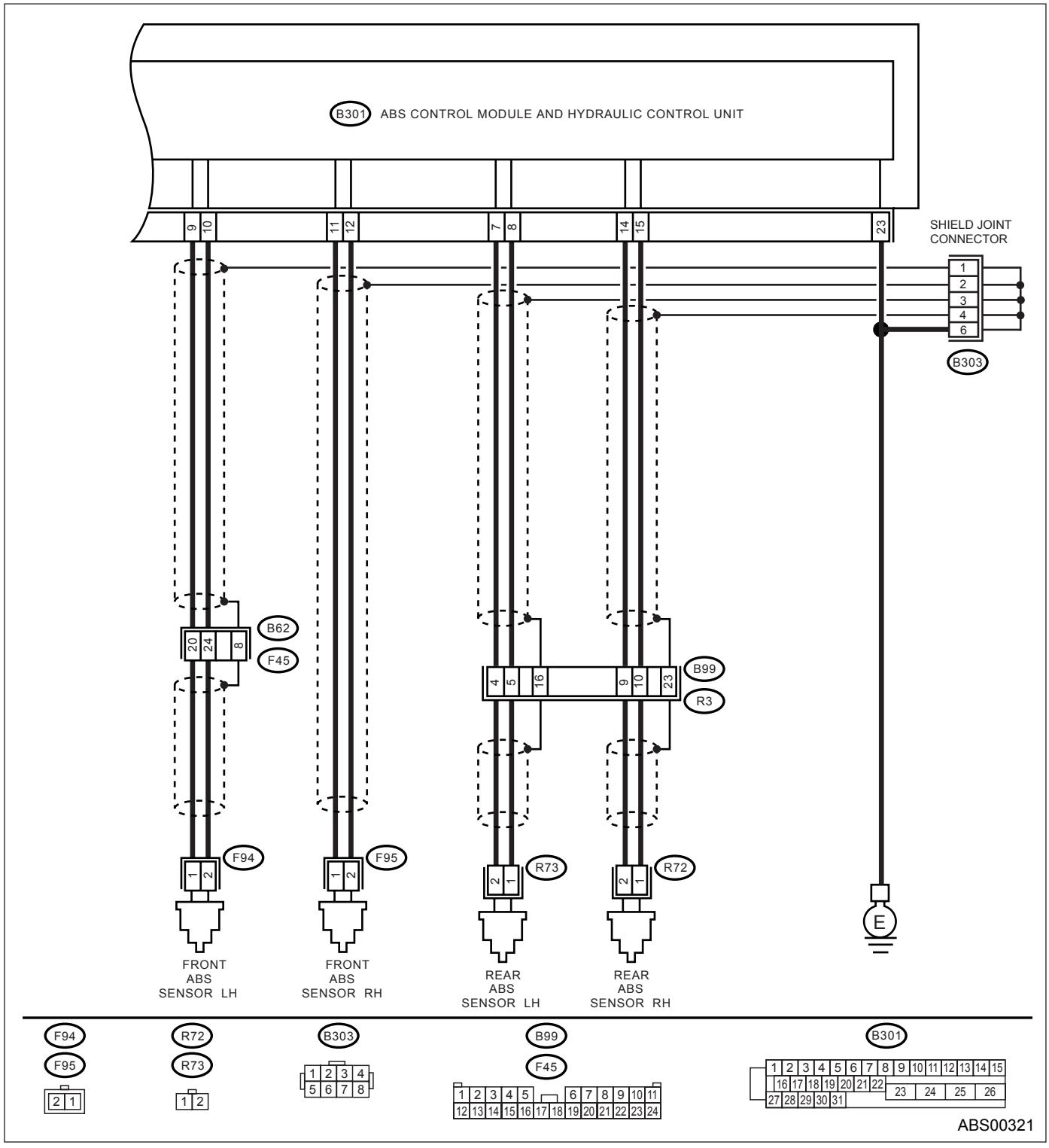
DIAGNOSIS:

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

TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK INSTALLATION OF ABS SENSOR.** Turn ignition switch to OFF. Are the ABS sensor installation bolts tightened to the specified torque?	33 N·m (3.4 kgf-m, 24.6 ft-lb)	Go to step **2.**	Tighten the ABS sensor installation bolts securely.
2	**CHECK ABS SENSOR GAP.** Measure the gap between ABS sensor projection and tone wheel. Is the measured value within the specified range?	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 **3.**	Adjust the gap. NOTE: Adjust the gap using spacer (Part No. 26755AA000). If the gap cannot be corrected with spacers, replace damaged sensor or tone wheel.
3	**PREPARE OSCILLOSCOPE.** Is an oscilloscope available?	Oscilloscope is available.	Go to step **4.**	Go to step **5.**
4	**CHECK ABS SENSOR SIGNAL.** 1)Lift up the vehicle. 2)Turn ignition switch to OFF. 3)Connect the oscilloscope to the connector. 4)Turn ignition switch to ON. 5)Rotate the wheels and measure voltage at specified frequency. <Ref. to ABS-17, WAVEFORM, Control Module I/O Signals.> NOTE: When this inspection is completed, the ABS control module may store DTC 29 or DTC 56. ***Connector & terminal*** ***DTC 22 / (F95) No. 1 (+) — No. 2 (–):*** ***DTC 24 / (F45) No. 20 (+) — No. 24 (–):*** ***DTC 26 / (B99) No. 9 (+) — No. 10 (–):*** ***DTC 28 / (B99) No. 4 (+) — No. 5 (–):*** Is the measured value same as the specified value?	Oscilloscope pattern is as shown in the figure.	Go to step **8.**	Go to step **7.**
5	**CHECK CONTAMINATION OF ABS SENSOR OR TONE WHEEL.** Remove the disc rotor or drum from hub in accordance with DTC. Is the ABS sensor projection or tone wheel contaminated by dirt or other foreign matter?	ABS sensor projection or tone wheel is not contaminated.	Go to step **6.**	Thoroughly remove dirt or other foreign matter.
6	**CHECK FOR DAMAGE OF ABS SENSOR OR TONE WHEEL.** Is there any breakage or damage in the ABS sensor projection or the tone wheel?	There is no breakage or damage.	Go to step **7.**	Replace the ABS sensor or tone wheel. Front: <Ref. to ABS-14, Front ABS Sensor.> Rear: <Ref. to ABS-18, Rear ABS Sensor.> and Front: <Ref. to ABS-21, Front Tone Wheel.> Rear:<Ref. to ABS-22, Rear Tone Wheel.>

	Step	Check	Yes	No
7	**CHECK TONE WHEEL RUNOUT.** Measure the tone wheel runout. Is the measured value less than the specified value?	0.05 mm (0.0020 in)	Go to step **8.**	Replace the tone wheel. Front: <Ref. to ABS-21, Front Tone Wheel.> Rear: <Ref. to ABS-22, Rear Tone Wheel.>
8	**CHECK RESISTANCE OF ABS SENSOR.** 1)Turn ignition switch to OFF. 2)Disconnect the connector from ABS sensor. 3)Measure the resistance between ABS 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 measured value within the specified range?	Front: 1 — 1.5 kΩ Rear: 1.025 — 1.265 kΩ	Go to step **9.**	Replace the ABS sensor. Front: <Ref. to ABS-14, Front ABS Sensor.> Rear: <Ref. to ABS-18, Rear ABS Sensor.>
9	**CHECK FOR SHORT CIRCUIT TO GROUND IN ABS SENSOR.** Measure the resistance between ABS 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 measured value more than the specified value?	1 MΩ	Go to step **10.**	Replace the ABS sensor. Front: <Ref. to ABS-14, Front ABS Sensor.> Rear: <Ref. to ABS-18, Rear ABS Sensor.>
10	**CHECK HARNESS/CONNECTOR BETWEEN ABSCM & H/U AND ABS SENSOR.** 1)Connect the connector to ABS sensor. 2)Disconnect the connector from ABSCM & H/U. 3)Measure the resistance at ABSCM & H/U connector terminals. ***Connector & terminal*** ***DTC 22 / (B301) No. 11 — No. 12:*** ***DTC 24 / (B301) No. 9 — No. 10:*** ***DTC 26 / (B301) No. 14 — No. 15:*** ***DTC 28 / (B301) No. 7 — No. 8:*** Is the measured value within the specified range?	Front: 1 — 1.5 kΩ Rear: 1.025 — 1.265 kΩ	Go to step **11.**	Repair the harness/connector between ABSCM & H/U and ABS sensor.
11	**CHECK FOR SHORT CIRCUIT TO GROUND IN HARNESS.** Measure the resistance between ABSCM & H/U connector and chassis ground. ***Connector & terminal*** ***DTC 22 / (B301) No. 11 — Chassis ground:*** ***DTC 24 / (B301) No. 9 — Chassis ground:*** ***DTC 26 / (B301) No. 14 — Chassis ground:*** ***DTC 28 / (B301) No. 7 — Chassis ground:*** Is the measured value more than the specified value?	1 MΩ	Go to step **12.**	Repair the harness/connector between ABSCM & H/U and ABS sensor.

	Step	Check	Yes	No
12	**CHECK GROUND CIRCUIT OF ABSCM & H/U.** Measure the resistance between ABSCM & H/U and chassis ground. ***Connector & terminal*** ***(B301) No. 23 — Chassis ground:*** Is the measured value less than the specified value?	0.5 Ω	Go to step **13.**	Repair the ABSCM & H/U ground harness.
13	**CHECK FOR POOR CONTACT IN CONNECTORS.** Is there poor contact in connectors between ABSCM & H/U and ABS sensor?	There is no poor contact.	Go to step **14.**	Repair the connector.
14	**CHECK FOR SOURCES OF SIGNAL NOISE.** Is the car telephone or wireless transmitter properly installed?	Car telephone or wireless transmitter is correctly installed.	Go to step **15.**	Properly install the car telephone or wireless transmitter.
15	**CHECK FOR SOURCES OF SIGNAL NOISE.** Are noise sources (such as an antenna) installed near the sensor harness?	Noise sources are not installed.	Go to step **16.**	Install the noise sources apart from sensor harness.
16	**CHECK SHIELD CIRCUIT.** 1)Disconnect connector (B303). 2)Measure the resistance between shield connector and chassis ground. ***Connector & terminal*** ***DTC 22 / (B303) No. 2 — Chassis ground:*** ***DTC 24 / (B303) No. 1 — Chassis ground:*** ***DTC 26 / (B303) No. 4 — Chassis ground:*** ***DTC 28 / (B303) No. 3 — Chassis ground:*** Is the measured value less than the specified value?	0.5 Ω	Go to step **17.**	Repair the shield harness.
17	**CHECK ABSCM & H/U.** 1)Connect all connectors. 2)Clear the memory. 3)Perform the inspection mode. 4)Read out DTC. Is the same DTC still being output?	Same DTC is not output.	Go to step **18.**	Replace the ABSCM & H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>
18	**CHECK FOR OTHER DIAGNOSTIC TROUBLE CODES (DTCs) .** Are other DTCs being output?	Other DTC is not output.	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 the vehicle.	Proceed with the diagnosis corresponding to DTC.

L: DTC 29 — ABS SENSOR FAILURE (ABNORMAL ABS SENSOR SIGNAL) (ANY ONE OF FOUR) —

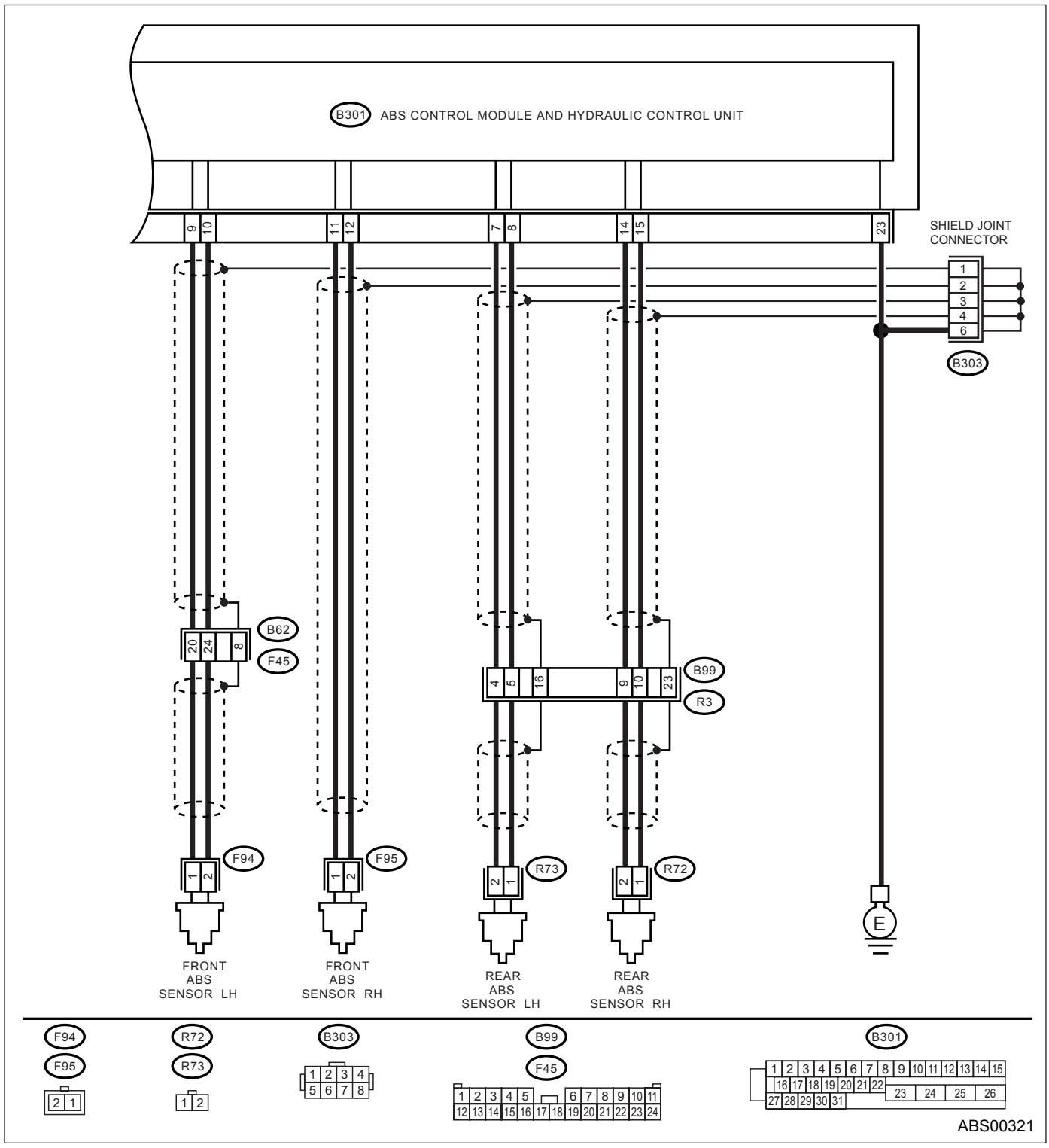
DIAGNOSIS:

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

TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



	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.	Wheels have not been turned freely.	Go to step **2.**	The ABS is normal. Clear the memory. NOTE: If the wheels has been turned freely for a long time, such as when vehicle is towed or jacked-up, or when steering wheel is continuously turned all way, this diagnostic trouble code may be stored.
2	**CHECK TIRE SPECIFICATIONS.** Turn ignition switch to OFF. Are the tire specifications correct?	Tire specifications are correct.	Go to step **3.**	Replace the tire.
3	**CHECK TIRES FOR WEAR.** Is the tire worn excessively?	Tire is not worn excessively.	Go to step **4.**	Replace the tire.
4	**CHECK TIRE PRESSURE.** Is the tire pressure correct?	Tire pressure is correct.	Go to step **5.**	Adjust the tire pressure.
5	**CHECK INSTALLATION OF ABS SENSOR.** Are the ABS sensor installation bolts tightened to the specified torque?	33 N·m (3.4 kgf-m, 24.6 ft-lb)	Go to step **6.**	Tighten the ABS sensor installation bolts securely.
6	**CHECK ABS SENSOR GAP.** Measure the gap between ABS sensor projection and tone wheel. Is the measured value within the specified range?	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.**	Adjust the gap. NOTE: Adjust the gap using spacer (Part No. 26755AA000). If the gap cannot be corrected with spacers, replace damaged sensor or tone wheel.
7	**PREPARE OSCILLOSCOPE.** Is an oscilloscope available?	Oscilloscope is available.	Go to step **8.**	Go to step **9.**

	Step	Check	Yes	No
8	**CHECK ABS SENSOR SIGNAL.** 1)Lift up the vehicle. 2)Turn ignition switch to OFF. 3)Connect the oscilloscope to the connector. 4)Turn ignition switch to ON. 5)Rotate the wheels and measure voltage at specified frequency. <Ref. to ABS-17, WAVEFORM, Control Module I/O Signals.> NOTE: When this inspection is completed, the ABSCM & H/U may store DTC 29. ***Connector & terminal*** ***Front RH*** ***(F95) No. 1 (+) — No. 2 (–):*** ***Front LH*** ***(F45) No. 20 (+) — No. 24 (–):*** ***Rear RH*** ***(B99) No. 9 (+) — No. 10 (–):*** ***Rear LH*** ***(B99) No. 4 (+) — No. 5 (–):*** Is the measured value same as the specified value?	Oscilloscope pattern is as shown in the figure.	Go to step **12.**	Go to step **9.**
9	**CHECK CONTAMINATION OF ABS SENSOR OR TONE WHEEL.** Remove the disc rotor or drum from hub. Is the ABS sensor projection or the tone wheel contaminated by dirt or other foreign matter?	ABS sensor projection or tone wheel is not contaminated.	Go to step **10.**	Thoroughly remove dirt or other foreign matter.
10	**CHECK FOR DAMAGE OF ABS SENSOR OR TONE WHEEL.** Are there any breakage or damaged teeth in the ABS sensor projection or the tone wheel?	There is no breakage or damage.	Go to step **11.**	Replace the ABS sensor or tone wheel. Front: <Ref. to ABS-14, Front ABS Sensor.>Rear: <Ref. to ABS-18, Rear ABS Sensor.> and Front: <Ref. to ABS-21, Front Tone Wheel.>Rear: <Ref. to ABS-22, Rear Tone Wheel.>
11	**CHECK TONE WHEEL RUNOUT.** Measure the tone wheel runout. Is the measured value less than the specified value?	0.05 mm (0.0020 in)	Go to step **12.**	Replace the tone wheel. Front: <Ref. to ABS-21, Front Tone Wheel.>Rear: <Ref. to ABS-22, Rear Tone Wheel.>
12	**CHECK ABSCM & H/U.** 1)Turn ignition switch to OFF. 2)Connect all connectors. 3)Clear the memory. 4)Perform the inspection mode. 5)Read out DTC. Is the same DTC still being output?	Same DTC is not output.	Go to step **13.**	Replace the ABSCM & H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>

	Step	Check	Yes	No
13	**CHECK FOR OTHER DIAGNOSTIC TROUBLE CODES (DTCs) .** Are other DTCs being output?	Other DTC is not output.	There was a temporary poor contact.	Proceed with the diagnosis corresponding to DTC.

M: DTC 31 — ABNORMAL FRONT INLET SOLENOID VALVE RH CIRCUIT IN ABSCM & H/U —

NOTE:
For the diagnostic procedure, refer to DTC 37. <Ref. to ABS-54, DTC 37 — ABNORMAL REAR INLET SOLENOID VALVE LH CIRCUIT IN ABSCM & H/U —, Diagnosis Chart with Diagnosis connector.>

N: DTC 33 — ABNORMAL FRONT INLET SOLENOID VALVE LH CIRCUIT IN ABSCM & H/U —

NOTE:
For the diagnostic procedure, refer to DTC 37. <Ref. to ABS-54, DTC 37 — ABNORMAL REAR INLET SOLENOID VALVE LH CIRCUIT IN ABSCM & H/U —, Diagnosis Chart with Diagnosis connector.>

O: DTC 35 — ABNORMAL REAR INLET SOLENOID VALVE RH CIRCUIT IN ABSCM & H/U —

NOTE:
For the diagnostic procedure, refer to DTC 37 . <Ref. to ABS-54, DTC 37 — ABNORMAL REAR INLET SOLENOID VALVE LH CIRCUIT IN ABSCM & H/U —, Diagnosis Chart with Diagnosis connector.>

P: DTC 37 — ABNORMAL REAR INLET SOLENOID VALVE LH CIRCUIT IN ABSCM & H/U —

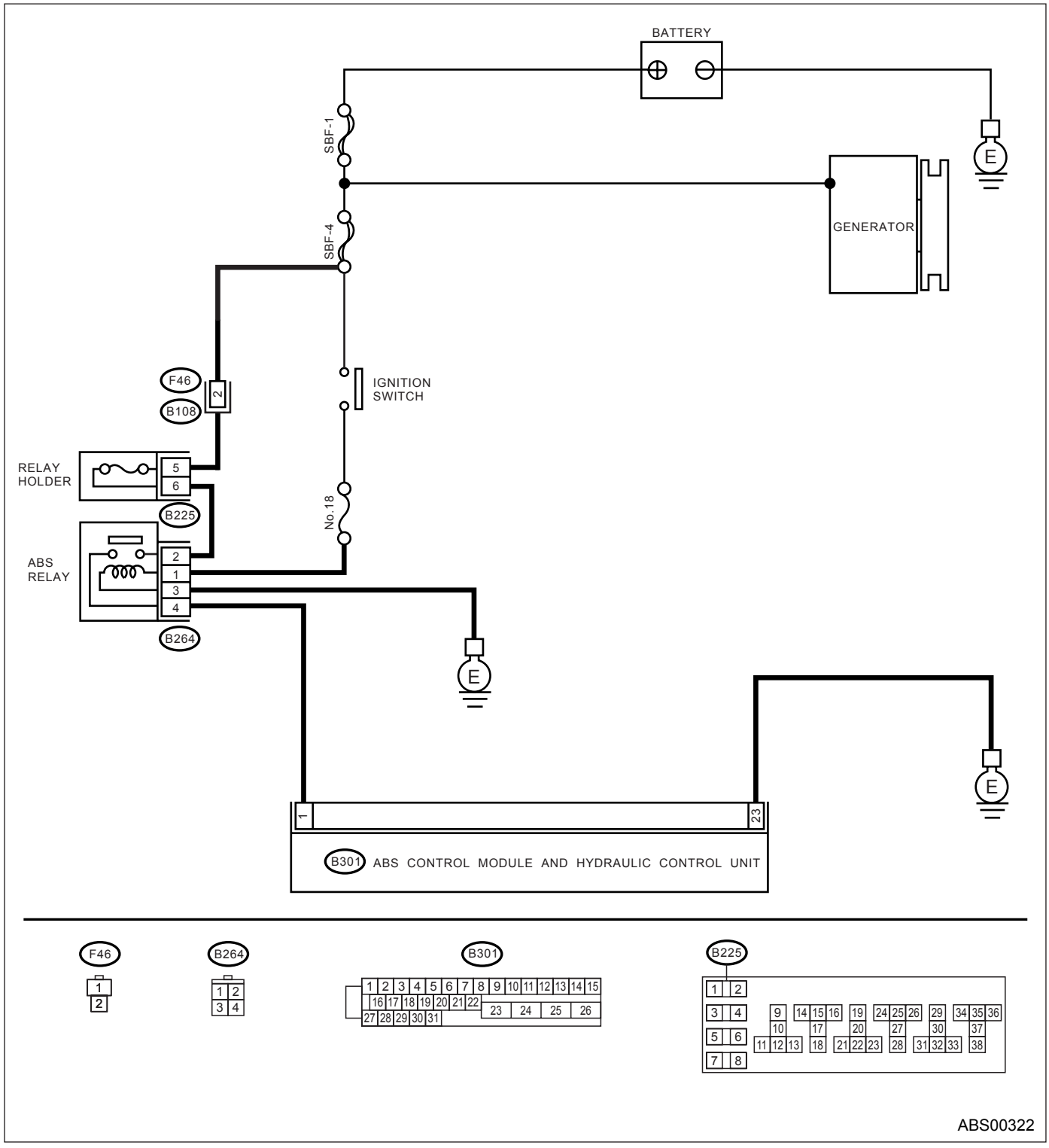
DIAGNOSIS:

- Faulty harness/connector
- Faulty inlet solenoid valve in ABSCM & H/U

TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK INPUT VOLTAGE OF RELAY HOLDER.** 1)Turn ignition switch to OFF. 2)Remove fuse. 3)Measure the voltage between ABS relay connector and chassis ground. ***Connector & terminal*** ***(B225) No. 5 (+) — Chassis ground (−):*** Is the measured value more than the specified value?	10 V	Go to step **2.**	Repair the open circuit in harness between battery and relay holder connector.
2	**CHECK RELAY HOLDER.** Is the fuse blown out?	The fuse is not blown out.	Go to step **3.**	Replace the fuse.
3	**CHECK INPUT VOLTAGE OF ABS RELAY.** 1)Install fuse. 2)Remove ABS relay. 3)Turn ignition switch to ON. 4)Measure the voltage between ABS relay connector and chassis ground. ***Connector & terminal*** ***(B264) No. 2 (+) — Chassis ground (−):*** Is the measured value more than the specified value?	10 V	Go to step **4.**	Repair the open circuit in harness between battery and relay holder connector.
4	**CHECK INPUT VOLTAGE OF ABS RELAY.** Measure the voltage between ABS relay connector and chassis ground. ***Connector & terminal*** ***(B264) No. 1 (+) — Chassis ground (−):*** Is the measured value more than the specified value?	10 V	Go to step **5.**	Repair the harness connector between battery, ignition switch and ABS relay.
5	**CHECK GROUND CIRCUIT OF ABS RELAY.** 1)Turn ignition switch to OFF. 2)Measure the resistance between ABS relay connector and chassis ground. ***Connector & terminal*** ***(B264) No. 3 (+) — Chassis ground:*** Is the measured value less than the specified value?	5 Ω	Go to step **6.**	Repair open circuit between ABS relay and chassis ground.
6	**CHECK ABS RELAY.** 1)Connect the battery to ABS relay terminals No. 1 and No. 3. 2)Measure the resistance between ABS relay terminals. Is the measured value less than the specified value?	10 Ω	Go to step **7.**	Replace the ABS relay.
7	**CHECK INPUT VOLTAGE OF ABSCM & H/U.** 1)Turn ignition switch to OFF. 2)Disconnect the connector from ABSCM & H/U. 3)Idle the engine. 4)Measure the voltage between ABSCM & H/U connector and chassis ground. ***Connector & terminal*** ***(B301) No. 1 (+) — Chassis ground (−):*** Is the measured value within the specified range?	10 — 15 V	Go to step **8.**	Repair the harness connector between ABSCM & H/U and ABS relay.

	Step	Check	Yes	No
8	**CHECK GROUND CIRCUIT OF ABSCM & H/U.** 1)Turn 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 measured value less than the specified value?	0.5 Ω	Go to step **9.**	Repair the ABSCM & H/U ground harness.
9	**CHECK FOR POOR CONTACT IN CONNECTORS.** Is there poor contact in connectors between generator, battery and ABSCM & H/U?	There is no poor contact.	Go to step **10.**	Repair the connector.
10	**CHECK ABSCM & H/U.** 1)Connect all connectors. 2)Clear the memory. 3)Perform the inspection mode. 4)Read out DTC. Is the same DTC still being output?	Same DTC is not output.	Go to step **11.**	Replace the ABSCM & H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>
11	**CHECK FOR OTHER DIAGNOSTIC TROUBLE CODES (DTCs) .** Are other DTCs being output?	Other DTC is not output.	There was a temporary poor contact.	Proceed with the diagnosis corresponding to DTC.

Q: DTC 32 — ABNORMAL FRONT OUTLET SOLENOID VALVE RH CIRCUIT IN ABSCM & H/U —

NOTE:
For the diagnostic procedure, refer to DTC 38 . <Ref. to ABS-58, DTC 38 — ABNORMAL REAR OUTLET SOLENOID VALVE LH CIRCUIT IN ABSCM & H/U —, Diagnosis Chart with Diagnosis connector.>

R: DTC 34 — ABNORMAL FRONT OUTLET SOLENOID VALVE LH CIRCUIT IN ABSCM & H/U —

NOTE:
For the diagnostic procedure, refer to DTC 38 . <Ref. to ABS-58, DTC 38 — ABNORMAL REAR OUTLET SOLENOID VALVE LH CIRCUIT IN ABSCM & H/U —, Diagnosis Chart with Diagnosis connector.>

S: DTC 36 — ABNORMAL REAR OUTLET SOLENOID VALVE RH CIRCUIT IN ABSCM & H/U —

NOTE:
For the diagnostic procedure, refer to DTC 38 . <Ref. to ABS-58, DTC 38 — ABNORMAL REAR OUTLET SOLENOID VALVE LH CIRCUIT IN ABSCM & H/U —, Diagnosis Chart with Diagnosis connector.>

T: DTC 38 — ABNORMAL REAR OUTLET SOLENOID VALVE LH CIRCUIT IN ABSCM & H/U —

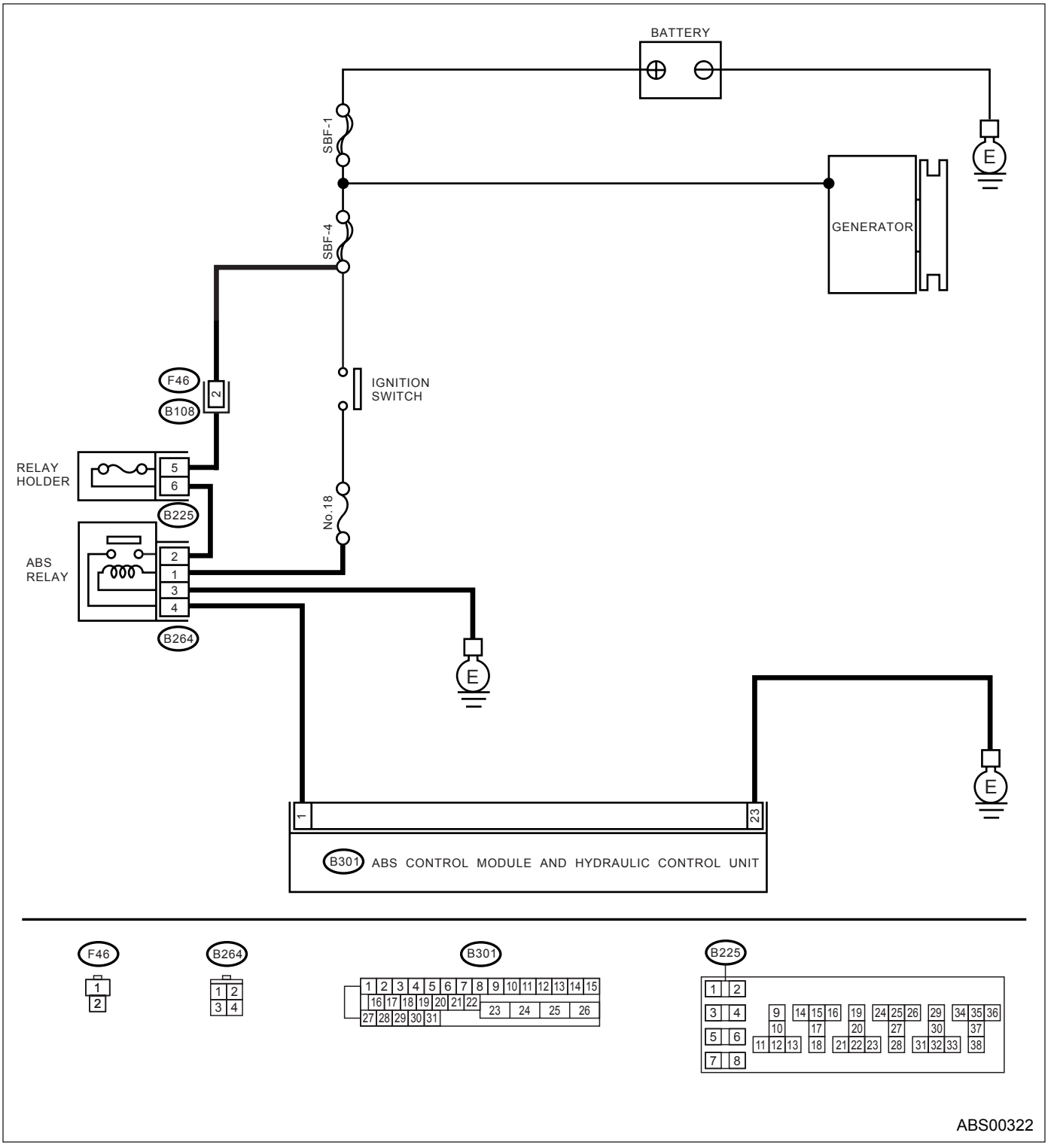
DIAGNOSIS:

- Faulty harness/connector
- Faulty outlet solenoid valve in ABSCM & H/U

TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



ABS00322

	Step	Check	Yes	No
1	**CHECK INPUT VOLTAGE OF RELAY HOLDER.** 1)Turn ignition switch to OFF. 2)Remove fuse. 3)Measure the voltage between ABS relay connector and chassis ground. ***Connector & terminal*** ***(B225) No. 5 (+) — Chassis ground (−):*** Is the measured value more than the specified value?	10 V	Go to step **2.**	Repair the open circuit in harness between battery and relay holder connector.
2	**CHECK RELAY HOLDER.** Is the fuse blown out?	The fuse is not blown out.	Go to step **3.**	Replace the fuse.
3	**CHECK INPUT VOLTAGE OF ABS RELAY.** 1)Install fuse. 2)Remove ABS relay. 3)Turn ignition switch to ON. 4)Measure the voltage between ABS relay connector and chassis ground. ***Connector & terminal*** ***(B264) No. 2 (+) — Chassis ground (−):*** Is the measured value more than the specified value?	10 V	Go to step **4.**	Repair the open circuit in harness between battery and relay holder connector.
4	**CHECK INPUT VOLTAGE OF ABS RELAY.** Measure the voltage between ABS relay connector and chassis ground. ***Connector & terminal*** ***(B264) No. 1 (+) — Chassis ground (−):*** Is the measured value more than the specified value?	10 V	Go to step **5.**	Repair the harness connector between battery, ignition switch and ABS relay.
5	**CHECK GROUND CIRCUIT OF ABS RELAY.** 1)Turn ignition switch to OFF. 2)Measure the resistance between ABS relay connector and chassis ground. ***Connector & terminal*** ***(B264) No. 3 (+) — Chassis ground:*** Is the measured value less than the specified value?	5 Ω	Go to step **6.**	Repair open circuit between ABS relay and chassis ground.
6	**CHECK ABS RELAY.** 1)Connect the battery to ABS relay terminals No. 1 and No. 3. 2)Measure the resistance between ABS relay terminals. Is the measured value less than the specified value?	10 Ω	Go to step **7.**	Replace the ABS relay.
7	**CHECK INPUT VOLTAGE OF ABSCM & H/U.** 1)Disconnect the connector from ABSCM & H/U. 2)Idle the engine. 3)Measure the voltage between ABSCM & H/U connector and chassis ground. ***Connector & terminal*** ***(F49) No. 1 (+) — Chassis ground (−):*** Is the measured value within the specified range?	10 — 15 V	Go to step **8.**	Repair the harness connector between battery, ignition switch and ABSCM & H/U.

	Step	Check	Yes	No
8	**CHECK INPUT VOLTAGE OF ABSCM & H/U.** 1)Turn ignition switch to OFF. 2)Disconnect the connector from ABSCM & H/U. 3)Idle the engine. 4)Measure the voltage between ABSCM & H/U connector and chassis ground. ***Connector & terminal*** ***(B301) No. 1 (+) — Chassis ground (−):*** Is the measured value within the specified range?	10 — 15 V	Go to step **9.**	Repair the harness connector between battery, ignition switch and ABSCM & H/U.
9	**CHECK GROUND CIRCUIT OF ABSCM & H/U.** 1)Turn 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 measured value less than the specified value?	0.5 Ω	Go to step **10.**	Repair the ABSCM & H/U ground harness.
10	**CHECK FOR POOR CONTACT IN CONNECTORS.** Is there poor contact in connectors between generator, battery and ABSCM & H/U?	There is no poor contact.	Go to step **11.**	Repair the connector.
11	**CHECK ABSCM & H/U.** 1)Connect all connectors. 2)Clear the memory. 3)Perform the inspection mode. 4)Read out DTC. Is the same DTC still being output?	Same DTC is not output.	Go to step **12.**	Replace the ABSCM & H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>
12	**CHECK FOR OTHER DIAGNOSTIC TROUBLE CODES (DTCs) .** Are other DTCs being output?	Other DTC is not output.	There was a temporary poor contact.	Proceed with the diagnosis corresponding to DTC.

U: DTC 41 — ABS CONTROL MODULE MALFUNCTION —

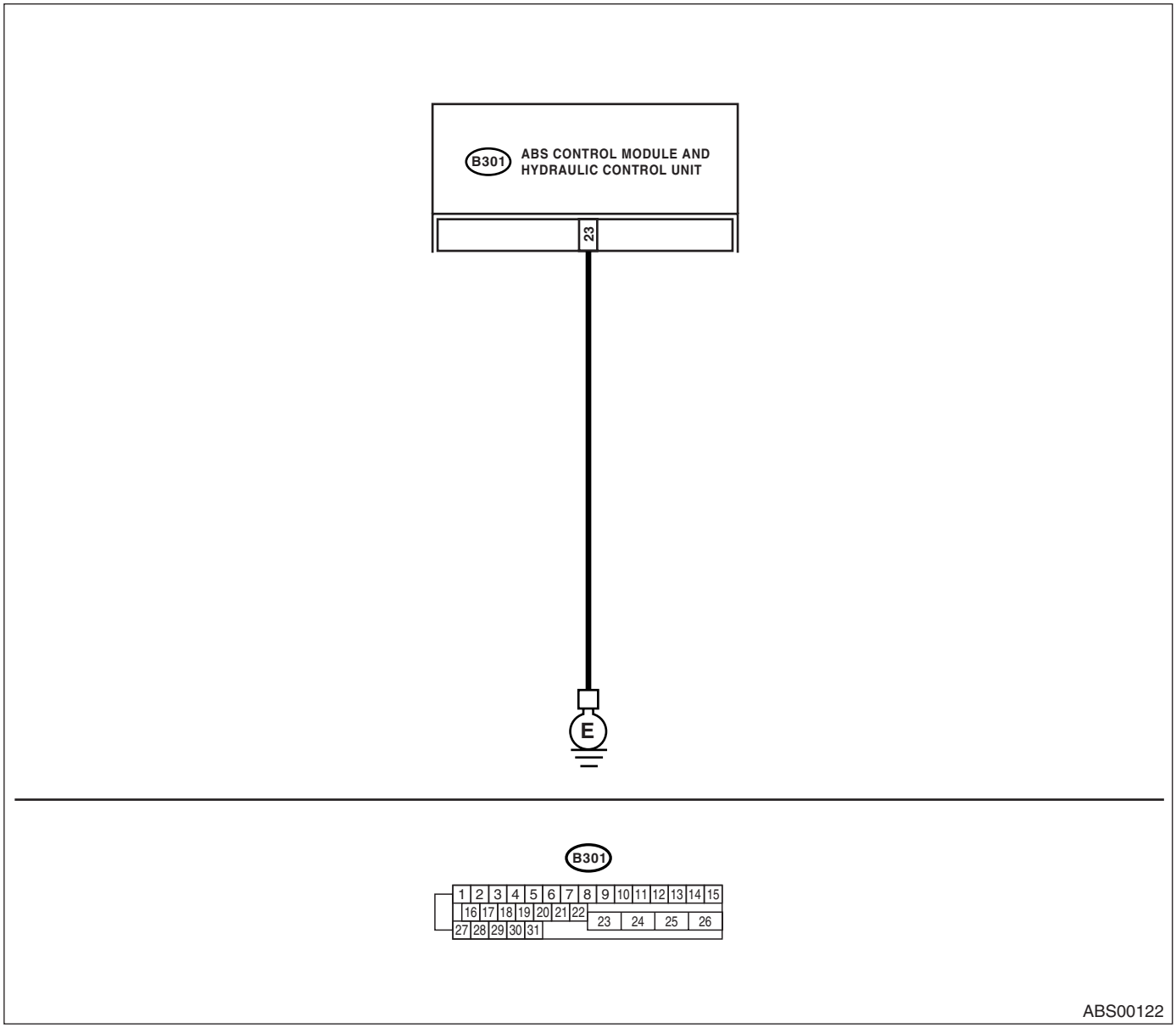
DIAGNOSIS:

- Faulty ABSCM & H/U

TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK GROUND CIRCUIT OF ABSCM & H/U.** 1)Turn ignition switch to OFF. 2)Disconnect the connector from ABSCM & H/U. 3)Measure the resistance between ABSCM & H/U and chassis ground. ***Connector & terminal*** ***(B301) No. 23 — Chassis ground:*** Is the measured value less than the specified value?	0.5 Ω	Go to step **2.**	Repair the ABSCM & H/U ground harness.
2	**CHECK FOR POOR CONTACT IN CONNECTORS.** Is there poor contact in connectors between battery, ignition switch and ABSCM & H/U?	There is no poor contact.	Go to step **3.**	Repair the connector.
3	**CHECK FOR SOURCES OF SIGNAL NOISE.** Is the car telephone or wireless transmitter properly installed?	Car telephone or wireless transmitter is correctly installed.	Go to step **4.**	Properly install the car telephone or wireless transmitter.
4	**CHECK FOR SOURCES OF SIGNAL NOISE.** Are noise sources (such as an antenna) installed near the sensor harness?	Noise sources are not installed.	Go to step **5.**	Install the noise sources apart from sensor harness.
5	**CHECK ABSCM & H/U.** 1)Connect all connectors. 2)Clear the memory. 3)Perform the inspection mode. 4)Read out DTC. Is the same DTC still being output?	Same DTC is not output.	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 FOR OTHER DIAGNOSTIC TROUBLE CODES (DTCs) .** Are other DTCs being output?	Other DTC is not output.	There was a temporary poor contact.	Proceed with the diagnosis corresponding to DTC.

V: DTC 42 — POWER SOURCE VOLTAGE IS ABNORMAL —

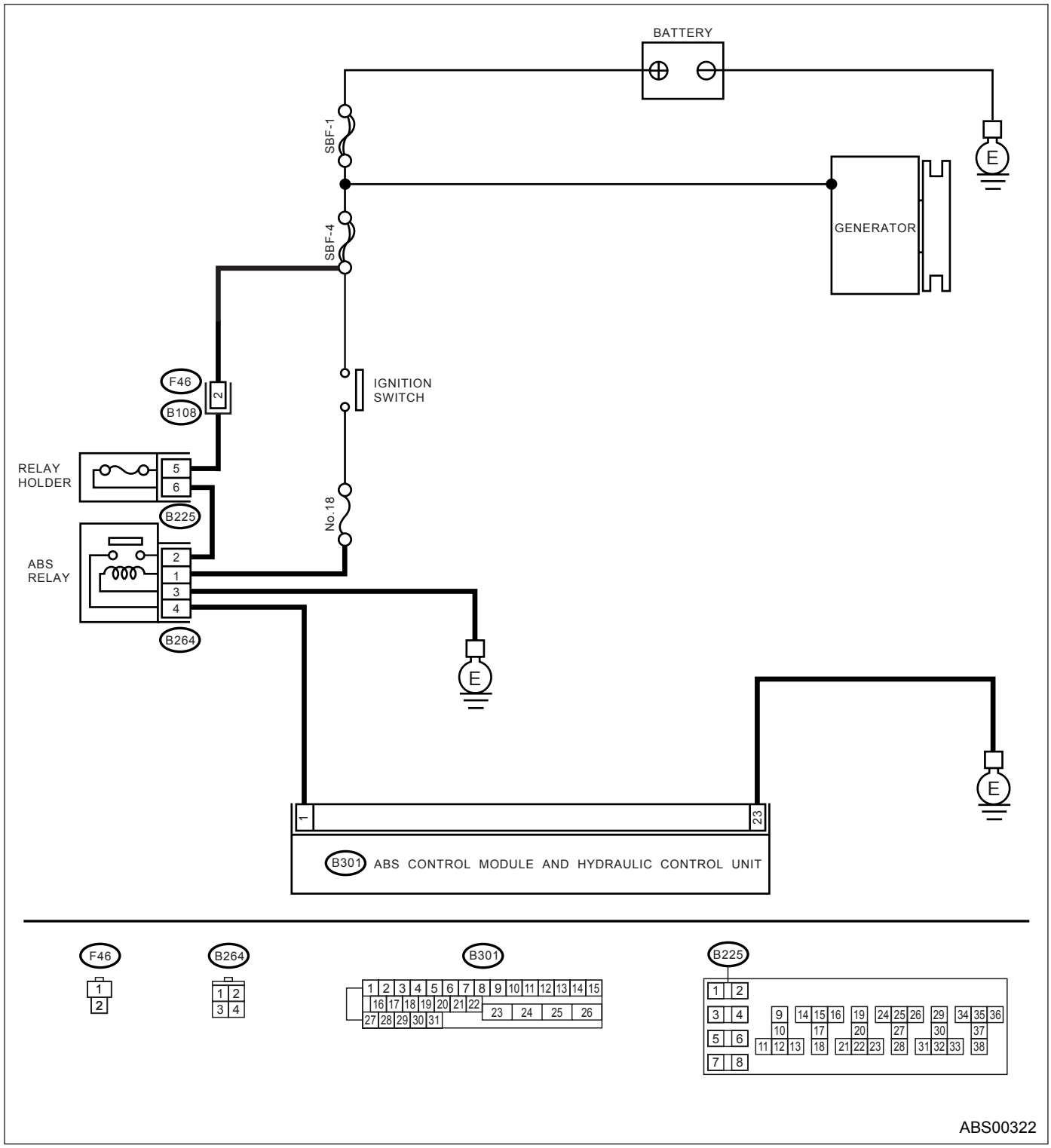
DIAGNOSIS:

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

TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



ABS00322

	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 measured value within the specified range?	10 — 17 V	Go to step **2.**	Repair the generator. <Ref. to SC(H4SO)-13, Generator.>
2	**CHECK BATTERY TERMINALS.** Turn ignition switch to OFF. Are the positive and negative battery terminals tightly clamped?	Terminals are tightly clamped.	Go to step **3.**	Tighten terminals.
3	**CHECK INPUT VOLTAGE OF RELAY HOLDER.** 1)Turn ignition switch to OFF. 2)Remove fuse. 3)Measure the voltage between ABS relay connector and chassis ground. ***Connector & terminal*** ***(B225) No. 5 (+) — Chassis ground (−):*** Is the measured value more than the specified value?	10 V	Go to step **4.**	Repair the open circuit in harness between battery and relay holder connector.
4	**CHECK RELAY HOLDER.** Is the fuse blown out?	The fuse is not blown out.	Go to step **5.**	Replace the fuse.
5	**CHECK INPUT VOLTAGE OF ABS RELAY.** 1)Install fuse. 2)Remove ABS relay. 3)Turn ignition switch to ON. 4)Measure the voltage between ABS relay connector and chassis ground. ***Connector & terminal*** ***(B264) No. 2 (+) — Chassis ground (−):*** Is the measured value more than the specified value?	10 V	Go to step **6.**	Repair the open circuit in harness between battery and relay holder connector.
6	**CHECK INPUT VOLTAGE OF ABS RELAY.** Measure the voltage between ABS relay connector and chassis ground. ***Connector & terminal*** ***(B264) No. 1 (+) — Chassis ground (−):*** Is the measured value more than the specified value?	10 V	Go to step **7.**	Repair the harness connector between battery, ignition switch and ABS relay.
7	**CHECK GROUND CIRCUIT OF ABS RELAY.** 1)Turn ignition switch to OFF. 2)Measure the resistance between ABS relay connector and chassis ground. ***Connector & terminal*** ***(B264) No. 3 (+) — Chassis ground:*** Is the measured value less than the specified value?	5 Ω	Go to step **8.**	Repair open circuit between ABS relay and chassis ground.
8	**CHECK ABS RELAY.** 1)Connect the battery to ABS relay terminals No. 1 and No. 3. 2)Measure the resistance between ABS relay terminals. Is the measured value less than the specified value?	10 Ω	Go to step **9.**	Replace the ABS relay.

	Step	Check	Yes	No
9	**CHECK INPUT VOLTAGE OF ABSCM & H/U.** 1)Disconnect the connector from ABSCM & H/U. 2)Idle the engine. 3)Operate 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 measured value within the specified range?	10 — 17 V	Go to step **10.**	Repair the harness connector between battery, ignition switch and ABSCM & H/U.
10	**CHECK GROUND CIRCUIT OF ABSCM & H/U.** 1)Turn 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 measured value less than the specified value?	0.5 Ω	Go to step **11.**	Repair the ABSCM & H/U ground harness.
11	**CHECK FOR POOR CONTACT IN CONNECTORS.** Is there poor contact in connectors between generator, battery and ABSCM & H/U?	There is no poor contact.	Go to step **12.**	Repair the connector.
12	**CHECK ABSCM & H/U.** 1)Connect all connectors. 2)Clear the memory. 3)Perform the inspection mode. 4)Read out DTC. Is the same DTC still being output?	Same DTC is not output.	Go to step **13.**	Replace the ABSCM & H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>
13	**CHECK FOR OTHER DIAGNOSTIC TROUBLE CODES (DTCs) .** Are other DTCs being output?	Other DTC is not output.	There was a temporary poor contact.	Proceed with the diagnosis corresponding to DTC.

W: DTC 44 — AT CONTROL COMBINATION IS ABNORMAL —

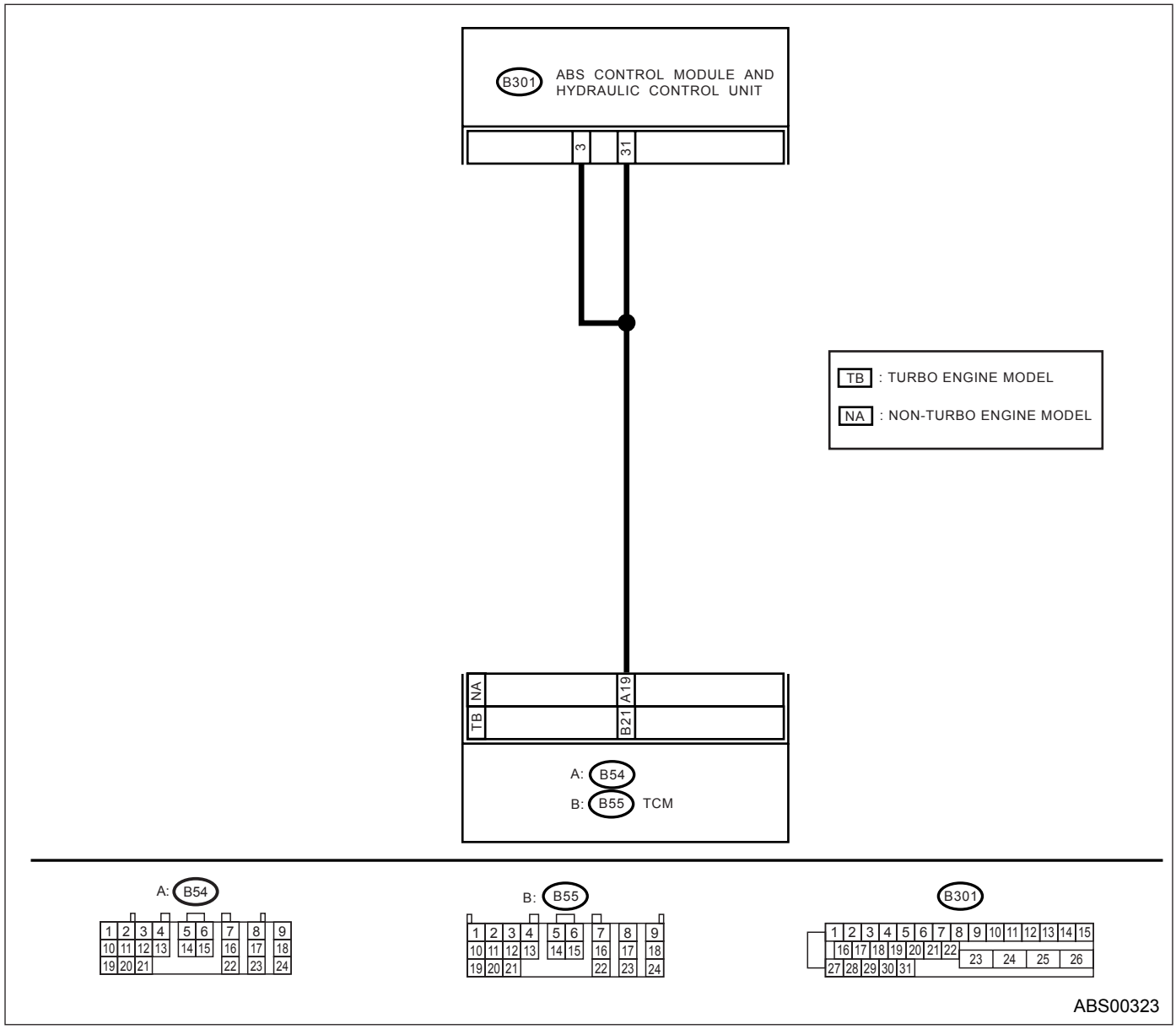
DIAGNOSIS:

- AT control combination is abnormal

TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK SPECIFICATIONS OF THE ABSCM & H/U.** Check the specification mark on the ABSCM & H/U. ***CC: AT*** ***CD: MT*** Does the vehicle specification and ABSCM & H/U specification match?	Specifications are matched.	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 FOR SHORT CIRCUIT TO GROUND IN HARNESS.** 1)Turn ignition switch to OFF. 2)Disconnect all connectors from TCM. 3)Disconnect the connector from ABSCM & H/U. 4)Measure the resistance between ABSCM & H/U connector and chassis ground. ***Connector & terminal*** ***(B301) No. 3 — Chassis ground:*** Is the measured value more than the specified value?	1 MΩ	Go to step **3.**	Repair the harness between ABSCM & H/U and TCM.
3	**CHECK FOR SHORT CIRCUIT TO BATTERY IN HARNESS.** Measure the voltage between ABSCM & H/U connector and chassis ground. ***Connector & terminal*** ***(B301) No. 3 (+) — Chassis ground (−):*** Is the measured value less than the specified value?	1 V	Go to step **4.**	Repair the harness between ABSCM & H/U and TCM.
4	**CHECK FOR SHORT CIRCUIT TO BATTERY IN HARNESS.** 1)Turn ignition switch to ON. 2)Measure the voltage between ABSCM & H/U connector and chassis ground. ***Connector & terminal*** ***(B301) No. 3 (+) — Chassis ground (−):*** Is the measured value less than the specified value?	1 V	Go to step **5.**	Repair the harness between ABSCM & H/U and TCM.
5	**CHECK TCM.** 1)Turn ignition switch to OFF. 2)Connect all connectors to TCM. 3)Turn ignition switch to ON. 4)Measure the voltage between TCM connector terminal and chassis ground. ***Connector & terminal*** ***NON-TURBO MODEL*** ***(B54) No. 19 (+) — Chassis ground (−):*** ***TURBO MODEL*** ***(B55) No. 2 (+) — Chassis ground (−):*** Is the measured value within the specified range?	10 — 15 V	Go to step **7.**	Go to step **6.**
6	**CHECK AT.** Is the AT functioning normally?	AT is functioning normally.	Replace the TCM.	Repair the AT.

	Step	Check	Yes	No
7	**CHECK FOR OPEN CIRCUIT IN HARNESS.** Measure the voltage between ABSCM & H/U connector and chassis ground. ***Connector & terminal*** ***(B301) No. 3 (+) — Chassis ground (−):*** ***(B301) No. 31 (+) — Chassis ground (−):*** Is the measured value within the specified range?	10 — 15 V	Go to step **8.**	Repair the harness/connector between ABSCM & H/U and TCM.
8	**CHECK FOR POOR CONTACT IN CONNECTORS.** Is there poor contact in connectors between TCM and ABSCM & H/U?	There is no poor contact.	Go to step **9.**	Repair the connector.
9	**CHECK ABSCM & H/U.** 1)Turn ignition switch to OFF. 2)Connect all connectors. 3)Clear the memory. 4)Perform the inspection mode. 5)Read out DTC. Is the same DTC still being output?	Same DTC is not output.	Go to step **10.**	Replace the ABSCM & H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>
10	**CHECK FOR OTHER DIAGNOSTIC TROUBLE CODES (DTCs) .** Are other DTCs being output?	Other DTC is not output.	There was a temporary poor contact.	Proceed with the diagnosis corresponding to DTC.

X: DTC 51 — VALVE RELAY MALFUNCTION —

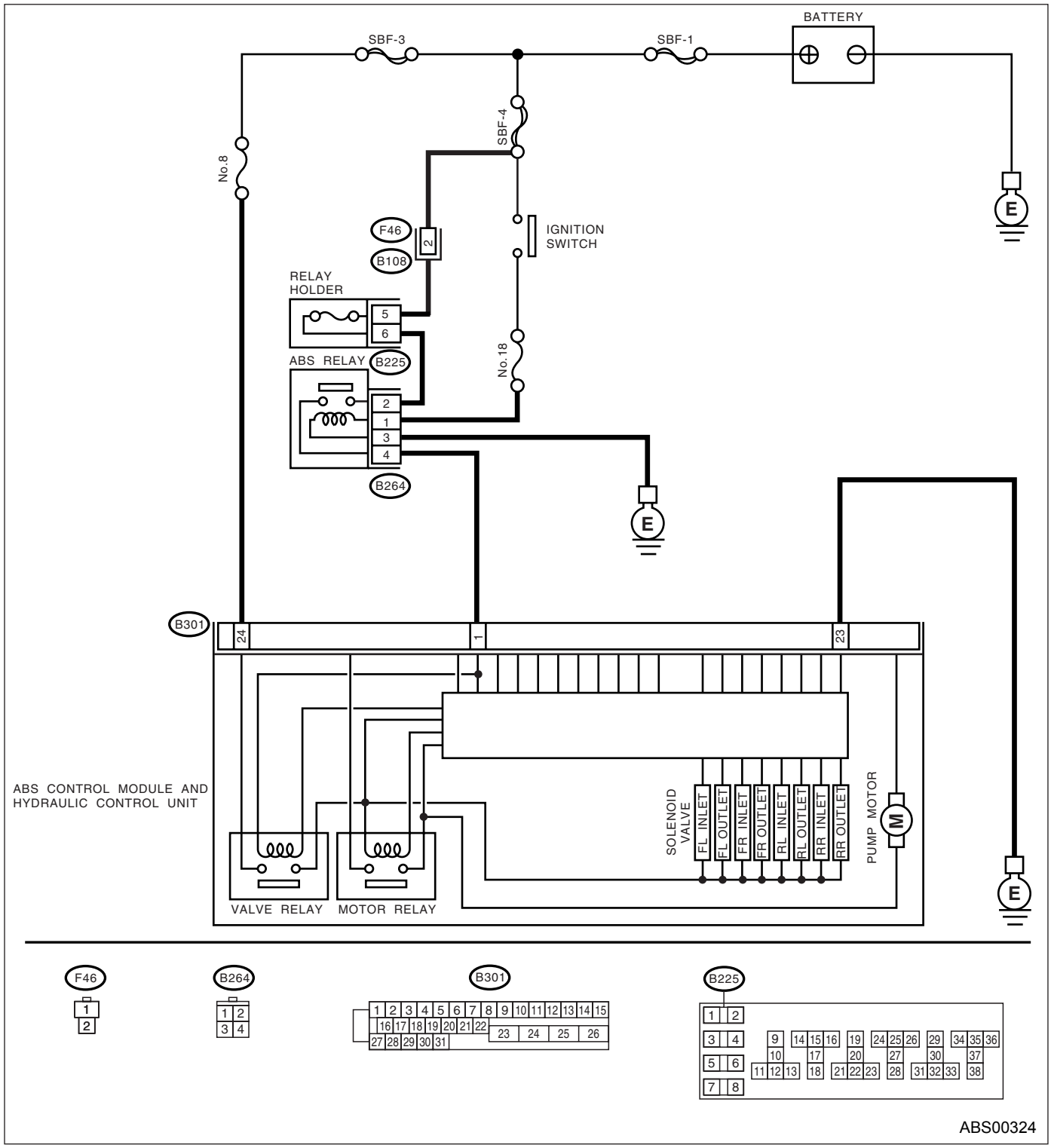
DIAGNOSIS:

- Valve relay malfunction

TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK INPUT VOLTAGE OF RELAY HOLDER.** 1)Turn ignition switch to OFF. 2)Remove fuse. 3)Measure the voltage between ABS relay connector and chassis ground. ***Connector & terminal*** ***(B225) No. 5 (+) — Chassis ground (−):*** Is the measured value more than the specified value?	10 V	Go to step **2.**	Repair the open circuit in harness between battery and relay holder connector.
2	**CHECK RELAY HOLDER.** Is the fuse blown out?	The fuse is not blown out.	Go to step **3.**	Replace the fuse.
3	**CHECK INPUT VOLTAGE OF ABS RELAY.** 1)Install fuse. 2)Remove ABS relay. 3)Turn ignition switch to ON. 4)Measure the voltage between ABS relay connector and chassis ground. ***Connector & terminal*** ***(B264) No. 2 (+) — Chassis ground (−):*** Is the measured value more than the specified value?	10 V	Go to step **4.**	Repair the open circuit in harness between battery and relay holder connector.
4	**CHECK INPUT VOLTAGE OF ABS RELAY.** Measure the voltage between ABS relay connector and chassis ground. ***Connector & terminal*** ***(B264) No. 1 (+) — Chassis ground (−):*** Is the measured value more than the specified value?	10 V	Go to step **5.**	Repair the harness connector between battery, ignition switch and ABS relay.
5	**CHECK GROUND CIRCUIT OF ABS RELAY.** 1)Turn ignition switch to OFF. 2)Measure the resistance between ABS relay connector and chassis ground. ***Connector & terminal*** ***(B264) No. 3 (+) — Chassis ground:*** Is the measured value less than the specified value?	5 Ω	Go to step **6.**	Repair open circuit between ABS relay and chassis ground.
6	**CHECK ABS RELAY.** 1)Connect the battery to ABS relay terminals No. 1 and No. 3. 2)Measure the resistance between ABS relay terminals. Is the measured value less than the specified value?	10 Ω	Go to step **7.**	Replace the ABS relay.
7	**CHECK INPUT VOLTAGE OF ABSCM & H/U.** 1)Turn ignition switch to OFF. 2)Disconnect the connector from ABSCM & H/U. 3)Idle the engine. 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 measured value within the specified range?	10 — 15 V	Go to step **8.**	Repair the harness connector between battery, ABS relay and ABSCM & H/U.

	Step	Check	Yes	No
8	**CHECK GROUND CIRCUIT OF ABSCM & H/U.** 1)Turn 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 measured value less than the specified value?	0.5 Ω	Go to step **9.**	Repair the ABSCM & H/U ground harness.
9	**CHECK VALVE RELAY IN ABSCM & H/U.** Measure the resistance between ABSCM & H/U and terminals. ***Terminal*** ***No. 23 — No. 24:*** Is the measured value more than the specified value?	1 MΩ	Go to step **10.**	Replace the ABSCM & H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>
10	**CHECK FOR POOR CONTACT IN CONNECTORS.** Is there poor contact in connector between generator, battery and ABSCM & H/U?	There is no poor contact.	Go to step **11.**	Repair the connector.
11	**CHECK ABSCM & H/U.** 1)Connect all connectors. 2)Clear the memory. 3)Perform the inspection mode. 4)Read out DTC. Is the same DTC still being output?	Same DTC is not output.	Go to step **12.**	Replace the ABSCM & H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>
12	**CHECK FOR OTHER DIAGNOSTIC TROUBLE CODES (DTCs) .** Are other DTCs being output?	Other DTC is not output.	There was a temporary poor contact.	Proceed with the diagnosis corresponding to DTC.

Y: DTC 52 — MOTOR AND/OR MOTOR RELAY MALFUNCTION —

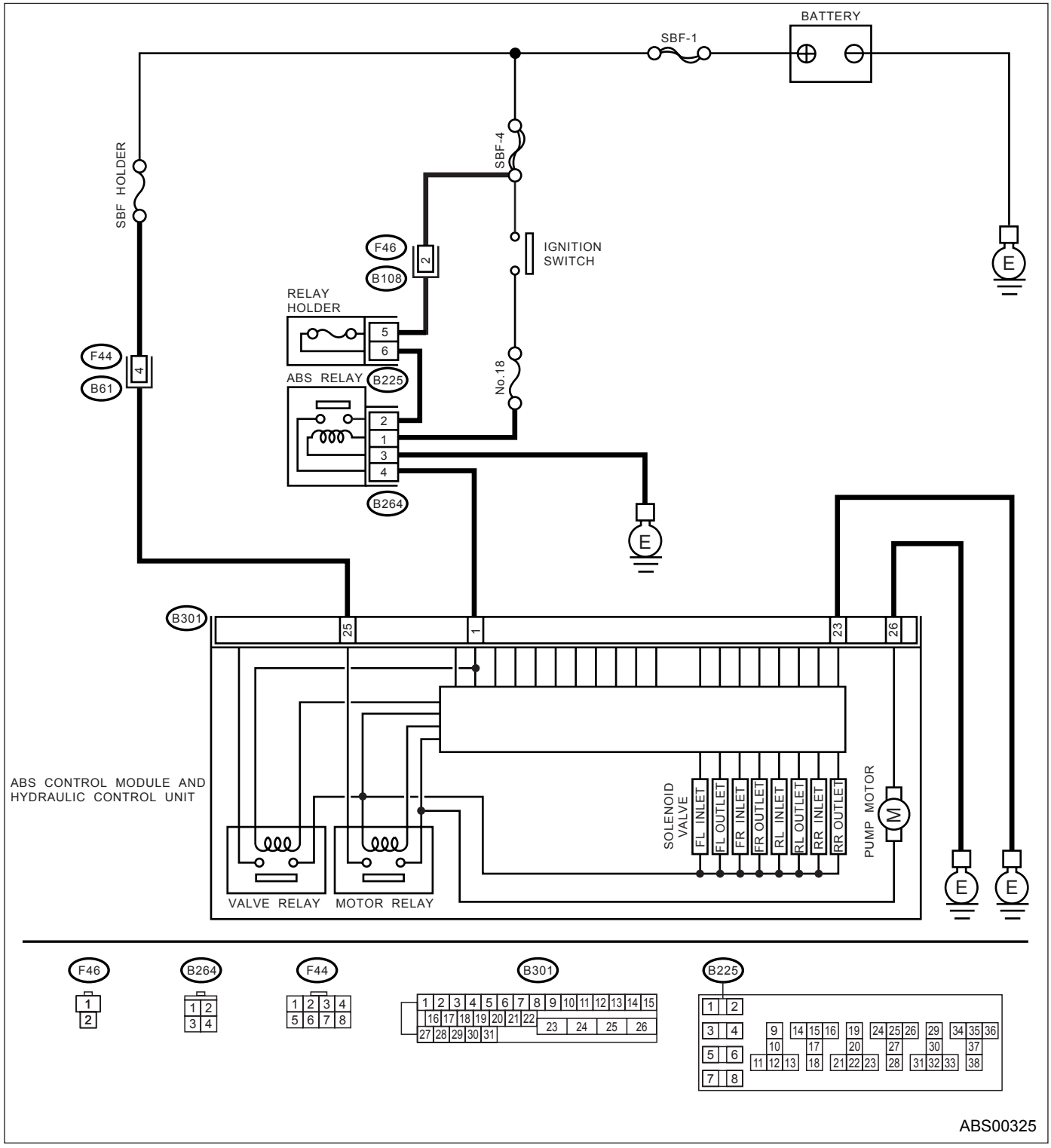
DIAGNOSIS:

- Motor malfunction
- Motor relay malfunction
- Faulty harness connector

TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK INPUT VOLTAGE OF ABSCM & H/U.** 1)Turn ignition switch to OFF. 2)Disconnect the connector from ABSCM & H/U. 3)Turn 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 measured value within the specified range?	10 — 15 V	Go to step **2.**	Repair the harness/connector between battery and ABSCM & H/U and check fuse SBF-holder.
2	**CHECK GROUND CIRCUIT OF MOTOR.** 1)Turn 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 measured value less than the specified value?	0.5 Ω	Go to step **3.**	Repair the ABSCM & H/U ground harness.
3	**CHECK INPUT VOLTAGE OF RELAY HOLDER.** 1)Turn ignition switch to OFF. 2)Remove fuse. 3)Measure the voltage between ABS relay connector and chassis ground. ***Connector & terminal*** ***(B225) No. 5 (+) — Chassis ground (−):*** Is the measured value more than the specified value?	10 V	Go to step **4.**	Repair the open circuit in harness between battery and relay holder connector.
4	**CHECK RELAY HOLDER.** Is the fuse blown out?	The fuse is not blown out.	Go to step **5.**	Replace the fuse.
5	**CHECK INPUT VOLTAGE OF ABS RELAY.** 1)Install fuse. 2)Remove ABS relay. 3)Turn ignition switch to ON. 4)Measure the voltage between ABS relay connector and chassis ground. ***Connector & terminal*** ***(B264) No. 2 (+) — Chassis ground (−):*** Is the measured value more than the specified value?	10 V	Go to step **6.**	Repair the open circuit in harness between battery and relay holder connector.
6	**CHECK INPUT VOLTAGE OF ABS RELAY.** Measure the voltage between ABS relay connector and chassis ground. ***Connector & terminal*** ***(B264) No. 1 (+) — Chassis ground (−):*** Is the measured value more than the specified value?	10 V	Go to step **7.**	Repair the harness connector between battery, ignition switch and ABS relay.
7	**CHECK GROUND CIRCUIT OF ABS RELAY.** 1)Turn ignition switch to OFF. 2)Measure the resistance between ABS relay connector and chassis ground. ***Connector & terminal*** ***(B264) No. 3 (+) — Chassis ground:*** Is the measured value less than the specified value?	5 Ω	Go to step **8.**	Repair open circuit between ABS relay and chassis ground.

	Step	Check	Yes	No
8	**CHECK ABS RELAY.** 1)Connect the battery to ABS relay terminals No. 1 and No. 3. 2)Measure the resistance between ABS relay terminals. Is the measured value less than the specified value?	10 Ω	Go to step **9.**	Replace the ABS relay.
9	**CHECK INPUT VOLTAGE OF ABSCM & H/U.** 1)Idle the engine. 2)Measure the voltage between ABSCM & H/U connector and chassis ground. ***Connector & terminal*** ***(B301) No. 1 (+) — Chassis ground (−):*** Is the measured value within the specified range?	10 — 15 V	Go to step **10.**	Repair the harness connector between battery, ignition switch and ABSCM & H/U.
10	**CHECK GROUND CIRCUIT OF ABSCM & H/U.** 1)Turn 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 measured value less than the specified value?	0.5 Ω	Go to step **11.**	Repair the ABSCM & H/U ground harness.
11	**CHECK MOTOR OPERATION.** Operate the sequence control. <Ref. to ABS-11, ABS Sequence Control.> NOTE: Use the diagnosis connector to operate sequence control. Can motor operating noise (buzz) be heard during the sequence control?	Motor operating noise (buzz) can be heard.	Go to step **12.**	Replace the ABSCM & H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>
12	**CHECK FOR POOR CONTACT IN CONNECTORS.** Turn ignition switch to OFF. Is there poor contact in connectors between generator, battery and ABSCM & H/U?	There is no poor contact.	Go to step **13.**	Repair the connector.
13	**CHECK ABSCM & H/U.** 1)Connect all connectors. 2)Clear the memory. 3)Perform the inspection mode. 4)Read out DTC. Is the same DTC still being output?	Same DTC is not output.	Go to step **14.**	Replace the ABSCM & H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>

	Step	Check	Yes	No
14	**CHECK FOR OTHER DIAGNOSTIC TROUBLE CODES (DTCs) .** Are other DTCs being output?	Other DTC is not output.	There was 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 the vehicle.	Proceed with the diagnosis corresponding to DTC.

Z: DTC 54 — STOP LIGHT SWITCH MALFUNCTION —

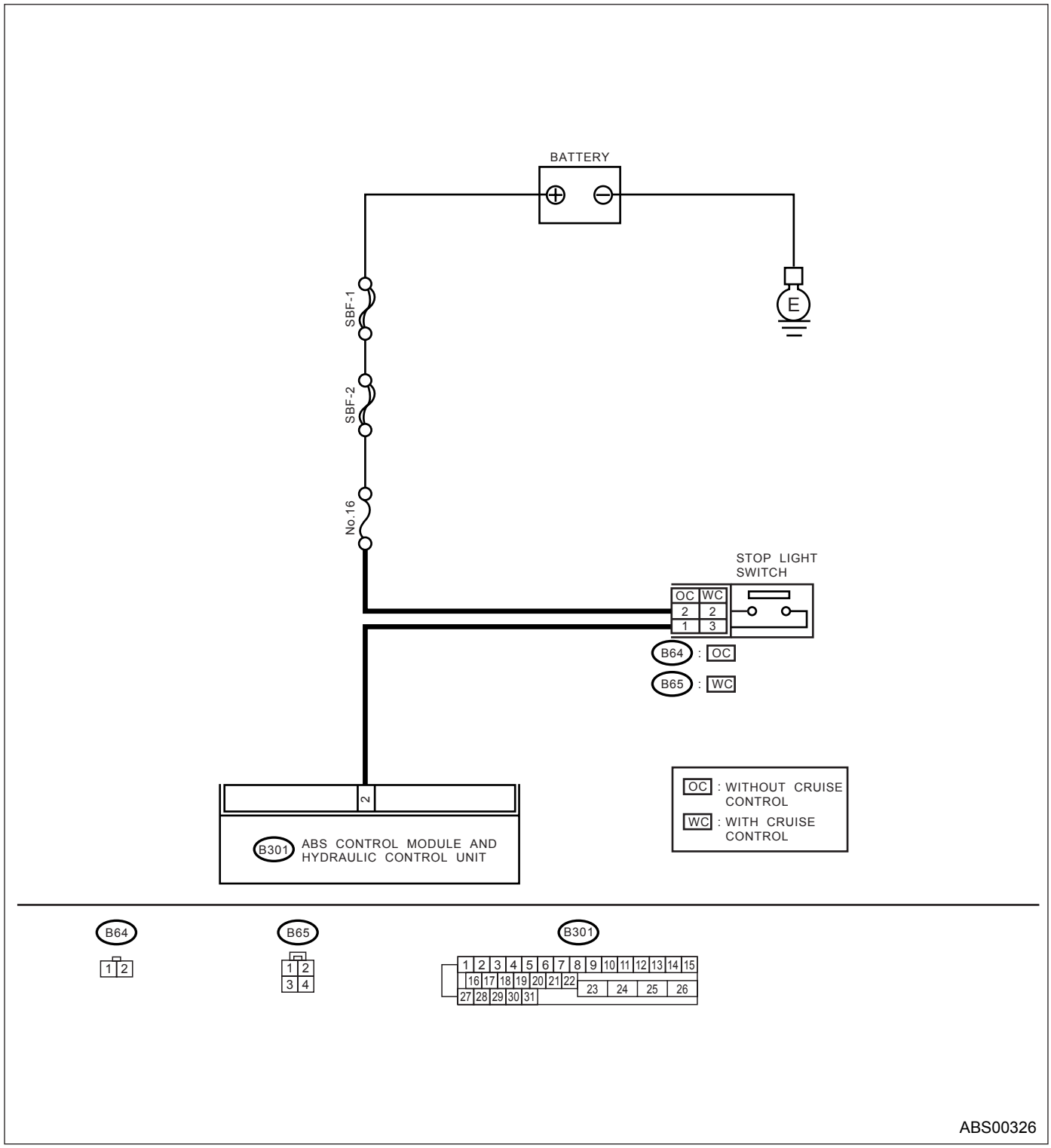
DIAGNOSIS:

- Stop light switch malfunction

TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



ABS00326

	Step	Check	Yes	No
1	**CHECK IF STOP LIGHTS COME ON.** Depress the brake pedal. Do the stop lights turn on?	Stop lights turn on.	Go to step **2.**	Repair the stop lights circuit.
2	**CHECK FOR OPEN CIRCUIT IN HARNESS.** 1)Turn 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 measured value within the specified range?	10 — 15 V	Go to step **3.**	Repair the harness between stop light switch and ABSCM & H/U.
3	**CHECK FOR POOR CONTACT IN CONNECTORS.** Is there poor contact in connector between stop light switch and ABSCM & H/U?	There is no poor contact.	Go to step **4.**	Repair the connector.
4	**CHECK ABSCM & H/U.** 1)Connect all connectors. 2)Clear the memory. 3)Perform the inspection mode. 4)Read out DTC. Is the same DTC still being output?	Same DTC is not output.	Go to step **5.**	Replace the ABSCM & H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>
5	**CHECK FOR OTHER DIAGNOSTIC TROUBLE CODES (DTCs) .** Are other DTCs being output?	Other DTC is not output.	There was a temporary poor contact.	Proceed with the diagnosis corresponding to DTC.

AA:DTC 56 — ABNORMAL G SENSOR OUTPUT VOLTAGE —

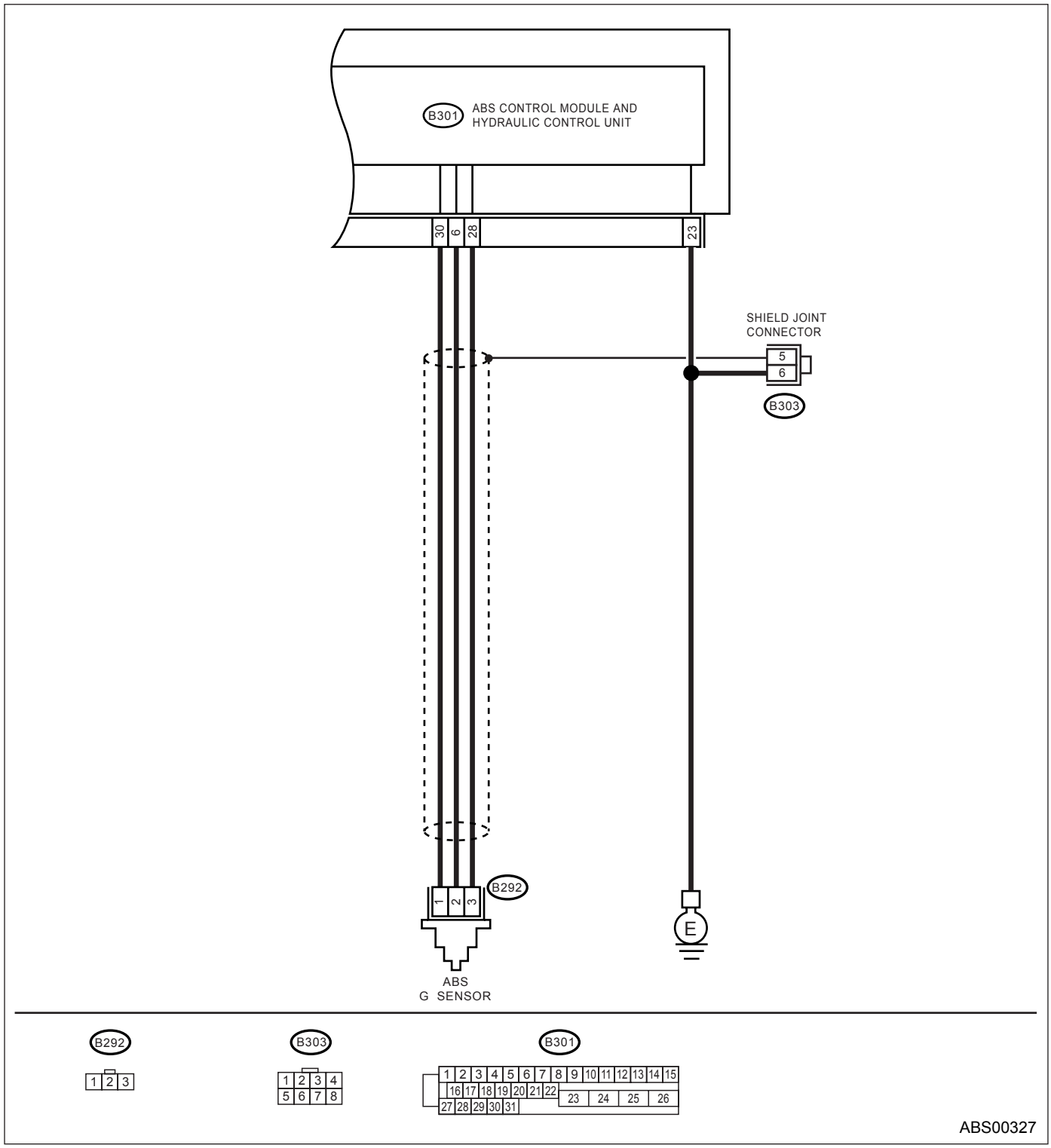
DIAGNOSIS:

- Abnormal G sensor output voltage

TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK IF THE WHEELS HAVE TURNED FREELY FOR A LONG TIME.** Have the wheels been turned freely such as when the vehicle is lifted up, or operated on a free roller or rolling road?	Wheels have not been turned freely.	Go to step **2.**	The ABS is normal. Clear the memory.
2	**CHECK SPECIFICATIONS OF THE ABSCM & H/U.** Check the specification mark on the ABSCM & H/U. ***CC: AT*** ***CD: MT*** Does the vehicle specification and ABSCM & H/U specification match?	Specifications are matched.	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 INPUT VOLTAGE OF G SENSOR.** 1)Turn ignition switch to OFF. 2)Remove the console box. 3)Remove the G sensor from vehicle. (Do not disconnect connector.) 4)Turn ignition switch to ON. 5)Measure the voltage between G sensor connector terminals. ***Connector & terminal*** ***(B292) No. 1 (+) — No. 3 (–):*** Is the measured value within the specified range?	4.75 — 5.25 V	Go to step **4.**	Repair the harness/connector between G sensor and ABSCM & H/U.
4	**CHECK OPEN CIRCUIT IN G SENSOR OUTPUT HARNESS AND GROUND HARNESS.** 1)Turn 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 measured value within the specified range?	5.0 — 5.6 kΩ	Go to step **5.**	Repair the harness/connector between G sensor and ABSCM & H/U.
5	**CHECK SHORT CIRCUIT TO GROUND IN G SENSOR OUTPUT HARNESS.** 1)Disconnect the connector from G sensor. 2)Measure the resistance between ABSCM & H/U connector and chassis ground. ***Connector & terminal*** ***(B301) No. 6 — Chassis ground:*** Is the measured value more than the specified value?	1 MΩ	Go to step **6.**	Repair the harness between G sensor and ABSCM & H/U.
6	**CHECK FOR SHORT CIRCUIT TO BATTERY IN HARNESS.** Measure the voltage between ABSCM & H/U connector and chassis ground. ***Connector & terminal*** ***(B301) No. 6 (+) — Chassis ground (–):*** Is the measured value less than the specified value?	1 V	Go to step **7.**	Repair the harness between G sensor and ABSCM & H/U.

	Step	Check	Yes	No
7	**CHECK FOR SHORT CIRCUIT TO BATTERY IN HARNESS.** 1)Turn ignition switch to ON. 2)Measure the voltage between ABSCM & H/U connector and chassis ground. ***Connector & terminal*** ***(B301) No. 6 (+) — Chassis ground (−):*** Is the measured value less than the specified value?	1 V	Go to step **8.**	Repair the harness between G sensor and ABSCM & H/U.
8	**CHECK FOR SHORT CIRCUIT TO GROUND IN HARNESS.** Measure the resistance between ABSCM & H/U connector and chassis ground. ***Connector & terminal*** ***(B301) No. 28 — Chassis ground:*** Is the measured value more than the specified value?	1 MΩ	Go to step **9.**	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).>
9	**CHECK G SENSOR.** 1)Turn ignition switch to OFF. 2)Remove the G sensor from vehicle. 3)Connect the connector to G sensor. 4)Connect the connector to ABSCM & H/U. 5)Turn ignition switch to ON. 6)Measure the voltage between G sensor connector terminals. ***Connector & terminal*** ***(B292) No. 2 (+) — No. 3 (−):*** Is the measured value within specified value when G sensor is horizontal?	2.1 — 2.4 V	Go to step **10.**	Replace the G sensor. <Ref. to ABS-23, G Sensor.>
10	**CHECK G SENSOR.** Measure the voltage between G sensor connector terminals. ***Connector & terminal*** ***(B292) No. 2 (+) — No. 3 (−):*** Is the measured value within the specified range when G sensor is inclined forwards to 90°?	3.7 — 4.1 V	Go to step **11.**	Replace the G sensor. <Ref. to ABS-23, G Sensor.>
11	**CHECK G SENSOR.** Measure the voltage between G sensor connector terminals. ***Connector & terminal*** ***(B292) No. 2 (+) — No. 3 (−):*** Is the measured value within the specified range when G sensor is inclined backwards to 90°?	0.5 — 0.9 V	Go to step **12.**	Replace the G sensor. <Ref. to ABS-23, G Sensor.>
12	**CHECK FOR POOR CONTACT IN CONNECTORS.** Is there poor contact in connector between ABSCM & H/U and G sensor?	There is no poor contact.	Go to step **13.**	Repair the connector.
13	**CHECK ABSCM & H/U.** 1)Connect all connectors. 2)Clear the memory. 3)Perform the inspection mode. 4)Read out DTC. Is the same DTC still being output?	Same DTC is not output.	Go to step **14.**	Replace the ABSCM & H/U. <Ref. to ABS-7, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>

	Step	Check	Yes	No
14	**CHECK FOR OTHER DIAGNOSTIC TROUBLE CODES (DTCs) .** Are other DTCs being output?	Other DTC is not output.	There was a temporary poor contact.	Proceed with the diagnosis corresponding to DTC.