12. Diagnostic Procedure with Diagnostic Trouble Code (DTC)

A: DTC C0101 ABS WHEEL SPEED SENSOR MALFUNCTION RR SENSOR (BROKEN WIRE, INPUT VOLTAGE TOO HIGH)

NOTE:

For the diagnostic procedure, refer to DTC C0104. <Ref. to ABS(diag)-38, DTC C0104 ABS WHEEL SPEED SENSOR MALFUNCTION FL SENSOR (BROKEN WIRE, INPUT VOLTAGE TOO HIGH), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

B: DTC C0102 ABS WHEEL SPEED SENSOR MALFUNCTION RL SENSOR (BROKEN WIRE, INPUT VOLTAGE TOO HIGH)

NOTE:

For the diagnostic procedure, refer to DTC C0104. <Ref. to ABS(diag)-38, DTC C0104 ABS WHEEL SPEED SENSOR MALFUNCTION FL SENSOR (BROKEN WIRE, INPUT VOLTAGE TOO HIGH), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

C: DTC C0103 ABS WHEEL SPEED SENSOR MALFUNCTION FR SENSOR (BROKEN WIRE, INPUT VOLTAGE TOO HIGH)

NOTE:

For the diagnostic procedure, refer to DTC C0104. <Ref. to ABS(diag)-38, DTC C0104 ABS WHEEL SPEED SENSOR MALFUNCTION FL SENSOR (BROKEN WIRE, INPUT VOLTAGE TOO HIGH), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

D: DTC C0104 ABS WHEEL SPEED SENSOR MALFUNCTION FL SENSOR (BROKEN WIRE, INPUT VOLTAGE TOO HIGH)

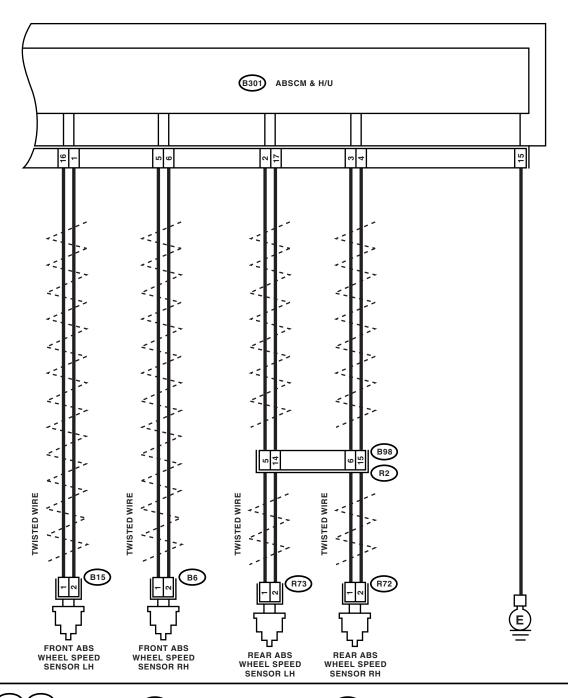
DTC DETECTING CONDITION:

- Defective ABS wheel speed sensor (broken wire, input voltage too high)
- Defective harness connector

TROUBLE SYMPTOM:

ABS does not operate.

WIRING DIAGRAM:









	Step	Check	Yes	No
1	CHECK POOR CONTACT IN CONNECTOR.	Is there poor contact?	Repair the con-	Go to step 2.
	Check the poor contact between ABSCM&H/U		nector.	
	and ABS wheel speed sensor.			
2	CHECK HARNESS CONNECTOR BETWEEN	Is the resistance less than 0.5	Go to step 3.	Repair the har-
	ABSCM&H/U AND ABS WHEEL SPEED	Ω ?		ness connector
	SENSOR.			between
	 Disconnect the connector (B301) from 			ABSCM&H/U and
	ABSCM&H/U.			ABS wheel speed
	2) Disconnect the connector from ABS wheel			sensor.
	speed sensor.			
	Measure the resistance between			
	ABSCM&H/U connector and ABS wheel speed			
	sensor connector.			
	Connector & terminal			
	DTC C0101			
	(B301) No. 3 — (R72) No. 1:			
	(B301) No. 4 — (R72) No. 2:			
	DTC C0102			
	(B301) No. 2 — (R73) No. 1:			
	(B301) No. 17 — (R73) No. 2: DTC C0103			
	(B301) No. 5 — (B6) No. 1:			
	(B301) No. 6 — (B6) No. 2:			
	DTC C0104			
	(B301) No. 16 — (B15) No. 1:			
	(B301) No. 1 — (B15) No. 2:			
3	CHECK GROUND SHORT OF HARNESS.	Is the resistance more than 1	Go to step 4.	Repair the har-
	Measure the resistance between ABSCM&H/U	ΜΩ?		ness connector
	connector and chassis ground.			between
	Connector & terminal			ABSCM&H/U and
	DTC C0101			ABS wheel speed
	(B301) No. 4 — Chassis ground:			sensor.
	DTC C0102			
	(B301) No. 17 — Chassis ground:			
	DTC C0103			
	(B301) No. 6 — Chassis ground:			
	DTC C0104			
<u> </u>	(B301) No. 1 — Chassis ground:			
4	CHECK ABS WHEEL SPEED SENSOR POW-	is the voltage 5 — 16 V?	Go to step 6.	Go to step 5.
	ER SUPPLY CIRCUIT.			
	 Connect the ABSCM&H/U connector. Turn the ignition switch to ON. 			
	3) Measure the voltage between ABS wheel			
	speed sensor connector and chassis ground.			
	Connector & terminal			
	DTC C0101			
	(R72) No. 1 (+) — Chassis ground (-):			
	DTC C0102			
	(R73) No. 1 (+) — Chassis ground (–):			
	DTC C0103			
	(B6) No. 1 (+) — Chassis ground (−):			
	DTC C0104			
	(B15) No. 1 (+) — Chassis ground (–):			

	Step	Check	Yes	No
5	CHECK ABSCM&H/U POWER SUPPLY CIRCUIT. 1) Turn the ignition switch to OFF. 2) Disconnect the ABSCM&H/U connector. 3) Turn the ignition switch to ON. 4) Measure the voltage between ABSCM&H/U connector and chassis ground. Connector & terminal (B301) No. 18 (+) — (B301) No. 15 (-):	Is the voltage 10 — 15 V?	Go to step 7.	Check the generator, battery, ABSCM&H/U power circuit.
6	CHECK ABS WHEEL SPEED SENSOR SIGNAL. 1) Install the ABS wheel speed sensor. 2) Prepare an oscilloscope. 3) Check ABS wheel speed sensor. <ref. abs="" abs-13,="" front="" inspection,="" sensor,="" sensor.="" speed="" to="" wheel=""></ref.>	Is the waveform pattern as shown in the figure?	Go to step 7.	Replace the speed sensor.
7	CHECK ABSCM&H/U. 1) Connect all the connectors. 2) Erase the memory. 3) Perform the inspection mode. <ref. abs(diag)-17,="" clear="" memory="" mode,="" monitor.="" operation,="" select="" subaru="" to=""> 4) Read the DTC.</ref.>	Is the same DTC displayed?	Replace the ABSCM only. <ref. (abscm&h="" abs="" abs-8,="" and="" control="" hydraulic="" module="" replacement,="" to="" u).="" unit=""></ref.>	Go to step 8.
8	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Perform the diagnosis according to DTC.	It results from a temporary noise interference.

E: DTC C0105 REAR ABS WHEEL SPEED SENSOR RH MALFUNCTION (ABS WHEEL SPEED SENSOR ABNORMAL SIGNAL)

NOTF:

For the diagnostic procedure, refer to DTC C0108. <Ref. to ABS(diag)-41, DTC C0108 FRONT ABS WHEEL SPEED SENSOR LH MALFUNCTION (ABS WHEEL SPEED SENSOR ABNORMAL SIGNAL), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

F: DTC C0106 REAR ABS WHEEL SPEED SENSOR LH MALFUNCTION (ABS WHEEL SPEED SENSOR ABNORMAL SIGNAL)

NOTE:

For the diagnostic procedure, refer to DTC C0108. <Ref. to ABS(diag)-41, DTC C0108 FRONT ABS WHEEL SPEED SENSOR LH MALFUNCTION (ABS WHEEL SPEED SENSOR ABNORMAL SIGNAL), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

G: DTC C0107 FRONT ABS WHEEL SPEED SENSOR RH MALFUNCTION (ABS WHEEL SPEED SENSOR ABNORMAL SIGNAL)

NOTE:

For the diagnostic procedure, refer to DTC C0108. <Ref. to ABS(diag)-41, DTC C0108 FRONT ABS WHEEL SPEED SENSOR LH MALFUNCTION (ABS WHEEL SPEED SENSOR ABNORMAL SIGNAL), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

H: DTC C0108 FRONT ABS WHEEL SPEED SENSOR LH MALFUNCTION (ABS WHEEL SPEED SENSOR ABNORMAL SIGNAL)

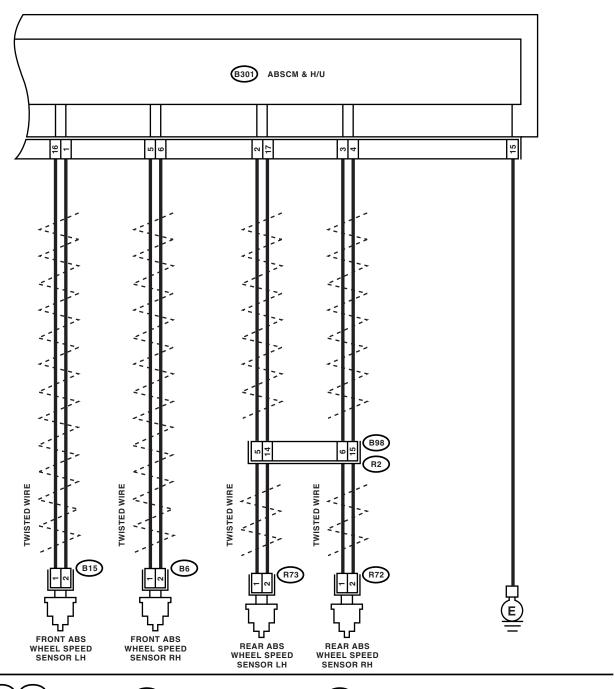
DTC DETECTING CONDITION:

- Defective ABS wheel speed sensor signal (noise, abnormal signal, etc.)
- Defective harness connector

TROUBLE SYMPTOM:

ABS does not operate.

WIRING DIAGRAM:









	Step	Check	Yes	No
1	CHECK OUTPUT OF ABS WHEEL SPEED SENSOR USING SUBARU SELECT MONITOR. 1) Select {Current Data Display & Save} in Subaru Select Monitor. 2) Read the ABS wheel speed sensor output corresponding to the faulty wheel in Subaru Select Monitor data display mode.	Does the speed indicated on the display change in response to the speedometer reading during acceleration/decelera- tion when the steering wheel is in the straight-ahead position?	Go to step 2.	Go to step 7.
2	CHECK POOR CONTACT IN CONNECTOR. Turn the ignition switch to OFF.	Is there poor contact in con- nectors between ABSCM&H/U and ABS wheel speed sensor?	Repair the con- nector.	Go to step 3.
3	CHECK SOURCES OF SIGNAL NOISE. Make sure the radio wave device and electric components like car phone, radio, etc. are installed correctly.	Is the radio wave device and electric components like car phone, radio, etc. installed correctly?	Go to step 4.	Install the radio wave device and electric components properly.
4	CHECK SOURCES OF SIGNAL NOISE. Check that the noise sources are (such as an antenna) installed near the sensor harness.	Is the noise sources installed?	Install the noise sources apart from the sensor harness.	Go to step 5.
5	CHECK ABSCM&H/U. 1) Connect all the connectors. 2) Erase the memory. 3) Perform the inspection mode. <ref. abs(diag)-17,="" clear="" memory="" mode,="" monitor.="" operation,="" select="" subaru="" to=""> 4) Read the DTC.</ref.>	Is the same DTC displayed?	Replace the ABSCM only. <ref. abs-8,<br="" to="">REPLACEMENT, ABS Control Mod- ule and Hydraulic Control Unit (ABSCM&H/U).></ref.>	Go to step 6.
6	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Perform the diag- nosis according to DTC.	It results from a temporary noise interference.
7	CHECK INSTALLATION OF ABS WHEEL SPEED SENSOR.	Is the ABS wheel speed sensor installation bolt tightened to 7.5 N·m (0.76 kgf-m, 5.5 ft-lb)?	Go to step 8.	Tighten the ABS wheel speed sensor installation bolts.
8	CHECK ABS WHEEL SPEED SENSOR SIGNAL. 1) Install the ABS wheel speed sensor. 2) Prepare an oscilloscope. 3) Check ABS wheel speed sensor. <ref. abs="" abs-13,="" front="" inspection,="" sensor,="" sensor.="" speed="" to="" wheel=""></ref.>	Does the oscilloscope indicate the waveform pattern like shown in the figure when the tire is slowly turned? Does the oscilloscope indication repeat the waveform pattern like shown in the figure when the tire is slowly turned in equal speed for more one rotation?	Go to step 10.	Go to step 9.
9	CHECK ABS WHEEL SPEED SENSOR AND MAGNETIC ENCODER.	Are there foreign particles, breakage or damage in the pole piece of ABS wheel speed sensor or magnetic encoder?	Remove dirt completely. Replace the ABS wheel speed sensor or magnetic encoder as a unit with hub unit bearing when it is broken or damaged.	Go to step 10.
10	CHECK SOURCES OF SIGNAL NOISE. Make sure the radio wave device and electric components like car phone, radio, etc. are installed correctly.	Is the radio wave device and electric components like car phone, radio, etc. installed correctly?	Go to step 11.	Install the radio wave device and electric components properly.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ABS (ĎIAGNOSTICS)

	Step	Check	Yes	No
11	CHECK SOURCES OF SIGNAL NOISE. Check if the noise sources are (such as an antenna) installed near the sensor harness.	Are noise sources installed?	Go to step 12.	Install the noise sources apart from the sensor harness.
12	CHECK ABSCM&H/U. 1) Connect all the connectors. 2) Erase the memory. 3) Perform the inspection mode. <ref. abs(diag)-17,="" clear="" memory="" mode,="" monitor.="" operation,="" select="" subaru="" to=""> 4) Read the DTC.</ref.>	Is the same DTC displayed?	Replace the ABSCM only. <ref. abs-8,<br="" to="">REPLACEMENT, ABS Control Mod- ule and Hydraulic Control Unit (ABSCM&H/U).></ref.>	Go to step 13.
13	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Perform the diagnosis according to DTC.	It results from a temporary noise interference. NOTE: Though ABS warning light remains to illuminate at this time, it is normal. Drive the vehicle at more than 12 km/h (7 MPH) in order to make ABS warning light go off. Be sure to drive the vehicle and check the warning light goes off.

I: DTC C0115 ABS WHEEL SPEED SENSOR SIGNAL MALFUNCTION IN ONE OF FOUR WHEELS

DTC DETECTING CONDITION:

- Defective ABS wheel speed sensor signal (noise, abnormal signal, etc.)
- Defective magnetic encoder
- When a wheel is turned freely for a long time

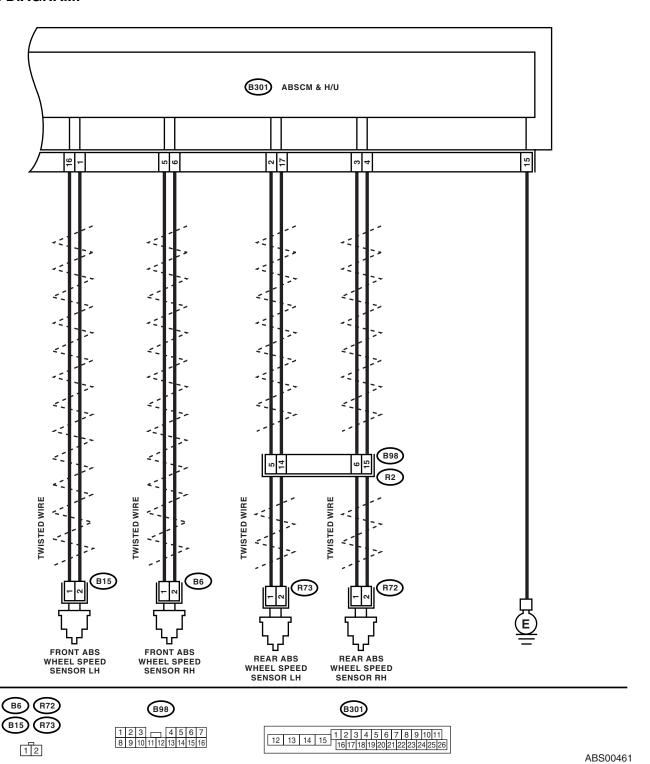
TROUBLE SYMPTOM:

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

NOTE:

Brake warning light comes on as well as ABS warning light.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	WHETHER A WHEEL TURNED FREELY OR NOT. Check if the wheels have been turned freely for more than one minute, such as when the vehicle is jacked-up, under full-lock cornering or when the wheels are not in contact with road surface.	Did the wheels turn freely?	ABS is normal. Erase the memory. NOTE: When the wheels turn freely for a long time, such as when the vehicle is towed or jacked- up, or when steer- ing wheel is contin- uously turned all the way, this diag- nostic trouble code may sometimes occur.	Go to step 2.
2	CHECK TIRE SPECIFICATIONS. Turn the ignition switch to OFF.	Are the tire specifications correct?	Go to step 3.	Replace the tire.
3	CHECK WEAR OF TIRE.	Is the tire worn excessively?	Replace the tire.	Go to step 4.
4	CHECK TIRE INFLATION PRESSURE.	Is the tire pressure correct?	Go to step 5.	Adjust the tire pressure.
5	CHECK INSTALLATION OF ABS WHEEL SPEED SENSOR.	Is the ABS wheel speed sensor installation bolt tightened 7.5 N·m (0.76 kgf-m, 5.5 ft-lb)? (four of them)	Go to step 6.	Tighten the ABS wheel speed sensor installation bolts.
6	CHECK ABS WHEEL SPEED SENSOR SIGNAL. 1) Install the ABS wheel speed sensor. 2) Prepare an oscilloscope. 3) Check ABS wheel speed sensor. <ref. abs="" abs-13,="" front="" inspection,="" sensor,="" sensor.="" speed="" to="" wheel=""></ref.>	Does the oscilloscope indicate the waveform pattern as shown in the figure when the tire is slowly turned? Does the oscilloscope indication repeat the waveform pattern as shown in the figure when the tire is slowly turned in equal speed for more one rotation?	Go to step 8.	Go to step 7.
7	CHECK ABS WHEEL SPEED SENSOR AND MAGNETIC ENCODER.	Are there foreign particles, breakage or damage in the pole piece of ABS wheel speed sensor or magnetic encoder?	Remove dirt completely. Replace the ABS wheel speed sensor or magnetic encoder as a unit with hub unit bearing when it is broken or damaged.	Go to step 8.
8	CHECK ABSCM&H/U. 1) Connect all the connectors. 2) Erase the memory. 3) Perform the inspection mode. <ref. abs(diag)-17,="" clear="" memory="" mode,="" monitor.="" operation,="" select="" subaru="" to=""> 4) Read the DTC.</ref.>	Is the same DTC displayed?	Replace the ABSCM only. <ref. abs-8,<br="" to="">REPLACEMENT, ABS Control Mod- ule and Hydraulic Control Unit (ABSCM&H/U).></ref.>	Go to step 9.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ABS (DIAGNOSTICŠ)

Step	Check	Yes	No
9 CHECK ANY OTHER DTC ON DISPI	AY. Is any other DTC displayed?	Perform the diagnosis according to DTC.	It results from a temporary noise interference. NOTE: Though ABS warning light remains to illuminate at this time, it is normal. Drive the vehicle at more than 12 km/h (7 MPH) in order to make ABS warning light go off. Be sure to drive the vehicle and check the warning light goes off.

J: DTC C0120 FRONT INLET SOLENOID VALVE LH MALFUNCTION IN ABS CONTROL MODULE AND HYDRAULIC CONTROL UNIT (ABSCM&H/U)

NOTE

For the diagnostic procedure, refer to DTC C0126. <Ref. to ABS(diag)-46, DTC C0126 REAR INLET SOLE-NOID VALVE RH MALFUNCTION IN ABS CONTROL MODULE AND HYDRAULIC CONTROL UNIT (ABSCM&H/U), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

K: DTC C0122 FRONT INLET SOLENOID VALVE RH MALFUNCTION IN ABS CONTROL MODULE AND HYDRAULIC CONTROL UNIT (ABSCM&H/U)

NOTE:

For the diagnostic procedure, refer to DTC C0126. <Ref. to ABS(diag)-46, DTC C0126 REAR INLET SOLE-NOID VALVE RH MALFUNCTION IN ABS CONTROL MODULE AND HYDRAULIC CONTROL UNIT (ABSCM&H/U), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

L: DTC C0124 REAR INLET SOLENOID VALVE LH MALFUNCTION IN ABS CONTROL MODULE AND HYDRAULIC CONTROL UNIT (ABSCM&H/U)

NOTE:

For the diagnostic procedure, refer to DTC C0126. <Ref. to ABS(diag)-46, DTC C0126 REAR INLET SOLE-NOID VALVE RH MALFUNCTION IN ABS CONTROL MODULE AND HYDRAULIC CONTROL UNIT (ABSCM&H/U), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

M: DTC C0126 REAR INLET SOLENOID VALVE RH MALFUNCTION IN ABS CONTROL MODULE AND HYDRAULIC CONTROL UNIT (ABSCM&H/U)

DTC DETECTING CONDITION:

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

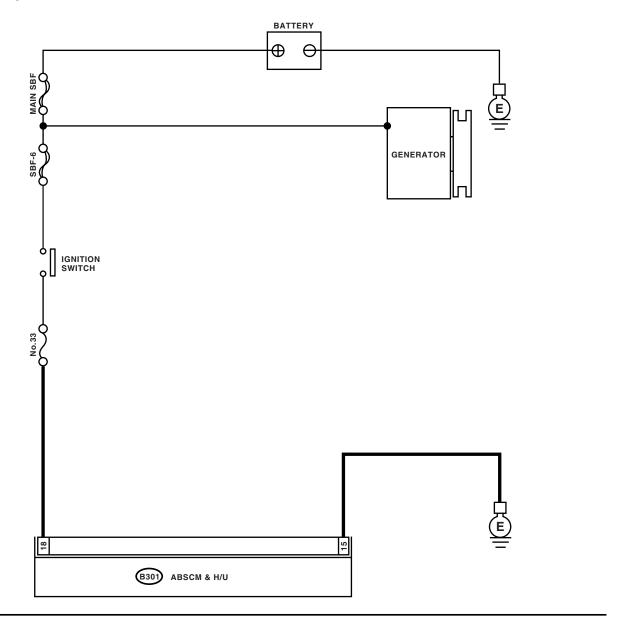
TROUBLE SYMPTOM:

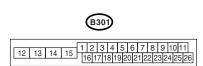
- · ABS does not operate.
- EBD does not operate.

NOTE

Brake warning light comes on as well as ABS warning light.

WIRING DIAGRAM:





T	Chain	Obsale	Vaa	N-
	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. 18 (+) — Chassis ground (-):	Is the voltage 10 — 15 V?	Go to step 2.	Repair the ABSCM&H/U power circuit.
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. 15 — Chassis ground:	Ω?	Go to step 3.	Repair the ABSCM&H/U ground harness.
3	CHECK POOR CONTACT IN CONNECTOR.	Is there poor contact in con- nector between generator, bat- tery and ABSCM&H/U?	Repair the connector.	Go to step 4.
4	CHECK ABSCM&H/U. 1) Connect all the connectors. 2) Erase the memory. 3) Perform the inspection mode. 4) Read the DTC.	Is the same DTC displayed?	Replace ABSCM&H/U. <ref. (abscm&h="" abs="" abs-6,="" and="" control="" hydraulic="" module="" to="" u).="" unit=""></ref.>	Go to step 5.
5	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" abs(diag)-34,="" code="" diagnostic="" list="" of="" to="" trouble=""></ref.>	Temporary poor contact occurs.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ABS (DIAGNOSTICS)

N: DTC C0121 FRONT OUTLET SOLENOID VALVE LH MALFUNCTION IN ABS CONTROL MODULE AND HYDRAULIC CONTROL UNIT (ABSCM&H/U)

NOTE:

For the diagnostic procedure, refer to DTC C0127. <Ref. to ABS(diag)-49, DTC C0127 REAR OUTLET SO-LENOID VALVE RH MALFUNCTION IN ABS CONTROL MODULE AND HYDRAULIC CONTROL UNIT (ABSCM&H/U), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

O: DTC C0123 FRONT OUTLET SOLENOID VALVE RH MALFUNCTION IN ABS CONTROL MODULE AND HYDRAULIC CONTROL UNIT (ABSCM&H/U)

NOTE:

For the diagnostic procedure, refer to DTC C0127. <Ref. to ABS(diag)-49, DTC C0127 REAR OUTLET SO-LENOID VALVE RH MALFUNCTION IN ABS CONTROL MODULE AND HYDRAULIC CONTROL UNIT (ABSCM&H/U), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

P: DTC C0125 REAR OUTLET SOLENOID VALVE LH MALFUNCTION IN ABS CONTROL MODULE AND HYDRAULIC CONTROL UNIT (ABSCM&H/U)

NOTE:

For the diagnostic procedure, refer to DTC C0127. <Ref. to ABS(diag)-49, DTC C0127 REAR OUTLET SO-LENOID VALVE RH MALFUNCTION IN ABS CONTROL MODULE AND HYDRAULIC CONTROL UNIT (ABSCM&H/U), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Q: DTC C0127 REAR OUTLET SOLENOID VALVE RH MALFUNCTION IN ABS CONTROL MODULE AND HYDRAULIC CONTROL UNIT (ABSCM&H/U)

DTC DETECTING CONDITION:

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

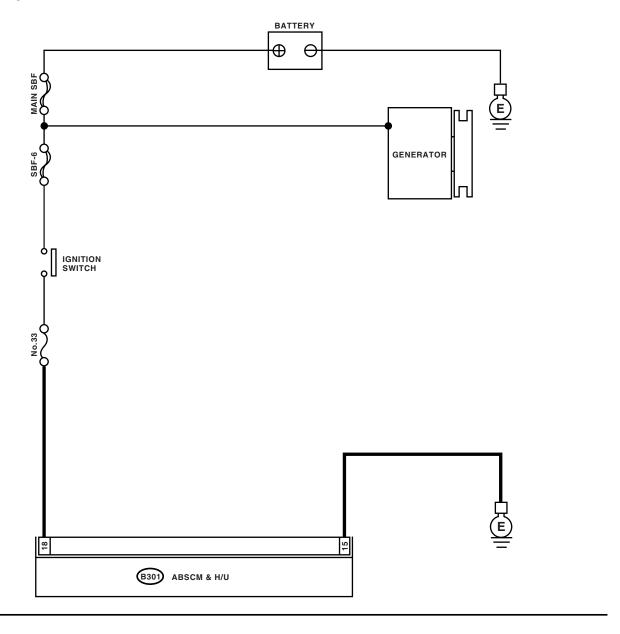
TROUBLE SYMPTOM:

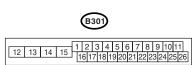
- ABS does not operate.
- EBD does not operate.

NOTE:

Brake warning light comes on as well as ABS warning light.

WIRING DIAGRAM:





	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. 18 (+) — Chassis ground (-):	Is the voltage 10 — 15 V?	Go to step 2.	Repair the ABSCM&H/U power circuit.
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. 15 — 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 CONNECTOR.	Is there poor contact in con- nector between generator, bat- tery and ABSCM&H/U?	Repair the connector.	Go to step 4.
4	CHECK ABSCM&H/U. 1) Connect all the connectors. 2) Erase the memory. 3) Perform the inspection mode. 4) Read the DTC.	Is the same DTC displayed?	Replace ABSCM&H/U. <ref. (abscm&h="" abs="" abs-6,="" and="" control="" hydraulic="" module="" to="" u).="" unit=""></ref.>	Go to step 5.
5	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" abs(diag)-34,="" code="" diagnostic="" list="" of="" to="" trouble=""></ref.>	Temporary poor contact occurs.

R: DTC C0110 ABS CONTROL MODULE MALFUNCTION

DTC DETECTING CONDITION:

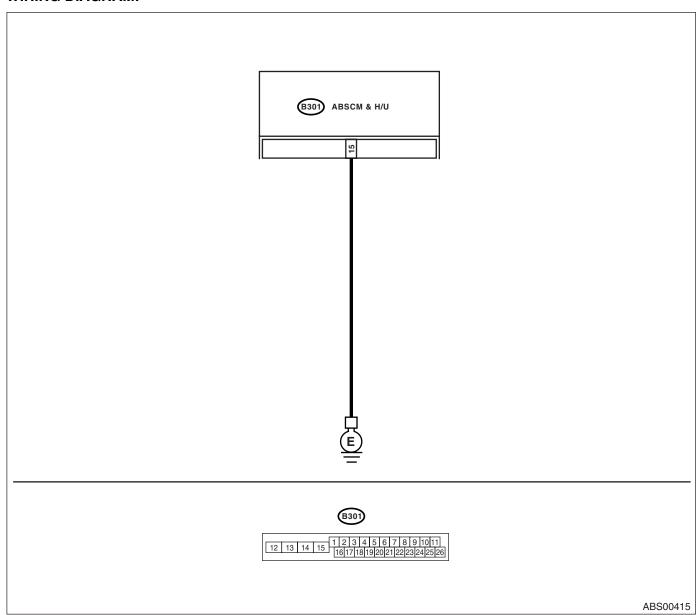
Defective ABSCM&H/U

TROUBLE SYMPTOM:

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

Brake warning light comes on as well as ABS warning light.

WIRING DIAGRAM:



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

ABS (ĎIAGNOSTICS)

	Step	Check	Yes	No
1	 Turn the ignition switch to OFF. Disconnect the connector from ABSCM&H/U. Measure the resistance between ABSCM&H/U and chassis ground. Connector & terminal (B301) No. 15 — Chassis ground: 	Is the resistance less than 0.5 Ω ?	Go to step 2.	Repair the ABSCM&H/U ground harness.
2	CHECK POOR CONTACT IN CONNECTOR.	Is there poor contact in con- nectors between battery, igni- tion switch and ABSCM&H/U?	Repair the connector.	Go to step 3.
3	CHECK SOURCES OF SIGNAL NOISE.	Is the car telephone or radio properly installed?	Go to step 4.	Properly install the car telephone or radio.
4	CHECK SOURCES OF SIGNAL NOISE.	Are noise sources (such as an antenna) installed near the sensor harness?	Install the noise sources apart from the sensor harness.	Go to step 5.
5	CHECK ABSCM&H/U. 1) Connect all the connectors. 2) Erase the memory. 3) Perform the inspection mode. 4) Read the DTC.	Is the same DTC displayed?	Replace the ABSCM only. <ref. (abscm&h="" abs="" abs-8,="" and="" control="" hydraulic="" module="" replacement,="" to="" u).="" unit=""></ref.>	Go to step 6.
6	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" abs(diag)-34,="" code="" diagnostic="" list="" of="" to="" trouble=""></ref.>	Temporary poor contact occurs.

S: DTC C0109 POWER VOLTAGE MALFUNCTION

DTC DETECTING CONDITION:

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

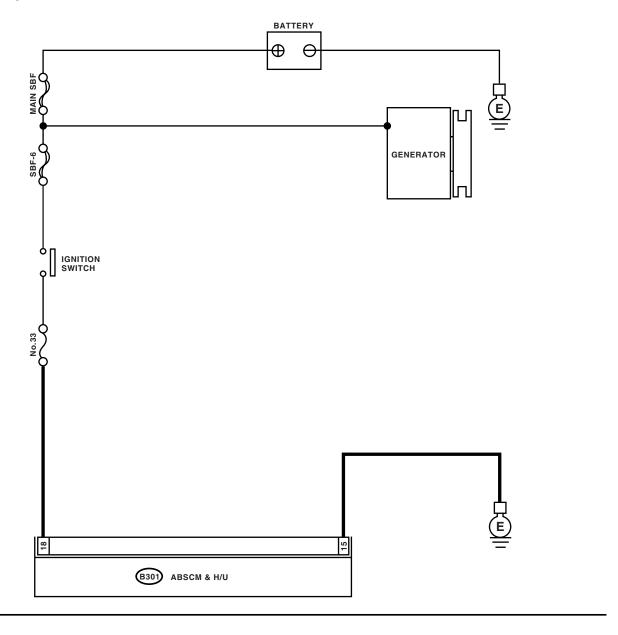
TROUBLE SYMPTOM:

- · ABS does not operate.
- EBD may not operate.

NOTE:

If EBD does not operate, brake warning light comes on as well as ABS warning light. Both warning lights go off if voltage returns.

WIRING DIAGRAM:



B301 12 13 14 15 12 3 4 5 6 7 8 9 10 11 16 17 18 19 20 21 22 23 24 25 26

	Step	Check	Yes	No
1	CHECK GENERATOR. 1) Start the engine. 2) Run the engine at idle after warming up. 3) Measure the voltage between generator B terminal and chassis ground. Terminals Generator B terminal (+) — Chassis ground (-):	Is the voltage 10 — 15 V?	Go to step 2.	Repair the generator.
2	CHECK BATTERY TERMINAL. Turn the ignition switch to OFF.	Are the positive and negative battery terminals clamped tightly?	Go to step 3.	Tighten the 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 devices such as headlights, air conditioner, defogger, etc. which produce much electrical loading. 4) Measure the voltage between ABSCM&H/U connector and chassis ground. Connector & terminal (B301) No. 18 (+) — Chassis ground (-):	Is the voltage 10 — 15 V?	Go to step 4.	Repair the ABSCM&H/U power circuit.
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. 15 — 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 CONNECTOR.	Is there poor contact in con- nector between generator, bat- tery and ABSCM&H/U?	Repair the connector.	Go to step 6.
6	CHECK ABSCM&H/U. 1) Connect all the connectors. 2) Erase the memory. 3) Perform the inspection mode. 4) Read the DTC.	Is the same DTC displayed?	Replace the ABSCM only. <ref. abs-8,<br="" to="">REPLACEMENT, ABS Control Mod- ule and Hydraulic Control Unit (ABSCM&H/U).></ref.>	Go to step 7.
7	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" abs(diag)-34,="" code="" diagnostic="" list="" of="" to="" trouble=""></ref.>	Temporary poor contact occurs.

T: DTC C0140 CAN COMMUNICATION MALFUNCTION

DTC DETECTING CONDITION:

Defective CAN communication

TROUBLE SYMPTOM:

Possibly the vehicle speed cannot output on CAN.

	Step	Check	Yes	No
1	CHECK LAN SYSTEM. Perform the diagnosis for LAN system. <ref. (dtc).="" code="" diagnostic="" lan(diag)-24,="" operation,="" read="" to="" trouble=""></ref.>		system.	Replace the ABSCM only. <ref. abs-8,<br="" to="">REPLACEMENT, ABS Control Mod- ule and Hydraulic Control Unit (ABSCM&H/U).></ref.>

U: DTC C0114 VALVE RELAY MALFUNCTION

DTC DETECTING CONDITION:

Defective valve relay

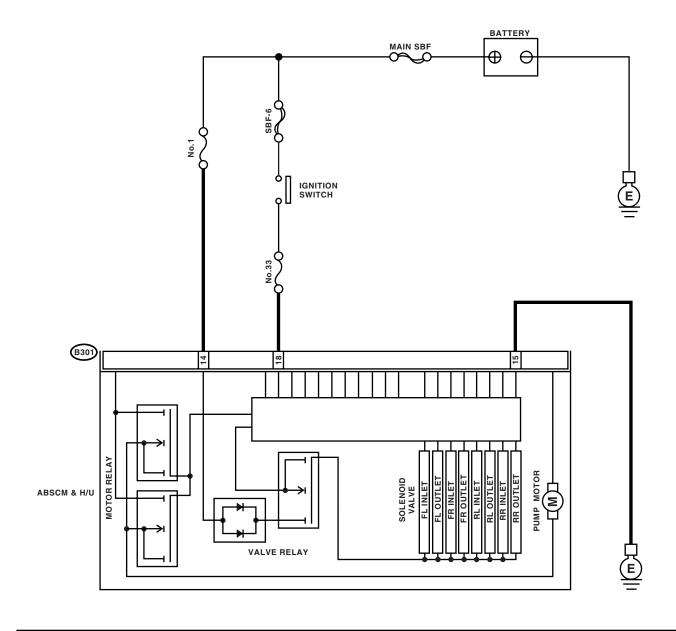
TROUBLE SYMPTOM:

- · ABS does not operate.
- EBD does not operate depending on the trouble contents.

NOTE

Brake warning light comes on as well as ABS warning light when EBD does not operate.

WIRING DIAGRAM:





	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. 18 (+) — Chassis ground (-): (B301) No. 14 (+) — 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. 15 — Chassis ground:	Is the resistance less than 0.5 Ω ?	Go to step 3.	Repair the ABSCM&H/U ground harness.
3	CHECK VALVE RELAY IN ABSCM&H/U. Measure the resistance between ABSCM&H/U terminals. Terminals No. 14 — No. 15:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 4.	Replace the ABSCM only. <ref. (abscm&h="" abs="" abs-8,="" and="" control="" hydraulic="" mod-="" replacement,="" to="" u).="" ule="" unit=""></ref.>
4	CHECK POOR CONTACT IN CONNECTOR.	Is there poor contact in con- nector between generator, bat- tery and ABSCM&H/U?	Repair the connector.	Go to step 5.
5	CHECK ABSCM&H/U. 1) Connect all the connectors. 2) Erase the memory. 3) Perform the inspection mode. 4) Read the DTC.	Is the same DTC displayed?	Replace the ABSCM only. <ref. (abscm&h="" abs="" abs-8,="" and="" control="" hydraulic="" module="" replacement,="" to="" u).="" unit=""></ref.>	Go to step 6.
6	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" abs(diag)-34,="" code="" diagnostic="" list="" of="" to="" trouble=""></ref.>	Temporary poor contact occurs.

V: DTC C0111 MOTOR/MOTOR RELAY MALFUNCTION

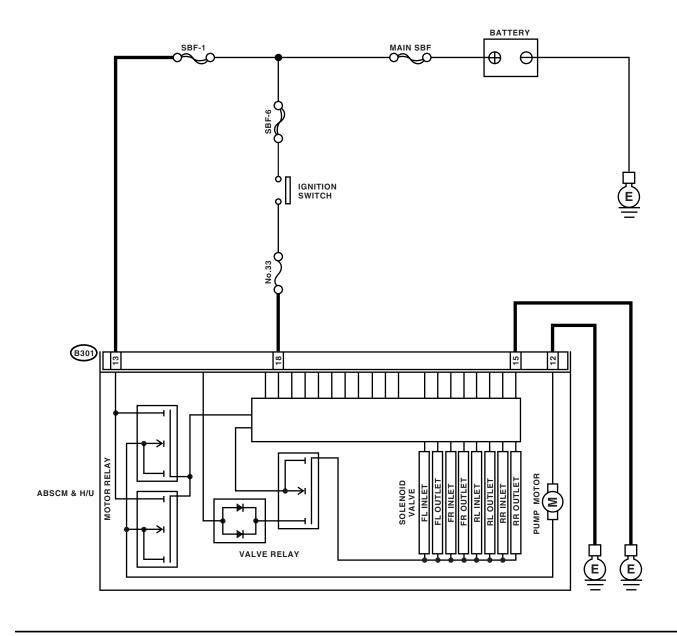
DTC DETECTING CONDITION:

- · Defective motor
- Defective motor relay
- Defective harness connector

TROUBLE SYMPTOM:

ABS does not operate.

WIRING DIAGRAM:





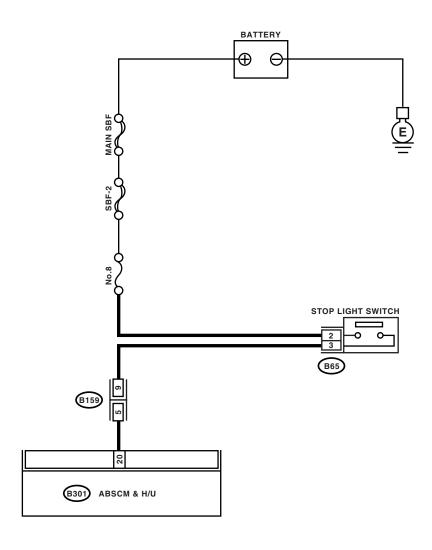
	Step	Check	Yes	No
1	CHECK INPUT VOLTAGE OF ABSCM&H/U. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ABSCM&H/U. 3) Turn the ignition switch to ON. 4) Measure the voltage between ABSCM&H/U connector and chassis ground. Connector & terminal (B301) No. 13 (+) — Chassis ground (-):	Is the voltage 10 — 15 V?	Go to step 2.	Repair the har- ness connector between battery and ABSCM&H/U.
2	CHECK INSTALLATION OF MOTOR GROUND.	Is the motor ground terminal installation bolt tightened 33 N·m (3.3 kgf-m, 24.3 ft-lb)?	Go to step 3.	Tighten the motor ground terminal installation bolt.
3	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. 12 — Chassis ground:	Is the resistance less than 0.5 Ω ?	Go to step 4.	Repair the ABSCM&H/U ground harness.
4	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. 18 (+) — Chassis ground (-):	Is the voltage 10 — 15 V?	Go to step 5.	Repair the har- ness connector between battery, ignition switch and ABSCM&H/U.
5	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. 15 — Chassis ground:	Is the resistance less than 0.5 Ω ?	Go to step 6.	Repair the ABSCM&H/U ground harness.
6	CHECK MOTOR OPERATION. Operate the ABS sequence control. <ref. abs="" abs-10,="" control.="" sequence="" to=""> NOTE: Use the diagnosis connector to operate the ABS sequence control.</ref.>			Replace ABSCM&H/U. <ref. abs-6,<br="" to="">ABS Control Mod- ule and Hydraulic Control Unit (ABSCM&H/U).></ref.>
7	CHECK POOR CONTACT IN CONNECTOR. Turn the ignition switch to OFF.	Is there poor contact in con- nector between generator, bat- tery and ABSCM&H/U?	Repair the connector.	Go to step 8.
8	CHECK ABSCM&H/U. 1) Connect all the connectors. 2) Erase the memory. 3) Perform the inspection mode. 4) Read the DTC.	Is the same DTC displayed?	Replace ABSCM&H/U. <ref. (abscm&h="" abs="" abs-6,="" and="" control="" hydraulic="" module="" to="" u).="" unit=""></ref.>	Go to step 9.

	Step	Check	Yes	No
9 CHECK	ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	of Diagnostic Trou-	Temporary poor contact occurs. NOTE: Though ABS warning light remains to illuminate at this time, it is normal. Drive the vehicle at more than 12 km/h (7 MPH) in order to make ABS warning light go off. Be sure to drive the vehicle and check the warning light goes off.

W: DTC C0116 FAULTY STOP LIGHT SWITCH

DTC DETECTING CONDITION:

Defective stop light switch WIRING DIAGRAM:



B65

(B159)

(B301) 12 13 14 15 12 3 4 5 6 7 8 9 10 11 16 17 18 19 20 21 22 23 24 25 26

	Step	Check	Yes	No
1	CHECK OUTPUT OF STOP LIGHT SWITCH USING SUBARU SELECT MONITOR. 1) Select {Current Data Display & Save} in Subaru Select Monitor. 2) Release the brake pedal. 3) Read the stop light switch signal in Subaru Select Monitor.	Is "OFF" displayed on the display?	Go to step 2.	Go to step 3.
2	CHECK OUTPUT OF STOP LIGHT SWITCH USING SUBARU SELECT MONITOR. 1) Depress the brake pedal. 2) Read the stop light switch output in Subaru Select Monitor.	Is "ON" displayed on the display?	Go to step 5.	Go to step 3.
3	CHECK IF STOP LIGHTS COME ON. Depress the brake pedal.	Does the stop light illuminate?	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. 20 (+) — Chassis ground (-):	Is the voltage 10 — 15 V?	Go to step 5.	Repair harness between stop light switch and ABSCM&H/U con- nector.
5	CHECK POOR CONTACT IN CONNECTOR.	Is there poor contact in con- nector between stop light switch and ABSCM&H/U?	Go to step 6.	Repair the connector.
6	CHECK ABSCM&H/U. 1) Connect all the connectors. 2) Erase the memory. 3) Perform the inspection mode. 4) Read the DTC.	Is the same DTC displayed?	Replace the ABSCM only. <ref. abs-8,<br="" to="">REPLACEMENT, ABS Control Mod- ule and Hydraulic Control Unit (ABSCM&H/U).></ref.>	Go to step 7.
7	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" abs(diag)-34,="" code="" diagnostic="" list="" of="" to="" trouble=""></ref.>	Temporary poor contact occurs.

X: DTC C0118 G SENSOR OUTPUT VOLTAGE MALFUNCTION

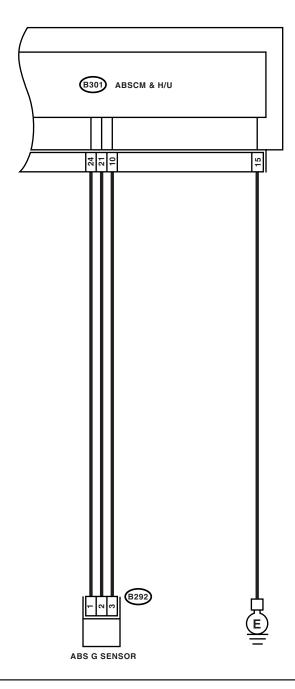
DTC DETECTING CONDITION:

Defective G sensor

TROUBLE SYMPTOM:

ABS does not operate.

WIRING DIAGRAM:







1 2 3

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

	Step	Check	Yes	No
1	CHECK OUTPUT OF G SENSOR USING	Is the reading indicated on dis-	Go to step 2.	Go to step 5.
	SUBARU SELECT MONITOR.	play –1.2 — 1.2 m/s when G		
	Select {Current Data Display & Save} in Subaru Select Monitor.	sensor is horizontal?		
	Read the G sensor output on Subaru			
	Select Monitor.			
2	CHECK POOR CONTACT IN CONNECTOR.	Is there poor contact in con-	Repair the con-	Go to step 3.
		nector between ABSCM&H/U and G sensor?	nector.	
3	CHECK ABSCM&H/U.	Is the same DTC displayed?	Replace the	Go to step 4.
	Connect all the connectors.	is the same DTC displayed:	ABSCM only.	Go to step 4.
	2) Erase the memory.		<ref. abs-8,<="" td="" to=""><td></td></ref.>	
	3) Perform the inspection mode.		REPLACEMENT,	
	4) Read the DTC.		ABS Control Mod-	
			ule and Hydraulic Control Unit	
			(ABSCM&H/U).>	
4	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the DTC	Temporary poor
			using "List of Diag-	contact occurs.
			nostic Trouble Code (DTC)".	
			<ref. th="" to<=""><th></th></ref.>	
			ABS(diag)-34, List	
			of Diagnostic Trou-	
			ble Code (DTC).>	
5	CHECK INPUT VOLTAGE OF G SENSOR. 1) Turn the ignition switch to OFF.	Is the voltage 4.75 — 5.25 V?	Go to step 6.	Repair the har- ness connector
	2) Remove the console box.			between G sensor
	3) Remove the G sensor from vehicle. (Do not			and ABSCM&H/U.
	disconnect connector.)			
	4) Turn the ignition switch to ON.			
	 Measure the voltage between G sensor connector terminals. 			
	Connector & terminal			
	(B292) No. 1 (+) — No. 3 (−):			
6	CHECK OPEN CIRCUIT IN G SENSOR OUT-		Go to step 7.	Repair the har-
	PUT HARNESS AND GROUND HARNESS. 1) Turn the ignition switch to OFF.	kΩ?		ness connector between G sensor
	2) Disconnect the connector from ABSCM&H/			and ABSCM&H/U.
	U.			
	3) Measure the resistance between			
	ABSCM&H/U connector terminals. Connector & terminal			
	(B301) No. 21 — No. 10:			
7	CHECK GROUND SHORT IN G SENSOR	Is the resistance more than 1	Go to step 8.	Repair the har-
	OUTPUT HARNESS.	ΜΩ?		ness between G
	Disconnect the connector from G sensor. Measure the resistance between.			sensor and
	 Measure the resistance between ABSCM&H/U connector and chassis ground. 			ABSCM&H/U.
	Connector & terminal			
	(B301) No. 21 — Chassis ground:			
8	CHECK G SENSOR.	Is the voltage 2.1 — 2.5 V	Go to step 9.	Replace G sen-
	 Connect the connector to G sensor. Connect the connector to ABSCM&H/U. 	when G sensor is on a level?		sor. <ref. abs-<br="" to="">18, G Sensor.></ref.>
	3) Turn the ignition switch to ON.			10, 0 0011301./
	Measure the voltage between G sensor			
	connector terminals.			
	Connector & terminal			
1	(B292) No. 2 (+) — No. 3 (-):			

	Step	Check	Yes	No
9	CHECK G SENSOR. Measure the voltage between G sensor connector terminals.	Is the voltage 3.6 — 4.1 V when G sensor is inclined forwards to 90°?	Go to step 10.	Replace G sen- sor. <ref. abs-<br="" to="">18, G Sensor.></ref.>
	Connector & terminal (B292) No. 2 (+) — No. 3 (−):			
10	CHECK G SENSOR. Measure the voltage between G sensor connector terminals. Connector & terminal (B292) No. 2 (+) — No. 3 (-):	Is the voltage 0.5 — 1.0 V when G sensor is inclined backward to 90°?	Go to step 11.	Replace G sen- sor. <ref. abs-<br="" to="">18, G Sensor.></ref.>
11	CHECK POOR CONTACT IN CONNECTOR. Turn the ignition switch to OFF.	Is there poor contact in con- nector between ABSCM&H/U and G sensor?	Repair the con- nector.	Go to step 12.
12	CHECK ABSCM&H/U. 1) Connect all the connectors. 2) Erase the memory. 3) Perform the inspection mode. 4) Read the DTC.	Is the same DTC displayed?	Replace the ABSCM only. <ref. abs-8,<br="" to="">REPLACEMENT, ABS Control Mod- ule and Hydraulic Control Unit (ABSCM&H/U).></ref.>	Go to step 13.
13	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" abs(diag)-34,="" code="" diagnostic="" list="" of="" to="" trouble=""></ref.>	Temporary poor contact occurs.

Y: DTC C0119 G SENSOR OUTPUT VOLTAGE MALFUNCTION

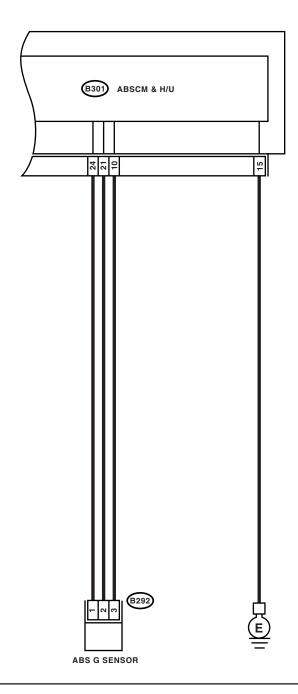
DTC DETECTING CONDITION:

Defective G sensor output signal

TROUBLE SYMPTOM:

ABS does not operate.

WIRING DIAGRAM:







1 2 3

1 2 3 4 5 6 7 8 9 10 11 16 17 18 19 20 21 22 23 24 25 26

	Step	Check	Yes	No
1	WHETHER A WHEEL TURNED FREELY OR NOT.	freely when the vehicle is lifted up or drove on a rolling road?	ABS is normal. Erase the memory.	Go to step 2.
2	CHECK OUTPUT OF G SENSOR USING SUBARU SELECT MONITOR. 1) Select {Current Data Display & Save} in Subaru Select Monitor. 2) Read the Subaru Select Monitor display.	Is the reading indicated on display –1.2 — 1.2 m/s when G sensor is on a level?	Go to step 3.	Go to step 8.
3	CHECK OUTPUT OF G SENSOR USING SUBARU SELECT MONITOR. 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) Select {Current Data Display & Save} in Subaru Select Monitor. 6) Read the Subaru Select Monitor display.	Is the reading indicated on display 8.1 — 11.2 m/s when G sensor is inclined forward to 90°?	Go to step 4.	Replace G sen- sor. <ref. abs-<br="" to="">18, G Sensor.></ref.>
4	CHECK OUTPUT OF G SENSOR USING SUBARU SELECT MONITOR. Read the Subaru Select Monitor display.	Is the reading indicated on display –8.1 — –11.2 m/s when G sensor is inclined backward to 90°?	Go to step 5.	Replace G sen- sor. <ref. abs-<br="" to="">18, G Sensor.></ref.>
5	CHECK POOR CONTACT IN CONNECTOR. Turn the ignition switch to OFF.	Is there poor contact in con- nector between ABSCM&H/U and G sensor?	Repair the connector.	Go to step 6.
6	CHECK ABSCM&H/U. 1) Connect all the connectors. 2) Erase the memory. 3) Perform the inspection mode. 4) Read the DTC.	Is the same DTC displayed?	Replace the ABSCM only. <ref. abs-8,<br="" to="">REPLACEMENT, ABS Control Mod- ule and Hydraulic Control Unit (ABSCM&H/U).></ref.>	Go to step 7.
7	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" abs(diag)-34,="" code="" diagnostic="" list="" of="" to="" trouble=""></ref.>	Temporary poor contact occurs.
8	CHECK OPEN CIRCUIT IN G SENSOR OUT-PUT 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. 21 — No. 10:	k $Ω$?	Go to step 9.	Repair the har- ness connector between G sensor and ABSCM&H/U.
9	CHECK GROUND SHORT OF HARNESS. Measure the resistance between ABSCM&H/U connector and chassis ground. Connector & terminal (B301) No. 21 — Chassis ground:	Is the resistance more than 1 M Ω ?	Go to step 10.	Repair the har- ness connector between G sensor and ABSCM&H/U.

	Step	Check	Yes	No
10	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 on a level?	Go to step 11.	Replace G sen- sor. <ref. abs-<br="" to="">18, G Sensor.></ref.>
11	CHECK G SENSOR. Measure the voltage between G sensor connector terminals. Connector & terminal (B292) No. 2 (+) — No. 3 (-):	Is the voltage 3.6 — 4.1 V when G sensor is inclined forwards to 90°?	Go to step 12.	Replace G sen- sor. <ref. abs-<br="" to="">18, G Sensor.></ref.>
12	CHECK G SENSOR. Measure the voltage between G sensor connector terminals. Connector & terminal (B292) No. 2 (+) — No. 3 (-):	Is the voltage 0.5 — 1.0 V when G sensor is inclined backward to 90°?	Go to step 13.	Replace G sen- sor. <ref. abs-<br="" to="">18, G Sensor.></ref.>
13	CHECK ABSCM&H/U. 1) Turn the ignition switch to OFF. 2) Connect all the connectors. 3) Erase the memory. 4) Perform the inspection mode. 5) Read the DTC.	Is the same DTC displayed?	Replace the ABSCM only. <ref. (abscm&h="" abs="" abs-8,="" and="" control="" hydraulic="" module="" replacement,="" to="" u).="" unit=""></ref.>	Go to step 14.
14	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Inspect the DTC using "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" abs(diag)-34,="" code="" diagnostic="" list="" of="" to="" trouble=""></ref.>	Temporary poor contact occurs.