

ABS Control Module and Hydraulic Control Unit (ABSCM&H/U)

ABS

2. ABS Control Module and Hydraulic Control Unit (ABSCM&H/U)

A: REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Use compressed air to get rid of water and dust around the ABSCM&H/U.

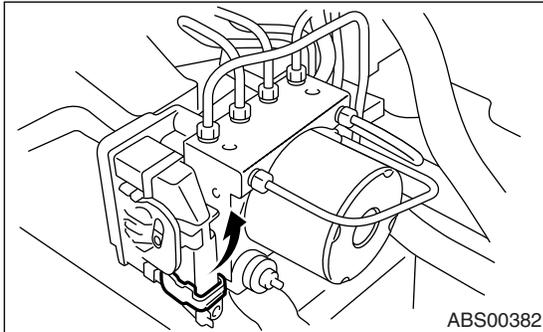
NOTE:

When dust and dirt are attached to the terminal, they may cause poor contact.

- 3) Disconnect the ABSCM&H/U connector pulling up the lock lever.

CAUTION:

Do not pull the harness when disconnecting connector.



- 4) Remove the harness clip.
- 5) Disconnect the brake pipes from ABSCM&H/U.
- 6) Wrap the brake pipe using a vinyl bag not to spill the brake fluid on the vehicle body.

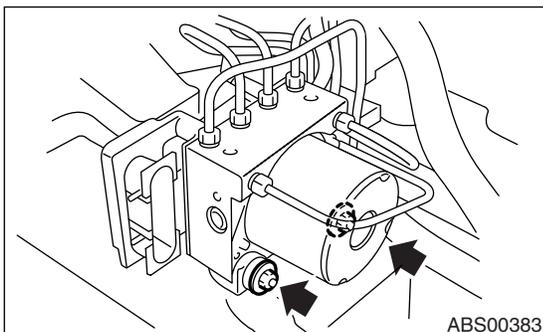
CAUTION:

When brake fluid is attached to the vehicle body, wash it off with water and wipe the water.

- 7) Remove the nuts and remove the ABSCM&H/U.

CAUTION:

- Do not drop or bump the ABSCM&H/U.
- Do not turn ABSCM&H/U upside down or place it sideways for storage.
- Be careful that no foreign objects are mixed in ABSCM&H/U.
- Be careful that no water enters inside the connectors.



- 8) Remove the ABSCM&H/U bracket.

B: INSTALLATION

- 1) Install the ABSCM&H/U bracket.

Tightening torque:

33 N·m (3.3 kgf·m, 24 ft·lb)

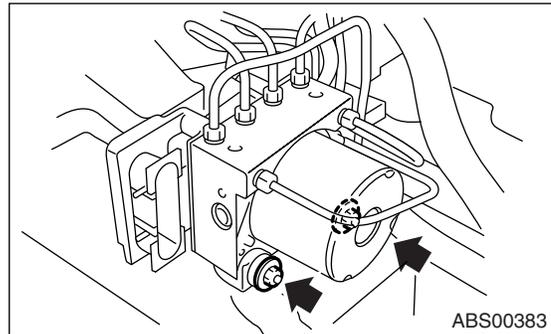
- 2) Install the ABSCM&H/U aligning the groove of damper on ABSCM&H/U side with the pawl of bracket.

NOTE:

Check the identification mark of ABSCM&H/U.

Tightening torque:

7.5 N·m (0.76 kgf·m, 5.5 ft·lb)



- 3) Connect the brake pipes to their correct ABSCM&H/U positions.

Tightening torque:

15 N·m (1.5 kgf·m, 10.8 ft·lb)

- 4) Using a harness clip, secure the ABSCM&H/U harness to bracket.
- 5) Connect the connector to ABSCM&H/U.

NOTE:

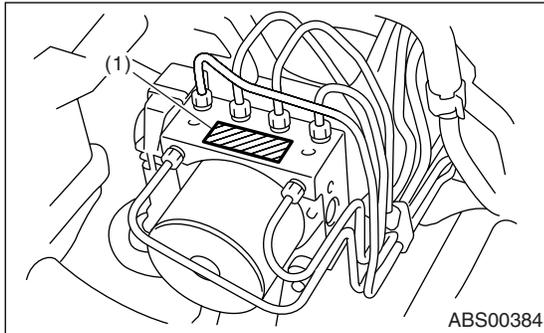
- Be sure to remove all foreign matters from inside the connector before connecting.
- Ensure the ABSCM&H/U connector is securely locked.

- 6) Bleed air from the brake system.

C: INSPECTION

- 1) Check the connected and fixed condition of connector.
- 2) Check the mark used for ABSCM&H/U identification.

Refer to "SPECIFICATION" for mark. <Ref. to ABS-2, SPECIFICATION, General Description.>



(1) Mark

1. CHECKING THE HYDRAULIC UNIT ABS OPERATION BY PRESSURE GAUGE

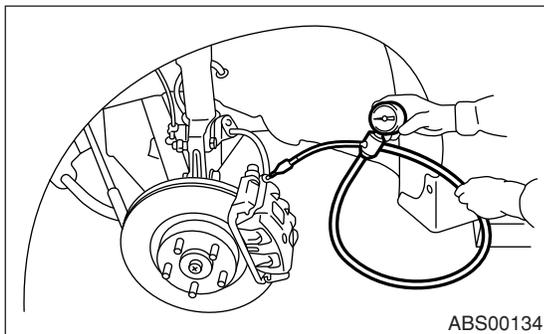
- 1) Lift-up the vehicle, and then remove the wheels.
- 2) Remove the air bleeder screws from the FL and FR caliper bodies.
- 3) Connect two pressure gauges to the FL and FR caliper bodies.

CAUTION:

- Pressure gauges used exclusively for brake fluid must be used.
- Do not use the pressure gauge for the measurement of transmission oil pressure since the piston seal may be expanded and deformed.

NOTE:

Wrap a sealing tape around the pressure gauge.



- 4) Bleed air from the pressure gauges and the FL and FR caliper bodies.
- 5) Perform ABS sequence control. <Ref. to ABS-10, ABS Sequence Control.>
- 6) When the hydraulic unit begins to work, first the FL side performs decompression, holding and compression, and then the FR side performs decompression, holding and compression.
- 7) Read values indicated on the pressure gauge and check if the fluctuation of the values between decompression and compression meets the standard values. Depress the brake pedal and check

that the kick-back is normal, and tightness is normal.

	Front wheel	Rear wheel
Initial value	3,500 kPa (36 kgf/cm ² , 511 psi)	3,500 kPa (36 kgf/cm ² , 511 psi)
When decompressed	500 kPa (5 kgf/cm ² , 73 psi) or less	500 kPa (5 kgf/cm ² , 73 psi) or less
When compressed	3,500 kPa (36 kgf/cm ² , 511 psi) or more	3,500 kPa (36 kgf/cm ² , 511 psi) or more

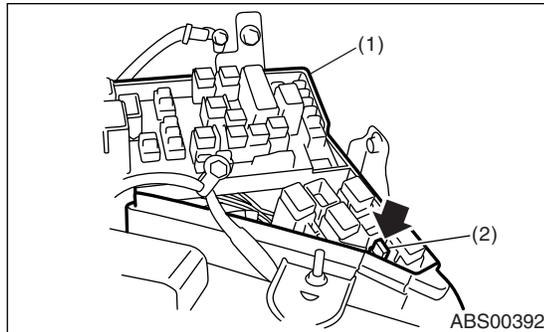
- 8) Remove the pressure gauges from the FL and FR caliper bodies.
- 9) Connect the air bleeder screws of the FL and FR caliper bodies.
- 10) Remove the air bleeder screws from the RL and RR caliper bodies.
- 11) Connect two pressure gauges to the RL and RR caliper bodies.
- 12) Bleed air from the brake system.
- 13) Bleed air from the pressure gauges and the RL and RR caliper bodies.
- 14) Perform ABS sequence control. <Ref. to ABS-10, ABS Sequence Control.>
- 15) When the hydraulic unit begins to work, first the RR side performs decompression, holding and compression, and then the RL side performs decompression, holding and compression.
- 16) Read values indicated on the pressure gauge and check if the fluctuation of the values between decompression and compression meets the standard values. Depress the brake pedal and check that the kick-back is normal, and tightness is normal.
- 17) Remove the pressure gauge from the RL and RR caliper bodies.
- 18) Connect the air bleeder screws of the RL and RR caliper bodies.
- 19) Bleed air from the brake system.

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2. CHECKING THE HYDRAULIC UNIT ABS OPERATION WITH BRAKE TESTER

1) Install the spare fuse to the FWD connector located in the main fuse box for the model without AT VTD.

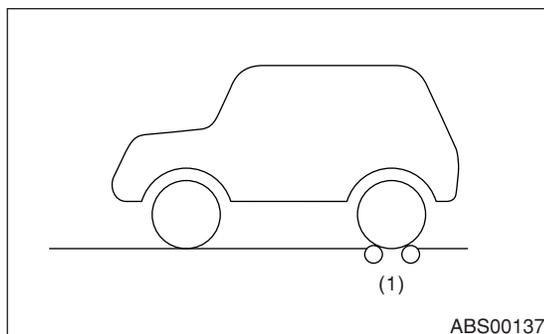
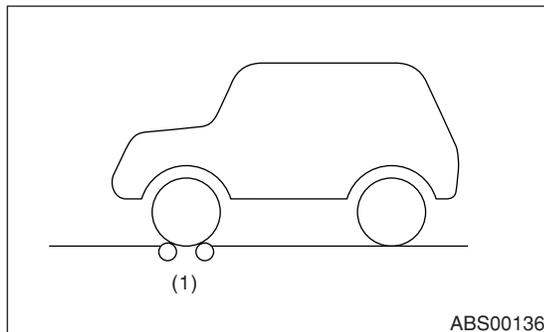


- (1) Main fuse box
- (2) FWD connector

2) Since the MT model and AT VTD model cannot cut off the AWD circuit forcibly, set the wheels other than measured one onto free rollers.

3) Prepare for the ABS sequence control.
<Ref. to ABS-10, ABS Sequence Control.>

4) Set the front wheels or rear wheels on the brake tester and set the select lever to "neutral".



- (1) Brake tester

5) Operate the brake tester.

6) Perform ABS sequence control.

<Ref. to ABS-10, ABS Sequence Control.>

7) When the hydraulic unit begins to work, check the following working sequence.

(1) The FL wheel performs decompression, holding and compression in sequence, and subsequently the FR wheel repeats the cycle.

(2) The RR wheel performs decompression, holding and compression in sequence, and subsequently the RL wheel repeats the cycle.

8) Read values indicated on the brake tester and check if the fluctuation of the values between decompression and compression meets the standard values.

	Front wheel	Rear wheel
Initial value	1,000 N (102 kgf, 225 lb)	1,000 N (102 kgf, 225 lb)
When decompressed	500 N (51 kgf, 112 lb) or less	500 N (51 kgf, 112 lb) or less
When compressed	1,000 N (102 kgf, 225 lb) or more	1,000 N (102 kgf, 225 lb) or more

9) After the inspection, depress the brake pedal and check that it is not abnormally hard, and tightness is normal.

D: REPLACEMENT

CAUTION:

- Because the seal of ABSCM cannot be replaced, do not pull or peel it with lifting up.
- Because the screw part of H/U deteriorates in every replacement procedure, do not perform the replacement more than five times on it. When the malfunction is found though the replacement that performed is less than five times, replace the H/U body.
- Use new screws for installation of ABSCM.
- When the sealing surface of ABSCM or H/U is dirty or damaged and it cannot be removed or repaired, replace it with new one.

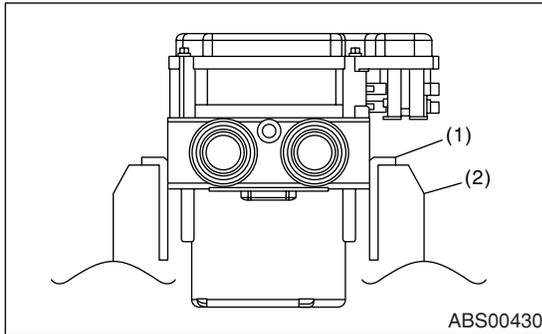
1) Remove the ABSCM&H/U. <Ref. to ABS-6, REMOVAL, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>

2) To prevent entering foreign matter and brake fluid leakage, plug the oil pressure port of ABSCM&H/U using screw plug and etc.

3) Set the pump motor part of removed ABSCM&H/U faces down on a vise.

NOTE:

Before securing a part on a vice, place cushioning material such as wood blocks, aluminum plate or cloth between the part and vice.

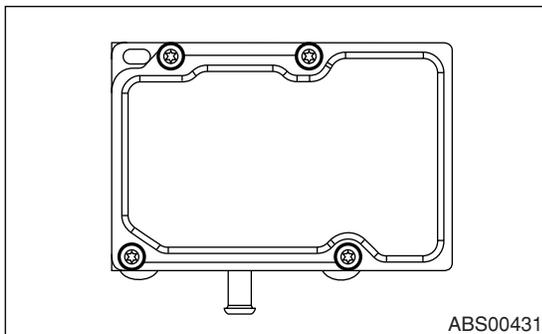


- (1) Aluminum plate or etc.
- (2) Vice

4) Using TORX® bit E5, remove the four screws of ABSCM.

NOTE:

Always use new screws.



5) Slowly remove the ABSCM upward from H/U.

NOTE:

To prevent damaging of coil part, remove the ABSCM straightly from H/U.

6) Ensure there are no dirt or damage on sealing surface of H/U.

CAUTION:

- Do not clean the ABSCM & H/U with applying compressed air.
- Do not repair the damages of H/U sealing surface using file or metal scraper. To remove the sealing, use resin scraper. Do not use the chemical materials (thinner and etc.).

7) Position the coil of new ABSCM to align H/U valve.

8) To prevent deforming of ABSCM housing cover, hold the corner of ABSCM and install it to the H/U without tilting.

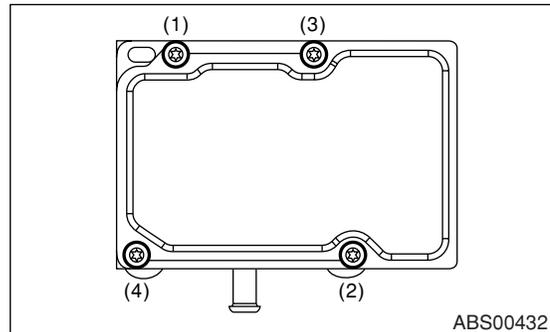
9) Using TORX® bit E5, tighten the screws stepwise in the order of (1) through (4).

CAUTION:

Always use new screws.

Tightening torque:

1.5 N·m (0.15 kgf·m, 1.1 ft·lb)



10) Check that there is no foreign matter in aligning part between ABSCM and H/U.

11) Using TORX® bit E5, tighten the screws stepwise in the order of (1) through (4) again.

Tightening torque:

3 N·m (0.3 kgf·m, 2.2 ft·lb)

12) Check that there is no clearance in aligning part between ABSCM and H/U.

13) Install the ABSCM&H/U to vehicle.