

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 remove water and dust around the ABSCM&H/U.

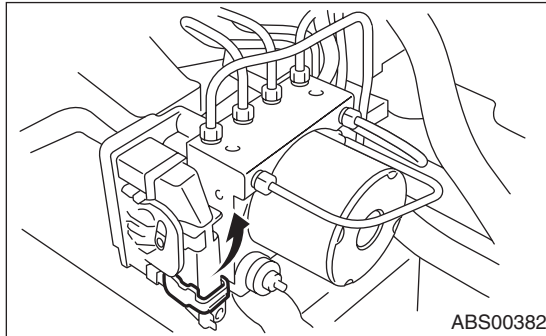
NOTE:

If the terminals become dirty, it may cause improper contact.

- 3) Lift the lock lever and disconnect the ABSCM&H/U connector.

CAUTION:

Do not pull on the harness when disconnecting the connector.



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

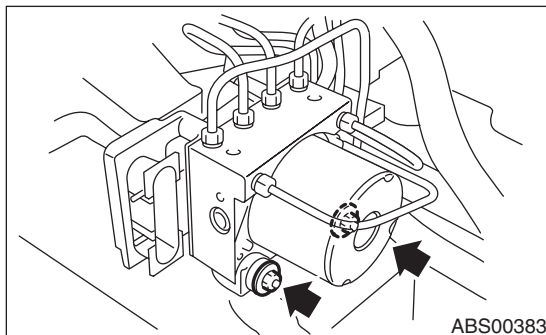
CAUTION:

If brake fluid is spilled on the vehicle body, wash it off immediately with water and wipe clean.

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

CAUTION:

- Do not drop or bump the ABSCM&H/U.
- Do not turn the ABSCM&H/U upside down or place it sideways for storage.
- Be careful not to let foreign matter enter into ABSCM&H/U.
- Be careful that no water enters 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)

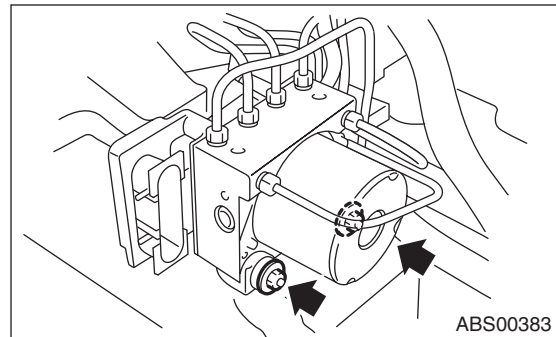
- 2) Install the ABSCM&H/U by aligning the damper groove of the ABSCM&H/U to the bracket side claw.

NOTE:

Check the identification marks of the 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 the bracket.
- 5) Connect the connector to the ABSCM&H/U.

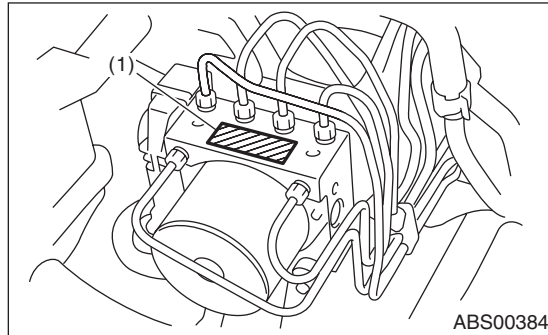
NOTE:

- Be sure to remove all foreign matter from inside the connector before connecting.
 - Make sure the ABSCU&H/U connector is securely locked.
- 6) Bleed air from the brake system.

C: INSPECTION

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

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



(1) Identification mark

1. CHECKING THE HYDRAULIC UNIT ABS OPERATION BY PRESSURE GAUGE

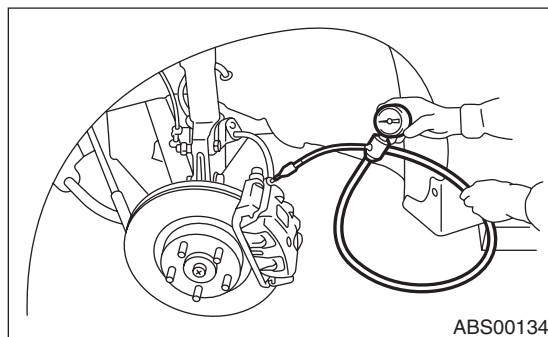
- 1) Lift up the vehicle, and remove the wheels.
- 2) Remove the air bleeder screws from FL and FR caliper bodies.
- 3) Connect two pressure gauges to FL and FR caliper bodies.

CAUTION:

- Use a pressure gauge used exclusively for brake fluid measurement.
- Do not use the pressure gauge used for the measurement of transmission oil. Doing so will cause the piston seal to expand and deform.

NOTE:

Wrap 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, hold and compression, and then the FR side performs decompression, hold 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 depressurized	500 kPa (5 kgf/cm ² , 73 psi) or less	500 kPa (5 kgf/cm ² , 73 psi) or less
When pressurized	3,500 kPa (36 kgf/cm ² , 511 psi) or more	3,500 kPa (36 kgf/cm ² , 511 psi) or more

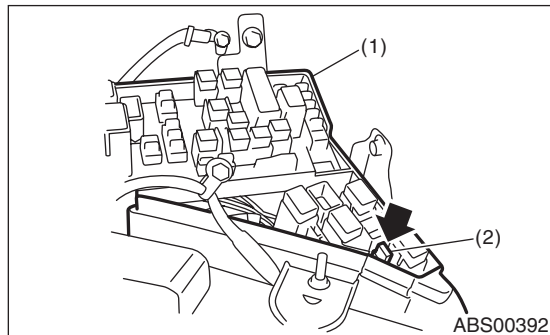
- 8) Disconnect the pressure gauges from FL and FR caliper bodies.
- 9) Install the air bleeder screws of FL and FR caliper bodies.
- 10) Remove the air bleeder screws from RL and RR caliper bodies.
- 11) Connect two pressure gauges to RL and RR caliper bodies.
- 12) Bleed air from the brake system.
- 13) Bleed air from RL and RR caliper bodies, and pressure gauge.
- 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, hold and compression, and then the RL side performs decompression, hold and compression.
- 16) Read values indicated on the pressure gauge and check if the fluctuation of the values between decompression and compression meets specification. Depress the brake pedal and check that the kick-back is normal, and tightness is normal.
- 17) Disconnect the pressure gauge from the RL and RR caliper bodies.
- 18) Install the air bleeder screws of RL and RR caliper bodies.
- 19) Bleed air from the brake system.

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2. CHECKING THE HYDRAULIC UNIT ABS OPERATION WITH THE BRAKE TESTER

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



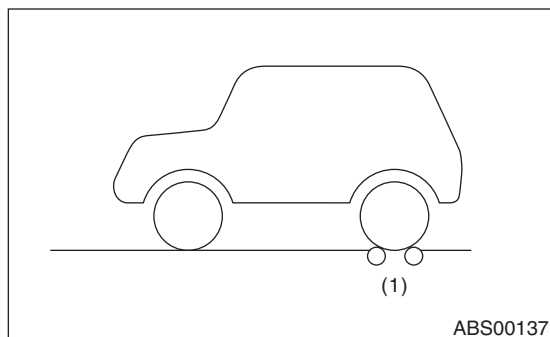
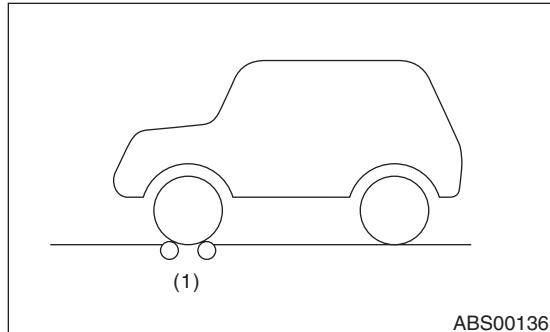
- (1) Main fuse box
- (2) FWD connector

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

3) Prepare for 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 gear 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 work sequence.

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

(2) The RR wheel performs decompression, hold 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 specification.

	Front wheel	Rear wheel
Initial value	1,000 N (102 kgf, 225 lb)	1,000 N (102 kgf, 225 lb)
When depressurized	500 N (51 kgf, 112 lb) or less	500 N (51 kgf, 112 lb) or less
When pressurized	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 the ABSCM cannot be replaced, do not pull or peel it by lifting it up.
- Because the screw of the H/U will become slightly worn in every replacement procedure, 5 times is the maximum number of times for replacement. If a problem is found such as not being able to torque the screw to specifications even before 5 replacement operations are performed, replace the H/U body.
- When installing the ABSCM, always use new screws.
- When the sealing surface of the ABSCM or H/U is dirty or damaged and it cannot be removed or repaired, replace with a new part.

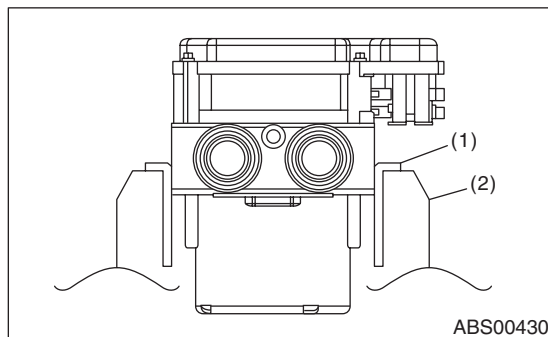
1) Remove the ABSCM&H/U bracket. <Ref. to ABS-6, REMOVAL, ABS Control Module and Hydraulic Control Unit (ABSCM&H/U).>

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

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

NOTE:

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



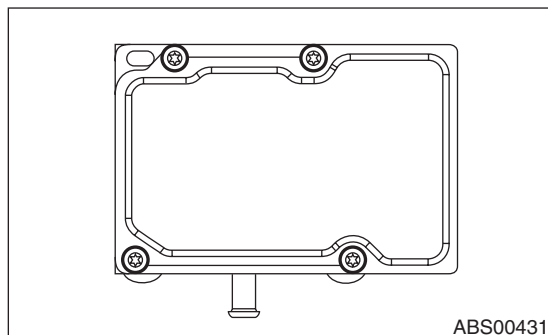
(1) Aluminum plate, etc.

(2) Vise

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

NOTE:

These screws cannot be reused.



5) Slowly pull out the ABSCM upward from the H/U.

NOTE:

To prevent damaging of coil section, remove the ABSCM straight up from H/U without twisting.

6) Make sure there is no dirt or damage on the sealing surface of the H/U.

CAUTION:

• Do not clean the ABSCM & H/U by applying compressed air.

• Even if damage is found on the H/U seal, do not attempt repair by filing or with a metal scraper. To remove the seal residue, always use a plastic scraper. Do not use chemical such as paint thinner, etc., to clean.

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

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

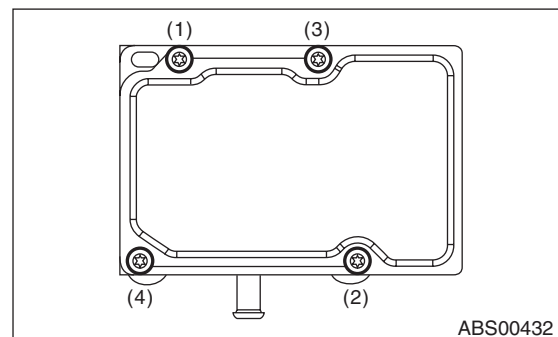
9) Using a TORX® BIT E5, attach/tighten new screws in the order of (1) through (4).

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 mating surface between the ABSCM & H/U.

11) Using a TORX® BIT E5, tighten the screws 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 gap in the mating surface between ABSCM & H/U.

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