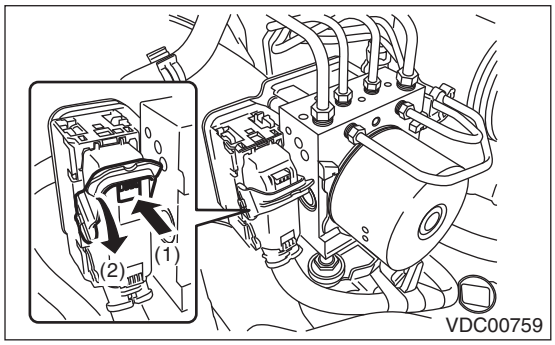
2. VDC Control Module and Hydraulic Control Unit (VDCCM&H/U)

A: REMOVAL

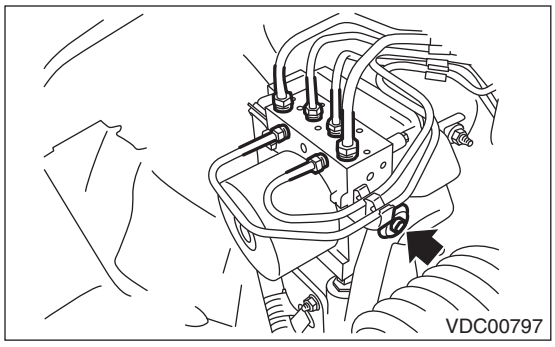
1) Disconnect the ground cable from battery.
2) Remove any dirt from around the VDCCM&H/U.
3) Release the lock (1), pull down the lock lever (2) and disconnect the VDCCM&H/U connector.

CAUTION:
Do not pull on the harness when disconnecting the connector.



4) Disconnect the brake pipes from the VDCCM&H/U.
5) 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.
6) Remove the bolt, and then remove the VDCCM&H/U.



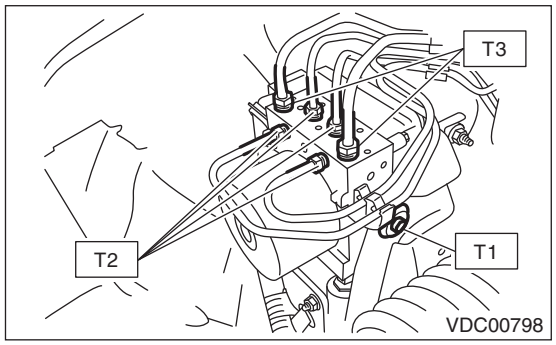
CAUTION:
• Do not drop or bump the VDCCM&H/U.
• Do not turn the VDCCM&H/U upside down or place it sideways for storage.
• Be careful not to let foreign matter enter the VDCCM&H/U.
• Be careful that no water enters the connectors.

B: INSTALLATION

1) Install in the reverse order of removal.

CAUTION:
When installing the VDCCM&H/U to the bracket, make sure that there is no oil adhered to the threads of VDCCM&H/U. If the oil is adhered, degrease it carefully before tightening.

Tightening torque:
T1: 7.5 N·m (0.76 kgf-m, 5.5 ft-lb)
T2: 15 N·m (1.5 kgf-m, 11.1 ft-lb)
T3: 19 N·m (1.9 kgf-m, 14 ft-lb)



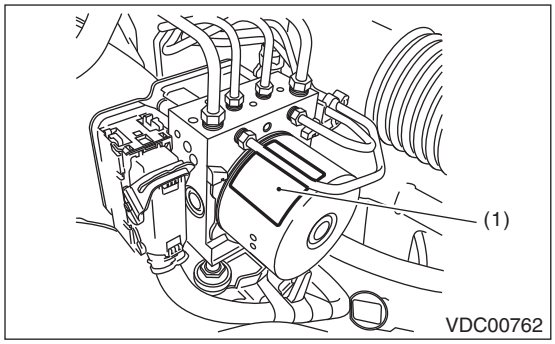
2) Connect the VDCCM&H/U connector.
3) Lift the lock lever to securely lock the connector.
4) Bleed air from the brake system.
5) Check the parameter to confirm that the applied model and grade of the target vehicle are included. <Ref. to VDC(diag)-19, PARAMETER CHECK, OPERATION, Subaru Select Monitor.>
6) If the applied model and grade of the target vehicle are not included on the {Confirm on parameter} display screen, perform parameter selection and registration. <Ref. to VDC(diag)-18, PARAMETER SELECTION, OPERATION, Subaru Select Monitor.>

NOTE:
• When the VDCCM&H/U has been replaced with a new part, be sure to perform parameter selection and registration.
• Parameter selection and registration operation requires the Subaru Select Monitor.
• When no data is registered, ABS/EBD/VDC warning light illuminates and the DTC “Parameter selection error” is detected.
7) Perform “Set up mode for Neutral of Steering Angle Sensor & Lateral G Sensor 0 point”. <Ref. to VDC-10, SET UP MODE FOR NEUTRAL OF STEERING ANGLE SENSOR & LATERAL G SENSOR 0 POINT, ADJUSTMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>

8) Perform “Longitudinal G sensor & lateral G sensor 0 point setting mode”. <Ref. to VDC-11, LONGITUDINAL G SENSOR & LATERAL G SENSOR 0 POINT SETTING MODE, ADJUSTMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>

C: INSPECTION

1) Check the condition of connection and settlement of connector.
2) Check the identification label of the VDCCM&H/U.
Refer to “SPECIFICATION” for identification label. <Ref. to VDC-2, SPECIFICATION, General Description.>



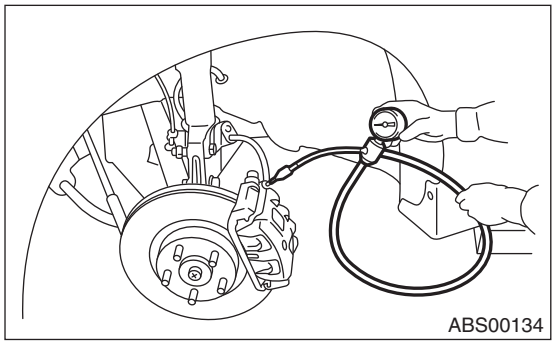
(1) Identification label

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.



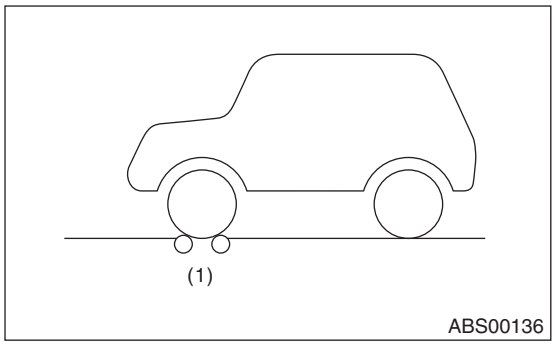
4) Bleed air from the pressure gauges and the FL and FR caliper bodies.
5) Perform ABS sequence control. <Ref. to VDC-12, ABS Sequence Control.>
6) When the hydraulic unit begins to work, first the FL side performs decompression, hold and compression, and then the FR side performs decompression, hold 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.

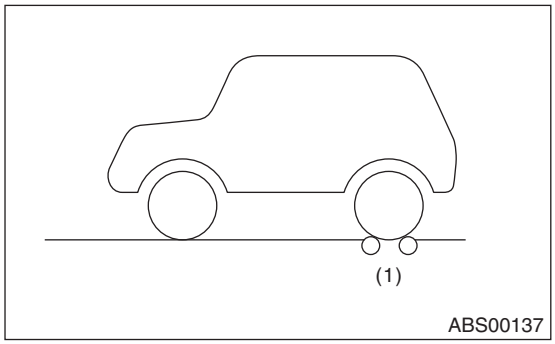
	Front wheel	Rear wheel
Initial value	3,500 kPa (36 kgf/cm^2, 511 psi)	3,500 kPa (36 kgf/cm^2, 511 psi)
When depressurized	500 kPa (5 kgf/cm^2, 73 psi) or less	500 kPa (5 kgf/cm^2, 73 psi) or less
When pressurized	3,500 kPa (36 kgf/cm^2, 511 psi) or more	3,500 kPa (36 kgf/cm^2, 511 psi) or more

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 VDC-12, 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.

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

1) Set wheels other than the one to measure on free rollers.
2) Prepare for ABS sequence control operation. <Ref. to VDC-12, ABS Sequence Control.>
3) Set the front wheels or rear wheels on the brake tester, and set the gear to neutral.





(1) Brake tester

4) Operate the brake tester.
5) Perform ABS sequence control. <Ref. to VDC-12, ABS Sequence Control.>
6) 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.
7) 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

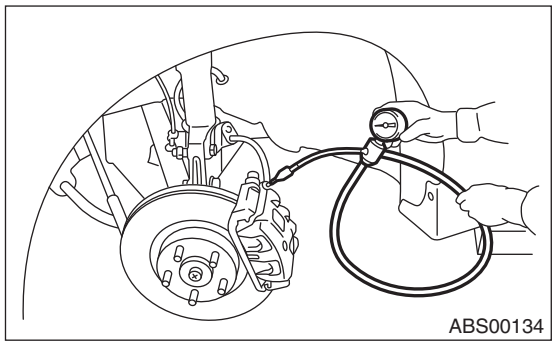
8) After the inspection, depress the brake pedal and check that it is not abnormally hard, and tightness is normal.

3. CHECKING THE HYDRAULIC UNIT VDC OPERATION USING A 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 a pressure gauge used for the measuring transmission oil pressure, as the piston seal may expand and deform.

NOTE:
Wrap sealing tape around the pressure gauge.



4) Bleed air from the pressure gauge.
5) Perform VDC sequence control. <Ref. to VDC-15, VDC Sequence Control.>
6) When the hydraulic unit begins to work, first the FL side performs compression, hold, and decompression, and then the FR side performs compression, hold, and decompression.
7) 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 it is not abnormally hard, and tightness is normal.

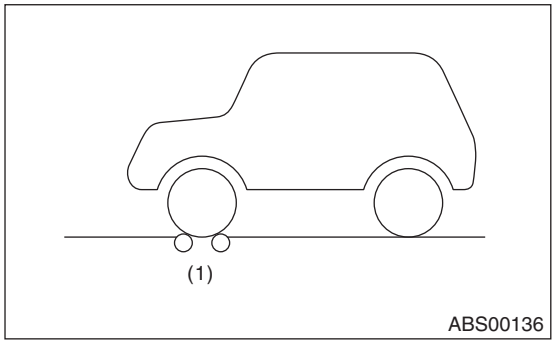
	Front wheel	Rear wheel
When pressurized	3,000 kPa (31 kgf/cm^2, 441 psi) or more	3,000 kPa (31 kgf/cm^2, 441 psi) or more
When depressurized	500 kPa (5 kgf/cm^2, 73 psi) or less	500 kPa (5 kgf/cm^2, 73 psi) or less

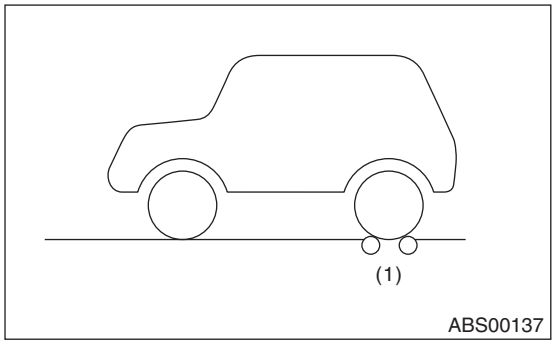
8) Disconnect the pressure gauges from FL and FR caliper bodies.
9) Install the air bleeder screws of FL and FR caliper bodies.
10) Remove the air bleeder screws from RL and RR caliper bodies.

11) Connect two pressure gauges to RL and RR caliper bodies.
12) Bleed air from RL and RR caliper bodies, and pressure gauge.
13) Perform VDC sequence control. <Ref. to VDC-15, VDC Sequence Control.>
14) When the hydraulic unit begins to work, first the RR side performs compression, hold, and decompression, and then the RL side performs compression, hold, and decompression.
15) Read the values indicated on the pressure gauges and check if it is within specification. Depress the brake pedal and check that it is not abnormally hard, and tightness is normal.
16) Disconnect the pressure gauge from the RL and RR caliper bodies.
17) Install the air bleeder screws of RL and RR caliper bodies.
18) Bleed air from the brake line.

4. CHECK HYDRAULIC UNIT VDC OPERATION WITH BRAKE TESTER

1) Set wheels other than the one to be measured on free rollers.
2) Prepare to operate the VDC sequence control. <Ref. to VDC-15, VDC Sequence Control.>
3) Set the front wheels or rear wheels on the brake tester, and set the gear to neutral.





(1) Brake tester

4) Operate the brake tester.
5) Perform VDC sequence control. <Ref. to VDC-15, VDC Sequence Control.>
6) When the hydraulic unit begins to work, check the following work sequence.
(1) The FL wheel performs compression, hold and decompression in sequence, and subsequently the FR wheel repeats the cycle.
(2) The RR wheel performs compression, hold and decompression in sequence, and subsequently the RL wheel repeats the cycle.
7) 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
When pressurized	2,000 N (204 kgf, 450 lbf) or more	2,000 N (204 kgf, 450 lbf) or more
When depressurized	500 N (51 kgf, 112 lbf) or less	500 N (51 kgf, 112 lbf) or less

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

D: ADJUSTMENT

1. SET UP MODE FOR NEUTRAL OF STEERING ANGLE SENSOR & LATERAL G SENSOR 0 POINT

Perform this mode after installing, replacing or adjusting the following parts.
- Steering angle sensor
- Steering wheel
- Suspension parts
- Wheel alignment
- VDCCM&H/U
- VDCCM&H/U bracket

1) Set the steering wheel to the neutral position.
2) Connect the Subaru Select Monitor.
3) On the «Main Menu» display, select {Each System Check}.
4) On the «System Selection Menu» display, select {Brake Control System}.
5) When {VDC} is displayed, select the [OK] button.
6) On the «Brake Control Diagnosis» display, select {Current Data Display & Save}.
7) Read {Steering angle sensor value}.
8) Check that the displayed value is between – 10 and 10 deg.
9) On the «Function Check Sequence» display, select {Set up mode for Neutral of Steering Angle Sensor & Lateral G Sensor 0 point}.
10) Drive the vehicle for 10 minutes, and check that there is no system malfunction or the warning light illumination while driving.
11) Make sure that the DTC is not stored.

2. LONGITUDINAL G SENSOR & LATERAL G SENSOR 0 POINT SETTING MODE

Perform this mode after installing or replacing the following parts.

- Suspension parts
- VDCCM&H/U
- VDCCM&H/U bracket

1) Park the vehicle on a level surface with all wheels aligned straight.
2) Connect the Subaru Select Monitor.
3) On the «Main Menu» display, select {Each System Check}.
4) On the «System Selection Menu» display, select {Brake Control System}.
5) When {VDC} is displayed, select the [OK] button.
6) On the «Brake Control Diagnosis» display, select {Current Data Display & Save}.
7) Read {Longitudinal G sensor output} and {Lateral G sensor Output}.
8) Check that the displayed value is between – 2 and 2 m/s^2.
9) On the «Function Check Sequence» display, select {Set up mode for Neutral of Steering Angle Sensor & Lateral G Sensor 0 point}.
10) Drive the vehicle for 10 minutes, and check that there is no system malfunction or the warning light illumination while driving.
11) Make sure that the DTC is not stored.