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NOT FOR RESALE

BRAKE

General Description

BRAKE

1. General Description

A: SPECIFICATION

Model		Others	WRX	STI
Front disc brake	Size	15-inch type	16-inch type	17-inch type
	Type	Disc (Floating type, ventilated)	Disc (Fixed type, ventilated)	
	Effective disc diameter	228 mm (8.98 in)	255 mm (10.04 in)	268 mm (10.55 in)
	Disc thickness × Diameter	24 × 277 mm (0.94 × 10.91 in)	24 × 294 mm (0.94 × 11.57 in)	30 × 326 mm (1.18 × 12.83 in)
	Effective cylinder diameter	42.8 mm (1.685 in) × 2	40.4 mm (1.591 in) × 4	40.0 mm × 2, 46.0 mm × 2 (1.575 in × 2, 1.811 in × 2)
	Pad dimensions (Length × Width × Thickness)	117.8 × 50.5 × 11.0 mm (4.638 × 1.988 × 0.433 in)	116.0 × 47.7 × 10.0 mm (4.567 × 1.878 × 0.394 in)	129.8 × 60.5 × 9.2 mm (5.110 × 2.382 × 0.362 in)
	Clearance adjustment	Automatic adjustment		
Rear Disc Brake	Size	14-inch type	15-inch type	17-inch type
	Type	Disc (Floating type)	Disc (Fixed type, ventilated)	
	Effective disc diameter	230 mm (9.06 in)	261 mm (10.28 in)	268 mm (10.55 in)
	Disc thickness × Diameter	10 × 266 mm (0.39 × 10.47 in)	18 × 290 mm (0.71 × 11.42 in)	20 × 316 mm (0.79 × 12.44 in)
	Effective cylinder diameter	38.1 mm (1.500 in)		36.0 mm (1.417 in)
	Pad dimensions (Length × Width × Thickness)	89.4 × 33.7 × 9.0 mm (3.520 × 1.327 × 0.354 in)	71.8 × 35.0 × 11.5 mm (2.827 × 1.378 × 0.453 in)	74.8 × 45.0 × 9.0 mm (2.945 × 1.772 × 0.354 in)
	Clearance adjustment	Automatic adjustment		
Master Cylinder	Type	Tandem		
	Effective outer diameter	26.99 mm (1-1/16 in)	25.4 mm (1 in)	26.99 mm (1-1/16 in)
	Reservoir type	Sealed type		
	Brake fluid reservoir capacity	205 cm ³ (12.51 cu in)		
Brake Booster	Type	Vacuum suspended		
	Effective outer diameter	205 + 230 mm (8.07 + 9.06 in)		
Brake line		Dual circuit system		
Brake fluid CAUTION: • Avoid mixing brake fluid of different brands to prevent fluid performance from degrading. • When filling with brake fluid, be careful not to allow any dust to enter the reservoir. • Use new DOT 3 brake fluid when replacing or refilling the fluid.		FMVSS No. 116, DOT3, or DOT4		

NOTE:

Refer to the "PB section" for parking brake specifications. <Ref. to PB-2, SPECIFICATION, General Description.>

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Contents		Standard	Limit	
Front brake	Pad thickness	15"	11 mm (0.43 in)	1.5 mm (0.059 in)
		16"	10 mm (0.393 in)	1.5 mm (0.059 in)
		17"	9.2 mm (0.362 in)	1.2 mm (0.047 in)
	Disc thickness	Except for 17 "	24 mm (0.94 in)	22 mm (0.87 in)
		17"	30 mm (1.18 in)	28 mm (1.10 in)
Disc runout		—	0.075 mm (0.0030 in)	
Rear brake (disc type)	Pad thickness	14"	9.0 mm (0.354 in)	1.5 mm (0.059 in)
		15"	11.5 mm (0.452 in)	1.5 mm (0.059 in)
		17"	9.0 mm (0.354 in)	1.2 mm (0.047 in)
	Disc thickness	14"	10 mm (0.39 in)	8.5 mm (0.335 in)
		15"	18 mm (0.71 in)	16 mm (0.63 in)
		17"	20 mm (0.79 in)	18 mm (0.71 in)
Disc runout		—	0.07 mm (0.0028 in)	
Rear brake (disc type parking brake) (Except for STI model)	Inside diameter	170 mm (6.69 in)	171 mm (6.73 in)	
	Lining thickness	3.2 mm (0.126 in)	1.5 mm (0.059 in)	
Rear brake (disc type parking brake) (Except for STI model)	Inside diameter	190 mm (7.48 in)	191 mm (7.52 in)	
	Lining thickness	3.2 mm (0.126 in)	1.5 mm (0.059 in)	
Parking brake	Lever stroke	7 — 8 notches/196 N (20 kgf, 44 lbf)		

		Brake pedal operation force	Fluid pressure		
			Others	WRX	STI
Brake booster	Brake fluid pressure with engine stopped	147 N (15 kgf, 33 lbf)	588 kPa (6 kgf/cm ² , 85 psi)		
		294 N (30 kgf, 66 lbf)	1,471 kPa (15 kgf/cm ² , 213 psi)	1,667 kPa (17 kgf/cm ² , 242 psi)	1,471 kPa (15 kgf/cm ² , 213 psi)
	Brake fluid pressure and vacuum pressure with engine running at 66.7 kPa (500 mmHg, 19.69 inHg)	147 N (15 kgf, 33 lbf)	5,296 kPa (54 kgf/cm ² , 768 psi)	6,276 kPa (64 kgf/cm ² , 910 psi)	4,021 kPa (41 kgf/cm ² , 583 psi)
		294 N (30 kgf, 66 lbf)	9,120 kPa (93 kgf/cm ² , 1,323 psi)	10,200 kPa (104 kgf/cm ² , 1,479 psi)	8,336 kPa (85 kgf/cm ² , 1,209 psi)

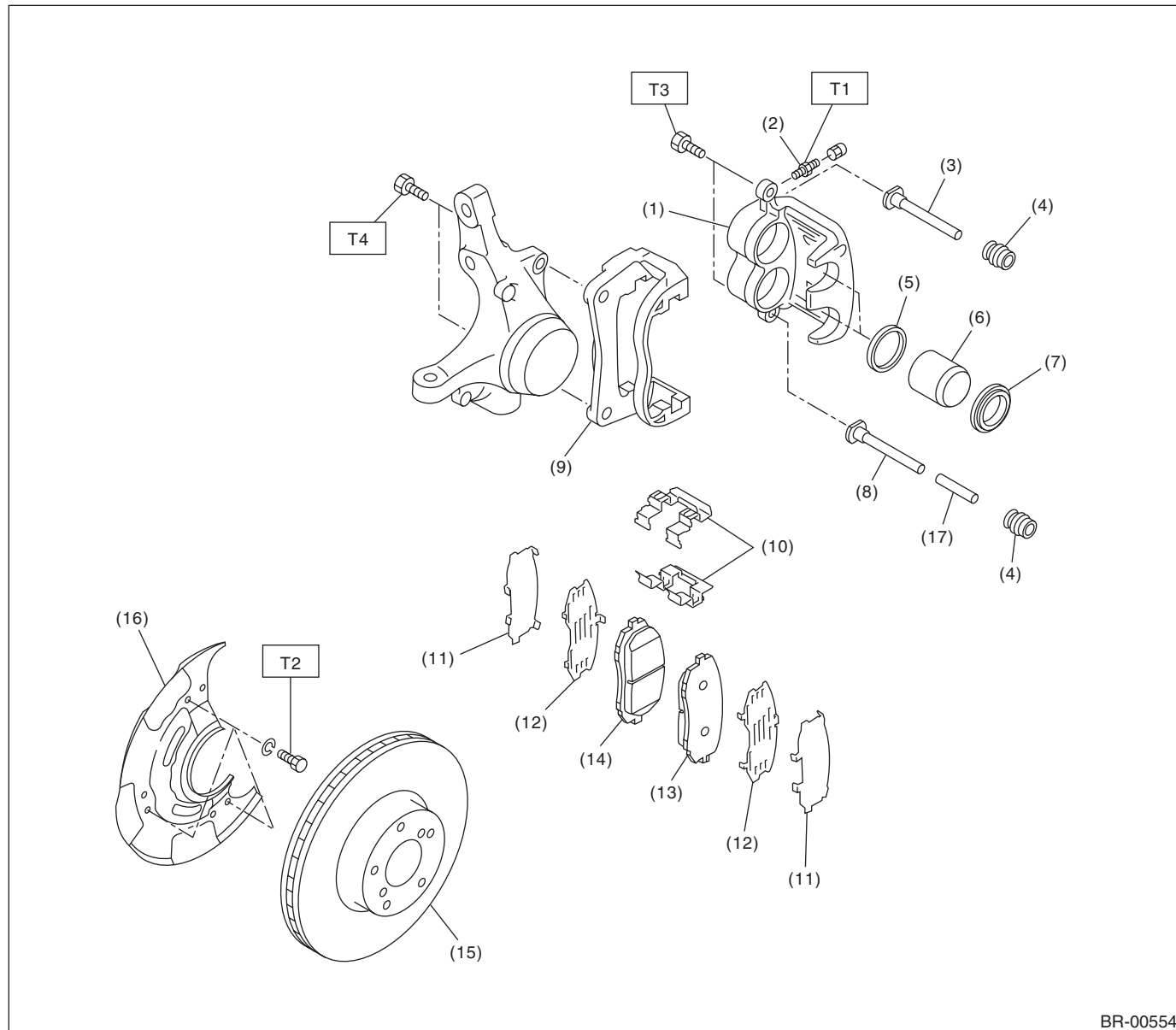
Brake pedal	Free play	0.5 — 2 mm (0.02 — 0.08 in) Depress the brake pedal with a force of less than 10 N (1 kgf, 2 lbf).
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B: COMPONENT

1. FRONT DISC BRAKE

15-inch type

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BR-00554

- (1) Caliper body
- (2) Air bleeder screw
- (3) Guide pin (Green)
- (4) Pin boot
- (5) Piston seal
- (6) Piston
- (7) Piston boot
- (8) Lock pin (Yellow)

- (9) Support
- (10) Pad clip
- (11) Outer shim
- (12) Inner shim
- (13) Pad (Outside)
- (14) Pad (Inside)
- (15) Disc rotor
- (16) Disc cover

- (17) Bushing

Tightening torque:N·m (kgf·m, ft·lb)

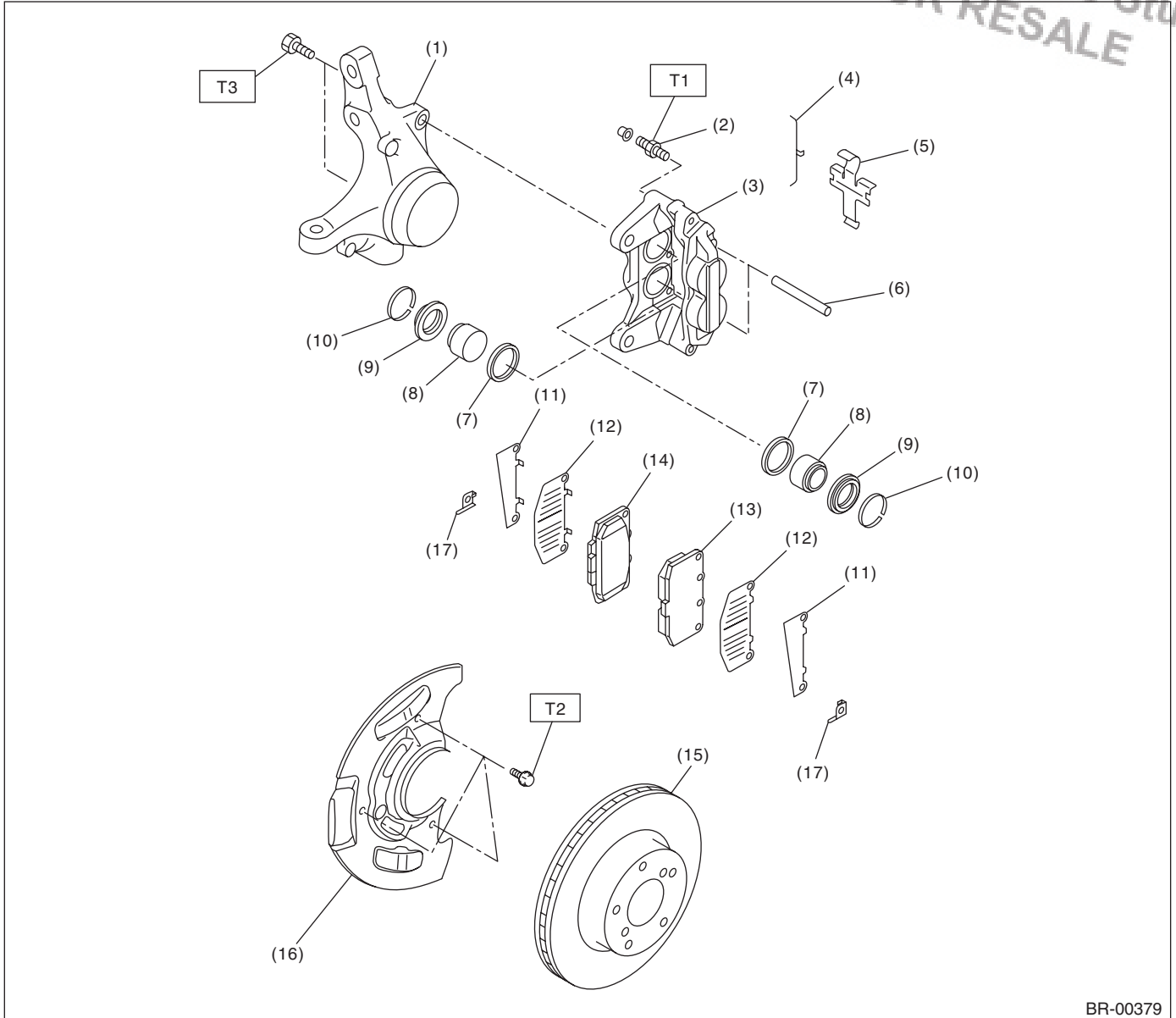
T1: 8 (0.8, 5.8)

T2: 18 (1.8, 13.0)

T3: 26.5 (2.7, 19.5)

T4: 80 (8.2, 59)

16-inch type



BR-00379

- | | | |
|-----------------------|--------------------|-----------------|
| (1) Housing | (9) Piston boot | (16) Disc cover |
| (2) Air bleeder screw | (10) Boot ring | (17) Spacer |
| (3) Caliper body | (11) Outer shim | |
| (4) M clip | (12) Inner shim | |
| (5) Cross spring | (13) Pad (Outside) | |
| (6) Pad pin | (14) Pad (Inside) | |
| (7) Piston seal | (15) Disc rotor | |
| (8) Piston | | |

Tightening torque: N·m (kgf·m, ft·lb)

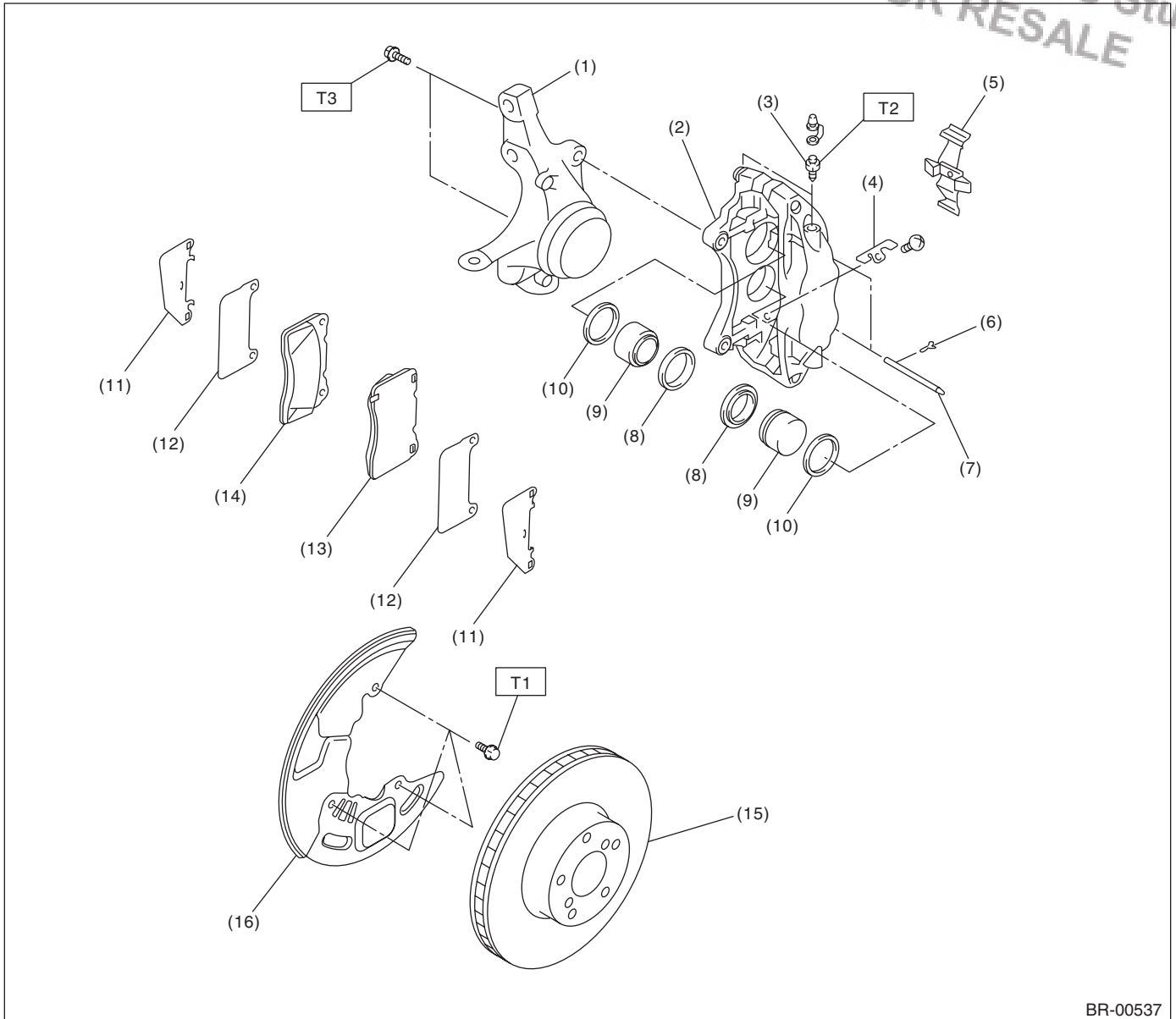
- T1: 8 (0.8, 5.8)**
T2: 18 (1.8, 13.0)
T3: 80 (8.2, 59)

General Description

BRAKE

17-inch type

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BR-00537

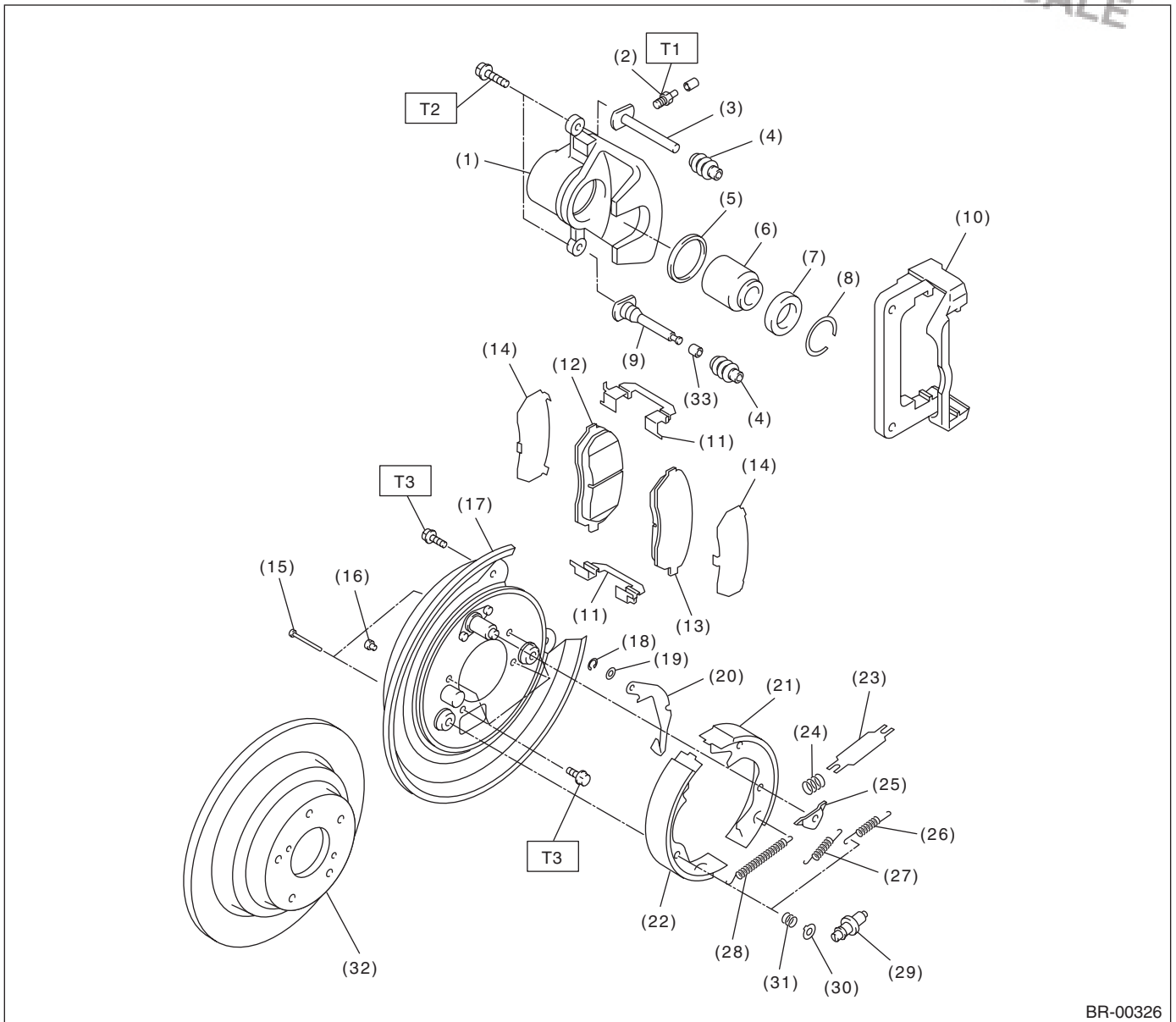
- | | | |
|-----------------------|-------------------------|-----------------|
| (1) Housing | (8) Piston boot | (15) Disc rotor |
| (2) Caliper body | (9) Piston | (16) Disc cover |
| (3) Air bleeder screw | (10) Piston seal | |
| (4) Guide plate | (11) Pad shim (Outside) | |
| (5) Cross spring | (12) Pad shim (Inside) | |
| (6) Clip | (13) Pad (Outside) | |
| (7) Pad pin | (14) Pad (Inside) | |

Tightening torque: N·m (kgf·m, ft·lb)

- T1: 18 (1.8, 13.0)**
T2: 20 (2.0, 14.5)
T3: 155 (15.8, 114.3)

2. REAR DISC BRAKE

14-inch type



BR-00326

- | | | |
|-----------------------|-------------------------------------|---------------------------------|
| (1) Caliper body | (14) Shim | (27) Primary shoe return spring |
| (2) Air bleeder screw | (15) Shoe hold-down pin | (28) Adjusting spring |
| (3) Guide pin (Green) | (16) Cover | (29) Adjuster |
| (4) Pin boot | (17) Back plate | (30) Shoe hold-down cup |
| (5) Piston seal | (18) Retainer | (31) Shoe hold-down spring |
| (6) Piston | (19) Spring washer | (32) Disc rotor |
| (7) Piston boot | (20) Parking brake lever | (33) Bushing |
| (8) Boot ring | (21) Parking brake shoe (Secondary) | |
| (9) Lock pin (Yellow) | (22) Parking brake shoe (Primary) | |
| (10) Support | (23) Strut | |
| (11) Pad clip | (24) Strut shoe spring | |
| (12) Inner pad | (25) Shoe guide plate | |
| (13) Outer pad | (26) Secondary shoe return spring | |

Tightening torque: N·m (kgf·m, ft·lb)

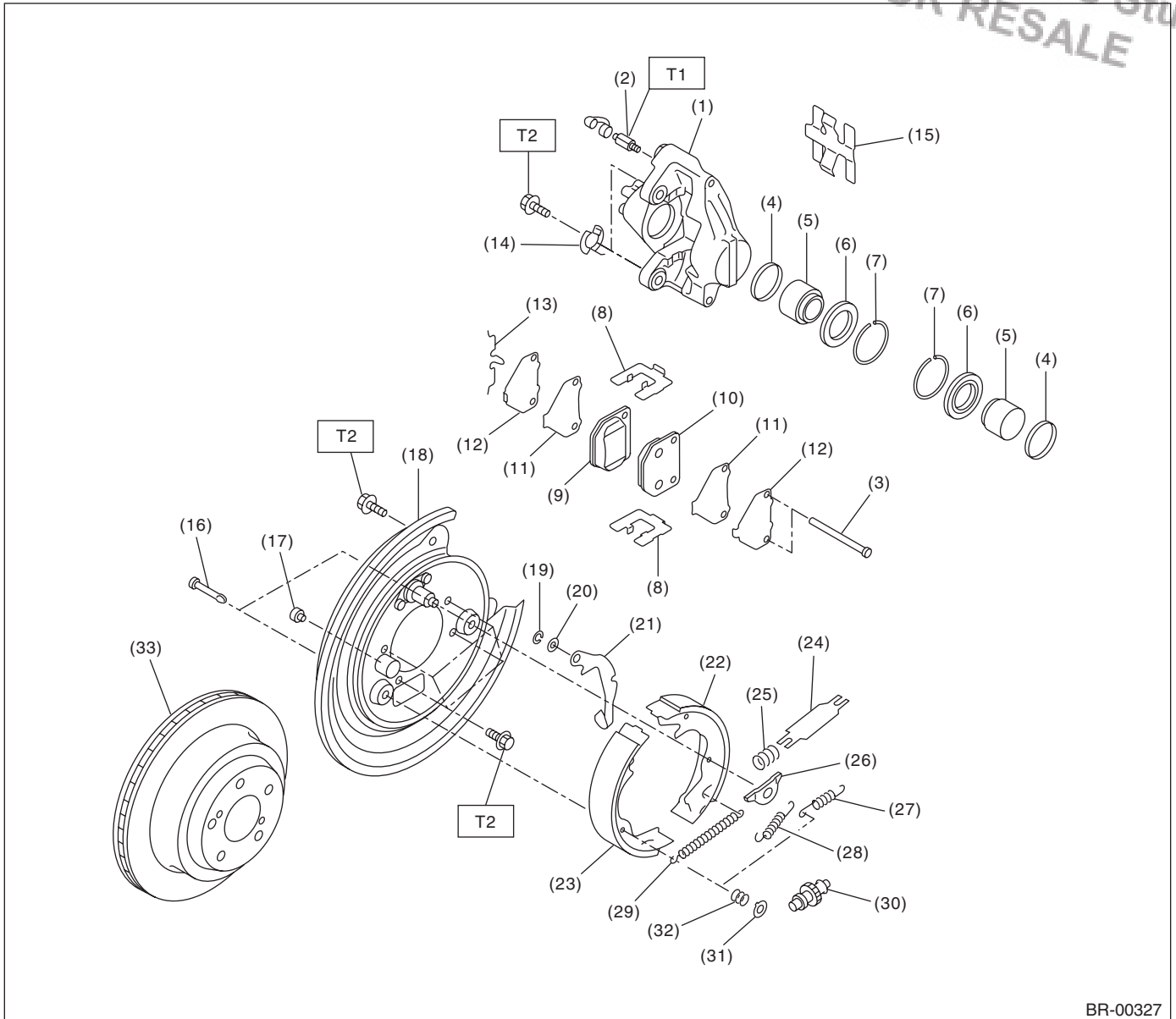
- T1: 8 (0.8, 5.8)**
T2: 37 (3.8, 27.5)
T3: 53 (5.4, 39.1)

General Description

BRAKE

15-inch type

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BR-00327

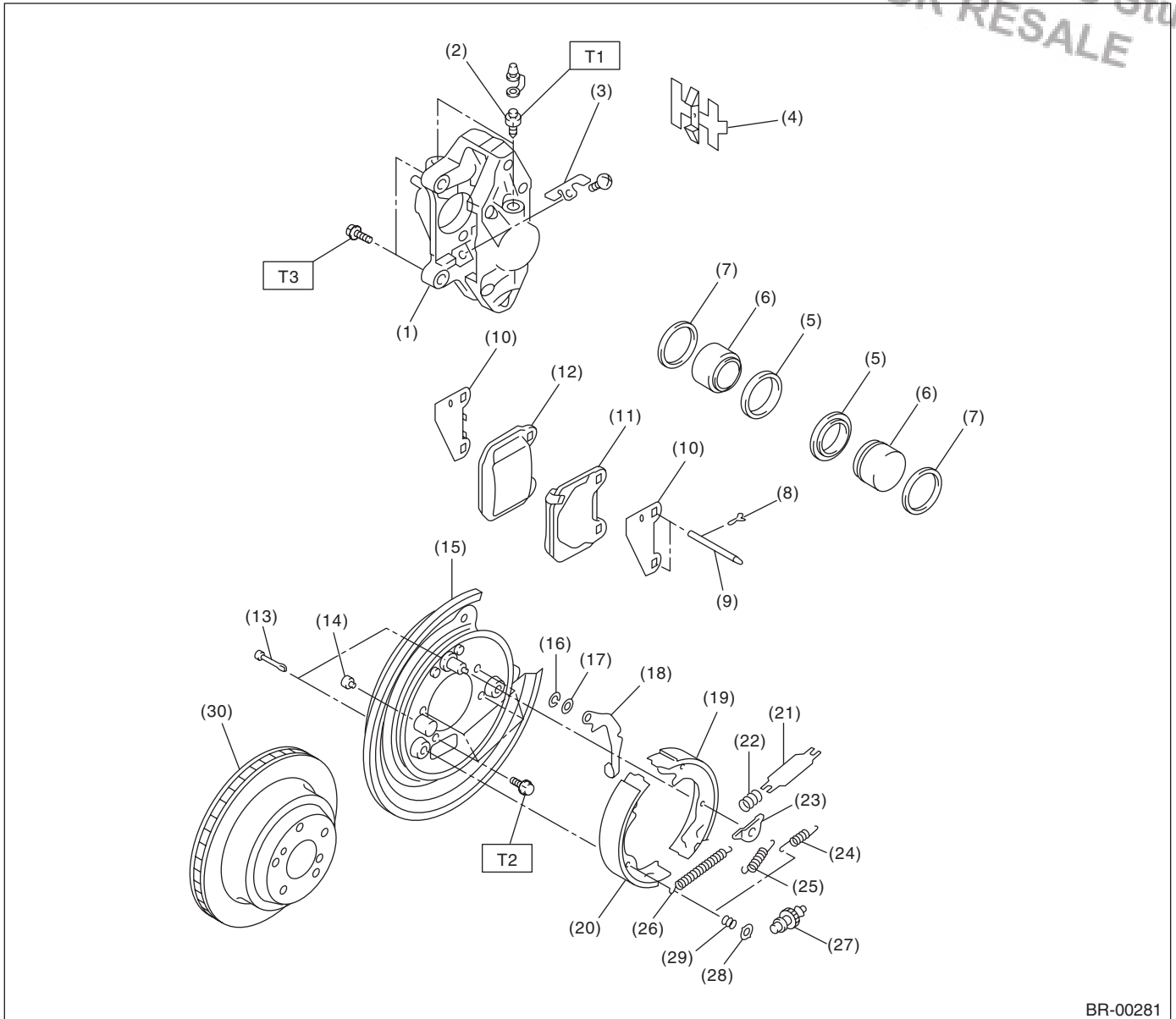
- | | | |
|-----------------------|-------------------------------------|-----------------------------------|
| (1) Caliper body | (14) Washer | (26) Shoe guide plate |
| (2) Air bleeder screw | (15) Cross spring | (27) Secondary shoe return spring |
| (3) Pad pin | (16) Shoe hold-down pin | (28) Primary shoe return spring |
| (4) Piston seal | (17) Cover | (29) Adjusting spring |
| (5) Piston | (18) Back plate | (30) Adjuster |
| (6) Piston boot | (19) Retainer | (31) Shoe hold-down cup |
| (7) Boot ring | (20) Spring washer | (32) Shoe hold-down spring |
| (8) Pad clip | (21) Parking brake lever | (33) Disc rotor |
| (9) Inner pad | (22) Parking brake shoe (Secondary) | |
| (10) Outer pad | (23) Parking brake shoe (Primary) | |
| (11) Inner shim | (24) Strut | |
| (12) Outer shim | (25) Strut shoe spring | |
| (13) M clip | | |

Tightening torque: N·m (kgf·m, ft·lb)

T1: 8 (0.8, 5.8)

T2: 53 (5.4, 39.1)

17-inch type



BR-00281

- | | | |
|-----------------------|-------------------------------------|---------------------------------|
| (1) Caliper body | (13) Shoe hold-down pin | (25) Primary shoe return spring |
| (2) Air bleeder screw | (14) Cover | (26) Adjusting spring |
| (3) Guide plate | (15) Back plate | (27) Adjuster |
| (4) Cross spring | (16) Retainer | (28) Shoe hold-down cup |
| (5) Piston boot | (17) Spring washer | (29) Shoe hold-down spring |
| (6) Piston | (18) Parking brake lever | (30) Disc rotor |
| (7) Piston seal | (19) Parking brake shoe (Secondary) | |
| (8) Clip | (20) Parking brake shoe (Primary) | |
| (9) Pad pin | (21) Strut | |
| (10) Pad shim | (22) Strut shoe spring | |
| (11) Pad (Outside) | (23) Shoe guide plate | |
| (12) Pad (Inside) | (24) Secondary shoe return spring | |

Tightening torque: N·m (kgf·m, ft·lb)

T1: 20 (2.0, 14.5)

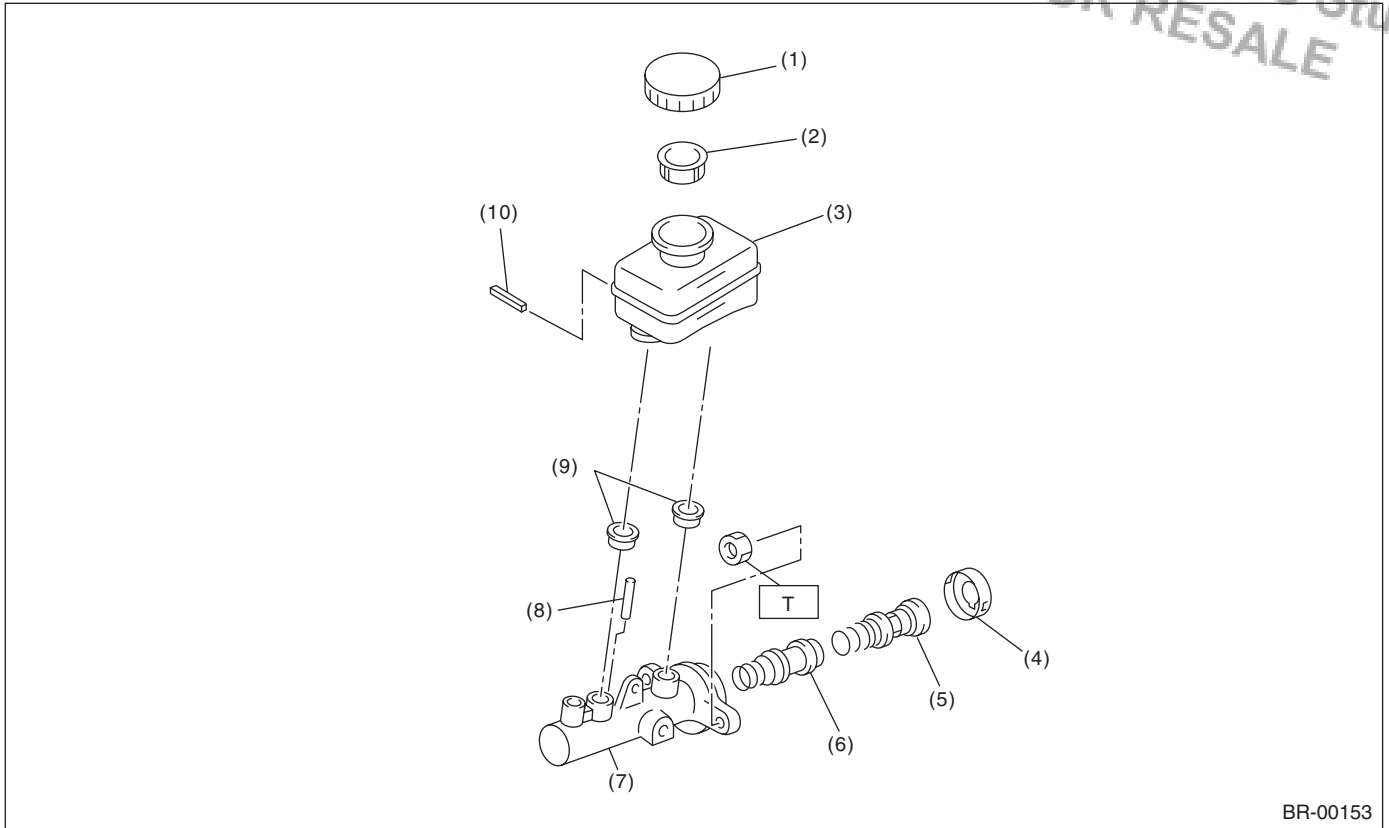
T2: 53 (5.4, 39.1)

T3: 65 (6.6, 47.9)

General Description

BRAKE

3. MASTER CYLINDER



BR-00153

- (1) Cap
- (2) Filter
- (3) Reservoir tank
- (4) Piston retainer
- (5) Primary piston

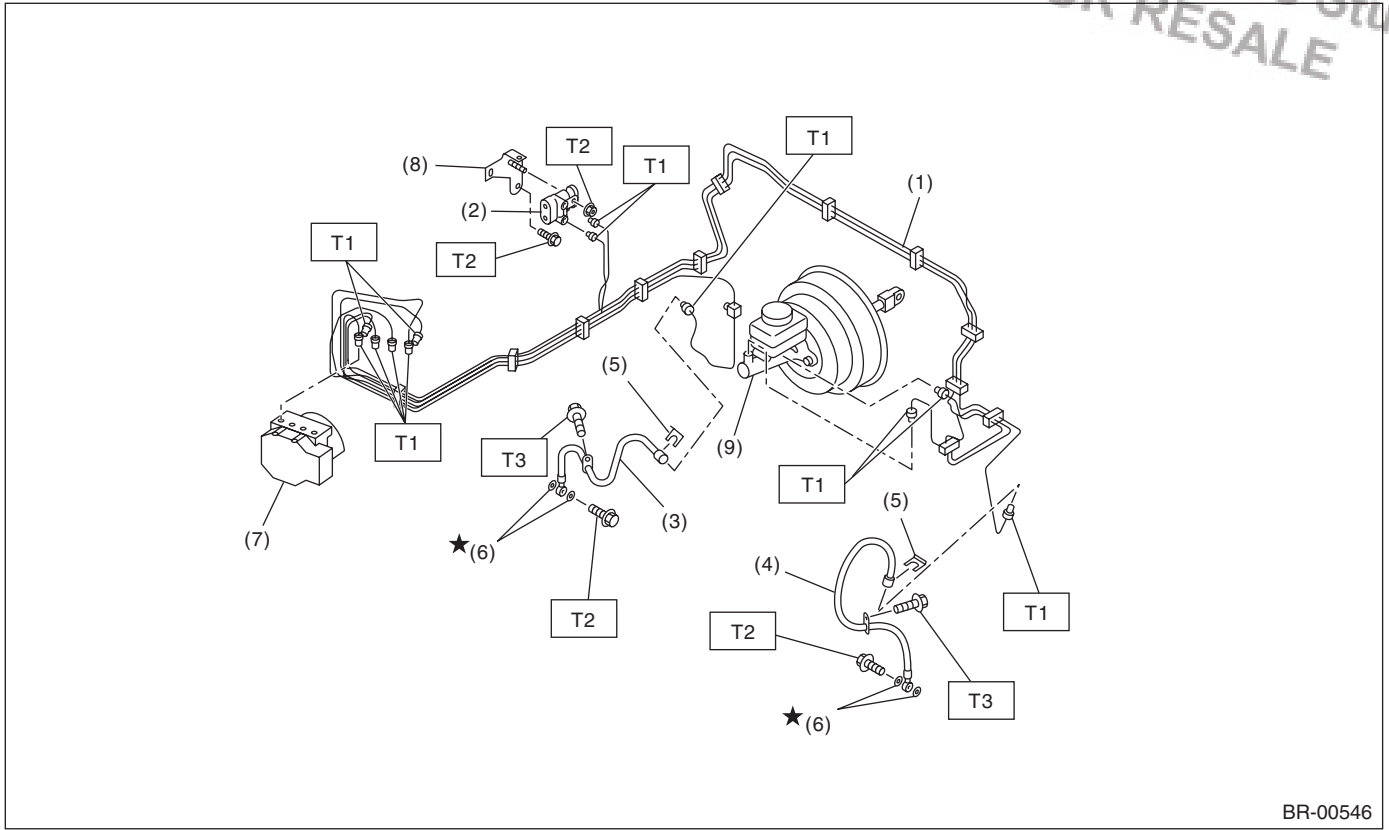
- (6) Secondary piston
- (7) Cylinder body
- (8) Cylinder pin
- (9) Seal

- (10) Pin

Tightening torque: N·m (kgf-m, ft-lb)

T: 15 (1.5, 10.8)

4. FRONT BRAKE PIPES AND HOSES



BR-00546

- | | |
|---------------------------|---|
| (1) Front brake pipe ASSY | (6) Gasket |
| (2) Two-way connector | (7) ABS control module and hydraulic control unit (ABSCM&H/U) |
| (3) Front brake hose RH | (8) Bracket |
| (4) Front brake hose LH | (9) Master cylinder |
| (5) Clamp | |

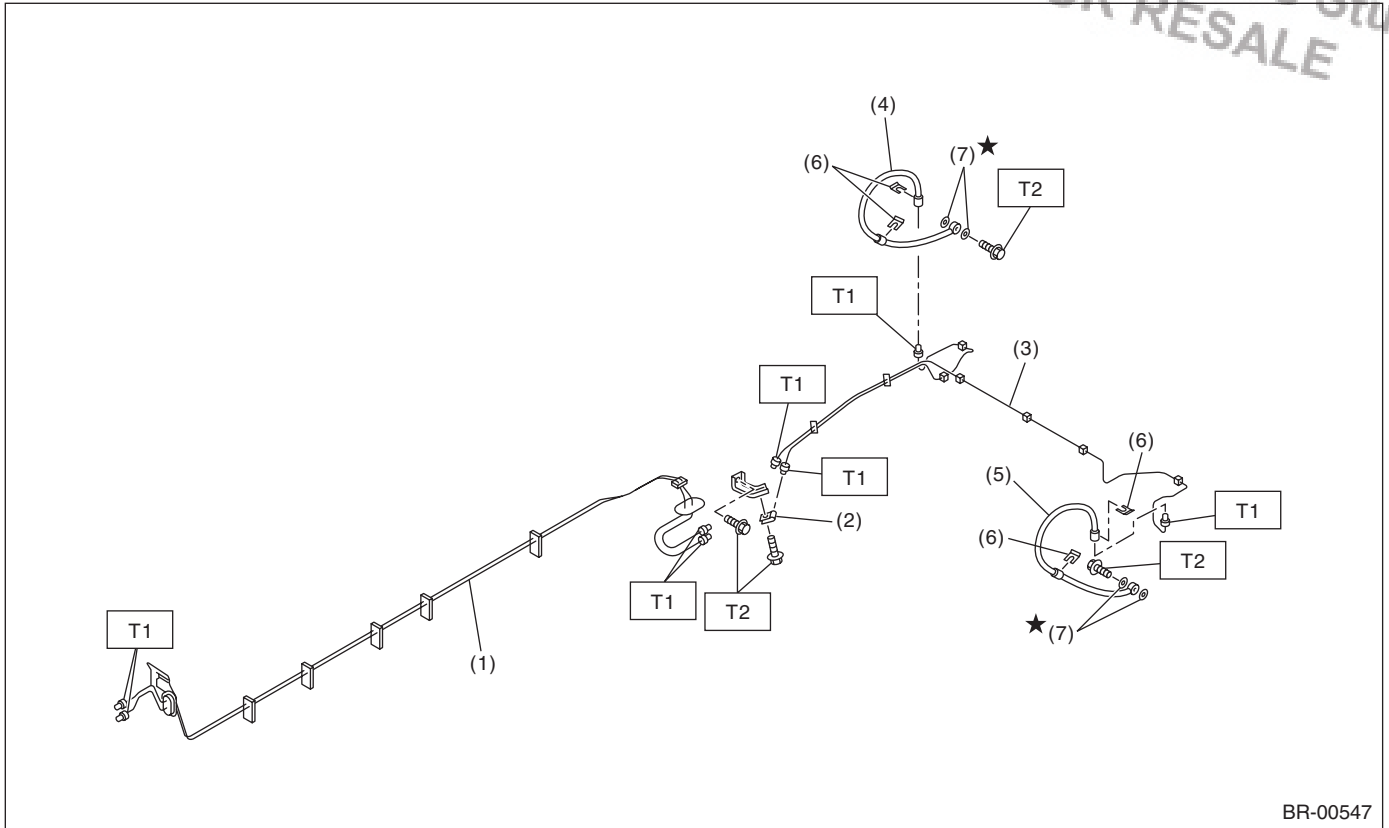
Tightening torque: N·m (kgf·m, ft·lb)

- | |
|---------------------------|
| T1: 15 (1.5, 10.8) |
| T2: 18 (1.8, 13.0) |
| T3: 33 (3.4, 25) |

General Description

BRAKE

5. CENTER AND REAR BRAKE PIPES AND HOSES



BR-00547

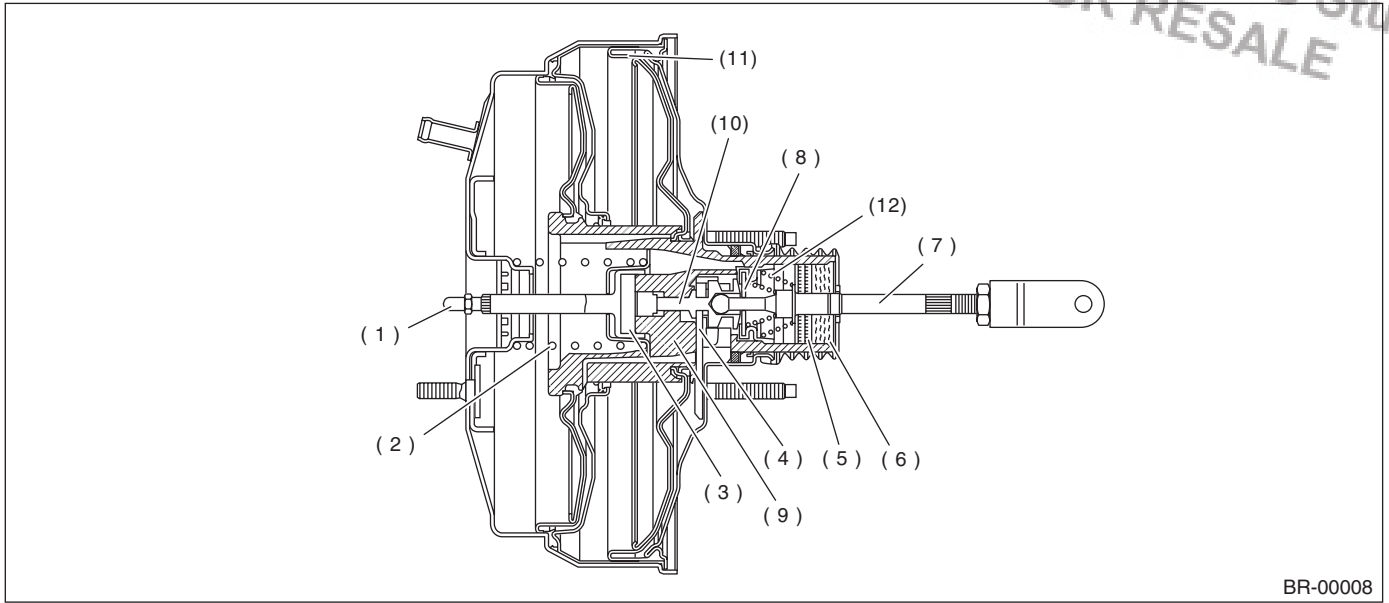
- | | |
|----------------------------|------------------------|
| (1) Center brake pipe ASSY | (5) Rear brake hose LH |
| (2) Two-way connector | (6) Clamp |
| (3) Rear brake pipe ASSY | (7) Gasket |
| (4) Rear brake hose RH | |

Tightening torque: N·m (kgf·m, ft·lb)

T1: 15 (1.5, 10.8)

T2: 18 (1.8, 13.0)

6. BRAKE BOOSTER



BR-00008

- | | | |
|-------------------|-------------------|--------------------------|
| (1) Push rod | (5) Filter | (9) Valve body |
| (2) Return spring | (6) Silencer | (10) Plunger valve |
| (3) Reaction disc | (7) Operating rod | (11) Diaphragm plate |
| (4) Key | (8) Poppet valve | (12) Valve return spring |

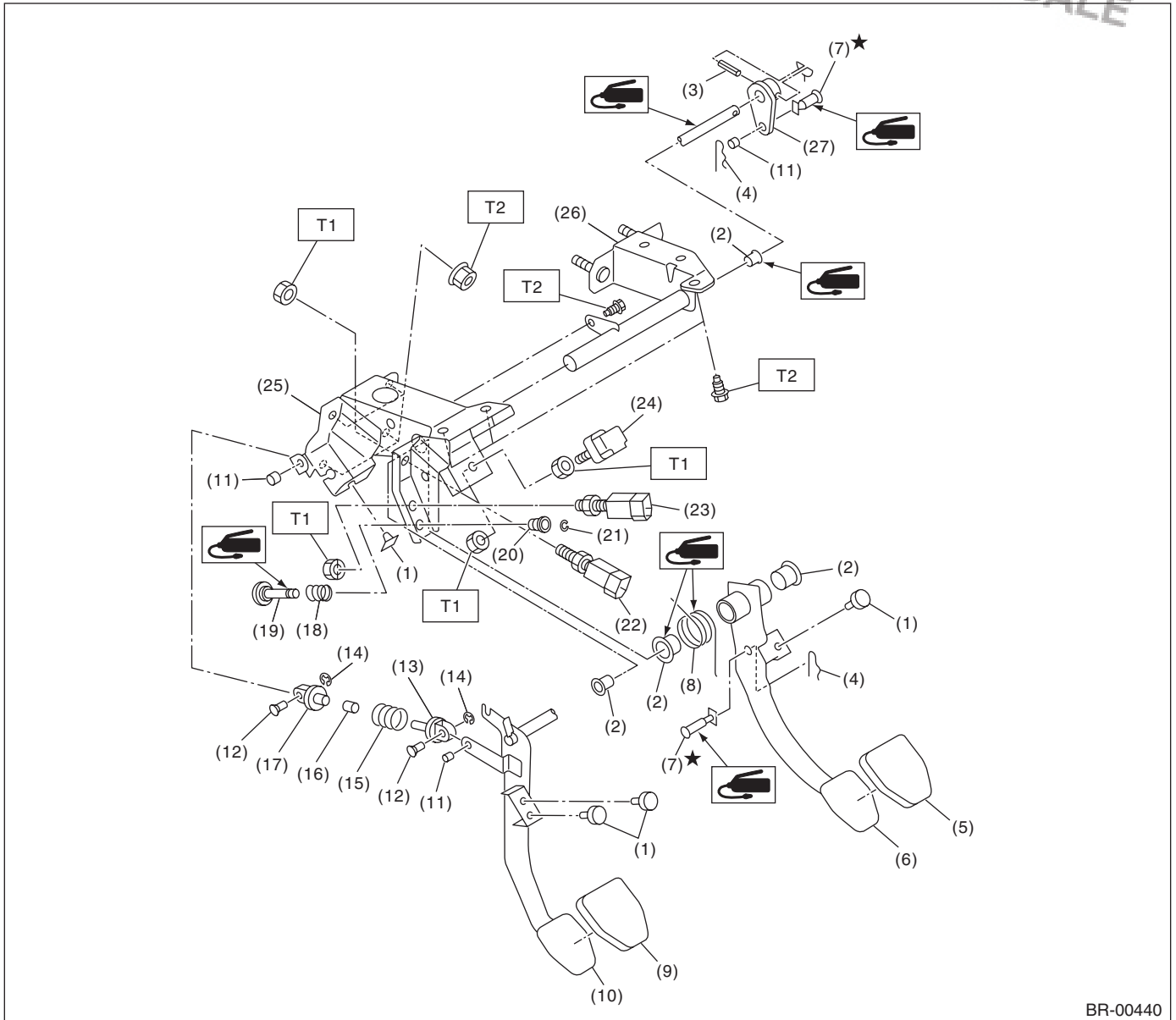
General Description

BRAKE

7. BRAKE PEDAL

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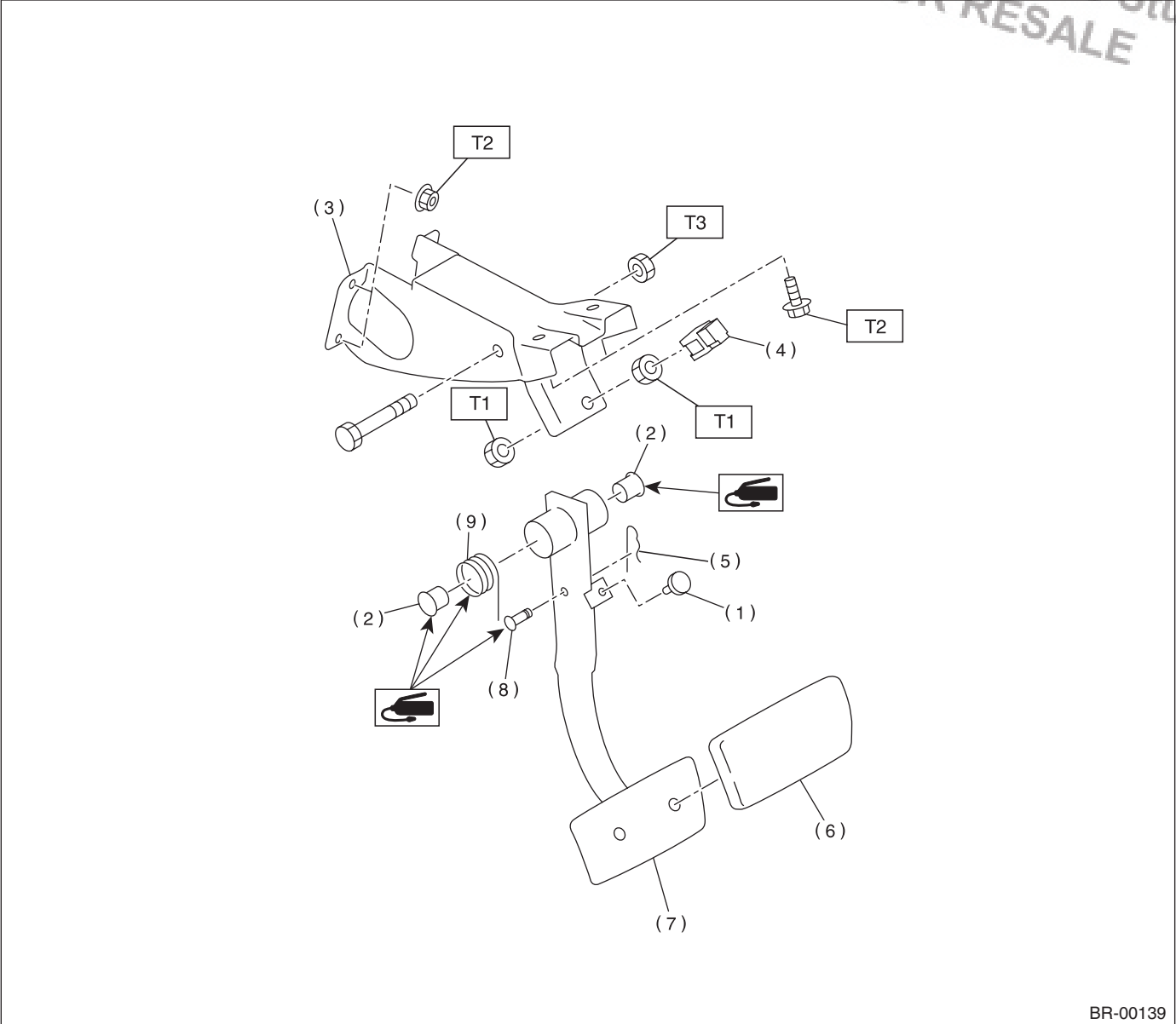
BR-00440

- | | | |
|------------------------|------------------------|--|
| (1) Stopper | (12) Clutch clevis pin | (22) Clutch switch (Starter interlock) |
| (2) Bushing | (13) Assist rod A | (23) Clutch switch (With cruise control) |
| (3) Spring pin | (14) Clip | (24) Stop light switch |
| (4) Snap pin | (15) Assist spring | (25) Pedal bracket |
| (5) Brake pedal pad | (16) Assist bushing | (26) Clutch master cylinder bracket |
| (6) Brake pedal | (17) Assist rod B | (27) Lever |
| (7) Clevis pin | (18) Spring S | |
| (8) Brake pedal spring | (19) Rod S | |
| (9) Clutch pedal pad | (20) Bushing S | |
| (10) Clutch pedal | (21) Clip | |
| (11) Bushing C | | |

Tightening torque: N·m (kgf·m, ft·lb)
T1: 8 (0.8, 5.8)
T2: 18 (1.8, 13.0)

AT model

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BR-00139

- (1) Stopper
- (2) Bushing
- (3) Pedal bracket
- (4) Stop light switch
- (5) Snap pin

- (6) Brake pedal pad
- (7) Brake pedal
- (8) Clevis pin
- (9) Brake pedal spring

Tightening torque: N·m (kgf·m, ft·lb)

T1: 8 (0.8, 5.8)

T2: 18 (1.8, 13.0)

T3: 30 (3.1, 22.1)

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BRAKE

C: CAUTION

- Wear appropriate work clothing, including a cap, protective goggles and protective shoes when performing any work.
- Before removal, installation or disassembly, be sure to clarify the failure. Avoid unnecessary removal, installation, disassembly and replacement.
- Use SUBARU genuine grease etc. or equivalent. Do not mix grease etc. of different grades or manufacturers.
- Before securing a part in a vise, place cushioning material such as wood blocks, aluminum plate or cloth between the part and the vise.
- Be sure to tighten fasteners including bolts and nuts to the specified torque.
- Place shop jacks or rigid racks at the specified points.

D: PREPARATION TOOL

1. GENERAL TOOL

TOOL NAME	REMARKS
Snap ring pliers	Used for removing and installing snap rings.

2. Front Brake Pad

A: REMOVAL

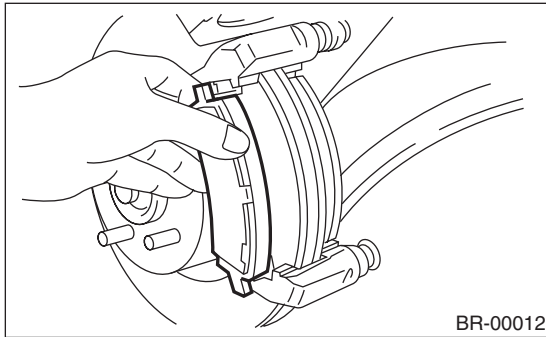
1. 15-INCH TYPE

- 1) Set the vehicle on a lift.
- 2) Loosen the wheel nuts.
- 3) Lift up the vehicle, and remove the front wheels.
- 4) Remove the lower caliper bolts.
- 5) Raise the caliper body and support it.

NOTE:

Do not disconnect the brake hose from the caliper body.

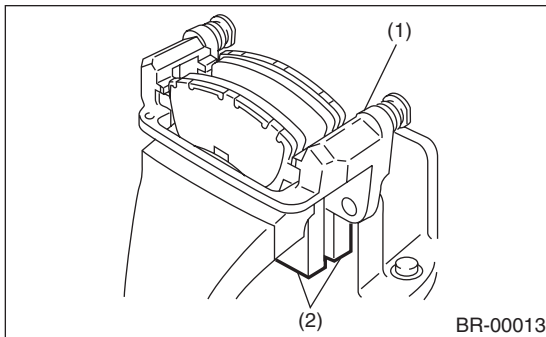
- 6) Remove the pad.



NOTE:

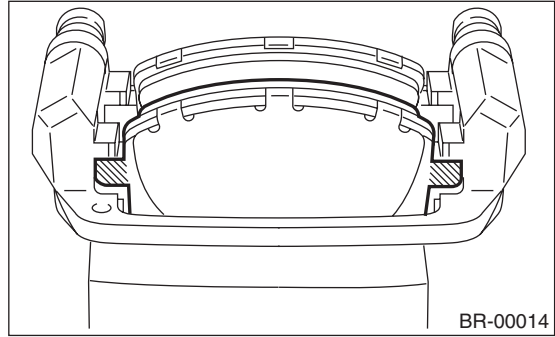
If the brake pad is difficult to remove, proceed as follows:

- (1) Remove the caliper body from support.
- (2) Remove the support.
- (3) Place the support between wooden blocks in the vise.



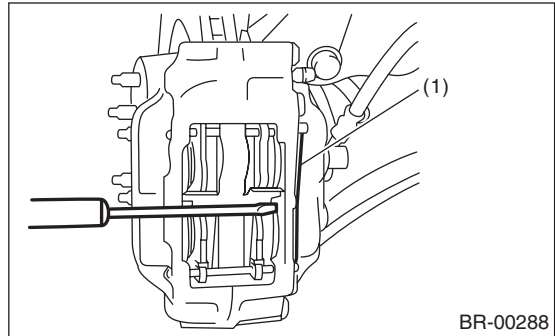
- (1) Support
- (2) Wooden block

- (4) Attach a rod of 12 mm (0.47 in) diameter or less to the shaded area of the brake pad, and strike the rod with a hammer to drive brake pad out.



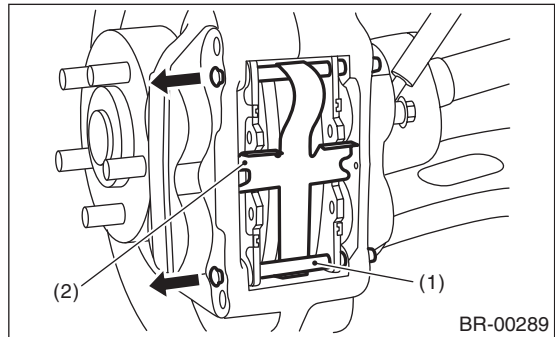
2. 16-INCH TYPE

- 1) Set the vehicle on a lift.
- 2) Loosen the wheel nuts.
- 3) Lift up the vehicle, and remove the front wheels.
- 4) Remove the M clip.



- (1) M clip

- 5) Remove the pad pin, then remove the cross spring.

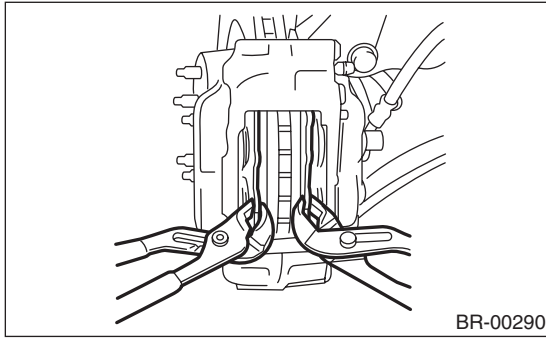


- (1) Pad pin
- (2) Cross spring

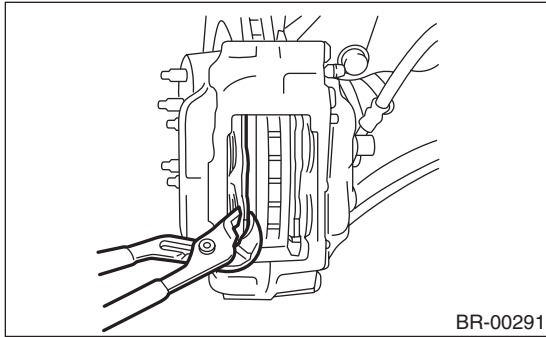
Front Brake Pad

BRAKE

6) Use a wrench to spread the pad, and push back the piston.

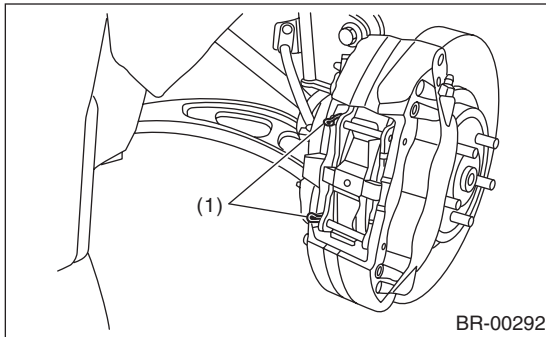


7) Remove the pad.



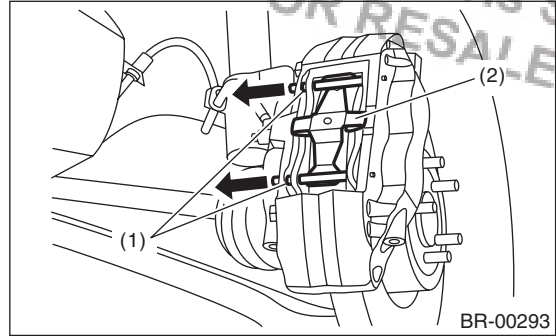
3. 17-INCH TYPE

- 1) Set the vehicle on a lift.
- 2) Loosen the wheel nuts.
- 3) Lift up the vehicle, and remove the front wheels.
- 4) Remove the clip.



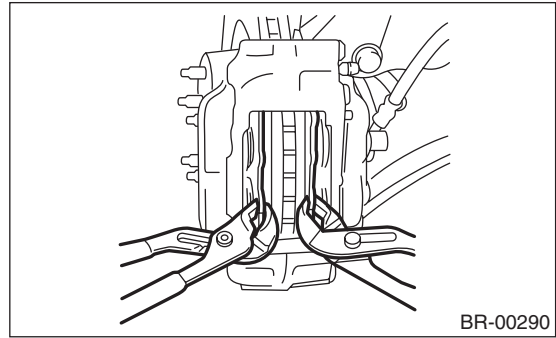
(1) Clip

5) Remove the pad pin and cross spring.

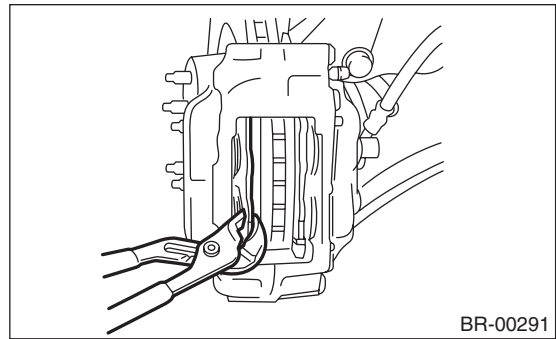


- (1) Pad pin
- (2) Cross spring

6) Use a wrench to spread the pad, and push back the piston.



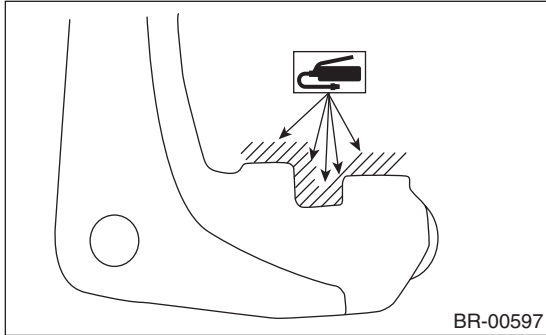
7) Remove the pad.



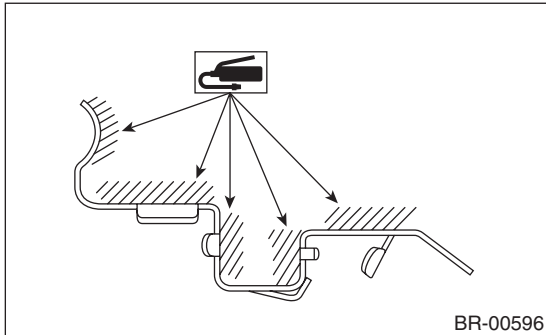
B: INSTALLATION

1. 15-INCH TYPE

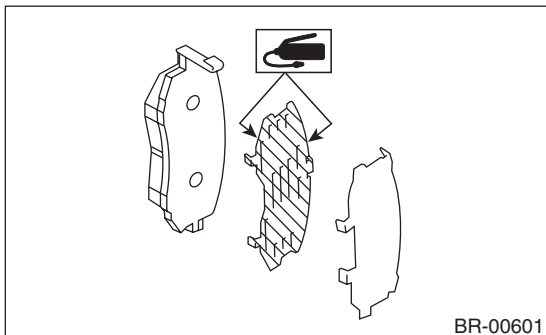
1) Apply a thin coat of Molykote M7439 (Part No. 003602001) to the support.



2) Apply a thin coat of Molykote M7439 (Part No. 003602001) to the contact surface between the pad and pad clip.



3) Apply a thin coat of Molykote AS-880N (Part No. K0777YA010) to both surfaces of the pad inner shim.



4) Install the pad to support.
5) Install the caliper body to the support.

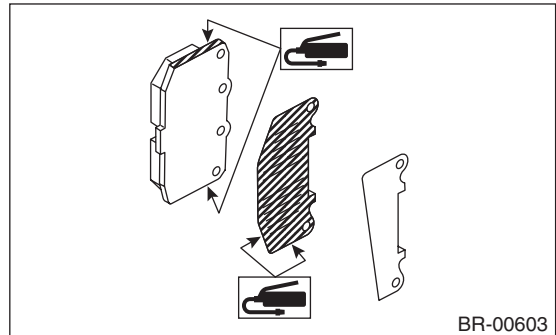
Tightening torque:
26.5 N·m (2.7 kgf·m, 19.5 ft·lb)

NOTE:

If it is difficult to push the piston during pad replacement, loosen the air bleeder screws to facilitate work.

2. 16-INCH TYPE

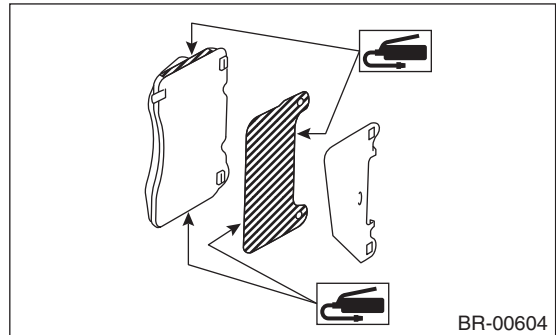
1) Apply a thin coat of Molykote AS-880N (Part No. K0777YA010) to both surfaces of the pad inner shim, and Molykote M7439 (Part No. 003602001) to the sides of pad.



2) Install the pad to the caliper body.
3) Install the pad pin to the caliper body.
4) Attach the M clip.
5) Attach the cross spring.

3. 17-INCH TYPE

1) Apply a thin coat of Molykote AS-880N (Part No. K0777YA010) to both surfaces of the pad inner shim, and Molykote M7439 (Part No. 003602001) to the sides of pad.

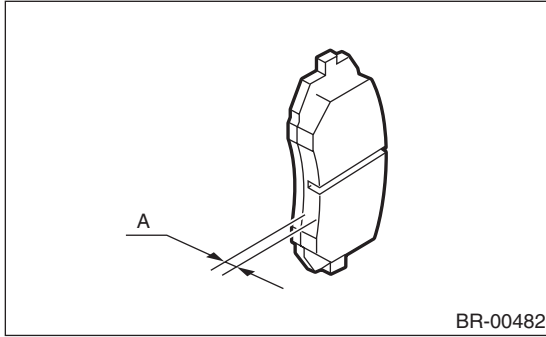


2) Install the pad to the caliper body.
3) Attach the cross spring.
4) Attach the pad pin.
5) Install the clip.

C: INSPECTION

1. 15-INCH TYPE

Check the pad thickness A.



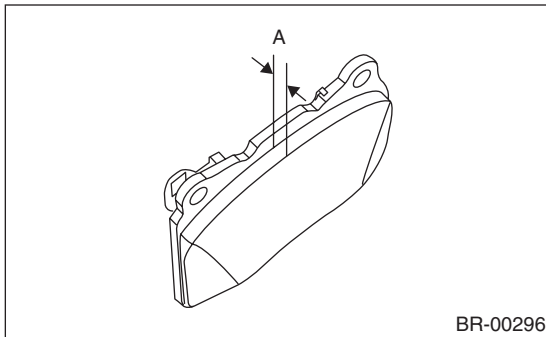
Pad thickness	Standard	11 mm (0.43 in)
	Wear limit	1.5 mm (0.059 in)

NOTE:

- Always replace the pads of both sides as a set.
- Replace pad clips if they are twisted or worn.
- A wear indicator is installed on the inner disc brake pad. If the pad is worn to the limit, the end of wear indicator contacts disc rotor, and a squeaking sound is heard as the wheel rotates. If the sound is heard, replace the pad.
- Replace the pad if there is oil or grease on it.

2. 16-INCH TYPE

Check the pad thickness A.



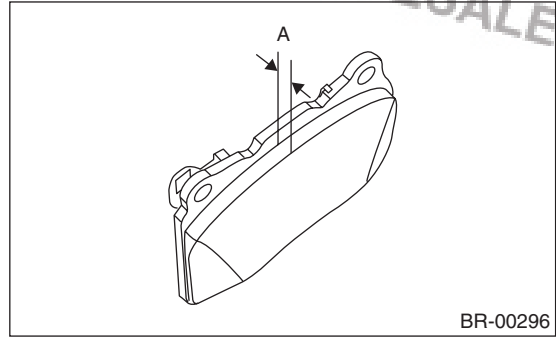
Pad thickness	Standard	10 mm (0.393 in)
	Wear limit	1.5 mm (0.059 in)

NOTE:

- Always replace the pads of both sides as a set.
- Replace pad clips if they are twisted or worn.
- A wear indicator is installed on the inner disc brake pad. If the pad is worn to the limit, the end of wear indicator contacts disc rotor, and a squeaking sound is heard as the wheel rotates. If the sound is heard, replace the pad.
- Replace the pad if there is oil or grease on it.

3. 17-INCH TYPE

Check the pad thickness A.



Pad thickness	Standard	9.2 mm (0.362 in)
	Wear limit	1.2 mm (0.047 in)

NOTE:

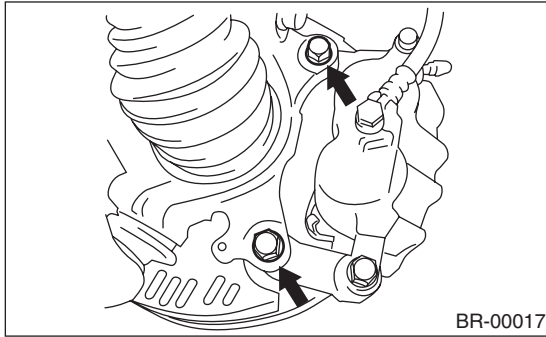
- Always replace the pads of both sides as a set.
- Replace pad clips if they are twisted or worn.
- A wear indicator is installed on the inner disc brake pad. If the pad is worn to the limit, the end of wear indicator contacts disc rotor, and a squeaking sound is heard as the wheel rotates. If the sound is heard, replace the pad.
- Replace the pad if there is oil or grease on it.

3. Front Disc Rotor

A: REMOVAL

1. 15-INCH TYPE

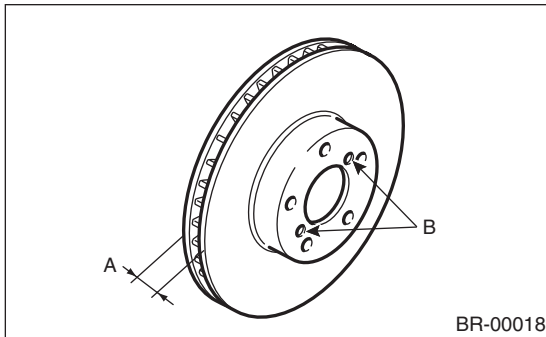
- 1) Set the vehicle on a lift.
- 2) Loosen the wheel nuts.
- 3) Lift up the vehicle, and remove the front wheels.
- 4) Remove the caliper body and the support from housing, and suspend it from the strut using a wire.



- 5) Remove the disc rotor.

NOTE:

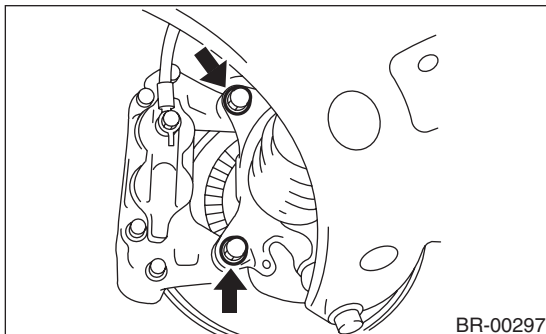
If it is difficult to remove the disc rotor from the hub, drive an 8 mm bolt into the threaded section (B) of the disc rotor, then remove the disc rotor.



- 6) Remove mud and foreign matter from the caliper body assembly and the support.

2. 16 INCH AND 17 INCH TYPE

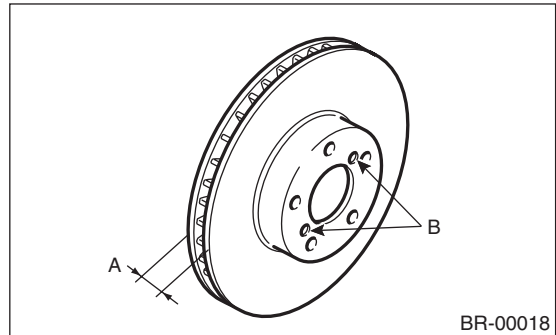
- 1) Set the vehicle on a lift.
- 2) Loosen the wheel nuts.
- 3) Lift up the vehicle, and remove the front wheels.
- 4) Remove the caliper body from the housing, and suspend it from the strut using a wire.



- 5) Remove the disc rotor from the hub.

NOTE:

If it is difficult to remove the disc rotor from the hub, drive an 8 mm bolt into the threaded section B of the disc rotor, then remove the disc rotor.



- 6) Remove mud and foreign objects from the caliper body assembly.

B: INSTALLATION

- 1) Install the disc rotor.
- 2) Install the caliper body and the support to housing.

Tightening torque:

Excluding the 17-inch type:
 80 N·m (8.2 kgf-m, 59 ft-lb)

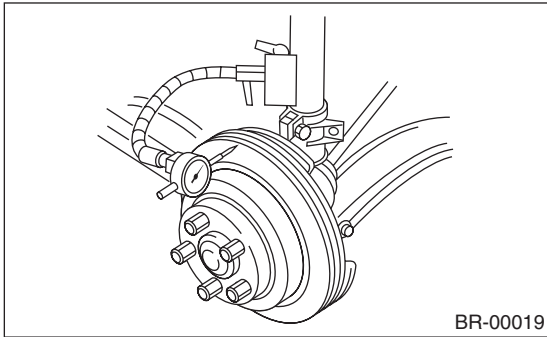
17-inch type:
 155 N·m (15.8 kgf-m, 114.3 ft-lb)

- 3) Install the wheel.

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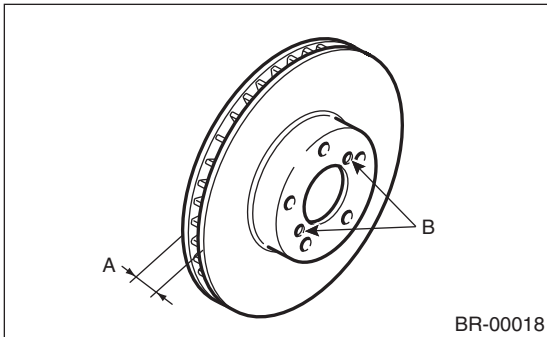
C: INSPECTION

- 1) Check the front wheel bearing looseness and axle hub play before the inspection of disc rotor runout limit. <Ref. to DS-23, INSPECTION, Front Axle.>
- 2) Secure the disc rotor by tightening the five wheel nuts.
- 3) Set a dial gauge 10 mm (0.39 in) inward from the disc rotor outer circumference. Rotate the disc rotor to check runout. If the runout of disc rotor exceeds the service limit, grind the disc rotor. After grinding, check the thickness of the disc rotor according to the procedure in step 4).



**Disc rotor runout limit:
0.075 mm (0.0030 in)**

- 4) Set a micrometer 10 mm (0.39 in) inward from the disc rotor outer perimeter, and then measure the disc rotor thickness. If the thickness of disc rotor exceeds the service limit, replace with a new disc rotor.



		Standard	Limit	Disc rotor outer diameter
Disc rotor thickness A	15"	24 mm (0.94 in)	22 mm (0.87 in)	277 mm (10.91 in)
	16"	24 mm (0.94 in)	22 mm (0.87 in)	294 mm (11.57 in)
	17"	30 mm (1.18 in)	28 mm (1.10 in)	326 mm (12.83 in)

4. Front Disc Brake Assembly

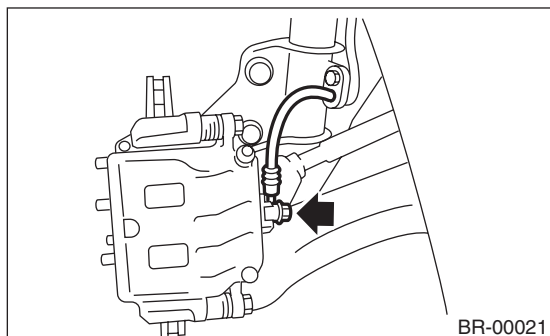
A: REMOVAL

1. 15-INCH TYPE

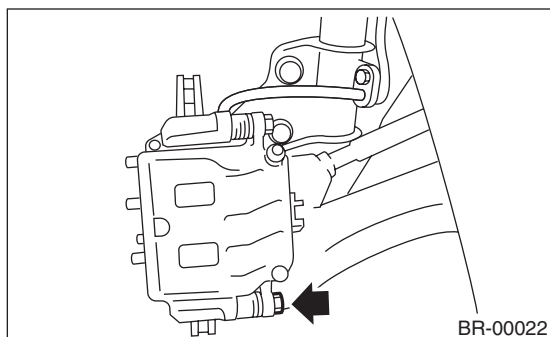
CAUTION:

Do not allow brake fluid to come in contact with vehicle body. If it does, wash off with water immediately and wipe away completely.

- 1) Set the vehicle on a lift.
- 2) Loosen the wheel nuts.
- 3) Lift up the vehicle, and remove the front wheels.
- 4) Remove the union bolt, and disconnect the brake hose from the caliper body assembly.



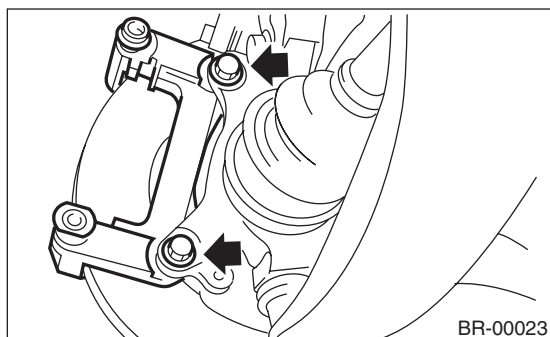
- 5) Remove the bolt securing the lock pin to caliper body.



- 6) Raise the caliper body, and then move it toward vehicle center to separate it from the support.
- 7) Remove the support from housing.

NOTE:

Remove the support only when replacing the rotor or support. It need not be removed when servicing the caliper body assembly.



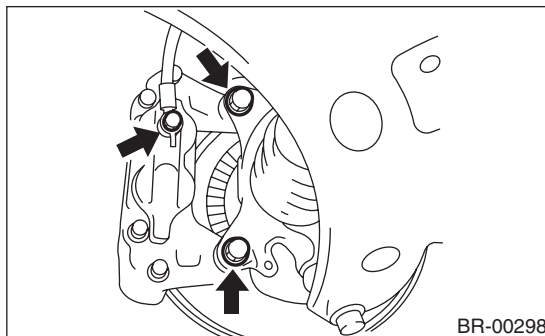
- 8) Remove mud and foreign matter from the caliper body assembly and the support.

2. 16-INCH TYPE

CAUTION:

Do not allow brake fluid to come in contact with vehicle body. If it does, wash off with water immediately and wipe away completely.

- 1) Set the vehicle on a lift.
- 2) Loosen the wheel nuts.
- 3) Lift up the vehicle, and remove the front wheels.
- 4) Remove the union bolt, and disconnect the brake hose from the caliper body assembly.
- 5) Remove the caliper body from the housing.



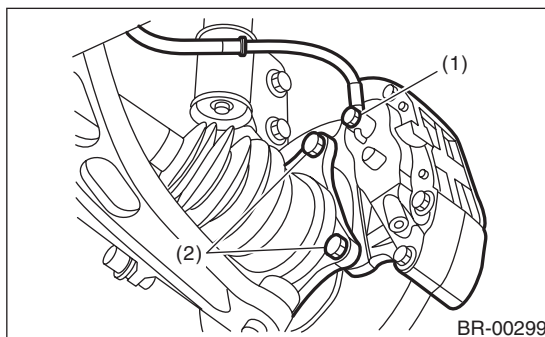
- 6) Remove mud and foreign matter from the caliper body assembly and the support.

3. 17-INCH TYPE

CAUTION:

Do not allow brake fluid to come in contact with vehicle body. If it does, wash off with water immediately and wipe away completely.

- 1) Set the vehicle on a lift.
- 2) Loosen the wheel nuts.
- 3) Lift up the vehicle, and remove the front wheels.
- 4) Remove the brake pad from the caliper body. <Ref. to BR-18, 17-INCH TYPE, REMOVAL, Front Brake Pad.>
- 5) Remove the union bolt (1) and brake hose from the caliper body assembly.
- 6) Remove the attachment bolts (2) from the housing.



- (1) Union bolt
- (2) Attachment bolts

Front Disc Brake Assembly

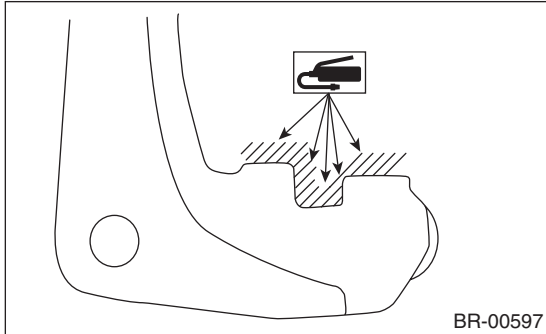
BRAKE

7) Remove mud and foreign objects from the caliper body assembly.

B: INSTALLATION

1. 15-INCH TYPE

1) Apply a thin coat of Molykote M7439 (Part No. 003602001) to the support.

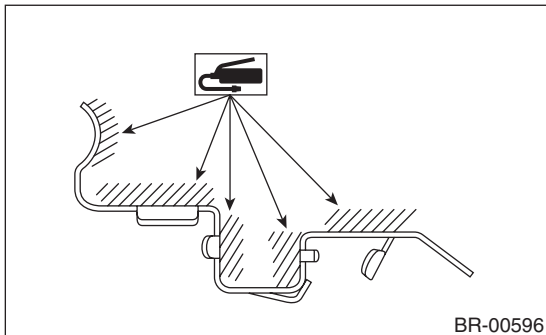


2) Install the support to the housing.

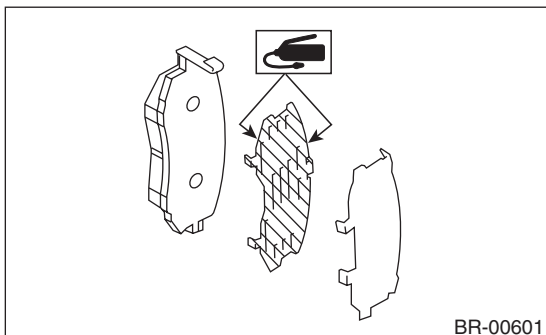
Tightening torque:

80 N·m (8.2 kgf·m, 59 ft·lb)

3) Apply a thin coat of Molykote M7439 (Part No. 003602001) to the contact surface between the pad and pad clip.



4) Apply a thin coat of Molykote AS-880N (Part No. K0777YA010) to both surfaces of the inner shim.



5) Install the pad to support.

6) Install the caliper body to the support.

Tightening torque:

26.5 N·m (2.7 kgf·m, 19.5 ft·lb)

7) Connect the brake hose using a new brake hose gasket.

Tightening torque:

18 N·m (1.8 kgf·m, 13.0 ft·lb)

8) Bleed air from the brake system.

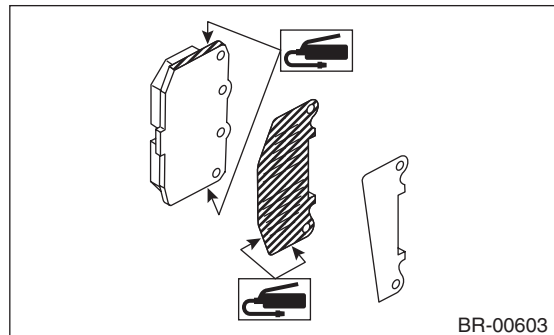
2. 16-INCH TYPE

1) Install the caliper body to the housing.

Tightening torque:

80 N·m (8.2 kgf·m, 59 ft·lb)

2) Apply a thin coat of Molykote AS-880N (Part No. K0777YA010) to both surfaces of the pad inner shim, and Molykote M7439 (Part No. 003602001) to the sides of pad.



3) Install the pad to the caliper body.

4) Install the pad pin and cross spring to the caliper body.

5) Attach the M clip.

6) Connect the brake hose using a new brake hose gasket.

Tightening torque:

18 N·m (1.8 kgf·m, 13.0 ft·lb)

7) Bleed air from the brake system.

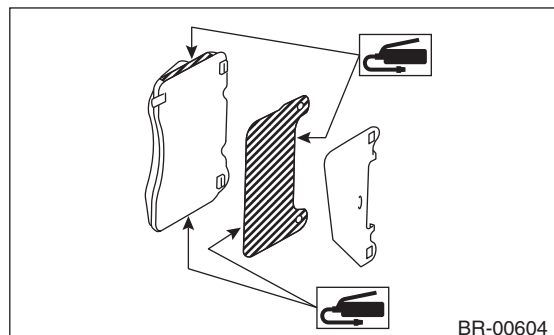
3. 17-INCH TYPE

1) Install the caliper body assembly to the housing.

Tightening torque:

155 N·m (15.8 kgf·m, 114.3 ft·lb)

2) Apply a thin coat of Molykote AS-880N (Part No. K0777YA010) to both surfaces of the pad inner shim, and Molykote M7439 (Part No. 003602001) to the sides of pad.



- 3) Install the pad to the caliper body.
- 4) Attach the cross spring.
- 5) Attach the pad pin.
- 6) Install the clip.
- 7) Connect the brake hose using a new brake hose gasket.

Tightening torque:

18 N·m (1.8 kgf-m, 13.0 ft-lb)

- 8) Bleed air from the brake system.

C: DISASSEMBLY

1. 15-INCH TYPE

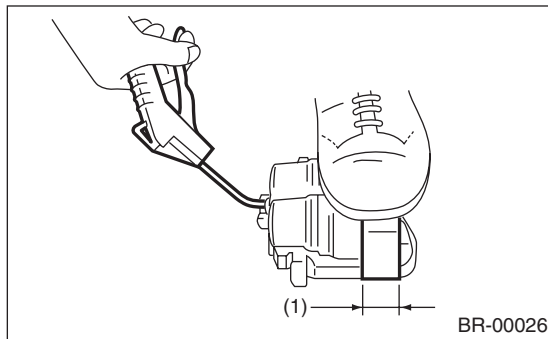
- 1) Remove mud and foreign matter from the caliper body assembly and the support.

CAUTION:

Be careful not to allow foreign matter to enter the brake hose connector.

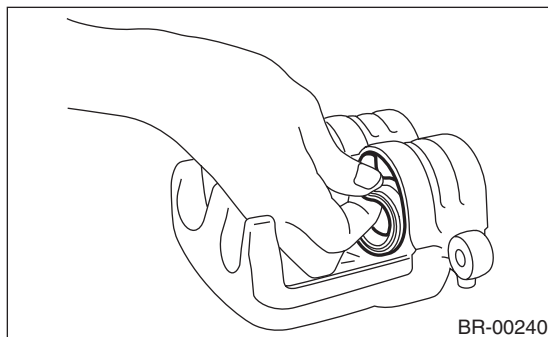
- 2) Place a wooden block in the caliper body as shown in the figure to prevent the piston from jumping out and being damaged.

- 3) Gradually apply compressed air via the brake hose installation hole to push the piston out.



(1) Place a wooden block of 30 mm (1.18 in) width.

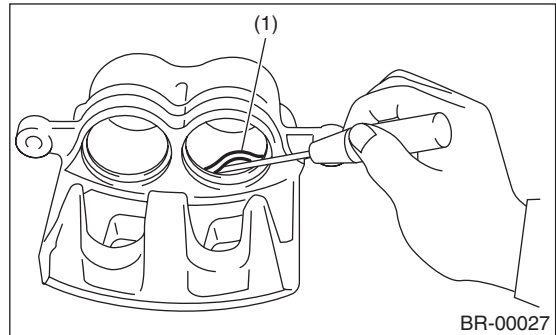
- 4) Remove the piston boot.



- 5) Remove the piston seal from caliper body cylinder.

CAUTION:

Do not damage the cylinder and piston seal groove.



(1) Piston seal

- 6) Remove the guide pin and boot from caliper body.

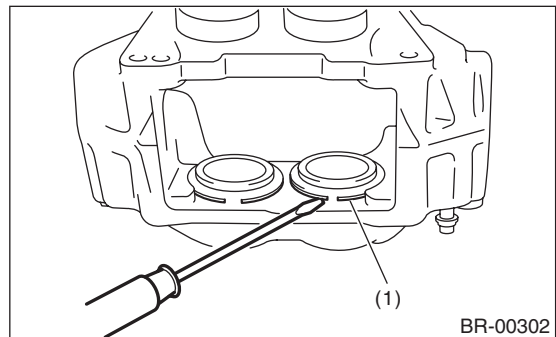
2. 16-INCH TYPE

- 1) Remove mud and foreign objects from the caliper body assembly.

CAUTION:

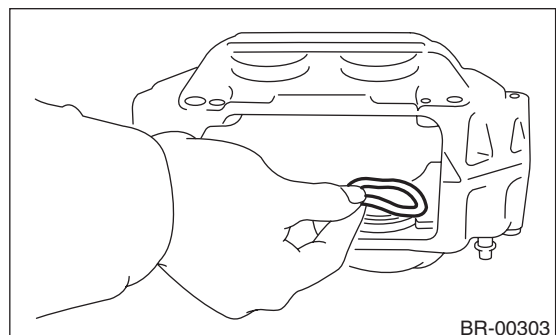
Be careful not to allow foreign matter to enter the brake hose connector.

- 2) Use a flat screw driver to remove the boot ring (1) from the piston.



(1) Boot ring

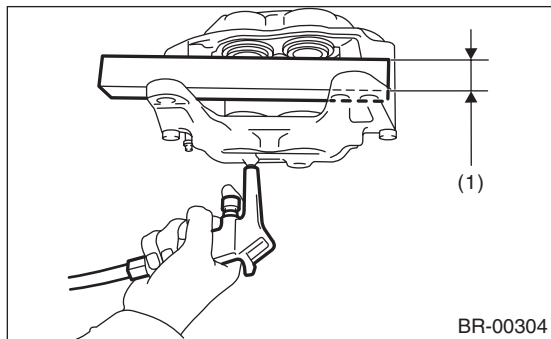
- 3) Remove the boot from the piston end.



Front Disc Brake Assembly

BRAKE

- 4) Place a wooden block in the caliper body as shown in the figure to prevent the piston from jumping out and being damaged.
- 5) Gradually apply compressed air via the brake hose installation hole to push the piston out.

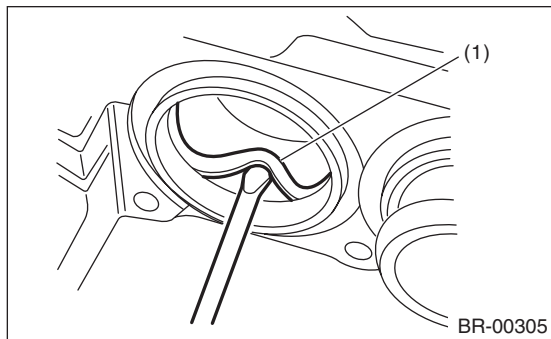


(1) Place a wooden block of 30 mm (1.18 in) width.

- 6) Remove the piston seal from caliper body cylinder.

CAUTION:

Do not damage the cylinder and piston seal groove.



(1) Piston seal

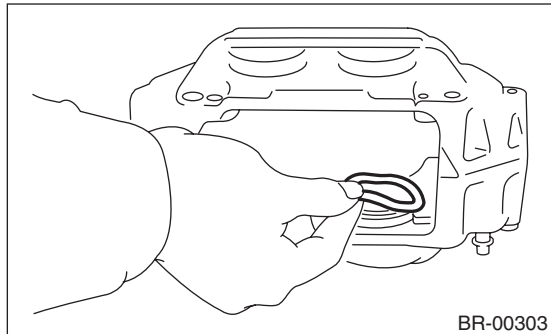
3. 17-INCH TYPE

- 1) Remove mud and foreign objects from the caliper body assembly.

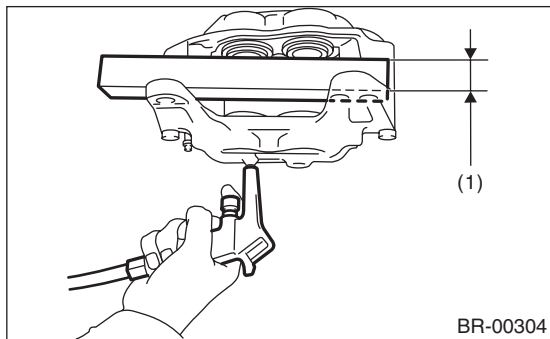
CAUTION:

Be careful not to allow foreign matter to enter the brake hose connector.

- 2) Remove the piston boot from each piston end.



- 3) Place a wooden block in the caliper body as shown in the figure to prevent the piston from jumping out and being damaged.
- 4) Gradually apply compressed air via the brake hose installation hole to push the piston out.

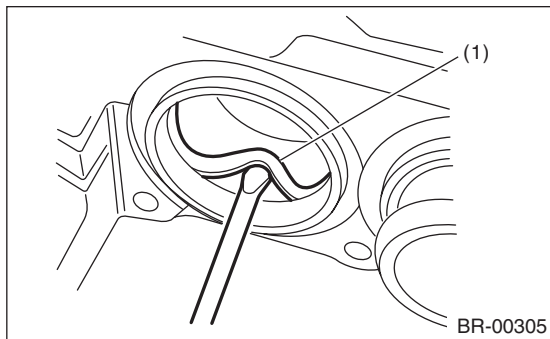


(1) Place a wooden block of 30 mm (1.18 in) width.

- 5) Remove the piston seal from the caliper body cylinder.

CAUTION:

Do not damage the cylinder and piston seal groove.



(1) Piston seal

D: ASSEMBLY

1. 15-INCH TYPE

- 1) Clean the inside of the caliper body using brake fluid.
- 2) Apply a coat of brake fluid to piston seal and install piston seal in the groove on caliper body.
- 3) Apply a coat of brake fluid to the inner surface of cylinder and the entire outer surface of the piston.
- 4) Apply a coat of specified grease to the boot, and fit to the groove on the ends of the cylinder.

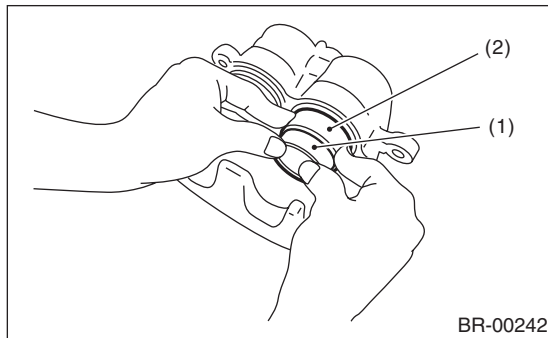
Grease:

NIGLUBE RX-2 (Part No. K0779GA102)

- 5) Insert the piston into cylinder.

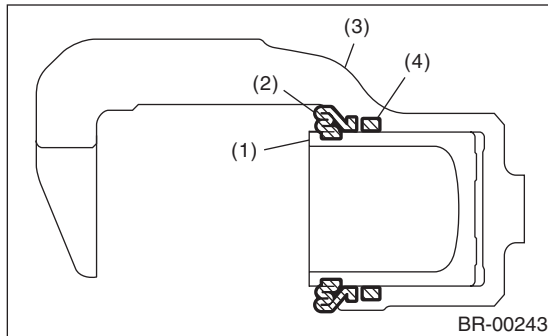
CAUTION:

Do not force the piston into cylinder.



- (1) Piston
- (2) Piston boot

- 6) Position the boot in the grooves on cylinder and piston.



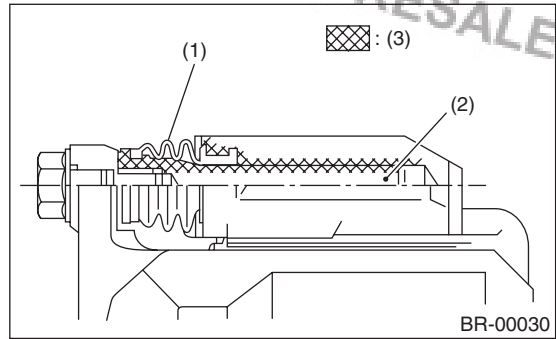
- (1) Piston
- (2) Piston boot
- (3) Caliper body
- (4) Piston seal

- 7) Apply a coat of specified grease to the lock pin and guide pin outer surface, cylinder inner surface, and boot grooves.

Grease:

NIGLUBE RX-2 (Part No. K0779GA102)

- 8) Insert the lock pin and guide pin boot into the support.



- (1) Pin boot
- (2) Lock pin or guide pin
- (3) Grease applied area

2. 16-INCH TYPE

- 1) Clean the inside of the caliper body using brake fluid.
- 2) Apply a coat of brake fluid to piston seal and install piston seal in the groove on caliper body.
- 3) Apply a coat of brake fluid to the inner surface of cylinder and the entire outer surface of the piston.
- 4) Apply a coat of specified grease to the boot and fit to the groove on the ends of the cylinder and piston.

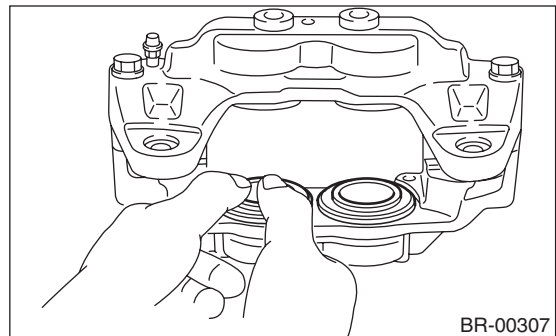
Grease:

NIGLUBE RX-2 (Part No. K0779GA102)

- 5) Insert the piston into cylinder.

CAUTION:

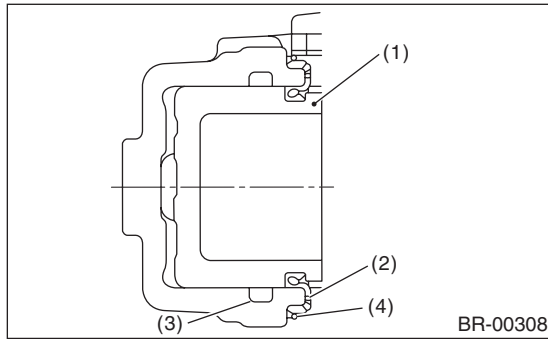
Do not force the piston into cylinder.



Front Disc Brake Assembly

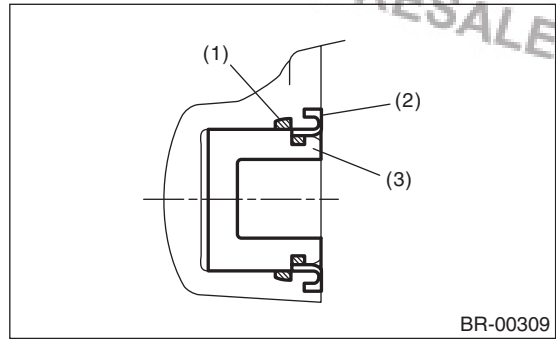
BRAKE

6) Position the boot in the grooves on cylinder and piston.



- (1) Piston
- (2) Piston boot
- (3) Piston seal
- (4) Boot ring

6) Position the boot in the grooves on cylinder and piston.



- (1) Piston seal
- (2) Piston boot
- (3) Piston

7) Install the boot ring. Be careful not to damage the boot.

3. 17-INCH TYPE

- 1) Clean the inside of the caliper body using brake fluid.
- 2) Apply a coat of brake fluid to piston seal and install piston seal in the groove on caliper body.
- 3) Apply a coat of brake fluid to the inner surface of cylinder and the entire outer surface of the piston.
- 4) Apply a coat of specified grease to the boot and fit to the groove on the piston.

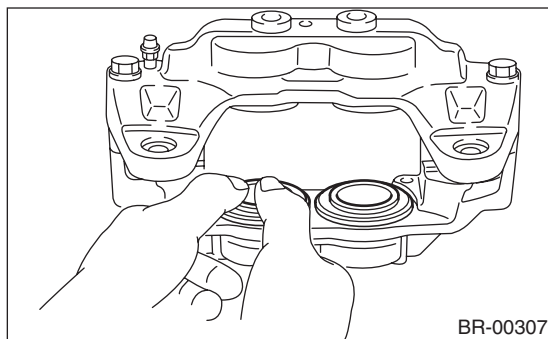
Grease:

NIGLUBE RX-2 (Part No. K0779GA102)

5) Insert the piston into the cylinder.

CAUTION:

Do not force the piston into cylinder.



E: INSPECTION

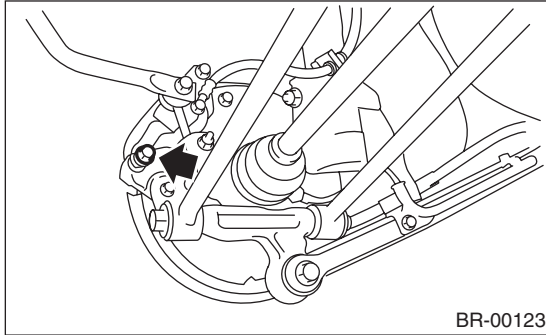
- 1) Repair or replace the faulty parts.
- 2) Check the caliper body and piston for uneven wear, damage or rust.
- 3) Check the rubber parts for damage or deterioration.

5. Rear Brake Pad

A: REMOVAL

1. 14-INCH TYPE

- 1) Set the vehicle on a lift.
- 2) Loosen the wheel nuts.
- 3) Lift up the vehicle, then remove the rear wheels.
- 4) Remove the lower caliper bolts.



- 5) Raise the caliper body and support it.

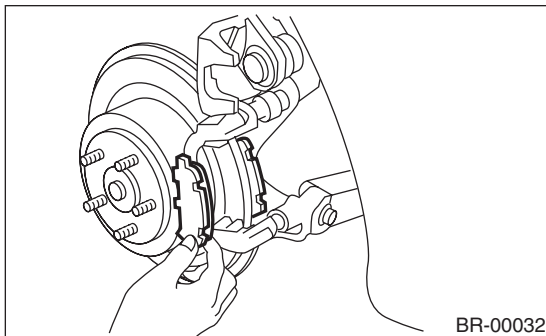
NOTE:

Do not disconnect the brake hose from the caliper body.

- 6) Remove the pad.

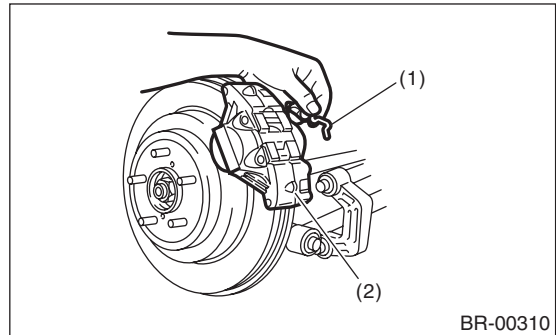
NOTE:

If it is difficult to remove the brake pad, use the same procedure as front disc brake pad. <Ref. to BR-17, REMOVAL, Front Brake Pad.>



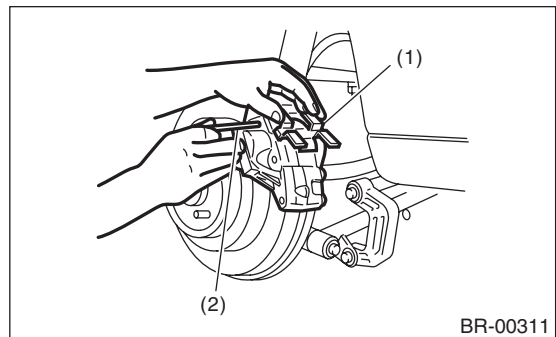
2. 15-INCH TYPE

- 1) Set the vehicle on a lift.
- 2) Loosen the wheel nuts.
- 3) Lift up the vehicle, then remove the rear wheels.
- 4) Remove the M clip.



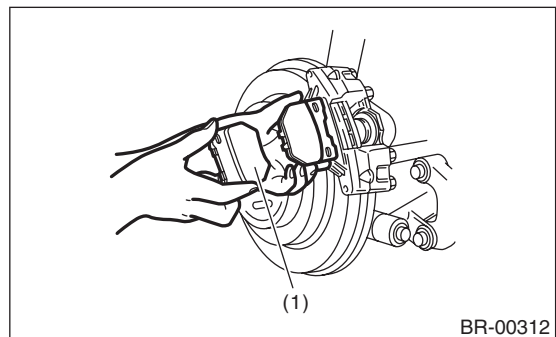
- (1) M clip
- (2) Caliper body

- 5) Remove the 2 pad pins.
- 6) Remove the cross spring.



- (1) Cross spring
- (2) Pad pin

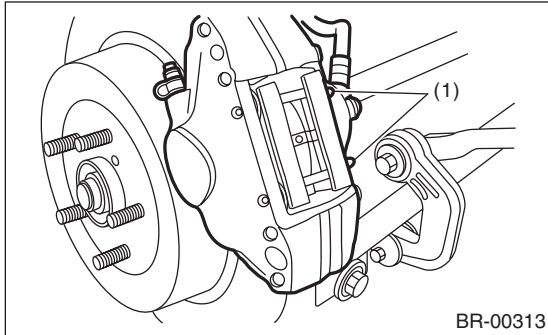
- 7) Spread the pads apart and push back the piston.
- 8) Remove the pad and shim.



- (1) Brake pad

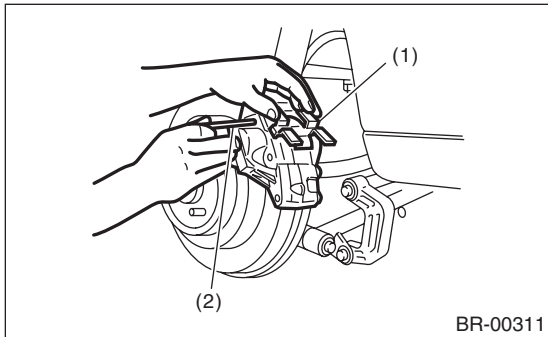
3. 17-INCH TYPE

- 1) Set the vehicle on a lift.
- 2) Loosen the wheel nuts.
- 3) Lift up the vehicle, then remove the rear wheels.
- 4) Remove the clip.



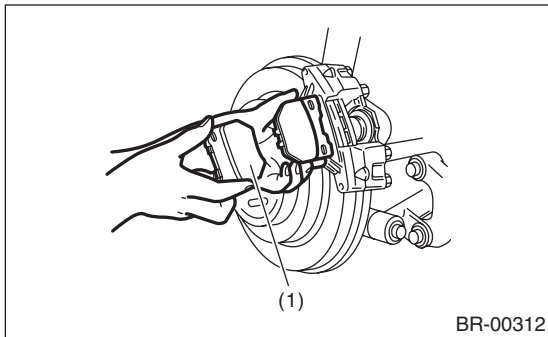
(1) Clip

- 5) Remove the pad pin and cross spring.



(1) Cross spring
(2) Pad pin

- 6) Spread the pads apart and push back the piston.
- 7) Remove the pad.

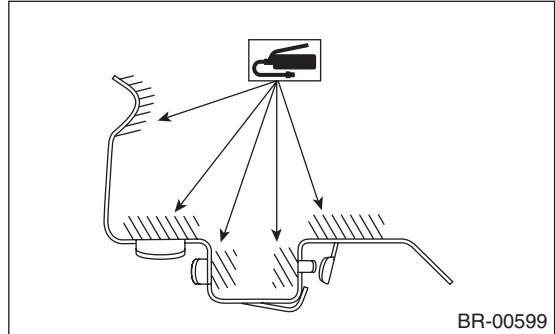


(1) Brake pad

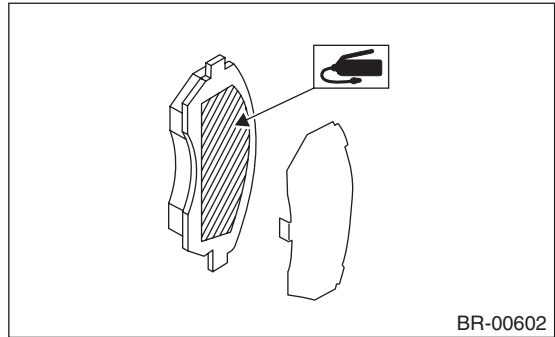
B: INSTALLATION

1. 14-INCH TYPE

- 1) Apply a thin coat of Molykote M7439 (Part No. 003602001) to the contact surface between the pad and pad clip.



- 2) Apply a thin coat of Molykote AS-880N (Part No. K0777YA010) to the contact surface between the pad and shim.



- 3) Install the pad to support.
- 4) Install the caliper body to the support.

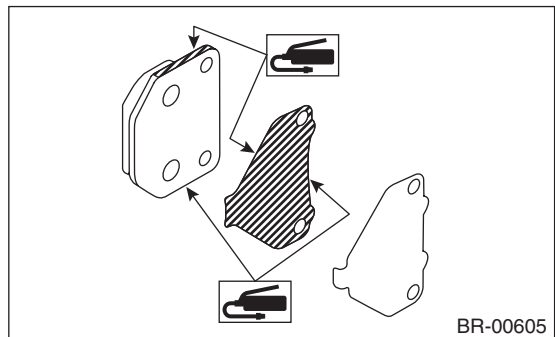
Tightening torque:
37 N·m (3.8 kgf·m, 27.5 ft·lb)

NOTE:

If it is difficult to push the piston during pad replacement, loosen the air bleeder screws to facilitate work.

2. 15-INCH TYPE

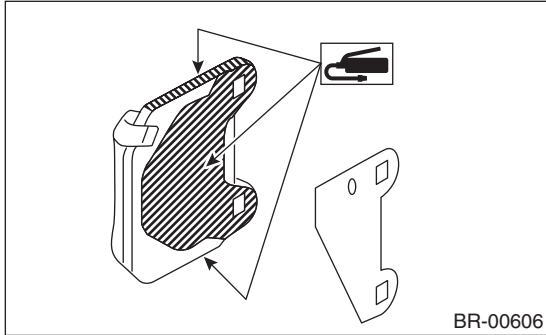
- 1) Apply a thin coat of Molykote AS-880N (Part No. K0777YA010) to both surfaces of the pad inner shim, and Molykote M7439 (Part No. 003602001) to the sides of pad.



- 2) Install the pad to the caliper body.
- 3) Attach the cross spring.
- 4) Install the pad pin to the caliper body.
- 5) Attach the M clip.

3. 17-INCH TYPE

1) Apply a thin coat of Molykote AS-880N (Part No. K0777YA010) to both surfaces of the pad inner shim, and Molykote M7439 (Part No. 003602001) to the sides of pad.

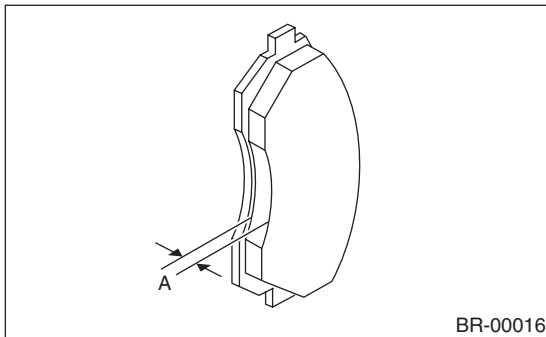


- 2) Install the pad to the caliper body.
- 3) Attach the cross spring and pad pin.
- 4) Install the clip.

C: INSPECTION

1. 14-INCH TYPE

Check the pad thickness A.



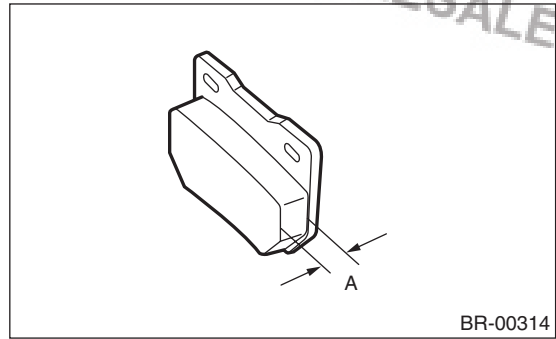
Pad thickness	Standard	9.0 mm (0.354 in)
	Wear limit	1.5 mm (0.059 in)

NOTE:

- Always replace the pads of both sides as a set.
- Replace pad clips if they are twisted or worn.
- A wear indicator is installed on the inner disc brake pad. If the pad is worn to the limit, the end of wear indicator contacts disc rotor, and a squeaking sound is heard as the wheel rotates. If the sound is heard, replace the pad.
- Replace the pad if there is oil or grease on it.

2. 15-INCH TYPE

Check the pad thickness A.



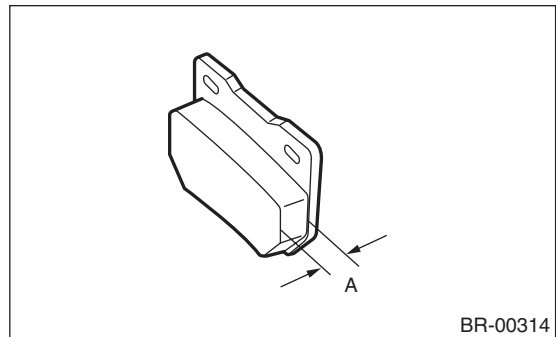
Pad thickness	Standard	11.5 mm (0.452 in)
	Wear limit	1.5 mm (0.059 in)

NOTE:

- Always replace the pads of both sides as a set.
- Replace pad clips if they are twisted or worn.
- A wear indicator is installed on the inner disc brake pad. If the pad is worn to the limit, the end of wear indicator contacts disc rotor, and a squeaking sound is heard as the wheel rotates. If the sound is heard, replace the pad.
- Replace the pad if there is oil or grease on it.

3. 17-INCH TYPE

Check the pad thickness A.



Pad thickness	Standard	9.0 mm (0.354 in)
	Wear limit	1.2 mm (0.047 in)

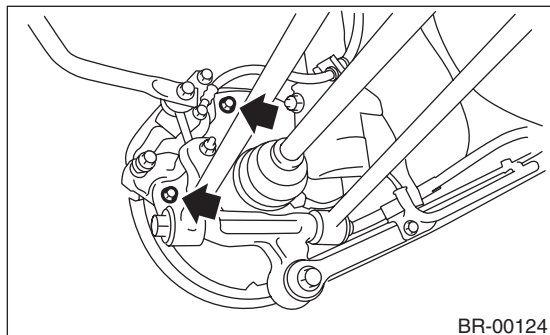
NOTE:

- Always replace the pads of both sides as a set.
- Replace pad clips if they are twisted or worn.
- A wear indicator is installed on the inner disc brake pad. If the pad is worn to the limit, the end of wear indicator contacts disc rotor, and a squeaking sound is heard as the wheel rotates. If the sound is heard, replace the pad.
- Replace the pad if there is oil or grease on it.

6. Rear Disc Rotor

A: REMOVAL

- 1) Set the vehicle on a lift.
- 2) Loosen the wheel nuts.
- 3) Lift up the vehicle, and remove the wheels.
- 4) Release the parking brake.
- 5) Remove the two mounting bolts, and remove the disc brake assembly.

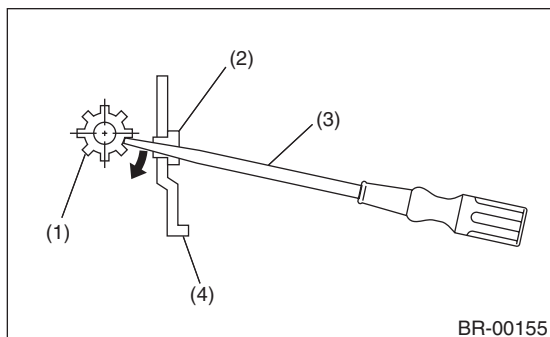


- 6) Suspend the disc brake assembly so that the hose is not stretched.
- 7) Remove the disc rotor.

NOTE:

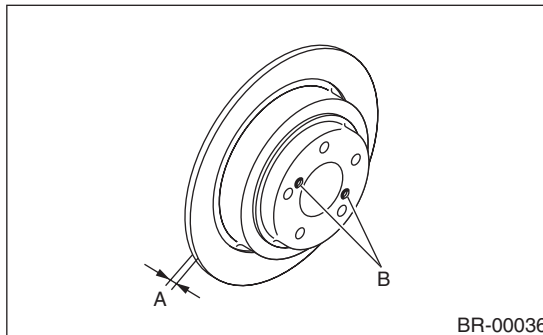
If it is difficult to remove the disc rotor, perform the following two methods in order.

- (1) Turn the adjusting screw using a flat tip screwdriver until the brake shoe is far enough away to allow removal of the disc rotor.



- (1) Adjusting screw
- (2) Cover
- (3) Flat tip screwdriver
- (4) Back plate

- (2) If it is difficult to remove the disc rotor from the hub, drive an 8 mm bolt into the threaded section B of the disc rotor, then remove the disc rotor.

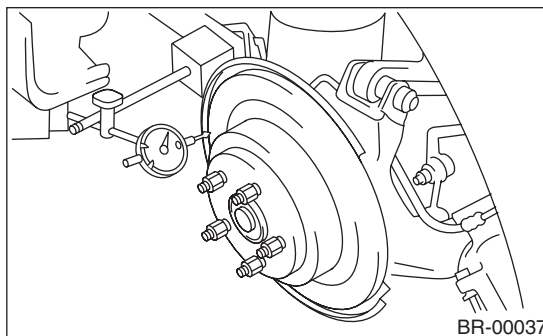


B: INSTALLATION

- 1) Install in the reverse order of removal.
- 2) Adjust the parking brake. <Ref. to PB-8, ADJUSTMENT, Parking Brake Assembly (Rear Disc Brake).>

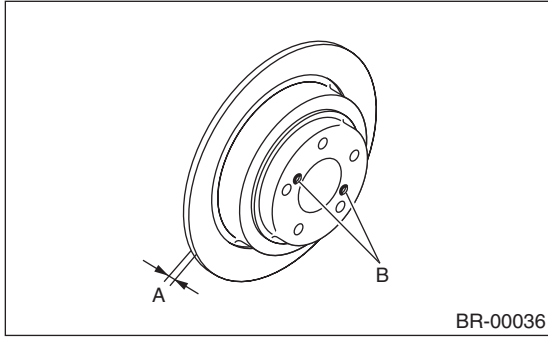
C: INSPECTION

- 1) Check the rear wheel bearing play and axle hub runout before inspecting the disc rotor runout. <Ref. to DS-30, INSPECTION, Rear Axle.>
- 2) Secure the disc rotor by tightening the five wheel nuts.
- 3) Set a dial gauge 10 mm (0.39 in) inward from the disc rotor outer circumference. Rotate the disc rotor to check runout. If the runout of disc rotor exceeds the service limit, grind the disc rotor. After grinding, check the thickness of the disc rotor according to the procedure in step 4).



Disc rotor runout limit:
0.070 mm (0.0028 in)

4) Set a micrometer 10 mm (0.39 in) inward from the disc rotor outer perimeter, and then measure the disc rotor thickness. If the thickness of disc rotor exceeds the service limit, replace with a new disc rotor.



		Standard	Limit	Disc outer dia.
Disc rotor thickness A	14"	10 mm (0.39 in)	8.5 mm (0.335 in)	266 mm (10.47 in)
	15"	18 mm (0.71 in)	16 mm (0.63 in)	290 mm (11.42 in)
	17"	20 mm (0.79 in)	18 mm (0.71 in)	316 mm (12.44 in)

7. Rear Disc Brake Assembly

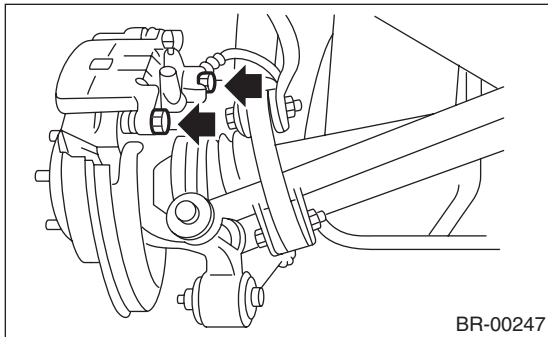
A: REMOVAL

1. 14-INCH TYPE

CAUTION:

Do not allow brake fluid to come in contact with vehicle body. If it does, wash off with water immediately and wipe away completely.

- 1) Set the vehicle on a lift.
- 2) Loosen the wheel nuts.
- 3) Lift up the vehicle, and remove the wheels.
- 4) Disconnect the brake hose from caliper body assembly.
- 5) Remove the bolt securing the lock pin to caliper body.



- 6) Raise the caliper body, and then move it toward vehicle center to separate it from the support.
- 7) Remove the support from housing.

NOTE:

Remove the support only when replacing the rotor or support. It need not be removed when servicing the caliper body assembly.
8) Remove mud and foreign matter from the caliper body assembly and the support.

CAUTION:

Be careful not to allow foreign matter to enter the brake hose connector.

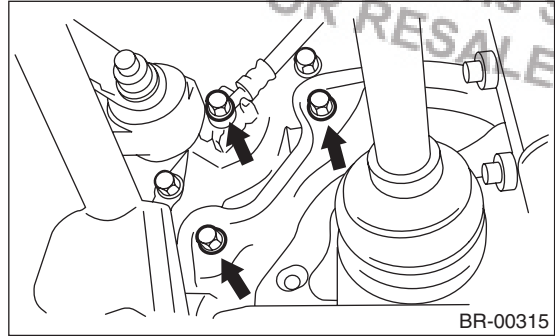
2. 15-INCH TYPE

CAUTION:

Do not allow brake fluid to come in contact with vehicle body. If it does, wash off with water immediately and wipe away completely.

- 1) Set the vehicle on a lift.
- 2) Loosen the wheel nuts.
- 3) Lift up the vehicle, and remove the wheels.
- 4) Remove the pad from the caliper body. <Ref. to BR-29, REMOVAL, Rear Brake Pad.>
- 5) Disconnect the brake hose from caliper body assembly.

- 6) Remove the caliper body from the housing.



- 7) Remove mud and foreign objects from the caliper body assembly.

CAUTION:

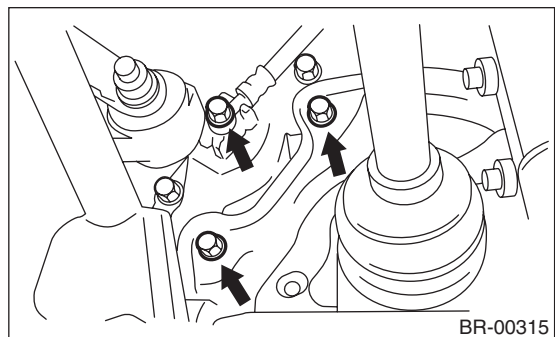
Be careful not to allow foreign matter to enter the brake hose connector.

3. 17-INCH TYPE

CAUTION:

Do not allow brake fluid to come in contact with vehicle body. If it does, wash off with water immediately and wipe away completely.

- 1) Set the vehicle on a lift.
- 2) Loosen the wheel nuts.
- 3) Lift up the vehicle, and remove the wheels.
- 4) Remove the brake pad from the caliper body. <Ref. to BR-30, 17-INCH TYPE, REMOVAL, Rear Brake Pad.>
- 5) Disconnect the brake hose from the caliper body.
- 6) Remove the caliper body from the housing.



- 7) Remove mud and foreign objects from the caliper body.

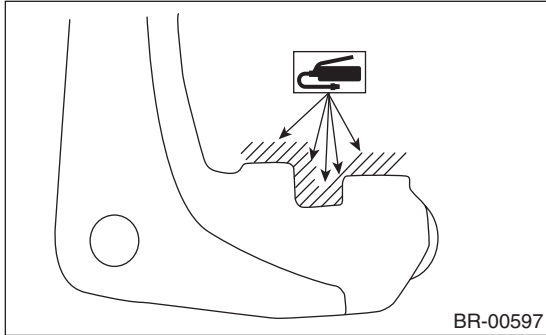
CAUTION:

Be careful not to allow foreign matter to enter the brake hose connector.

B: INSTALLATION

1. 14-INCH TYPE

- 1) Apply a thin coat of Molykote M7439 (Part No. 003602001) to the support.

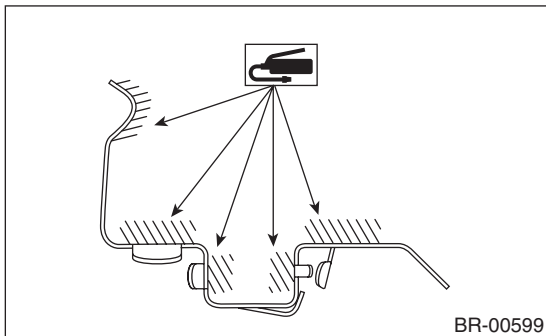


- 2) Install the support to the housing.

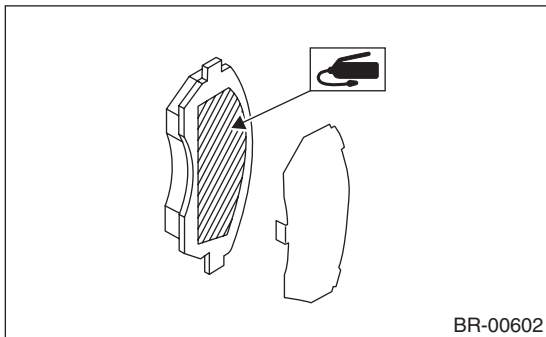
Tightening torque:

53 N·m (5.4 kgf-m, 39.1 ft-lb)

- 3) Apply a thin coat of Molykote M7439 (Part No. 003602001) to the contact surface between the pad and pad clip.



- 4) Apply a thin coat of Molykote AS-880N (Part No. K0777YA010) to the contact surface between the pad and shim.



- 5) Install the pad to support.
- 6) Install the caliper body to the support.

Tightening torque:

37 N·m (3.8 kgf-m, 27.5 ft-lb)

- 7) Connect the brake hose using a new brake hose gasket.

Tightening torque:

18 N·m (1.8 kgf-m, 13.0 ft-lb)

- 8) Bleed air from the brake system.

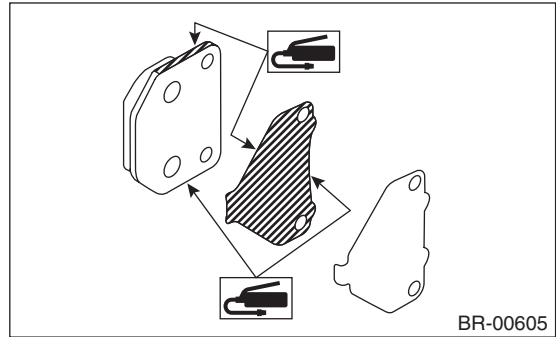
2. 15-INCH TYPE

- 1) Install the caliper body to the housing.

Tightening torque:

53 N·m (5.4 kgf-m, 39.1 ft-lb)

- 2) Apply a thin coat of Molykote AS-880N (Part No. K0777YA010) to both surfaces of the pad inner shim, and Molykote M7439 (Part No. 003602001) to the sides of pad.



- 3) Install the pad to the caliper body.
- 4) Connect the brake hose using a new brake hose gasket.

Tightening torque:

18 N·m (1.8 kgf-m, 13.0 ft-lb)

- 5) Bleed air from the brake system.

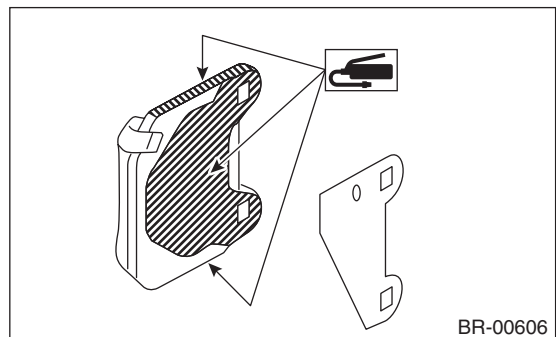
3. 17-INCH TYPE

- 1) Install the caliper body to the housing.

Tightening torque:

65 N·m (6.6 kgf-m, 47.9 ft-lb)

- 2) Apply a thin coat of Molykote AS-880N (Part No. K0777YA010) to both surfaces of the pad inner shim, and Molykote M7439 (Part No. 003602001) to the sides of pad.



- 3) Install the pad to the caliper body.
- 4) Connect the brake hose using a new brake hose gasket.

Tightening torque:

18 N·m (1.8 kgf-m, 13.0 ft-lb)

- 5) Bleed air from the brake system.

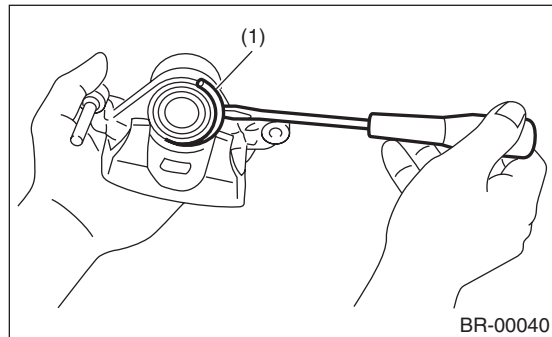
Rear Disc Brake Assembly

BRAKE

C: DISASSEMBLY

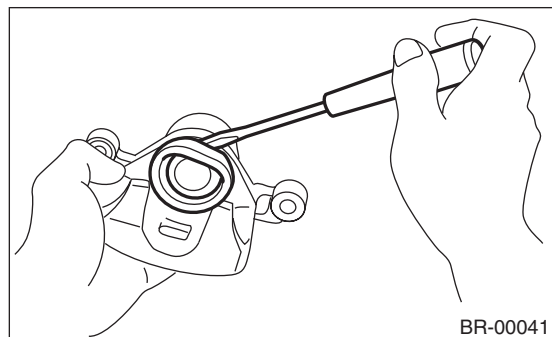
1. 14-INCH TYPE

1) Remove the boot ring.



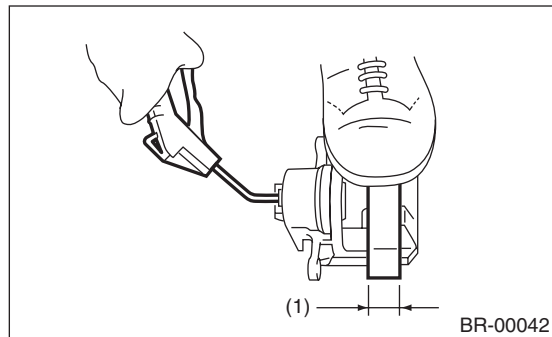
(1) Boot ring

2) Remove the piston boot.



3) Place a wooden block in the caliper body as shown in the figure to prevent the piston from jumping out and being damaged.

4) Gradually apply compressed air via the brake hose installation hole to push the piston out.

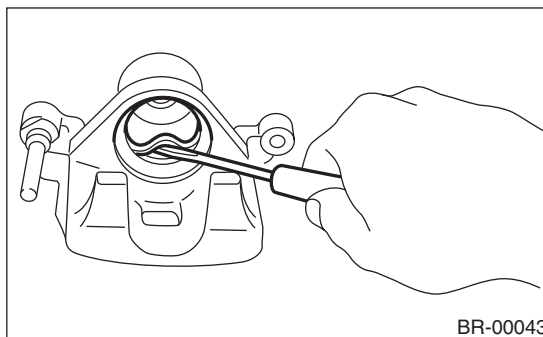


(1) Place a wooden block of 30 mm (1.18 in) width.

5) Remove the piston seal from caliper body cylinder.

CAUTION:

Do not damage the cylinder and piston seal groove.

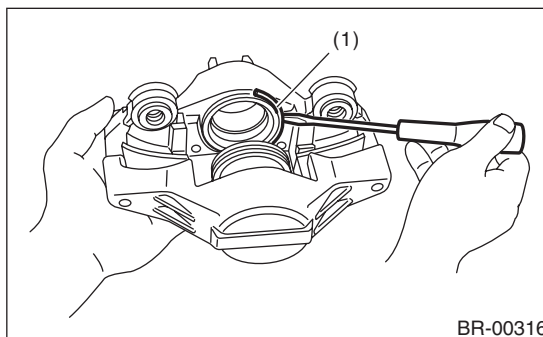


6) Remove the lock pin sleeve and boot from caliper body.

7) Remove the guide pin boot.

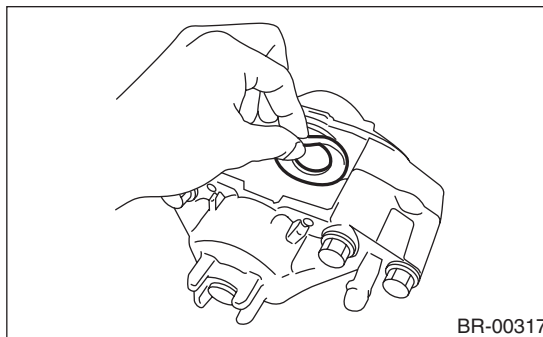
2. 15-INCH TYPE

1) Remove the boot ring.



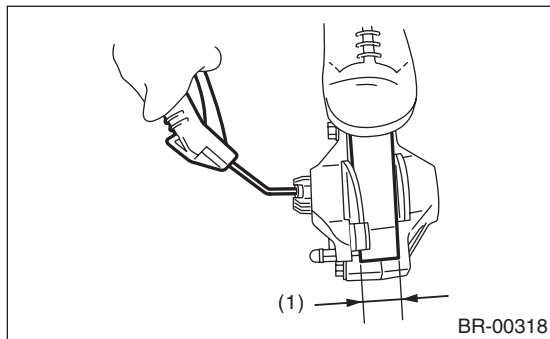
(1) Boot ring

2) Remove the piston boot.



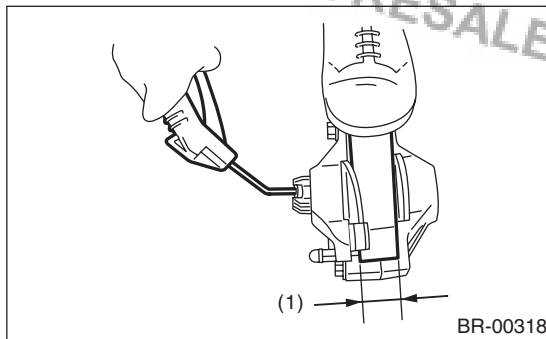
3) Place a wooden block in the caliper body as shown in the figure to prevent the piston from jumping out and being damaged.

4) Gradually apply compressed air via the brake hose installation hole to push the piston out.



(1) Place a wooden block of 30 mm (1.18 in) width.

3) Gradually apply compressed air via the brake hose installation hole to push the piston out.

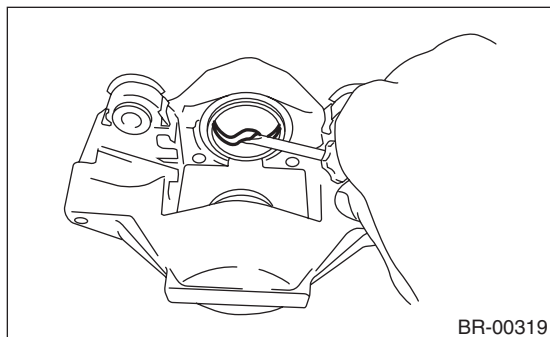


(1) Place a wooden block of 20 mm (0.79 in) width.

5) Remove the piston seal from caliper body cylinder.

CAUTION:

Do not damage the cylinder and piston seal groove.

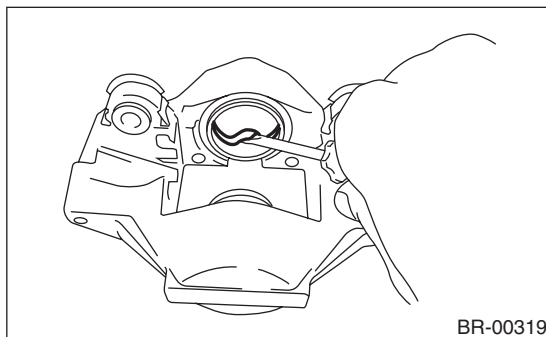


BR-00319

4) Remove the piston seal from caliper body cylinder.

CAUTION:

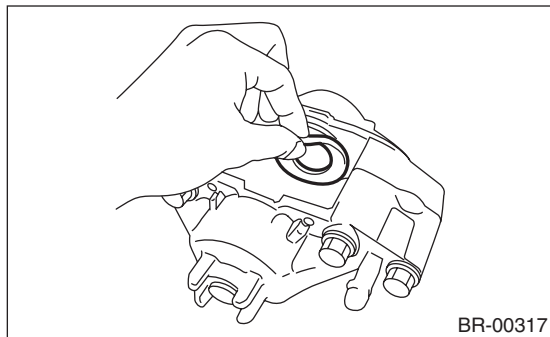
Do not damage the cylinder and piston seal groove.



BR-00319

3. 17-INCH TYPE

1) Remove the piston boot from each piston end.



BR-00317

2) Place a wooden block in the caliper body as shown in the figure to prevent the piston from jumping out and being damaged.

D: ASSEMBLY

1. 14-INCH TYPE

- 1) Clean the inside of the caliper body using brake fluid.
- 2) Apply a coat of brake fluid to piston seal and install piston seal in the groove on caliper body.
- 3) Apply a coat of brake fluid to the inner surface of cylinder and the entire outer surface of the piston.
- 4) Insert the piston into cylinder.

CAUTION:

Do not force the piston into cylinder.

5) Apply a coat of specified grease to the boot and fit to the groove on the ends of the cylinder and piston.

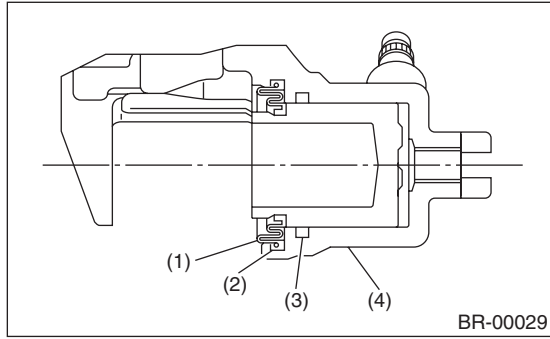
Grease:

NIGLUBE RX-2 (Part No. K0779GA102)

Rear Disc Brake Assembly

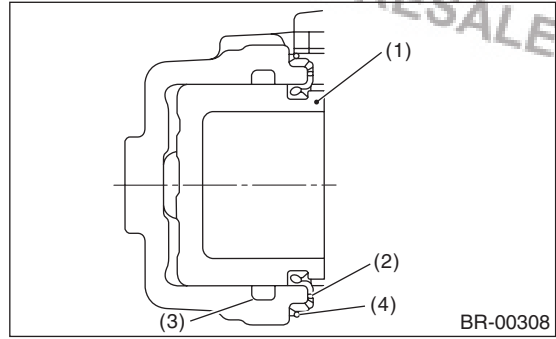
BRAKE

6) Attach the piston boot to the caliper body, and attach the boot ring.



- (1) Piston boot
- (2) Boot ring
- (3) Piston seal
- (4) Caliper body

6) Attach the piston boot to the caliper body, and attach the boot ring.

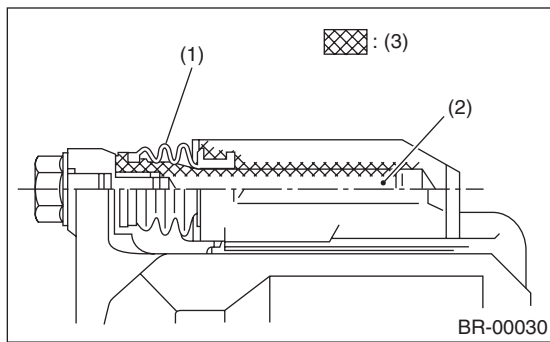


- (1) Piston
- (2) Piston boot
- (3) Piston seal
- (4) Boot ring

7) Apply a coat of specified grease to the guide pin, outer surface, sleeve outer surface, cylinder inner surface, and boot grooves.

Grease:

NIGLUBE RX-2 (Part No. K0779GA102)



- (1) Pin boot
- (2) Lock pin or guide pin
- (3) Grease applied area

8) Insert the guide pin boot to the support.

9) Install the lock pin boot to the support, and then insert the lock pin sleeve into the specified position.

2. 15-INCH TYPE

- 1) Clean the inside of the caliper body using brake fluid.
- 2) Apply a coat of brake fluid to piston seal and install piston seal in the groove on caliper body.
- 3) Apply a coat of brake fluid to the inner surface of cylinder and the entire outer surface of the piston.
- 4) Apply a coat of specified grease to the boot and fit to the groove on the piston.

Grease:

NIGLUBE RX-2 (Part No. K0779GA102)

5) Insert the piston into cylinder.

CAUTION:

Do not force the piston into cylinder.

3. 17-INCH TYPE

- 1) Clean the inside of the caliper body using brake fluid.
- 2) Apply a coat of brake fluid to the piston seal and install the piston seal in the groove of the caliper body.

3) Apply a coat of brake fluid to the inner surface and the entire outer surface of the cylinder.

4) Apply a coat of specified grease to the boot and fit to the groove on the piston.

Grease:

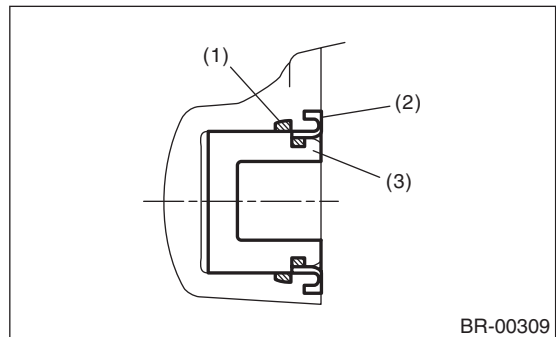
NIGLUBE RX-2 (Part No. K0779GA102)

5) Insert the piston into the cylinder.

CAUTION:

Do not force the piston into cylinder.

6) Position the boot in the grooves on piston and cylinder.



- (1) Piston seal
- (2) Piston boot
- (3) Piston

E: INSPECTION

- 1) Repair or replace the faulty parts.
- 2) Check the caliper body and piston for uneven wear, damage or rust.
- 3) Check the rubber parts for damage or deterioration.

8. Master Cylinder

A: REMOVAL

CAUTION:

Do not allow brake fluid to come in contact with vehicle body. If it does, wash off with water and wipe away completely.

- 1) Drain brake fluid from reservoir tank completely.
- 2) Disconnect the harness connector of the fluid level gauge.
- 3) Remove the brake pipes from master cylinder.
- 4) Remove the master cylinder mounting nuts, and remove the master cylinder from the brake booster.

B: INSTALLATION

- 1) Install in the reverse order of removal.

Tightening torque:

Master cylinder mounting nut

15 N·m (1.5 kgf-m, 10.8 ft-lb)

Piping flare nut

15 N·m (1.5 kgf-m, 10.8 ft-lb)

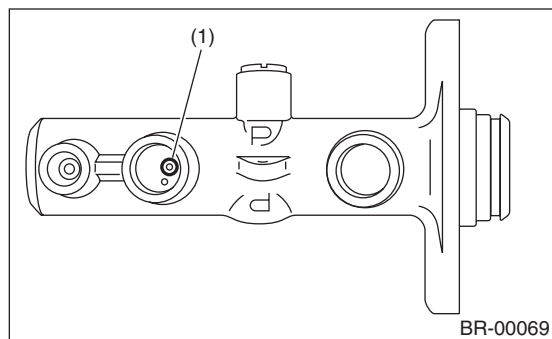
CAUTION:

Be sure to use recommended brake fluid.

- 2) Bleed air from brake system. <Ref. to BR-47, PROCEDURE, Air Bleeding.>

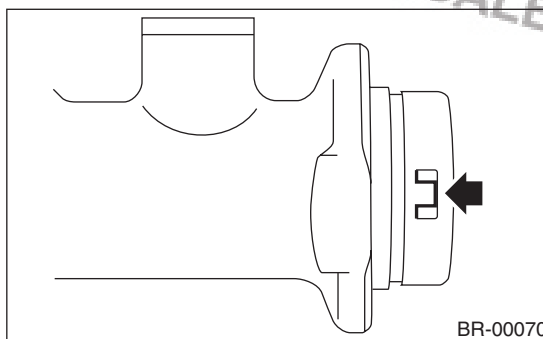
C: DISASSEMBLY

- 1) Remove mud and dirt from the surface of brake master cylinder.
- 2) Secure the master cylinder in a vise.
- 3) Remove the pin which secures the master cylinder and reservoir tank, then remove the reservoir tank and grommet.
- 4) Remove the cylinder pin with magnetic pick-up tool while pushing in the primary piston by screwdriver wrapped with tape.



(1) Cylinder pin (straight pin)

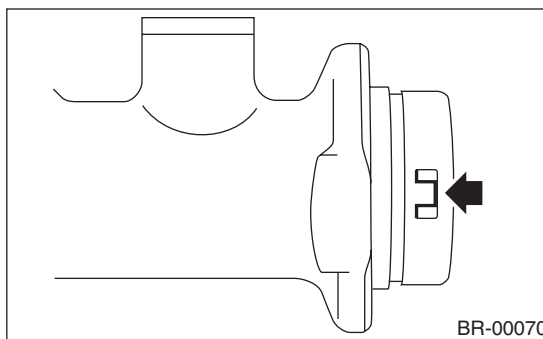
- 5) Raise the claw and remove the piston retainer. Hold the piston retainer while working, because the piston may fly out with force.



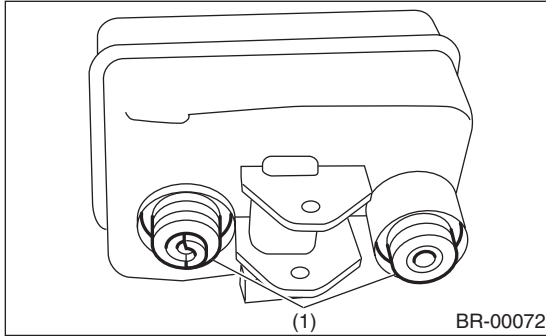
- 6) Extract the primary piston assembly and secondary piston assembly straight out while taking care not to scratch the inner surface of the cylinder.
- 7) Clean the inside of master cylinder and the piston assembly with brake fluid, and check each part for damage, deformation, wear or rust. Replace the part if defective.

D: ASSEMBLY

- 1) Apply brake fluid to the inner surface of master cylinder and piston assembly.
- 2) Make sure that the inner surface of master cylinder and the piston assembly are free of foreign matter. Install the primary piston assembly and the secondary piston assembly to master cylinder, while taking care not to scratch the master cylinder inner surface.
- 3) Install the cylinder pin while pushing in the primary piston by screwdriver wrapped with tape.
- 4) Install the piston retainer and secure it with the claw.



5) Install the seal to reservoir tank.



(1) Seal

6) Install the reservoir tank to the master cylinder, and secure with pin.

E: INSPECTION

If any damage, deformation, wear, swelling, rust or other faults are found on the primary piston assembly or secondary piston assembly, replace the faulty part.

NOTE:

- Replace the primary and secondary piston as a set.
- The limit of the clearance between each piston and master cylinder inner diameter is 0.11 mm (0.0043 in).

9. Brake Booster

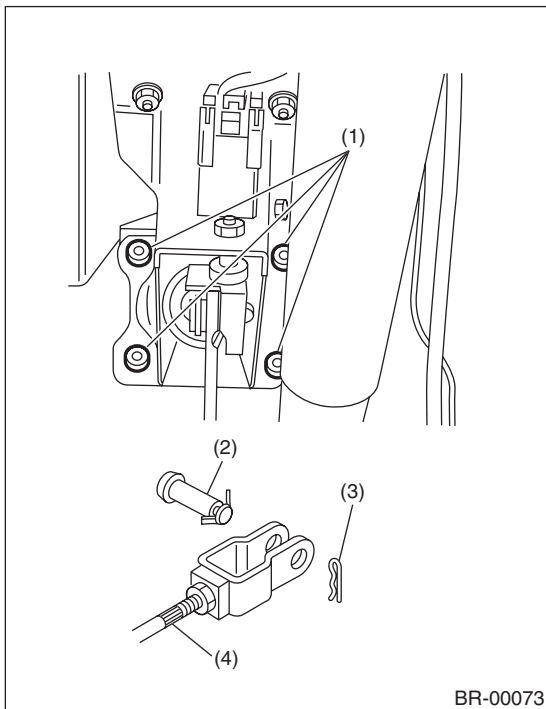
A: REMOVAL

1) Remove or disconnect the following parts in the engine compartment.

- (1) Disconnect the connector of brake fluid level gauge.
- (2) Remove the brake pipes from master cylinder.
- (3) Remove the master cylinder installation nut.
- (4) Disconnect the vacuum hose from brake booster.

2) Remove the following parts from the pedal bracket.

- (1) Snap pin and clevis pin
- (2) Four brake booster installation nuts



- (1) Nut
- (2) Clevis pin
- (3) Snap pin
- (4) Operating rod

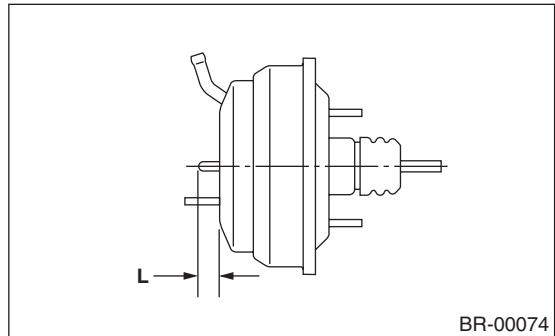
3) Remove the brake booster while avoiding the brake pipe.

NOTE:

- Be careful not to drop the brake booster. If the booster is dropped, replace it.
- Use special care when handling the operating rod. If excessive force is applied to the operating rod, the angle may change by $\pm 3^\circ$, and it may result in damage to power piston cylinder.
- Be careful when placing the brake booster on floor.
- Do not change the push rod length. If it has been changed, reset the projected length "L" to the standard length.

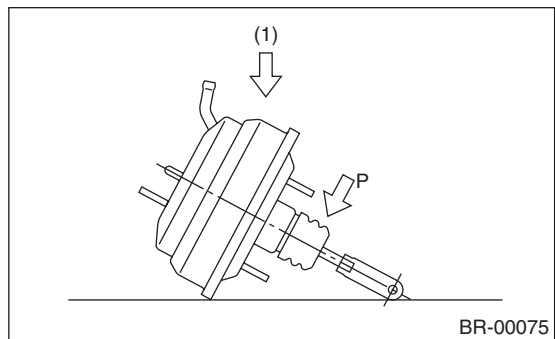
Specification L:

10.05 mm (0.40 in)



CAUTION:

If external force is applied from above when brake booster is placed in this position, the resin portion as indicated by "P" may become damaged.



(1) Force

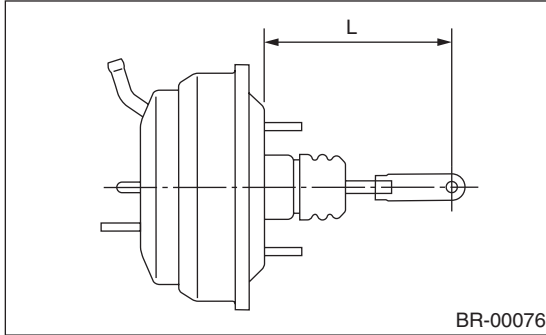
B: INSTALLATION

1) Check and adjust the operating rod of the brake booster.

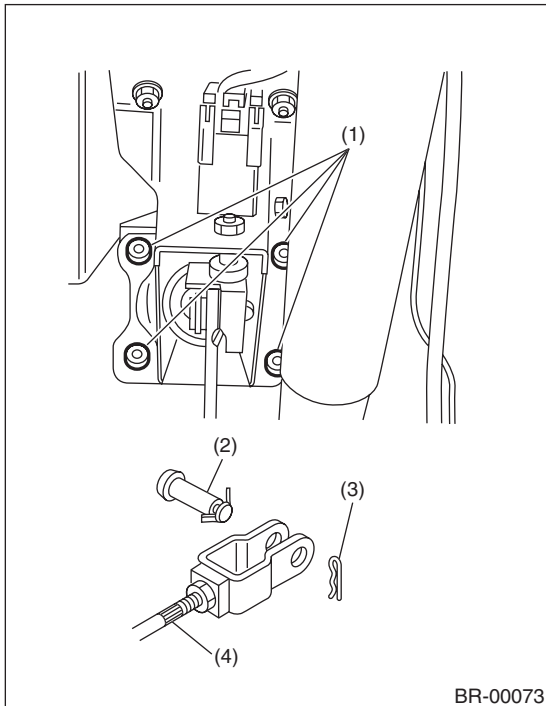
Specification L:

144.6 mm (5.69 in)

If it is out of specification, adjust it with the brake booster operating rod.

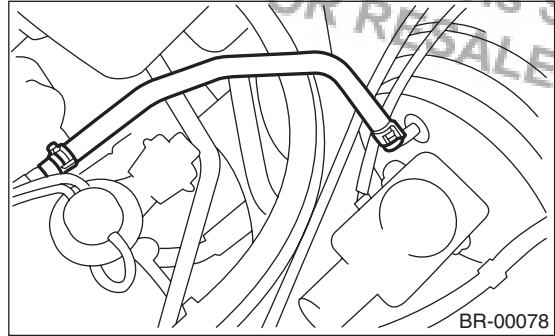


- 2) Mount the brake booster in position.
- 3) Connect the operating rod to brake pedal with clevis pin and snap pin.



- (1) Nut
- (2) Clevis pin
- (3) Snap pin
- (4) Operating rod

4) Connect the vacuum hose to brake booster.

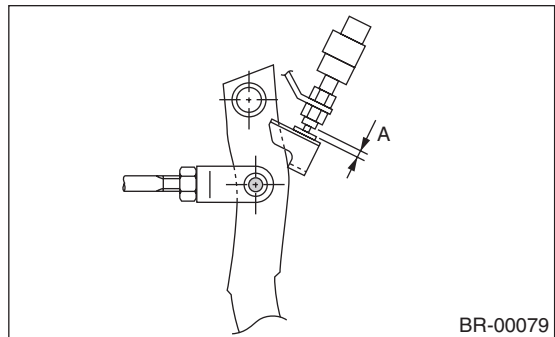


- 5) Mount the master cylinder onto the brake booster.
- 6) Connect the brake pipes to the master cylinder.
- 7) Connect the connector of the brake fluid level gauge.
- 8) Measure the clearance between the threaded end of the stop light switch and the stopper. If it is not within the specification, adjust it by adjusting the position of the stop light switch. <Ref. to BR-56, ADJUSTMENT, Stop Light Switch.>

CAUTION:

Be careful not to rotate the stop light switch.

Stop light switch clearance A:
0.3 mm (0.012 in)



- 9) Apply grease to the operating rod connecting pin to prevent it from wear.
- 10) Bleed air from brake system.

Tightening torque (air bleeder screw):

Excluding the 17-inch type:
8 N·m (0.8 kgf-m, 5.8 ft-lb)

17-inch type:

20 N·m (2.0 kgf-m, 14.5 ft-lb)

- 11) Perform a road test to make sure the brakes do not drag.

C: INSPECTION

1. OPERATION CHECK (WITHOUT GAUGES)

CAUTION:

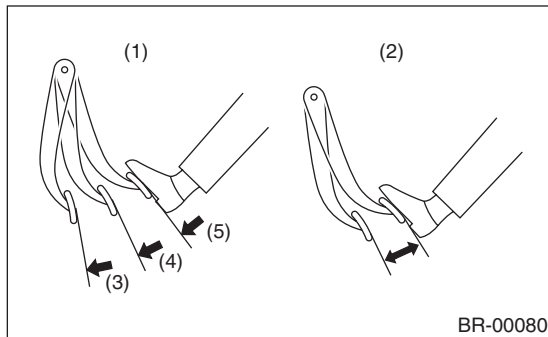
When checking operation, be sure to apply the parking brake securely.

Check without gauges

This method can not determine exactly what part is defective. But it is possible to identify the outline of the defect by performing the check according to the following procedures.

Air tightness check

Start the engine, and idle it for 1 to 2 minutes, then turn it OFF. Depress the brake pedal several times applying the normal pedal force. The pedal stroke should be the longest at the 1st depression, and it should become shorter at each successive depression. If no change occurs in the pedal height when pressed, the brake booster is faulty.



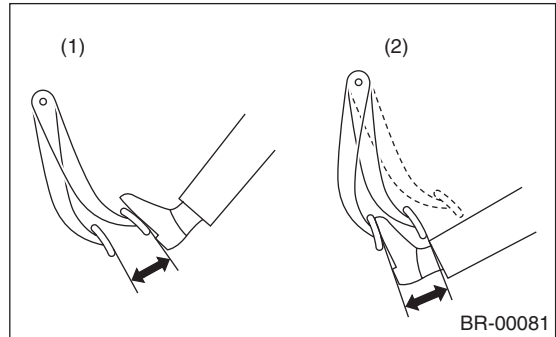
- (1) Normal operation
- (2) Not OK
- (3) 1st
- (4) 2nd
- (5) 3rd

NOTE:

- In case of defective operation, inspect the condition of the check valve and vacuum hose as well.
- Replace them if faulty, and perform the test again.
- If no improvement is observed, check precisely with gauges.

Operation check

1) While the engine is OFF, depress the brake pedal several times applying the same pedal force, to check for a change in pedal height.



- (1) When engine is stopped
- (2) When engine is started

2) With the brake pedal depressed, start the engine.
 3) As the engine starts, the brake pedal should move slowly toward the floor. If the pedal height does not change, the brake booster is faulty.

NOTE:

If faulty, check precisely with gauges.

Loaded air tightness check

Depress the brake pedal while the engine is running, and turn the engine to OFF while the pedal is depressed. Keep the pedal depressed for 30 seconds. If the pedal height does not change, the function of brake booster is normal. If the pedal height increases, it is faulty.

NOTE:

If faulty, check precisely with gauges.

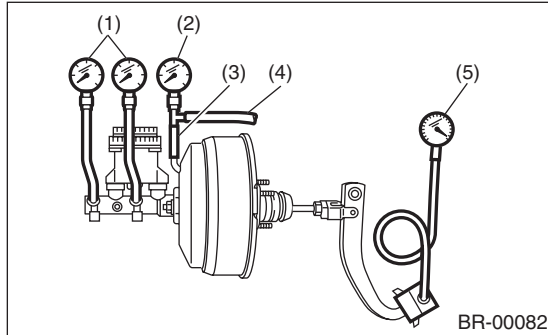
2. OPERATION CHECK (WITH GAUGE)

CAUTION:

When checking operation, be sure to apply the parking brake securely.

Check with gauge

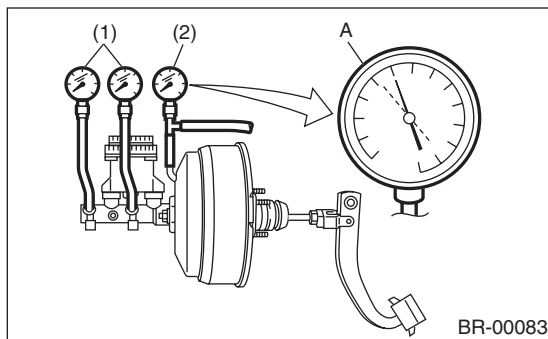
Connect the gauge as shown in the figure. After bleeding air from pressure gauge, perform each check.



- (1) Pressure gauge
- (2) Vacuum gauge
- (3) Adapter hose
- (4) Vacuum hose
- (5) Pedal force gauge

Air tightness check

1) Start the engine and keep it running until vacuum pressure indicates point A of the vacuum gauge = 66.7 kPa (500 mmHg, 19.69 inHg). Do not depress the brake pedal at this time.



- (1) Pressure gauge
- (2) Vacuum gauge

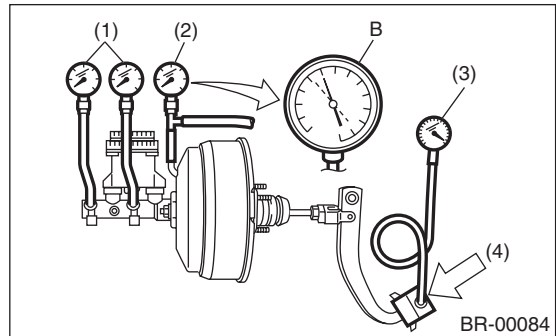
2) Stop the engine and check the gauge. If the vacuum pressure drop within 15 seconds after stopping the engine is 3.3 kPa (25 mmHg, 0.98 inHg) or less, the function of brake booster is normal.

If faulty, the cause may be one of the following.

- Check valve malfunction
- Leak from vacuum hose
- Leak from shell joint section or stud bolt welded section
- Damaged diaphragm
- Leak from valve body seal and bearing section
- Leak from plate and seal assembly section
- Leak from poppet valve assembly section

Loaded air tightness check

1) Start the engine and depress the brake pedal with a pedal force of 196 N (20 kgf, 44 lbf). Keep the engine running and keep the pedal pressed until a vacuum of point B = 66.7 kPa (500 mmHg, 19.69 inHg) is indicated on the vacuum gauge.



- (1) Pressure gauge
- (2) Vacuum gauge
- (3) Pedal force gauge
- (4) Depressed

2) Stop the engine and check the vacuum gauge. If the vacuum pressure drop within 15 seconds after stopping the engine is 3.3 kPa (25 mmHg, 0.98 inHg) or less, the function of brake booster is normal.

If defective, refer to "AIR TIGHTNESS CHECK".
<Ref. to BR-43, INSPECTION, Brake Booster.>

3) If the brake booster is faulty, replace it with a new part.

Lack of boost action check

Turn the engine OFF, and set the value of the vacuum gauge to "0". Then, check the fluid pressure when the brake pedal is depressed. The pressure must be greater than the specification listed.

Brake pedal operation force		147 N (15 kgf, 33 lbf)	294 N (30 kgf, 66 lbf)
Fluid pressure	15"	588 kPa (6 kgf/cm ² , 85 psi)	1,471 kPa (15 kgf/cm ² , 213 psi)
	16"		1,667 kPa (17 kgf/cm ² , 242 psi)
	17"		1,471 kPa (15 kgf/cm ² , 213 psi)

Boosting action check

Set the vacuum gauge reading to 66.7 kPa (500 mmHg, 19.69 inHg) with the engine running. Then, check the fluid pressure when the brake pedal is depressed. The pressure must be greater than the specification listed.

Brake pedal operation force		147 N (15 kgf, 33 lbf)	294 N (30 kgf, 66 lbf)
Fluid pressure	15"	5,296 kPa (54 kgf/cm ² , 768 psi)	9,120 kPa (93 kgf/cm ² , 1,323 psi)
	16"	6,276 kPa (64 kgf/cm ² , 910 psi)	10,200 kPa (104 kgf/cm ² , 1,479 psi)
	17"	4,021 kPa (41 kgf/cm ² , 583 psi)	8,336 kPa (85 kgf/cm ² , 1,209 psi)

10.Brake Fluid

A: INSPECTION

- 1) Check that the brake fluid level is between “MIN” and “MAX”. If out of the specified range, refill or drain fluid. If the fluid level is close to “MIN”, refill the fluid.
- 2) Check the fluid for discoloration. If the fluid color has changed excessively, drain the fluid and refill with new fluid.

B: REPLACEMENT

CAUTION:

- To maintain the brake fluid performance, replace the brake fluid according to maintenance schedule or earlier than that when used in severe condition.
- Be sure to use new SUBARU genuine brake fluid.
- Cover the air bleeder screw with cloth, when loosening it, to prevent brake fluid from being splashed over surrounding parts.
- Do not let brake fluid come into contact with the painted surface of the vehicle body. Wash away with water immediately and wipe off if it is spilled by accident.
- Avoid mixing brake fluid of different brands to prevent fluid performance from degrading.
- Be careful not to allow dirt or dust to enter the reservoir tank.
- During air bleeding operation for STI model, limit the amount of loosening the air bleeder screw to the minimum, in order to prevent brake fluid from seeping out along the air bleeder screw threads. Clean the caliper body with brake cleaner or water immediately after completing air bleeding, or the painted surface of caliper body may be damaged. Brake fluid remaining in the air bleeder screw should be wiped off with cloth.

NOTE:

- During the operation, keep the reservoir tank filled with brake fluid to eliminate entry of air.
 - Operate the brake pedal slowly.
 - For convenience and safety, two people should work together.
 - The required amount of brake fluid is approximately 500 mℓ (16.9 US fl oz, 17.6 Imp fl oz) for the entire brake system.
- 1) Lift up the vehicle and set rigid racks at the specified locations, or keep the vehicle lifted.
 - 2) Remove both front and rear wheels.
 - 3) Drain brake fluid from the reservoir tank.

- 4) Refill the reservoir tank with recommended brake fluid.

Recommended brake fluid:

Refer to “General Description”. <Ref. to BR-2, SPECIFICATION, General Description.>

Perform the same procedure as for bleeding the brake line, until new brake fluid comes out from vinyl tube. <Ref. to BR-47, PROCEDURE, Air Bleeding.>

11. Air Bleeding

A: PROCEDURE

CAUTION:

- Be sure to use new SUBARU genuine brake fluid.
- Cover the air bleeder screw with cloth, when loosening it, to prevent brake fluid from being splashed over surrounding parts.
- Do not let brake fluid come into contact with the painted surface of the vehicle body. Wash away with water immediately and wipe off if it is spilled by accident.
- Avoid mixing brake fluid of different brands to prevent fluid performance from degrading.
- Be careful not to allow dirt or dust to enter the reservoir tank.
- During air bleeding operation for STI model, limit the amount of loosening the air bleeder screw to the minimum, in order to prevent brake fluid from seeping out along the air bleeder screw threads. Clean the caliper body with brake cleaner or water immediately after completing air bleeding, or the painted surface of caliper body may be damaged. Brake fluid remaining in the air bleeder screw should be wiped off with cloth.

1. MASTER CYLINDER

NOTE:

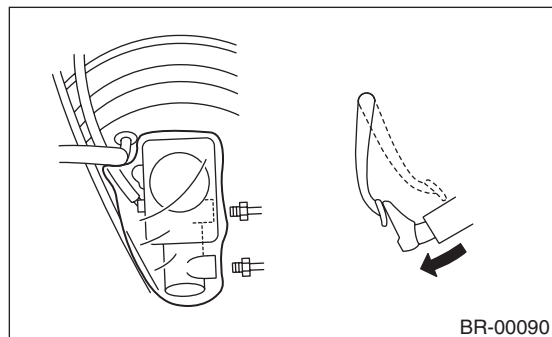
- When the master cylinder is disassembled or the reservoir tank is empty, bleed the master cylinder.
- If bleeding of the master cylinder is not necessary, omit the following procedures, and perform bleeding of the brake line. <Ref. to BR-47, BRAKE LINE, PROCEDURE, Air Bleeding.>

1) Fill the reservoir tank of the master cylinder with brake fluid.

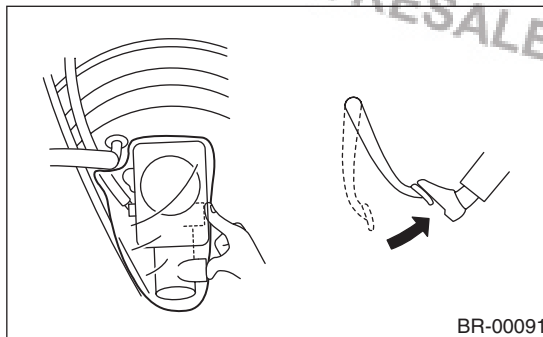
NOTE:

While bleeding air, keep the reservoir tank filled with brake fluid to prevent entry of air.

- 2) Disconnect the brake line at primary and secondary sides.
- 3) Wrap the master cylinder with a plastic bag.
- 4) Depress the brake pedal slowly and hold it.



- 5) Plug the outlet plug with your finger, and then release the brake pedal.



- 6) Repeat the step 4) and 5) several times.
- 7) Remove the plastic bag.
- 8) Install the brake pipe to the master cylinder.

Tightening torque:

15 N·m (1.5 kgf-m, 10.8 ft-lb)

- 9) Bleed air from the brake line. <Ref. to BR-47, BRAKE LINE, PROCEDURE, Air Bleeding.>

2. BRAKE LINE

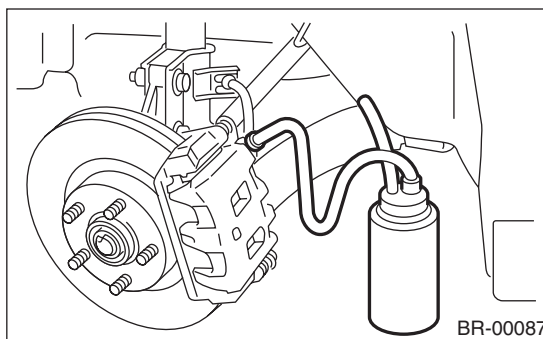
1) When the master cylinder is disassembled or the reservoir tank is empty, bleed the master cylinder before bleeding the brake line. <Ref. to BR-47, Air Bleeding.>

2) Fill the reservoir tank of the master cylinder with brake fluid.

NOTE:

While bleeding air, keep the reservoir tank filled with brake fluid to prevent entry of air.

3) Attach one end of the vinyl tube to the air bleeder screw and the other end to the brake fluid container.



- 4) Depress the brake pedal several times, and hold it.
- 5) Loosen the air bleeder screw to drain brake fluid. Tighten the air bleeder screw quickly, and release the brake pedal.
- 6) Repeat the steps 4) to 5) until there are no more air bubbles in the vinyl tube.

BRAKE

7) Repeat the steps from 2) to 6) above to bleed air from each wheel.

NOTE:

Perform the operation in the order from the farthest wheel cylinder from the master cylinder.

8) Securely tighten the air bleeder screws.

Tightening torque:

Excluding the 17-inch type:

8 N·m (0.8 kgf-m, 5.8 ft-lb)

17-inch type:

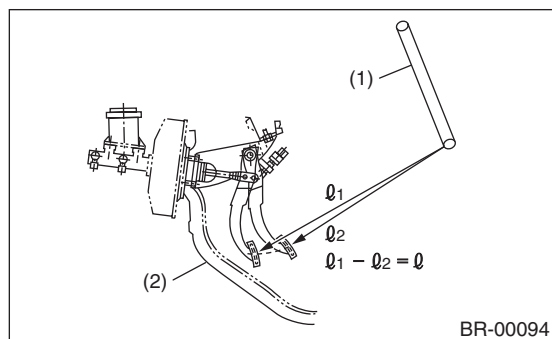
20 N·m (2.0 kgf-m, 14.5 ft-lb)

9) Check that there are no brake fluid leaks in the entire system.

10) Check the pedal stroke.

Run the engine at idle after warming up the engine, and depress the brake pedal with a force of 500 N (51 kgf, 112 lbf). Measure the distance between the brake pedal and steering wheel. Release the pedal, and measure the distance between pedal and steering wheel again.

16) Test run the vehicle and ensure that the brakes operate normally.



(1) Steering wheel

(2) Toe board

Specification of pedal stroke Q :

When depressing the pedal with a force of 500 N (51 kgf, 112 lbf).

Turbo model (Except for STI model):

105 mm (4.13 in)

Non-turbo model and STI model:

90 mm (3.54 in)

11) If the distance is more than specification, there is a possibility of air being caught in the brake line. Bleed the brake line of all air until the pedal stroke meets the specification.

12) Operate the hydraulic control unit in the sequence control mode. <Ref. to ABS-10, ABS Sequence Control.>

13) Check the pedal stroke again.

14) If the distance is more than specification, there is a possibility of air being caught in the hydraulic unit. Repeat above steps 2) to 9) until the pedal stroke meets the specification.

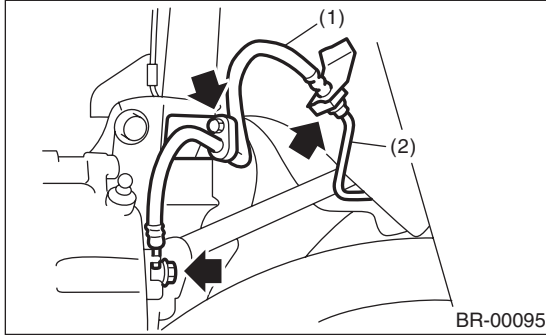
15) Fill the reservoir tank with brake fluid up to the "MAX" level.

12.Brake Hose

A: REMOVAL

1. FRONT BRAKE HOSE

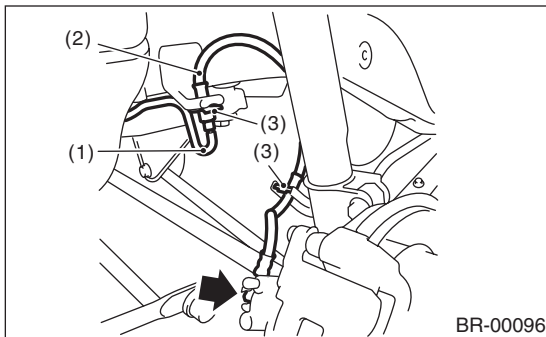
- 1) Separate the brake pipe from brake hose using a flare nut wrench.
- 2) Remove the clamp, the strut mount bolts, and union bolt.



- (1) Brake hose
- (2) Brake pipe

2. REAR BRAKE HOSE

- 1) Separate the brake pipe from brake hose using a flare nut wrench.
- 2) Remove the clamp and union bolt.



- (1) Brake pipe
- (2) Brake hose
- (3) Brake hose clamp

B: INSTALLATION

1. FRONT BRAKE HOSE

- 1) Secure the brake hose to strut mount.

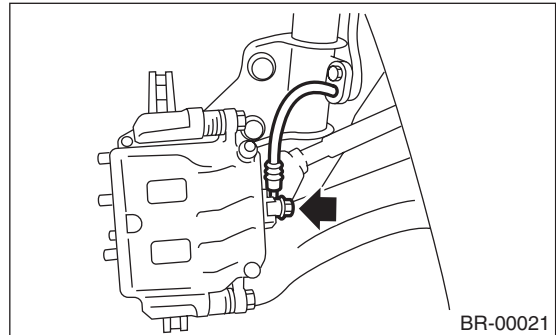
Tightening torque:

33 N·m (3.4 kgf-m, 25 ft-lb)

- 2) Install the brake hose to the caliper body using new gasket.

Tightening torque (union bolt):

18 N·m (1.8 kgf-m, 13.0 ft-lb)



- 3) Position the disc in straight position and route the brake hose through the hole in the bracket on the wheel apron side.

CAUTION:

Do not twist the brake hose.

- 4) Temporarily tighten the flare nut which connects brake pipe and hose.
- 5) Secure the brake hose to wheel apron bracket with clamp.
- 6) While holding the hexagonal part of brake hose fitting with a wrench, tighten the flare nut to the specified torque.

Tightening torque (brake pipe flare nut):

15 N·m (1.5 kgf-m, 10.8 ft-lb)

- 7) Bleed air from brake system.

2. REAR BRAKE HOSE

- 1) Route the brake hose through the hole of bracket, and lightly tighten the flare nut to connect brake pipe.
- 2) Insert the clamp to secure brake hose.
- 3) Install the brake hose to caliper body using new gasket.

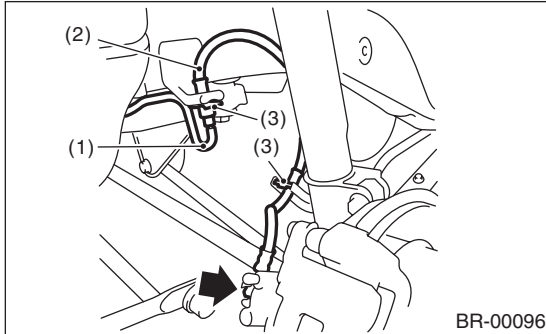
Tightening torque (union bolt):

18 N·m (1.8 kgf-m, 13.0 ft-lb)

BRAKE

4) While holding the hexagonal part of brake hose fitting with a wrench, tighten the flare nut to the specified torque.

Tightening torque (brake pipe flare nut):
15 N·m (1.5 kgf-m, 10.8 ft-lb)



- (1) Brake pipe
- (2) Brake hose
- (3) Brake hose clamp

5) Bleed air from the brake system.

C: INSPECTION

Check that there are no cracks, breakage, or damage on hoses. Check the joints for fluid leakage. If any cracks, breakage, damage or leakage is found, repair or replace the hose.

13. Brake Pipe

A: REMOVAL

NOTE:

The airbag system wiring harness is routed near the center brake pipe.

CAUTION:

- Airbag system connectors are yellow. Do not use the electrical test equipment on these circuits.
- Be careful not to damage the airbag system wiring harness when servicing the center brake pipe.
- When removing brake pipes, use a flare nut wrench.
- When removing brake pipes, do not bend.

B: INSTALLATION

NOTE:

The airbag system wiring harness is routed near the center brake pipe.

CAUTION:

- Airbag system connectors are yellow. Do not use the electrical test equipment on these circuits.
- Be careful not to damage the airbag system wiring harness when servicing the center brake pipe.
- When removing brake pipes, use a flare nut wrench.
- When installing the brake pipe, do not bend.
- After installing the brake pipe and hose, perform air bleed.
- After installing the brake hoses, make sure that they do not contact the tires or suspension assembly, etc.

Tightening torque (brake pipe):
15 N·m (1.5 kgf·m, 10.8 ft·lb)

C: INSPECTION

Check that there are no cracks, breakage, or damage on hoses. Check the joints for fluid leakage. If any cracks, breakage, damage or leakage is found, repair or replace the pipe.

NOTE:

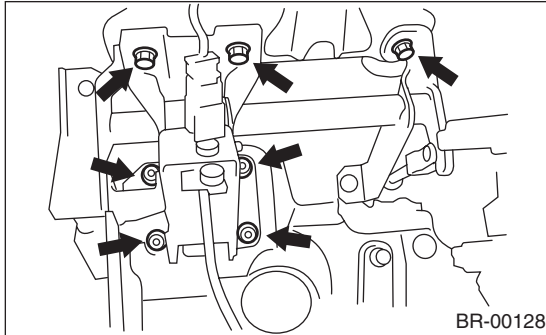
Check the part, which is difficult to see such as the backside using a mirror.

14. Brake Pedal

A: REMOVAL

1. MT MODEL

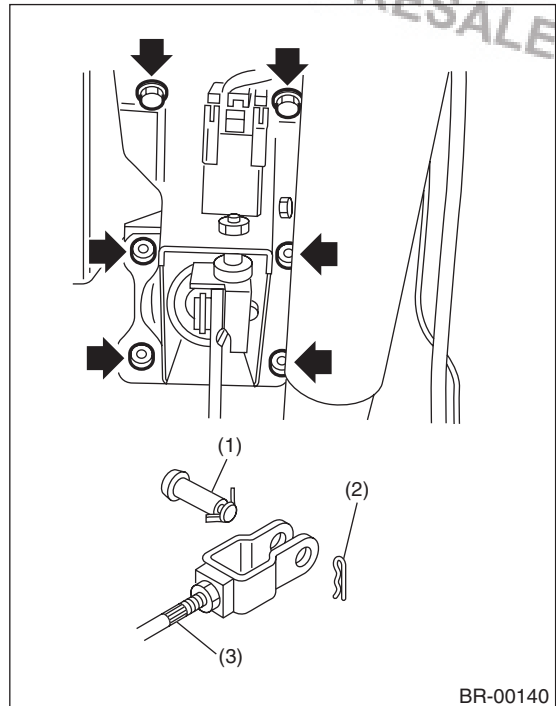
- 1) Remove the steering shaft.
- 2) Disconnect the connector (stop light switch etc) from the pedal bracket.
- 3) Remove the clevis pin which secures the lever and push rod.
- 4) Remove the nut which secures the clutch master cylinder.
- 5) Remove the accelerator pedal.
- 6) Remove the bolt and nut which secures the pedal bracket.



2. AT MODEL

- 1) Disconnect the ground cable from battery.
- 2) Remove the instrument panel lower cover from instrument panel.
- 3) Remove the clevis pins which secure the brake pedal to the brake booster operating rod. Also disconnect the stop light switch connector.

- 4) Remove the four bolts and four nuts which secure brake pedal to pedal.



- (1) Clevis pin
- (2) Snap pin
- (3) Operating rod

B: INSTALLATION

- 1) Install in the reverse order of removal.

CAUTION:

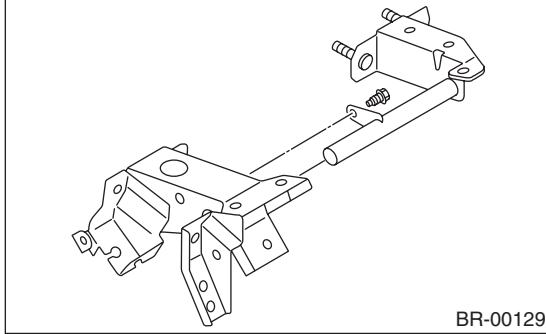
- If the cable clamp is damaged, replace it with a new part.
 - Be sure to cover outer cable end with boot.
 - Always use a new clevis pin.
- 2) Adjust the clutch pedal. <Ref. to CL-31, ADJUSTMENT, Clutch Pedal.>
 - 3) Check the brake pedal after installation. <Ref. to BR-54, INSPECTION, Brake Pedal.>

C: DISASSEMBLY

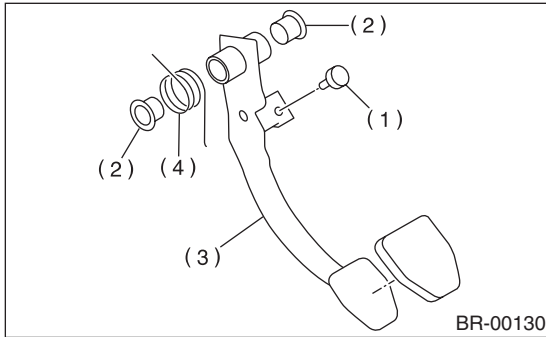
1. MT MODEL

- 1) Remove the brake switch. <Ref. to BR-55, REMOVAL, Stop Light Switch.>
- 2) Remove the clutch pedal. <Ref. to CL-30, DISASSEMBLY, Clutch Pedal.>

3) Remove the clutch master cylinder bracket.



4) Remove the bushing, spring and stopper.

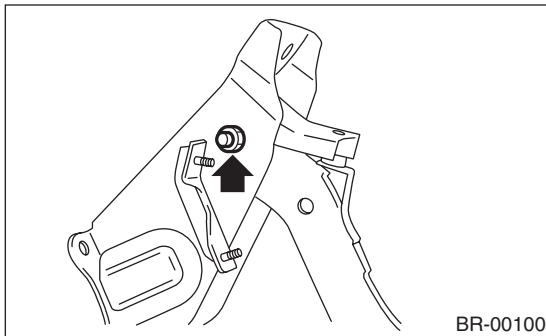


- (1) Stopper
- (2) Bushing
- (3) Brake pedal
- (4) Brake pedal spring

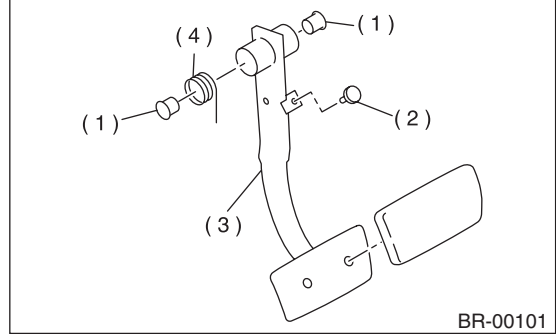
5) Remove the brake pedal pad.

2. AT MODEL

- 1) Remove the brake switch.
- 2) Unbolt, and then remove the brake pedal.



3) Remove the bushing, spacer spring.



- (1) Plug
- (2) Stopper
- (3) Brake pedal
- (4) Brake pedal spring

4) Remove the brake pedal pad.

D: ASSEMBLY

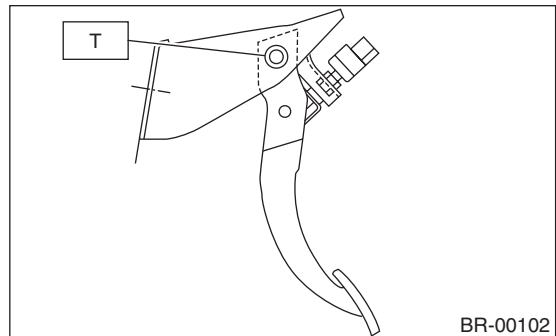
- 1) Position the stop light switch, etc. to the brake pedal.
- 2) Clean the inside of bores of the clutch pedal and brake pedal, apply grease, and set bushings into the bores.
- 3) Align bores of the pedal bracket, clutch pedal and brake pedal, attach brake pedal return spring, then install the pedal bolt.

NOTE:

Clean up the inside of bushings and apply a thin coat of grease before installing the spacer.

Tightening torque:

T: 30 N·m (3.1 kgf·m, 22.1 ft·lb)



- 4) After attaching the brake pedal to the vehicle, adjust the position of the stop light switch.

E: INSPECTION

1) Move the brake and clutch pedal pads in the lateral direction with a force of approx. 10 N (1 kgf, 2 lbf), and check that the pedal deflection is within specifications.

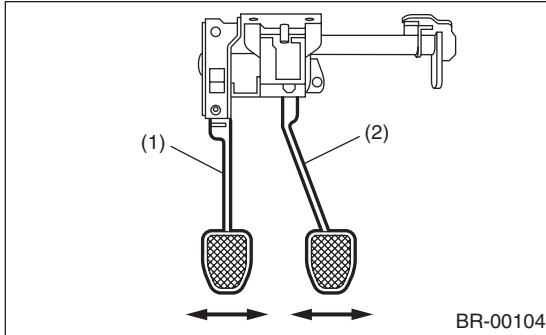
CAUTION:

If excessive deflection is found, replace the bushing with a new part.

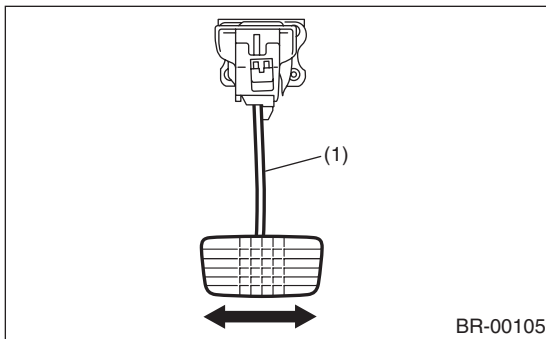
Deflection of the brake and clutch pedal:

Limit

5.0 mm (0.197 in) or less



- (1) Clutch pedal
- (2) Brake pedal



- (1) Brake pedal

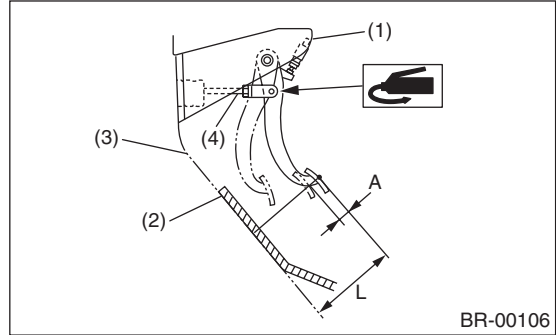
2) Check the position of pedal pad.

Pedal height L:

148 mm (5.83 in)

Brake pedal free play A:

0.5 — 2.0 mm (0.02 — 0.08 in) [When pressing the brake pedal with a force less than 10 N (1 kgf, 2 lbf).]



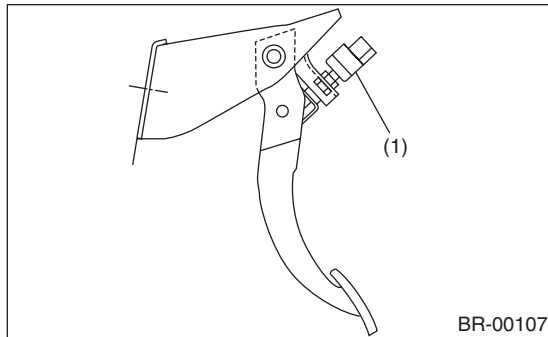
- (1) Stop light switch
- (2) Mat
- (3) Toe board
- (4) Brake booster operating rod

3) If it is not within the specification, adjust it by adjusting the brake booster operating rod length.

15. Stop Light Switch

A: REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Disconnect the stop light switch connector.
- 3) Loosen the nuts, unscrew the stop light switch, and remove stop light switch.



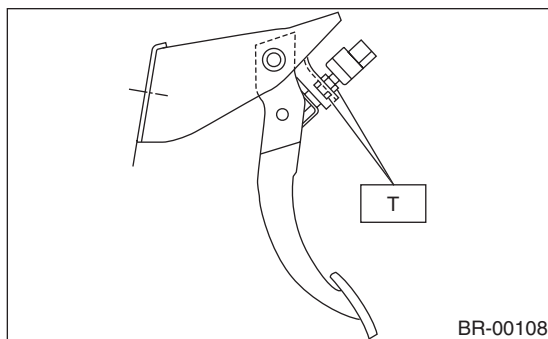
(1) Stop light switch

B: INSTALLATION

- 1) Install the stop light switch onto the bracket with screws and position it with the nut.
- 2) Adjust the stop light switch position, and then tighten the nut. <Ref. to BR-56, ADJUSTMENT, Stop Light Switch.>

Tightening torque:

8 N·m (0.8 kgf·m, 5.8 ft·lb)

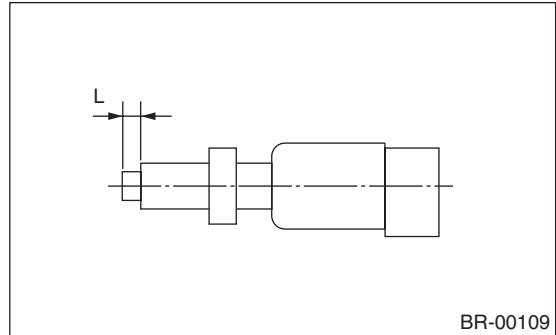


C: INSPECTION

- 1) If the stop light switch does not operate properly (or if it is not secured at the specified position), replace with a new part.

Specified position L:

2 mm (0.079 in)



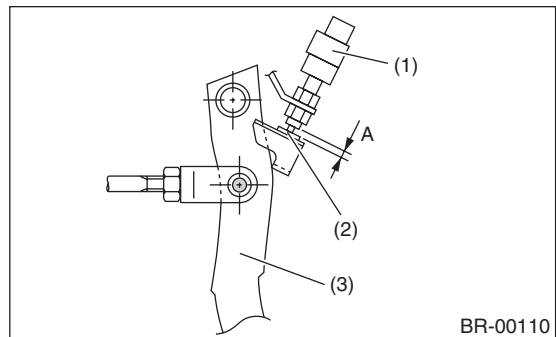
- 2) Measure the clearance between the threaded end of the stop light switch and the stopper.

CAUTION:

Be careful not to rotate the stop light switch.

Stop light switch clearance A:

0.3 mm (0.012 in)



- (1) Stop light switch
- (2) Stopper
- (3) Brake pedal

- 3) If it is not within the specification, adjust it by adjusting the position of the stop light switch.

CAUTION:

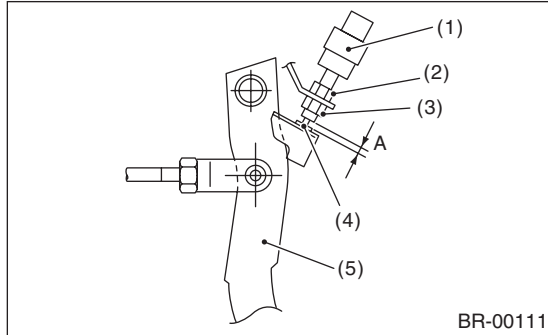
Be careful not to rotate the stop light switch.

D: ADJUSTMENT

Loosen the lock nut, and adjust the stop light switch position until the clearance between the threaded end of the stop light switch and stopper (A) becomes 0.3 mm (0.012 in). Then, tighten the lock nut.

Tightening torque:

8 N·m (0.8 kgf·m, 5.8 ft·lb)



- (1) Stop light switch
- (2) Lock nut A
- (3) Lock nut B
- (4) Stopper
- (5) Brake pedal

NOTE:

Tighten lock nut B until the threaded end of switch contacts the stopper. Hold the switch so that it does not rotate, and loosen the lock nut B approx. 60°. The clearance (A) will become 0.3 mm (0.012 in).

16. General Diagnostic Table

A: INSPECTION

	Trouble and possible cause	Corrective action
1. Insufficient braking	(1) Fluid leakage from the hydraulic mechanism	Correct or replace. (cup, piston seal, piston boot, master cylinder piston kit, pipe or hose)
	(2) Entry of air into the hydraulic mechanism	Bleed air.
	(3) Excessively wide shoe clearance	Adjust the clearance.
	(4) Wear, deteriorated surface material, water or fluid on lining	Replace, grind or clean.
	(5) Improper operation of master cylinder, disc caliper, brake booster or check valve	Repair or replace.
2. Unstable or uneven braking	(1) Fluid on the lining, drum or disc rotor	Correct the cause of fluid leakage, and clean or replace.
	(2) Drum or disc rotor problem	Repair or replace the drum or disc rotor.
	(3) Worn brake drum, or damage to the drum caused by entry of sand	Repair by grinding, or replace.
	(4) Improper lining contact, deteriorated surface, deteriorated or worn lining material	Repair by grinding, or replace.
	(5) Deformed back plate	Repair or replace.
	(6) Overinflation of tires	Adjust the air pressure.
	(7) Defective wheel alignment	Adjust alignment.
	(8) Loose back plate or support installation bolt	Tighten to the specified torque.
	(9) Faulty wheel bearing	Replace.
	(10) Defective hydraulic system	Replace the cylinder, brake pipe or hose.
	(11) Unstable performance of the parking brake	Check, adjust or replace the rear brake and cable system.
3. Excessive pedal stroke	(1) Entry of air into the hydraulic mechanism	Bleed air.
	(2) Excessive play in the master cylinder push rod	Adjust.
	(3) Fluid leakage from the hydraulic mechanism	Correct or replace. (cup, piston seal, piston boot, master cylinder piston kit, pipe or hose)
	(4) Improperly adjusted shoe clearance	Adjust.
	(5) Improper lining contact or worn lining	Repair or replace.
4. Brake dragging or improper brake return	(1) Insufficient pedal play	Adjust play.
	(2) Improper master cylinder return	Clean or replace the cylinder.
	(3) Clogged hydraulic system	Replace.
	(4) Improper return or adjustment of parking brake	Repair or adjust.
	(5) Weakened spring tension or breakage of shoe return spring	Replace the spring.
	(6) Excessively narrow shoe clearance	Adjust the clearance.
	(7) Improper disc caliper operation	Repair or replace.
	(8) Faulty wheel bearing	Replace.
5. Brake noise (1) (creaking sound)	(1) Hardened or deteriorated lining	Replace the shoe assembly or pad.
	(2) Worn lining	Replace the shoe assembly or pad.
	(3) Loose back plate or support installation bolt	Tighten to the specified torque.
	(4) Loose wheel bearing	Tighten to the specified torque.
	(5) Dirty drum or disc rotor	Clean the drum or disc rotor, or clean/replace the brake assembly.
6. Brake noise (2) (hissing sound)	(1) Worn lining	Replace the shoe assembly or pad.
	(2) Improperly installed shoe or pad	Repair or replace the shoe assembly or pad.
	(3) Loose or bent drum or disc rotor	Retighten or replace.

General Diagnostic Table

BRAKE

	Trouble and possible cause	Corrective action
7. Brake noise (3) (click sound)	In the case of the disc brake:	
	(1) Excessively worn pad or the support	Replace the pad or the support.
	In the case of the drum brake:	
	(1) Excessively worn shoe ridge	Replace the back plate.
	(2) Lack of oil on the shoe ridge surface and anchor	Supply grease.