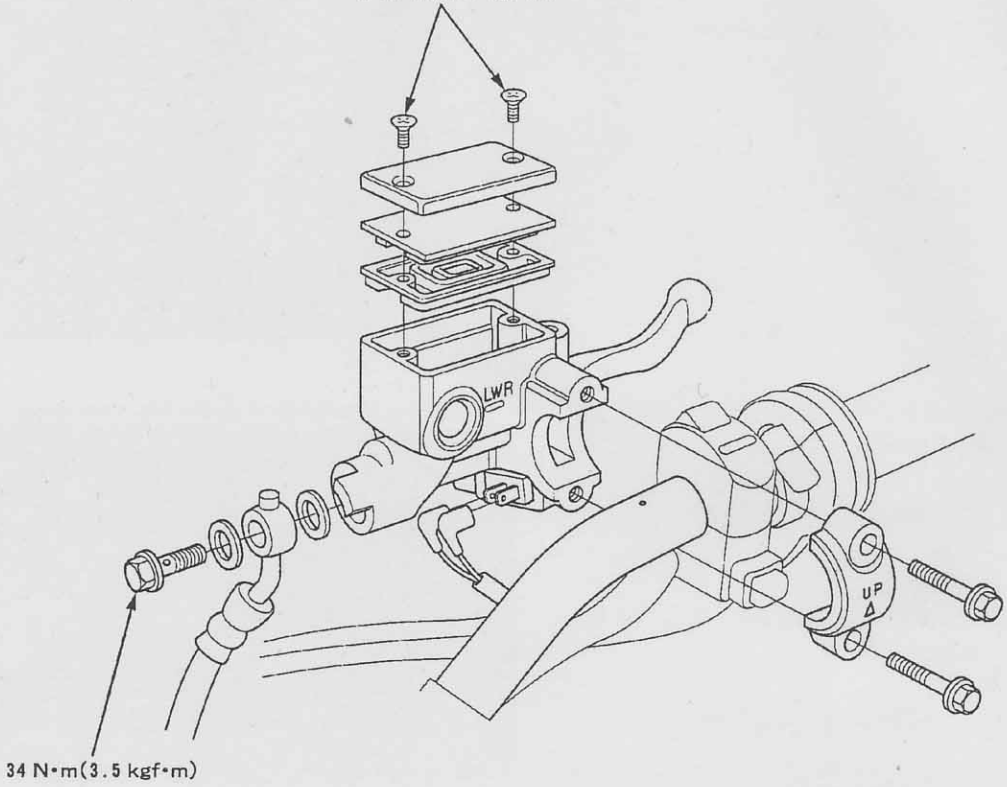
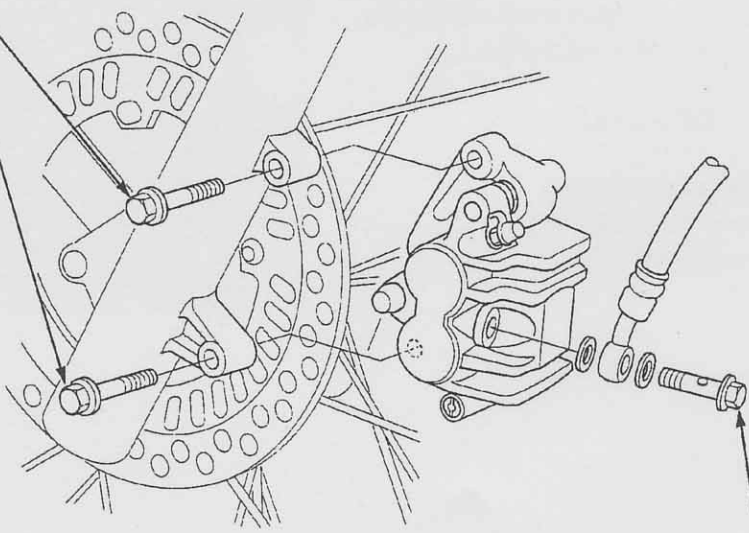


2 N·m (0.15 kgf·m)



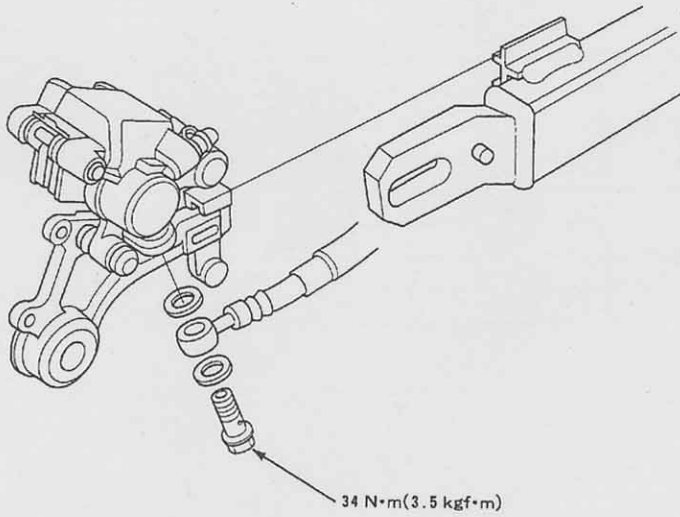
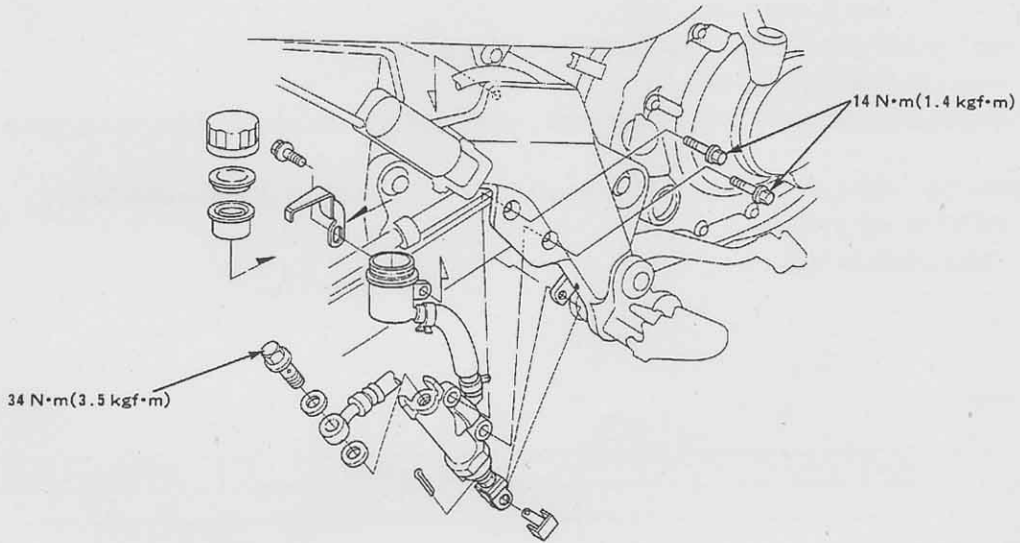
34 N·m (3.5 kgf·m)

30 N·m (3.1 kgf·m)



34 N·m (3.5 kgf·m)

Service Information.....	13 - 2	Front master cylinder.....	13 - 14
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Front brake caliper.....	13 - 10		



◆ Service Information

• General



A contaminated brake disc or pad reduces braking performance. Replace contaminated pads and clean the contaminated disc with brake degreasing agent.

- Do not contaminate the brake fluid with water or debris.
- Do not mix different products of brake fluid to prevent chemical reaction.
- Do not re-use drained brake fluid.
- Keep painted, plastic and rubber surfaces away from the fluid.
- Do not re-use the sealing washer.
- Clean all disassembled parts with brake fluid and check the passages with compressed air.
- If air entered the hydraulic system, for example, with disconnecting the brake hose, bleed air from the top system.
- Replace brake pads in pair.

• Specification

Item		Standard	Service Limit
Brake fluid		DOT 4	-
Pad thickness		-	-
Disc runout	Front	-	0.3mm
	Rear	-	0.3mm
Disc thickness	Front	3.5mm	3.0mm
	Rear	4.5mm	4.0mm
Master cylinder bore	Front	12.700 – 12.743mm	12.755mm
	Rear	14.000 – 14.043mm	14.055mm
Master piston ext. diameter	Front	12.657 – 12.684mm	12.645mm
	Rear	13.957 – 13.984mm	13.945mm
Caliper cylinder bore	Front	25.400 – 25.450mm	25.460mm
	Rear	27.000 – 27.050mm	27.060mm
Caliper piston ext. diameter	Front	25.318 – 25.368mm	25.310mm
	Rear	26.918 – 26.968mm	26.910mm

- **Torque Settings**

Brake hose bolt	34N.m (3.5kgf-m)
Front caliper mount bolt	30N.m (3.1kgf-m) Apply screw locker
Rear brake hose guide screw	4N.m (0.43kgf-m) Alloc bolt
Reservoir cover screw	2N.m (0.15kgf-m)
Front brake light switch screw	1N.m (0.12kgf-m)
Front brake lever pivot bolt	10N.m (1.0kgf-m)
nut	10N.m (1.0kgf-m)
Front brake hose clamp bolt	12N.m (1.2kgf-m) Apply screw locker
Rear master cylinder holder bolt	14N.m (1.4kgf-m) Alloc bolt
Push rod lock nut	18N.m (1.8kgf-m)
Caliper pad pin	18N.m (1.8kgf-m)
Caliper pad pin plug	2N.m (0.25kgf-m)
Caliper bleeder valve	5N.m (0.55kgf-m)
Caliper pin bolt	12N.m (1.2kgf-m) Apply screw locker
Front caliper pin bolt A	22N.m (2.2kgf-m) Apply screw locker
Rear caliper pin bolt	27N.m (2.8kgf-m)
Brake pedal pivot bolt	34N.m (3.5kgf-m) Apply screw locker

- **Special tools:**

Snap ring pliers 07914-3230001

- **Troubleshooting**

Brake lever/pedal soft or spongy

- Air in hydraulic system
- Brake fluid contaminated
- Pad/disc dirty
- Caliper piston seal worn
- Master cylinder piston cup worn
- Brake pad worn
- Caliper internal contamination
- Caliper slide friction
- Brake pad/disc unequal wear
- Low brake fluid level
- Clogged fluid passage
- Disc runout / deformation
- Caliper piston stuck / worn
- Master cylinder piston stuck / worn
- Disc worn
- Master cylinder internal contamination
- Lever bent

Brake lever / pedal heavy

- Caliper piston stuck / worn
- Caliper slide friction
- Clogged brake fluid passage
- Caliper piston seal worn
- Master cylinder piston stuck / worn
- Lever / pedal bent

Brake operation not smooth, partial braking

- Disc / wheel misaligned
- Pad / disc contaminated
- Disc runout / deformed
- Caliper slide friction

Brake drag

- Pad / disc contaminated / worn
- Pad / disc unequal / step wear
- Disc runout / deformed
- Caliper slide friction

- Brake fluid change / air bleed



A contaminated disc or pad reduces braking performance. Replace contaminated pads and clean a contaminated disc with brake degreasing



- Do not contaminate the brake fluid with water or debris.
- Do not mix different products of brake fluid.
- Keep painted/plastic/rubber surfaces away from brake fluid.

- Brake fluid drain

Front

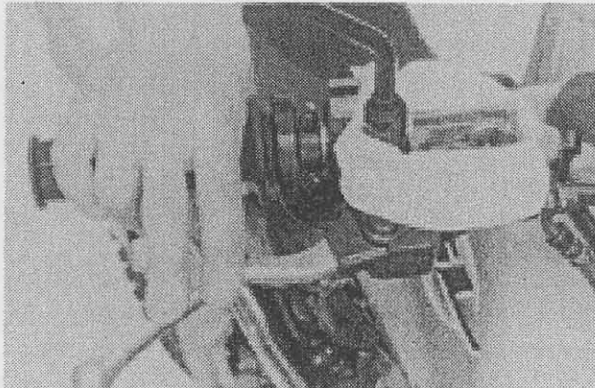
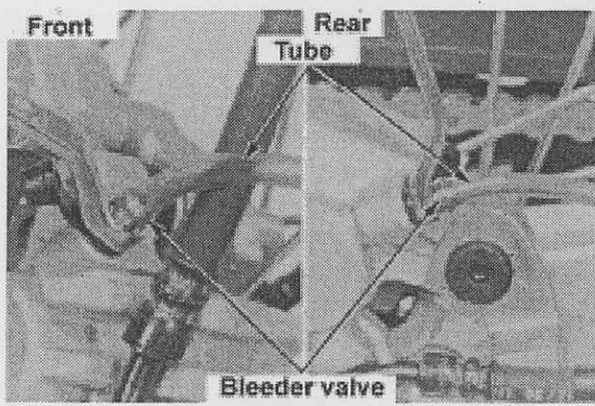
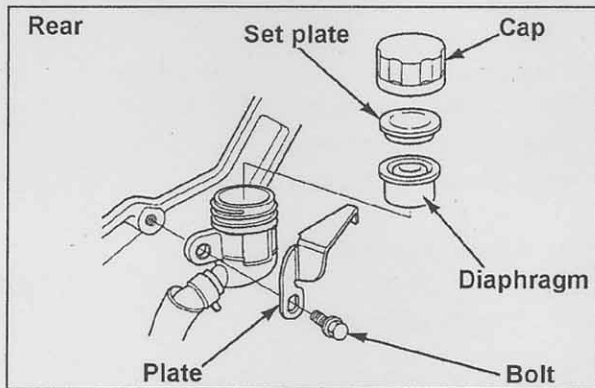
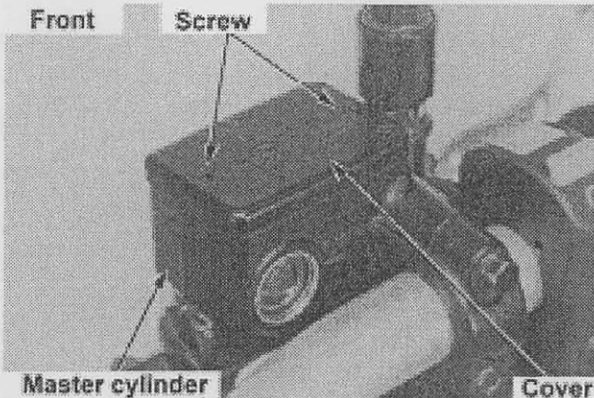
Level the top surface of the master cylinder. Unscrew to remove the reservoir cover.

Rear

Unscrew the reservoir bolt and remove the plate. Remove the reservoir cap.

Connect transparent vinyl tube to the bleeder valve.

Loosen the bleeder valve on the caliper. Operate the brake lever/pedal and repeat until no fluid comes out from the tube.



• Brake fluid refill, air bleed



- Use DOT4 brake fluid for both front/rear brakes.
- Do not mix different products of brake fluid.

Note:

Monitor the fluid level in the reservoir and add brake fluid if necessary while servicing.

Tighten the bleeder valve and fill brake fluid to the maximum level.

Operate brake lever/pedal until all air bubbles go out (feel heavy on lever/pedal).

Connect the transparent vinyl tube to the caliper bleeder and place a container underneath.

1. Operate brake lever/pedal for a few times. Loosen the bleeder valve for ½ round while holding lever/pedal fully depressed, then tighten the valve.

Note:

Do not release lever/pedal until the bleeder valve is tightened.

2. Slowly release lever/pedal and leave for a few seconds in fully returned position.
3. Repeat the above procedure until no air comes out from the valve.

Tighten the bleeder valve.

Torque: 5N.m (0.55kgf-m)

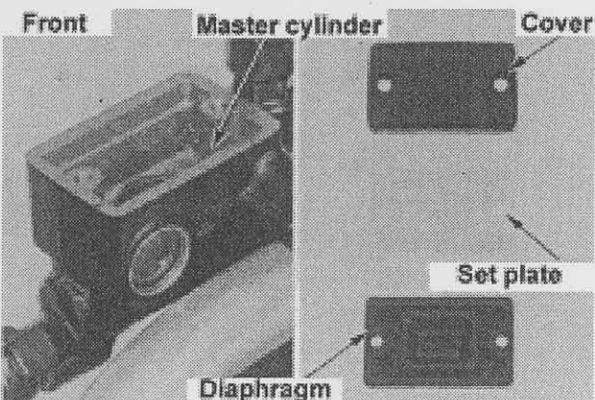
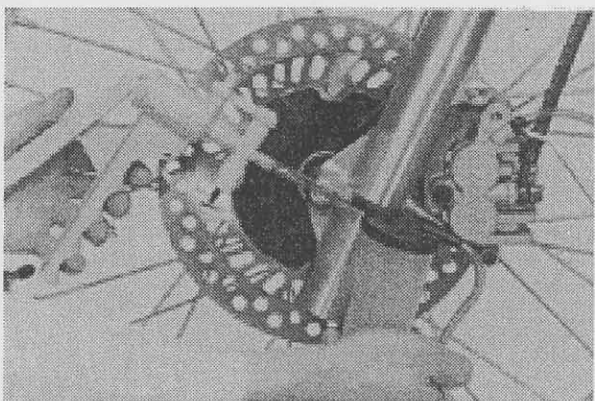
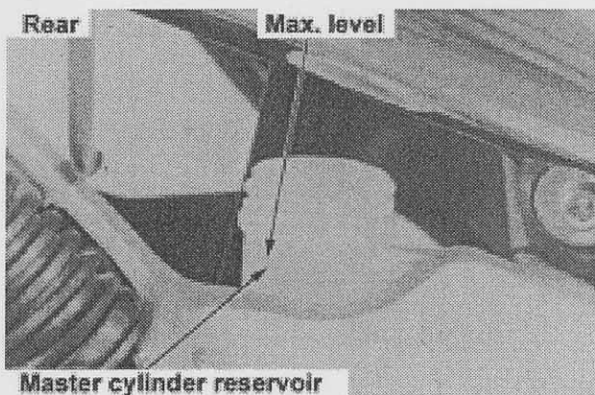
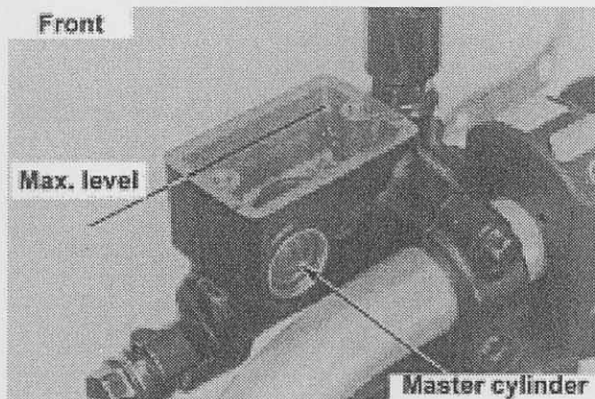
After bleeding air, refill brake fluid to maximum level and install the reservoir cap.

• Front

Install the diaphragm, set plate and reservoir cover.

Tighten screws.

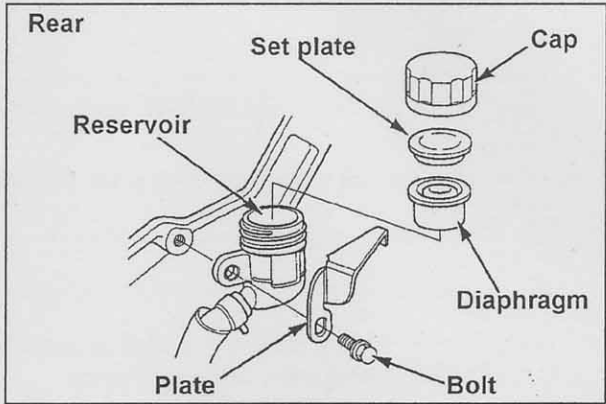
Torque: 2N.m (0.15kgf-m)



- **Rear**

Install diaphragm, set plate, and reservoir cap.

Install the plate and secure the reservoir bolt.

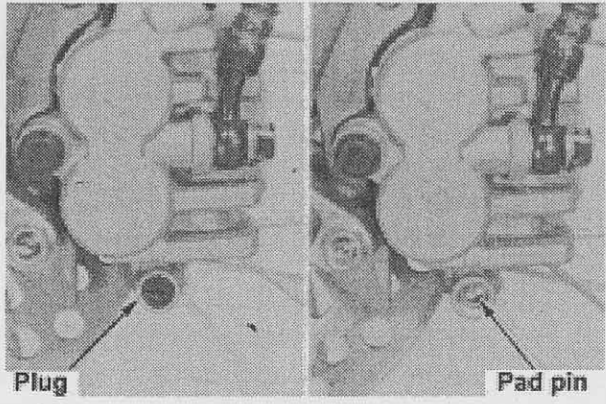


- **Brake pad and disc**

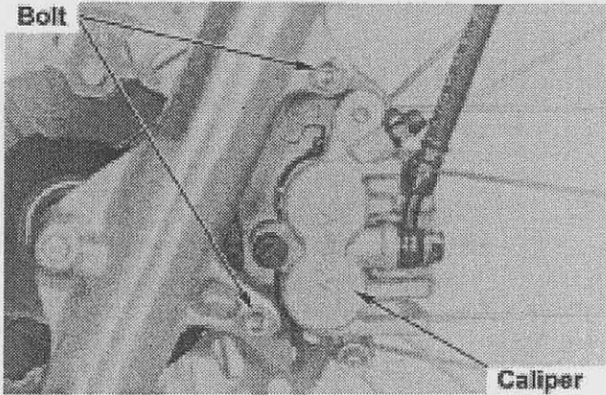
- **Front brake pad replacement**

Note:
Replace brake pads in a pair.

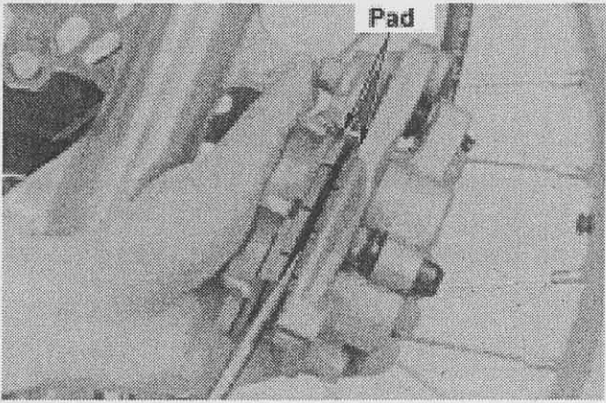
Unscrew the pad pin plug to loosen the pin.



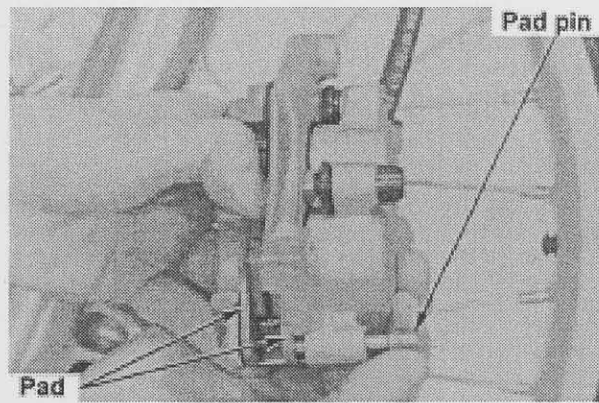
Unscrew the mount bolts to remove brake caliper.



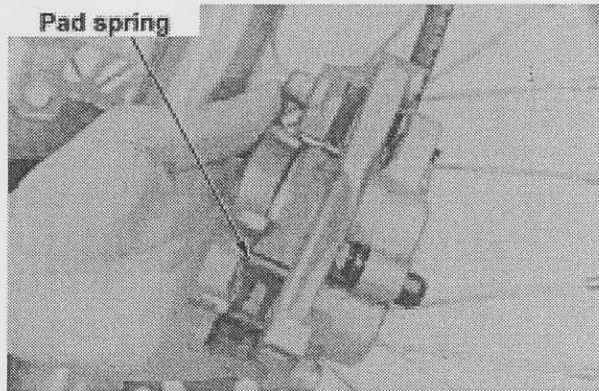
Press the old brake pads to the caliper piston and push the piston back to make it easy to install new brake pads.



Remove the pad pin to remove pads.

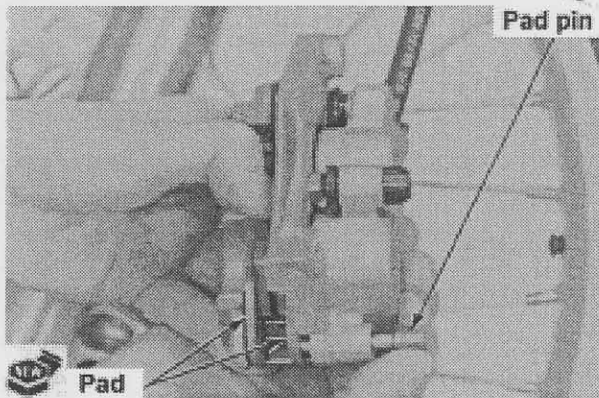


Clean around the caliper piston.
Check the pad spring is properly installed.



Align the top edge of the brake pads to the pad retainer to install the pads to the caliper.

Push the pads to the pad spring to align the caliper and pads pin holes to install the pad pin.

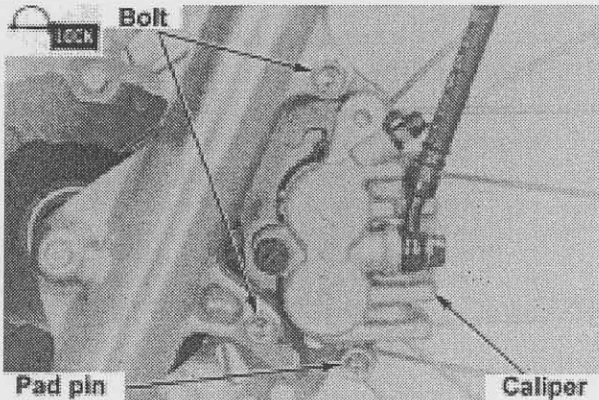


Clean the mount bolts and apply screw locker.
Install the front brake caliper and tighten mount bolts.

Torque: 30N.m (3.1kgf-m)

Tighten the pad pin

Torque: 18N.m (1.8kgf-m)

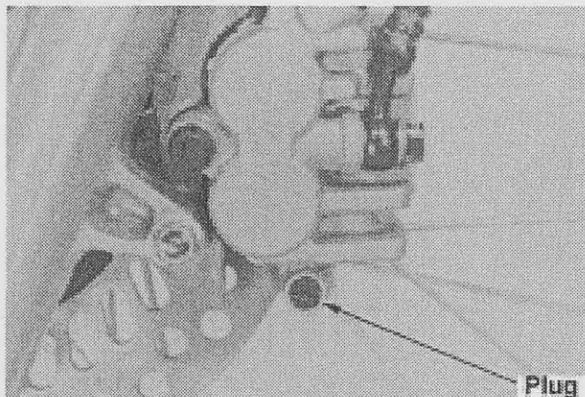


Install the pad pin plug and tighten.

Torque: 2N.m (0.25kgf-m)



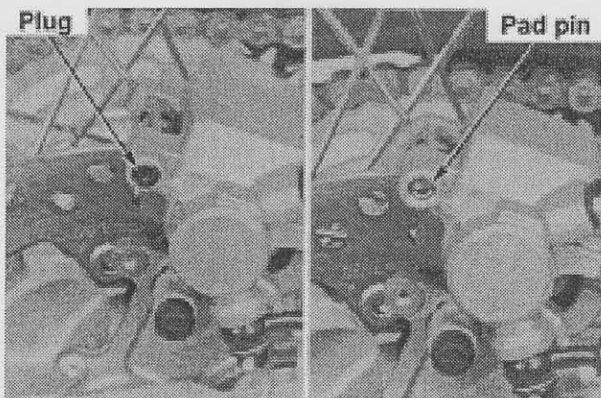
After replacing the brake pads, operate the brake lever to push out the piston.



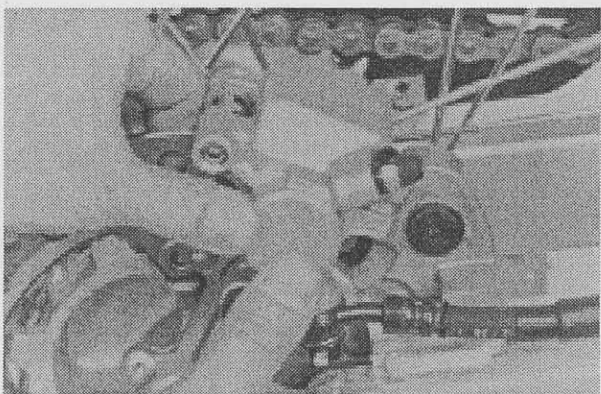
• **Rear brake pad replacement**

Note:
Replace the brake pads in a pair.

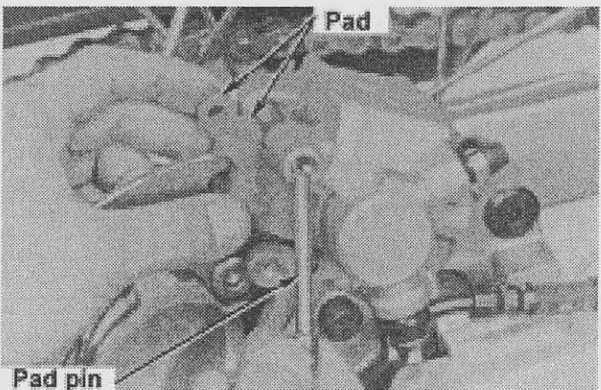
Remove the pad pin plug and loosen the pad pin.



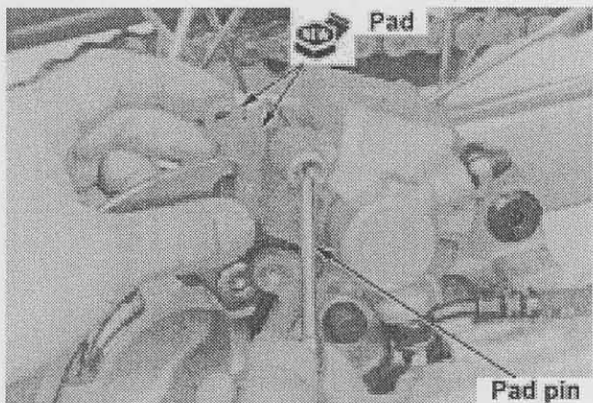
Push back the caliper piston to install new pads.



Remove the pad pin to remove brake pads. Check the pad spring is properly installed. Align top ends of the pads to the pad retainer, to install the pads to the caliper.



Press the brake pads to the pad spring and align the holes on the caliper and the pads to install the pad pin.

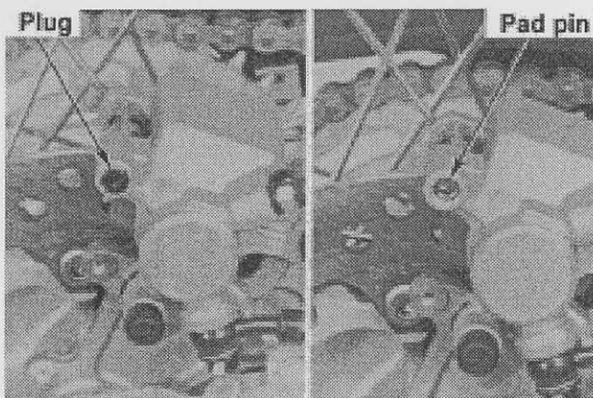


Tighten the pad pin.

Torque: 18N.m (1.8kgf-m)

Install/tighten the pad pin plug.

Torque: 2N.m (0.25kgf-m)



After replacing the pads, operate the brake pedal to push out the piston.

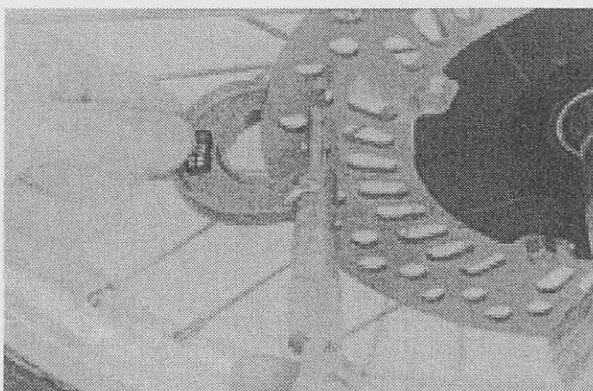
• Brake disc inspection

Measure the thickness of the brake disc.

Service limit: Front: 3.0mm
Rear: 4.0mm

Measure at a few different places and take the minimum value.

Replace the disc if the value is below the limit.

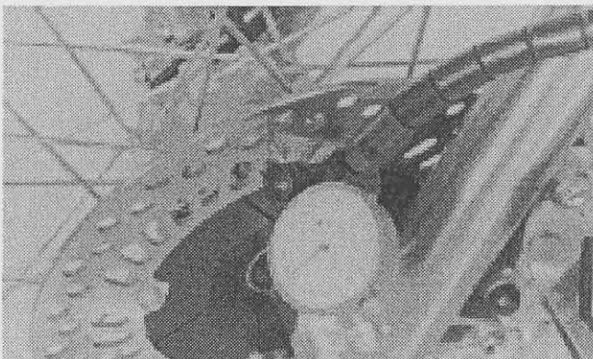


Measure the disc runout.

Service limit: Front: 0.3mm
Rear: 0.3mm

If the reading is beyond the above limits, inspect the wheel bearing.

Replace the disc if the bearing is OK.



- Front Brake Caliper

- Removal



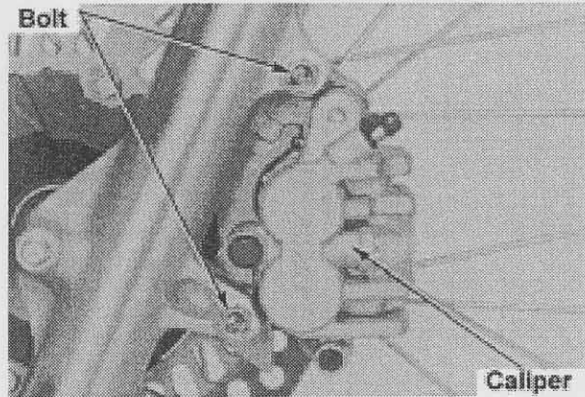
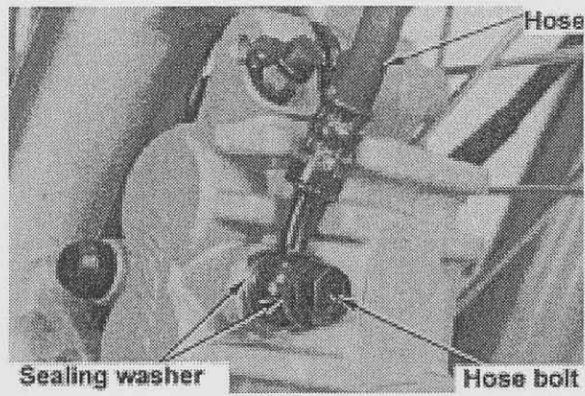
- Keep painted/plastic/rubber surfaces away from the brake fluid.
- Do not re-use the sealing washer.

Drain brake fluid (13-4).

Remove the brake hose bolt and the sealing washer to disconnect the brake hose.

Unscrew the caliper mount bolt to remove the caliper.

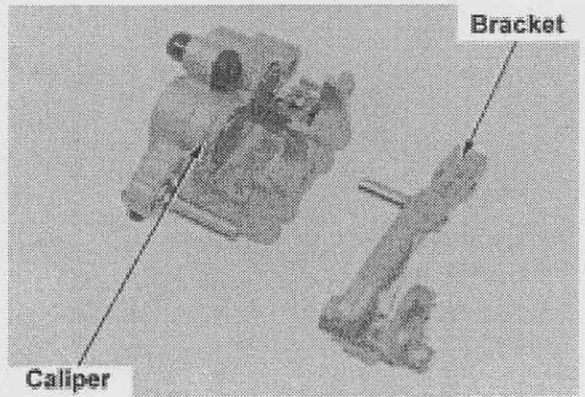
Remove brake pads (13-6).



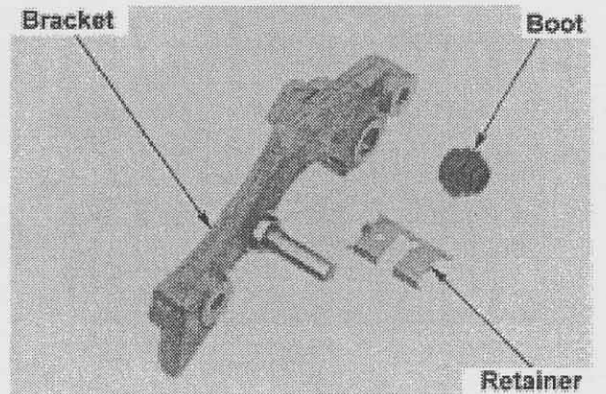
- Disassembly

Note:
Do not remove the bracket pin and a caliper pin unless they are to be replaced.

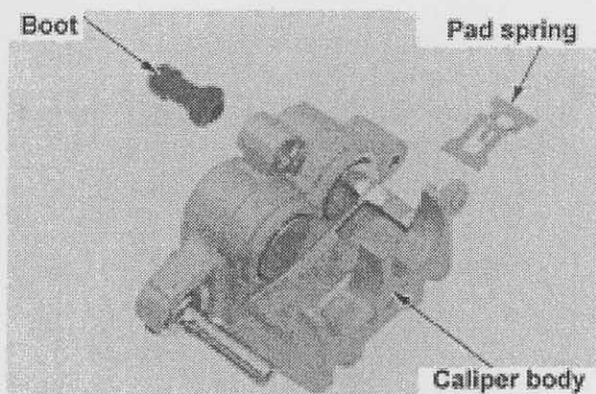
Remove the caliper bracket from the caliper.



Remove the caliper pin boot and a retainer from the bracket.

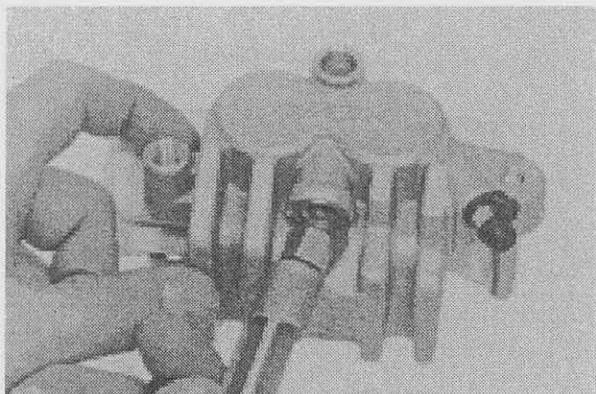


Remove the pad spring and a bracket pin boot from the caliper body.



Wrap the piston with a cloth to prevent both piston and brake fluid coming out, and turn the piston downwards.

Gradually apply low pressure air from the brake hose attachment to remove the piston from the caliper.



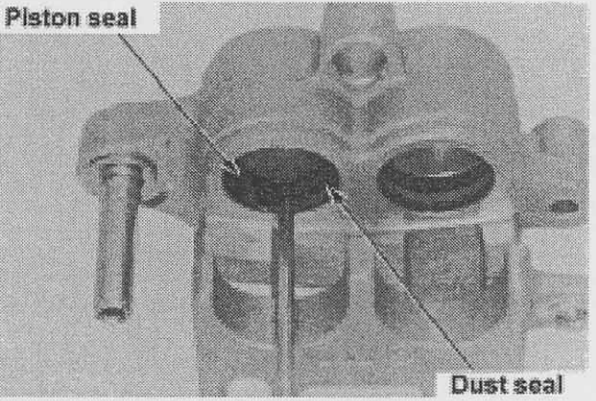
Warning

- Do not use highly compressed air and do not bring the air nozzle too close.
- Do not insert your hand inside the caliper.

Remove a piston seal and a dust seal.

Caution

Take care not to damage the interior surface of the caliper cylinder.



Clean the caliper cylinder/piston with brake fluid and remove dirt from grooves.

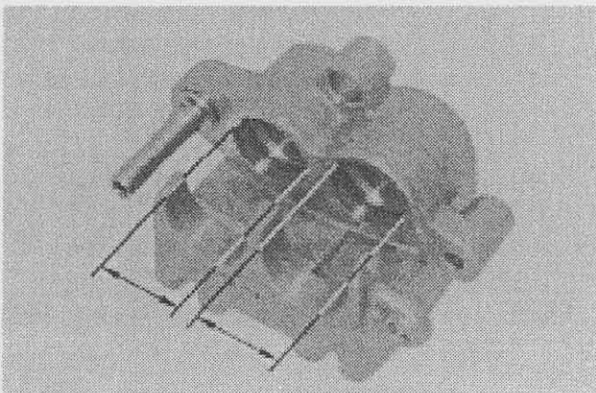
Notes:

- Clean all disassembled parts with brake fluid and check the passages with compressed air.
- Sort all disassembled parts in order and keep them away from dust/debris.

Inspection

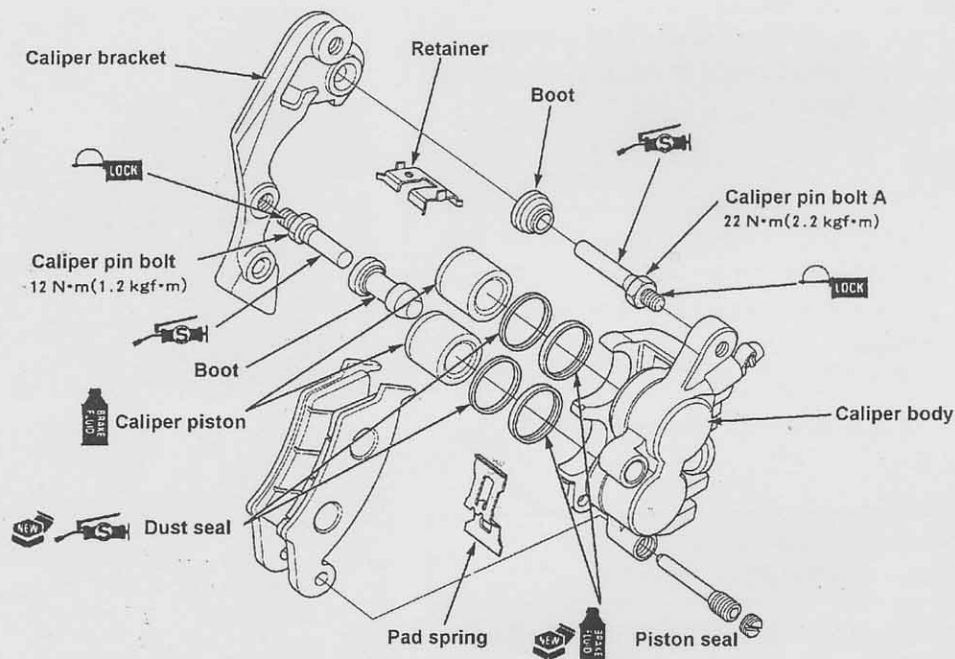
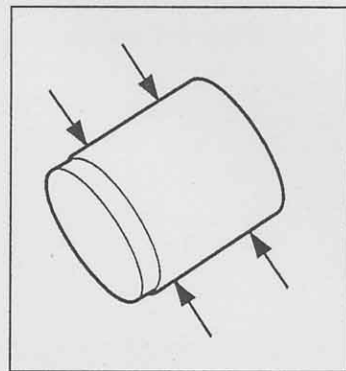
Piston, cylinder damage, scratch → replace.
Measure the cylinder bore.

Service limit: 25.460mm or above → replace.



Measure the external diameter of the piston.

Service limit: 25.310mm or less → replace.



Notes:

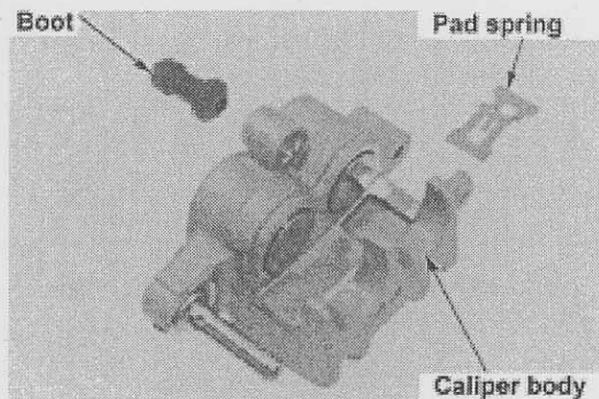
- Do not re-use drained brake fluid.
- Replace piston/dust seals with new ones.
- Replace the boot if it is worn/damaged.
- Apply silicone grease to the interior surface of the boot.
- Check all parts are free of dust/debris prior to assembling.

Apply brake fluid to the piston seals and set them into the seal grooves on the caliper cylinder.

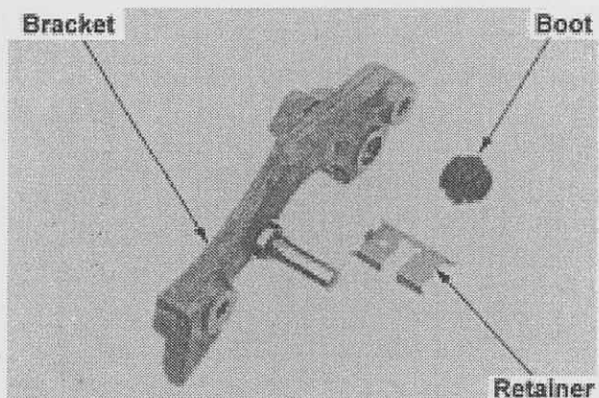
Apply silicone grease to the dust seals and set them to the seal grooves on the caliper cylinder.

Apply brake fluid to the piston and install it to the caliper cylinder.

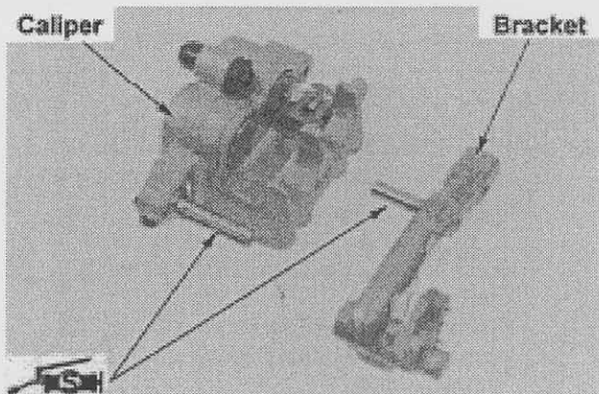
Install the pad spring to the caliper body.
Install the bracket pin boot to the caliper body.



Install the caliper pin boot and the retainer to the caliper bracket.



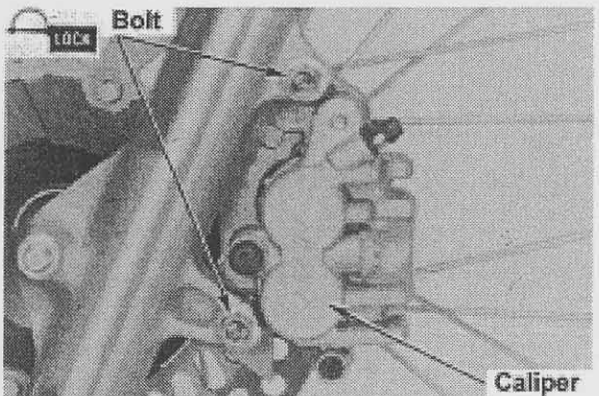
Apply silicone grease to pin bolts on each side and install the bracket to the caliper body.



• Installation

Clean the mount bolt and apply screw locker.
Install the front brake caliper to the fork and tighten bolts.

Torque: 30N.m (3.0kgf-m)



Connect the brake hose by pushing it to the stopper on the caliper body.

Note: Do not twist the hose.

Install new sealing washer and tighten the brake hose bolt.

Torque: 34N.m (3.5kgf-m)

Install brake pads (13-6)

Refill brake fluid and bleed air (13-5)

- **Front Master Cylinder**

- **Removal**



- Keep painted/plastic/rubber surfaces away from brake fluid.
- Do not re-use the sealing washer.

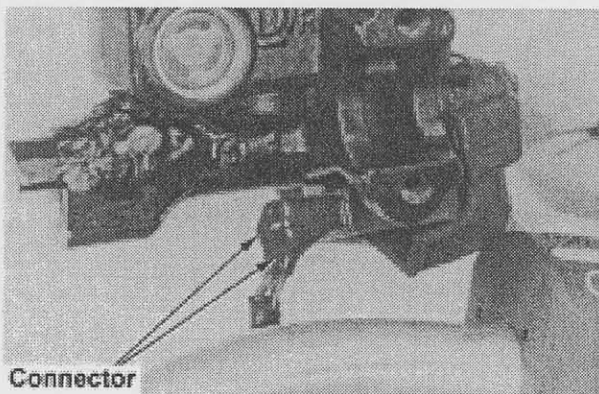
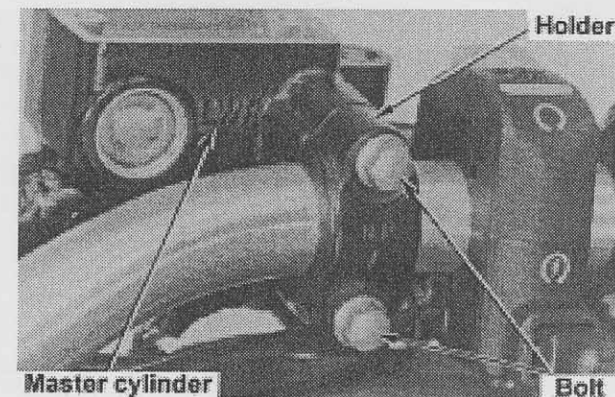
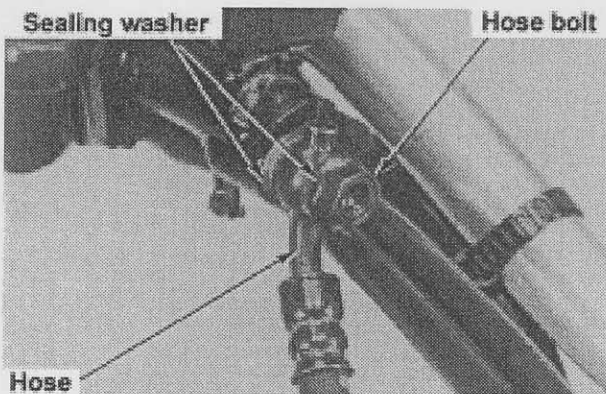
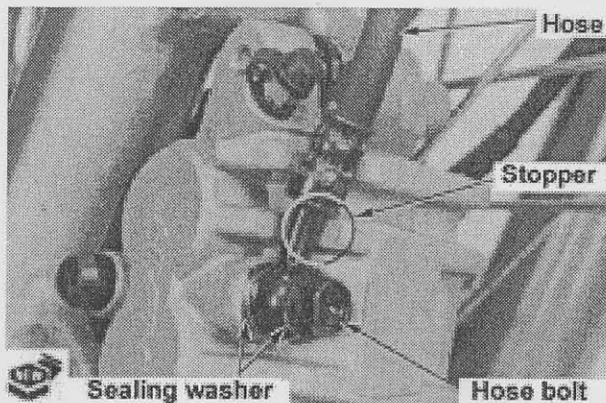
Drain brake fluid (13-4).

Remove rear view mirrors (11-3).

Remove a brake hose bolt and a sealing washer to disconnect the brake hose.

Note

Before unscrewing the bolt, mark the position of the master cylinder holder on the handlebar.



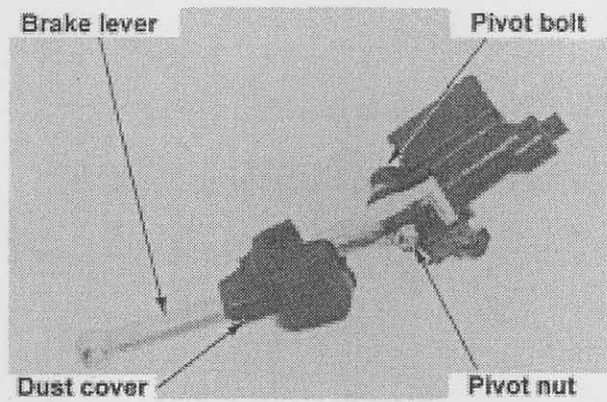
Unscrew the bolt to disconnect the master cylinder holder and the master cylinder from the handlebar.

Disconnect front brake lamp switch connectors.

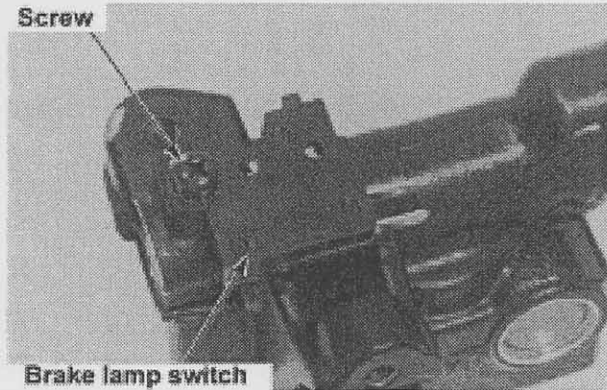
• Disassembly

Remove a dust cover.

Unscrew a pivot bolt/nut to remove the brake lever.



Unscrew to disconnect the front brake lamp switch.



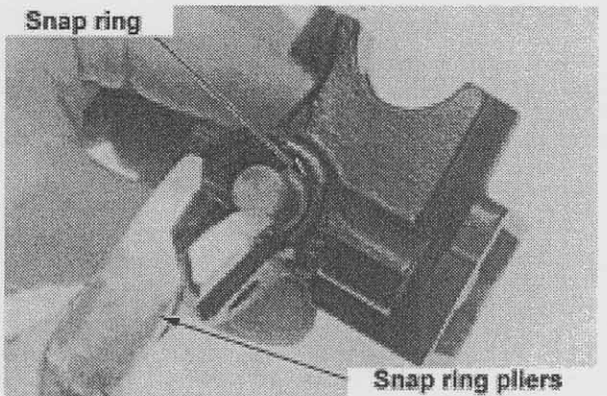
Remove the piston boot.

Remove a snap ring.

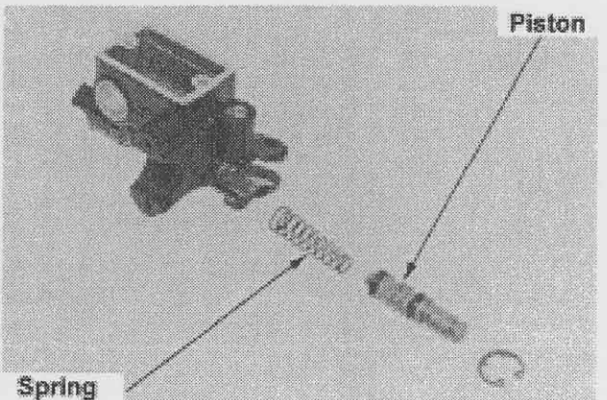
Special tool:

Snap ring pliers

07914-3230001



Remove the piston and the spring.



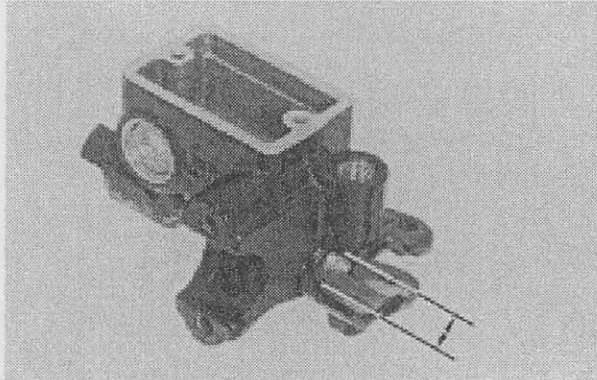
Notes:

- Clean all disassembled parts with brake fluid and check passages with compressed air.
- Sort all disassembled parts and keep away from debris/dust.
- Do not remove a piston cup from the piston. Replacement should be done in whole piston Assy.

- **Inspection**

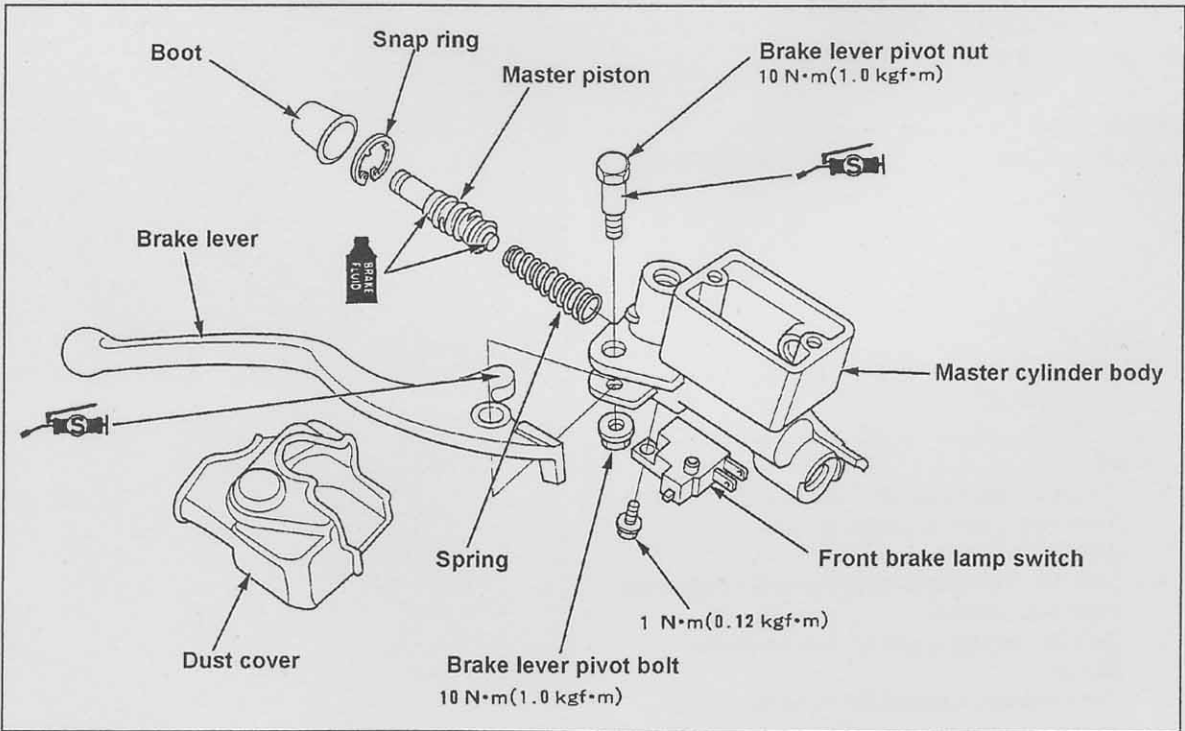
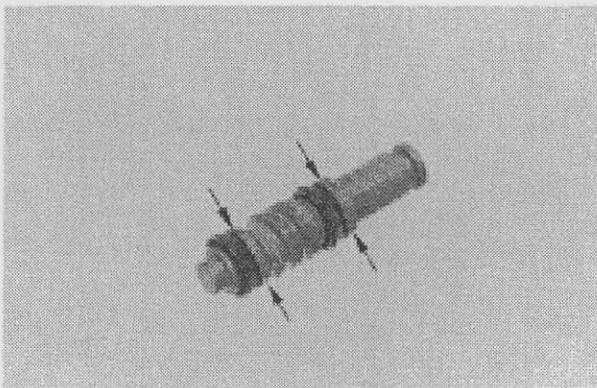
Piston and cylinder damage, scratch → replace
 Measure the cylinder bore.

Service limit: 12.755mm or above → replace



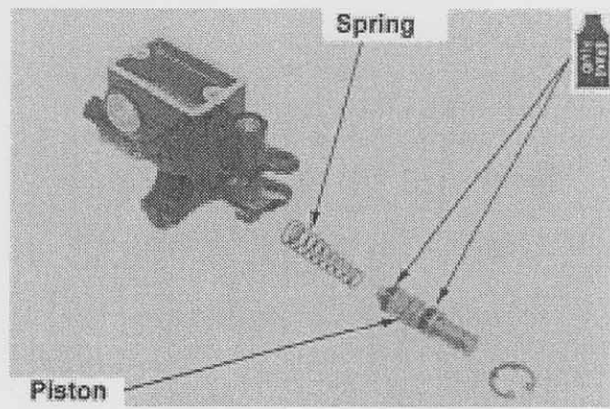
Measure the external diameter of the piston.

Service limit: 12.645mm or less → replace



Notes:

- Master piston Assy and the spring should be replaced at the same time.
- Replace the boot if it is worn/damaged.
- Apply silicone grease to the interior surface of the boot.
- Check all parts are free of dust/debris before assembling.



Apply brake fluid to the piston cup on the piston.
Install the spring to the piston.
Install piston Assy / spring to the master cylinder.



Do not peel the lip of the piston cup.

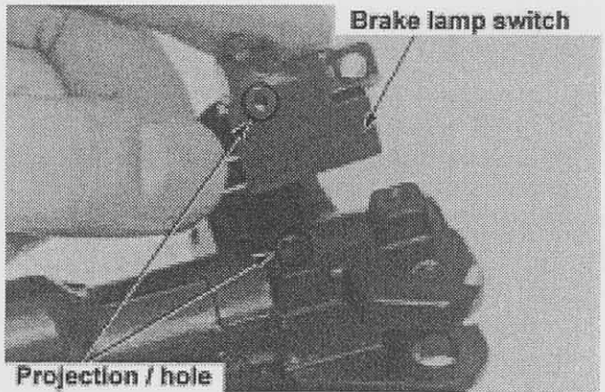
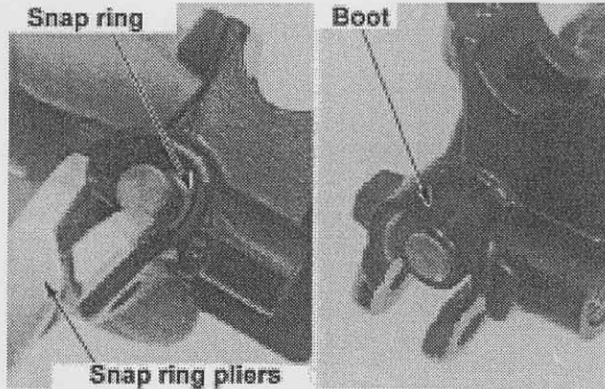
Install the snap ring to the groove on the master cylinder.

Special tool:

Snap ring plier 07914-3230001

Install the boot.

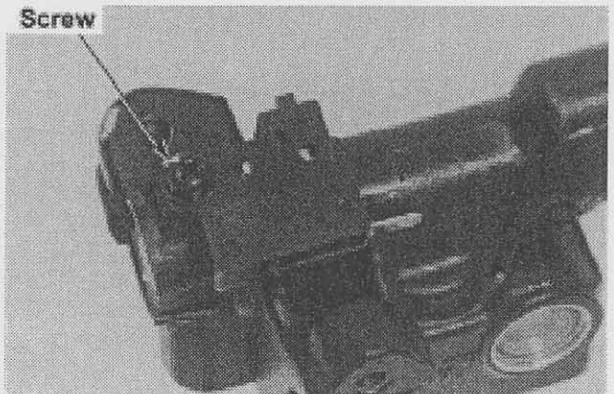
Note:
Round cornered surface should face inwards.



Install the front brake lamp switch by setting its projection to the hole on the master cylinder.

Install / tighten the front brake lamp switch cover.

Torque: 1N.m (0.12kgf-m)



Install the brake lever.
Apply silicone grease to the brake lever pivot.
Tighten the brake lever pivot bolt.

Torque: 10N.m (1.0kgf-m)

Tighten the front brake lever pivot nut.

Torque: 10N.m (1.0kgf-m)

Install the dust cover.

• Installation

Connect the brake lamp switch connector.

Install the master cylinder and its holder to the handlebar with the holder "UP" mark facing upwards.

Align the holder to the mark which was marked when removing the holder from the handlebar.

Tighten the top bolt first.

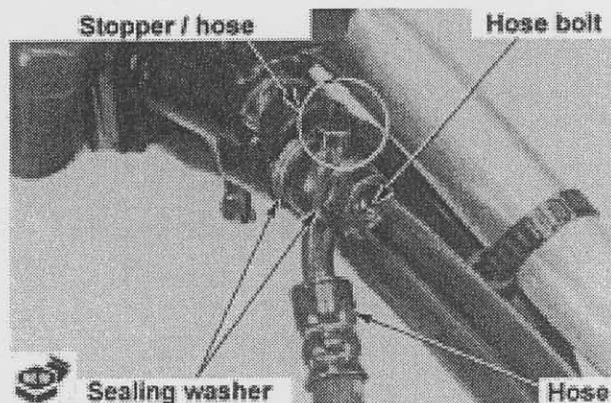
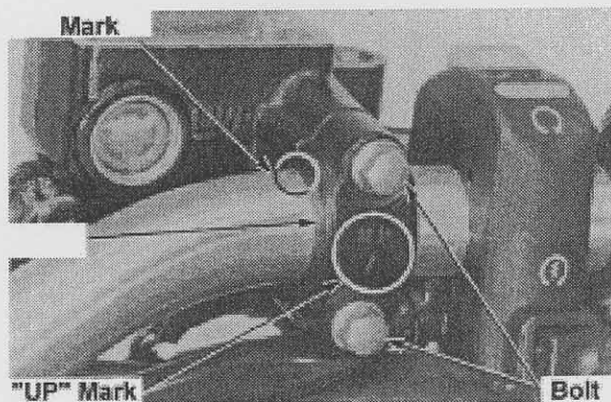
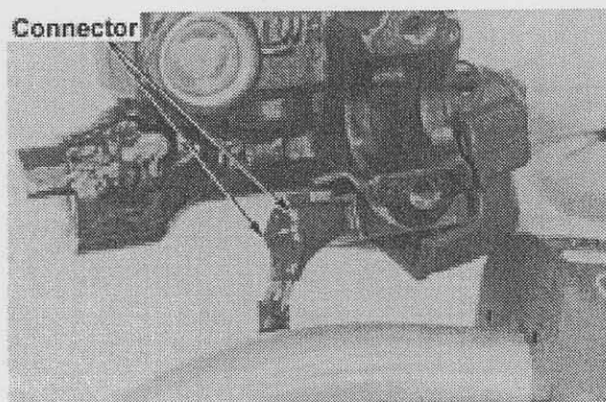
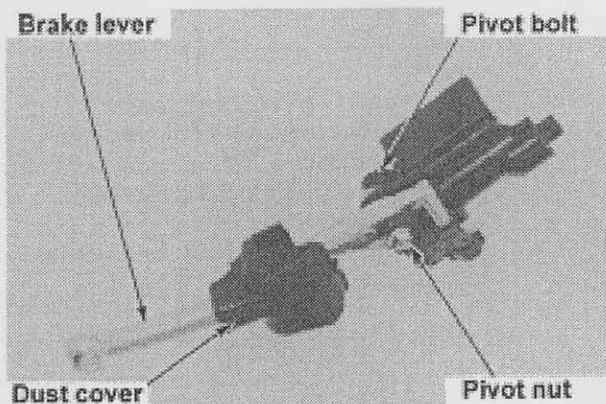
Connect the brake hose to the master cylinder with a new sealing washer and the brake hose bolt and tighten the bolt.

Torque: 34N.m (3.5kgf-m)

Note:

The brake hose should be stopped at the stopper on the master cylinder.

Install rear/view mirrors (11-8).
Refill brake fluid and bleed air (13-5).



- Rear brake caliper

- Removal

Notes:

- Keep painted/plastic/rubber surfaces away from brake fluid.
- Do not re-use the sealing washer.

Drain brake fluid (13-4).

Remove the brake pads (13-8).

Remove the rear wheel (12-3).

Remove the rear brake caliper from the swing arm.

Unscrew the brake hose bolt and remove a sealing washer to disconnect the brake hose.

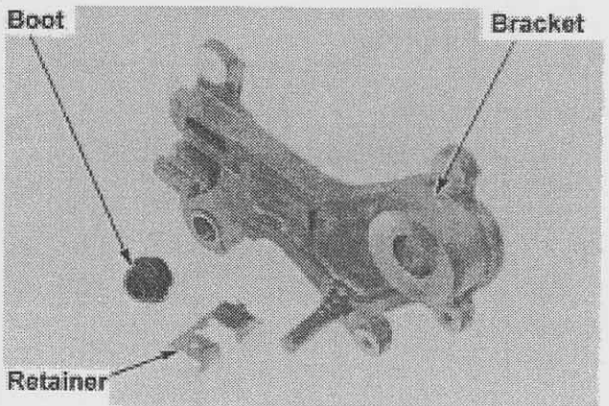
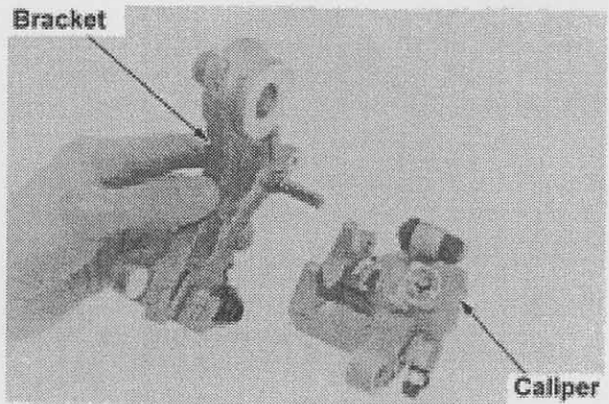
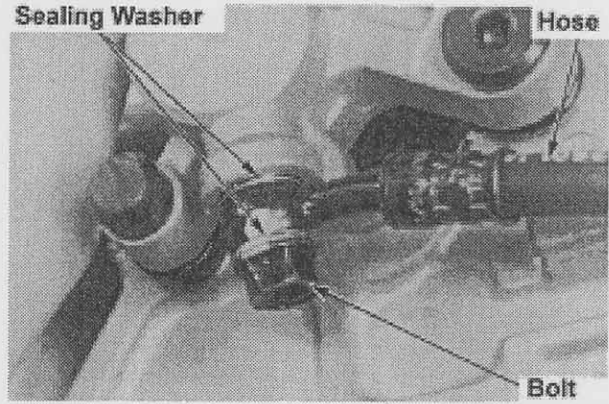
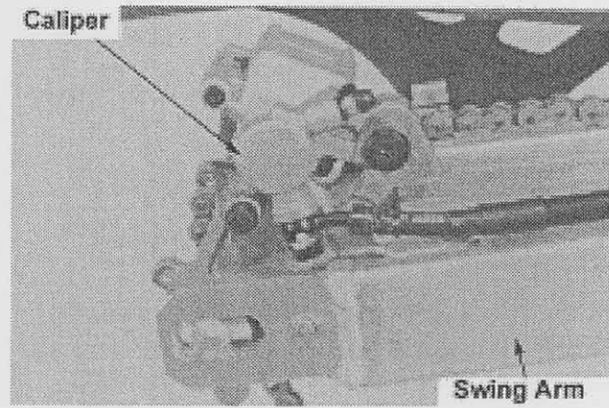
- Disassembly

Note:

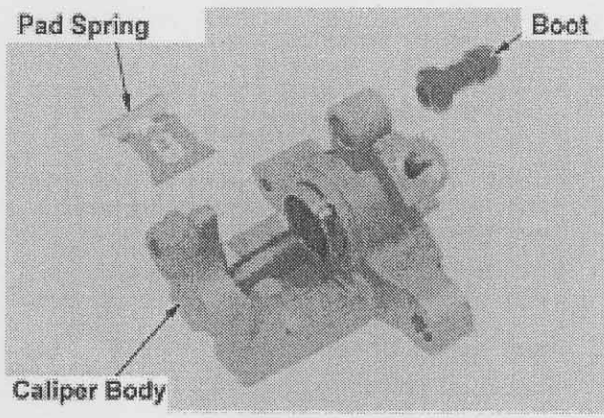
Do not remove bracket / caliper pins unless replacing them.

Remove the caliper bracket from the caliper.

Remove the caliper pin boot and a retainer from the bracket.



Remove the pad spring and a bracket pin boot from the caliper body.

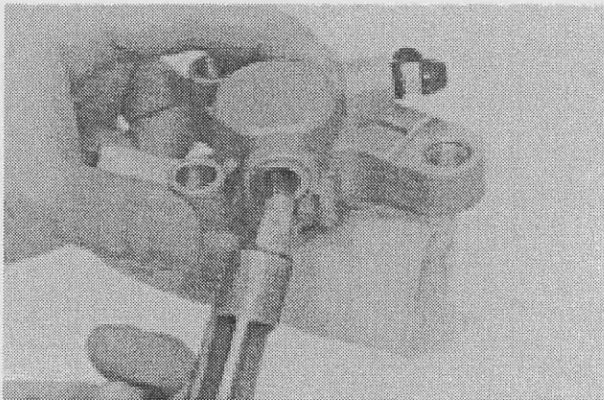


Wrap the piston with a cloth to prevent the piston and brake fluid coming out and turn it downwards.

Gradually apply low pressure air from the brake hose attachment and remove the piston from the caliper.

Warning

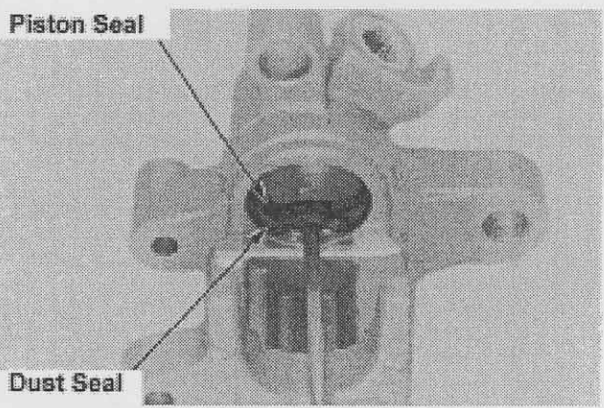
- Do not use highly compressed air or bring the nozzle close.
- Do not put your hand inside the caliper.



Remove a piston seal and a dust seal.

Caution

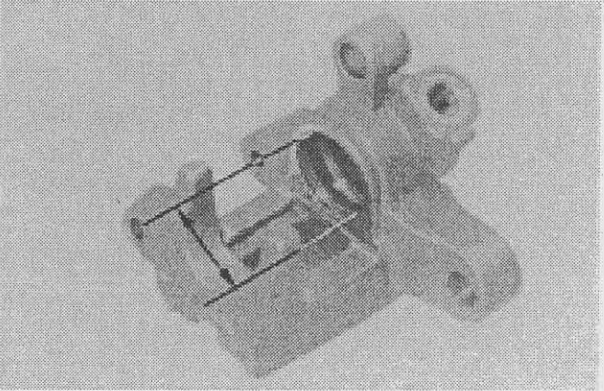
Do not damage the interior surface of the caliper.



Clean the caliper cylinder/piston with clean brake fluid and remove contamination from the grooves.

Notes:

- Clean all disassembled parts with brake fluid and check their passages by using compressed air.
- Sort all parts and keep away from dust/debris.



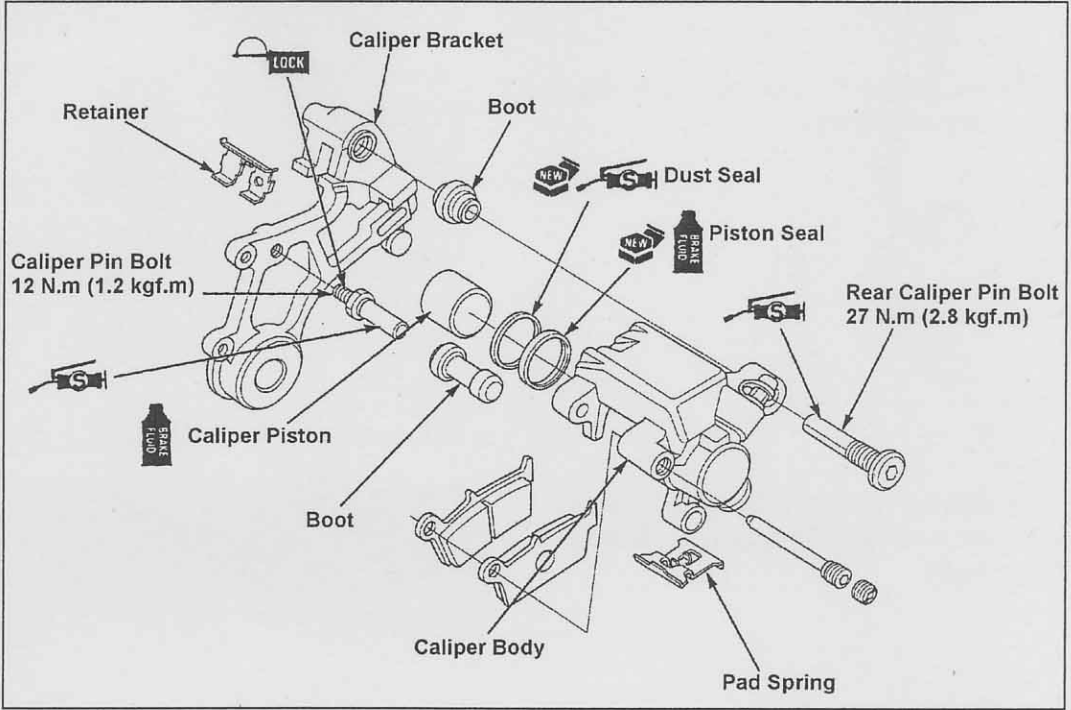
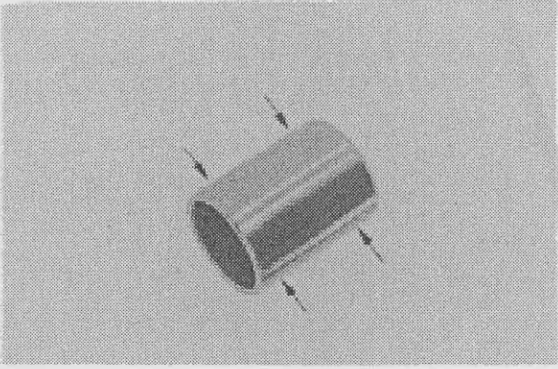
Inspection

Piston, cylinder damaged / scratched → replace.
Measure the cylinder bore.

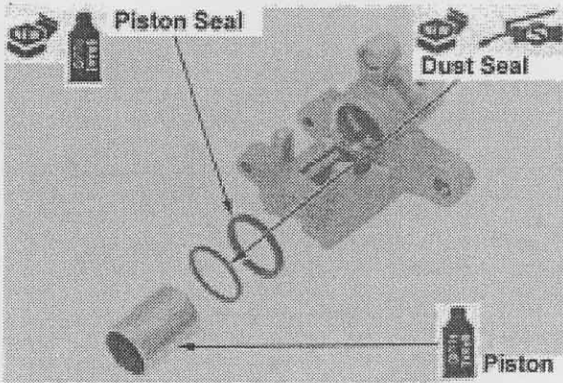
Service limit: 27.060mm or above → replace.

Measure the external diameter of the piston.

Service limit: 26.910mm or less → replace

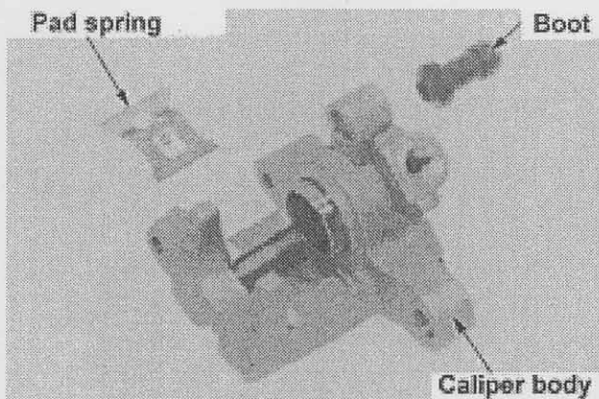


- Notes:**
- Do not re-use drained brake fluid.
 - Replace a piston seal and a dust seal with new ones.
 - Replace boots if they are worn.
 - Apply silicone grease to the boot interior surfaces.
 - Check all parts are clean before assembly.

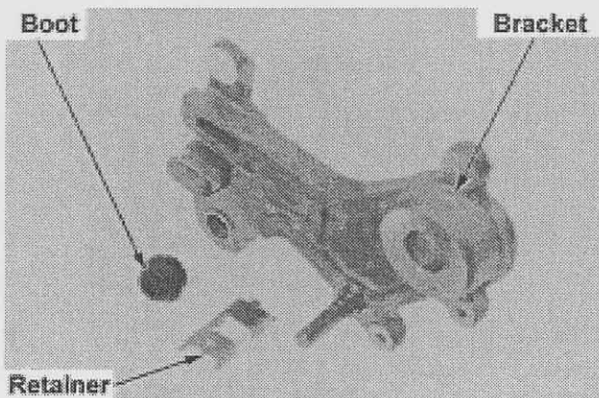


Apply brake fluid to the piston seal and install it to the seal slit on the caliper cylinder.
Apply silicone grease to the dust seal and install it to the seal slit on the caliper cylinder.
Apply brake fluid to the piston and install the piston to the caliper cylinder, setting its open end to the pad side.

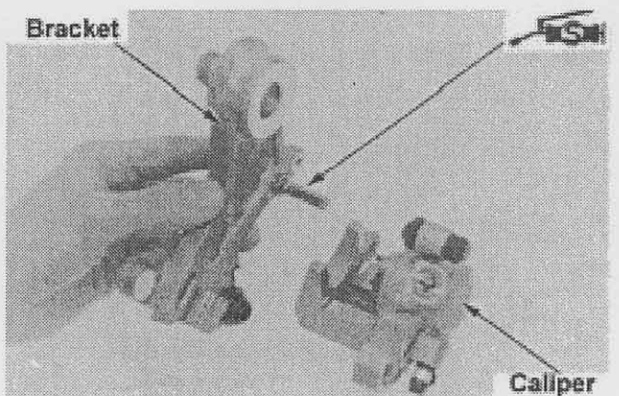
Install the pad spring to the caliper body.
Install the bracket pin boot to the caliper body.



Install the caliper pin boot and the retainer to the caliper bracket.



Apply silicone grease to the pin bolts on each side and install the bracket to the caliper body.

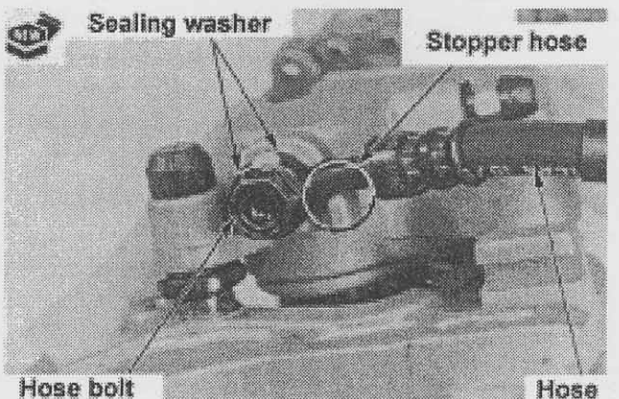


Connect a brake hose by pushing it to the stopper on the caliper body.



Do not twist the brake hose.

Install new sealing washers and tighten the brake hose bolt.



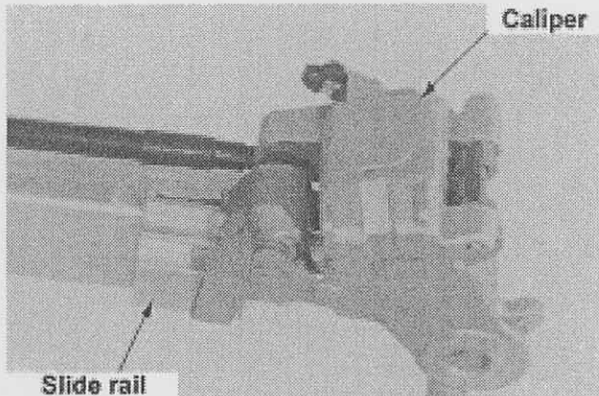
Torque: 34N.m (3.5kgf-m)

Set the rear caliper to the slide rail on the swing arm.

Install the rear wheel (12-8).

Install brake pads (13-8).

Fill brake fluid and bleed air (13-5).



• Rear Master Cylinder

• Removal



- Keep painted, plastic and rubber surfaces away from brake fluid.
- Do not re-use the sealing washer.

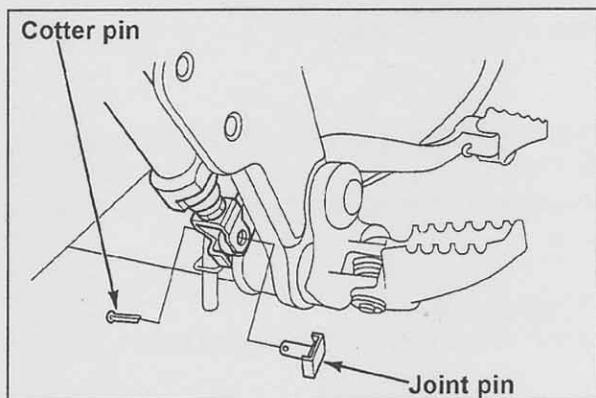
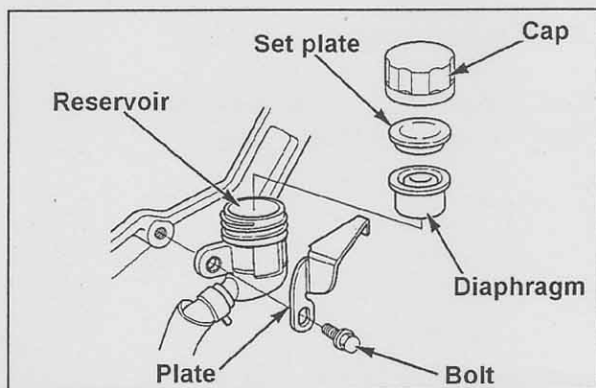
Unscrew the reservoir bolt and remove the plate.

Remove the reservoir cap.

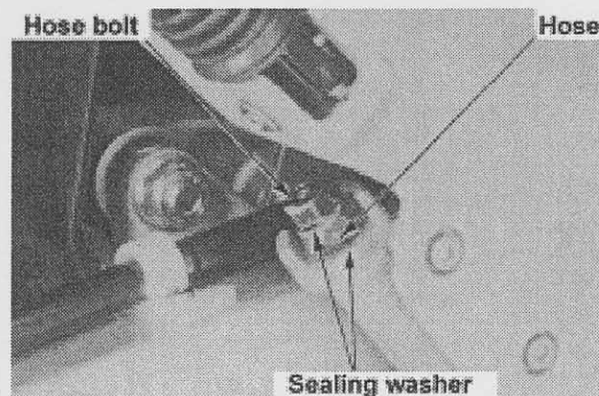
Drain brake fluid (13-4).

Remove the following parts:

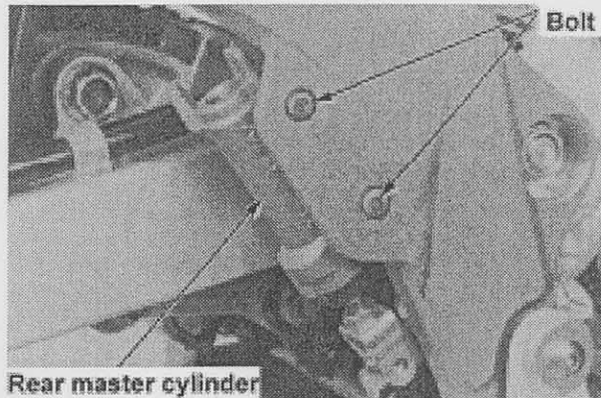
- Cotter pin
- Joint pin



- Brake hose bolt
- Sealing washer
- Brake hose

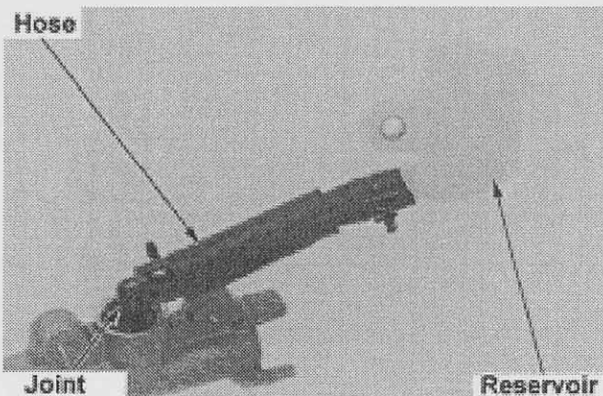


Unscrew bolts to remove the rear motor cylinder Assy.

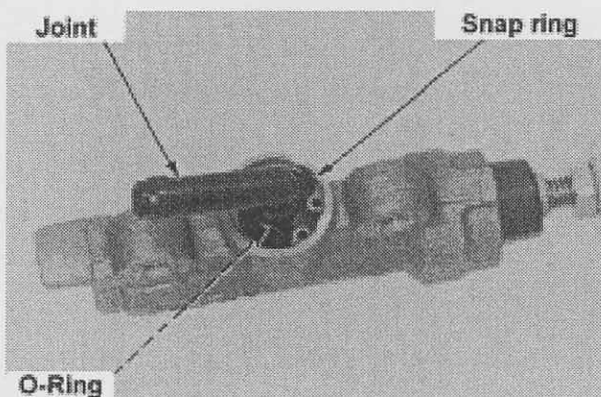


• Disassembly

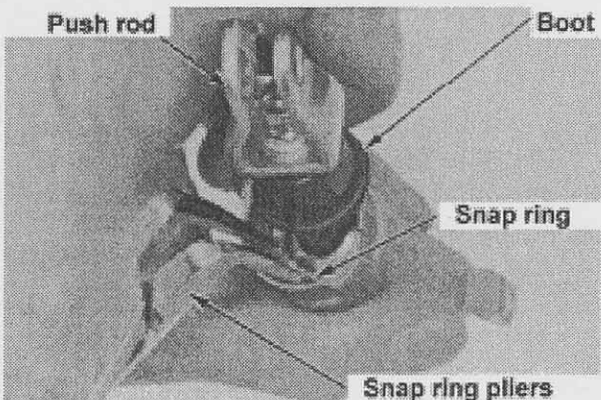
Disconnect the hose and the reservoir from the reservoir hose joint.



Remove the snap ring and remove the reservoir hose joint and the O-Ring from the master cylinder.



Remove the piston boot from the master cylinder.
Remove the snap ring to remove the push rod.



Special tool:

Snap ring pliers 07914-3230001

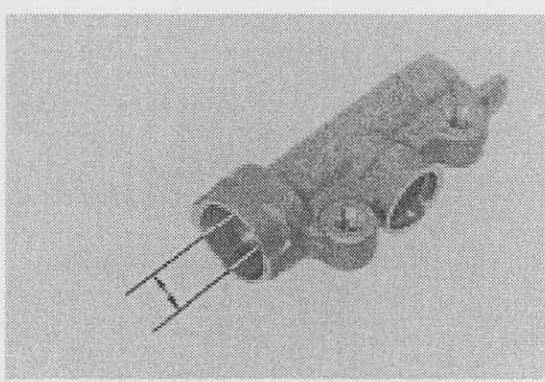
Remove the piston and the spring.

- Clean all disassembled parts with brake fluid and check air passage with compressed air.
- Sort and store all parts. Keep them away from dust or debris.
- Do not remove a piston cup from the piston. Replace the piston Assy if necessary.

- **Inspection**

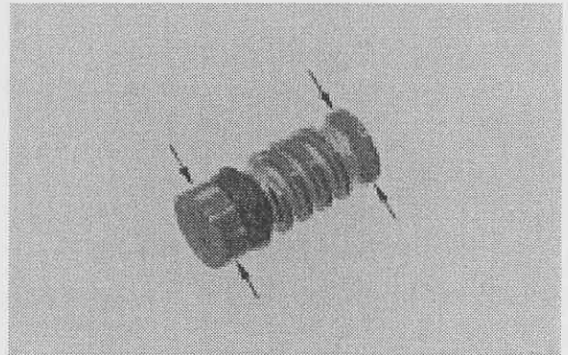
Scratch / damage on piston / cylinder → replace.
Measure the cylinder bore.

Service limit: 14.055mm or above → replace.

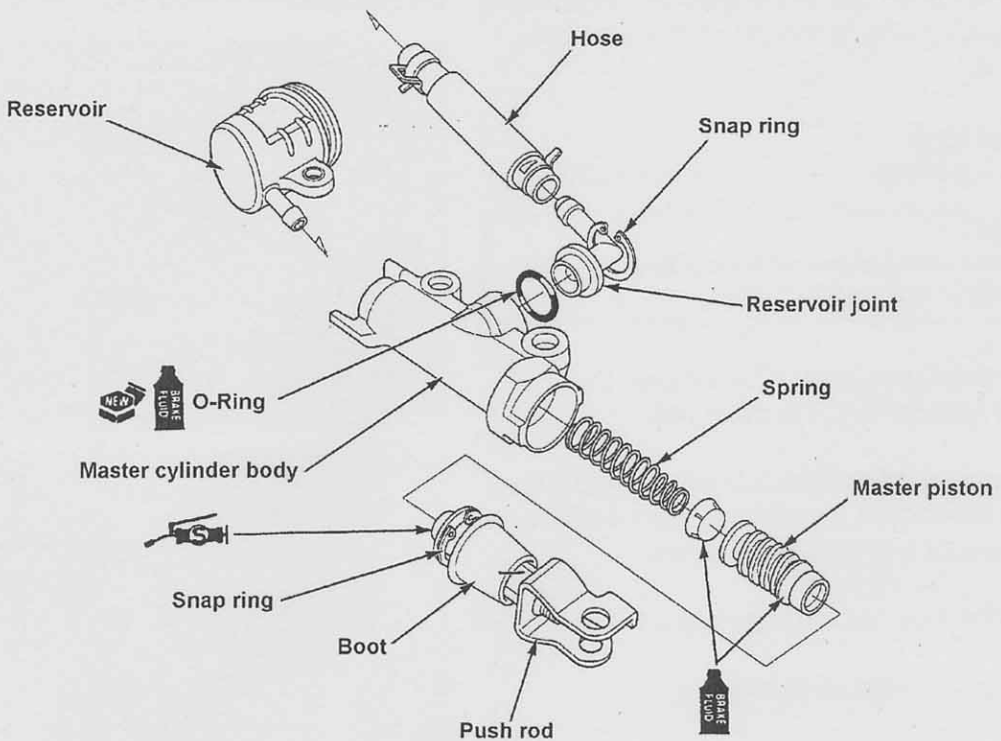


Measure the piston external diameter.

Service limit: 13.945mm or less → replace.



- **Assembly**



Notes:

- Replace the master piston Assy and the spring together.
- Replace a boot if it is worn.
- Apply silicone grease to the boot interior surface.
- Check all parts are clean before assembly.

Apply brake fluid to the piston cup on the piston.
Install the spring to the piston cup.
Install the piston Assy / spring to the master cylinder.



Do not peel the piston cup lip.

Apply silicone grease to the piston contact area on the push rod.

Install the push rod to the master cylinder and set the snap ring to the slit on the master cylinder.

Special tool:

Snap ring pliers

07914-3230001

Note:

Set the round-cornered side of the snap ring to inside and set it to the slit.

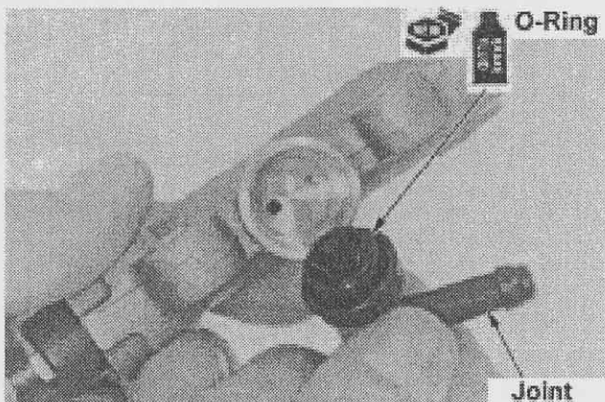
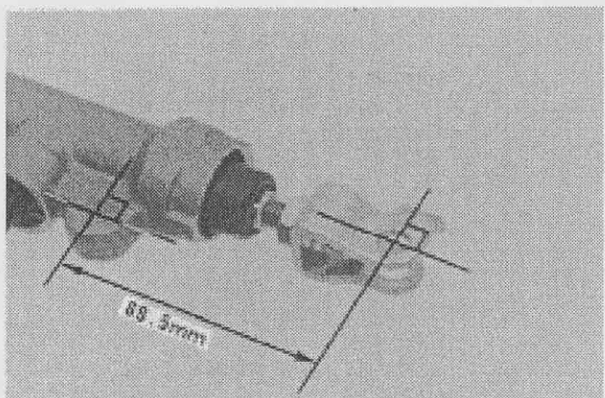
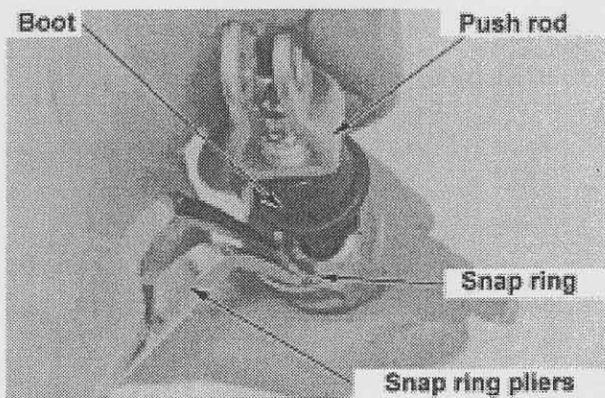
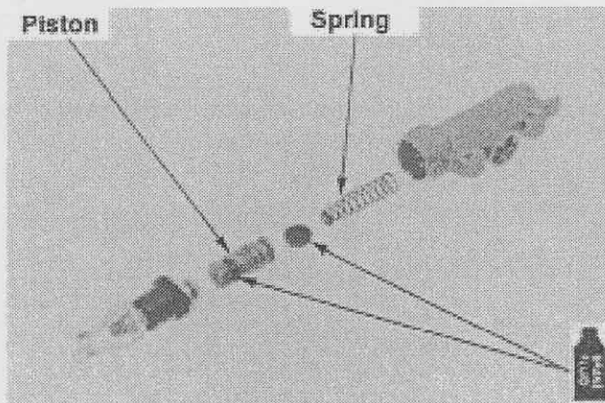
Install the piston boot to the slits on the master cylinder and the push rod.

If the push rod joint was removed, adjust the distance between the joint pin hole and the lower mount bolt hole to 69.5mm.

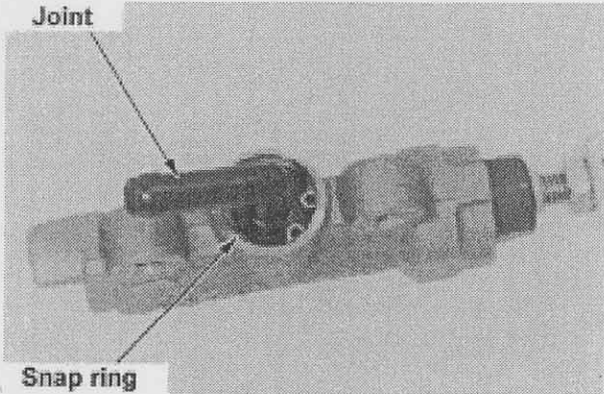
Screw the lock nut after the adjustment.

Torque: 18N.m (1.8kgf-m)

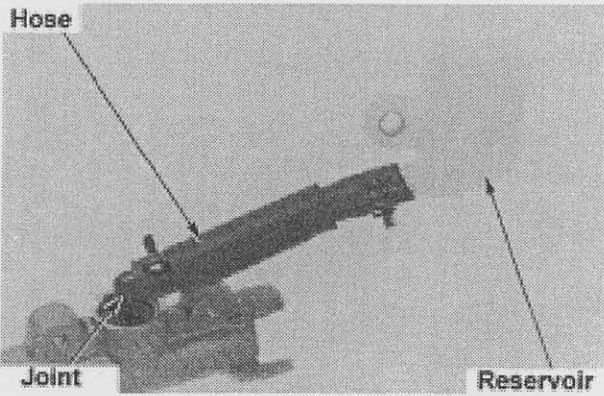
Apply brake fluid to the new O-Ring and set it to the reservoir hose joint.



Connect the reservoir hose joint to the master cylinder and install the snap ring to the slit on the master cylinder.



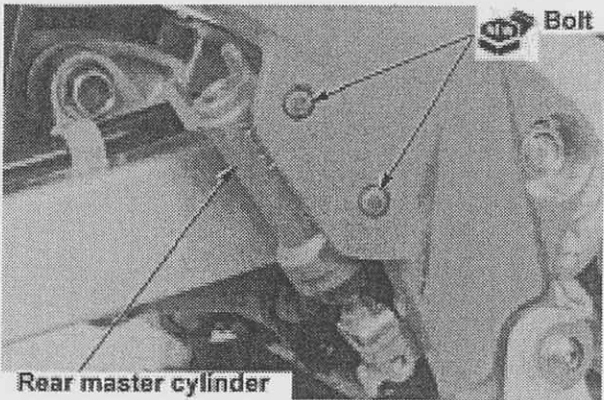
Connect the hose and the reservoir to the reservoir hose joint.



• Installation

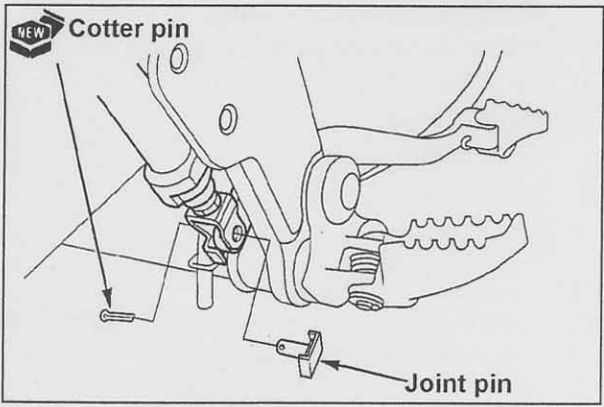
Install the rear master cylinder and screw the new holder bolt.

Torque: 14N.m (1.4kgf-m)



Install the following parts:

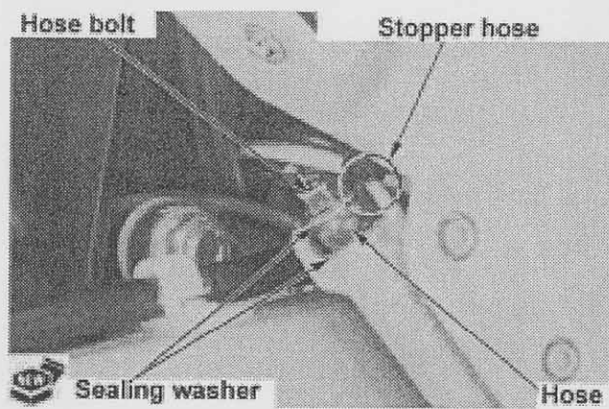
- Joint pin
- New cotter pin



Connect the brake hose to the master cylinder with new sealing washers and the brake hose bolt.

Torque: 34N.m (3.5kgf-m)

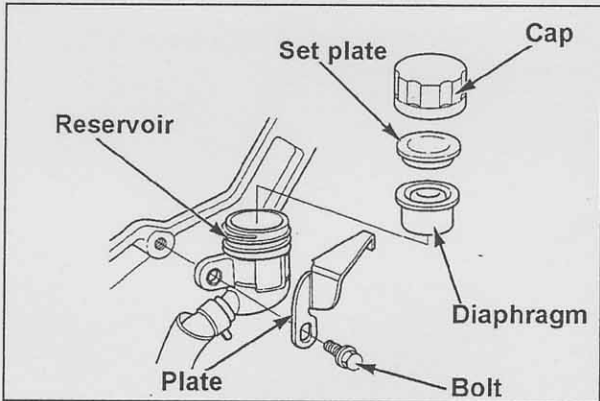
Note:
Press the hose to the stopper on the master cylinder.



Fill brake fluid and bleed air (13-5).

Install the diaphragm, set plate and the reservoir cap.

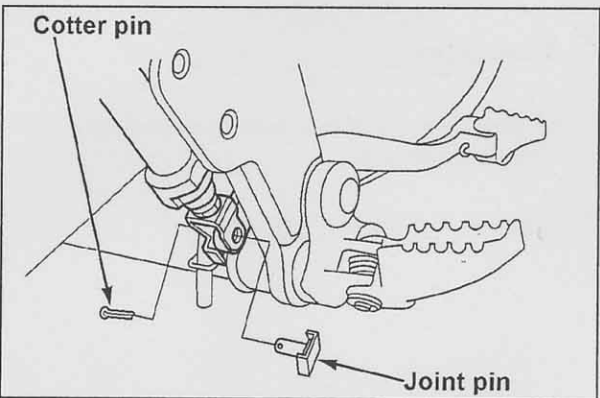
Install the plate and screw the reservoir bolt.



• **Brake Pedal**

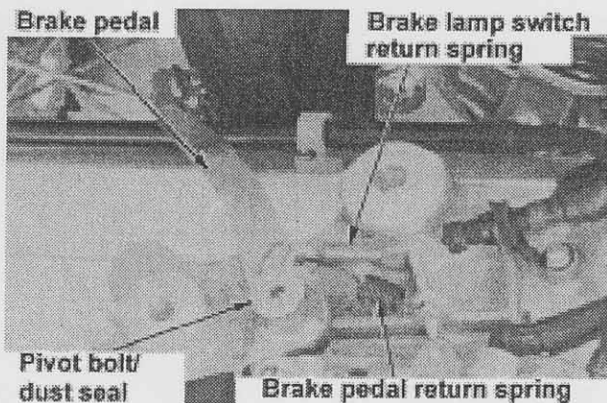
• **Removal**

Remove a cotter pin to remove a joint pin.
Remove a right step holder (9-3).



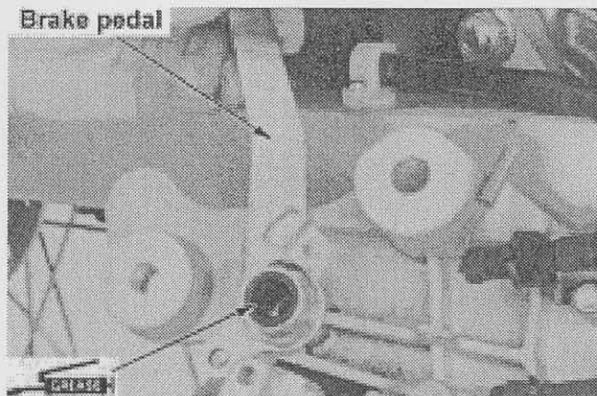
Remove the following parts:

- Brake pedal return spring
- Brake lamp switch return spring
- Pivot bolt
- Brake pedal
- Dust seal



- **Installation**

Apply grease to the pivot of the pedal and install it in a reverse order of removal procedure.



Clean the brake pedal pivot bolt and apply screw locker.
Tighten the pivot bolt.

Torque: 34N.m (3.5kgf-m)

