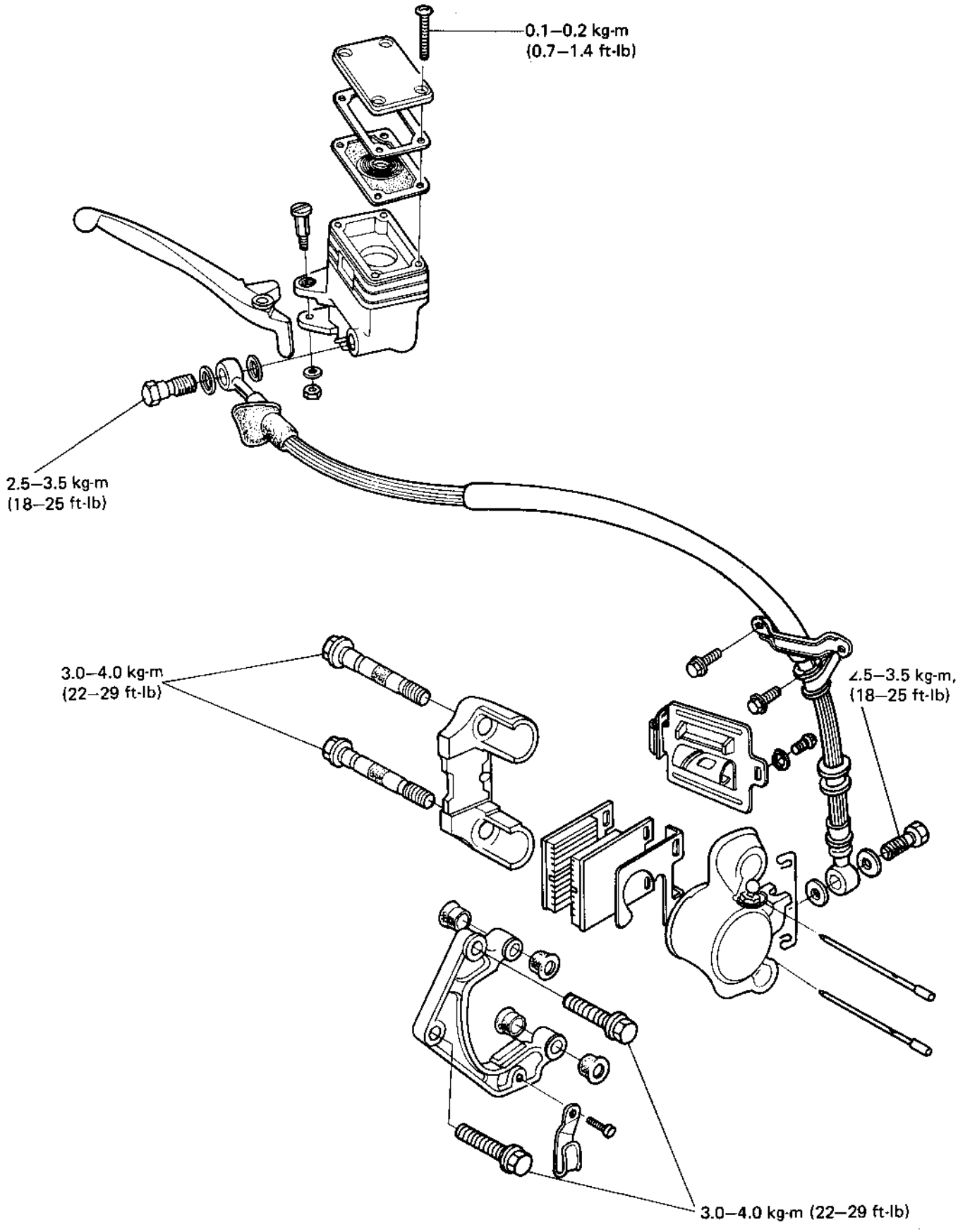

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15. HYDRAULIC BRAKE

SERVICE INFORMATION

GENERAL INFORMATION

- The front brake can be removed without disconnecting the hydraulic system. Once the hydraulic systems have been opened, or if the brakes feel spongy, the system must be bled.
- Do not allow foreign material to enter the system when filling the reservoir.
- Avoid spilling brake fluid on painted surfaces or instrument lenses, as severe damage will result.
- Always check brake operation before riding the motorcycle.

SPECIAL TOOLS

Special tool	
Snap Ring Pliers	07914–3230001

TORQUE VALUES

Brake hose bolt	2.5–3.5 kg-m (18–25 ft-lb)
Front brake caliper carrier	3.0–4.0 kg-m (22–29 ft-lb)
Front brake caliper A	3.0–4.0 kg-m (22–29 ft-lb)

SPECIFICATIONS

ITEM	STANDARD	SERVICE LIMIT
Disc thickness	6.9–7.1 mm (0.27–0.28 in)	6.0 mm (0.24 in)
Disc runout	———	0.3 mm (0.01 in)
Front master cylinder I.D.	14.000–14.043 mm (0.5512–0.5529 in)	14.055 mm (0.5533 in)
Front master piston O.D.	13.957–13.984 mm (0.5495–0.5506 in)	13.945 mm (0.5490 in)
Front caliper piston O.D.	42.772–42.822 mm (1.6839–1.6859 in)	42.765 mm (1.6837 in)
Front caliper cylinder I.D.	42.850–42.950 mm (1.6870–1.6909 in)	42.915 mm (1.6896 in)

TROUBLESHOOTING

Brake lever soft or spongy
1. Air bubbles in hydraulic system
2. Low fluid level
3. Hydraulic system leaking

Brake lever too hard
1. Sticking piston(s)
2. Clogged hydraulic system
3. Pads glazed or worn excessively

Brakes drag
1. Hydraulic system sticking
2. Incorrect adjustment of lever
3. Sticking piston(s)

Brakes grab or pull to one side
1. Pads contaminated
2. Disc or wheel misaligned

Brakes chatter or squeal
1. Pads contaminated
2. Excessive disc runout
3. Caliper installed incorrectly
4. Disc or wheel misaligned

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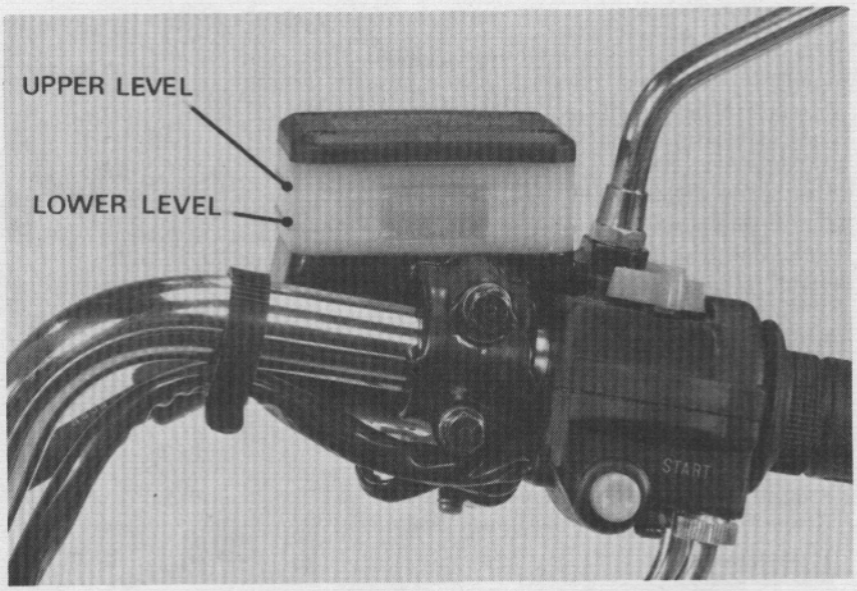
BRAKE FLUID REPLACEMENT/ AIR BLEEDING

Check the fluid level with the fluid reservoir parallel to the ground.

CAUTION

- *Install the diaphragm on the reservoir when operating the brake lever. Failure to do so will allow brake fluid to squirt out of the reservoir during brake operation.*
- *Avoid spilling fluid on painted surfaces. Place a rag over the fuel tank whenever the system is serviced.*

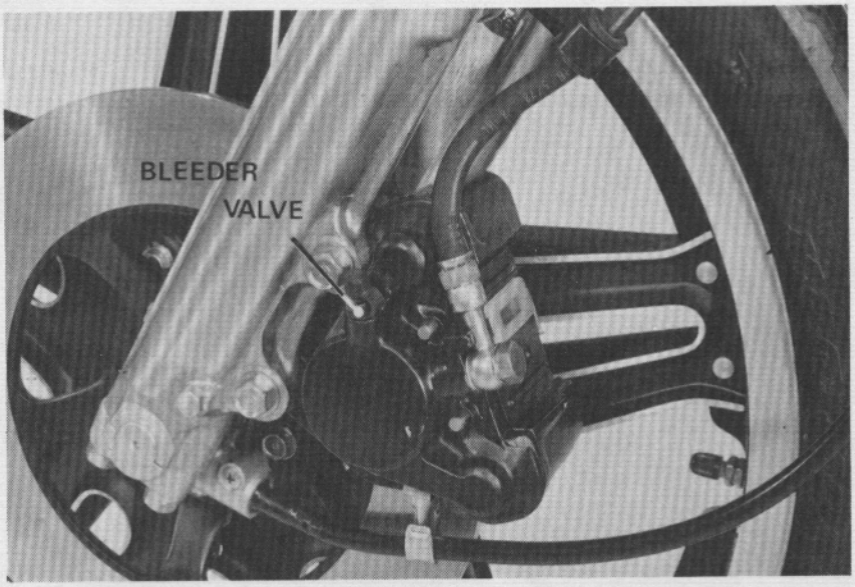


BRAKE FLUID DRAINING

Connect a bleed hose to the bleeder valve.
Loosen the caliper bleeder valve and pump the brake lever.
Stop pumping the lever when on fluid flows out of the bleeder valve.

WARNING

A brake disc or pad contaminated with brake fluid or grease reduces stopping power. Discard contaminated pads and clean the disc with a high quality brake degreasing agent.



BRAKE FLUID FILLING

NOTE

Use ONLY DOT–3 brake fluid from a sealed container.

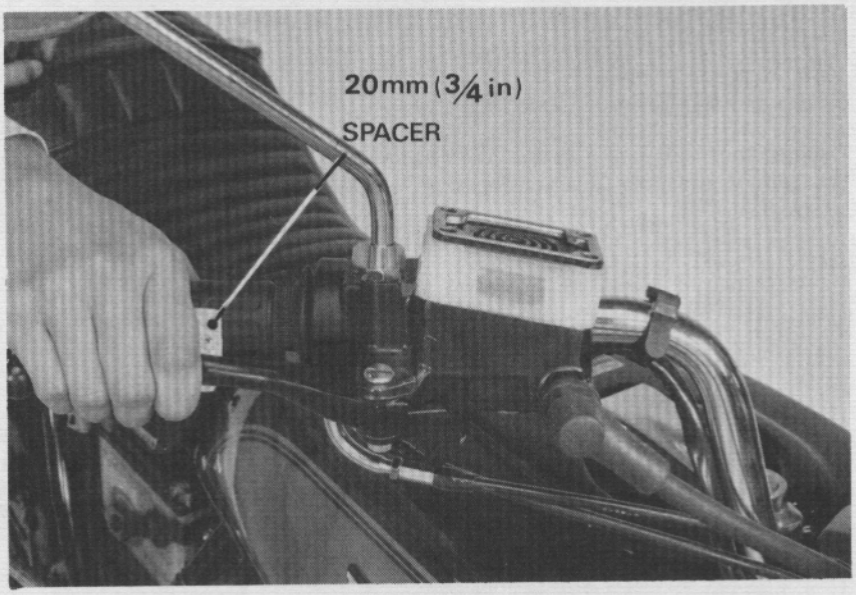
Close the bleeder valve, fill the reservoir, and install the diaphragm.

AIR BLEEDING

To prevent piston overtravel and brake fluid seepage, keep a 20 mm (3/4 in) space between the lever and the handlebar grip when bleeding the front brake system. Pump up the system pressure until there are no air bubbles in the fluid flowing out of the reservoir small hole and lever resistance is felt.

NOTE

Check the fluid level often while bleeding the brake to prevent air from being pumped into the system.



NOTE

Never re-use the contaminated fluid which has been pumped out during brake bleeding. This would decrease the efficiency of the brake system.

Squeeze the brake lever, open bleeder valve 1/2 turn and close the bleeder valve.
Release the brake lever slowly and wait several seconds after it reaches the end of its travel.

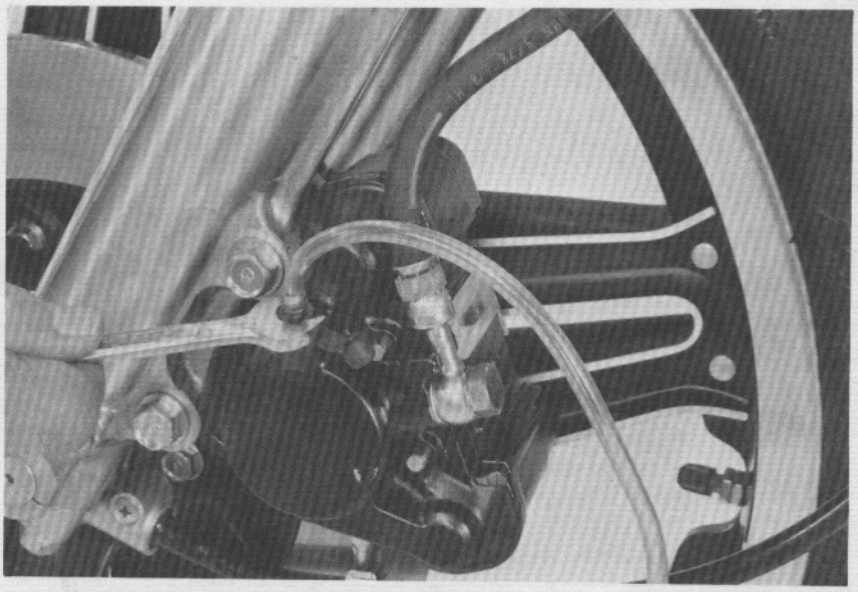
NOTE

Do not release the brake lever until the bleeder valve has been closed.

Repeat the above steps until no bubbles appear in the fluid at the end of the hose.
Fill the fluid reservoir to the upper level mark.

WARNING

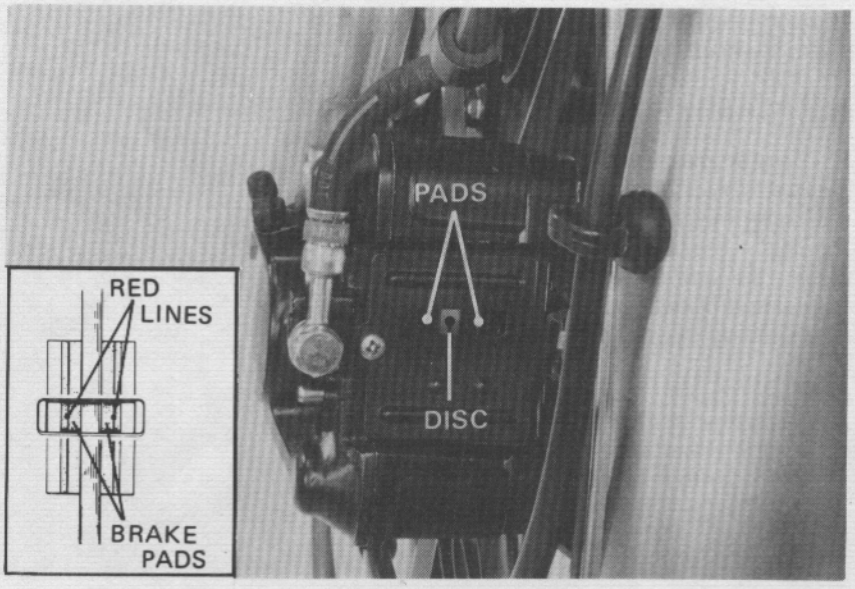
A brake disc or pad contaminated with brake fluid or grease reduces stopping power. Discard contaminated pads and clean the disc with a high quality brake degreasing agent.



BRAKE PAD/DISC

BRAKE PAD WEAR CHECK

Replace the front brake pads if the red line on the top of the pads reaches the edge of the brake disc.



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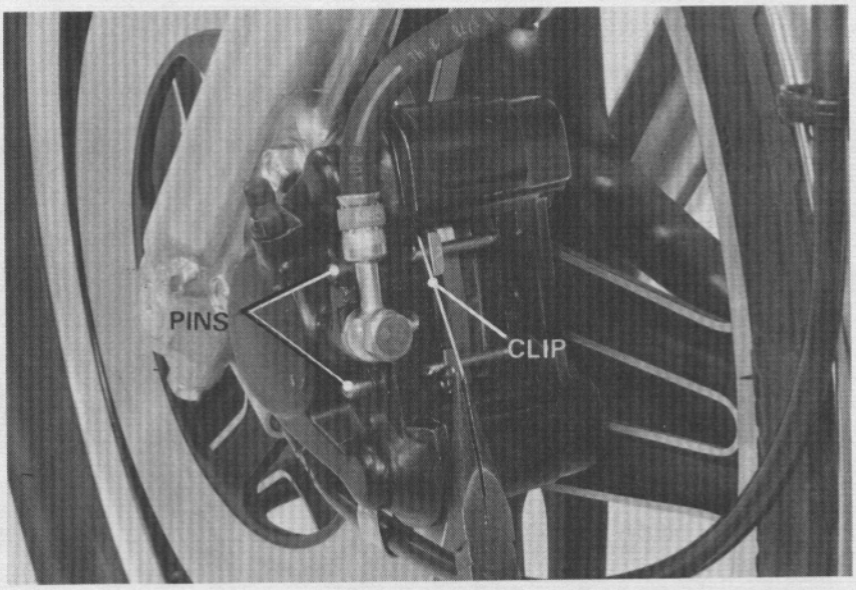
BRAKE PAD REPLACEMENT

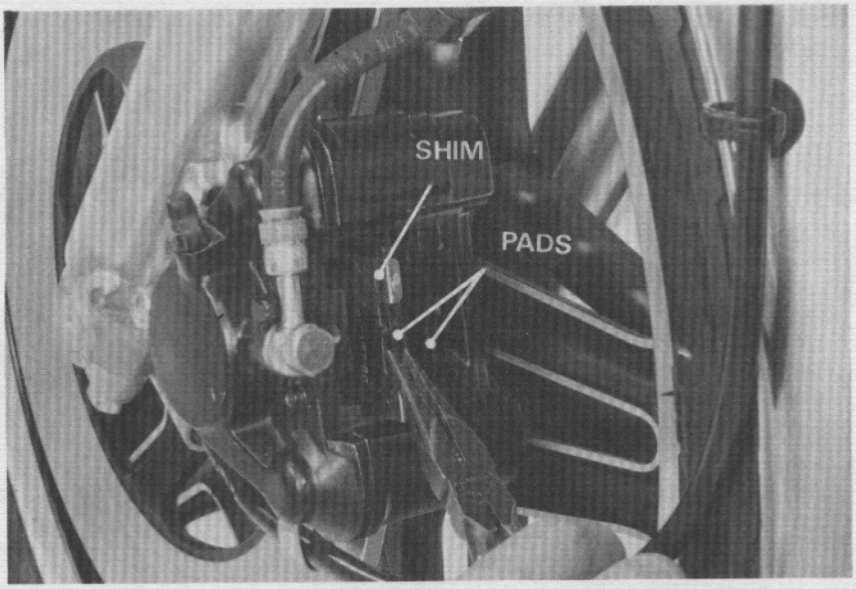
Remove the caliper cover.
Remove the clip.
Push the caliper toward the right and push the piston all the way in to allow installation of new brake pads.
Remove the pins, brake pads and shim.
Apply a coat of silicon grease to both sides of the shim.



Install new brake pads with the shim between the piston and pad.
Install the pins and clip.
Install the caliper cover.

NOTE

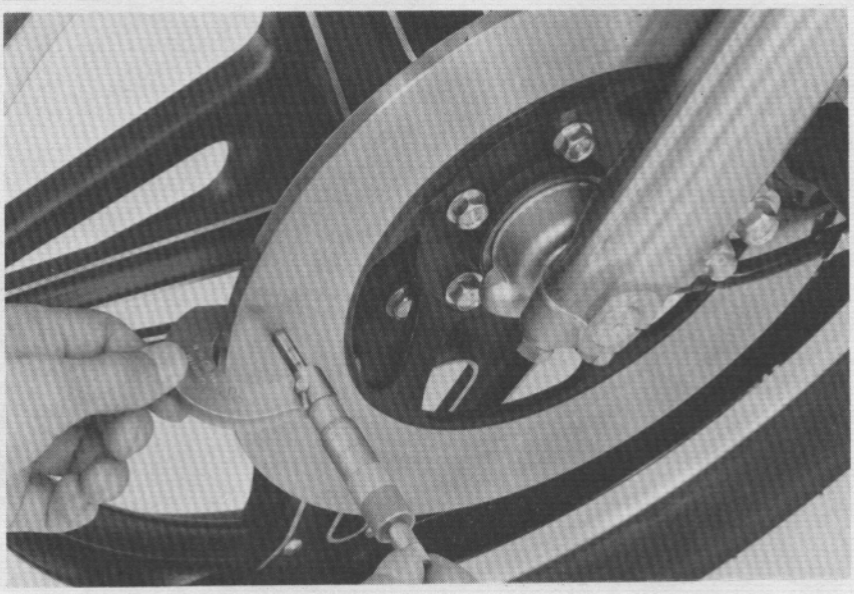
- Always replace the brake pads in pairs to assure even disc pressure.
- Push the piston all the way in.
- Check the brake fluid level in the master cylinder reservoir because new pads will cause the fluid level to rise.



DISC THICKNESS

Measure the disc thickness.

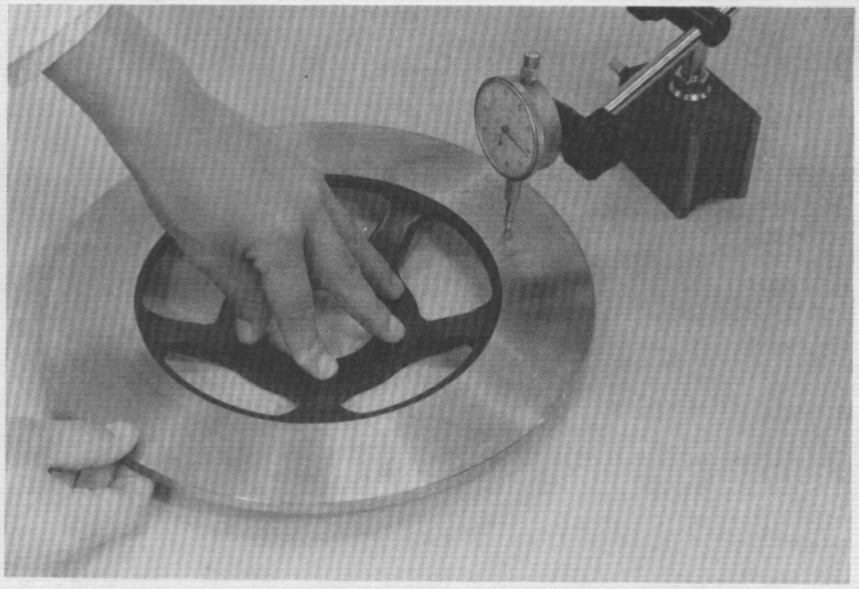
SERVICE LIMIT: 6.0 mm (0.24 in)



BRAKE DISC WARPAGE

Measure brake disc warpage.

SERVICE LIMIT: 0.3 mm (0.01 in)



BRAKE MASTER CYLINDER

BRAKE MASTER CYLINDER DISASSEMBLY

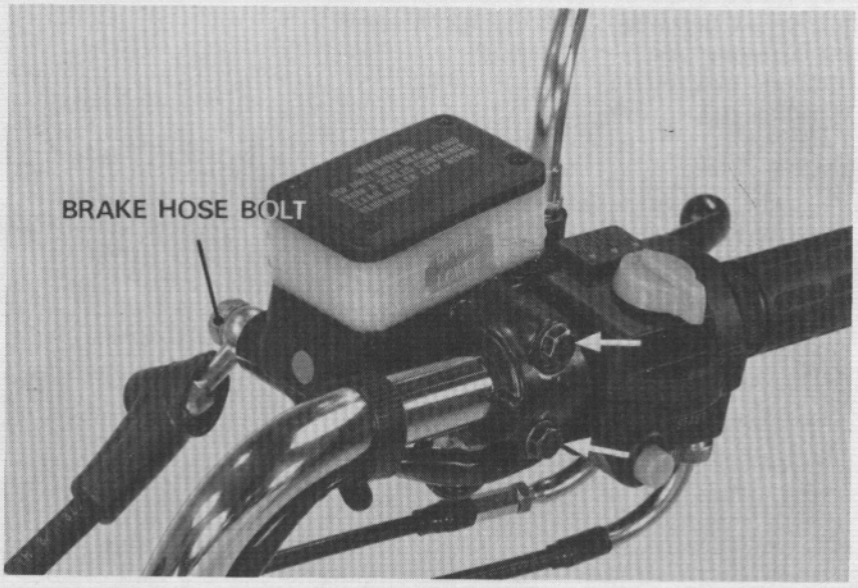
Drain brake fluid from the hydraulic system.
Remove the brake lever and rear view mirror from the master cylinder.
Disconnect the brake hose.

CAUTION

- *Avoid spilling brake fluid on painted surfaces.*
- *Cover the fuel tank whenever the brake system is serviced.*

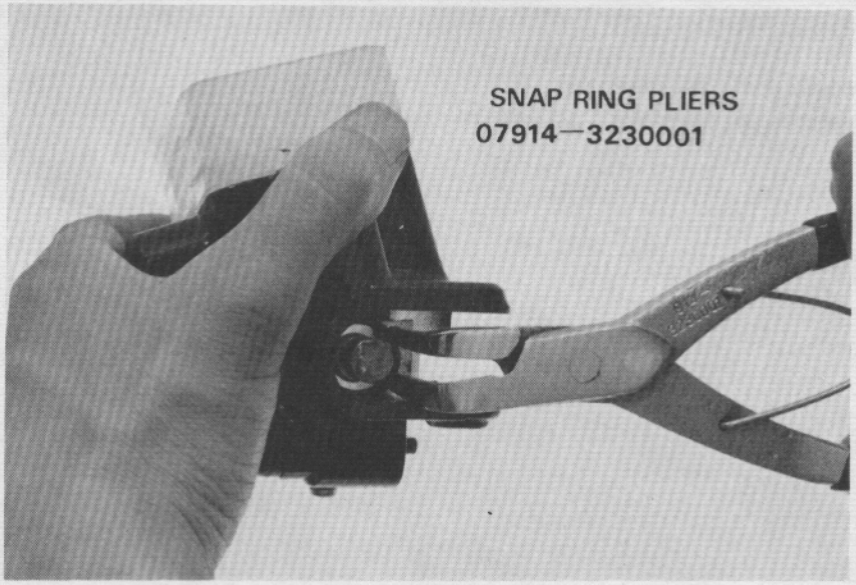
NOTE

When removing the brake hose bolt, cover the end of the hose to prevent contamination and secure the hose.



Remove the two master cylinder attaching bolts.

Remove the boot.
Remove the circlip form the master cylinder body.



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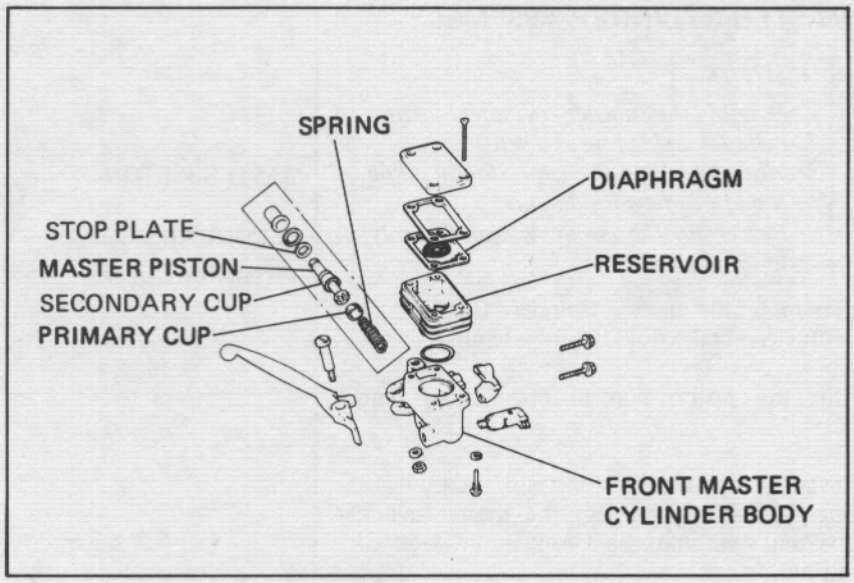
Remove the stop plate, secondary cup and master piston.
Then remove the primary cup and spring.

Remove the brake fluid reservoir from the master cylinder body.

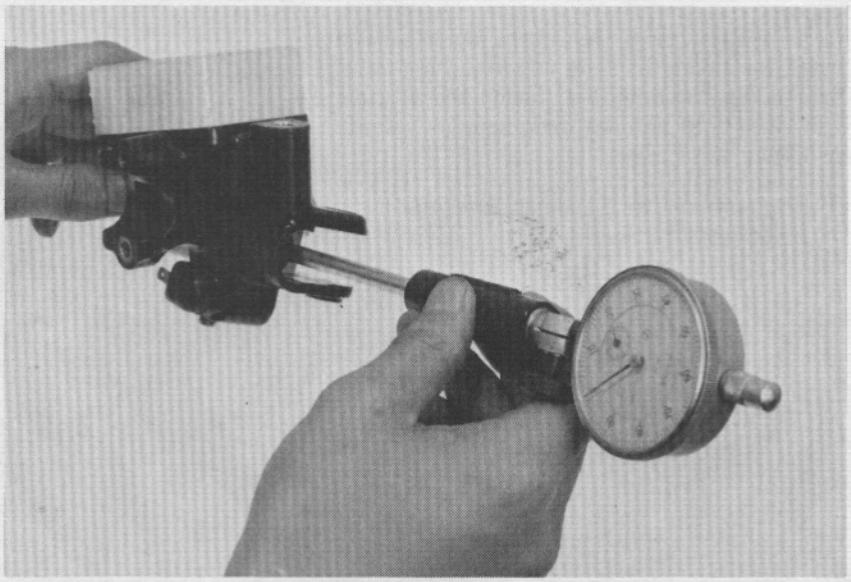
Clean the inside of the master cylinder and reservoir with brake fluid.



MASTER CYLINDER I.D. INSPECTION

Measure the master cylinder I.D.
Check the master cylinder for scores, scratches or nicks.

SERVICE LIMIT: 14.055 mm (0.5533 in)

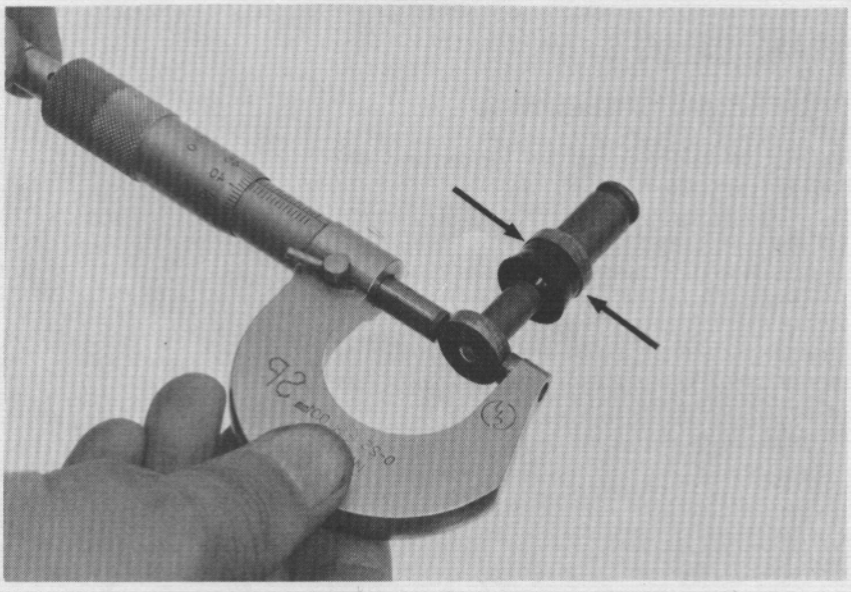


MASTER PISTON O.D. INSPECTION

Measure the master piston O.D.

SERVICE LIMIT: 13.945 mm (0.5490 in)

Check the primary cup and secondary cup for damage.



MASTER CYLINDER ASSEMBLY

CAUTION

- *Handle the master cylinder piston, cylinder and spring as a set.*
- *When installing the cups, do not allow the lips to turn inside out.*
- *Be certain the circlip is seated firmly in the groove.*

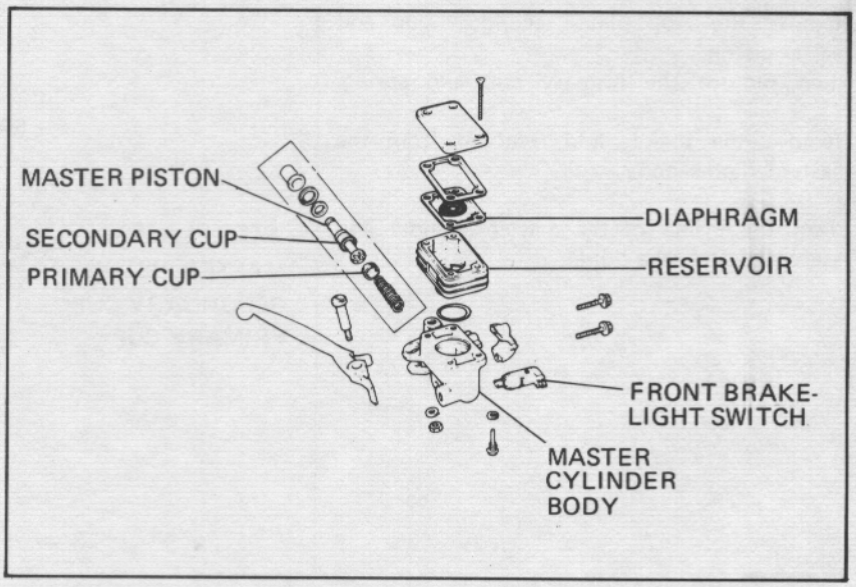
Assemble the master cylinder. Coat all parts with clean brake fluid before assembly.

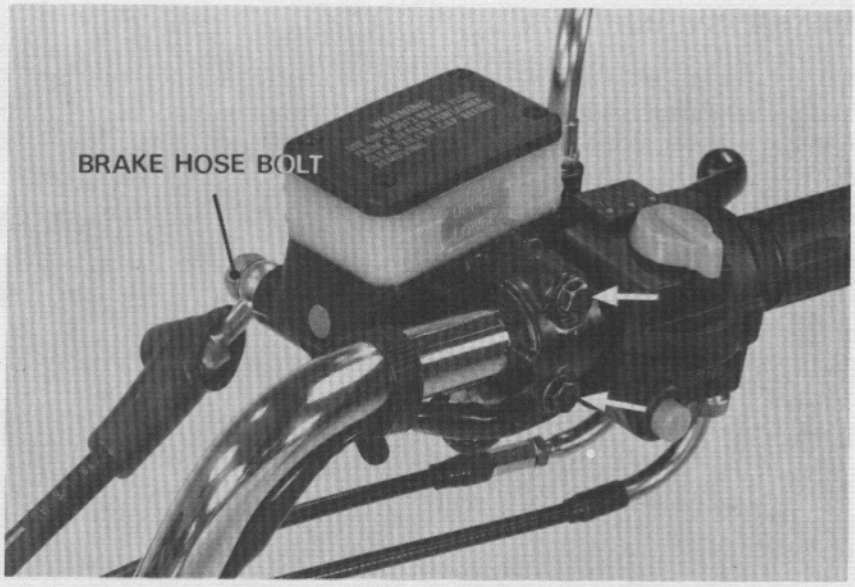
Dip the piston cup in brake fluid before assembly.

Install the boot, washer and clip.
Install the reservoir on the master cylinder making sure that the O-ring is in good condition.

Place the master cylinder on the handlebar and install the holder and the two mounting bolts. Torque the top bolt first. Install the oil hose with the bolt and its two sealing washers. Install the brake lever.

Fill the reservoir to the upper level and bleed the brake system (Page 15—3).





BRAKE CALIPER

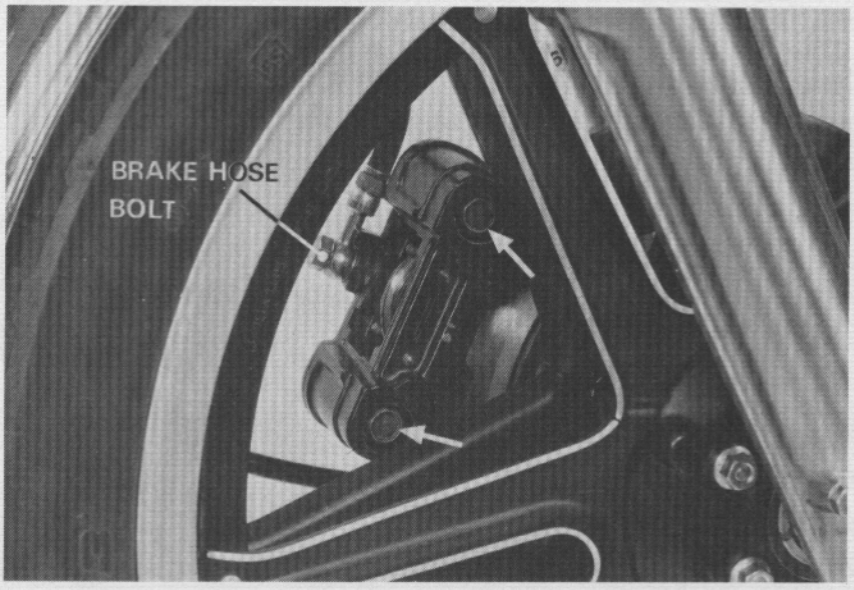
CALIPER A DISASSEMBLY

Place a container under the caliper and disconnect the brake hose bolt.

NOTE

Avoid spilling brake fluid on painted surfaces.

Loosen the two caliper shafts gradually in several steps while pressing them against the caliper.
Remove caliper A.



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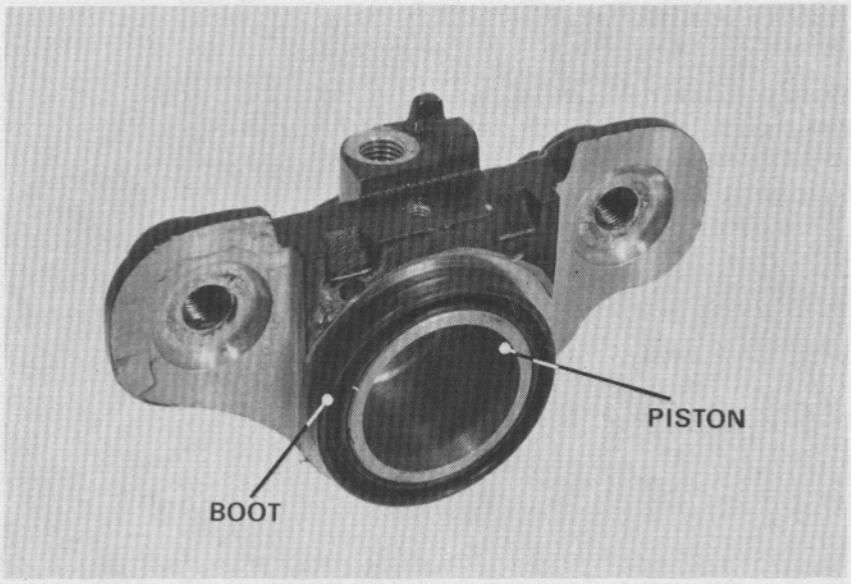
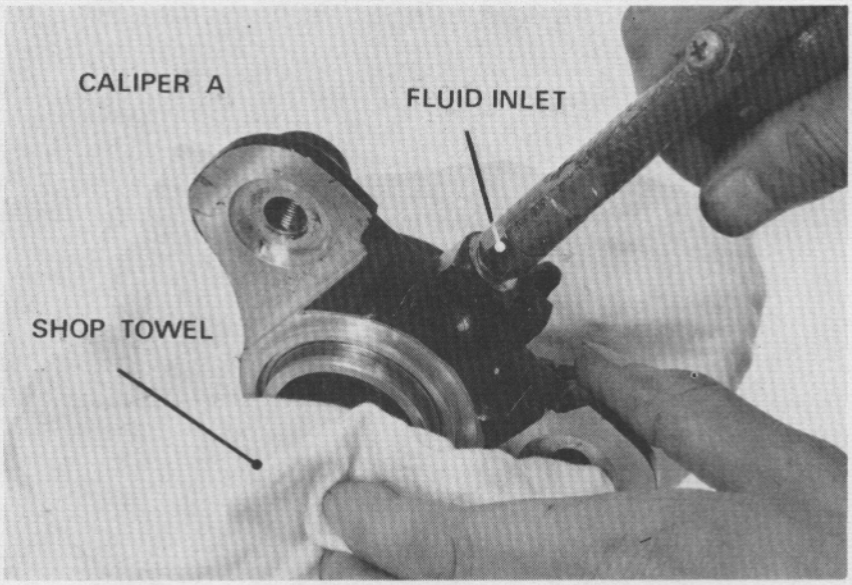
Remove the piston boot.
Inspect the piston boot for damage or deterioration.



Place a shop towel over the piston to control piston removal. Position the caliper with the piston down.
Remove the piston by applying a small amount of air pressure to the fluid inlet.

WARNING

Do not use high pressure air or bring the nozzle too close to the inlet.



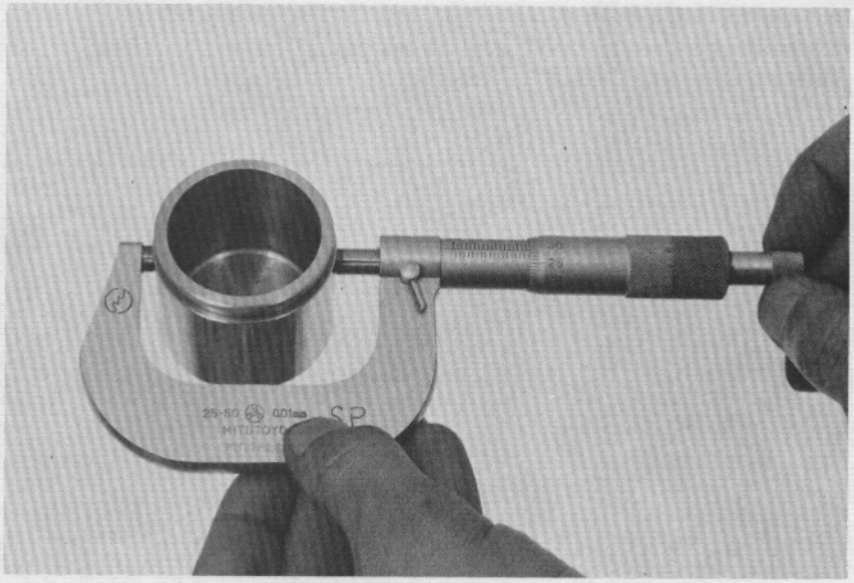
Examine the piston and cylinder for scoring or scratches and replace if necessary.

Remove the oil seal by first pushing it into the cylinder. Then pull it out.
Clean the caliper grooves with brake fluid.

FRONT CALIPER PISTON O.D. INSPECTION

Check the piston for scoring or scratches.
Measure the outside diameter of the piston with a micrometer.

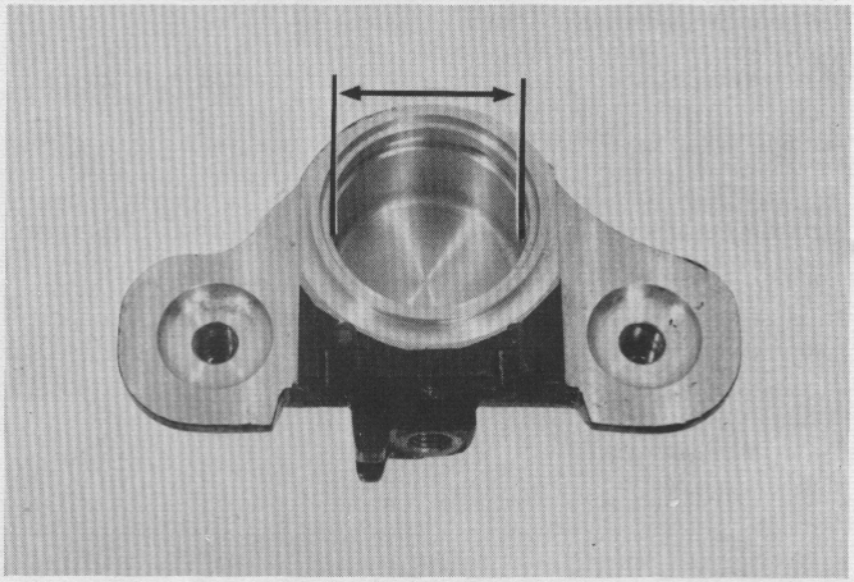
SERVICE LIMIT: 42.765 mm (1.6837 in)



FRONT CALIPER CYLINDER I.D. INSPECTION

Check the caliper cylinder for scoring or scratches.
Measure the inside diameter of the caliper cylinder bore.

SERVICE LIMIT: 42.915 mm (1.6896 in)

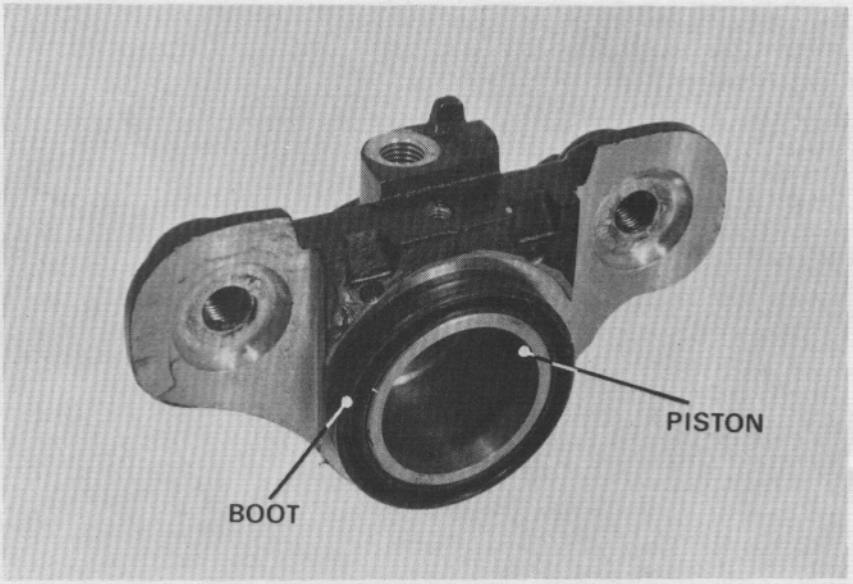


FRONT BRAKE CALIPER ASSEMBLY

WARNING

A brake disc or pad contaminated with brake fluid or grease reduces stopping power. Replace contaminated pads, and clean the disc with a good quality degreasing agent.

Assemble the caliper in the reverse order of disassembly. The oil seal must be replaced with a new one whenever removed. Lubricate the piston and seal with a medium grade of Hi-Temperature Silicone grease or brake fluid before assembly.
Be certain the piston seal is seated in the caliper groove.
Place the piston in the caliper with the boot lip facing out. Install the boot on the piston.



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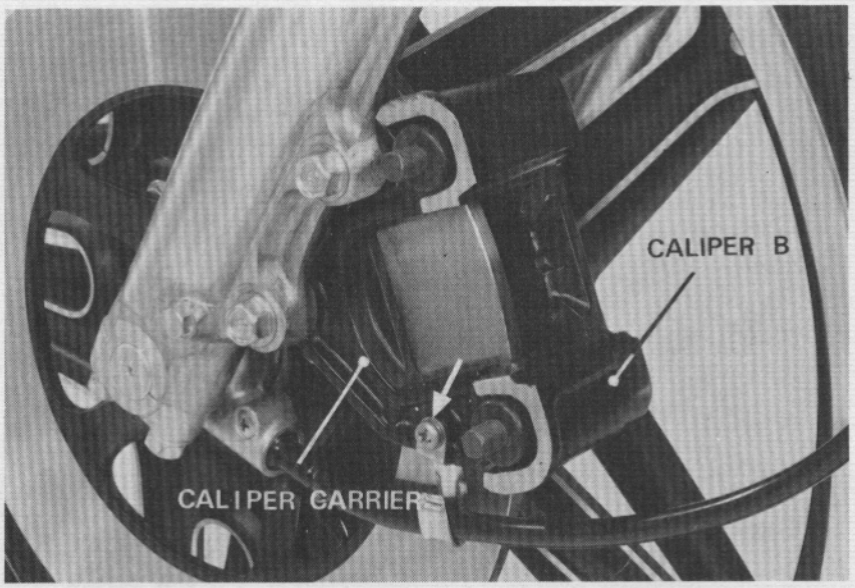
CALIPER CARRIER/CALIPER B DISASSEMBLY

Remove the speedometer cable clamp.
Remove the carrier with caliper B by removing the two bolts.



Remove the caliper shafts from the carrier and caliper B while rotating them by hand. Avoid damaging the boots.

CALIPER CARRIER/CALIPER B ASSEMBLY

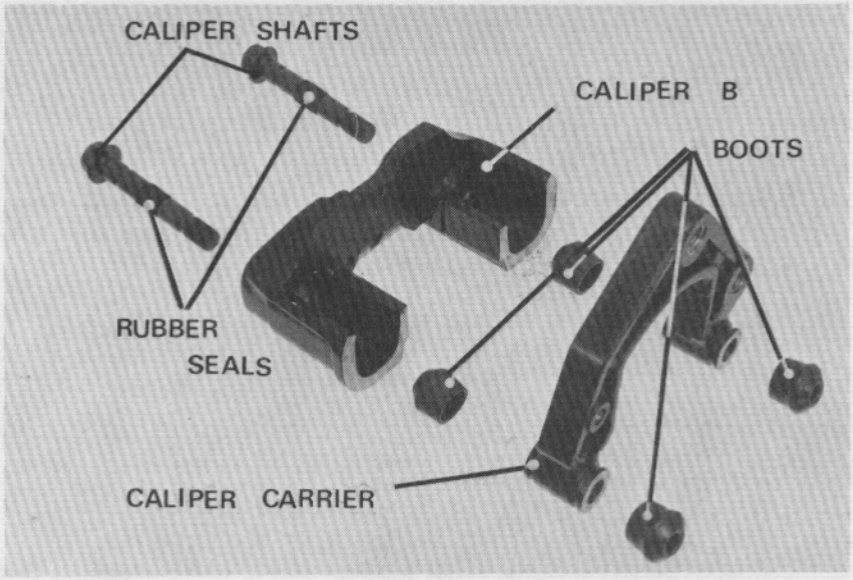
Wash all parts with brake fluid.
Coat the rubber seals with silicon grease or brake fluid and install in the shaft grooves.

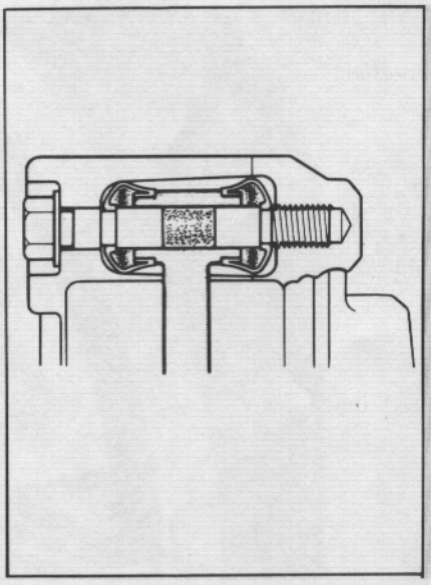
NOTE

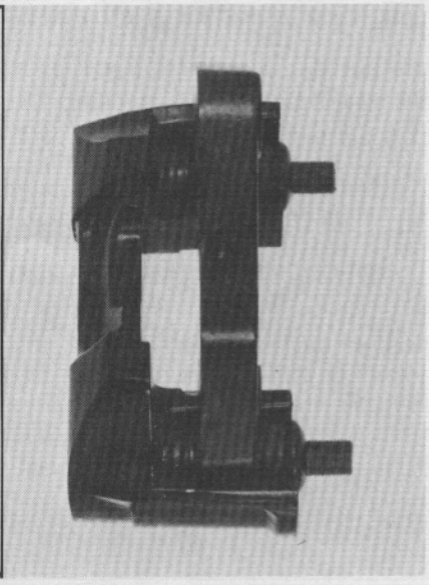
Replace the boots and rubber seals with new ones if damaged.

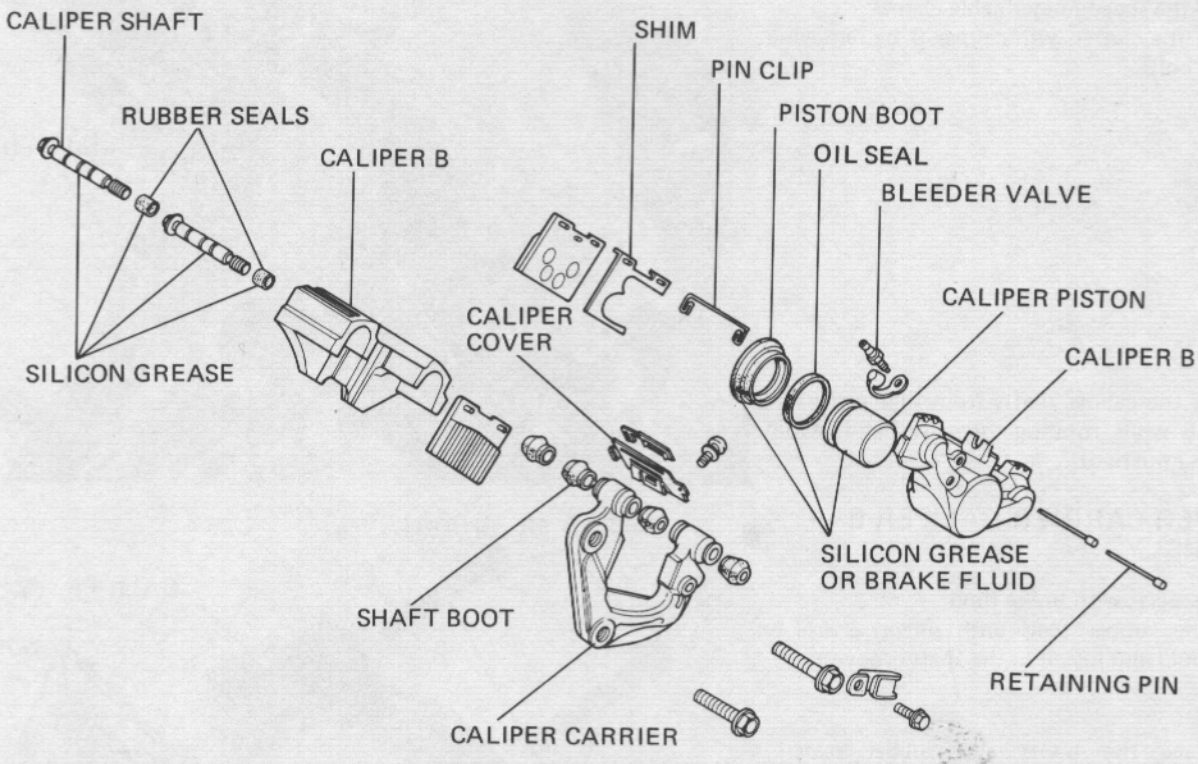
Install the boots on the carrier.
Assemble caliper B and caliper carrier, making sure that the boots are seated in the caliper shaft grooves properly.
Install the carrier on the front fork.

TORQUE: 3.0–4.0 kg-m (22–29 ft-lb)









CALIPER A INSTALLATION

Tighten the caliper shafts evenly while pushing them against caliper B.

NOTE

Tighten the shafts carefully, noting the mating surfaces of caliper A and B.

TORQUE: 3.0–4.0 kg-m (22–29 ft-lb)

Connect the brake hose.
Install the caliper cover.
Fill the brake fluid reservoir and bleed the front brake system. (See page 15–3).

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