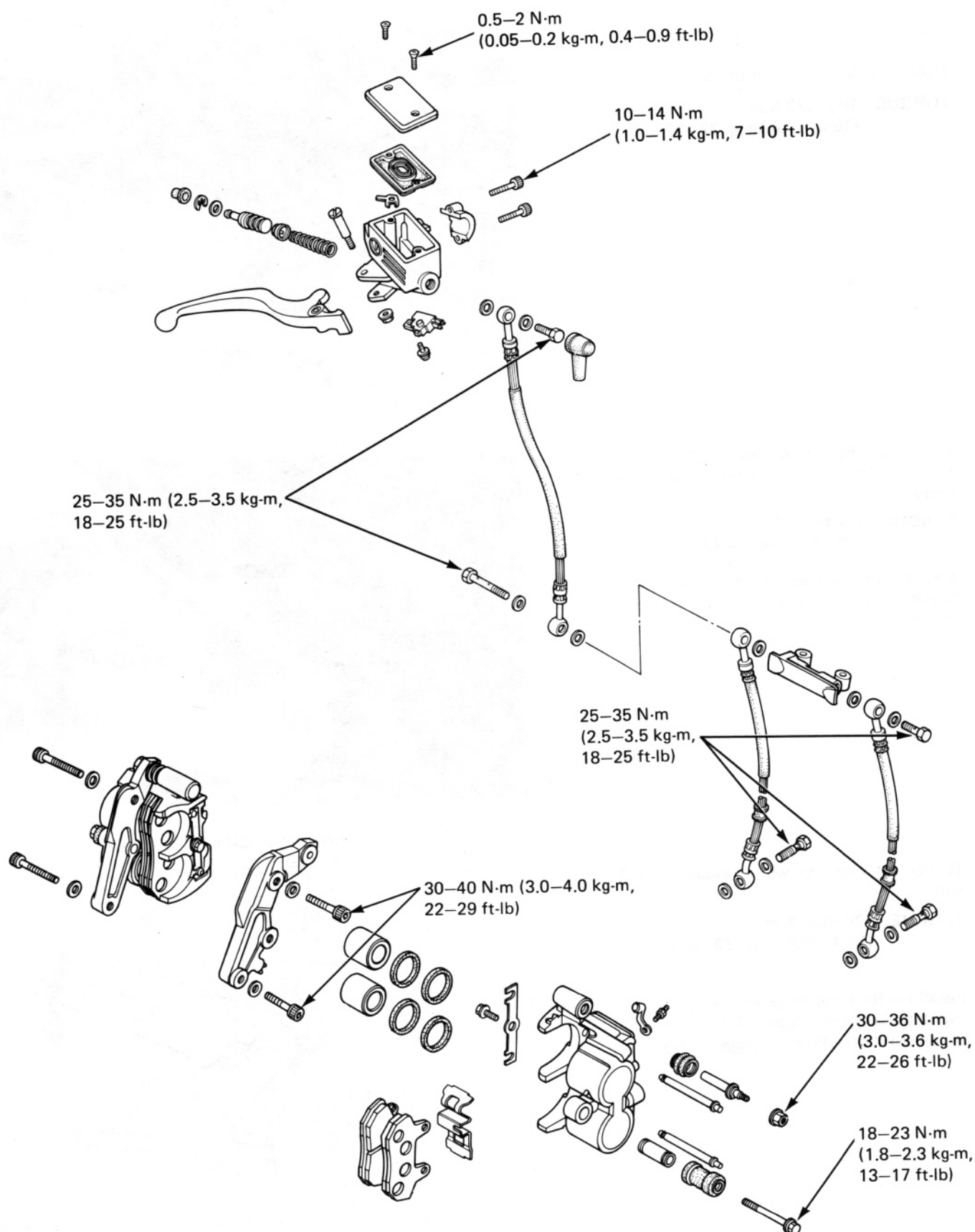


HYDRAULIC BRAKE



17. HYDRAULIC BRAKE

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SERVICE INFORMATION

GENERAL

- The brake calipers can be removed without disconnecting the hydraulic system.
- Bleed the hydraulic system if it is disassembled or if the brake feels spongy.
- 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 can result.
- Always check brake operation before riding the motorcycle.

SPECIFICATIONS

	STANDARD	SERVICE LIMIT
Front disc thickness	4.8–5.2 mm (0.19–0.20 in)	4.0 mm (0.16 in)
Front disc runout	—	0.3 mm (0.012 in)
Front master cylinder I.D.	15.870–15.913 mm (0.6248–0.6265 in)	15.93 mm (0.627 in)
Front master piston O.D.	15.827–15.854 mm (0.6231–0.6242 in)	15.82 mm (0.623 in)
Front caliper piston O.D.	30.148–30.280 mm (1.1901–1.1921 in)	30.29 mm (1.193 in)
Front caliper cylinder I.D.	30.230–30.280 mm (1.1902–1.2913 in)	30.14 mm (1.187 in)

17

TORQUE VALUES

Brake hose bolt	25–35 N·m (2.5–3.5 kg-m, 18–25 ft-lb)
Front brake caliper bracket	30–40 N·m (3.0–4.0 kg-m, 22–29 ft-lb)
Front brake caliper bolt	18–23 N·m (1.8–2.3 kg-m, 13–17 ft-lb)
Front brake caliper pivot bolt	30–36 N·m (3.0–3.6 kg-m, 22–26 ft-lb)

TOOL

Special

Snap ring pliers	07914–3230001
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HYDRAULIC BRAKE

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. Sticking piston(s)
3. Incorrect rear brake pedal adjustment.

Brakes grab or pull to one side

1. Pads contaminated.
2. One side of front brake faulty.
3. Disc or wheel misaligned.

Brake chatter or squeal

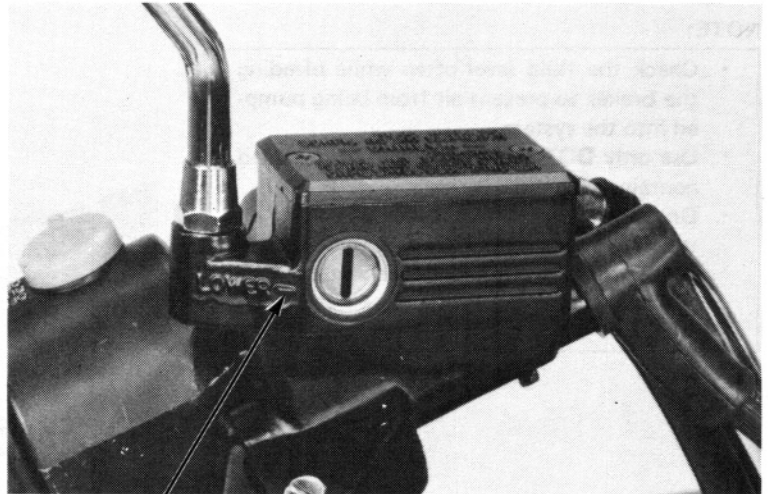
1. Pads contaminated.
2. Excessive disc runout.
3. Caliper installed incorrectly.
4. Disc or wheel misaligned.

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.*



LOWER LEVEL

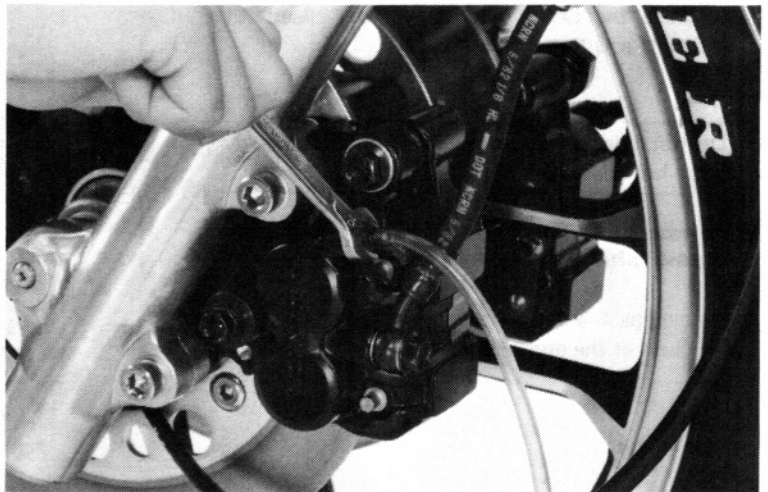
BRAKE FLUID DRAINING

Connect a bleed hose to the bleed valve.

Loosen the caliper bleed valve and pump the brake lever. Stop operating the lever when fluid stops flowing out of the bleed valve.

WARNING

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



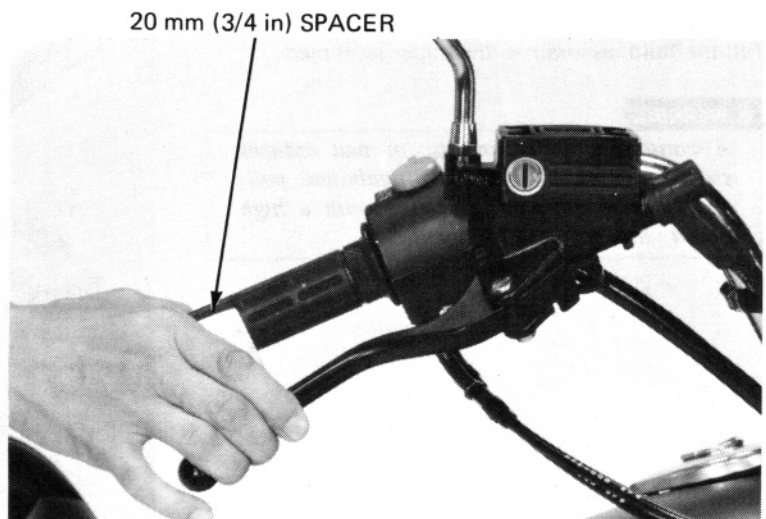
BRAKE FLUID FILLING

NOTE:

Do not mix different types of fluid since they are not compatible.

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

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

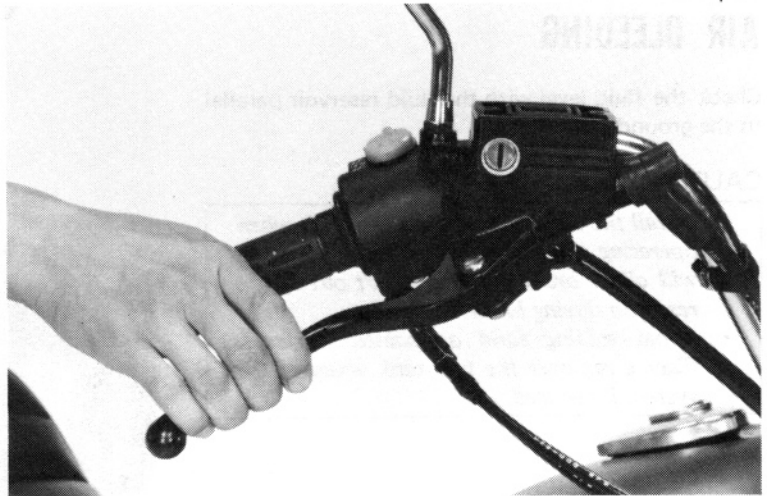


HYDRAULIC BRAKE

AIR BLEEDING

NOTE:

- Check the fluid level often while bleeding the brakes to prevent air from being pumped into the system.
- Use only **DOT 3 brake fluid** from a sealed container.
- Do not mix brake fluid types and never reuse the contaminated fluid which has been pumped out during brake bleeding, because this will impair the efficiency of the brake system.



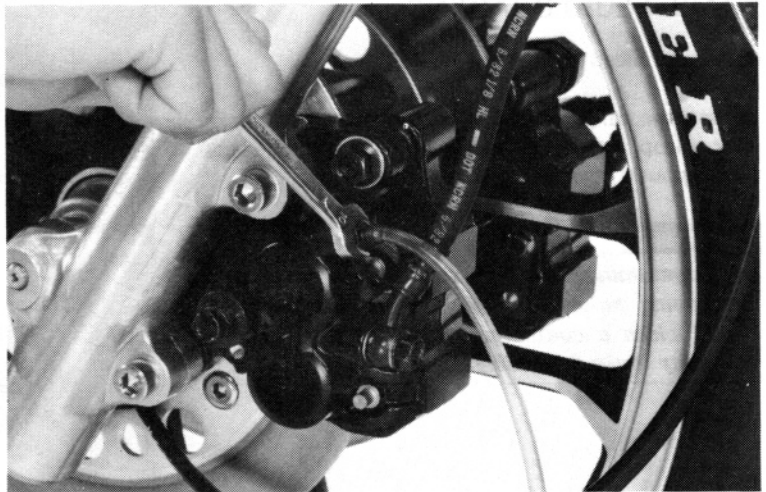
- 1) Squeeze the brake lever, open the bleed valve 1/2 turn and then close the valve.

NOTE:

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

- 2) Release the brake lever slowly and wait several seconds after it reaches the end of its travel.

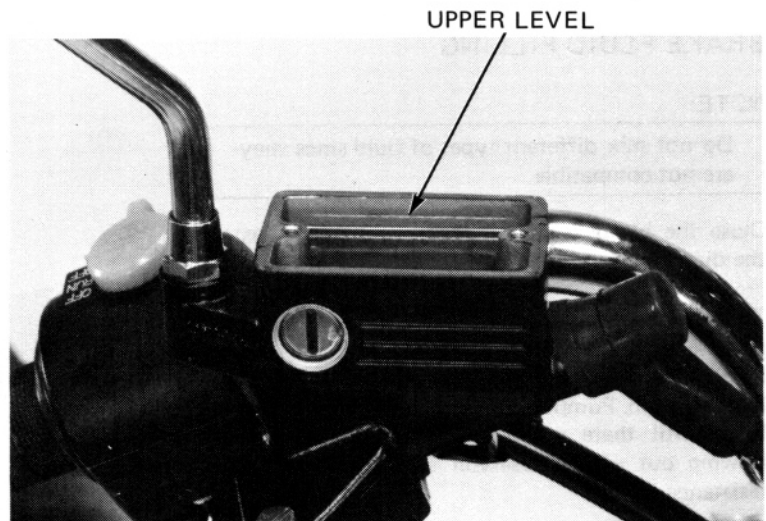
Repeat steps 1 and 2 until bubbles cease to appear in the fluid at the end of the hose.



Fill the fluid reservoir to the upper level mark.

WARNING

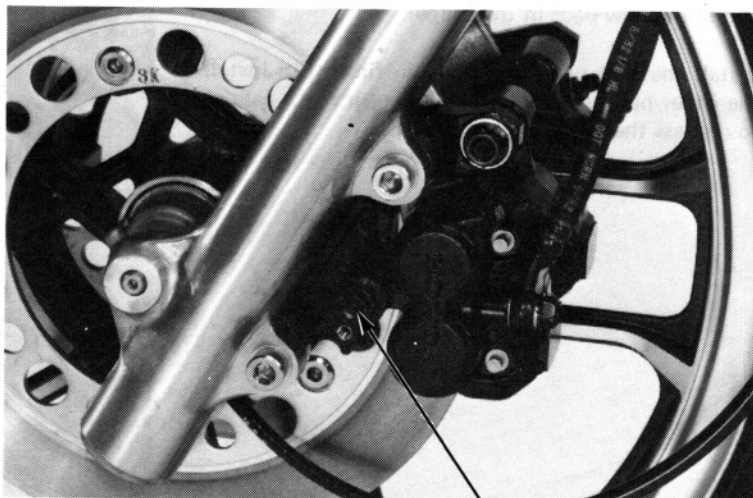
A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.



BRAKE PAD/DISC**PAD REPLACEMENT****NOTE:**

Always replace the brake pads in pairs to assure even disc pressure.

Remove the caliper bolt.
Pivot the caliper up out of the way.



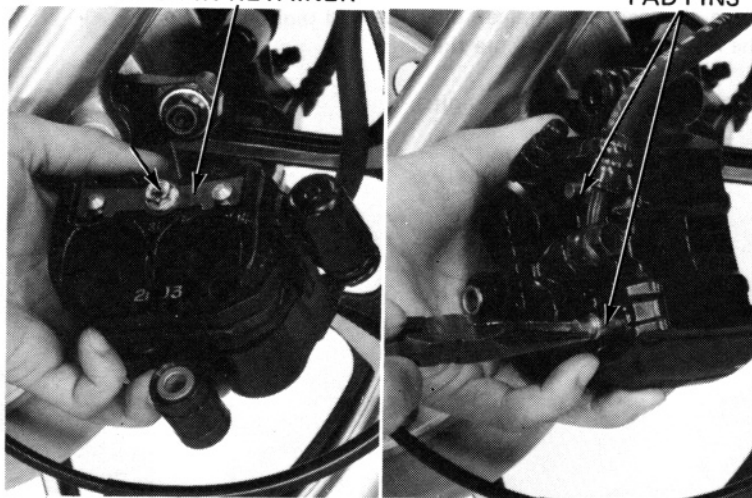
CALIPER BOLT

Remove the pad pin retainer and pull the pad pins out of the caliper.

Remove the brake pads.

PAD PIN RETAINER

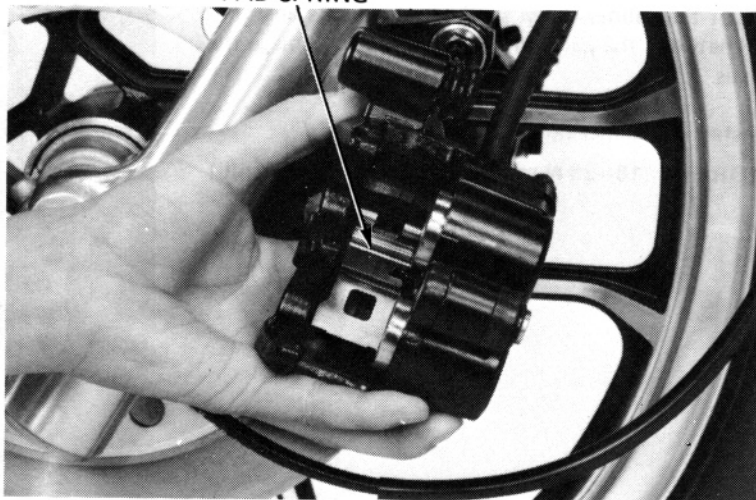
PAD PINS



Position the pad spring in the caliper as shown.

Push the caliper pistons in all the way.

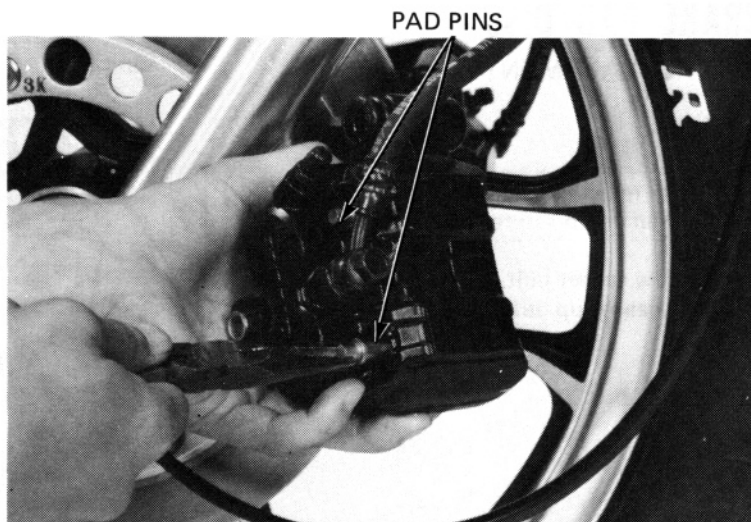
PAD SPRING



HYDRAULIC BRAKE

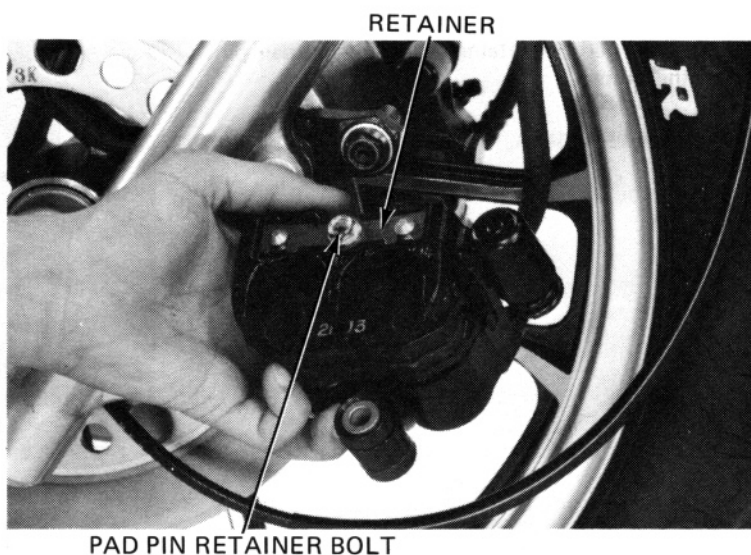
Install the new pads in the caliper.

Install the pad pins, one pad pin first, then install the other pin by pushing the pads against the caliper to depress the pad spring.



Place the pad pin retainer over the pad pins. Push the retainer down to secure the pins.

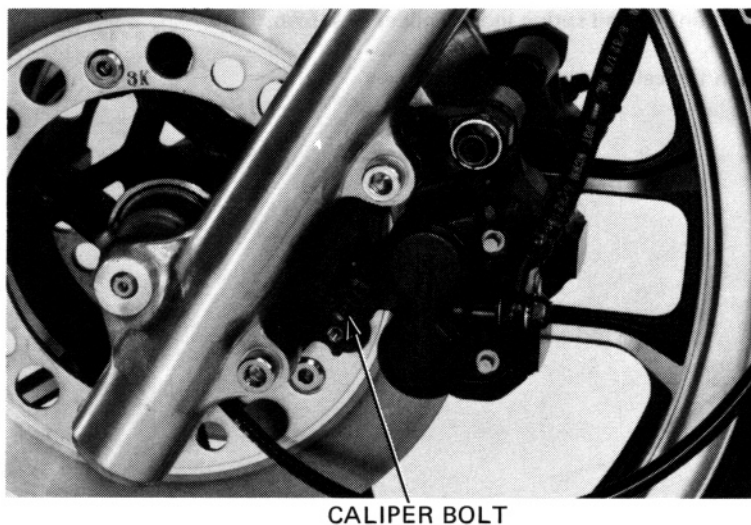
Install the pad pin retainer bolt.



Pivot the caliper down so the brake disc is positioned between the pads, making sure not to damage the pads.

Install the caliper bolt and tighten it.

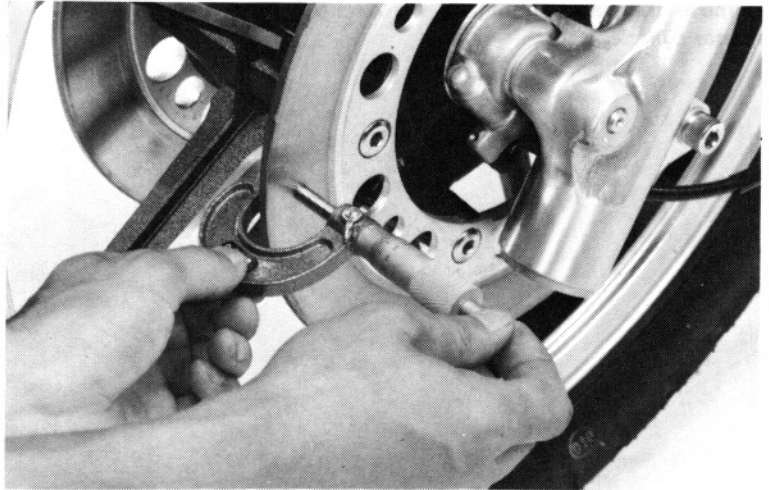
TORQUE: 18–23 N.m (1.8–2.3 kg-m, 13–17 ft-lb)



DISC THICKNESS

Measure the thickness of each disc.

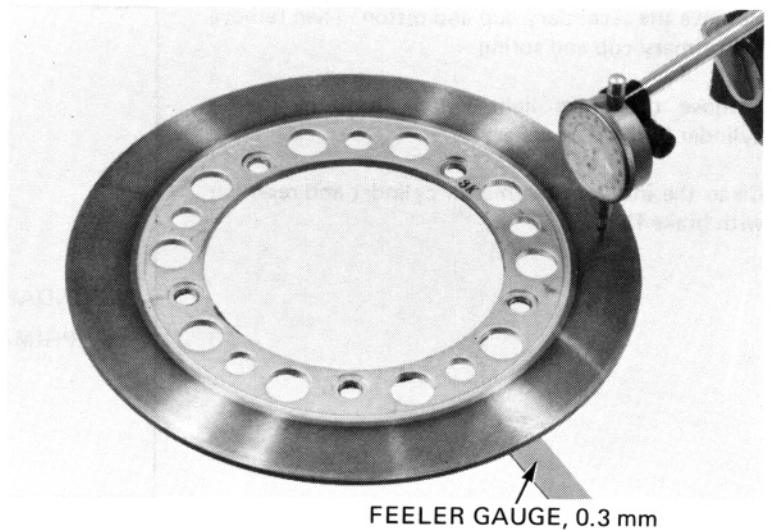
SERVICE LIMIT: 4.0 mm (0.16 in)



BRAKE DISC WARPAGE

Measure the brake disc for warpage with a feeler gauge on a surface plate.

SERVICE LIMIT: 0.30 mm (0.012 in)



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.

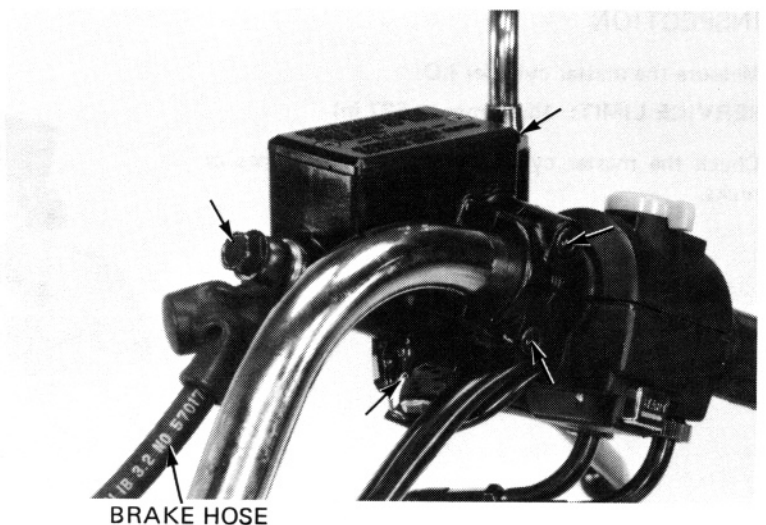
CAUTION:

Avoid spilling brake fluid on painted surfaces. Place a rag over the fuel tank whenever the brake system is serviced.

NOTE:

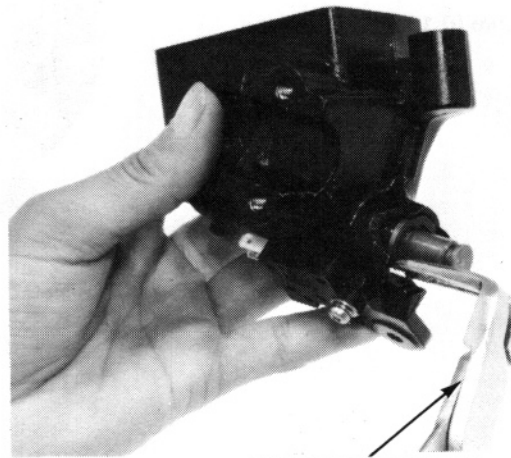
When removing the oil hose bolt, cover the end of the hose to prevent contamination. Secure the hose to prevent fluid from leaking out.

Remove the master cylinder.



HYDRAULIC BRAKE

Remove the piston boot and the circlip from the master cylinder body.

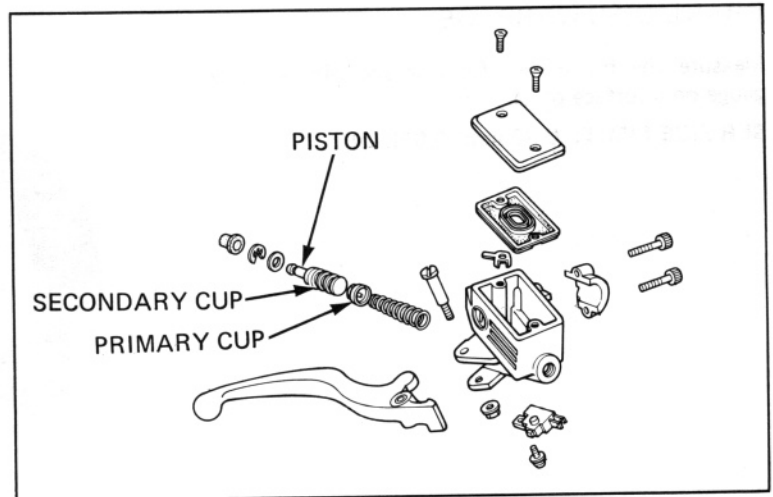


SNAP RING PLIERS
07914-3230001

Remove the secondary cup and piston. Then remove the primary cup and spring.

Remove the brake light switch from the master cylinder body, if necessary.

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

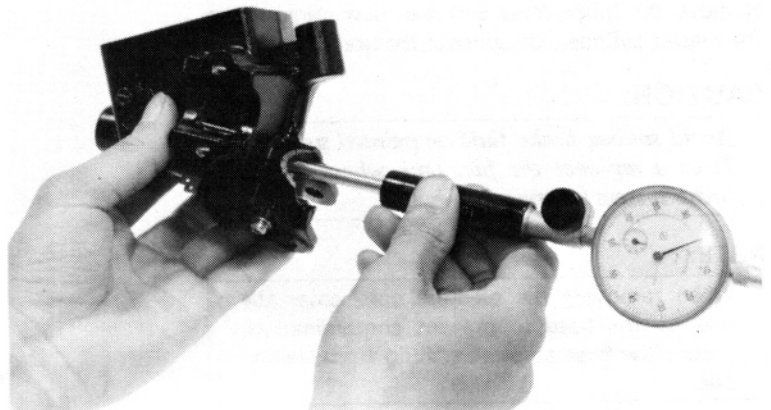


INSPECTION

Measure the master cylinder I.D.

SERVICE LIMIT: 15.93 mm (0.627 in)

Check the master cylinder for scores, scratches or nicks.



Measure the master piston O.D.

SERVICE LIMIT: 15.82 mm (0.623 in)

Check the primary and secondary cups for damage before assembly.



ASSEMBLY

CAUTION:

Handle the master cylinder piston, cylinder and spring as a set.

Assemble the master cylinder. Coat all parts with clean brake fluid before assembly. Install the spring and primary cup together.

Dip the piston cup in brake fluid before assembly.

CAUTION:

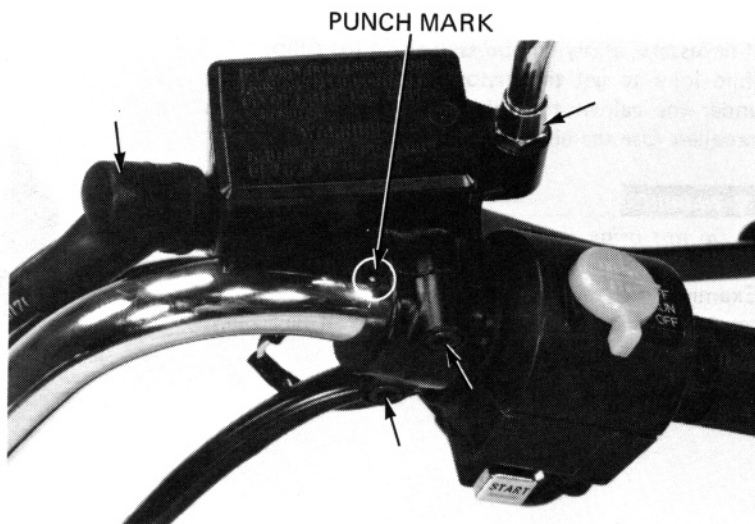
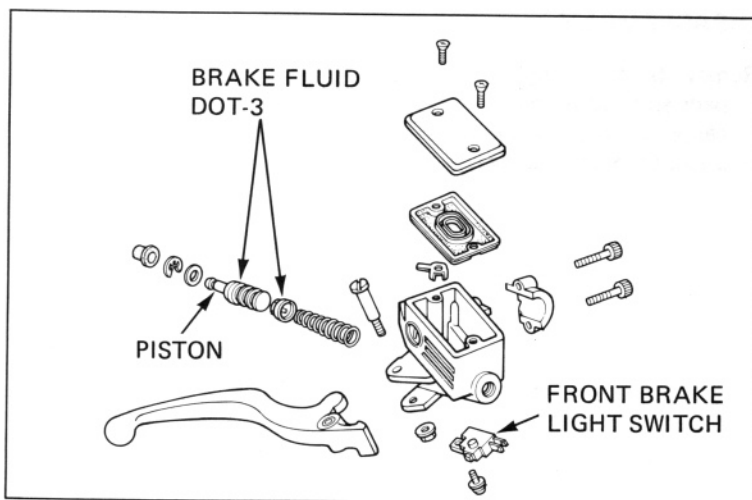
When installing the cups, do not allow the lips to turn inside out. Be certain the circlip is seated firmly in the groove.

Install the piston clip and boot.

Place the master cylinder on the handlebar and install the holder with the two mounting bolts. Tighten 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 according to page 17-4.



HYDRAULIC BRAKE

BRAKE CALIPERS

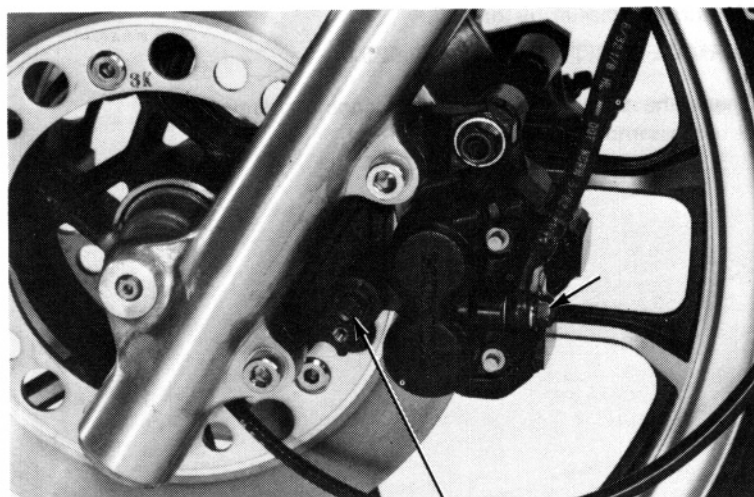
REMOVAL

Place a clean container under the caliper and disconnect the brake hose from the caliper.

CAUTION:

Avoid spilling brake fluid on painted surfaces.

Remove the caliper bolt and caliper.

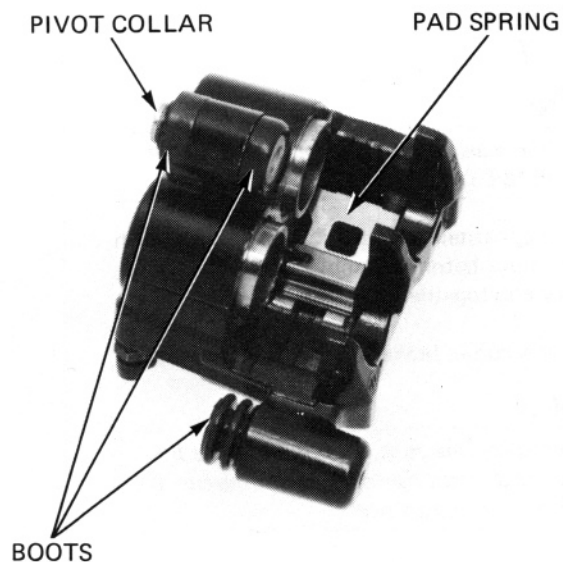


CALIPER BOLT

DISASSEMBLY

Remove the following:

- pads and pad spring.
- caliper pivot collar and boots.
- pistons from the caliper.

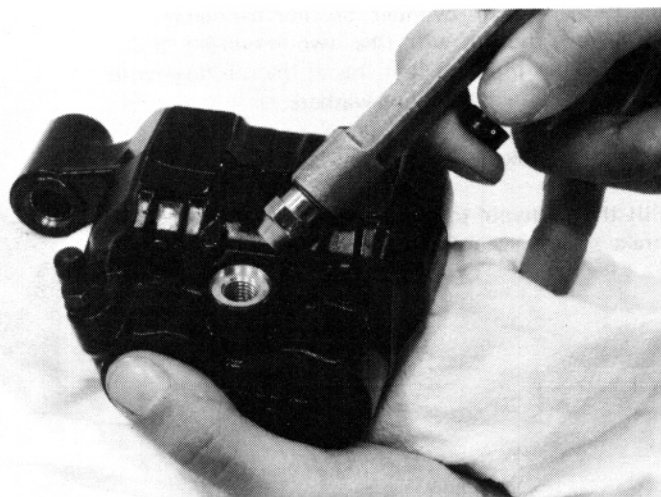


If necessary, apply compressed air to the caliper fluid inlet to get the piston out. Place a shop rag under the caliper to cushion the piston when it is expelled. Use the air in short spurts.

WARNING

Do not bring the nozzle too close to the inlet.

Examine the pistons and cylinders for scoring, scratches or other damage and replace if necessary.

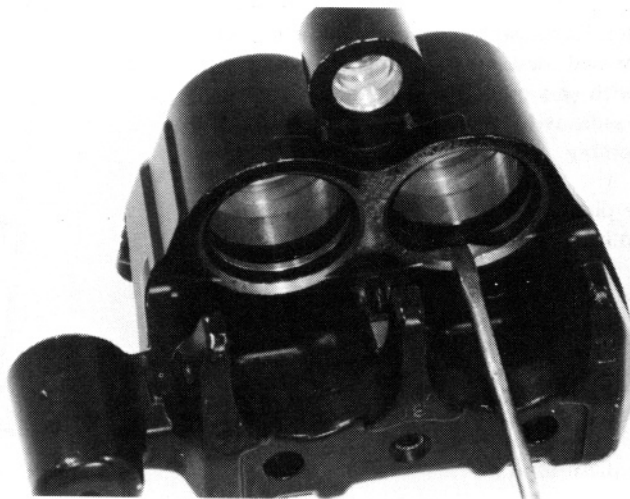


Push the piston seals in, lift them out and discard them.

Clean the oil seal grooves with brake fluid.

CAUTION:

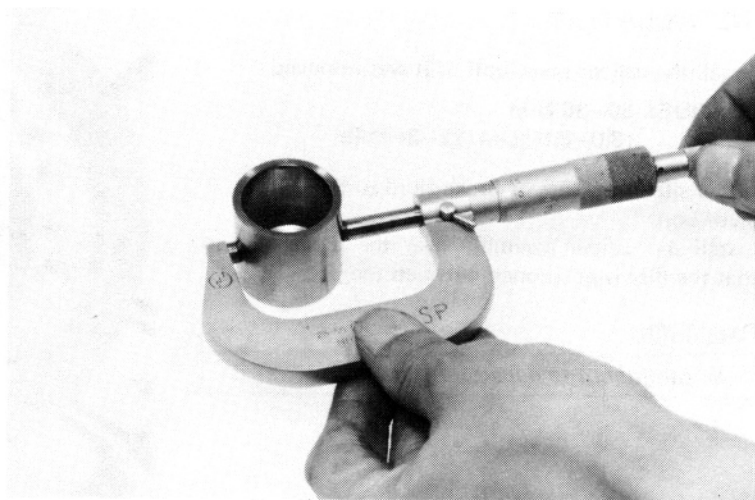
Be careful not to damage the piston sliding surfaces when removing the seals.



PISTON INSPECTION

Check the pistons for scoring, scratches or other faults. Measure the piston diameter with a micrometer.

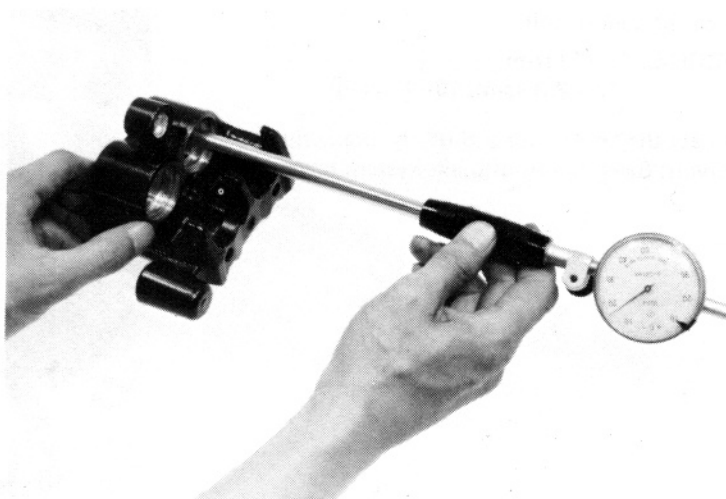
SERVICE LIMIT: 30.14 mm (1.187 in)



CYLINDER INSPECTION

Check the caliper cylinder bore for scoring, scratches or other faults. Measure the caliper cylinder bore.

SERVICE LIMIT: 30.29 mm (1.193 in)



HYDRAULIC BRAKE

ASSEMBLY

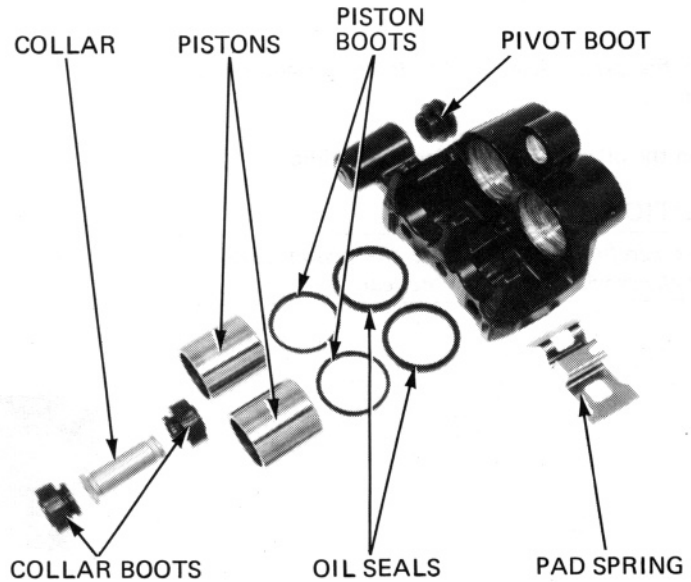
If the piston boots are hardened or deteriorated, replace them with new ones. The piston seals must be replaced with new ones whenever they are removed. Coat the seals with silicone grease or brake fluid before assembly.

Install the pistons with the dished ends toward the pads. Then install the piston boots.

Install the collar boots and collar making sure that the boots are seated in the collar and caliper grooves properly.

Install the pad spring and pads.

Install the pivot boot.



INSTALLATION

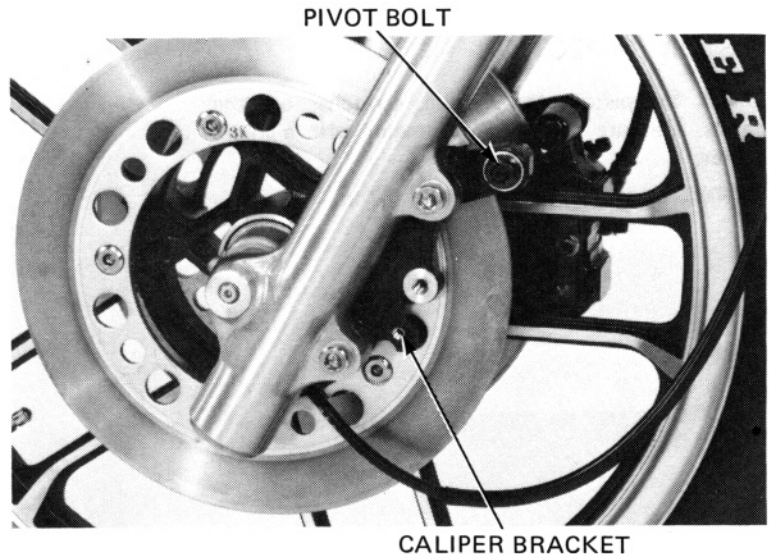
Install the caliper pivot bolt, if it was removed.

TORQUE: 30–36 N·m
(3.0–3.6 kg·m, 22–26 ft-lb)

Apply silicone grease or brake fluid to the caliper pivot bolt.
Install the caliper assembly over the brake disc so that the disc is positioned between the pads.

CAUTION:

Be careful not to damage the pads.



Install the caliper bolt.

TORQUE: 18–23 N·m
(1.8–2.3 kg·m, 13–17 ft-lb)

Connect the brake hose and fill the brake fluid reservoir. Bleed the front brake system (page 17-4).

