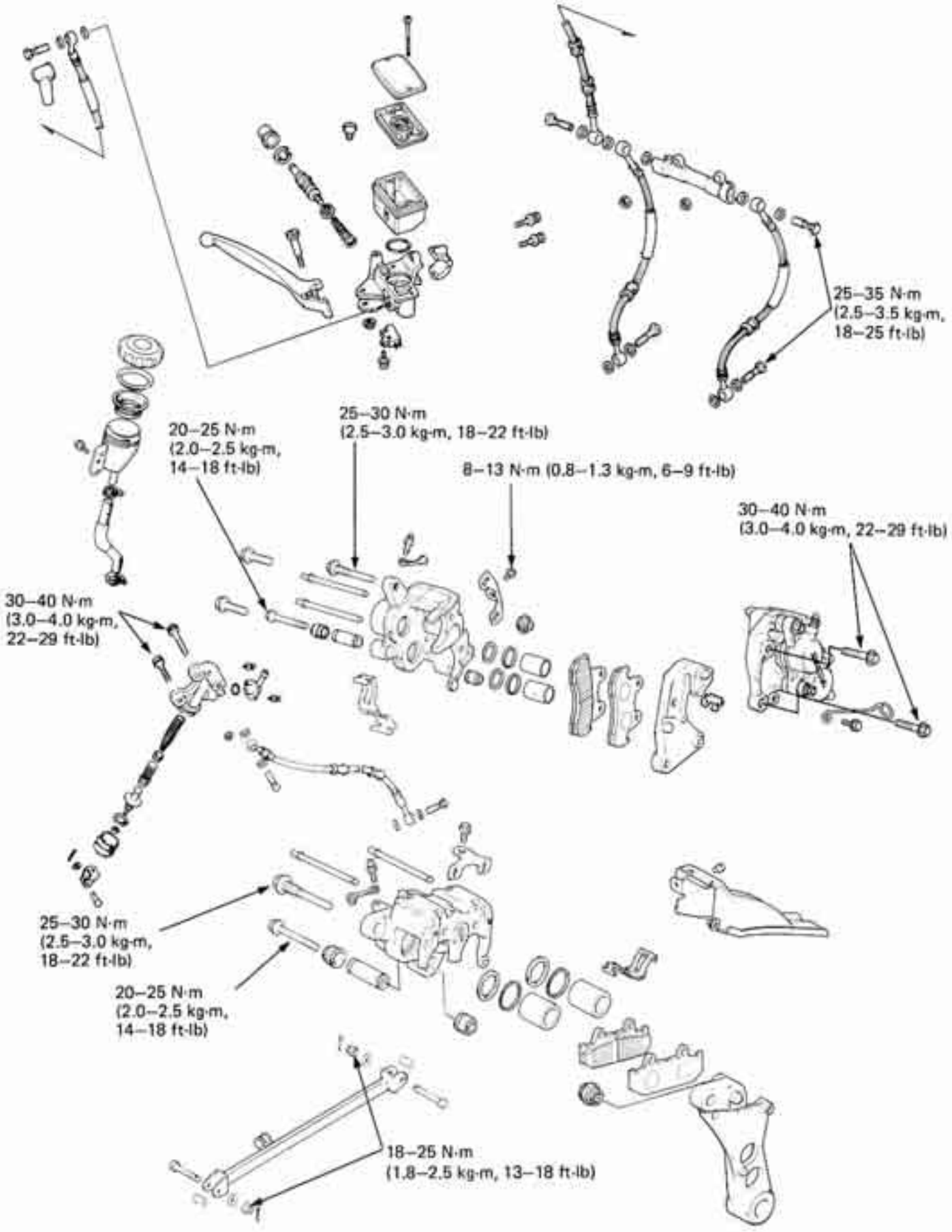


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SERVICE INFORMATION

GENERAL INSTRUCTIONS

- The front and rear brakes 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.

TOOL

Common

Snap ring pliers	07914–3230001

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)
Rear brake caliper	15–25 N·m (1.5–2.5 kg-m, 11–18 ft-lb)
Rear master cylinder	30–40 N·m (3.0–4.0 kg-m, 22–29 ft-lb)
Rear brake torque rod nut	18–25 N·m (1.8–2.5 kg-m, 13–18 ft-lb)
Rear axle nut	85–105 N·m (8.5–10.5 kg-m, 61–76 ft-lb)
Caliper shaft	25–30 N·m (2.5–3.0 kg-m, 18–22 ft-lb)
Caliper bolt	20–25 N·m (2.0–2.5 kg-m, 14–18 ft-lb)

SPECIFICATIONS

	STANDARD	SERVICE LIMIT
Front disc thickness	13.9–14.1 mm (0.55–0.56 in)	13 mm (0.5 in)
Front disc runout	———	0.30 mm (0.012 in)
Front master cylinder I.D.	15.870–15.913 mm (0.6248–0.6265 in)	15.925 mm (0.6270 in)
Front master piston O.D.	15.827–15.854 mm (0.6231–0.6242 in)	15.815 mm (0.6226 in)
Front caliper piston O.D.	30.148–30.198 mm (1.1869–1.1889 in)	30.14 mm (1.187 in)
Front caliper cylinder I.D.	30.230–30.280 mm (1.19041–1.1921 in)	30.29 mm (1.193 in)
Rear master cylinder I.D.	14.000–14.043 mm (0.5512–0.5529 in)	14.06 mm (0.553 in)
Rear caliper cylinder I.D.	30.230–30.280 mm (1.1901–1.19021 in)	30.29 mm (1.193 in)
Rear caliper piston O.D.	30.148–34..128 mm (1.1869–1.1889 in)	30.14 mm (1.187 in)
Rear disc thickness	6.8–7.2 mm (0.27–0.28 in)	6.0 mm (0.24 in)
Rear disc runout	———	0.30 mm (0.012 in)

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TROUBLSHOOTING

Brake Lever/Pedal Soft or Spongy
1. Air bubbles in hydraulic system
2. Low fluid level
3. Hydraulic system leaking

Brake Lever/Pedal 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 or pedal
3. Sticking piston(s)

Brakes Grab or Pull to One Side
1. Pads contaminated
2. Fault in one side of front brake
3. 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

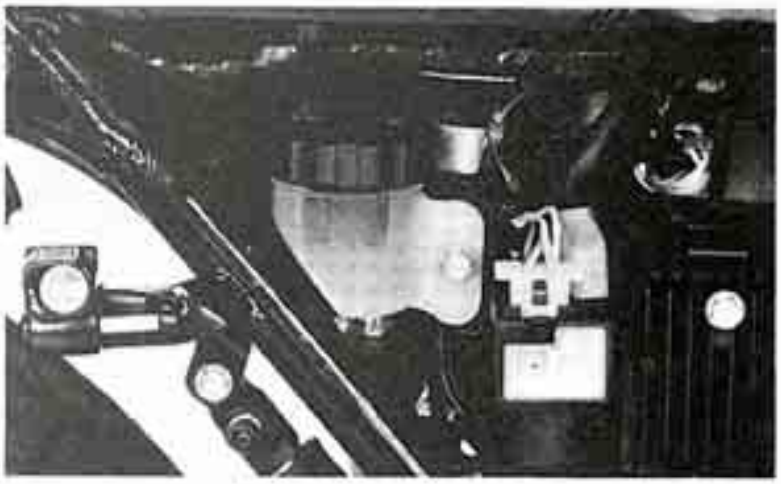


Check the fluid level with the fluid reservoir parallel to the ground.

CAUTION

- *Install the diaphragm on the reservoir when operating the brake lever/pedal. 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 (or pedal).
Stop operating the lever (or pedal) when no fluid flows out of the bleeder 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

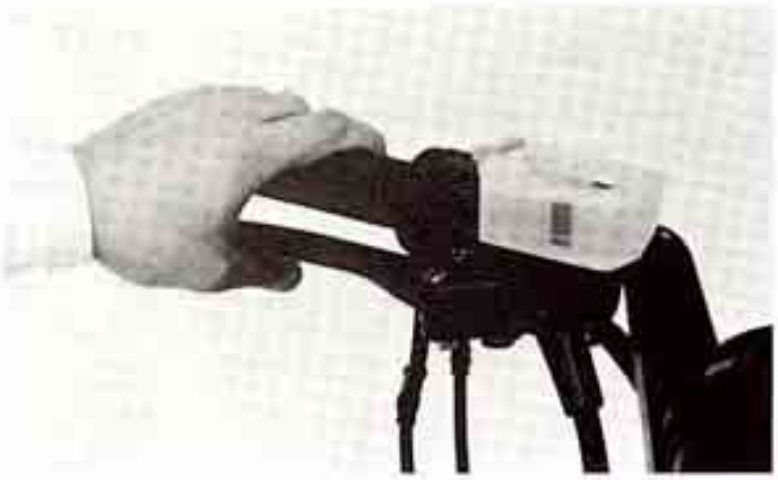
NOTE

Do not mix different brands of brake fluid since they may not be compatible.

Close the bleeder valve, fill the reservoir, and install the diaphragm.
To prevent piston overtravel and brake fluid seepage, keep a 20 mm (3/4 in) space between the lever and handlebar grip 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 (or pedal) resistance is felt.

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AIR BLEEDING



NOTE

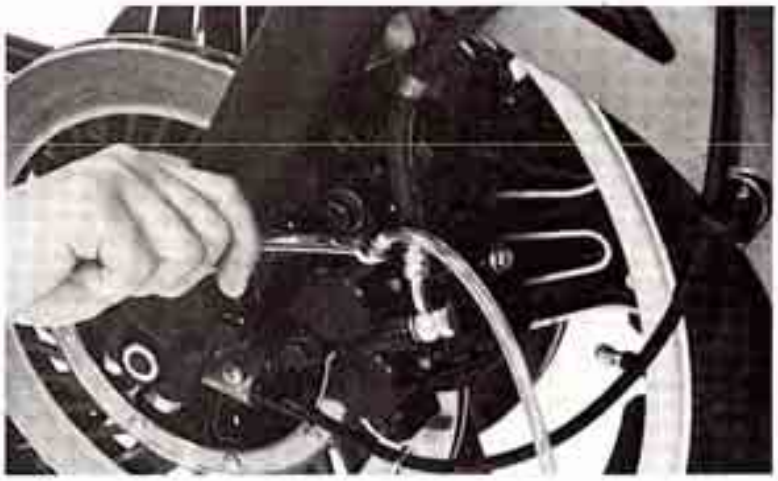
Use this procedure for the front and rear brakes.

NOTE

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

NOTE

- Use only **DOT 3 brake fluid** from a sealed container.
- Do not mix brake fluid brands and never re-use the contaminated fluid which has been pumped out during brake bleeding, because this will impair the efficiency of the brake system.



i) Squeeze the brake lever (or depress the brake pedal), open the bleeder valve 1/2 turn then close the valve.

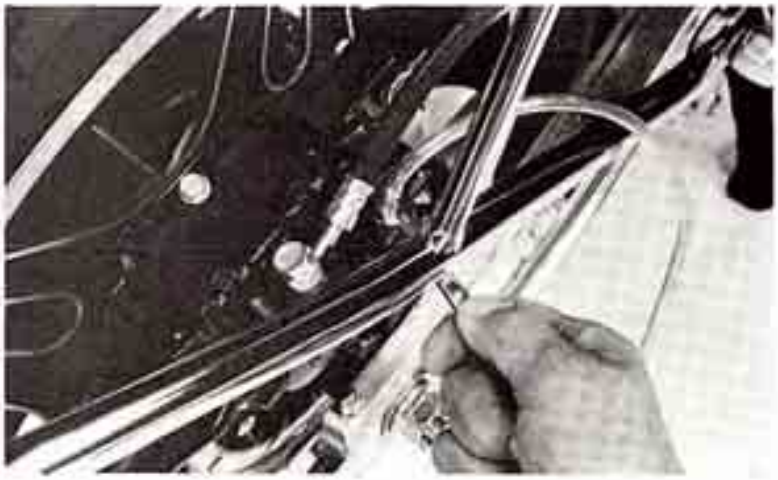
NOTE

Do not release the brake lever (or pedal) until the bleeder valve has been closed again.

ii) Release the brake lever (or pedal) slowly and wait several seconds after it reaches the end of its travel.

Repeat the above steps (i) and (ii) 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.

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BRAKE PAD/DISC

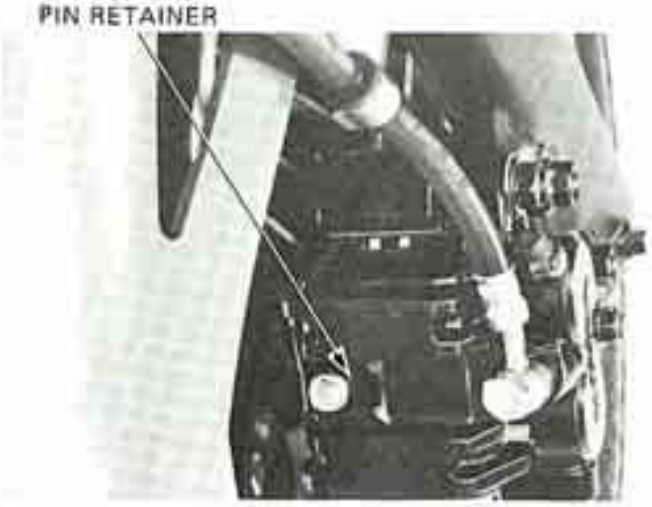
FRONT BRAKE PAD REPLACMENT

Replace the brake pads if the wear line on the pads reaches the edge of the brake disc. (Refer to Page 3-18).

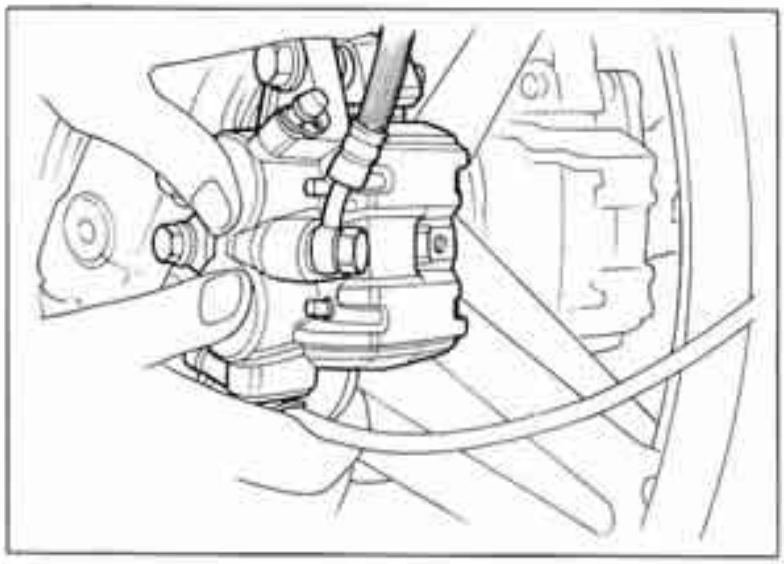
CAUTION

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

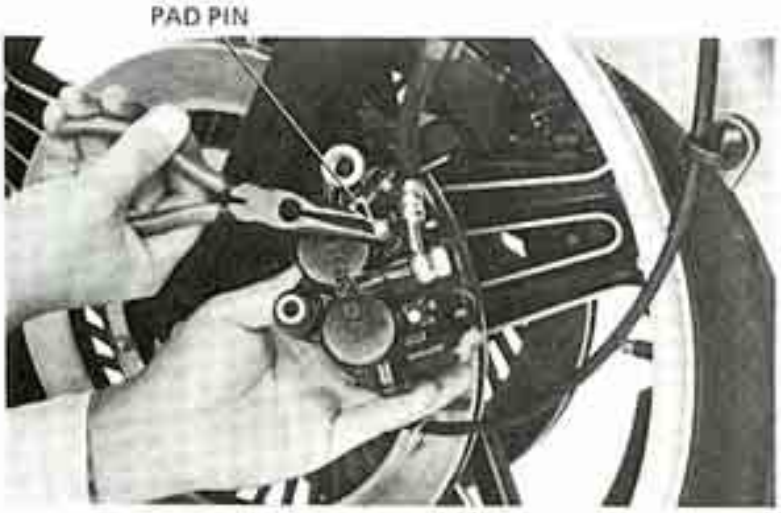
Remove the brake pad pin retainer.



Push the caliper against the disc to push the pistons all the way in to facilitate new brake pad installation.



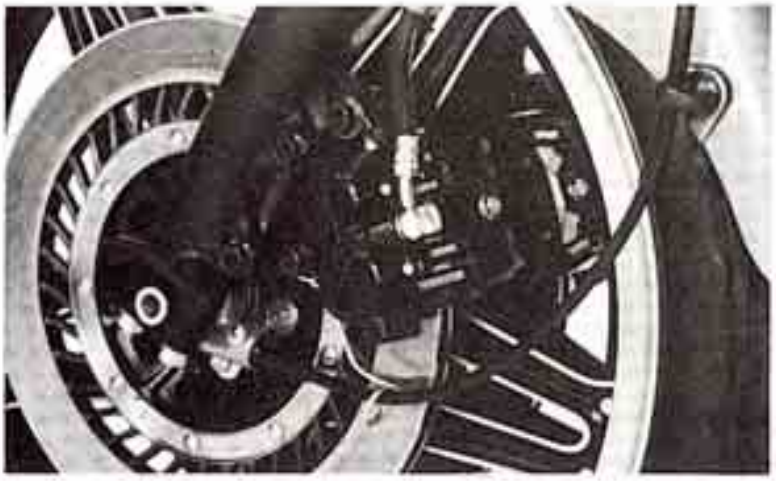
Remove the caliper mount bolt and caliper shaft.
Remove the brake caliper.
Remove the pad pins.



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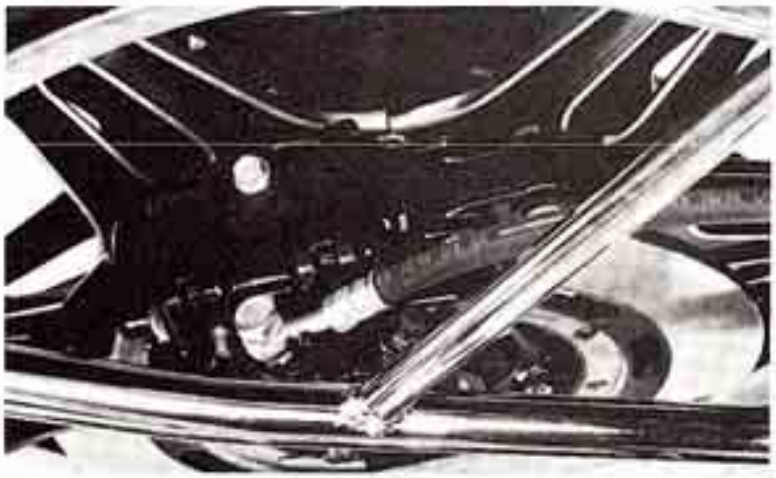
Install new brake pads and insert the pad pins.
Install the pad pin retainer.
Install the front brake caliper on the front fork.

TORQUE VALUES:
PIN RETAINER BOLT:
8–13 N·m (0.8–1.3 kg-m, 69 ft-lb)
CALIPER MOUNT BOLT:
20–25 N·m (2.0–2.5 kg-m, 14–18 ft-lb)
CALIPER SHAFT:
25–30 N·m (2.5–3.0 kg-m, 18–22 ft-lb)



REAR BRAKE PAD REPLACMENT

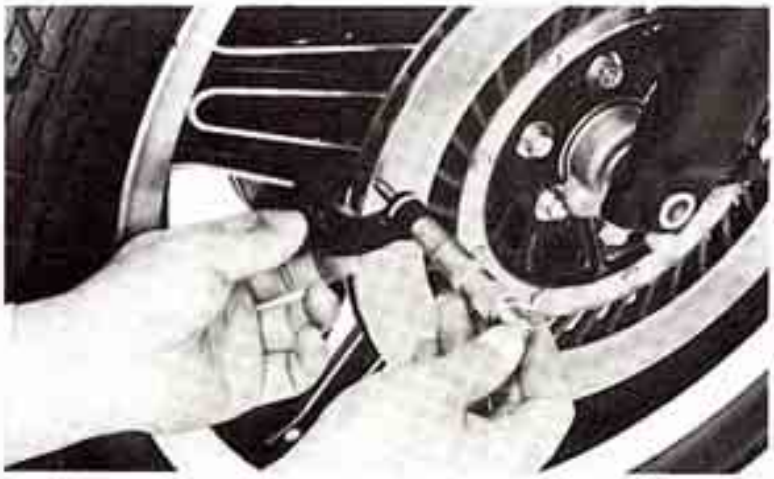
Refer to Front Brake Pad Replacement. (Page 15-5)



BRAKE DISC THICKNESS

Measure the disc thickness.
SERVICE LIMITS:

Front:	**13 mm (0.5 in)**
Rear:	**6 mm (0.2 in)**



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BRAKE DISC WARPAGE

Measure brake disc warpage.

SERVICE LIMIT: 0.30 mm (0.012 in)



FRONT MASTER CYLINDER

DISASSEMBLY

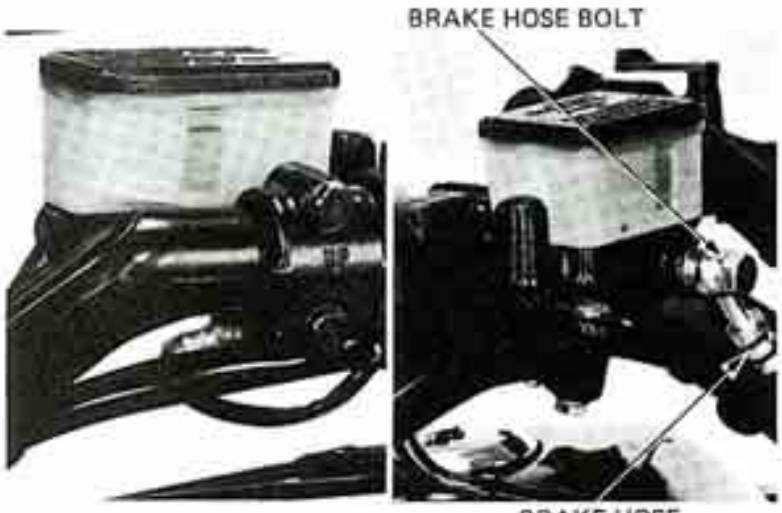
Drain brake fluid from the hydraulic system.
Remove the brake lever from the master cylinder.
Disconnect the brake hose.

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



Remove the master cylinder.

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

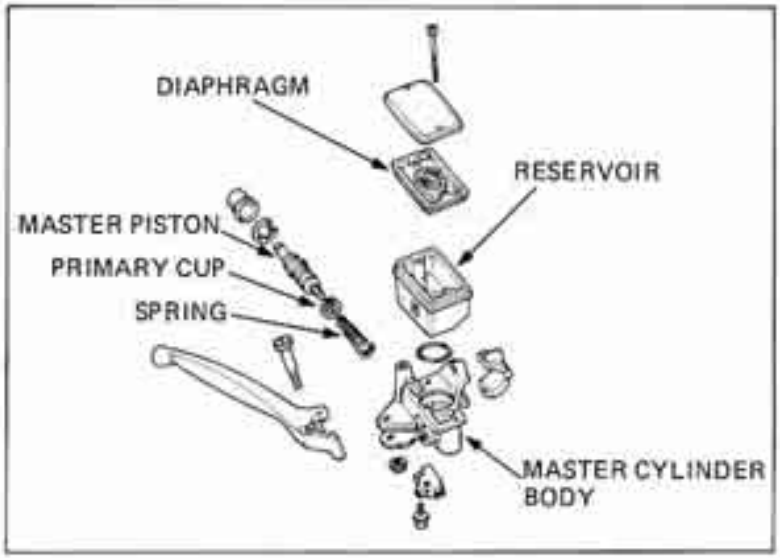


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Remove the master piston.
Then remove the primary cup and spring.

Remove the brake fluid reservoir from the master cylinder body.

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



INSPECTION

CYLINDER I.D.

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

SERVICE LIMIT: 15.925 mm (0.6270 in)

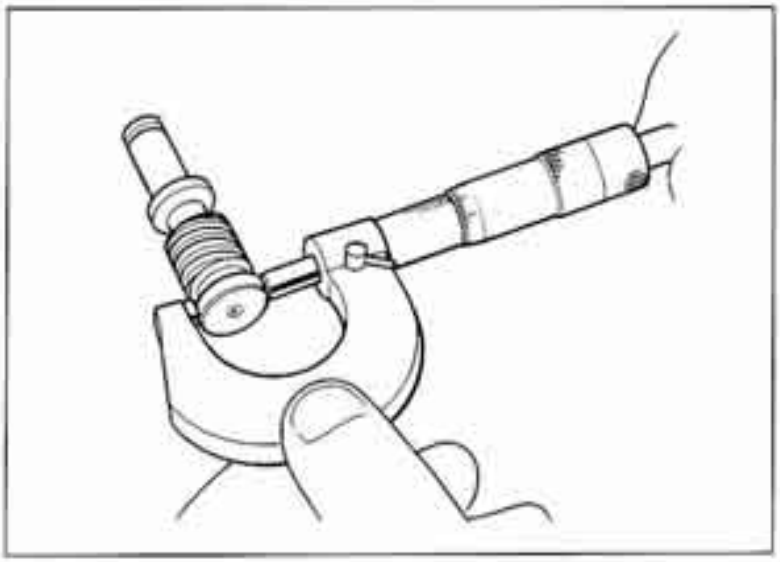


PISTON O.D.

Measure the master piston O.D.

SERVICE LIMIT: 15.815 mm (0.6226 in)

Check the primary cup and secondary cup for damage before assembly.



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ASSEMBLY

CAUTION

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

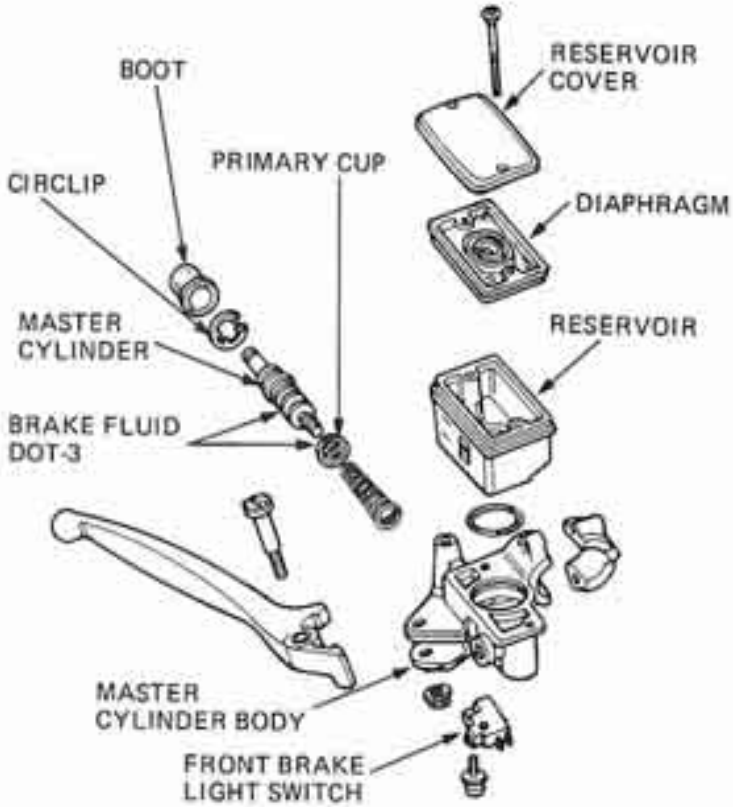
Assemble the master cylinder. Coat all parts with clean brake fluid before assembly.
Install the spring and valve together.

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



INSTALLATION

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 according to page 15-3.



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FRONT BRAKE CALIPER

DISASSEMBLY

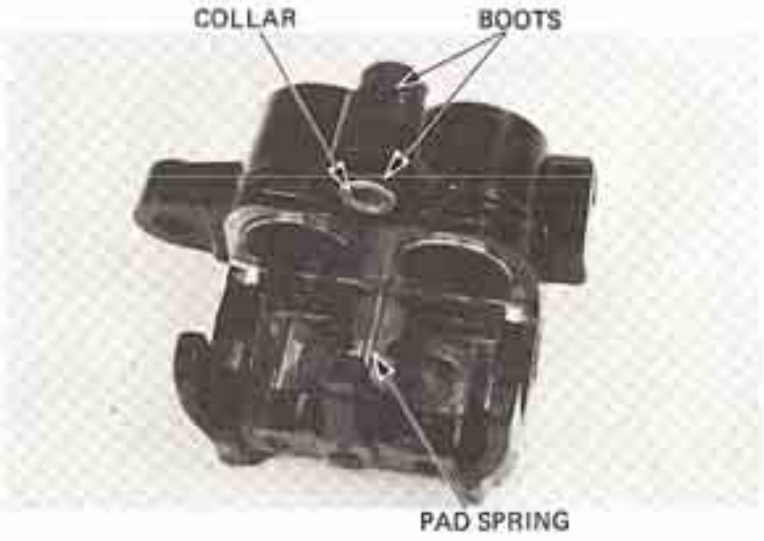
Drain the brake hydraulic system.
Disconnect the brake hose.
Remove the brake pads (see page 26-22).

NOTE:
Avoid spilling brake fluid on painted surfaces.



Remove the caliper mounting bolt.

Remove the boots and collar.
Remove the pad spring.



Position the caliper with the piston down and apply small spurts of air pressure to the fluid inlet.

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

NOTE:
Place a shop towel over the pistons to prevent the pistons from becoming projectiles.



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

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Push the oil seals in and then lift them out.
Clean the caliper grooves with brake fluid.

CAUTION

Do not damage the piston sliding surface.



CALIPER PISTON INSPECTION

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

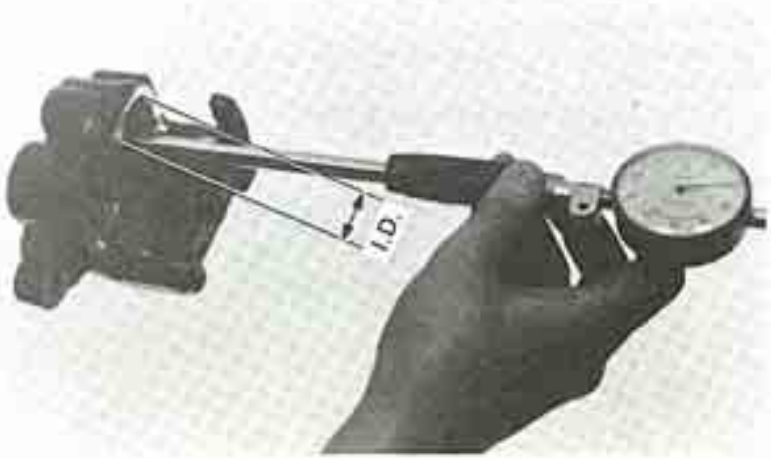
SERVICE LIMIT: 30.14 mm (1.187 in)



CALIPER CYLINDER INSPECTION

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

SERVICE LIMIT: 30.29 mm (1.193 in)

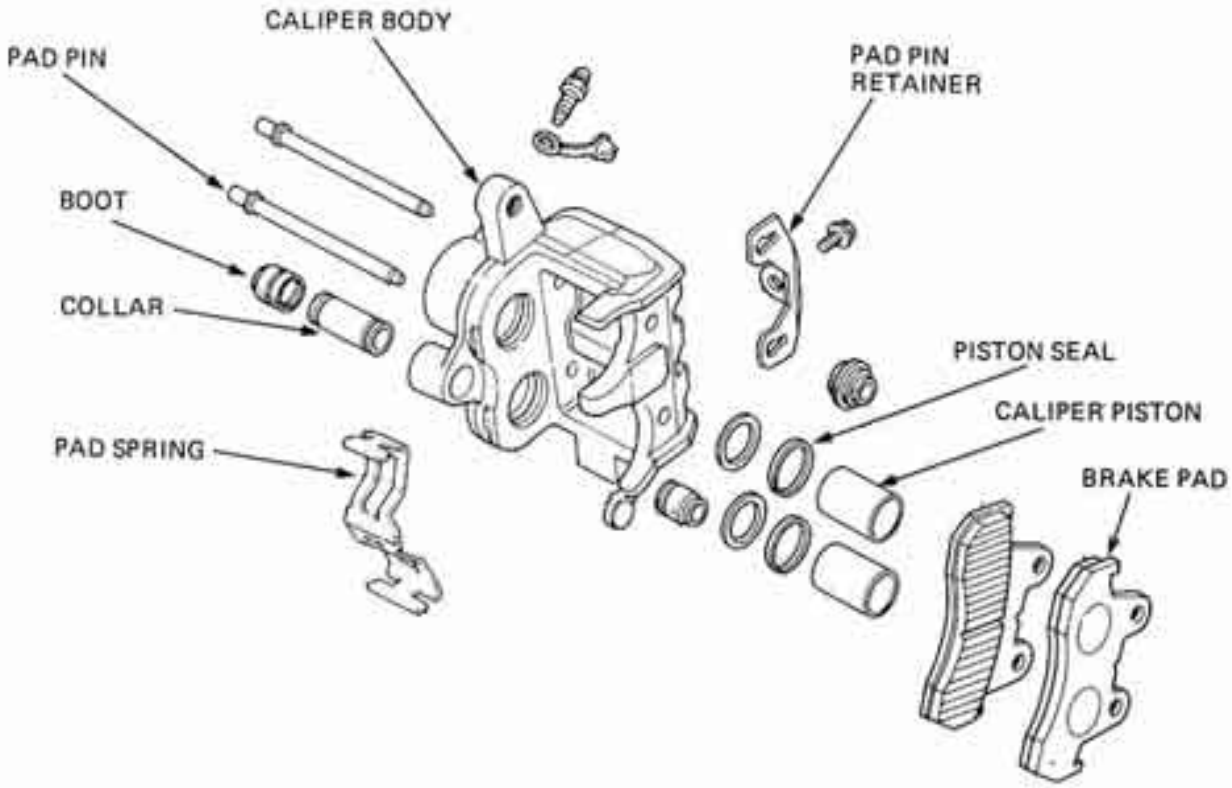


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ASSEMBLY

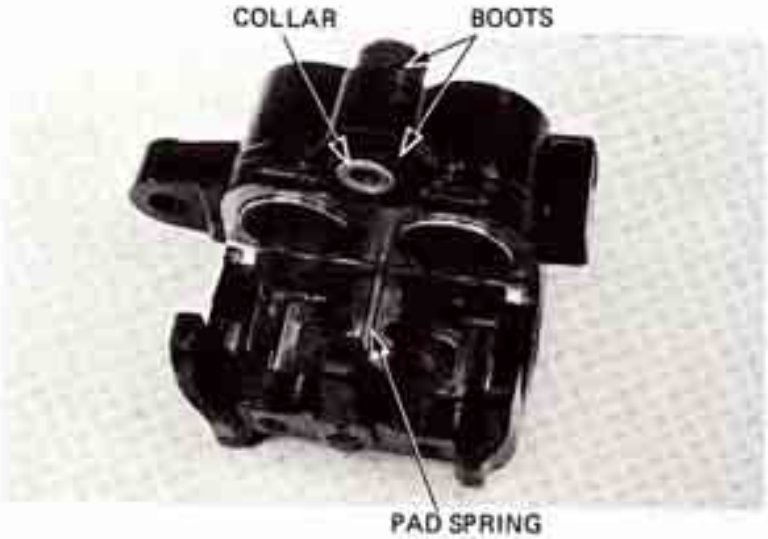
WARNING

A contaminated brake disc or pad reduces stopping power. Do not allow grease on the brake pads.



The oil seals must be replaced with new ones whenever disassembled.
Coat the oil seals with silicon grease or brake fluid before assembly.
Install the pistons with the dished ends on the brake pad side.

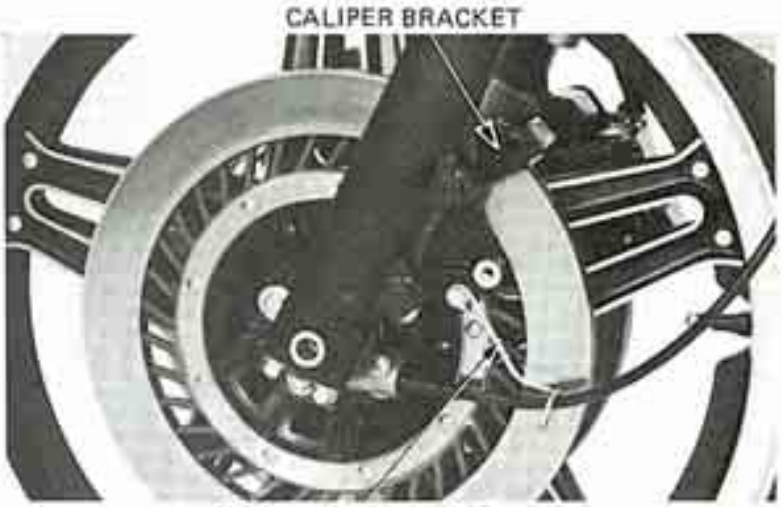
Install the boots and collar making sure that the boots are seated in the collar grooves properly.
Install the brake pad spring.



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FRONT CALIPER BRACKET DISASSEMBLY

Remove the speedometer clamp.
Remove the caliper bracket.
Remove the caliper shaft boot.



FRONT CALIPER BRACKET ASSEMBLY

Coat the boot with silicone grease or brake fluid and install it in the groove of the carrier.
Install the caliper carrier.

NOTE

Install the caliper shim on the caliper bracket with cement.



Install the caliper bracket on the fork slider.

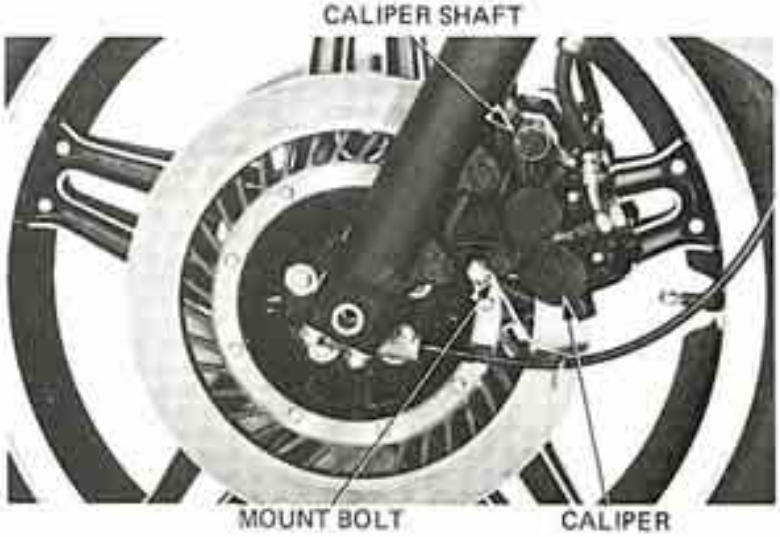
TORQUE:
30–40N·m (3.0–4.0 kg·m, 22–29 ft·lb)

CALIPER INSTALLATION

Apply silicon grease or brake fluid to the caliper shaft.
Install the caliper onto the front fork.

TORQUE:
CALIPER SHAFT:
25–30 N·m (2.5–3.0 kg·m, 18–22 ft·lb)
CALIPER MOUNT BOLT:
20–25 N·m (2.0–2.5 kg·m, 14–18 ft·lb)

Make sure that the caliper shaft boot is seated in the shaft groove properly.
Install the brake pads.
Connect the brake hose.
Bleed the brake system.



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REAR MASTER CYLINDER

DISASSEMBLY

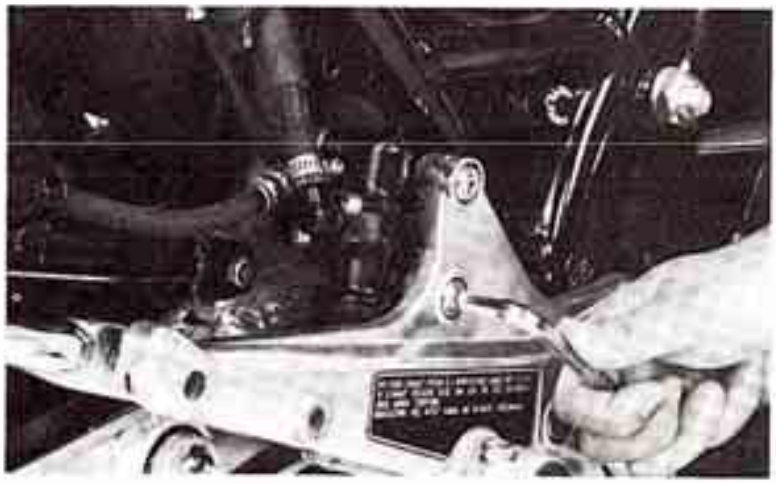
Remove the right side cover.
Place a clean drip pan under the brake line.
Disconnect the brake line on the back of the master cylinder.



CAUTION

Avoid spilling brake fluid on painted surfaces.

Remove the pin from the rod ege and remove the two allen head bolts.

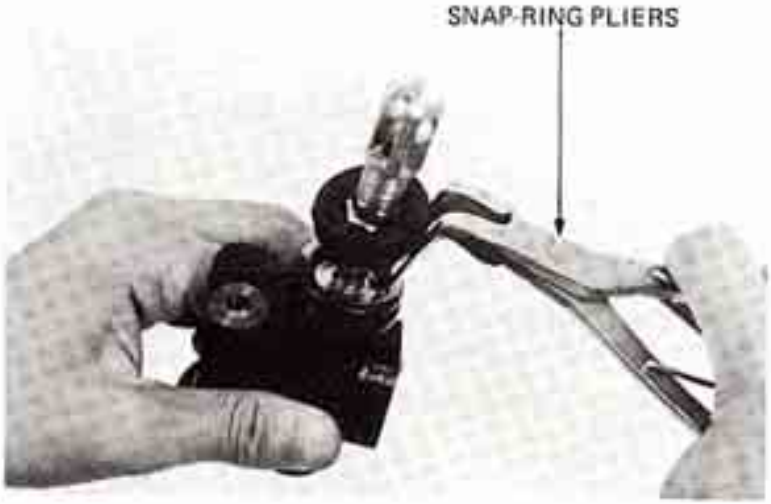


Remove the rubber cover.
Remove the circlip and push rod from the master cylinder body.

Remove the master piston, primary cup and spring.

It may be necessary to apply a small amount of air pressure to the fluid outlet to remove the master piston and primary cup.

Clean all parts with brake fluid.



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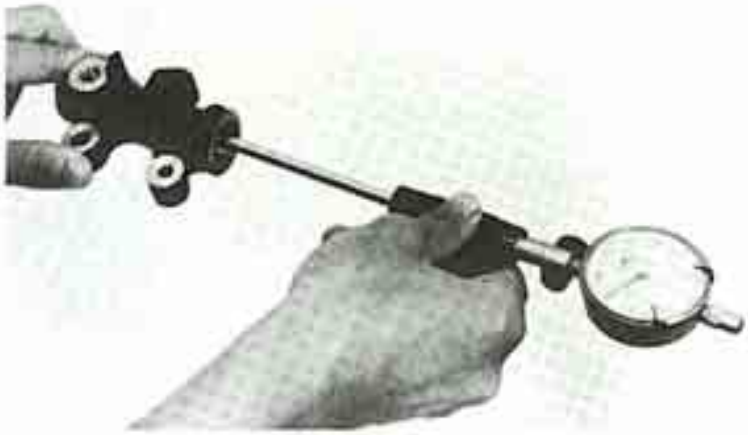
INSPECTION

CYLINDER I.D.

Measure the inside diameter of the master cylinder bore.

SERVICE LIMIT: 14.06 mm (0.554 in)

Check for scores, scratches or nicks.



PISTON O.D.

Measure the master piston O.D.

SERVICE LIMIT: 13.945 mm (0.5490 in)

Check the primary cup and secondary cup for damages before assembly.



ASSEMBLY

CAUTION

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

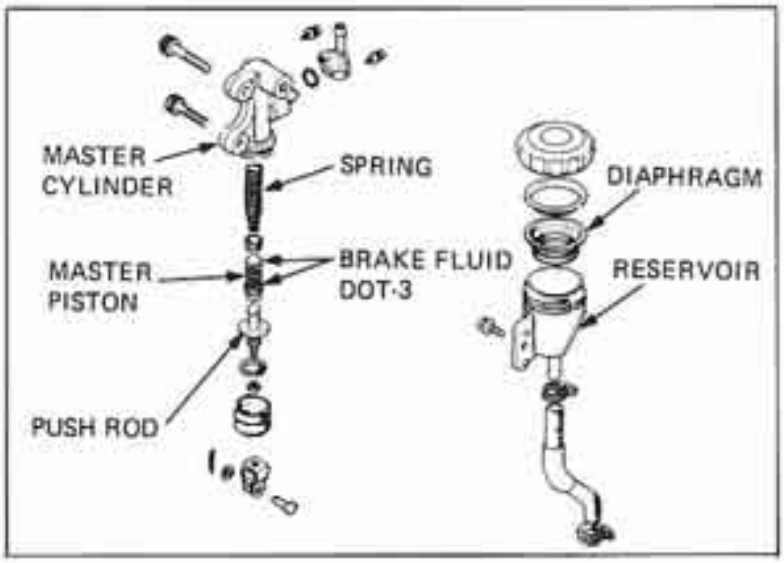
Assemble the master cylinder.
Coat all parts with clean brake fluid.

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 snap-ring is seated firmly in the groove.

Install the spring.
Install the primary cup and piston.
Install the push rod and circlip.
Install the boot, nut and rod eye.



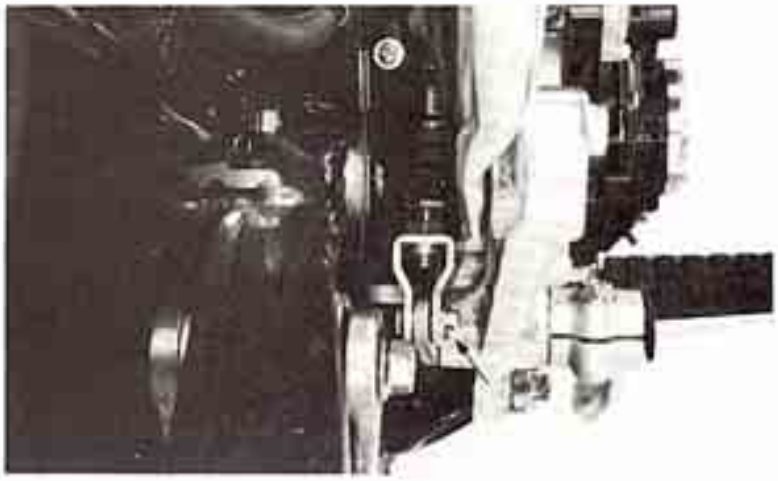
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Install the master cylinder on the master cylinder bracket.

TORQUE:
30–40N-m (3.0–4.0 kg-m, 22–29 ft-lb)

Connect the brake hose and brake rod.

Bleed the brake hydraulic system after assembly. (Page 15-14)



REAR CALIPER

REMOVAL

Remove the right saddle bag.
Drain the hydraulic system and disconnect the brake hose.

CAUTION

Avoid spilling brake fluid on painted surfaces to prevent damage to the paint.

Remove the brake caliper by removing the caliper mount bolts.



DISASSEMBLY

Refer to Front Brake Caliper (Page 15-10).

INSPECTION

REAR BRAKE CALIPER

Check the piston for scoring or scratches.
Measure the piston O.D.

SERVICE LIMIT: 30.14 mm (1.187 in)



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REAR BRAKE CALIPER CYLINDER

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

SERVICE LIMIT: 30.29 mm (1.193 in)



ASSEMBLY

Refer to Front Brake Caliper (Page 15-12).

REAR CALIPER BRACKET DISASSEMBLY

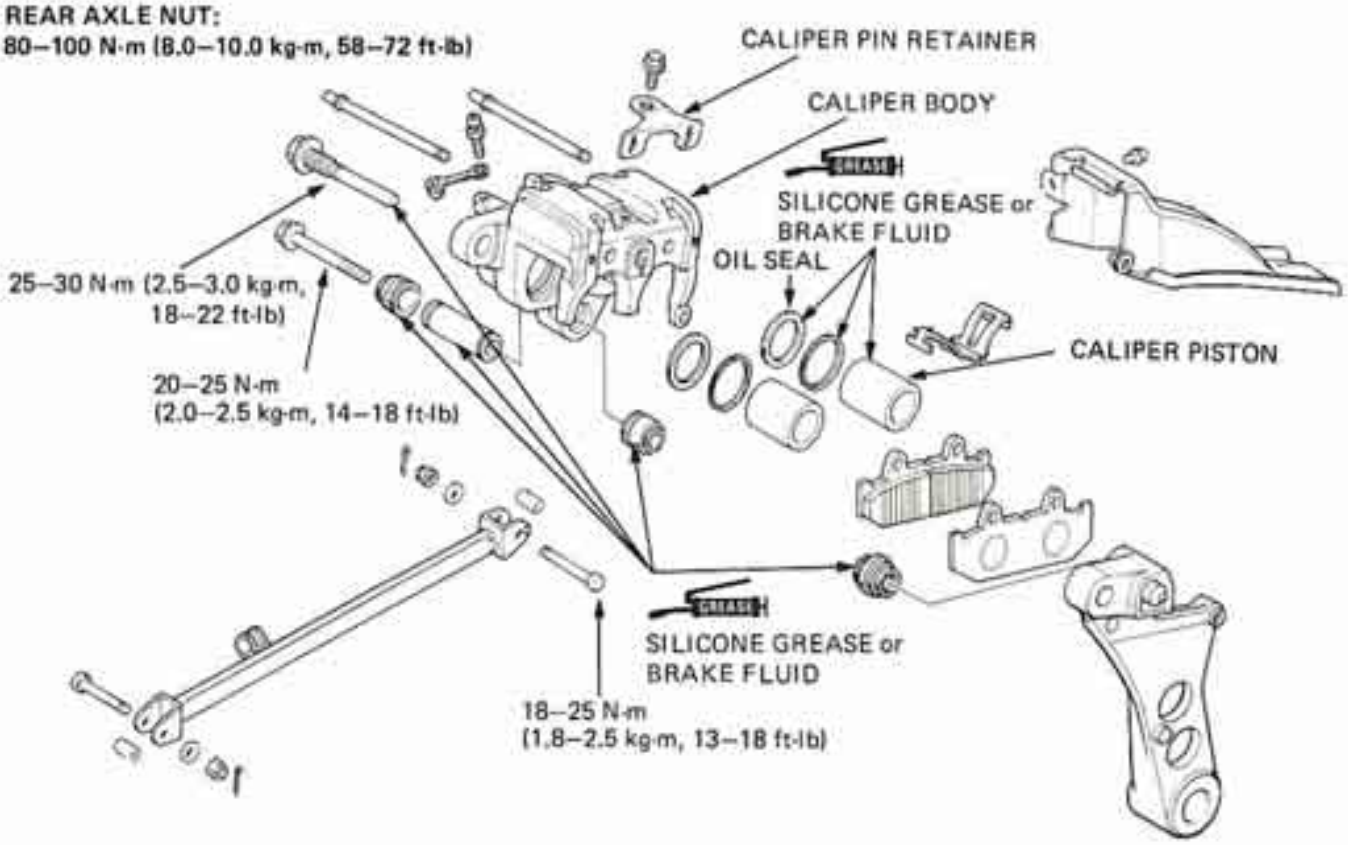
Remove the rear wheel.
Remove the rear brake caliper.
Remove the rear brake torque link.
Remove the rear brake caliper bracket.
Remove the caliper shaft boot.

REAR CALIPER BRACKET ASSEMBLY

Installation is the reverse order of removal.

Coat the boot with silicon grease or brake fluid.
Install the boot in the groove of the bracket with cement as shown.

TORQUE:
REAR AXLE NUT:
80–100 N·m (8.0–10.0 kg-m, 58–72 ft-lb)



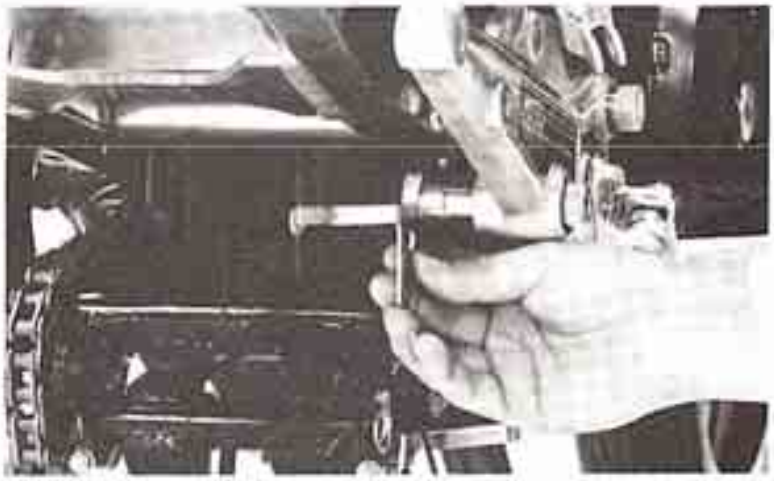
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Remove the brake pedal.
Remove the rear brake master cylinder.
Remove the rear brake stoplight switch spring and brake pedal shaft.

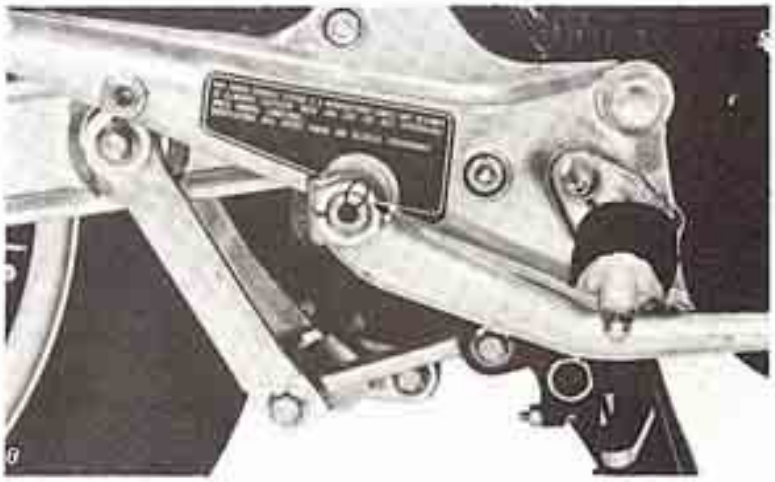


INSTALLATION

Install the brake pedal shaft.
Install the return spring.



Install the thrust washer on the brake shaft.
Install the brake pedal by aligning the punch mark on the brake shaft with the punch mark on the brake pedal.



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