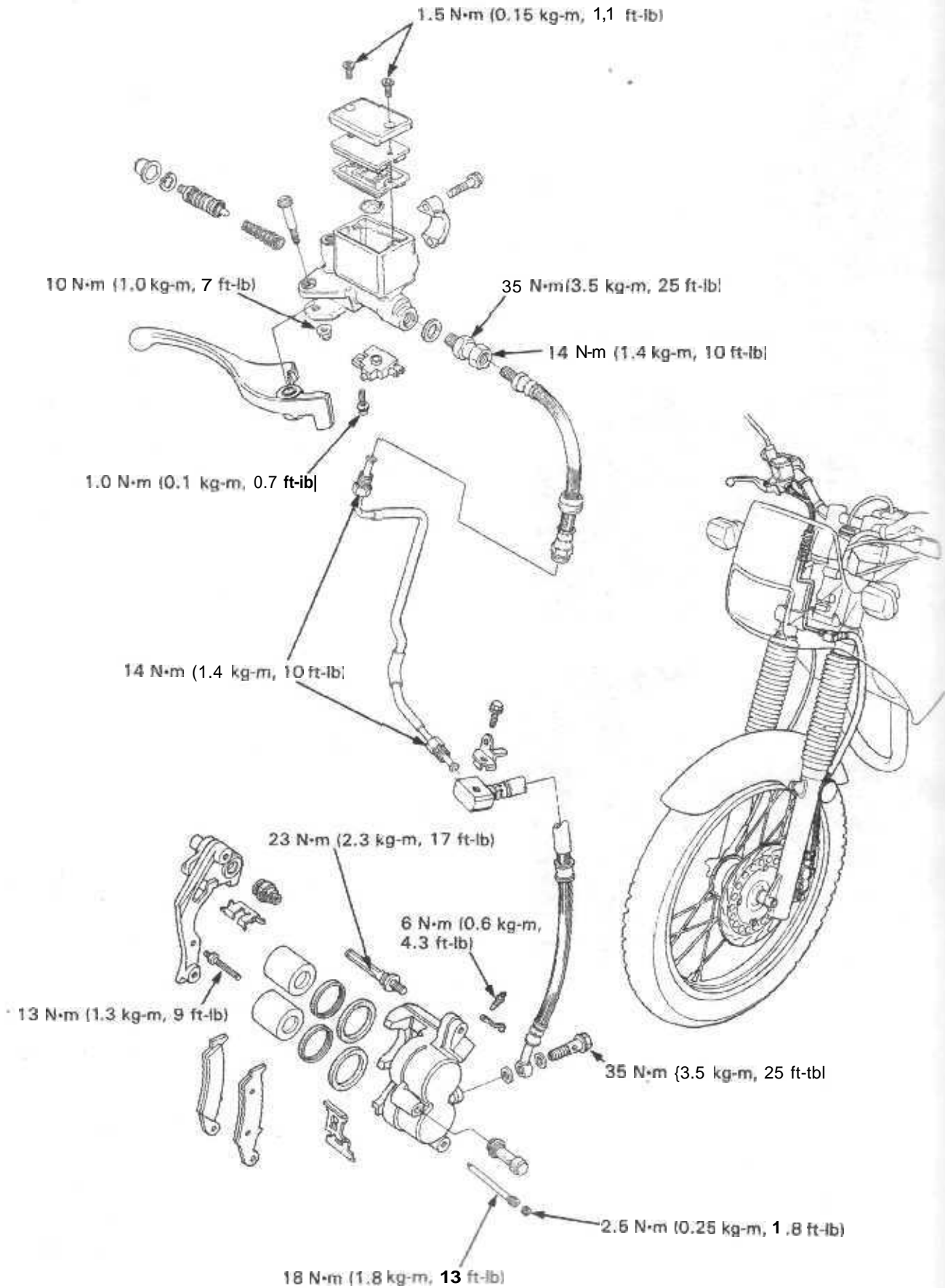


# HYDRAULIC BRAKE



# 14. HYDRAULIC BRAKE

SERVICE INFORMATION	14-1	BRAKE PAD/DISC	14-4
TR OUBL ES HO OTIN G	14-2	MASTER CYLINDER	14-6
BRAKE FLUID RE PLACEMENT/BLEEDING	14-3	BRAKE CALIPER	14-8

3B27	3B27	Передний	Задний
115514	TR2501HH		JPM27FF

## SERVICE INFORMATION

### GENERAL

- The brake pads can be removed without disconnecting the hydraulic system.
- Bleed the hydraulic system if it has been **disassembled** or if the brake feels **spongy**.
- Do not **allow** foreign material to enter the **system** when filling the reservoir.
- Brake fluid will damage painted, plastic and rubber parts. Whenever handling brake fluid, protect the **painted**, plastic and rubber parts by covering them with a rag. If fluid does get on these parts, wipe it off with a clean cloth.
- Always **check brake operation** before riding the motorcycle.
- If the metal brake pipe has to be removed, loosen the **brake pipe nut** while holding the brake hose nut to prevent the brake hose or brake hose stay from twisting or bending.

### 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.
- **Inhaled asbestos fibers** have been found to cause respiratory disease and cancer. **Never use an air hose or dry brush to clean brake assemblies.** Use an **OSHA-approved vacuum cleaner or alternate method approved by OSHA** designed to minimize the hazard caused by airborne asbestos fibers.

### SPECIFICATIONS

Unit: mm (in)

ITEM	STANDARD	SERVICE LIMIT
Front disc thickness	3.3–3.7 (0.13–0.15)	3.0 (0.12)
Front disc runout	—	0.3 (0.01)
Front master cylinder I.D.	11.000–11.043 (0.4331–0.4348)	11.055 (0.4352)
Front master piston O.D.	10.957–10.984 (0.4314–0.4324)	10.945 (0.4309)
Front caliper cylinder I.D.	27.000–27.950 (1.0630–1.0650)	27.06 (1.065)
Front caliper cylinder O.D.	26.900–26.950 (1.0591–1.061)	26.89 (1.0587)
Specified brake fluid	DOT 4 only	—

14

### TORQUE VALUES

Brake hose oil bolt	35 N·m (3.5 kg-m, 25 ft-lb)
Brake hose joint (master cylinder side)	35 N·m (3.5 kg-m, 25 ft-lb)
(brake hose side)	14 N·m (1.4 kg-m, 10 ft-lb)
Brake pipe nut	14 N·m (1.4 kg-m, 10 ft-lb) Apply oil to the threads
Caliper mounting bolt	25 N·m (2.5 kg-m, 18 ft-lb)
Master cylinder cover screw	1.5 N·m (0.15 kg-m, 1.1 ft-lb)
Brake lever pivot nut	10 N·m (1.0 kg-m, 7 ft-lb)
Front brake light switch screw	1.0 N·m (0.1 kg-m, 0.7 ft-lb)
Caliper pin bolt	23 N·m (2.3 kg-m, 17 ft-lb) Apply a locking agent to the threads
Caliper bracket pin bolt	13 N·m (1.3 kg-m, 9 ft-lb)
Brake pad pin	18 N·m (1.8 kg-m, 13 ft-lb)
Brake pad pin plug	2.5 N·m (0.25 kg-m, 1.8 ft-lb)
Bleed valve	6 N·m (0.6 kg-m, 4.3 ft-lb)

### TOOL

Special Snap ring pliers 07914-3230001 or equivalent commercially available in U.S.A.

## TROUBLESHOOTING

### Brake lever soft or spongy

- Air bubbles in hydraulic system
- Low fluid level
- Hydraulic system leaking

### Brake lever too hard

- Sticking piston
- Clogged hydraulic system
- Pads glazed or excessively worn

### Brake drag

- Hydraulic system sticking
- Sticking piston(s)
- Clogged hydraulic system
- Caliper slide pin sticking
- Disc or wheel misaligned

### Brake grab or pull to one side

- Pads contaminated
- Uneven pad wear
- \* Disc or wheel misaligned

### Brake chatter or squeal

- Pads contaminated
- Excessive disc runout
- Caliper installed incorrectly
- Disc or wheel misaligned

## BRAKE FLUID REPLACEMENT/BLEEDING

### WARNING

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

### CAUTION

- Do not let foreign material to enter the system when filling the reservoir.
- Avoid spilling fluid on painted, plastic or rubber parts. Place a rag over these parts whenever the system is serviced.

### BRAKE FLUID DRAINING

With the fluid reservoir parallel to the ground, remove the reservoir cover, set plate and diaphragm.

Connect a bleed hose to the caliper bleed valve. Loosen the bleed valve and pump the brake lever until no more fluid flows out of the bleed valve.

### BRAKE FLUID FILLING/BLEEDING

Fill the master cylinder reservoir with DOT 4 brake fluid from a sealed container.

### CAUTION

- Do not mix different types of fluid. They are not compatible.

Connect a commercially available brake bleeder to the bleed valve. Pump the brake bleeder and loosen the bleed valve. Add fluid when the fluid level in the master cylinder reservoir is low.

### NOTE

- Check the fluid level often while bleeding the brake to prevent air from being pumped into the system.
- Use only DOT 4 brake fluid from a sealed container.
- When using a brake bleeding tool, follow the manufacturer's operating instruction.

Repeat the above procedures until air bubbles do not appear in the plastic hose.

### NOTE

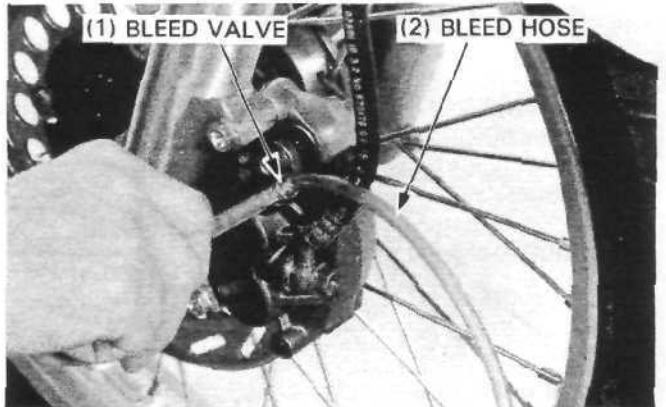
- If air is entering the bleeder from around the bleed valve threads, seal the threads with teflon tape.

Close the bleed valve and operate the brake lever. If it still feels spongy, repeat the above procedure.

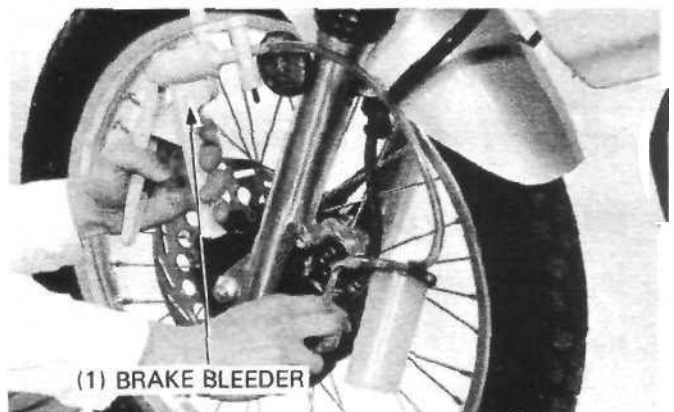
(1) RESERVOIR COVER



(1) BLEED VALVE (2) BLEED HOSE



(1) BRAKE BLEEDER



## HYDRAULIC BRAKE

If a brake bleeder is not **available**, use the following procedure: Pump up the system pressure with the brake lever until there are no air bubbles in the fluid flowing out of the reservoir **small** hole.

Connect the bleed hose to the bleed valve and bleed the system as follows:

1. Squeeze the brake lever, open the bleed valve 1/4 turn and **then** close the **bleed** 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 air bubbles cease to appear in the fluid coming out of the bleed valve.

Tighten the bleed valve.

TORQUE: 6 **N·m** (0.6 **kg·m**, 4.3 **ft·lb**)

Fill the **master** cylinder reservoir to the upper level mark with DOT 4 brake fluid from a sealed container.

Install the diaphragm, **set** plate and reservoir cover.

Tighten the reservoir cover screws.

TORQUE: 1.5 **N·m** (0.15 **kg·m**, 1.1 **ft·lb**)

## BRAKE PAD/DISC

### BRAKE PAD REPLACEMENT

#### NOTE

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

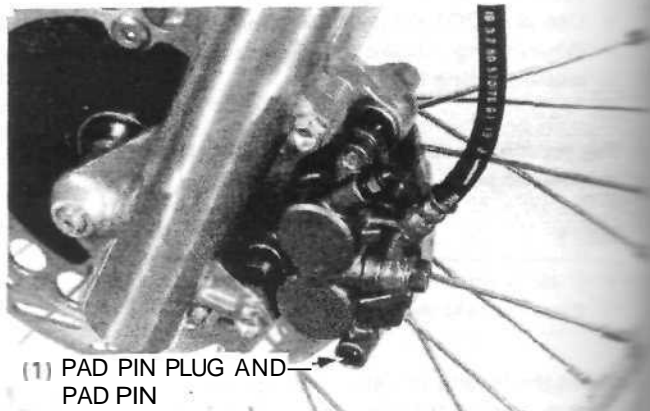
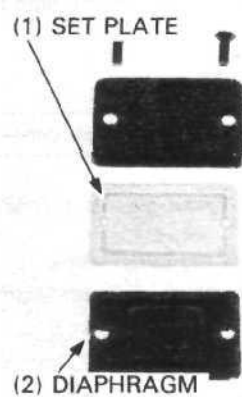
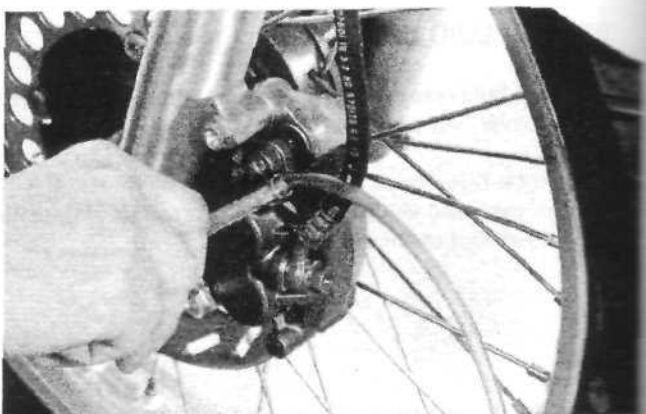
Push the caliper pistons all the way into caliper to gain clearance for the new pads.

#### CAUTION

- Be careful **that** the master cylinder does **not** overflow when the caliper pistons are compressed.
- Brake fluid can cause damage to **painted**, plastic or rubber surface.

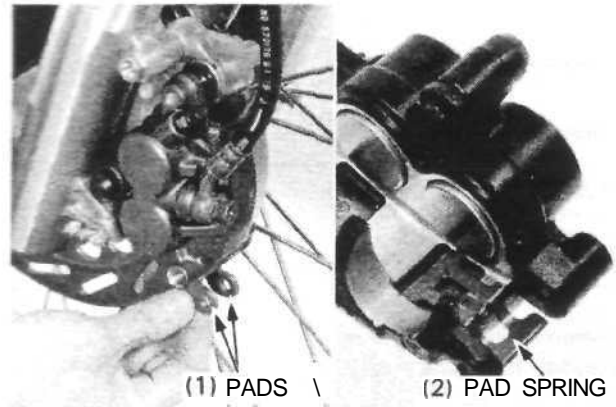
Remove the following:

- pad pin plug
- pad pin
- pads



Make sure that the pad spring is installed in the position shown.

Install new pads in the caliper.



Install the pad pin and tighten it to the specified torque.

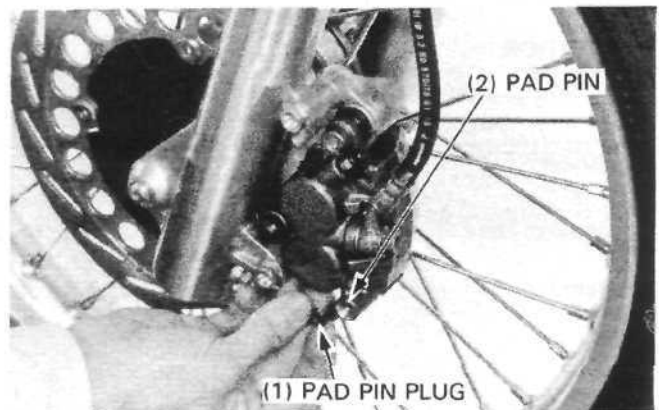
**TORQUE: 18 N·m (1.8 kg-m, 13 ft-lb)**

Tighten the pad pin plug to the specified torque.

**TORQUE: 2.5 N·m (0.25 kg-m, 1.8 ft-lb)**

**NOTE**

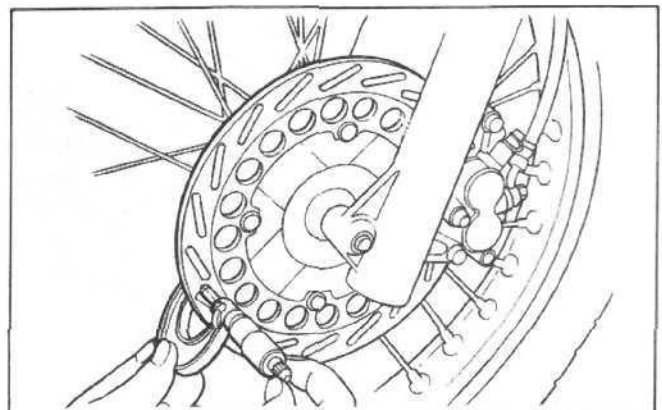
- Operate the brake lever to seat the caliper pistons against the pads.



**DISC THICKNESS**

Measure the disc thickness.

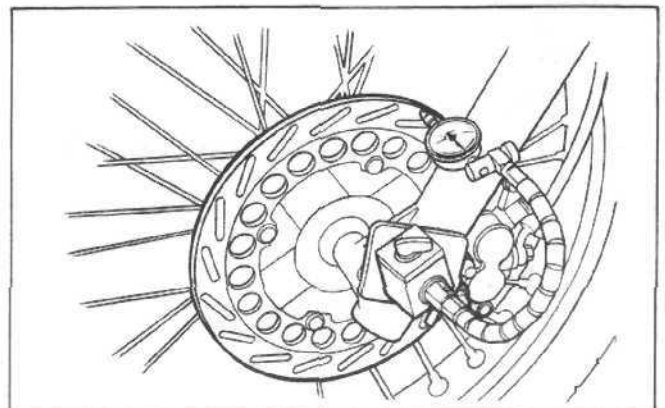
**SERVICE LIMIT: 3.0 mm (0.12 in)**



**DISC WARPAGE**

Measure the brake disc for runout.

**SERVICE LIMIT: 0.3 mm (0.01 in)**



# MASTER CYLINDER

## DISASSEMBLY

Drain brake fluid **from** the hydraulic system (page 14-3).

### CAUTION

*\* Avoid spilling fluid on **painted**, plastic, or rubber parts. Place a rag over these parts whenever the system is serviced.*

Remove the **rear** view mirror.  
Loosen the brake hose joint nut and disconnect the brake hose from the joint.  
Disconnect the front brake light switch wires.  
Remove the master cylinder.

### CAUTION

*• When removing the brake hose cover the end of the hose to prevent contamination.*

Remove the brake lever by removing the pivot nut and bolt.

Remove the brake light switch by removing the screw.

Remove the piston boot.

Remove the snap ring from the master cylinder.

### TOOL:

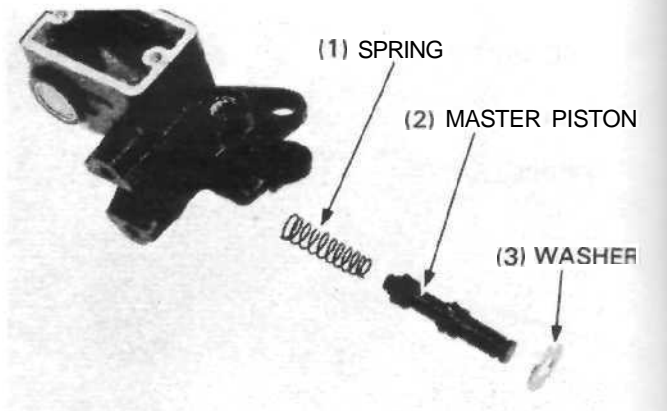
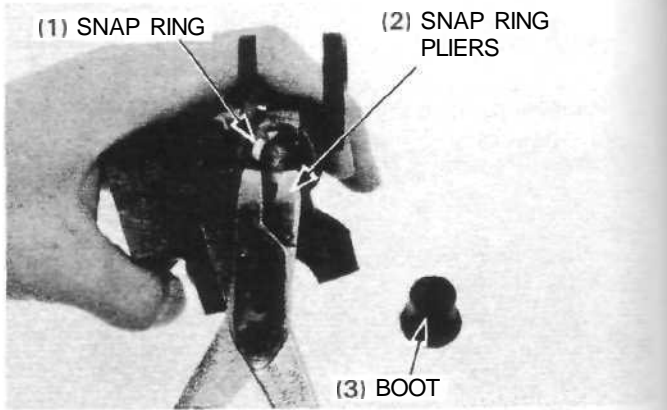
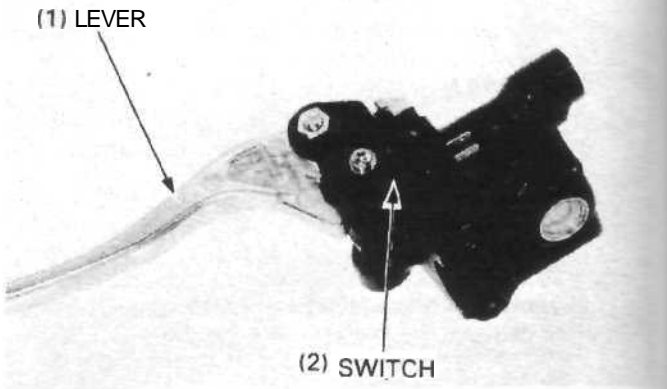
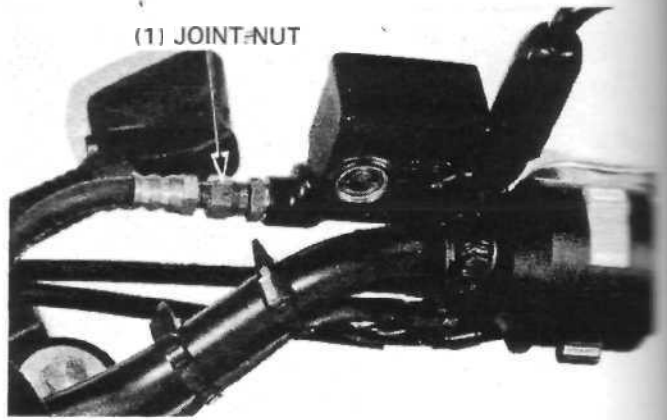
**Snap ring pliers**

**07914-3230001** or equivalent commercially available in U.S.A.

Remove the following:

- washer
- master piston
- spring

Clean the master cylinder, reservoir and master piston in clean brake fluid.





**INSPECTION**

Check the primary and secondary cups for wear, **deterioration** or damage.

Check the master cylinder and piston for scoring or other **dam-**  
**age.**

Measure the master cylinder inside diameter.

**SERVICE LIMIT: 11.05b mm (0.4352 in)**

Measure the master piston outside diameter.

**SERVICE LIMIT: 10.945 mm (0.4309 in)**

**NOTE**

- The master piston, piston cups and spring must be replaced as a set.

**ASSEMBLY**

Coat the master piston and primary and secondary cups with clean brake fluid, then install the spring, master piston and washer into the master cylinder.

Install the snap ring and piston boot.

**CAUTION**

- *Do not allow the lips of the cups to turn inside out and be certain the snap ring is firmly seated in the groove.*

**TOOL:**

Snap ring pliers

**07914-3230001 or equivalent commercially available in U.S.A.**

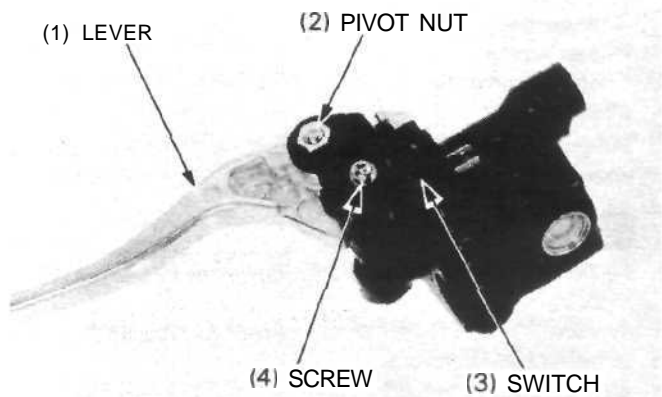
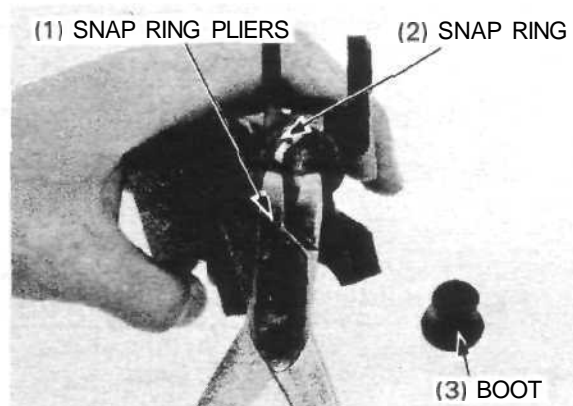
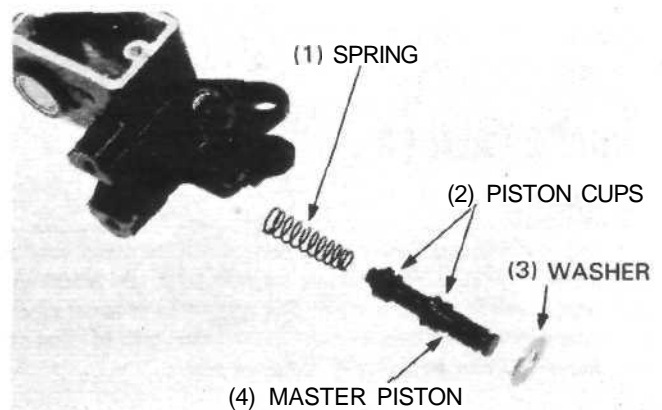
Install the brake light switch.

Tighten the screw to the specified torque.

**TORQUE: 1.0 N·m (0.1 kg·m, 0.7 ft·lb)**

Install the brake lever and tighten the pivot nut.

**TORQUE: 10 N·m (1.0 kg·m, 7 ft·lb)**





## HYDRAULIC BRAKE

Place the front brake master cylinder on the handlebar and install the holder with the "UP" mark facing up. Align the end of the master cylinder with the punch mark on the handlebar, and tighten the upper bolt first, then tighten the lower bolt.

Install the brake hose joint with new sealing washer to the master cylinder, then tighten the joint nut (master cylinder side).

**TORQUE: 35 N·m (3.5 kg·m, 25 ft·lb)**

Connect the brake hose to the brake hose joint and tighten the joint nut (brake hose side) holding the end of the brake hose.

**TORQUE: 14 N·m (1.4 kg·m, 10 ft·lb)**

Connect the brake light switch wires to the switch. Fill and bleed the hydraulic system (page 14-3).

## BRAKE CALIPER

### ▲ WARNING

- *Inhaled asbestos fibers have been found to cause respiratory disease and cancer. Never use an air hose or dry brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner or alternate method approved by OSHA designed to minimize the hazard caused by airborne asbestos fibers.*

### DISASSEMBLY

Drain the brake fluid from the front brake hydraulic system (page 14-3).

Remove the brake pads (page 14-4).

Remove the front brake hose from the caliper.

### CAUTION

- *Avoid spilling brake fluid on painted, plastic or rubber parts. Place a rag over these parts whenever the system is serviced.*

Remove the caliper mounting bolts and caliper.

Remove the following:

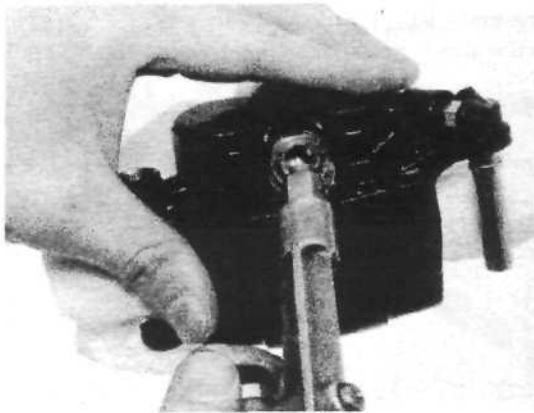
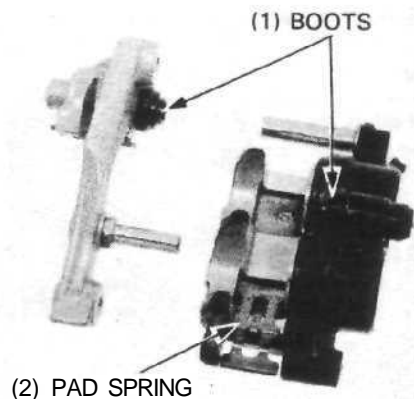
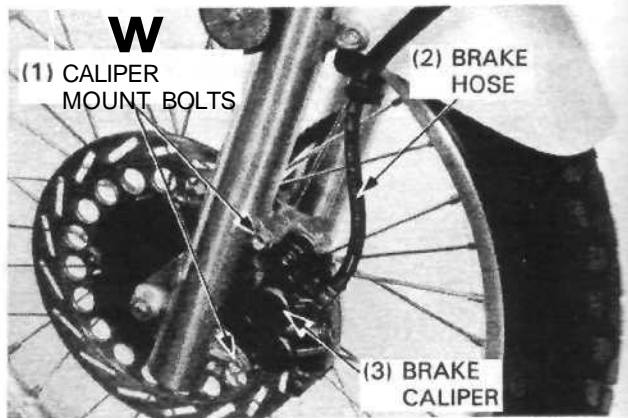
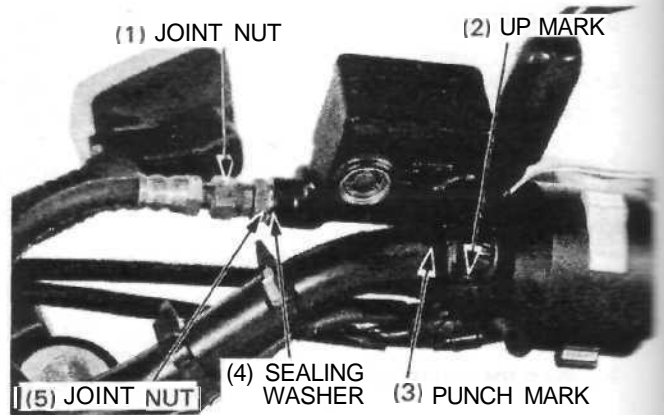
- bracket
- pivot boot
- pad spring

Check the pivot boots for wear or damage and replace them if necessary.

Position the caliper with the pistons down and apply small squirts of air pressure to the fluid inlet to remove the pistons.

### ▲ WARNING

- *Do not use high pressure air or bring the nozzle too close to the inlet.*
- *Place a shop towel over the pistons to prevent them from becoming projectiles.*
- *Use adequate eye protection.*

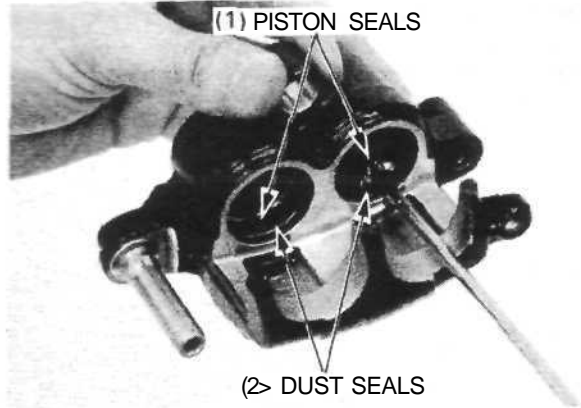


Push the dust and piston seals in and lift them out.

Coat the seal grooves with clean brake fluid.

**CAUTION**

- Be careful not to damage the piston sliding surfaces.

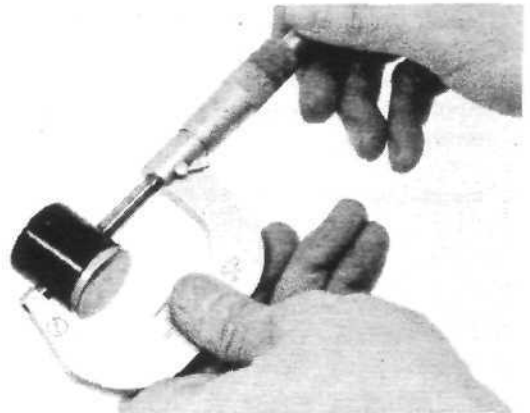


**INSPECTION**

Check the caliper pistons for scoring or other damage.

Measure the caliper piston outside diameter.

SERVICE LIMIT: 26.89 mm (1.0587 in)



Check the caliper cylinder bores for scoring or other damage.

Measure the caliper cylinder inside diameter.

SERVICE LIMIT: 27.06 mm (1.065 in)

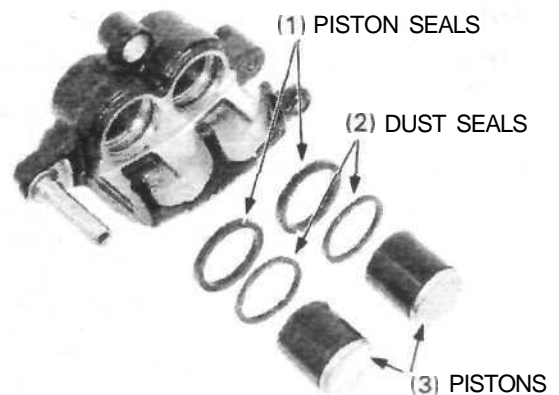


**ASSEMBLY**

The dust and piston seals must be replaced with new ones whenever they are removed.

Coat new dust and piston seals with clean brake fluid and install them in the seal grooves in the caliper.

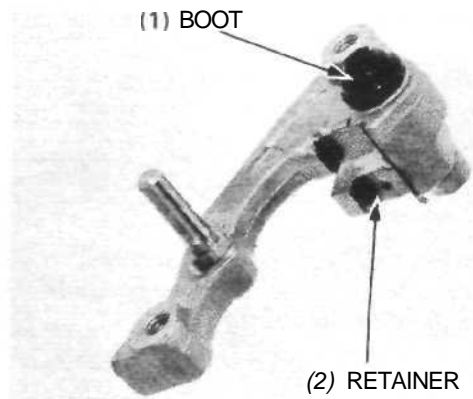
Lubricate the caliper cylinders and pistons with clean brake fluid and install the pistons into the caliper cylinders as shown.



## HYDRAULIC BRAKE

Install the pivot boot on the caliper bracket and make sure that the boot is seated in the groove properly.

**Make** sure that the pad retainer is attached on the bracket properly.

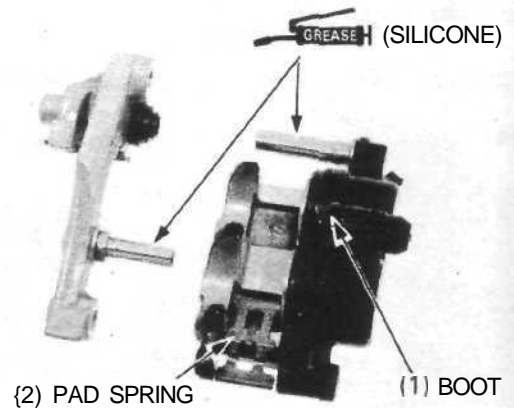


Install the pivot boot on the caliper and make sure that the boot is seated in the groove properly.

Install the pad spring.

Apply silicone grease to the pivot pins and install the bracket on the caliper.

Install the pads (page 14-5).



Install the caliper on the fork leg and over the brake disc so that the disc is positioned between the pads.

### NOTE

- Use care not to damage the pads.

Tighten the caliper mounting bolts to the specified torque.

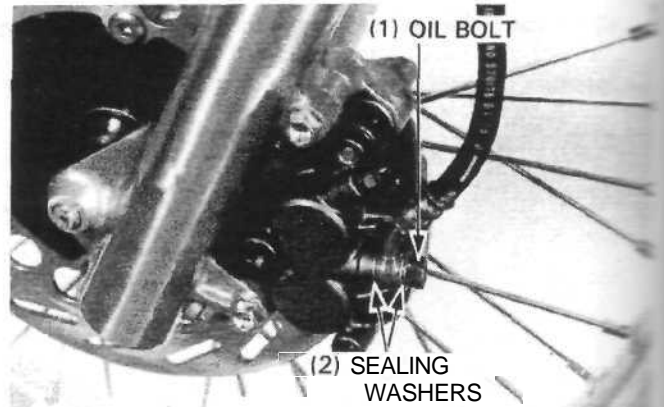
**TORQUE: 25 N·m (2.5 kg-m, 18 ft-lb)**

Install the brake hose to the caliper with new sealing washers. Tighten the brake hose oil bolt to the specified torque.

**TORQUE: 35 N·m (3.5 kg-m, 25 ft-lb)**

### CAUTION

- *Do not twist the brake hose. Be sure the brake hose is straight, then connect it to the caliper.*



Fill and bleed the hydraulic system (page 14-3).