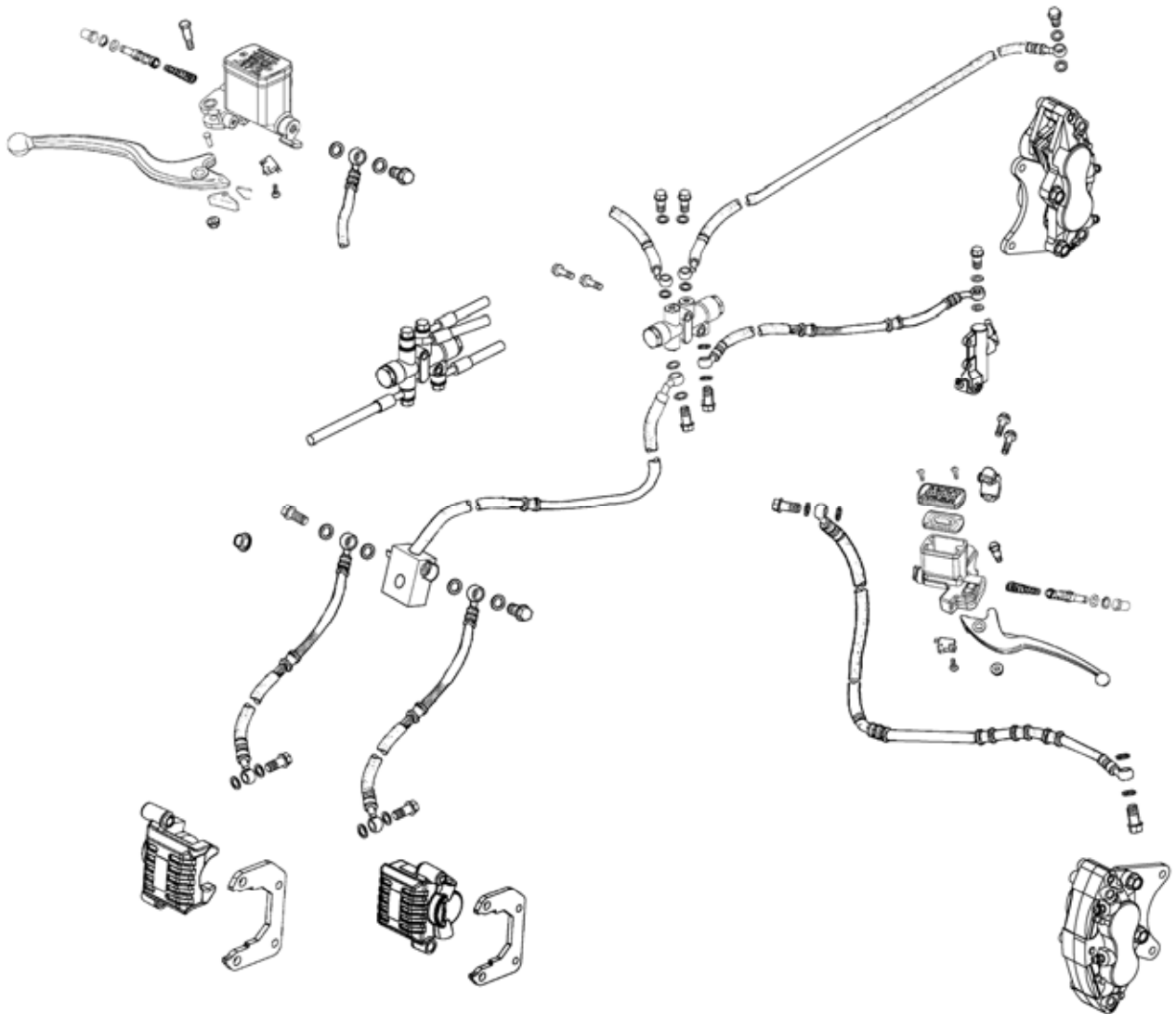


BRAKE SYSTEM

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16. BRAKE SYSTEM



16. BRAKE SYSTEM

SERVICE INFORMATION

GENERAL INSTRUCTIONS

- During servicing, keep oil or grease off the brake pads and brake disk.
- Drain the brake fluid from the hydraulic brake system before disassembly.
- Contaminated brake disk or brake pads reduce stopping power. Clean the contaminated brake disk with high-performance brake degreaser and replace the brake pads.
- Do not use brake fluid for cleaning.
- Bleed air from the brake system if the brake system is removed or the brake is soft.
- Do not allow any foreign matters entering the brake reservoir when filling the brake reservoir with brake fluid.
- Brake fluid will damage painted, coated surfaces and plastic parts. When working with brake fluid, use shop towels to cover and protect painted, rubber and plastic parts. Wipe off any splash of brake fluid with a clean towel. Do not wipe the machine with a towel contaminated by brake fluid.
- Make sure to use recommended brake fluid. Use of other unspecified brake fluids may cause brake failure.
- Inspect the brake operation before riding.

SPECIFICATIONS

Unit: mm (in)

Item	Standard	Service Limit
Brake disk thickness	3.8~4.2 (0.152~0.168)	3 (0.12)
Brake disk runout	—	0.3 (0.012)

TORQUE VALUES

Caliper mounting bolt	3.2 kgf-m (32 N-m, 25 lbf-ft)
Brake pad mounting bolt	1.8 kgf-m (18 N-m, 13 lbf-ft)
Brake disc bolt	3.5 kgf-m (35 N-m, 25.2 lbf-ft)
Bleed valve nut	0.6 kgf-m (6 N-m, 4.32 lbf-ft)
Brake hose bolt	3.5 kgf-m (35 N-m, 35 lbf-ft)
Master cylinder mounting bolt	1.2 kgf-m (12 N-m, 8.6 lbf-ft)
Delay valve mounting bolt	1.2 kgf-m (12 N-m, 8.6 lbf-ft)
Delay valve plug	5 kgf-m (50 N-m, 36 lbf-ft)

16. BRAKE SYSTEM

TROUBLESHOOTING

Loose brake lever

- Air in hydraulic brake system
- Brake fluid level too low
- Hydraulic brake system leakage

Poor brake performance

- Air in brake system
- Deteriorated brake fluid
- Contaminated brake pads and brake disk
- Worn brake pads
- Worn brake master cylinder piston oil seal
- Clogged brake fluid line
- Deformed brake disk
- Unevenly worn brake caliper

Tight brake lever

- Seized piston
- Clogged hydraulic brake system
- Smooth or worn brake pad

Brake noise

- Contaminated brake pad surface
- Excessive brake disk run out
- Incorrectly installed caliper
- Brake disk or wheel not aligned

Hard braking

- Seized hydraulic brake system
- Seized piston

BRAKE PADS REPLACEMENT

FRONT BRAKE PADS

Remove the front wheel. (refer to the “**FRONT WHEEL REMOVAL/INSPECTION/INSTALLATION**” section in the chapter 14).

Remove the two brake pad pins from the brake caliper.

Remove the two mounting bolts from brake caliper and then remove brake caliper.

✱

- Do not operate the brake lever during or after brake pad removal.
- Replace the brake pads as a set, otherwise braking performance will be adversely affected.

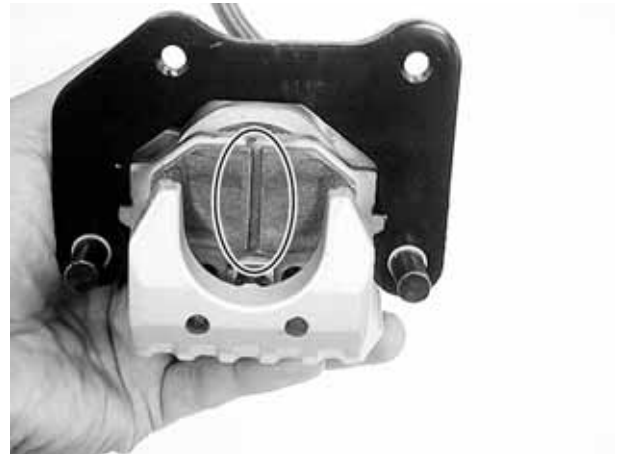


Compress the brake caliper holder and remove brake pads.



16. BRAKE SYSTEM

A wear indicator is provided on each brake. The indicators allows checking of brake pads wear. Check the position of the indicator.



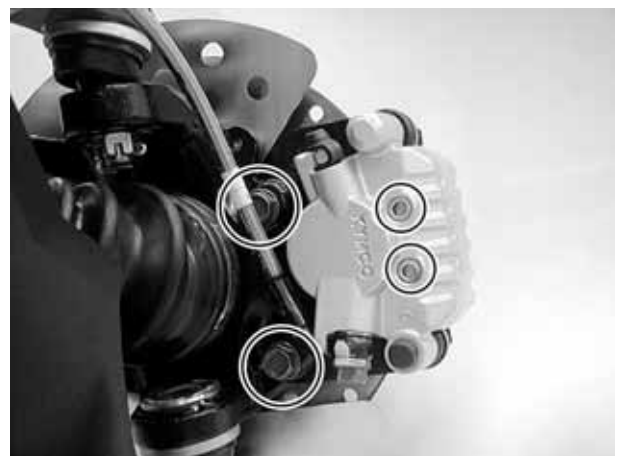
Install the new brake pads.

Install the brake pad mounting pins.
Install the brake caliper mounting bolts to the specified torque.

Torque: 3.2 kgf-m (32 Nm, 25 lbf-ft)

Tighten the brake pad mounting pins.

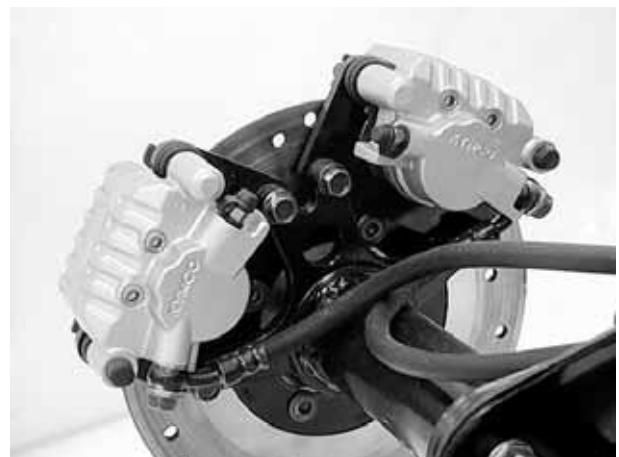
Torque: 1.8 kgf-m (18 Nm, 13 lbf-ft)



REAR BRAKE PADS (OFF ROAD)

Remove the rear wheel. (refer to the “**REAR WHEEL REMOVAL/INSPECTION/INSTALLATION**” section in the chapter 15).

The replacement of rear brake and front brake pads are the same.

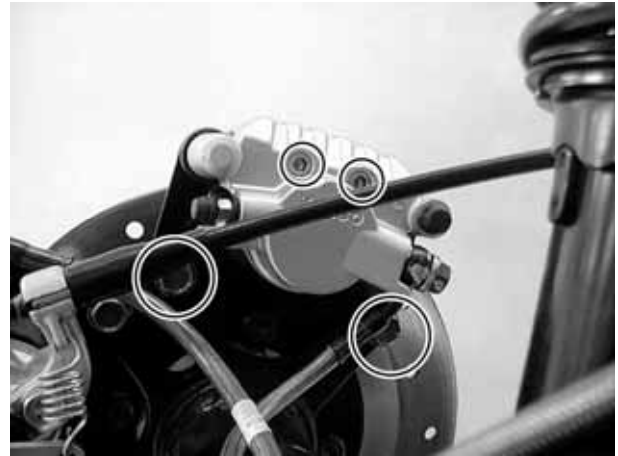


REAR BRAKE PADS (ON ROAD)

Rear brake

Remove the rear wheel. (refer to the “**REAR WHEEL REMOVAL/INSPECTION/INSTALLATION**” section in the chapter 15).

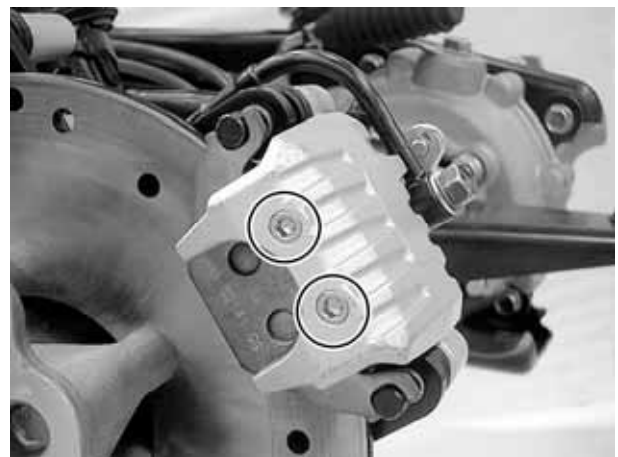
The replacement of rear brake and front brake pads are the same.



Rear brake (combined)

Remove the rear wheel. (refer to the “**REAR WHEEL REMOVAL/INSPECTION/INSTALLATION**” section in the chapter 15).

Remove the two brake pad pins from the brake caliper.



Remove the two mounting bolts from brake caliper and then remove brake caliper.

★

- Do not operate the brake lever during or after brake pad removal.
- Replace the brake pads as a set, otherwise braking performance will be adversely affected.

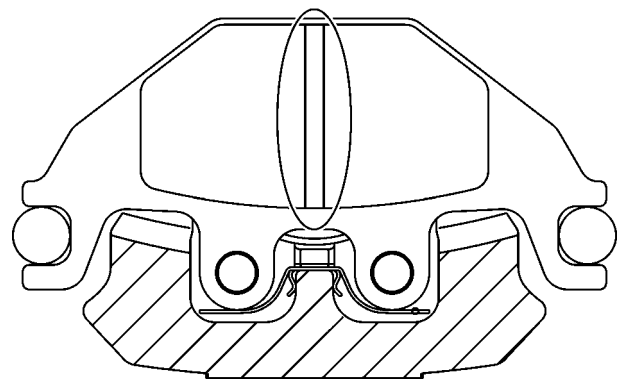


16. BRAKE SYSTEM

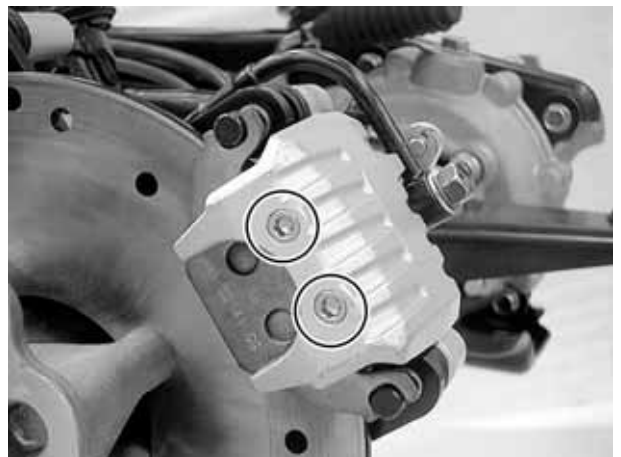
Compress the brake caliper holder and remove brake pads.



A wear indicator is provided on each brake. The indicators allows checking of brake pads wear. Check the position of the indicator.



Install the new brake pads.
Install the brake pad mounting pins.



16. BRAKE SYSTEM

Install the brake caliper mounting bolts to the specified torque.

Torque: 3.2 kgf-m (32 Nm, 25 lbf-ft)

Tighten the brake pad mounting pins.

Torque: 1.8 kgf-m (18 Nm, 13 lbf-ft)



FRONT BRAKE DISCS REMOVAL/INSPECTION/ INSTALLATION

REMOVAL

Remove the front wheel hub (refer to the “**FRONT WHEEL HUB REMOVAL/INSPECTION/INSTALLATION**” section in the chapter 14).

Remove the four bolts and then remove the brake disc.

INSPECTION

Measure the brake disc thickness.

Service Limit: 3 mm (0.12 in)

Measure the brake disk run out.

Service Limit: 0.3 mm (0.012 in)

INSTALLATION

Install the brake disc onto the wheel hub.
Install and tighten the new four bolts to the specified torque.

Torque: 3.5 kgf-m (35 Nm, 25.2 lbf-ft)



Brake Disc

REAR BRAKE DISC REMOVAL/INSPECTION/ INSTALLATION

REMOVAL

Remove the rear wheel hub (refer to the “**REAR WHEEL HUB REMOVAL/INSPECTION/INSTALLATION**” section in the chapter 15).

Remove the four bolts and then remove the brake disc.



Brake Disc

INSPECTION

Measure the brake disc thickness.

Service Limit: 3 mm (0.12 in)

Measure the brake disk run out.

Service Limit: 0.3 mm (0.012 in)

INSTALLATION

Install the brake disc onto the wheel hub.
Install and tighten the new four bolts to the specified torque.

Torque: 3.5 kgf-m (35 Nm, 25.2 lbf-ft)

16. BRAKE SYSTEM

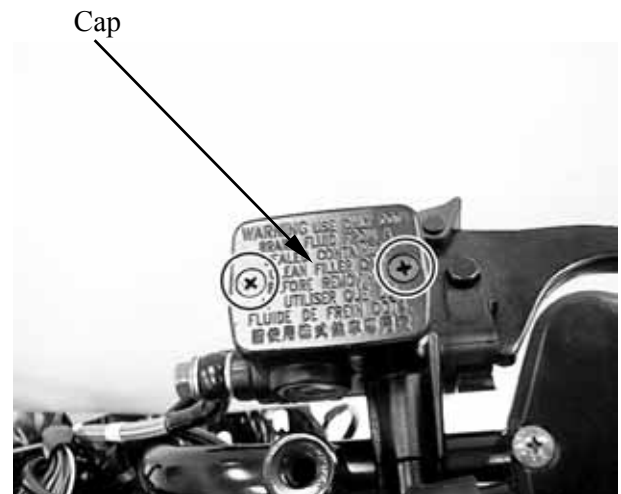
FRONT BRAKE FLUID CHANGE/AIR BLEED (OFF ROAD)

BRAKE FLUID CHANGE

Place the machine on the level ground and set the handlebar upright.

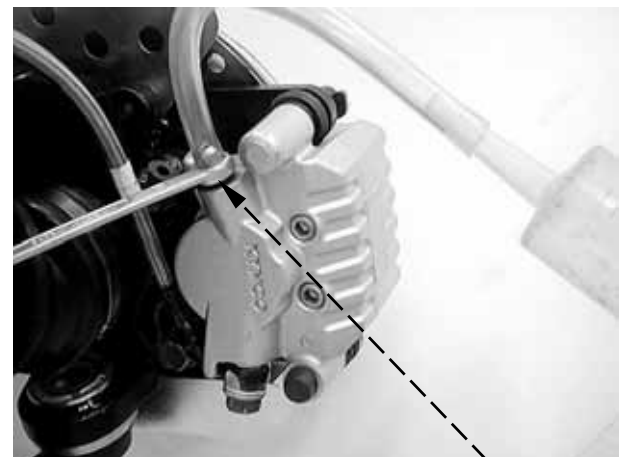
Remove the two screws from the brake fluid reservoir cap.

* Use shop towels to cover plastic parts and coated surfaces to avoid damage caused by splash of brake fluid.



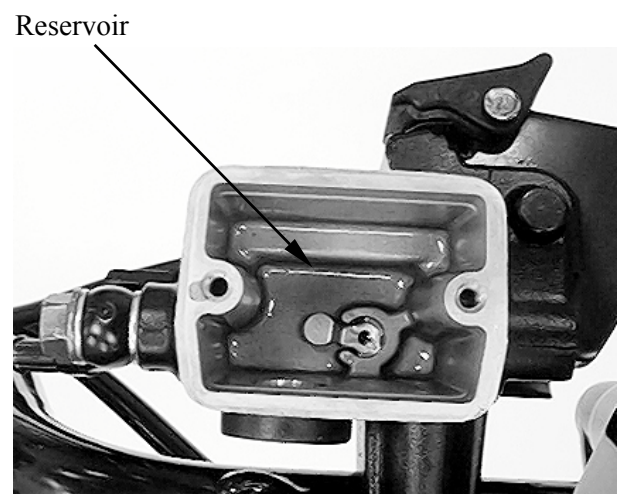
Connect a transparent hose to the brake caliper bleed valve (right and calipers) and then loosen the bleed valve nuts. Use a syringe to draw the brake fluid out through the hose. Then, tighten the bleed valve nuts.

Torque: 0.6 kgf-m (6 Nm, 4.32 lbf-ft)



Bleed Valve Nut

Fill the brake reservoir with brake fluid.



16. BRAKE SYSTEM

Connect a transparent hose to the right caliper bleed valve and then loosen the bleed valve nuts.

Use the syringe to draw brake fluid into it until there is no air bubbles in the transparent hose.

Then, tighten the bleed valve nut.

Torque: 0.6 kgf-m (6 Nm, 4.32 lbf-ft)

Connect a transparent hose to the left caliper bleed valve and then loosen the bleed valve nuts.

Use the syringe to draw brake fluid into it until there is no air bubbles in the transparent hose.

Then, tighten the bleed valve nut.

Torque: 0.6 kgf-m (6 Nm, 4.32 lbf-ft)

★

- When drawing brake fluid with the syringe, the brake fluid level should be kept over 1/2 of the brake reservoir height.
- Use only the recommended brake fluid.

Recommended Brake Fluid: DOT-4

BRAKE SYSTEM BLEEDING

1. Connect a transparent hose to the bleed valves (right and left caliper).
2. Fully apply the brake lever after continuously pull it several times. Then, loosen the right caliper bleed valve nut to bleed air from the brake system.
3. Fully apply the brake lever after continuously pull it several times. Then, loosen the left caliper bleed valve nut to bleed air from the brake system.
4. Repeat these steps until the brake system is free of air.

When bleeding air from the brake system, the brake fluid level should be kept over 1/2 of the brake reservoir height.



Bleed Valve

REAR BRAKE FLUID CHANGE/AIR BLEED

BRAKE LEVER

Brake fluid change

Place the machine on the level ground and set the handlebar upright.

Remove the two screws from the brake fluid reservoir cap.

★

Use shop towels to cover plastic parts and coated surfaces to avoid damage caused by splash of brake fluid.

Connect a transparent hose to the brake caliper bleed valve and then loosen the bleed valve nut.

Use a syringe to draw the brake fluid out through the hose.

Fill the brake reservoir with brake fluid and use the syringe to draw brake fluid into it until there is no air bubbles in the transparent hose.

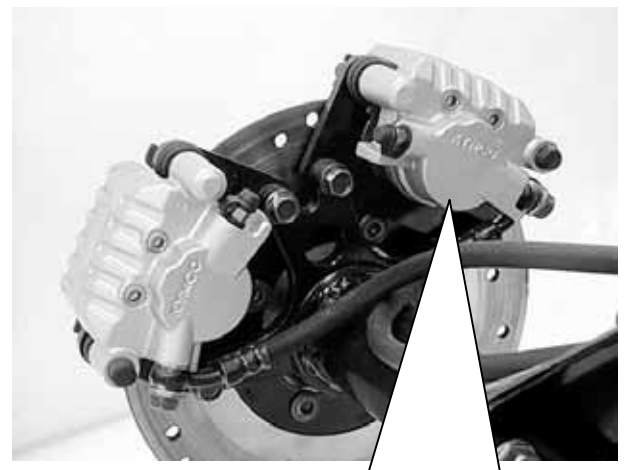
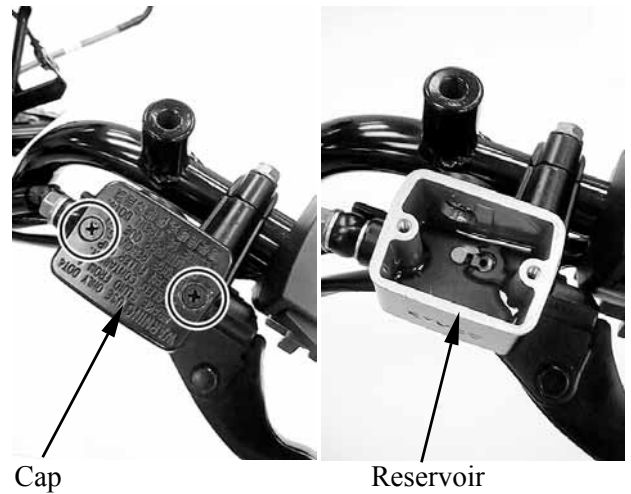
Then, tighten the bleed valve nut.

Torque: 0.6 kgf-m (6 Nm, 4.32 lbf-ft)

★

- When drawing brake fluid with the syringe, the brake fluid level should be kept over 1/2 of the brake reservoir height.
- Use only the recommended brake fluid.

Recommended Brake Fluid: DOT-4



Bleed Valve

16. BRAKE SYSTEM

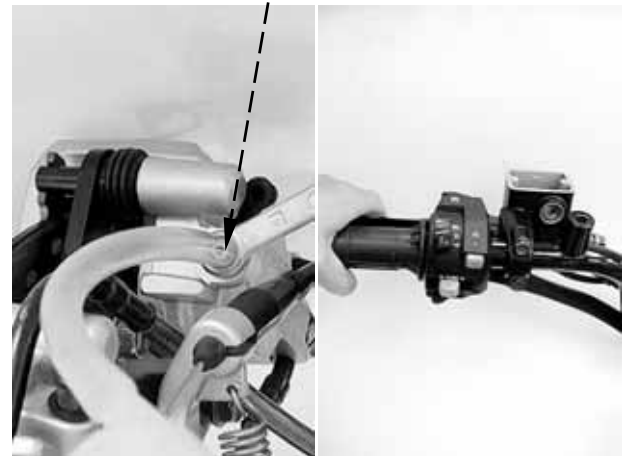
Brake system bleeding

1. Connect a transparent hose to the bleed valve.
2. Fully apply the brake lever after continuously pull it several times. Then, loosen the caliper bleed valve nut to bleed air from the brake system.
3. Repeat these steps until the brake system is free of air.

✱

When bleeding air from the brake system, the brake fluid level should be kept over 1/2 of the brake reservoir height.

Bleed Valve



BRAKE PEDAL (OFF ROAD)

Brake fluid change

Place the machine on the level ground and set the handlebar upright.

Remove the brake fluid reservoir cap.

✱

Use shop towels to cover plastic parts and coated surfaces to avoid damage caused by splash of brake fluid.

Cap

Reservoir



16. BRAKE SYSTEM

Connect a transparent hose to the brake caliper bleed valve and then loosen the bleed valve nut. Use a syringe to draw the brake fluid out through the hose.

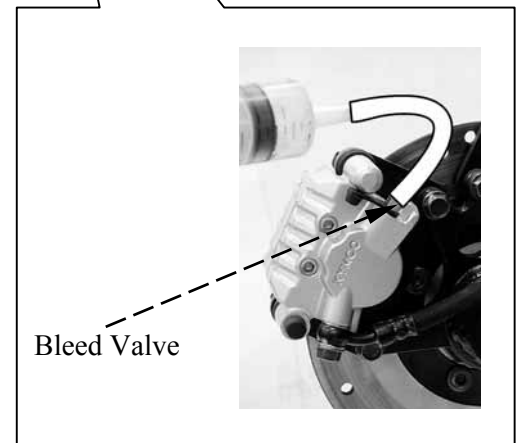
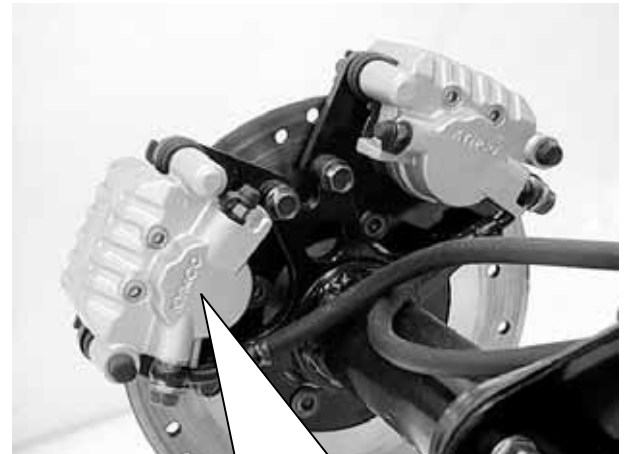
Fill the brake reservoir with brake fluid and use the syringe to draw brake fluid into it until there is no air bubbles in the transparent hose. Then, tighten the bleed valve nut.

Torque: 0.6 kgf-m (6 Nm, 4.32 lbf-ft)

★

- When drawing brake fluid with the syringe, the brake fluid level should be kept over 1/2 of the brake reservoir height.
- Use only the recommended brake fluid.

Recommended Brake Fluid: DOT-4

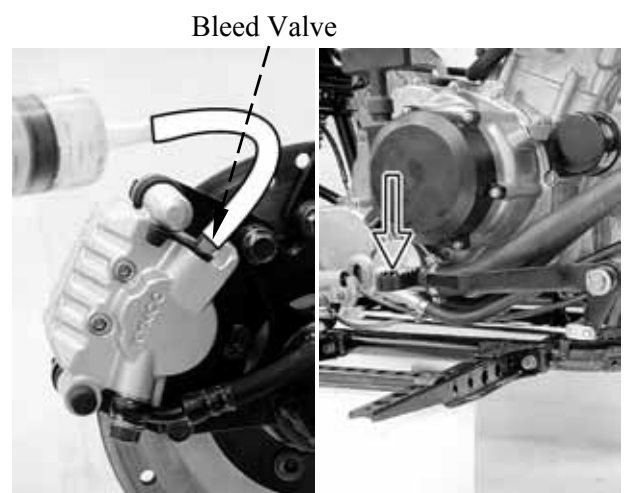


Brake system bleeding

1. Connect a transparent hose to the bleed valve.
2. Fully apply the brake pedal after continuously depress it several times. Then, loosen the caliper bleed valve nut to bleed air from the brake system.
3. Repeat these steps until the brake system is free of air.

★

When bleeding air from the brake system, the brake fluid level should be kept over 1/2 of the brake reservoir height.



16. BRAKE SYSTEM

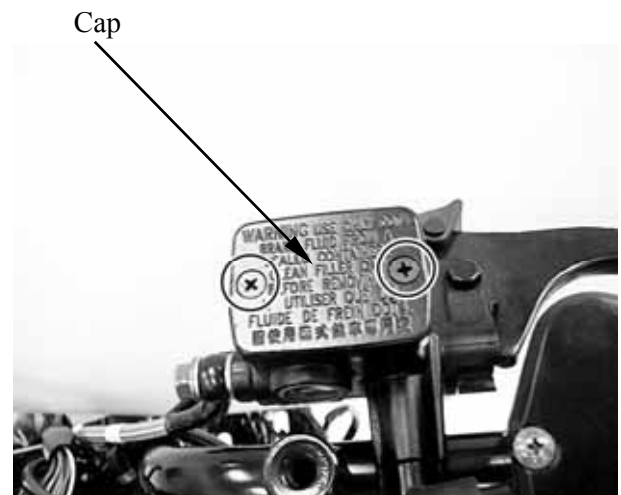
COMBINATION BRAKE FLUID CHANGE/AIR BLEED (ON ROAD)

BRAKE FLUID CHANGE

Place the machine on the level ground and set the handlebar upright.

1. Remove the two screws from the brake fluid reservoir cap.
2. Remove the brake fluid reservoir cap (front brake lever).

Use shop towels to cover plastic parts and coated surfaces to avoid damage caused by splash of brake fluid.



3. Connect a transparent hose to the delay valve bleed valve and then loosen the bleed valve nut. Use a syringe to draw the brake fluid out through the hose. Then tighten the bleed valve nut.

Torque: 0.6 kgf-m (6 Nm, 4.32 lbf-ft)

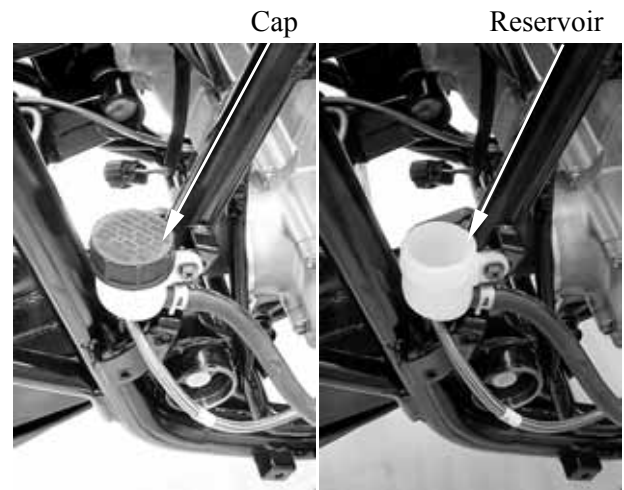


16. BRAKE SYSTEM

- Remove the brake fluid reservoir cap (brake pedal).

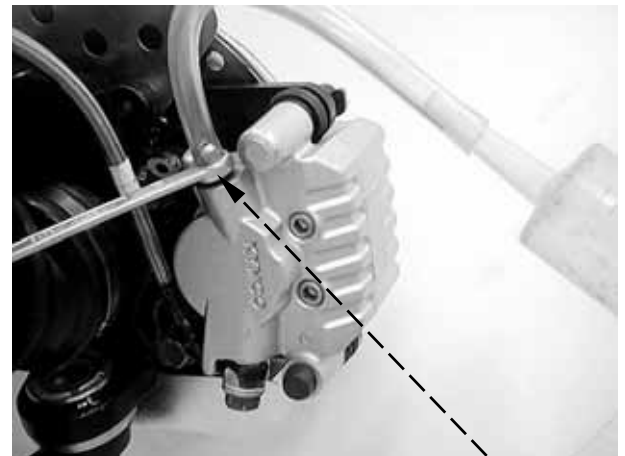
★

Use shop towels to cover plastic parts and coated surfaces to avoid damage caused by splash of brake fluid.



- Connect a transparent hose to the front brake caliper bleed valve (front right and left calipers) and then loosen the bleed valve nut. Use a syringe to draw the brake fluid out through the hose. Then tighten the bleed valve nuts.

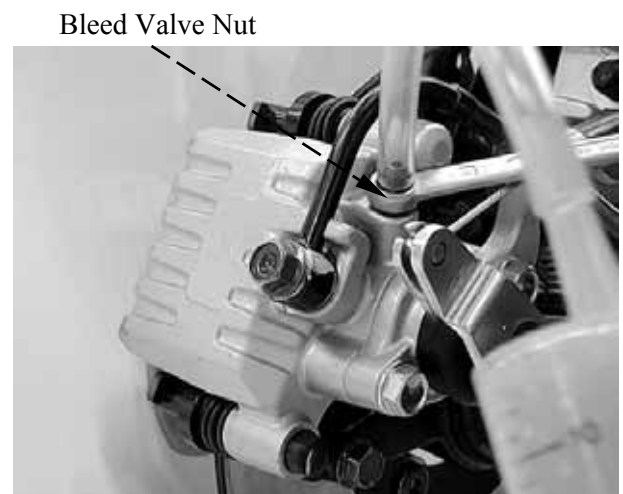
Torque: 0.6 kgf-m (6 Nm, 4.32 lbf-ft)



Bleed Valve Nut

- Connect a transparent hose to the rear brake caliper bleed valve (combined) and then loosen the bleed valve nut. Use a syringe to draw the brake fluid out through the hose. Then tighten the bleed valve nut.

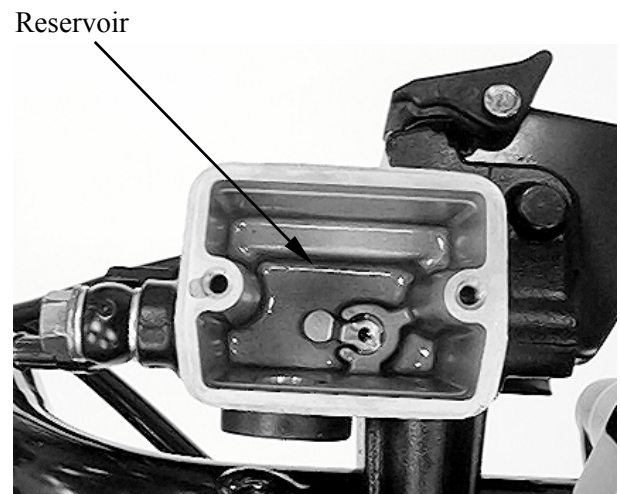
Torque: 0.6 kgf-m (6 Nm, 4.32 lbf-ft)



Bleed Valve Nut

16. BRAKE SYSTEM

7. Fill the brake reservoir (front brake lever) with brake fluid.



8. Loosen the delay valve bleed valve nut. Connect the transparent hose to the bleed valve. Use the syringe to draw brake fluid into it until there is no air bubbles in the transparent hose. Then, tighten the bleed valve nut.

Torque: 0.6 kgf-m (6 Nm, 4.32 lbf-ft)

*

- When drawing brake fluid with the syringe, the brake fluid level should be kept over 1/2 of the brake reservoir height (front brake lever).
- Use only the recommended brake fluid.

Recommended Brake Fluid: DOT-4

9. Fill the brake reservoir (brake pedal) with brake fluid.



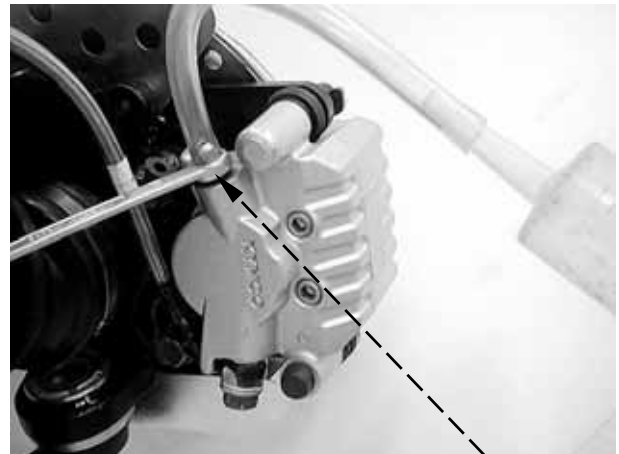
16. BRAKE SYSTEM

10. Connect a transparent hose to the right caliper bleed valve and then loosen the bleed valve nuts.
Use the syringe to draw brake fluid into it until there is no air bubbles in the transparent hose.
Then, tighten the bleed valve nut.

Torque: 0.6 kgf-m (6 Nm, 4.32 lbf-ft)

Connect a transparent hose to the left caliper bleed valve and then loosen the bleed valve nuts.
Use the syringe to draw brake fluid into it until there is no air bubbles in the transparent hose.
Then, tighten the bleed valve nut.

Torque: 0.6 kgf-m (6 Nm, 4.32 lbf-ft)



Bleed Valve Nut

★

- When drawing brake fluid with the syringe, the brake fluid level should be kept over 1/2 of the brake reservoir height (brake pedal).
- Use only the recommended brake fluid.

Recommended Brake Fluid: DOT-4

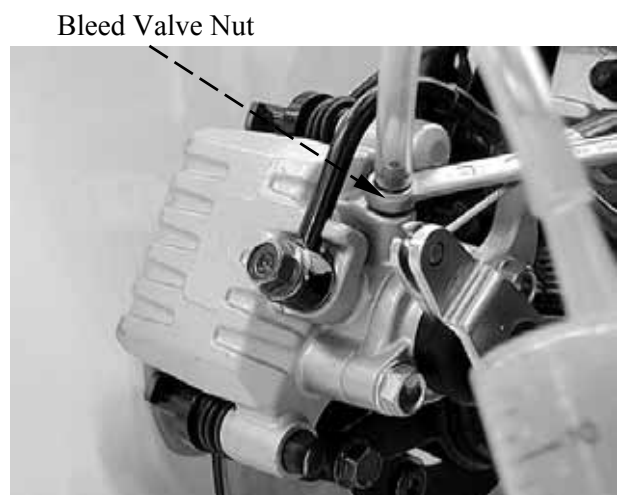
11. Loosen the rear caliper (combined) bleed valve nut. Connect the transparent hose to the bleed valve.
Use the syringe to draw brake fluid into it until there is no air bubbles in the transparent hose.
Then, tighten the bleed valve nut.

Torque: 0.6 kgf-m (6 Nm, 4.32 lbf-ft)

★

- When drawing brake fluid with the syringe, the brake fluid level should be kept over 1/2 of the brake reservoir height (brake pedal).
- Use only the recommended brake fluid.

Recommended Brake Fluid: DOT-4



Bleed Valve Nut

16. BRAKE SYSTEM

DELAY VALVE BLEEDING

1. Connect a transparent hose to the bleed valve (delay valve).
2. Fully apply the front brake lever after continuously pull it several times. Then, loosen the bleed valve nut (delay valve) to bleed air between the front brake master cylinder and the delay valve.
3. Repeat these steps until between the front brake master cylinder and the delay valve is free of air. Then tighten the bleed valve nut.

Torque: 0.6 kgf-m (6 Nm, 4.32 lbf-ft)

When bleeding air from the brake system, the brake fluid level should be kept over 1/2 of the brake reservoir height (front brake lever).

Bleed Valve



COMBINATION BRAKE SYSTEM AIR BLEEDING

1. To finish delay valve bleeding (refer to above).
2. Connect a transparent hose to the rear caliper (combined) and front calipers bleed valves.
3. Fully apply the brake pedal after continuously depress it several times and fully apply the front brake lever after continuously pull it several times. Then, loosen the rear caliper bleed valve nut to bleed air from the brake system.
4. Fully apply the brake pedal after continuously depress it several times and fully apply the front brake lever after continuously pull it several times. Then, loosen the front right caliper bleed valve nut to bleed air from the brake system.
5. Fully apply the brake pedal after continuously depress it several times and fully apply the front brake lever after continuously pull it several times. Then, loosen the front left caliper bleed valve nut to bleed air from the brake system.



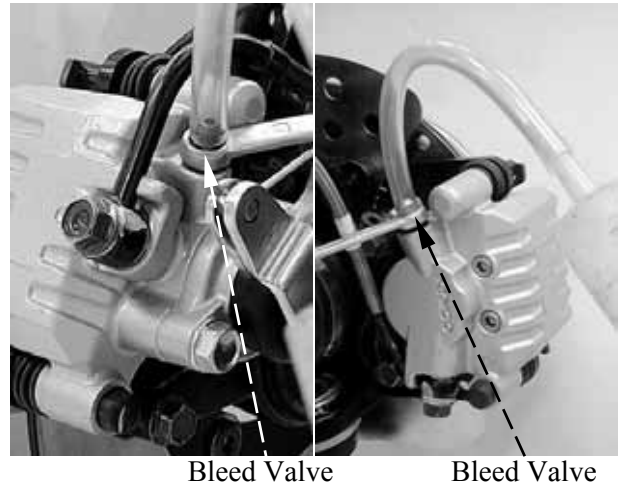
16. BRAKE SYSTEM

- Repeat these steps until the brake system is free of air. Then tighten the bleed valve nuts.

Torque: 0.6 kgf-m (6 Nm, 4.32 lbf-ft)

*

When bleeding air from the brake system, the brake fluid level should be kept over 1/2 of the brake reservoir height (brake pedal).



BRAKE MASTER CYLINDERS REMOVAL/INSPECTION/ INSTALLATION

REMOVAL

Front/rear master cylinder

Remove the brake reservoir cap and drain the brake fluid from the hydraulic brake system (refer to the “**FRONT BRAKE FLUID CHANGE/AIR BLEED (OFF ROAD)**” section or “**REAR BRAKE FLUID CHANGE/AIR BLEED**” section or “**COMBINATION BRAKE FLUID CHANGE/AIR BLEED (ON ROAD)**” in this chapter).

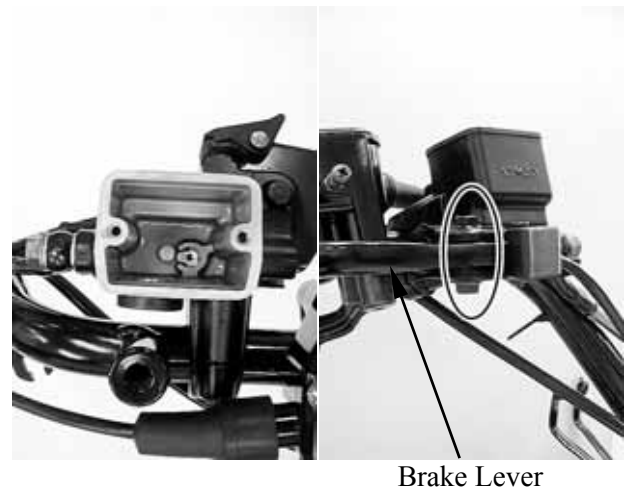
* Do not splash brake fluid onto any rubber, plastic and coated parts. When working with brake fluid, use shop towels to cover these parts.

Remove the bolt/nut and then remove the brake lever.

Remove fluid hose bolt/two washers and then disconnect the fluid hose.

* When removing the brake fluid hose bolt, be sure to place towels under the hose and plug the hose end to avoid brake fluid leakage and contamination.

Remove the two master cylinder holder bolts and remove the master cylinder.

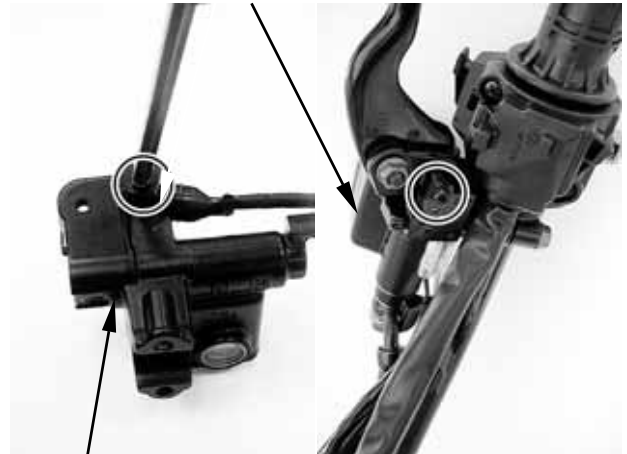


16. BRAKE SYSTEM

Push the hole under the front brake master cylinder and then remove the brake light switch.

Remove the screw and then remove the brake light switch from the rear brake master cylinder.

Rear Brake Master Cylinder



Front Brake Master Cylinder

Brake pedal master cylinder

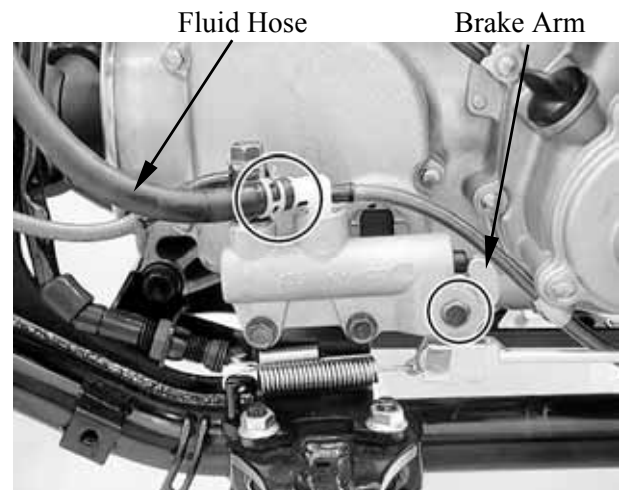
Remove the brake reservoir cap and drain the brake fluid from the hydraulic brake system (refer to the “**REAR BRAKE FLUID CHANGE/AIR BLEED**” section or “**COMBINATION BRAKE FLUID CHANGE/AIR BLEED (ON ROAD)**” section in this chapter).

* —————

Do not splash brake fluid onto any rubber, plastic and coated parts. When working with brake fluid, use shop towels to cover these parts.

Remove the joint then disconnect the fluid hose from the master cylinder.

Remove the bolt/nut then remove the brake arm from the master cylinder.



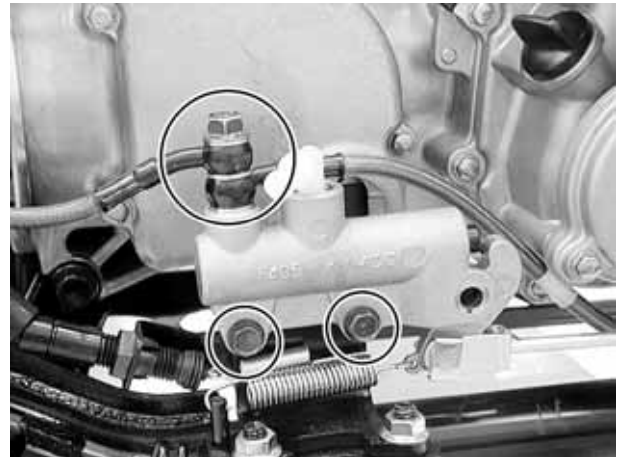
16. BRAKE SYSTEM

Remove fluid hose bolt/two washers and then disconnect the fluid hose.

★

When removing the brake fluid hose bolt, be sure to place towels under the hose and plug the hose end to avoid brake fluid leakage and contamination.

Remove the two mounting bolts and remove the master cylinder.



INSPECTION

Check the diaphragm to cracks or damage. If any damages are found, replace the diaphragm with a new one.



INSTALLATION

Front/rear master cylinder

Install the brake light switch.

Place the right and left brake master cylinder on the handlebar and install the master cylinder holder with the “UP” mark facing up, aligning the punch mark on the handlebar with the holder joint seam. First tighten the upper bolt and then tighten the lower blot.

Torque: 1.2 kg-m (12 Nm, 8.6 lbf-ft)

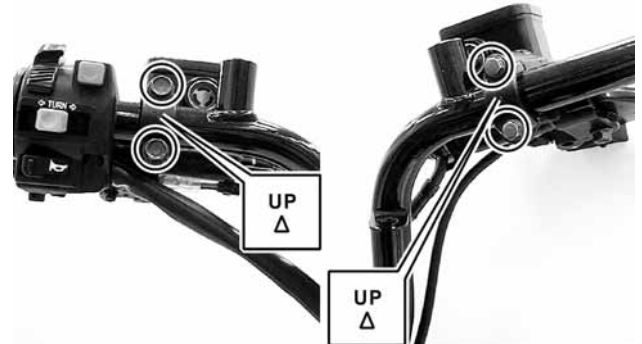


16. BRAKE SYSTEM

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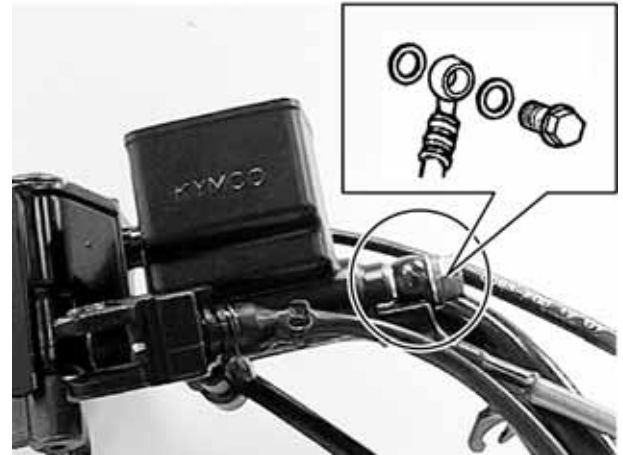
ON ROAD TYPE:

Refer to the “**REAR PARKING SYSTEM**” section in this chapter to install the left master cylinder holder.



Install the brake fluid hose with the attaching bolt and two new sealing washers, then tighten the bolt to the specified torque.

Torque: 3.5 kgf-m (35 Nm, 25 lbf-ft)



Apply lightweight lithium-soap base grease to the dust boot in the master cylinder, then install the brake lever.

Apply lightweight lithium-soap base grease to the bolt, then install and tighten the bolt and nut securely.

Fill the brake reservoir with the specified brake fluid and bleed air from the brake system (refer to the “**FRONT BRAKE FLUID CHANGE/AIR BLEED**” section or “**REAR BRAKE FLUID CHANGE/AIR BLEED**” section or “**COMBINATION BRAKE FLUID CHANGE/AIR BLEED (ON ROAD)**” section in this chapter).



Apply grease to the dust boot

Install the brake reservoir cap.

16. BRAKE SYSTEM

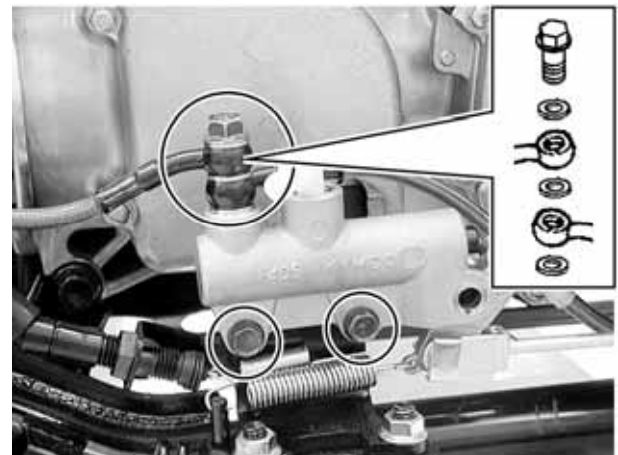
Brake pedal master cylinder

Install and tighten the two mounting bolts to the specified torque.

Torque: 1.2 kg-m (12 Nm, 8.6 lbf-ft)

Install the brake fluid hose (ON ROAD: two brake fluid hose) with the attaching bolt and two (ON ROAD: three) new sealing washers, then tighten the bolt to the specified torque.

Torque: 3.5 kgf-m (35 Nm, 25 lbf-ft)



Apply lightweight lithium-soap base grease to the dust boot in the master cylinder, then install the brake arm.

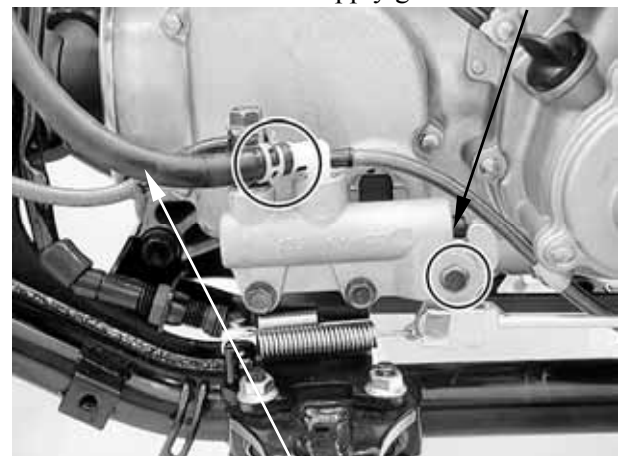
Apply lightweight lithium-soap base grease to the bolt, then install and tighten the bolt and nut securely.

Connect the fluid hose to the master cylinder, then fix the joint.

Fill the brake reservoir with the specified brake fluid and bleed air from the brake system (refer to the “**COMBINATION BRAKE FLUID CHANGE/AIR BLEED**” section in this chapter).

Install the brake reservoir cap.

Apply grease to dust boot



Fluid Hose

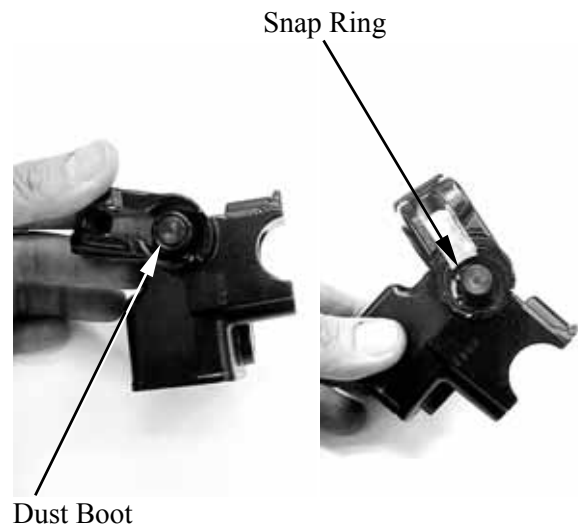
BRAKE MASTER CYLINDER DISASSEMBLY/INSPECTION/ ASSEMBLY

DISASSEMBLY

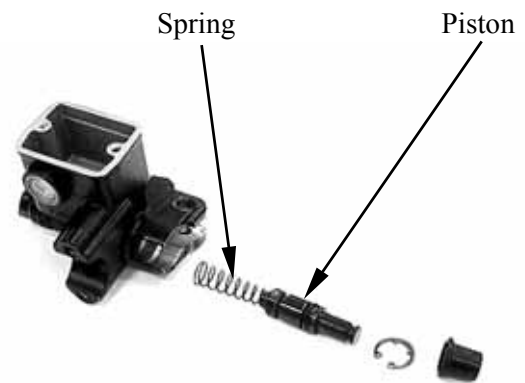
Front/rear brake master cylinder

Remove the brake master cylinder (refer to the “**BRAKE MASTER CYLINDERS REMOVAL/INSTALLATION**” section in this chapter).

Remove the piston dust boot and snap ring from the brake master cylinder.



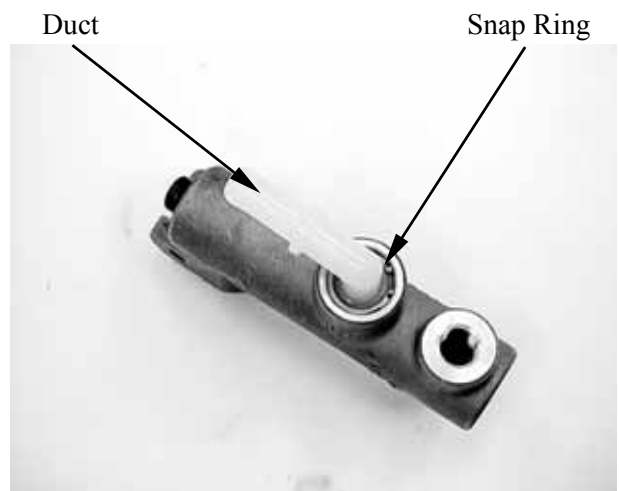
Remove the spring and piston together.



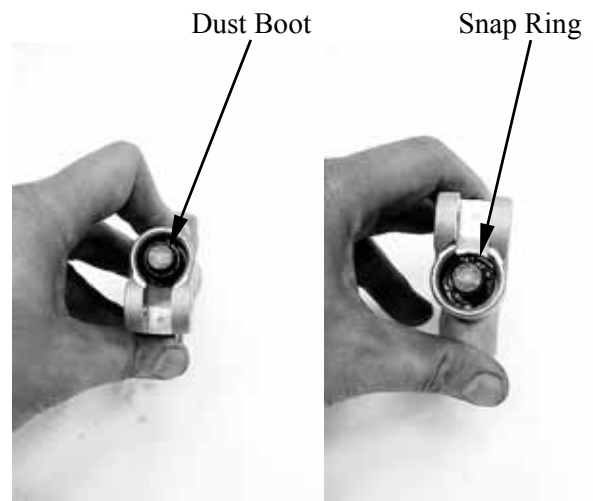
Brake pedal master cylinder

Remove the brake master cylinder (refer to the “**BRAKE MASTER CYLINDERS REMOVAL/INSTALLATION**” section in this chapter).

Remove the snap ring then remove the fluid duct and O-ring.



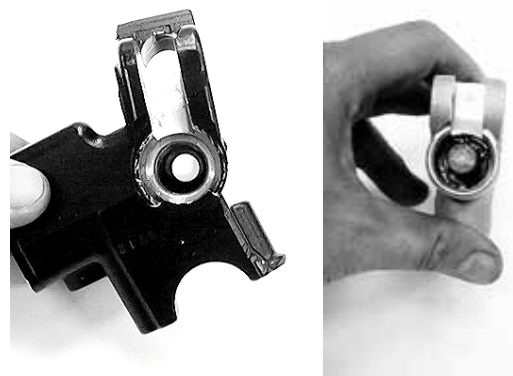
Remove the dust boot.
Remove the snap ring, then remove the piston and spring together.



INSPECTION

Check the cylinder inside wall for scratch, corrosion or other abnormal condition.

If any abnormal condition is found, replace the master cylinder.



Check the spring and piston for scratch, corrosion or other abnormal condition.

If any abnormal condition is found, replace the parts.



16. BRAKE SYSTEM

ASSEMBLY

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- Wash the master cylinder components with new brake fluid before reassembly.
- Do not wipe the brake fluid off with a rag after washing the components.
- When washing the components, use the specified brake fluid (DOT 4). Never use different types of fluid or cleaning solvents such as gasoline, kerosine, etc.
- Apply brake fluid to the master cylinder bore and all the component to be inserted to the bore.



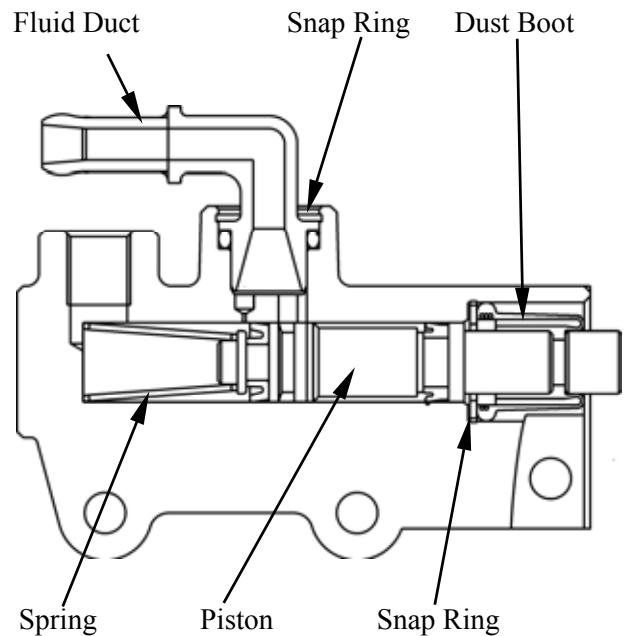
Front/rear brake master cylinder

Install the spring/piston.
Install the snap ring.
Install a new dust boot.

Brake pedal master cylinder

Install the spring/piston.
Install the snap ring.
Install a new dust boot.

Install a new O-ring.
Install the fluid duct.
Install the snap ring.



16. BRAKE SYSTEM

RELAY VALVE REMOVAL/DISASSEMBLY/INSPECTION/ASSEMBLY/ INSTALLATION (ON ROAD)

REMOVAL

Drain brake fluid (refer to the “**COMBINATION BRAKE FLUID CHANGE/AIR BLEED (ON ROAD)**” section in this chapter).

* Do not splash brake fluid onto any rubber, plastic and coated parts. When working with brake fluid, use shop towels to cover these parts.

Remove all fluid hoses bolts/washers and then disconnect the all fluid hoses.

* When removing the brake fluid hose bolt, be sure to place towels under the hose and plug the hose end to avoid brake fluid leakage and contamination.

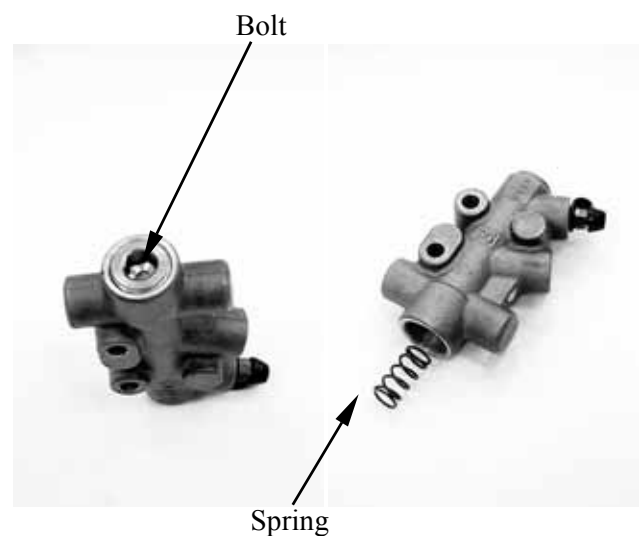
Remove the two mounting bolts and remove the relay valve.



DISASSEMBLY

Remove the bolt.

Remove the spring.



16. BRAKE SYSTEM

Push the piston out with a screwdriver.

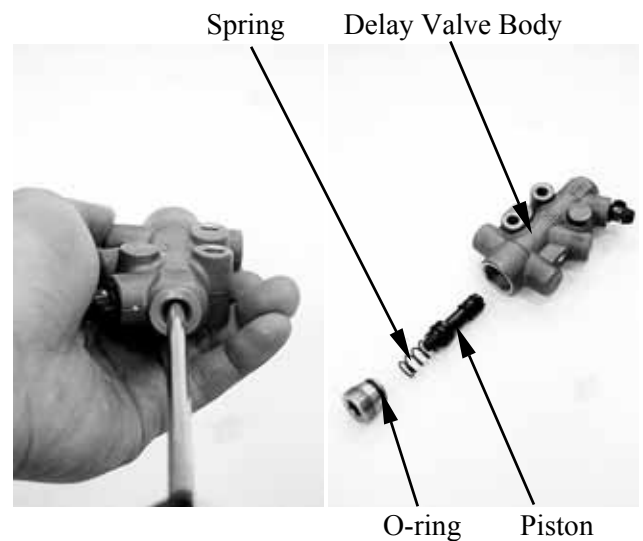
INSPECTION

Check the delay valve body inside wall for scratch, corrosion or other abnormal condition.

If any abnormal condition is found, replace the delay valve.

Check the spring and piston for scratch, corrosion or other abnormal condition.

If any abnormal condition is found, replace the parts.



ASSEMBLY

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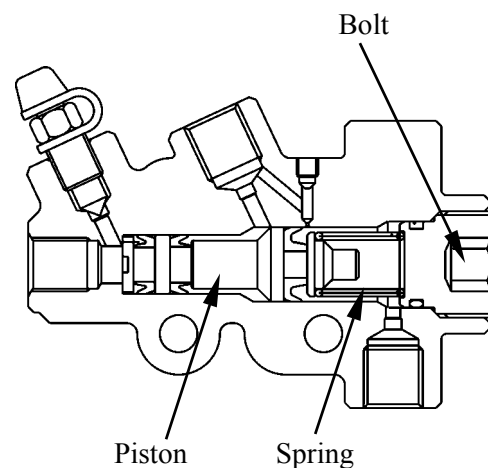
- Wash the delay valve components with new brake fluid before reassembly.
- Do not wipe the brake fluid off with a rag after washing the components.
- When washing the components, use the specified brake fluid (DOT 4). Never use different types of fluid or cleaning solvents such as gasoline, kerosine, etc.
- Apply brake fluid to the delay valve bore and all the component to be inserted to be inserted to the bore.

Install the piston.

Install the spring.

Replace a new O-ring then install and tighten the bolt to the specified torque.

Torque: 5 kgf-m (50 N-m, 36 lbf-ft)



16. BRAKE SYSTEM

INSTALLATION

Install and tighten the mounting bolts to the specified torque.

Torque: 1.2 kgf-m (12 Nm, 8.6 lbf-ft)

Install the all brake fluid hoses with the attaching bolts and new sealing washers, then tighten the bolts to the specified torque.

Torque: 3.5 kgf-m (35 Nm, 25 lbf-ft)

Fill the specified brake fluid and bleed air from the brake system (refer to the **“COMBINATION BRAKE FLUID CHANGE/AIR BLEED (ON ROAD)”** section in this chapter).



16. BRAKE SYSTEM

FRONT BRAKE CALIPERS REMOVAL/INSTALLATION

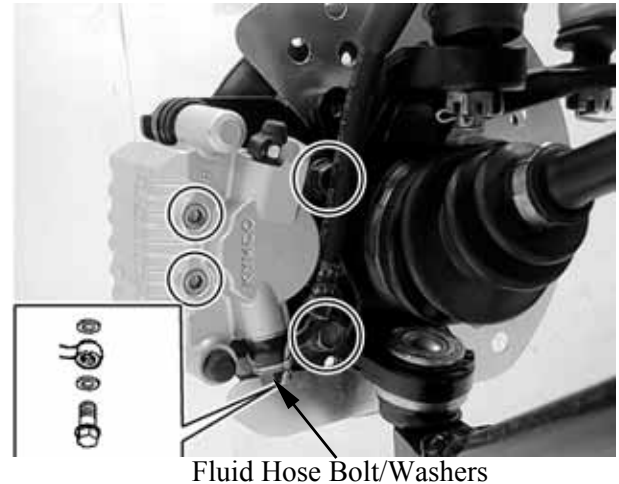
REMOVAL

Drain the brake fluid from the hydraulic brake system (refer to the “**FRONT BRAKE FLUID CHANGE/AIR BLEED (OFF ROAD)**” section or “**COMBINATION BRAKE FLUID CHANGE/AIR BLEED (ON ROAD)**” section in this chapter).

Remove the brake fluid hose bolt and two washers from the caliper.

Remove the brake pads (refer to the “**BRAKE PADS REPLACEMENT**” section in this chapter).

Remove the brake caliper.



INSTALLATION

Install the brake fluid hose with the attaching bolt and two new sealing washers, then tighten the bolt to the specified torque.

Torque: 3.5 kgf-m (35 Nm, 25 lbf-ft)

Fill the specified brake fluid and bleed air from the brake system (refer to the “**FRONT BRAKE FLUID CHANGE/AIR BLEED (OFF ROAD)**” section or “**COMBINATION BRAKE FLUID CHANGE/AIR BLEED (ON ROAD)**” section in this chapter).

16. BRAKE SYSTEM

REAR BRAKE CALIPERS REMOVAL/INSTALLATION

Drain the brake fluid from the hydraulic brake system (refer to the “**REAR BRAKE FLUID CHANGE/AIR BLEED**” section in this chapter).

Remove the brake fluid hose bolt and two washers from the caliper.

Remove the brake pads (refer to the “**BRAKE PADS REPLACEMENT**” section in this chapter).

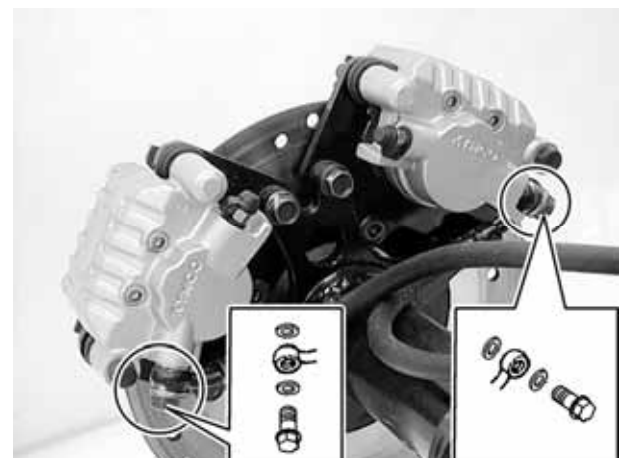
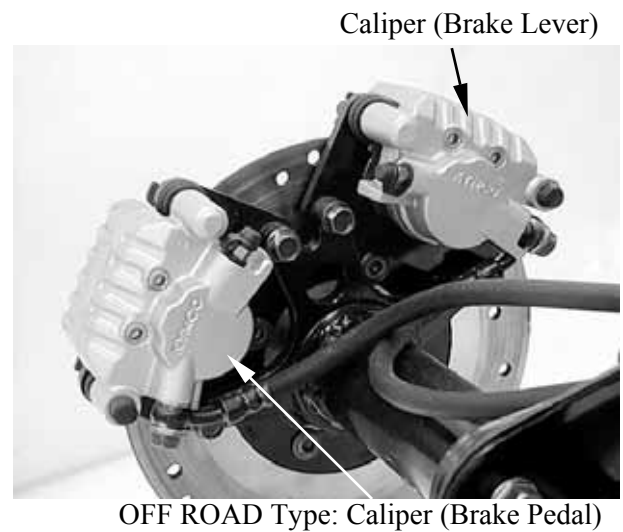
Remove the brake caliper.

INSTALLATION

Install the brake fluid hose with the attaching bolt and two new sealing washers, then tighten the bolt to the specified torque.

Torque: 3.5 kgf-m (35 Nm, 25 lbf-ft)

Fill the specified brake fluid and bleed air from the brake system (refer to the “**REAR BRAKE FLUID CHANGE/AIR BLEED**” section in this chapter).



16. BRAKE SYSTEM

REAR BRAKE/PARKING BRAKE CALIPER REMOVAL/INSTALLATION (ON ROAD)

Drain the brake fluid from the hydraulic brake system (refer to the “**COMBINATION BRAKE FLUID CHANGE/AIR BLEED (ON ROAD)**” section in this chapter).

Disconnect the parking brake cable from the caliper.

Remove the brake fluid hose bolt and two washers from the caliper.

Remove the brake pads (refer to the “**BRAKE PADS REPLACEMENT**” section in this chapter).

Remove the brake caliper.

INSTALLATION

Install the brake fluid hose with the attaching bolt and two new sealing washers, then tighten the bolt to the specified torque.

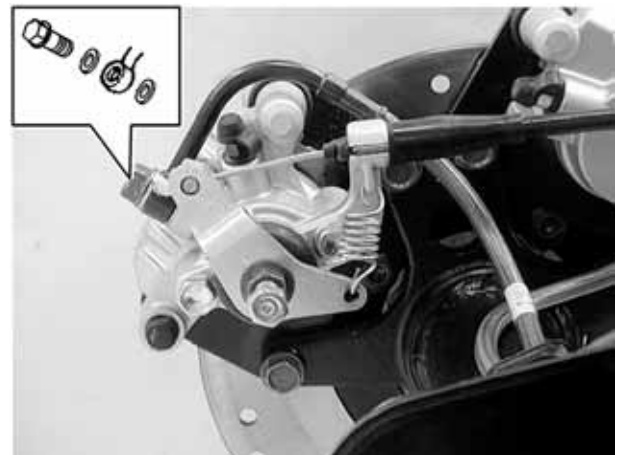
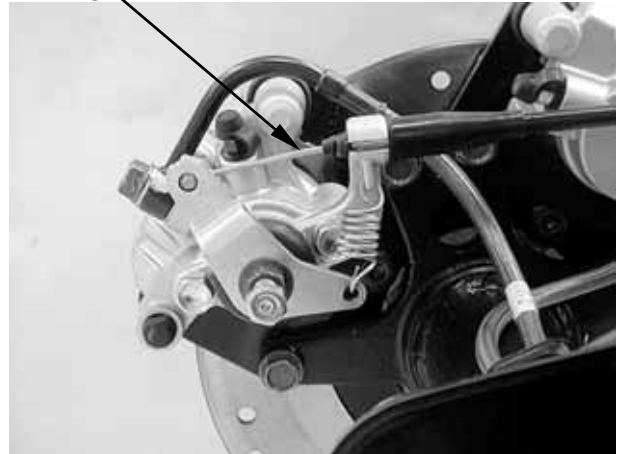
Torque: 3.5 kgf-m (35 Nm, 25 lbf-ft)

Connect the parking brake cable.

Fill the specified brake fluid and bleed air from the brake system (refer to the “**COMBINATION BRAKE FLUID CHANGE/AIR BLEED (ON ROAD)**” section in this chapter).

Adjust the parking brake lever (refer to the “**PARKING BRAKE ADJUSTMENT**” section in the chapter 3).

Parking Brake Cable



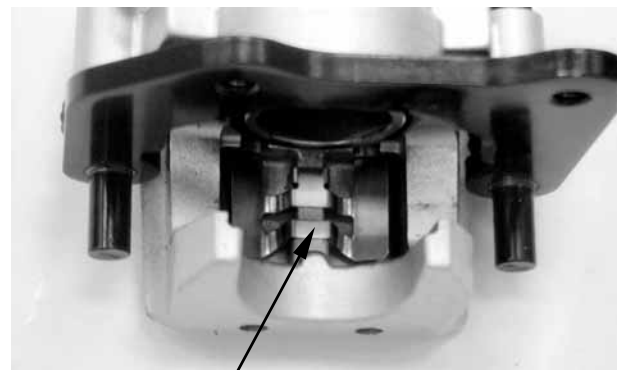
16. BRAKE SYSTEM

BRAKE CALIPER DISASSEMBLY/INSPECTION/ ASSEMBLY

DISASSEMBLY

Remove the front or rear brake caliper (refer to the “**FRONT BRAKE CALIPERS REMOVAL/INSTALLATION**” section or “**REAR BRAKE CALIPERS REMOVAL/INSTALLATION**” section in this chapter).

Remove the brake pad spring plate.

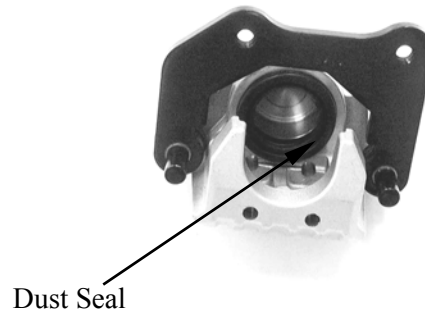


Spring Plate

Remove the piston from the brake caliper. If necessary, use compressed air to squeeze out the piston through the brake fluid inlet opening and place a shop towel under the caliper to avoid contamination caused by the removed piston.



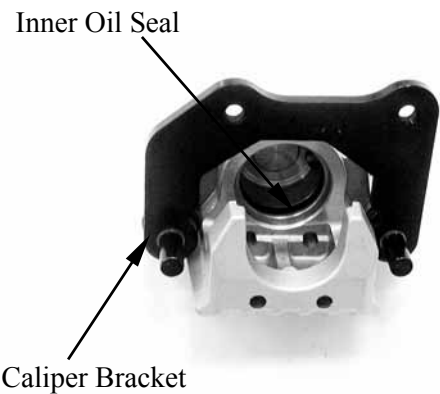
Push the piston dust seal inward to remove.



Pushing the piston oil seal outward to remove it.

Clean the seals groove with brake fluid.

* Be careful not to damage the piston surface.



Remove the caliper bracket.

INSPECTION

Inspect the caliper cylinder wall and piston surface for scratch, corrosion or other damages.

If any abnormal condition is noted, replace the caliper.

Inspect the dust boots for deterioration or damage.

If any damages are found, replace them with a new ones.



ASSEMBLY

*

- Wash the brake caliper components with new brake fluid before reassembly.
- Do not wipe the brake fluid off with a rag after washing the components.
- When washing the components, use the specified brake fluid (DOT 4). Never use different types of fluid or cleaning solvents such as gasoline, kerosine, etc.
- Apply brake fluid to all of the seals, brake caliper bore and piston before reassembly.



Apply silicone grease to the caliper bracket pins.

16. BRAKE SYSTEM

REAR BRAKE/PARKING BRAKE CALIPER DISASSEMBLY/INSPECTION/ ASSEMBLY (ON ROAD)

DISASSEMBLY/INSPECTION

Remove parking brake caliper (refer to the “**REAR BRAKE/PARKING BRAKE CALIPER REMOVAL/INSTALLATION (ON ROAD)**” section in this chapter).

Remove the brake pad spring plate.



Spring Plate

Remove the piston from the brake caliper. If necessary, use compressed air to squeeze out the piston through the brake fluid inlet opening and place a shop towel under the caliper to avoid contamination caused by the removed piston.



Inspect the caliper cylinder wall and piston surface for scratch, corrosion or other damages. If any abnormal condition is noted, replace the caliper.



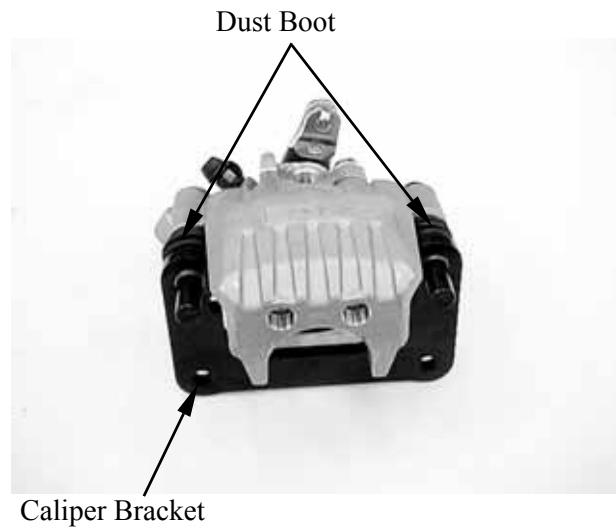
16. BRAKE SYSTEM

Inspect the dust boots for deterioration or damage.

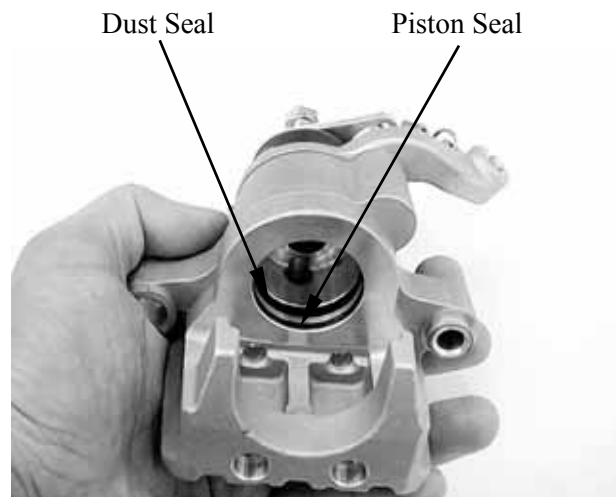
If any damages are found, replace them with a new ones.

Remove the caliper bracket.

Remove the dust boot.



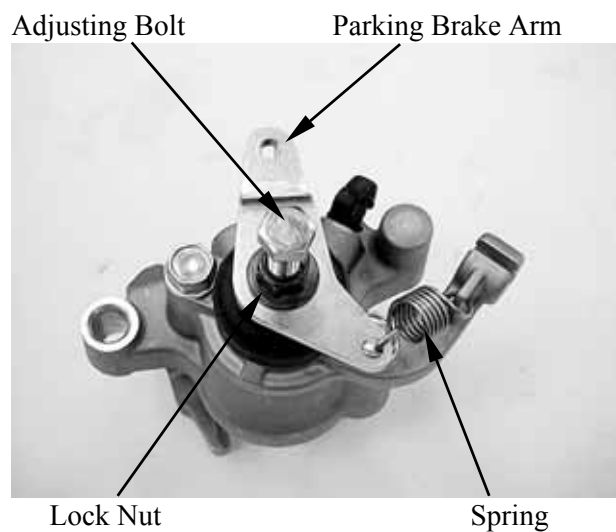
Remove the dust seal and piston seal.



Loosen the lock nut while hold the adjusting bolt.

Remove the adjusting bolt.

Remove the parking brake arm and spring.



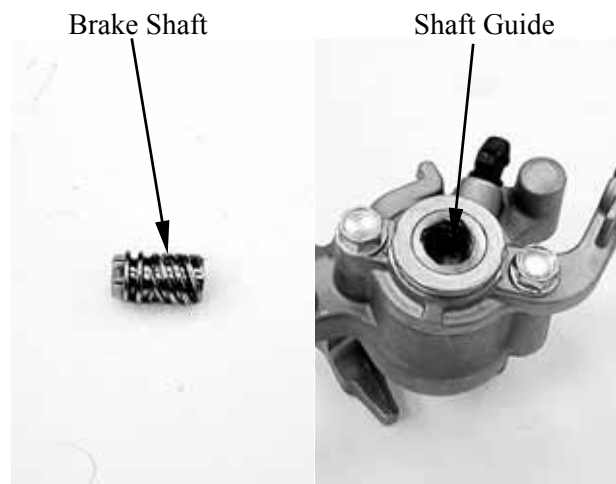
16. BRAKE SYSTEM

Inspect the dust boot for deterioration or damage.
If any damage is found, replace it with a new one.

Remove the drive bolt and dust boot.



Inspect the drive shaft and shaft guide for wear or damage.



Remove the two bolts and parking brake case.

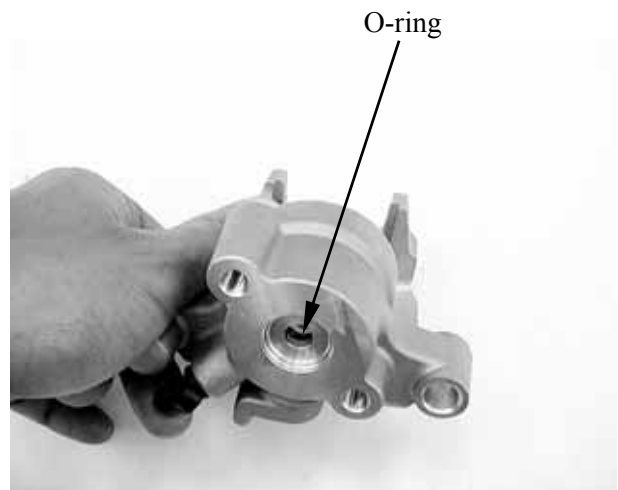


16. BRAKE SYSTEM

Remove the O-ring.



Inspect the O-ring for wear or damage.
If any damages are found, replace it with a new one.



INSTALLATION

Apply silicone grease to the new O-ring, then install the new O-ring.



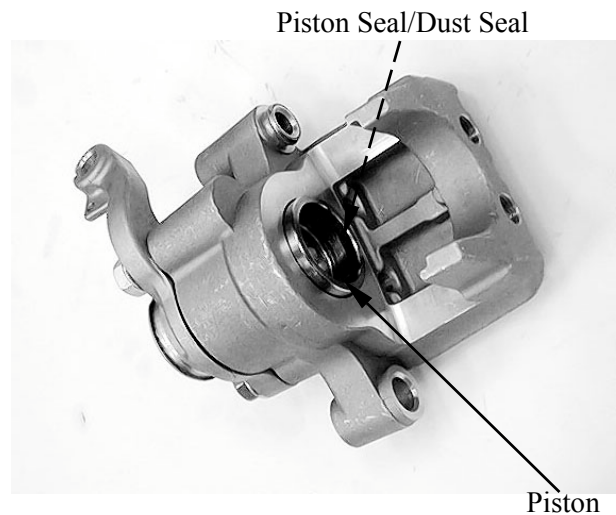
16. BRAKE SYSTEM

Install the parking brake case and two bolts.
Tighten the bolts securely.



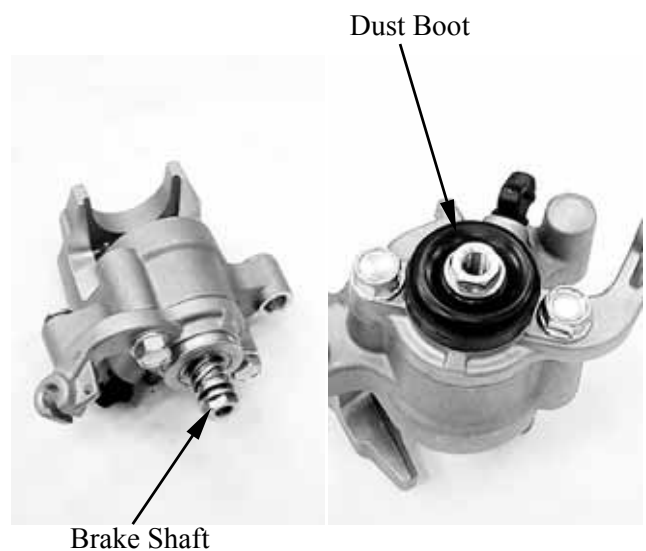
Apply silicone grease to the new piston seal
and new dust seal, then install them.

Install the piston.



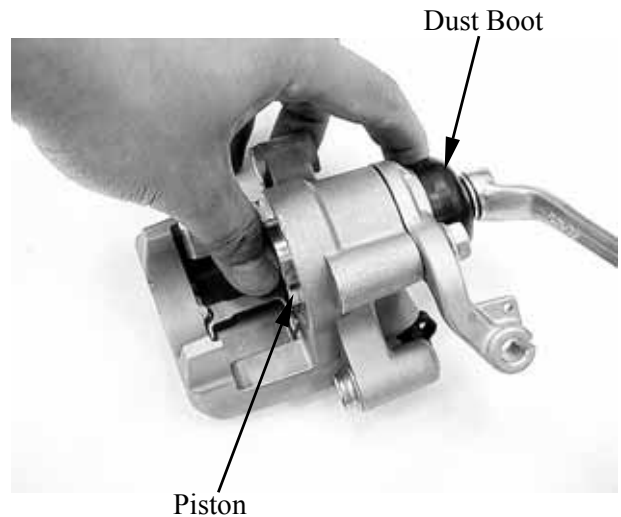
Apply silicone grease to the brake shaft, then
install it.

Apply silicone grease to the dust boot, then
install it.



16. BRAKE SYSTEM

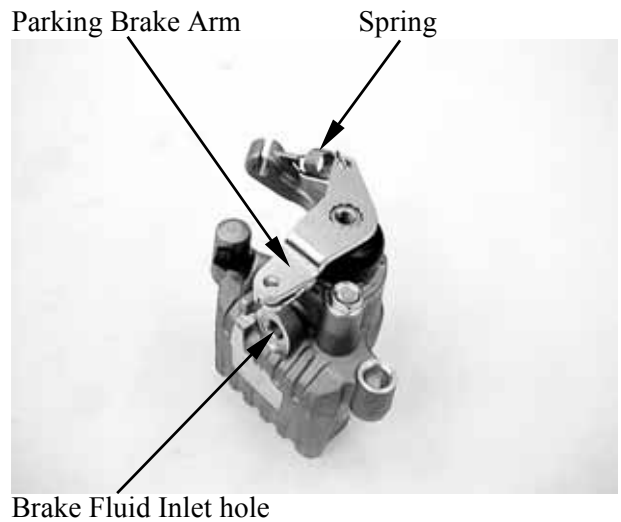
Press the piston and turn the brake shaft counterclockwise to expand boot, then the brake shaft does not touch piston.



Install the parking brake arm and spring.

- *

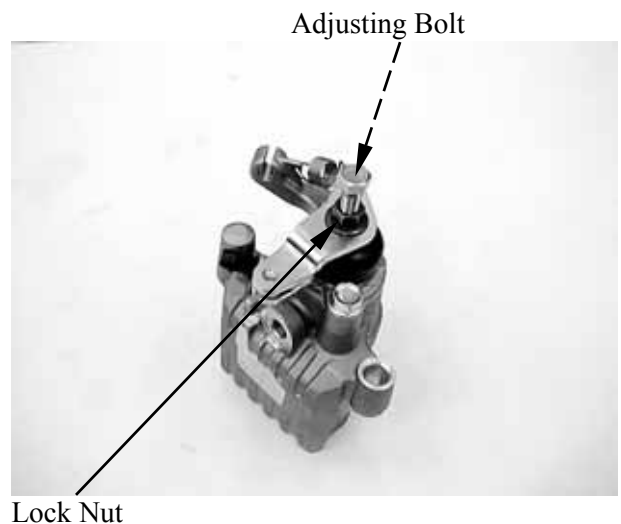
Align the parking brake arm with the brake fluid inlet hole as shown.



Install the adjusting bolt and lock nut.

- *

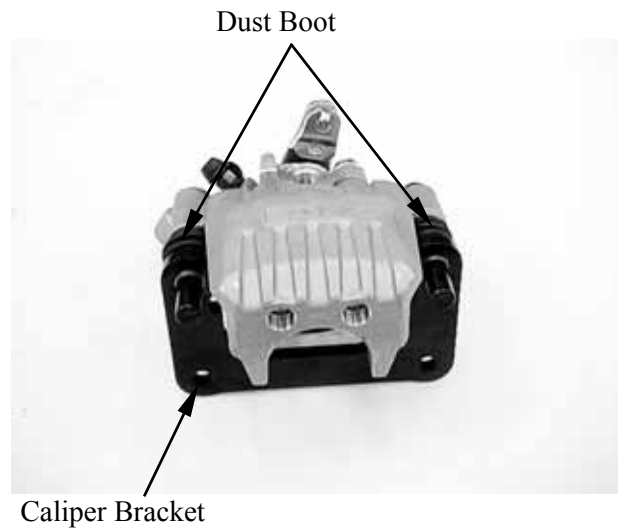
Do not turn in the adjusting too much and do not tighten the lock nut.
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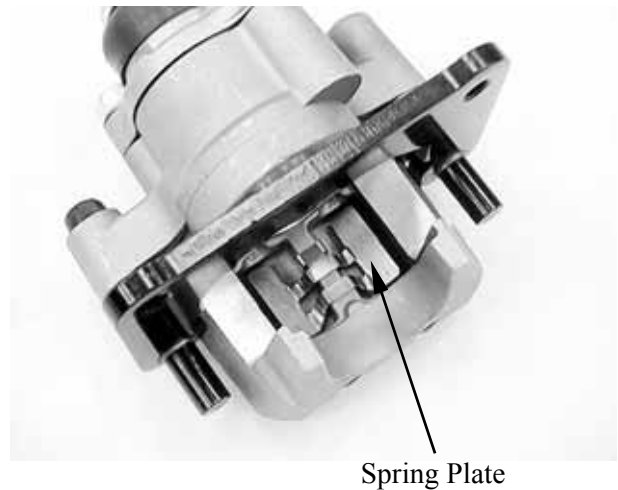
16. BRAKE SYSTEM

Install the dust boots.

Apply silicone grease to caliper bracket, then install it.



Install the spring plate.



Install the parking brake caliper (refer to the **“REAR BRAKE/PARKING BRAKE CALIPER REMOVAL/INSTALLATION (ON ROAD)”** section in this chapter).

Adjust the parking brake (refer to the **“PARKING BRAKE ADJUSTMENT (ON ROAD)”** section in the chapter 3).