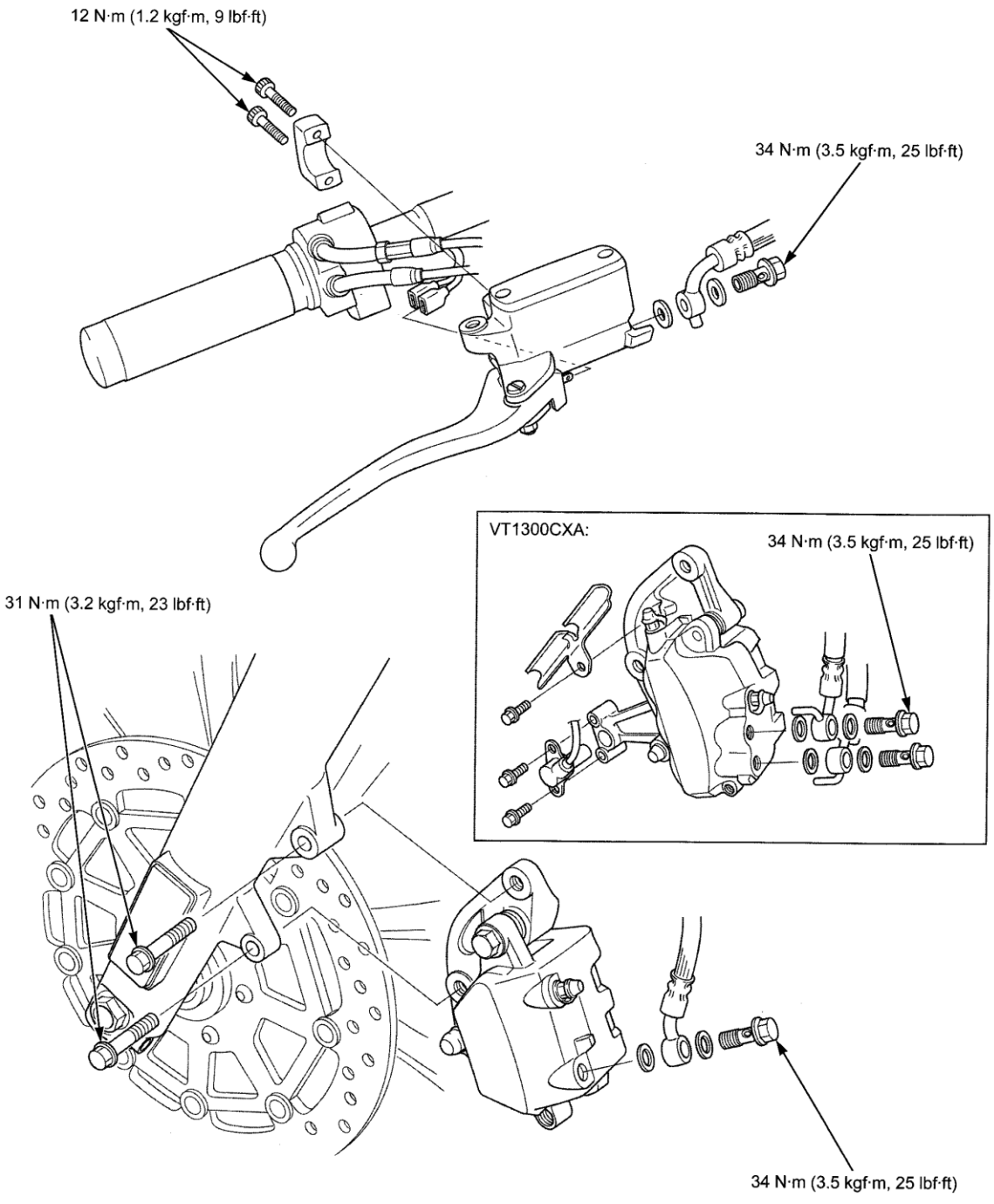
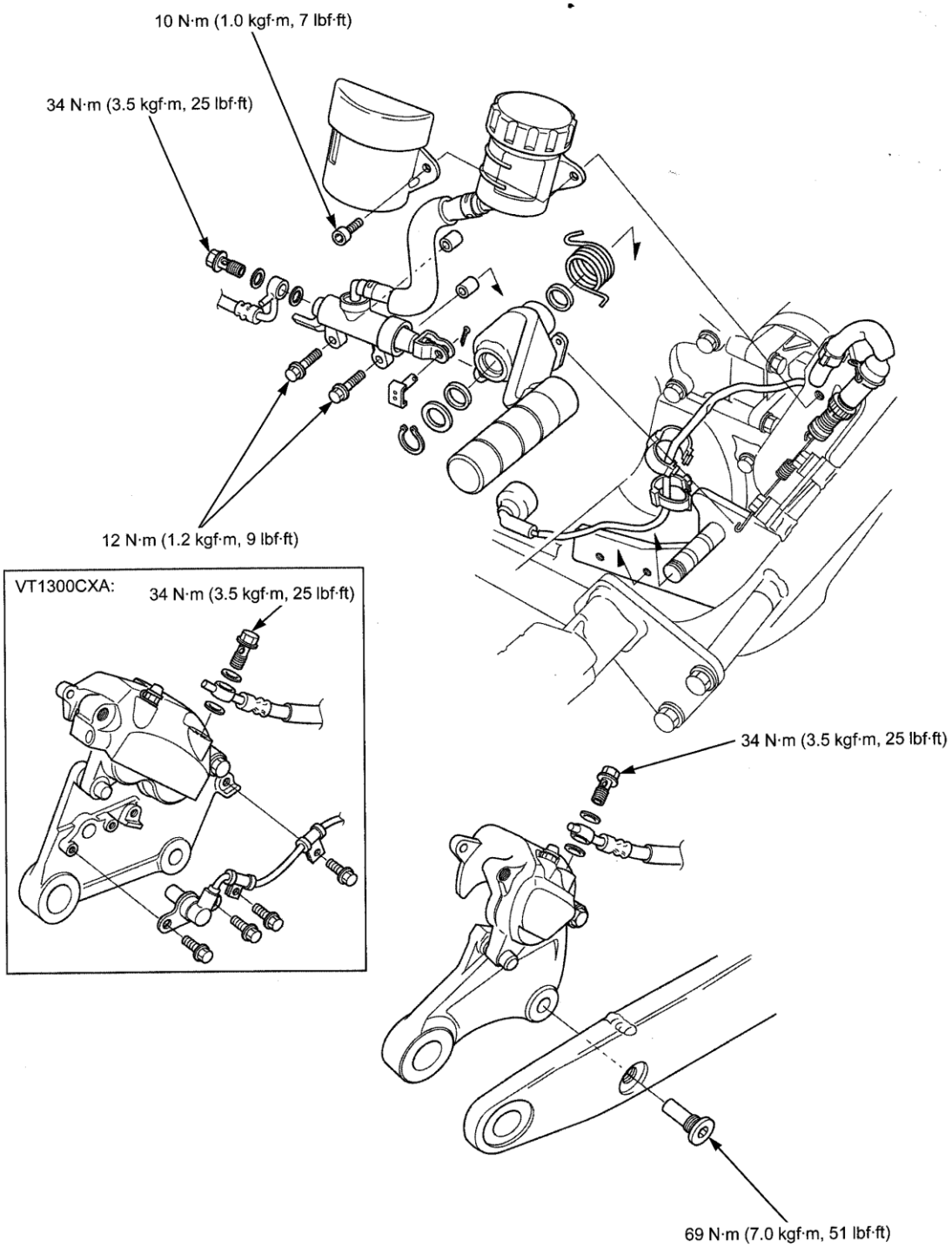
17. HYDRAULIC BRAKE

COMPONENT LOCATION

Front:



Rear:


10 N·m (1.0 kgf·m, 7 lbf·ft)
34 N·m (3.5 kgf·m, 25 lbf·ft)
12 N·m (1.2 kgf·m, 9 lbf·ft)
VT1300CXA:
34 N·m (3.5 kgf·m, 25 lbf·ft)
34 N·m (3.5 kgf·m, 25 lbf·ft)
69 N·m (7.0 kgf·m, 51 lbf·ft)

SERVICE INFORMATION

GENERAL

⚠CAUTION

Frequent inhalation of brake pad dust, regardless of material composition could be hazardous to your health.
- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.

NOTICE

Spilled brake fluid will severely damage instrument lenses and painted surfaces. It is also harmful to some rubber parts. Be careful whenever you remove the reservoir cap; make sure the front reservoir is horizontal first.

- This section covers service of the conventional brake components of the brake system. For Anti-lock Brake System (ABS) service (page 18-4).
- A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.
- Check the brake system by applying the brake lever or pedal after the air bleeding.
- Never allow contaminants (e.g., dirt, water) to enter an open reservoir.
- Once the hydraulic system has been opened, or if the brake feels spongy, the system must be bled.
- Always use fresh DOT 4 brake fluid from a sealed container when servicing the system. Do not mix different types of fluid as they may not be compatible.
- Always check brake operation before riding the motorcycle.

SPECIFICATIONS

Unit: mm (in)

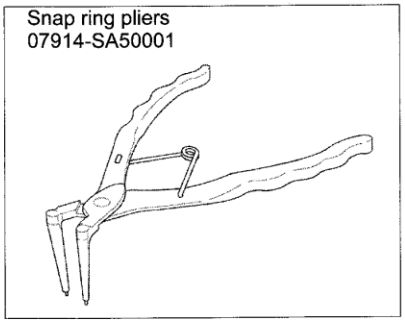
ITEM				STANDARD	SERVICE LIMIT
Recommended brake fluid				DOT 4 brake fluid	–
Front	Brake disc thickness			5.9 – 6.1 (0.23 – 0.24)	5.0 (0.20)
	Brake disc runout			–	0.30 (0.012)
	Master cylinder I.D.			12.700 – 12.743 (0.5000 – 0.5017)	12.755 (0.5022)
	Master piston O.D.			12.657 – 12.684 (0.4983 – 0.4994)	12.645 (0.4978)
	VT1300CX	Caliper cylinder I.D.		27.000 – 27.050 (1.0630 – 1.0650)	27.060 (1.0654)
		Caliper piston O.D.		26.918 – 26.968 (1.0598 – 1.0617)	26.91 (1.059)
	VT1300CXA	Caliper cylinder I.D.	Upper	27.000 – 27.050 (1.0630 – 1.0650)	27.060 (1.0654)
			Middle	22.650 – 22.700 (0.8917 – 0.8937)	22.710 (0.8941)
			Lower	27.000 – 27.050 (1.0630 – 1.0650)	27.060 (1.0654)
		Caliper piston O.D.	Upper	26.918 – 26.968 (1.0598 – 1.0617)	26.91 (1.059)
			Middle	22.585 – 22.618 (0.8892 – 0.8905)	22.56 (0.888)
			Lower	26.918 – 26.968 (1.0598 – 1.0617)	26.91 (1.059)
Rear	Brake disc thickness			5.8 – 6.2 (0.23 – 0.24)	5.0 (0.20)
	Brake disc runout			–	0.30 (0.012)
	VT1300CX	Master cylinder I.D.		14.000 – 14.043 (0.5512 – 0.5529)	14.055 (0.5533)
		Master piston O.D.		13.957 – 13.984 (0.5495 – 0.5506)	13.945 (0.5490)
		Caliper cylinder I.D.		38.18 – 38.23 (1.503 – 1.505)	38.24 (1.506)
		Caliper piston O.D.		38.098 – 38.148 (1.4999 – 1.5019)	38.09 (1.500)
	VT1300CXA	Master cylinder I.D.		17.460 – 17.503 (0.6874 – 0.6891)	17.515 (0.6896)
		Master piston O.D.		17.417 – 17.444 (0.6857 – 0.6848)	17.405 (0.6852)
		Caliper cylinder I.D.		32.030 – 32.080 (1.2610 – 1.2630)	32.090 (1.2634)
		Caliper piston O.D.		31.948 – 31.998 (1.2578 – 1.2598)	31.940 (1.2575)

TORQUE VALUES

Brake caliper bleed valve	5.5 N·m (0.6 kgf·m, 4.1 lbf·ft)	
Front master cylinder reservoir cap screw	1.5 N·m (0.2 kgf·m, 1.1 lbf·ft)	
Brake pad pin	18 N·m (1.8 kgf·m, 13 lbf·ft)	
Brake pad pin plug (VT1300CX)	2.5 N·m (0.3 kgf·m, 1.8 lbf·ft)	
Brake hose oil bolt	34 N·m (3.5 kgf·m, 25 lbf·ft)	
Front brake lever pivot bolt	1 N·m (0.1 kgf·m, 0.7 lbf·ft)	
Front brake lever pivot nut	6 N·m (0.6 kgf·m, 4.4 lbf·ft)	
Front brake light switch screw	1.2 N·m (0.1 kgf·m, 0.9 lbf·ft)	
Front master cylinder holder socket bolt	12 N·m (1.2 kgf·m, 9 lbf·ft)	
Rear brake reservoir mounting bolt	10 N·m (1.0 kgf·m, 7 lbf·ft)	
Rear master cylinder push rod nut	18 N·m (1.8 kgf·m, 13 lbf·ft)	
Rear master cylinder mounting bolt	12 N·m (1.2 kgf·m, 9 lbf·ft)	
Front brake caliper bracket pin	13 N·m (1.3 kgf·m, 10 lbf·ft)	Apply locking agent to the threads.
Front brake caliper pin	27 N·m (2.8 kgf·m, 20 lbf·ft)	Apply locking agent to the threads.
Front brake caliper mounting bolt	31 N·m (3.2 kgf·m, 23 lbf·ft)	ALOC bolt; replace with a new one.
Rear brake caliper bracket pin	23 N·m (2.3 kgf·m, 17 lbf·ft)	ALOC bolt; replace with a new one.
Rear brake caliper pin	27 N·m (2.8 kgf·m, 20 lbf·ft)	Apply locking agent to the threads.
Rear brake caliper stopper pin bolt	69 N·m (7.0 kgf·m, 51 lbf·ft)	ALOC bolt; replace with a new one.

TOOL

Snap ring pliers
07914-SA50001



TROUBLESHOOTING

Brake lever/pedal soft or spongy
- Air in hydraulic system
- Leaking hydraulic system
- Contaminated brake pad/disc
- Worn caliper piston seal
- Worn master cylinder piston cup
- Worn brake pad/disc
- Contaminated caliper
- Contaminated master cylinder
- Caliper not sliding properly
- Low brake fluid level
- Warped/deformed brake disc
- Sticking/worn caliper piston
- Sticking/worn master piston
- Bent brake lever/pedal

Brake lever/pedal hard
- Clogged/restricted hydraulic system
- Sticking/worn caliper piston
- Sticking/worn master piston
- Caliper not sliding properly
- Bent brake lever/pedal
- Worn caliper piston seal

Brake drag
- Contaminated brake pad/disc
- Clogged/restricted hydraulic system
- Worn caliper piston seal
- Badly worn brake pad/disc
- Warped/deformed brake disc
- Caliper not sliding properly
- Sticking/worn caliper piston
- Sticking/worn master piston
- Clogged master cylinder port
- Clogged brake hose joint
- Improper master cylinder push rod length (rear)

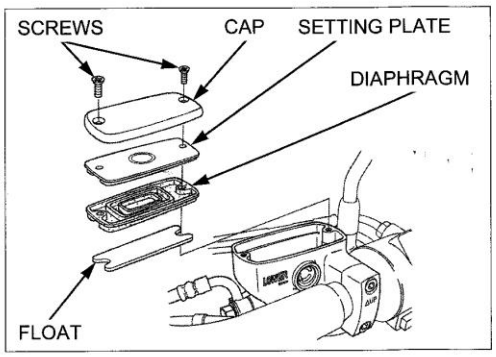
BRAKE FLUID REPLACEMENT/AIR BLEEDING (VT1300CX)

BRAKE FLUID DRAINING

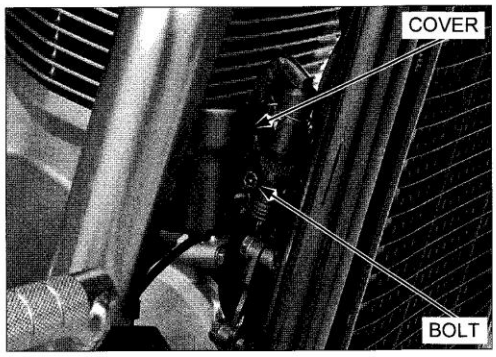
Front: Turn the handlebar to the left until the front master cylinder reservoir is level before removing the reservoir cap.

Remove the following:

- Screws
- Reservoir cap
- Setting plate
- Diaphragm
- Float



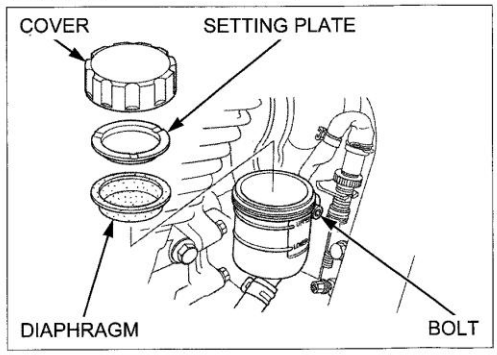
Rear: Remove the socket bolt and reservoir cover.



Rear: Reinstall the rear brake reservoir with the socket bolt.

Remove the following:

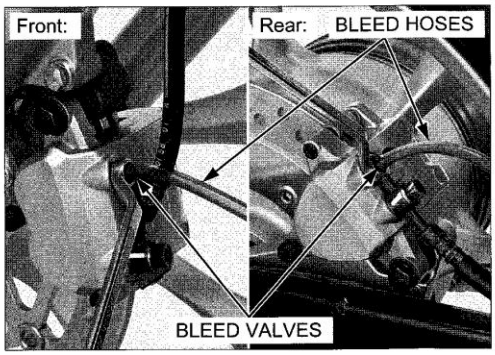
- Reservoir cap
- Setting plate
- Diaphragm



Connect a bleed hose to the bleed valve.

Loosen the bleed valve and pump the brake lever or pedal until no more fluid flows out of the bleed valve.

Tighten the bleed valve.



BRAKE FLUID FILLING/BLEEDING

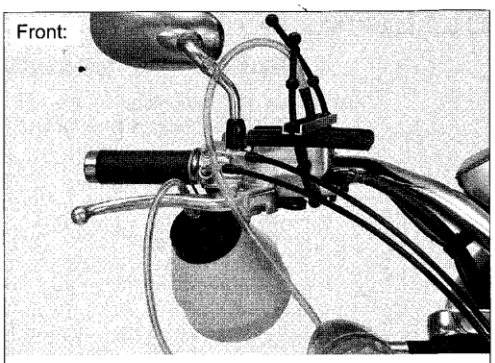
Fill the reservoir with DOT 4 brake fluid from a sealed container.

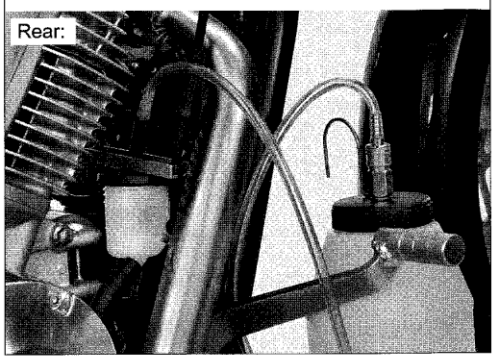
Connect an automatic refill system to the reservoir.

If an automatic refill system is not used, add brake fluid when the fluid level in the reservoir is low.

NOTE:

- Check the fluid level often while bleeding to prevent air from being pumped into the system.
- When using a brake bleeding tool, follow the manufacturer's operating instructions.





Connect a commercially available brake bleeder to the bleed valve.

Operate the brake bleeder and loosen the bleed valve. If an automatic refill system is not used, add brake fluid when the fluid level in the reservoir is low.

Perform the bleeding procedure until the system is completely flushed/bled.

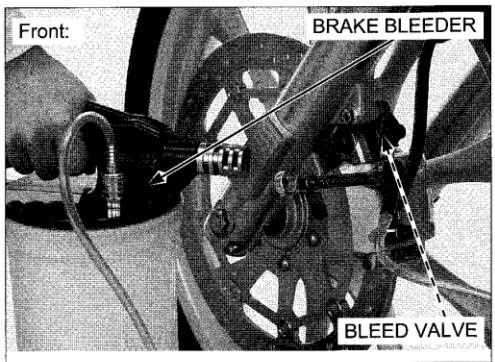
NOTE:

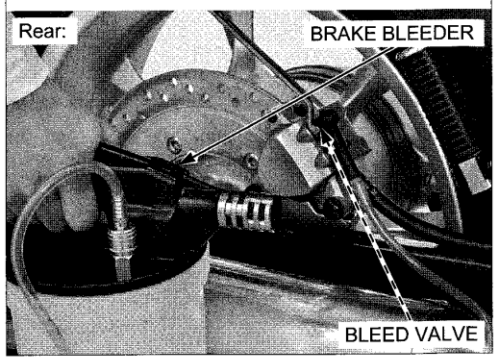
- If air is entering the bleeder from around the bleed valve threads, seal the threads with teflon tape.

Close the bleed valve and operate the brake lever or pedal. If it is still spongy, bleed the system again.

After bleeding the air completely, tighten the bleed valve to the specified torque.

TORQUE: 5.5 N·m (0.6 kgf·m, 4.1 lbf·ft)





If a brake bleeder is not available, use the following procedure:

Wrap a clean shop towel around the reservoir to prevent brake fluid spilling.

Connect a bleed hose to the bleed valve.

Pressurize the system with the brake lever or pedal until lever or pedal resistance is felt.

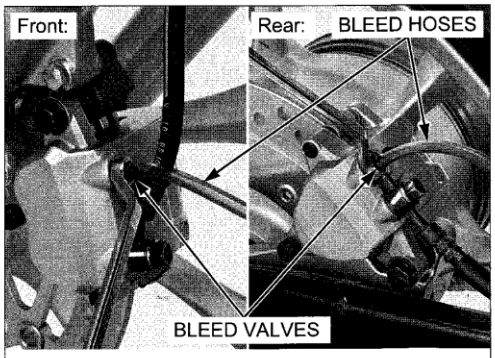
Do not release the lever or pedal until the bleed valve has been closed.

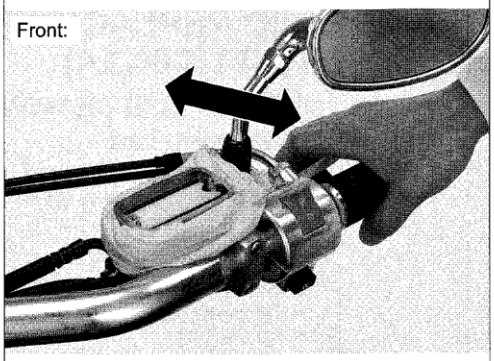
1. Squeeze the brake lever or depress the brake pedal, open the bleed valve 1/4 turn and then close it.
2. Release the brake lever or pedal slowly and wait several seconds after it reaches the end of its travel.

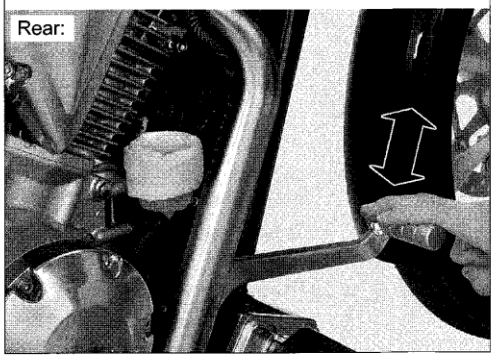
Repeat steps 1 and 2 until air bubbles do not appear in the bleed hose.

After bleeding the air completely, tighten the bleed valve to the specified torque.

TORQUE: 5.5 N·m (0.6 kgf·m, 4.1 lbf·ft)

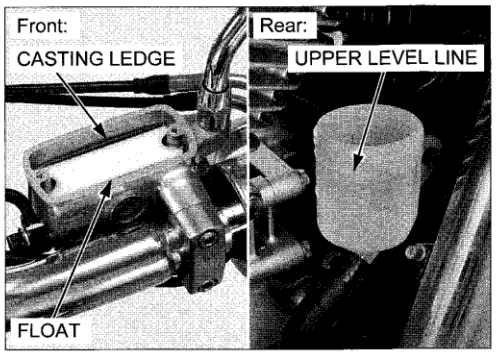






Fill the reservoir to the upper level line with DOT 4 brake fluid.

Install the master cylinder float.

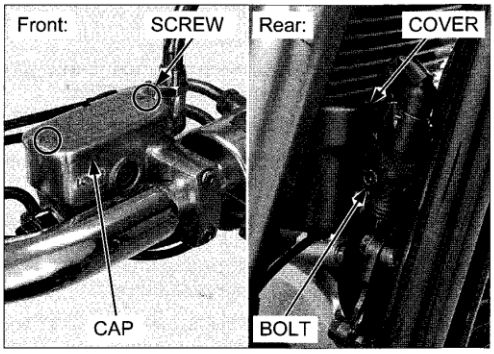


Front: Install the diaphragm, setting plate and reservoir cap and tighten the screws.

TORQUE: 1.5 N·m (0.2 kgf·m, 1.1 lbf·ft)

Rear: Install the reservoir cover.
Remove the reservoir mounting bolt, and install the reservoir and cover with the bolt.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)



BRAKE FLUID REPLACEMENT/AIR BLEEDING (VT1300CXA)

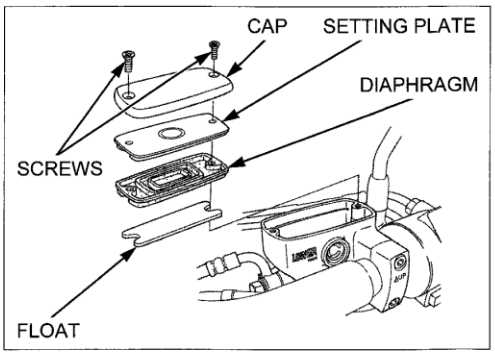
BRAKE FLUID DRAINING

LEVER BRAKE LINE

Turn the handlebar to the left until the front master cylinder reservoir is level before removing the reservoir cap.

Remove the following:

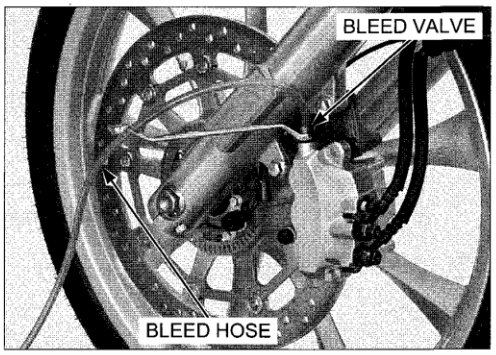
- Screws
- Reservoir cap
- Setting plate
- Diaphragm
- Float



Connect a bleed hose to the front brake caliper upper bleed valve.

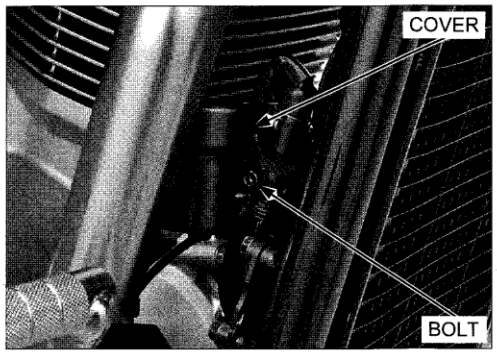
Loosen the bleed valve and pump the brake lever until no more fluid flows out of the bleed valve.

Tighten the bleed valve.



PEDAL BRAKE LINE

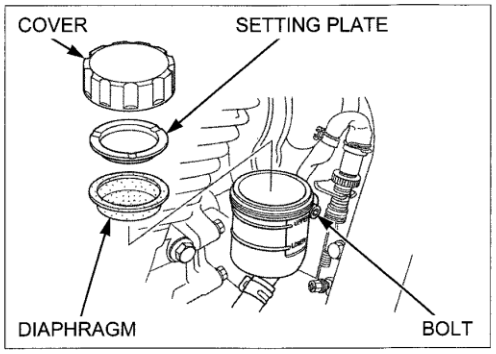
Remove the socket bolt and reservoir cover.



Reinstall the rear brake reservoir with the socket bolt.

Remove the following:

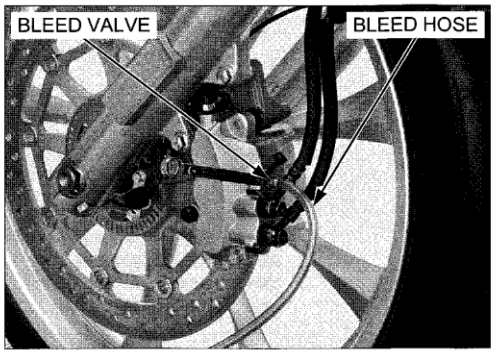
- Reservoir cover
- Setting plate
- Diaphragm



Connect a bleed hose to the front brake caliper lower bleed valve.

Loosen the bleed valve and pump the brake pedal until no more fluid flows out of the bleed valve.

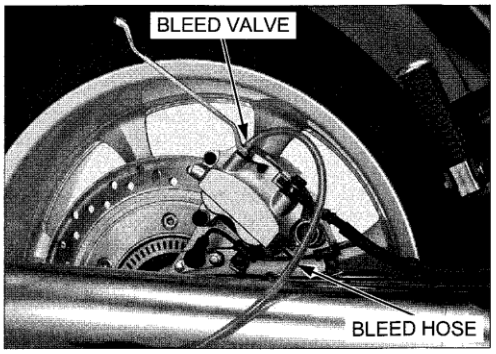
Tighten the bleed valve.



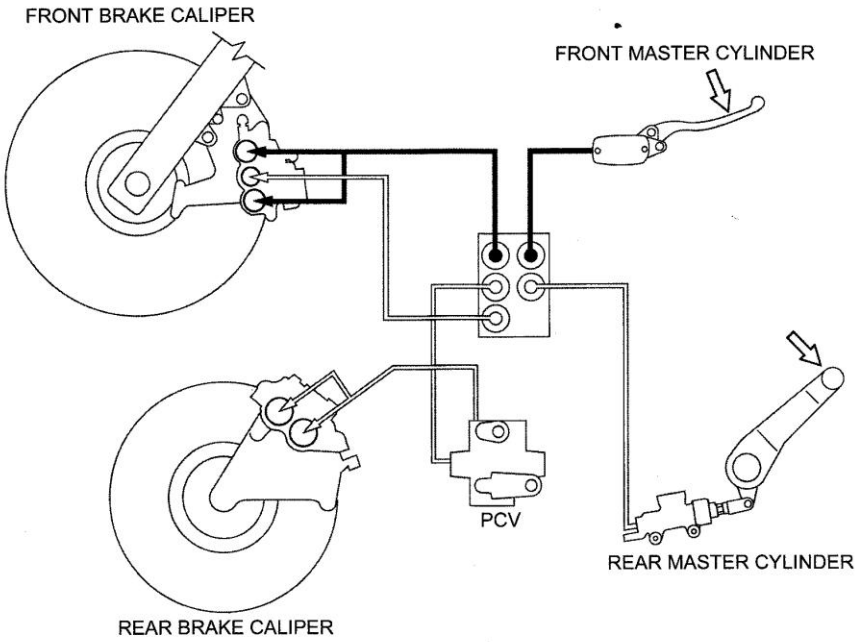
Connect a bleed hose to the rear brake caliper bleed valve.

Loosen the bleed valve and pump the brake pedal until no more fluid flows out of the bleed valve.

Tighten the bleed valve.



BRAKE FLUID FILLING/BLEEDING



LEVER BRAKE LINE

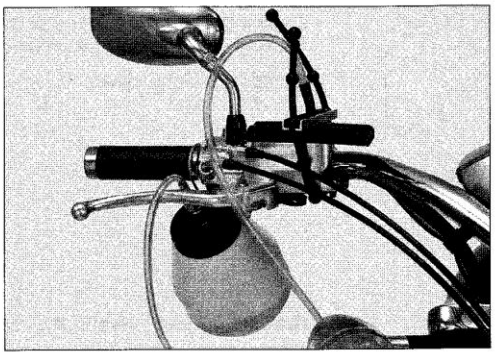
Fill the reservoir with DOT 4 brake fluid from a sealed container.

Connect an automatic refill system to the reservoir.

If an automatic refill system is not used, add brake fluid when the fluid level in the reservoir is low.

NOTE:

- Check the fluid level often while bleeding to prevent air from being pumped into the system.
- When using a brake bleeding tool, follow the manufacturer's operating instructions.



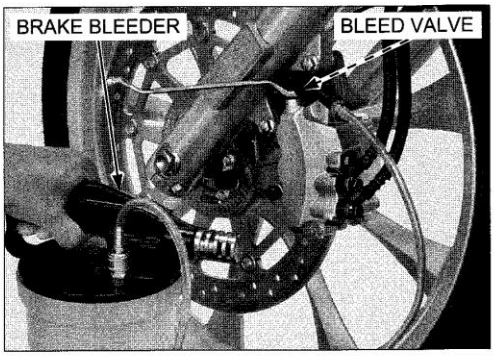
Connect a commercially available brake bleeder to the front brake caliper upper bleed valve.

Operate the brake bleeder and loosen the bleed valve. If an automatic refill system is not used, add brake fluid when the fluid level in the reservoir is low.

Perform the bleeding procedure until the system is completely flushed/bled.

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 is still spongy, bleed the system again.

After bleeding the air completely, tighten the bleed valve to the specified torque.

TORQUE: 5.5 N·m (0.6 kgf·m, 4.1 lbf·ft)

If a brake bleeder is not available, use the following procedure:

Wrap a clean shop towel around the reservoir to prevent brake fluid spilling.

Connect a bleed hose to the front brake caliper upper bleed valve.

Pressurize the system with the brake lever until lever resistance is felt.

1. Squeeze the brake lever, open the bleed valve 1/4 turn and then close it.

NOTE:

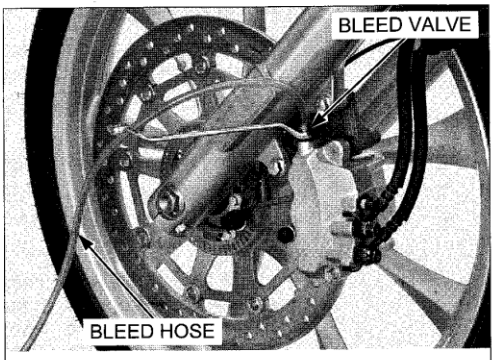
- Do not release the lever until the bleed valve has been closed.

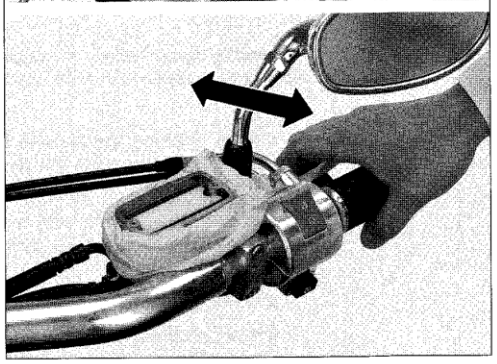
2. Release the brake lever slowly and wait several seconds after it reaches the end of its travel.

   Repeat steps 1 and 2 until air bubbles do not appear in the bleed hose.

   After bleeding the air completely, tighten the bleed valve to the specified torque.

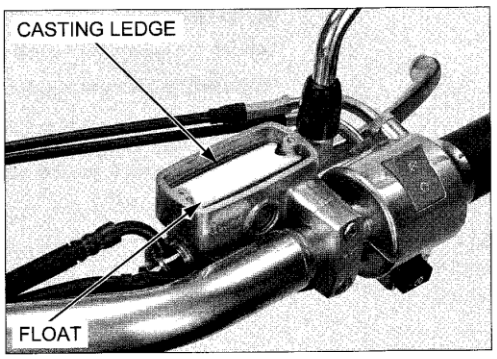
   TORQUE: 5.5 N·m (0.6 kgf·m, 4.1 lbf·ft)





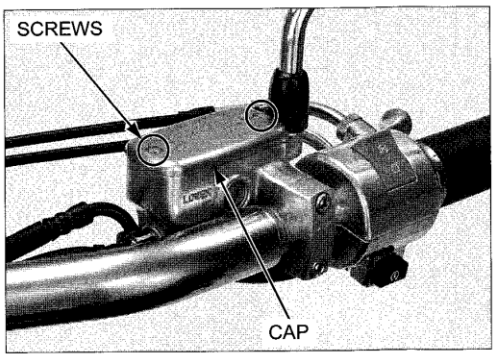
Fill the reservoir to the casting ledge with DOT 4 brake fluid.

Install the master cylinder float.



Install the diaphragm, setting plate and reservoir cap and tighten the screws.

TORQUE: 1.5 N·m (0.2 kgf·m, 1.1 lbf·ft)



PEDAL BRAKE LINE

Add fluid and bleed any air from the brake pedal line in the sequence as follow:

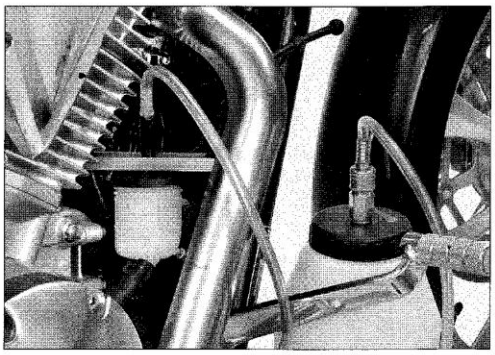
Fill the reservoir with DOT 4 brake fluid from a sealed container.

Connect an automatic refill system to the reservoir.

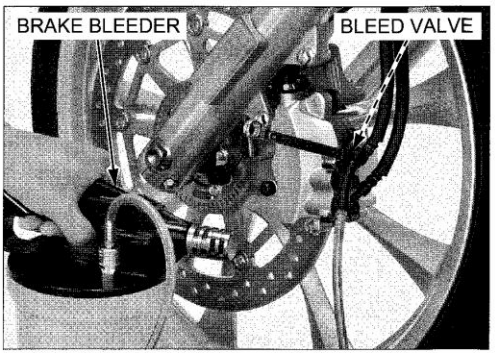
If an automatic refill system is not used, add brake fluid when the fluid level in the reservoir is low.

NOTE:

- Check the fluid level often while bleeding to prevent air from being pumped into the system.
- When using a brake bleeding tool, follow the manufacturer's operating instructions.



Connect a commercially available brake bleeder to the front brake caliper lower bleed valve.



NOTE:

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

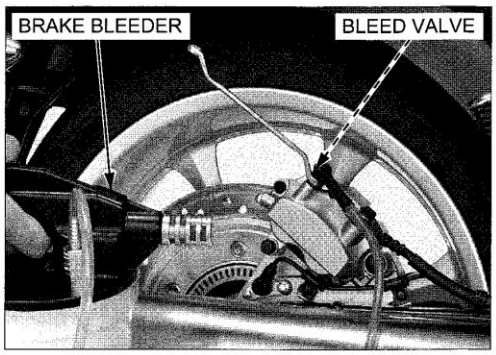
1. Operate the brake bleeder and loosen the bleed valve. If an automatic refill system is not used, add brake fluid when the fluid level in the reservoir is low.
2. Repeat the above procedures until a sufficient amount of fluid flows out of the bleed valve.

   It is not problem if the fluid flowing out from the lower bleed valve contains air bubbles because the lines will be bled later.

   Tighten the lower bleed valve to the specified torque.

   TORQUE: 5.5 N·m (0.6 kgf·m, 4.0 lbf·ft)

Connect a commercially available brake bleeder to the rear brake caliper bleed valve.
Repeat step 1 and 2 for the rear brake caliper bleed valve.



If a brake bleeder is not available, use the following procedure.

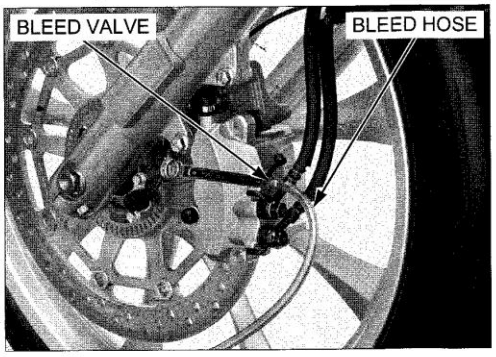
Wrap a clean shop towel around the reservoir to prevent brake fluid spilling.

Connect a bleed hose to the front brake caliper lower bleed valve.

1. Pump the brake pedal several times quickly, then push the brake pedal all the way down, open the bleed valve 1/4 turn.

   Wait several seconds and close the bleed valve.

   Release the brake pedal slowly and wait several seconds after it reaches the end of its travel.



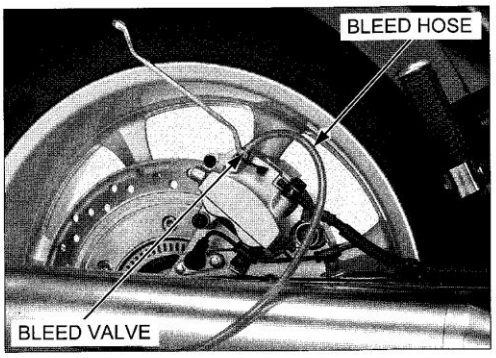
NOTE:

- Do not release the pedal until the bleed valve has been closed.

2. Repeat the above procedures until a sufficient amount of the fluid flows out from the bleed valve.

   It is not a problem if the fluid flowing out from the bleed valve contains air bubbles because the lines will be bled later.

Connect a bleed hose to the rear brake caliper bleed valve.
Repeat step 1 and 2 for the rear brake caliper bleed valve.



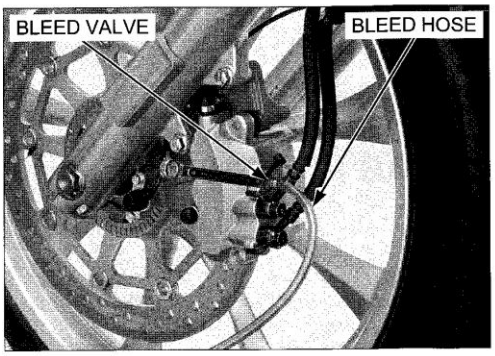
Connect a bleed hose to the front brake caliper lower bleed valve.

1. Pump the brake pedal several times quickly, then push the brake pedal all the way down, loosen the bleed valve and loosen the bleed valve 1/4 turn.

   Wait several seconds and close the bleed valve.

   Release the brake pedal slowly and wait several seconds after it reaches the end of its travel.

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

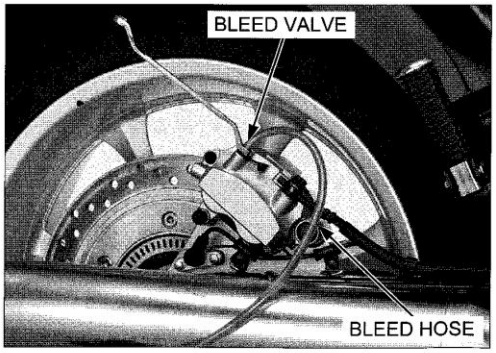


Connect a bleed hose to the rear brake caliper bleed valve.
Repeat step 1 and 2 for the bleed valve.

Note that you may feel strong resistance on the rear (combined) brake pedal during pumping when bleeding air from the caliper. This symptom is caused by the PCV function. Be sure to apply the brake pedal fully.

Tighten the bleed valve to the specified torque.

TORQUE: 5.5 N·m (0.6 kgf·m, 4.0 lbf·ft)



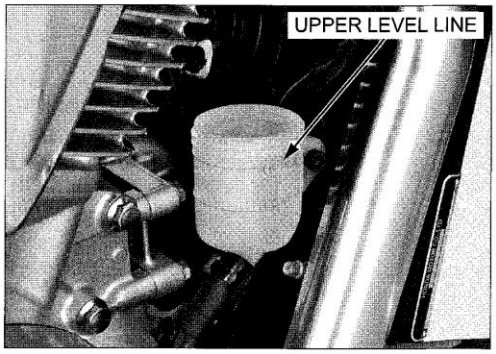
After there are no more air bubbles in the fluid, repeat the air bleeding procedure about two or three times at each bleed valve.

Make sure the bleed valves are closed and operate the brake pedal. If it still feels spongy, bleed the system again.

After bleeding the air completely, tighten the bleed valves to the specified torque.

TORQUE: 5.5 N·m (0.6 kgf·m, 4.0 lbf·ft)

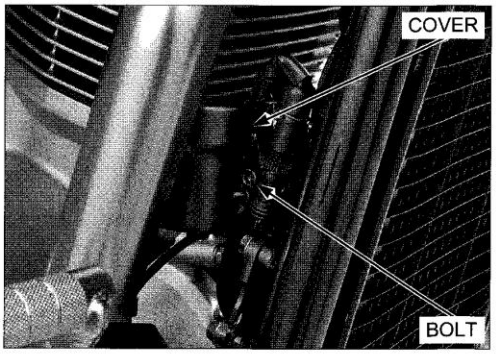
Fill the reservoir to the upper level line with DOT 4 brake fluid.



Install the reservoir cover.

Remove the reservoir mounting bolt, and install the reservoir and cover with the bolt.

TORQUE: 10 N·m (1.0 kgf·m, 4 lbf·ft)

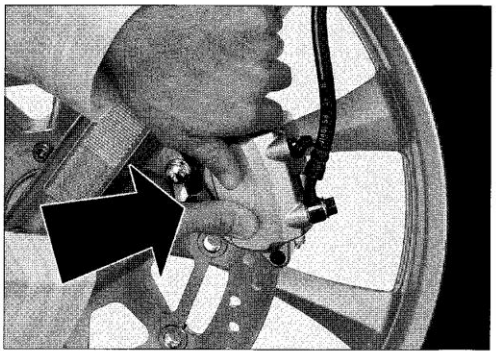


BRAKE PAD/DISC

FRONT BRAKE PAD REPLACEMENT (VT1300CX)

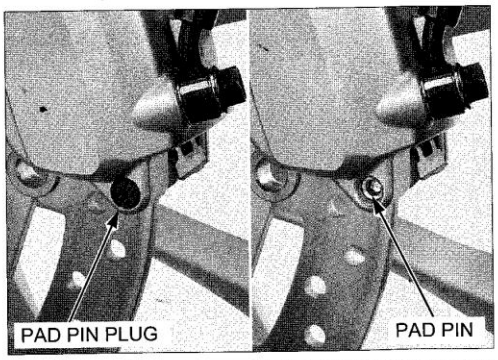
Check the brake fluid level in the reservoir as this operation causes the level to rise.

Push the caliper piston all the way in to allow installation of new brake pads.



Remove the pad pin plug and loosen the pad pin.

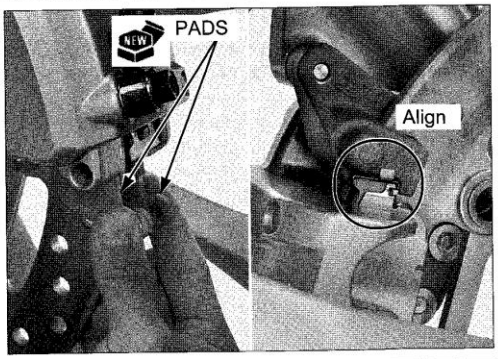
Pull the pad pin out of the caliper body while pushing in the brake pads against the pad spring.



Remove the brake pads.

Make sure the pad spring is installed correctly. Always replace the brake pads in pairs to ensure even disc pressure.

Install new brake pads into the caliper so their ends rest into the pad retainer on the bracket properly.



Install the pad pin by pushing in the brake pads against the pad spring to align the pad pin holes in the brake pads with the caliper body.

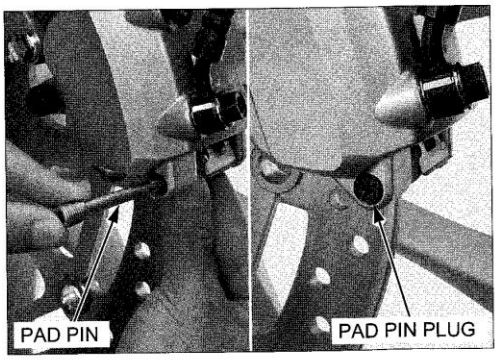
Tighten the pad pin to the specified torque.

TORQUE: 18 N·m (1.8 kgf·m, 13 lbf·ft)

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

TORQUE: 2.5 N·m (0.3 kgf·m, 1.8 lbf·ft)

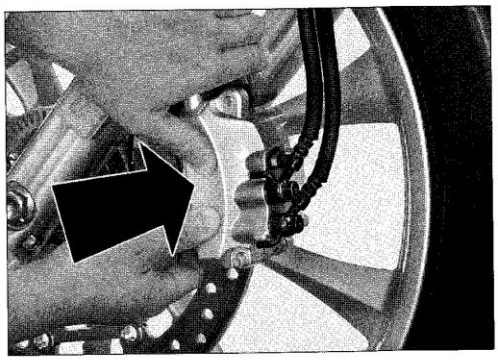
Operate the brake lever to seat the caliper piston against the pads.



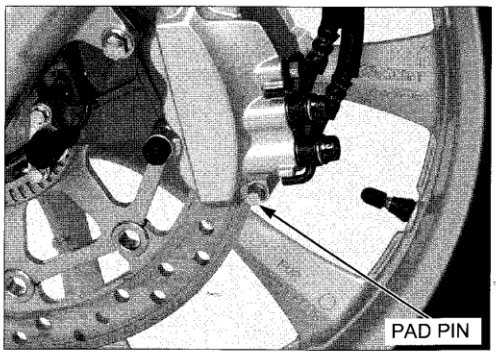
FRONT BRAKE PAD REPLACEMENT (VT1300CXA)

Check the brake fluid level in the reservoir as this operation causes the level to rise.

Push the caliper piston all the way in to allow installation of new brake pads.



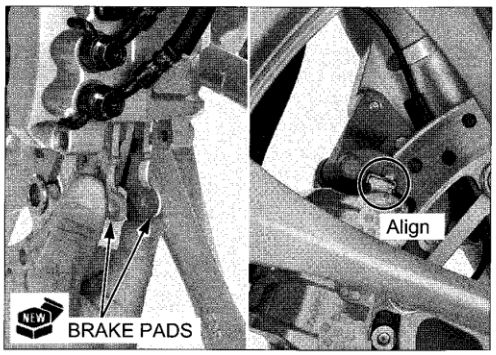
Loosen the pad pin and pull it out of the caliper body while pushing in the brake pads against the pad spring.



Remove the brake pads.

Make sure the pad spring is installed correctly. Always replace the brake pads in pairs to ensure even disc pressure.

Install new brake pads into the caliper so their ends rest into the pad retainer on the bracket properly.

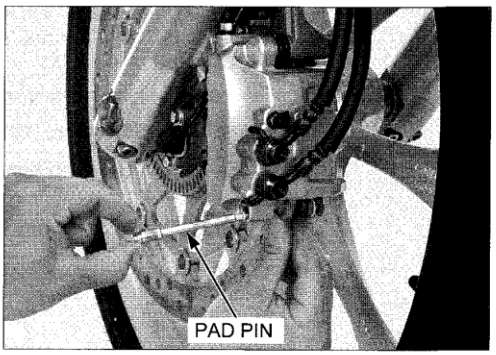


Install the pad pin by pushing in the brake pads against the pad spring to align the pad pin holes in the brake pads with the caliper body.

Tighten the pad pin to the specified torque.

TORQUE: 18 N·m (1.8 kgf·m, 13 lbf·ft)

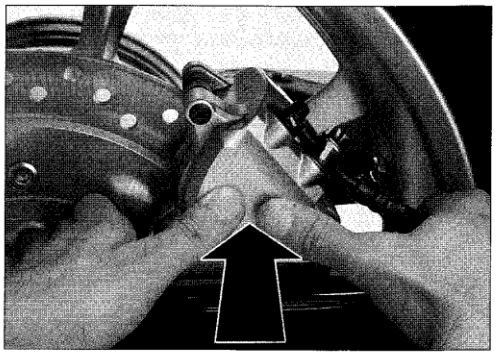
Operate the brake lever to seat the caliper piston against the pads.



REAR BRAKE PAD REPLACEMENT (VT1300CX)

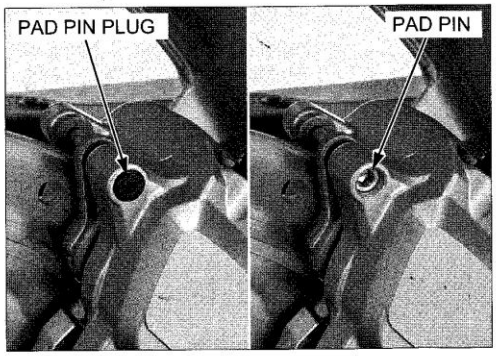
Check the brake fluid level in the reservoir as this operation causes the level to rise.

Push the caliper piston all the way in to allow installation of new brake pads.



Remove the pad pin plug and loosen the pad pin.

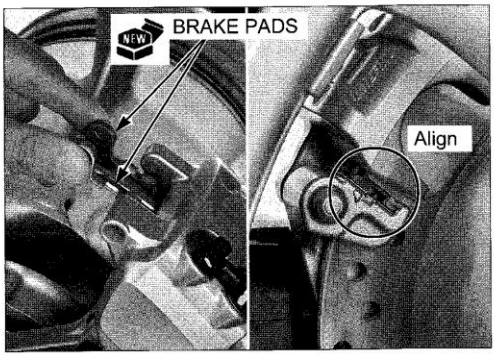
Pull the pad pin out of the brake body while pushing in the pads against the pad spring.



Remove the brake pads.

Make sure the pad spring is installed correctly. Always replace the brake pads in pairs to ensure even disc pressure.

Install new brake pads into the brake caliper so their ends rest into the pad retainer on the bracket properly.



Install the pad pin by pushing in the brake pads against the pad spring to align the pad pin holes in the brake pads with the caliper body.

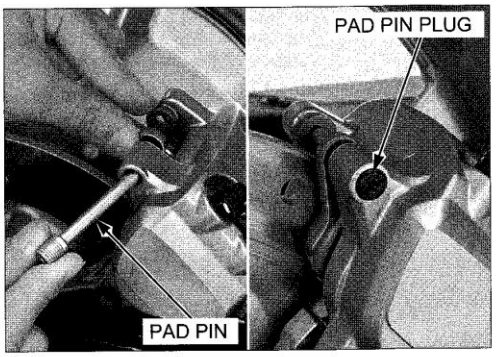
Tighten the pad pin to the specified torque.

TORQUE: 18 N·m (1.8 kgf·m, 13 lbf·ft)

Tighten the pad pin plug to the specified torque.

TORQUE: 2.5 N·m (0.3 kgf·m, 1.8 lbf·ft)

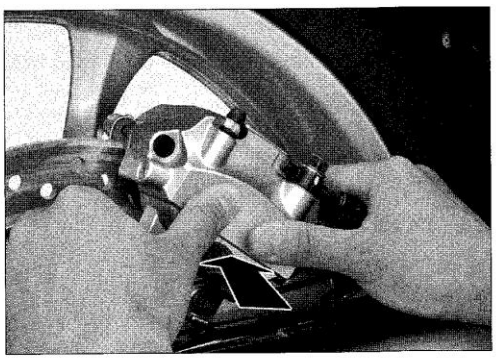
Operate the brake lever to seat the caliper piston against the pads.



REAR BRAKE PAD REPLACEMENT (VT1300CXA)

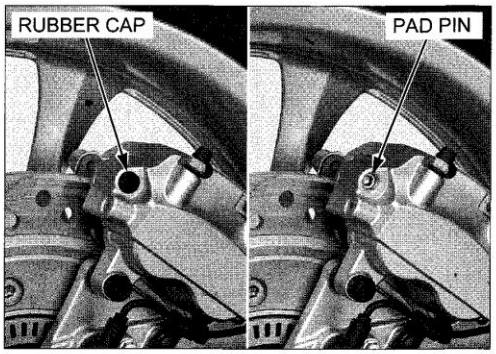
Check the brake fluid level in the reservoir as this operation causes the level to rise.

Push the caliper piston all the way in to allow installation of new brake pads.



Remove the rubber cap and loosen the pad pin.

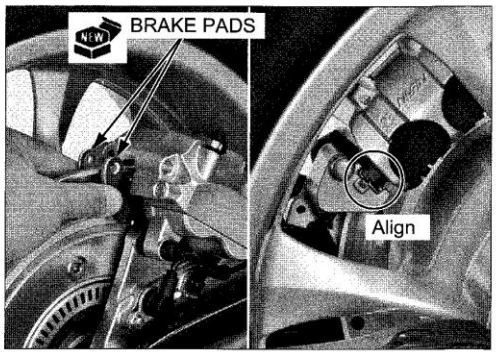
Pull the pad pin out of the caliper body while pushing in the pads against the pad spring.



Remove the brake pads.

Make sure the pad spring is installed correctly. Always replace the brake pads in pairs to ensure even disc pressure.

Install new brake pads into the brake caliper so their ends rest into the pad retainer on the bracket properly.



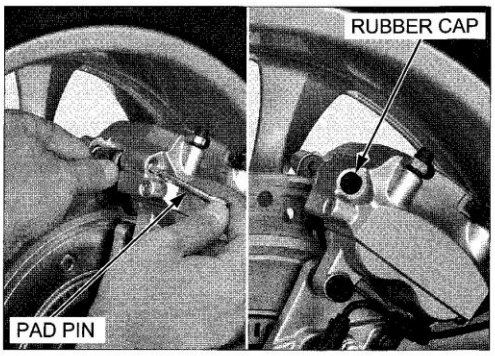
Install the pad pin by pushing in the brake pads against the pad spring to align the pad pin holes in the brake pads with the caliper body.

Tighten the pad pin to the specified torque.

TORQUE: 18 N·m (1.8 kgf·m, 13 lbf·ft)

Install the rubber cap securely.

Operate the brake pedal to seat the caliper piston against the pads.

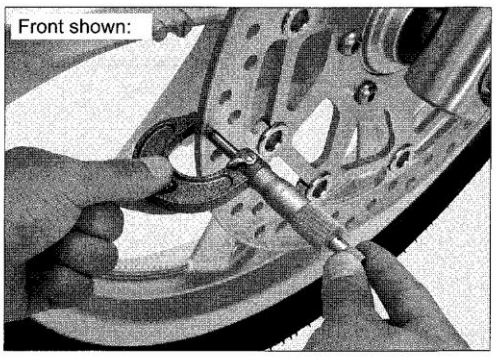


BRAKE DISC INSPECTION

Visually inspect the disc for damage or cracks.

Measure the brake disc thickness at several points.

SERVICE LIMIT: 5.0 mm (0.20 in)



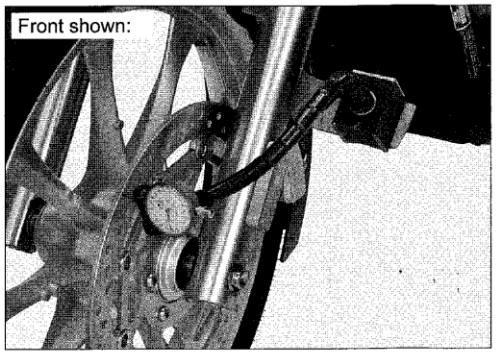
Measure the brake disc warpage with a dial indicator.

SERVICE LIMIT: 0.30 mm (0.012 in)

Check the wheel bearings for excessive play, if the warpage exceeds the service limit.
Replace the brake disc if the wheel bearings are normal.

For brake disc replacement:

- Front (page 15-15)
- Rear (page 16-8)



FRONT MASTER CYLINDER

REMOVAL

Drain the brake fluid from the hydraulic system:

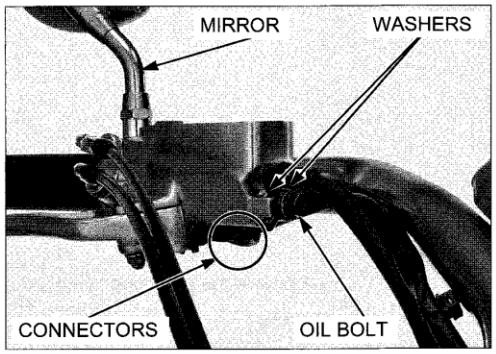
- VT1300CX (page 17-7)
- VT1300CXA (page 17-10)

When removing the oil bolt, cover the end of the hose to prevent contamination.

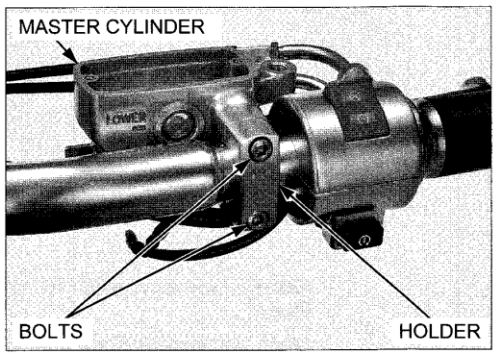
Remove the following:

- Rearview mirror
- Oil bolt
- Sealing washers
- Brake hose

Disconnect the front brake light switch connectors.

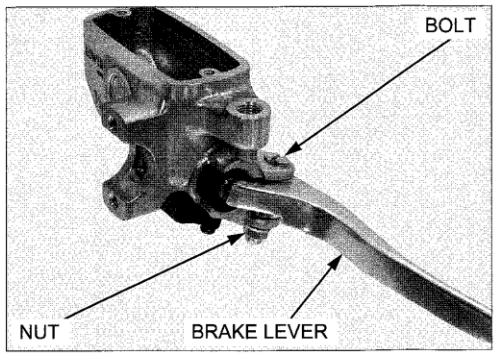


Remove the socket bolts, master cylinder holder and master cylinder.

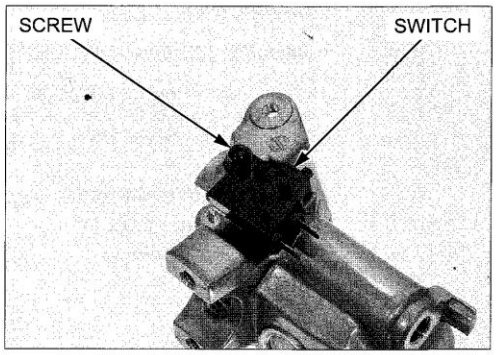


DISASSEMBLY

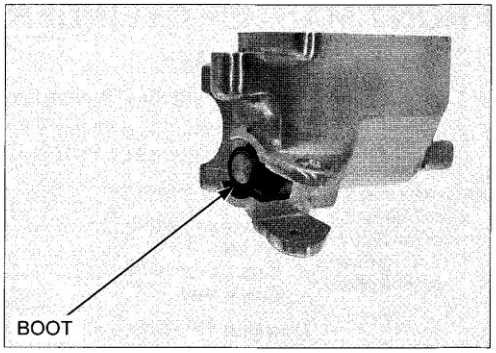
Remove the pivot nut, bolt and brake lever.



Remove the screw and front brake light switch.

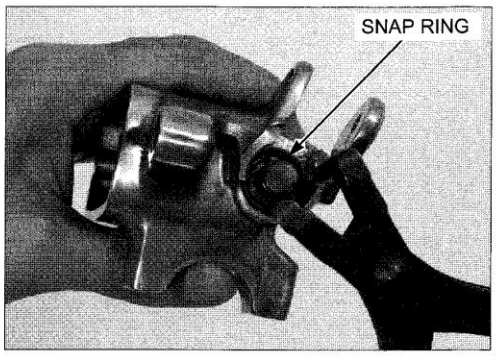


Remove the boot.



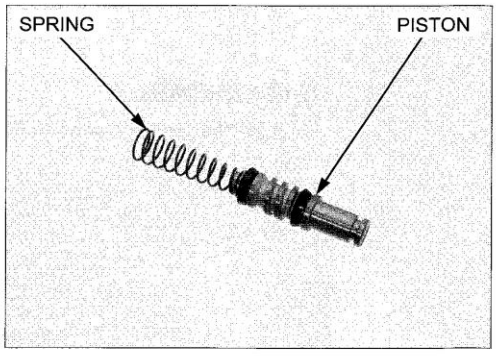
Remove the snap ring using the special tool.

TOOL:
Snap ring pliers **07914-SA50001**



Remove the master piston and spring then separate the them.

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

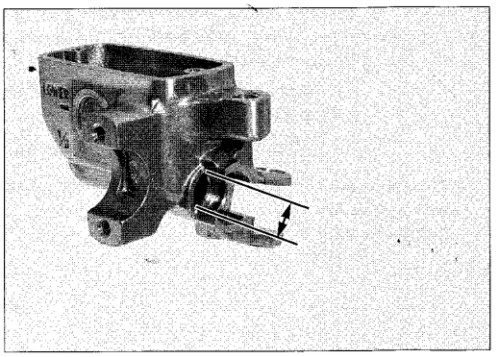


INSPECTION

Check the master cylinder for scoring, scratches or damage.

Measure the master cylinder I.D.

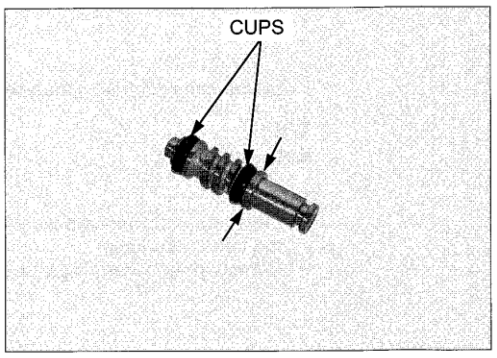
SERVICE LIMIT: 12.755 mm (0.5022 in)



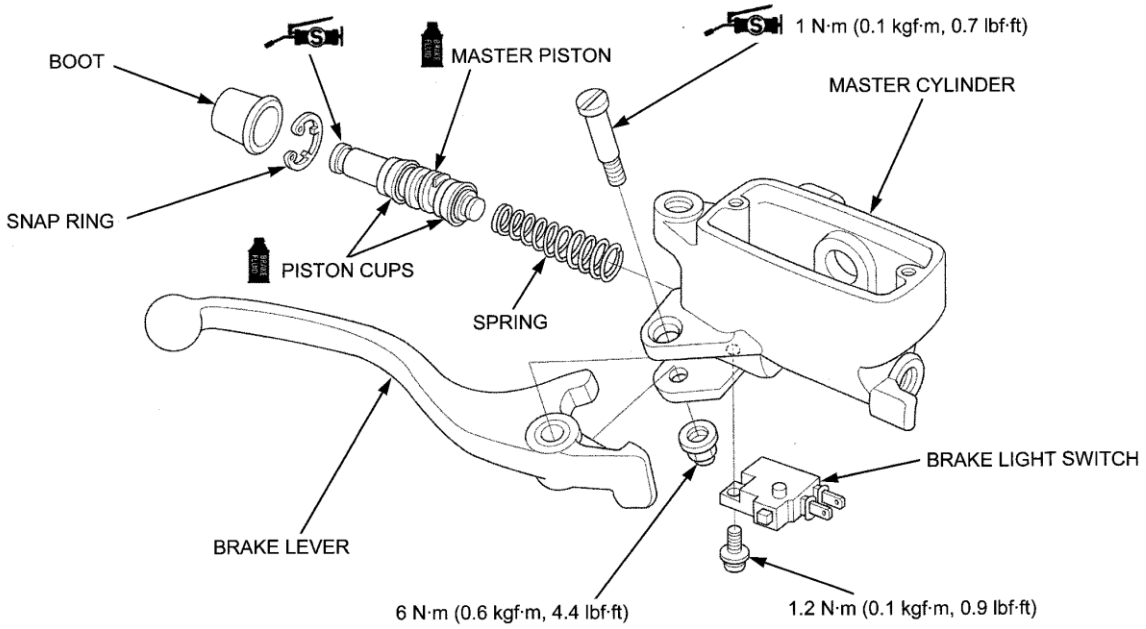
Check the piston scoring, scratches or damage.
Check the cups for fatigue or damage.

Measure the master piston O.D.

SERVICE LIMIT: 12.645 mm (0.4978 in)



ASSEMBLY



NOTE:

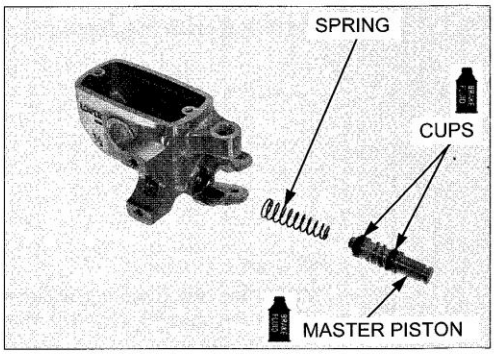
- Replace the master piston, piston cups, spring, snap ring and boot as a set; do not replace the parts individually.

Apply brake fluid to the master piston outer surface and piston cups.

Install the spring to the piston end.

Do not allow the piston cup lips to turn inside out.

Install the master piston/spring into the master cylinder.

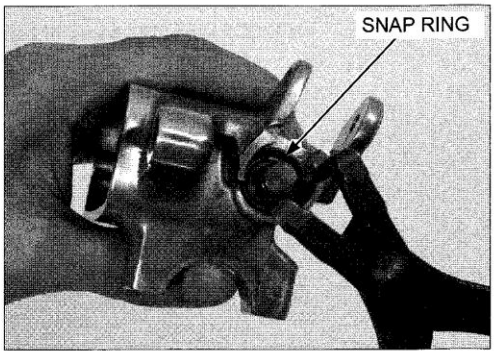


Install the snap ring using the special tool.

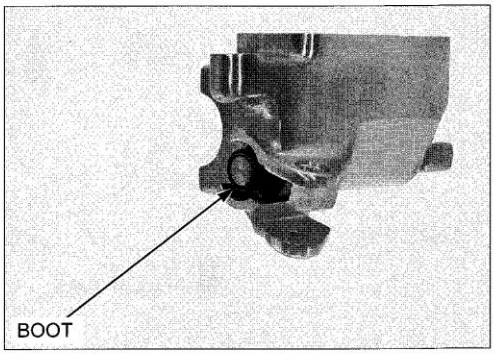
TOOL:
Snap ring pliers **07914-SA50001**

NOTE:

- Install the snap ring with the chamfered edges facing the thrust load side.
- Make sure the snap ring is seated in the groove.

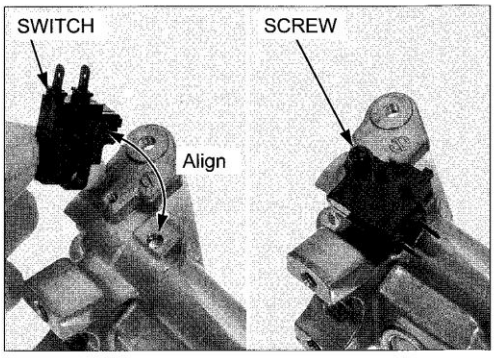


Install the boot into the master cylinder and the piston groove.



Install the front brake light switch aligning its boss with the hole of the master cylinder.
Install and tighten the screw to the specified torque.

TORQUE: 1.2 N·m (0.1 kgf·m, 0.9 lbf·ft)



Apply 0.1 g (0.004 oz) of silicone grease to the brake lever-to-master piston contacting area.

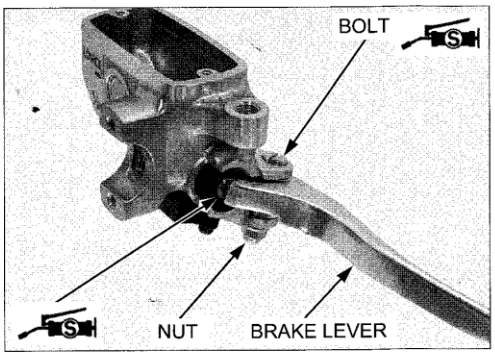
Apply 0.1 g (0.004 oz) of silicone grease to the brake lever pivot bolt sliding surface and install it with the brake lever.

Tighten the pivot bolt to the specified torque.

TORQUE: 1 N·m (0.1 kgf·m, 0.7 lbf·ft)

Install and tighten the pivot nut to the specified torque while holding the pivot bolt.

TORQUE: 6 N·m (0.6 kgf·m, 4.4 lbf·ft)



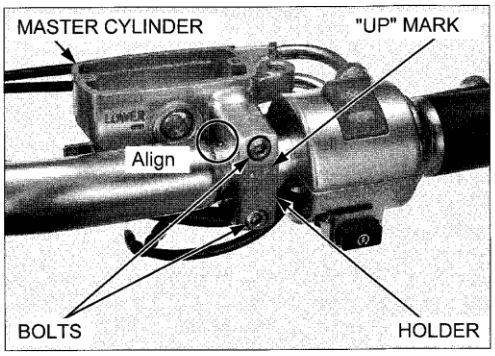
INSTALLATION

Install with the "UP" mark on the holder facing up.

Install the master cylinder with the master cylinder holder and socket bolts.

Align the edge of the master cylinder with the punch mark on the handlebar and tighten the upper bolt first, then tighten the lower bolt to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



Connect the brake hose to the master cylinder with the oil bolt and new sealing washers.

Be sure to rest the hose joint pin against the stopper.

Tighten the oil bolt to the specified torque.

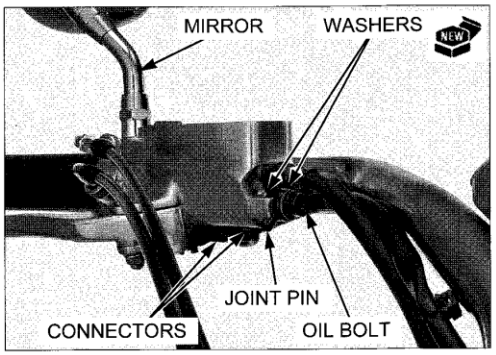
TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

Install the rearview mirror.

Connect the front brake light switch connectors.

Fill and bleed the hydraulic system:

- VT1300CX (page 17-7)
- VT1300CXA (page 17-10)



FRONT BRAKE CALIPER (VT1300CX)

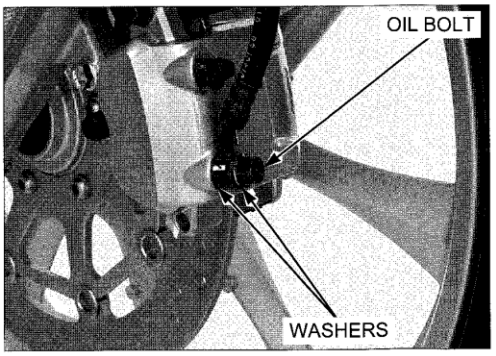
REMOVAL

Drain the brake fluid from the hydraulic system (page 17-7).
Remove the brake pads (page 17-16).

When removing the oil bolt, cover the end of the hose to prevent contamination.

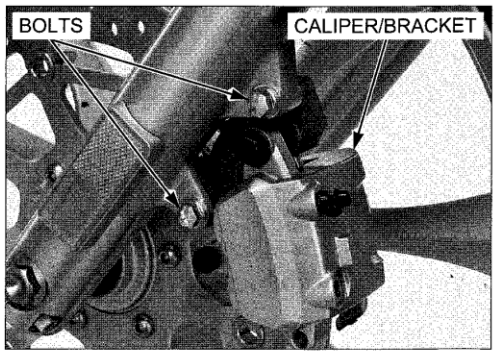
Remove the following:

- Oil bolt
- Sealing washers
- Brake hose



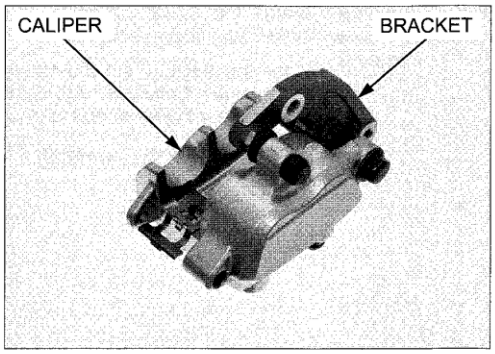
Do not reuse the bolts.

Remove the brake caliper mounting bolts and brake caliper/bracket.

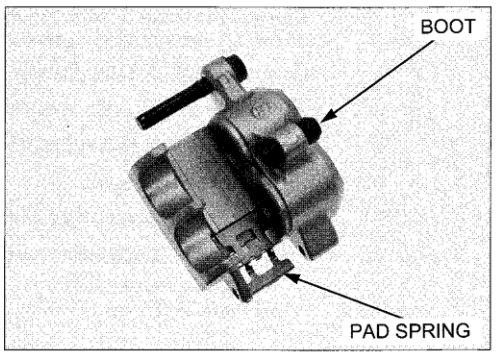


DISASSEMBLY

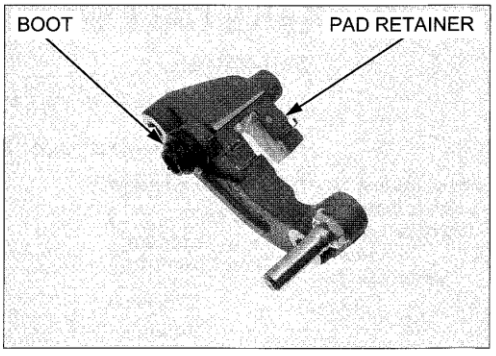
Separate the brake caliper and caliper bracket.



Remove the pad spring and boot from the brake caliper.



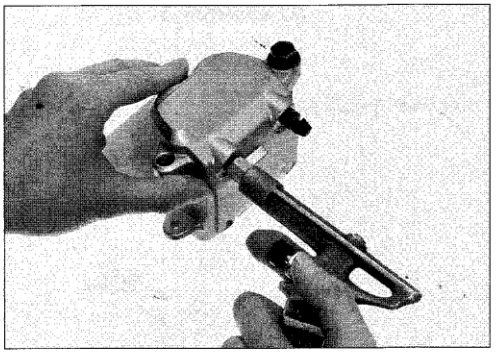
Remove the pad retainer and boot from the caliper bracket.



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

Place a shop towel over the pistons.

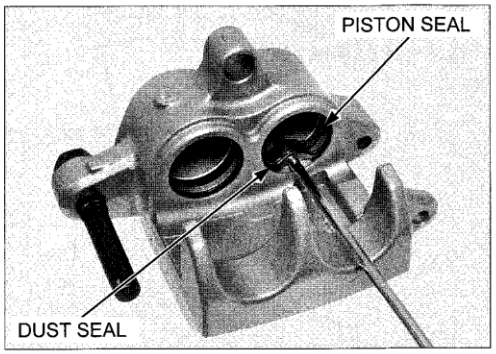
Position the caliper body with the piston facing down and apply short bursts of air pressure to the fluid inlet to remove the pistons.



Be careful not to damage the piston sliding surface.

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

Clean the seal grooves, caliper cylinders and pistons with clean brake fluid.

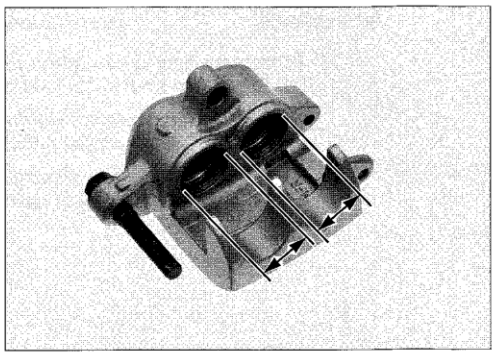


INSPECTION

Check the caliper cylinders for scoring, scratches or damage.

Measure the caliper cylinder I.D.

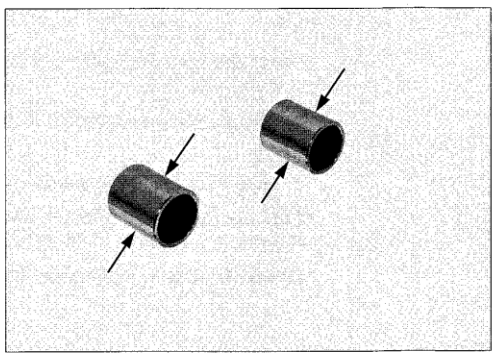
SERVICE LIMIT: 27.060 mm (1.0654 in)



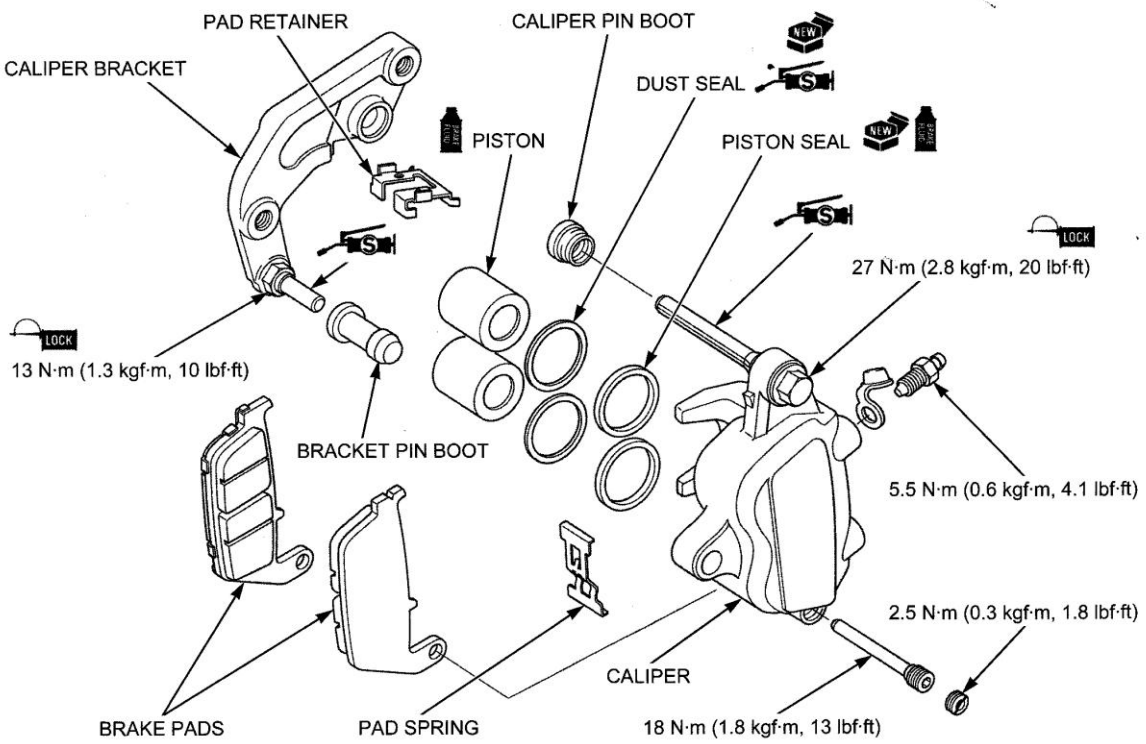
Check the pistons for scoring, scratches or damage.

Measure the caliper piston O.D.

SERVICE LIMIT: 26.91 mm (1.059 in)



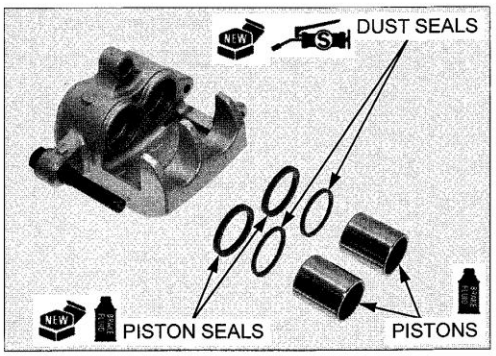
ASSEMBLY



Apply brake fluid to new piston seal lips and install them into the seal grooves in the brake caliper.

Apply silicone grease to new dust seal lips and install them into the seal grooves in the brake caliper.

Apply brake fluid to the caliper piston outer surface and install them into the caliper cylinders with the opening toward the pads.



Check the boot and replace it if it is hard, deteriorated or damaged.

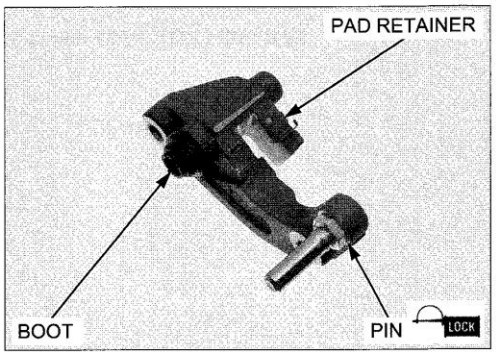
Install the pad retainer and boot to the caliper bracket.

NOTE:

- Note the installation direction of the pad retainer.

If the bracket pin is removed, apply locking agent to the threads and tighten it to the specified torque.

TORQUE: 13 N·m (1.3 kgf·m, 10 lbf·ft)



Check the boot and replace it if it is hard, deteriorated or damaged.

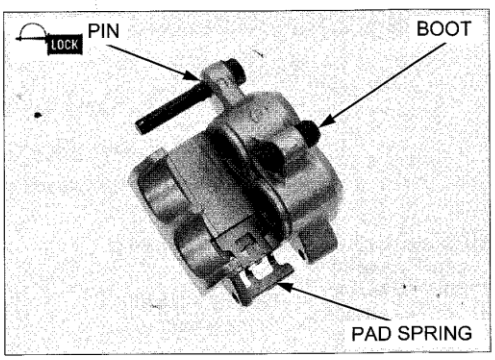
Install the pad spring and boot to the brake caliper.

NOTE:

- Note the installation direction of the pad spring.

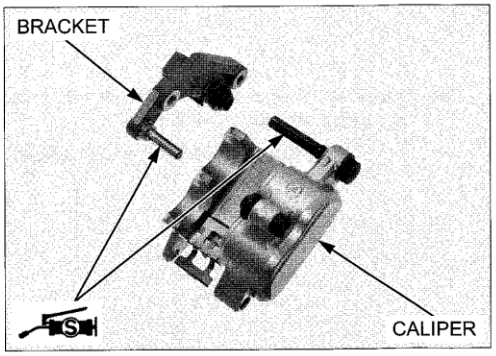
If the caliper pin is removed, apply locking agent to the threads and tighten it to the specified torque.

TORQUE: 27 N·m (2.8 kgf·m, 20 lbf·ft)



Apply 0.4 g (0.014 oz) minimum of silicone grease to the brake caliper and bracket pins sliding surface.

Install the caliper bracket to the brake caliper.

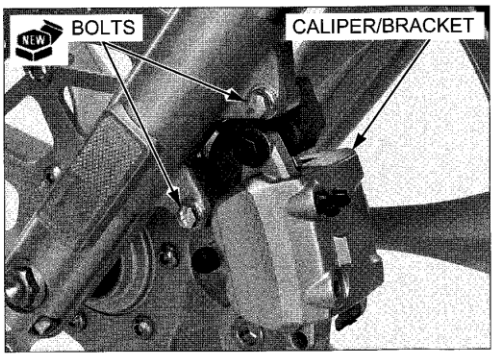


INSTALLATION

Install the brake caliper/bracket and new mounting bolts.

Tighten the brake caliper mounting bolts to the specified torque.

TORQUE: 31 N·m (3.2 kgf·m, 23 lbf·ft)



Connect the brake hose to the brake caliper with the oil bolt and new sealing washers.

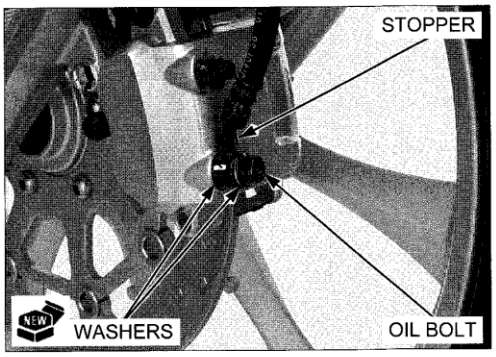
Be sure to rest the hose joint against the stopper.

Tighten the oil bolt to the specified torque.

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

Install the brake pads (page 17-16).

Fill and bleed the hydraulic system (page 17-7).



FRONT BRAKE CALIPER (VT1300CXA)

REMOVAL

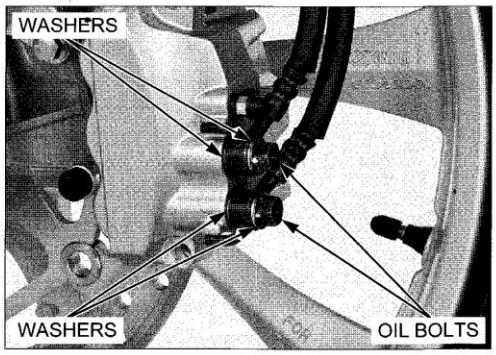
Drain the brake fluid from the hydraulic system (page 17-10).
Remove the brake pads (page 17-17).

Remove the front wheel speed sensor from the caliper bracket (page 18-26).

When removing the oil bolt, cover the end of the hose to prevent contamination.

Remove the following:

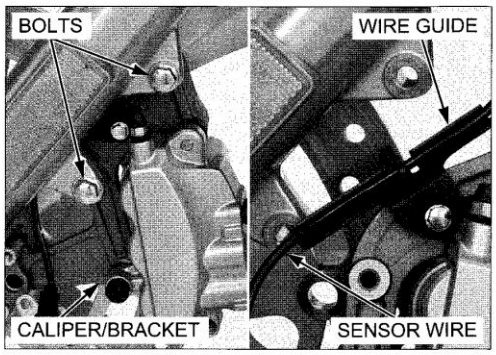
- Oil bolts
- Sealing washers
- Brake hoses



Do not reuse the bolts.

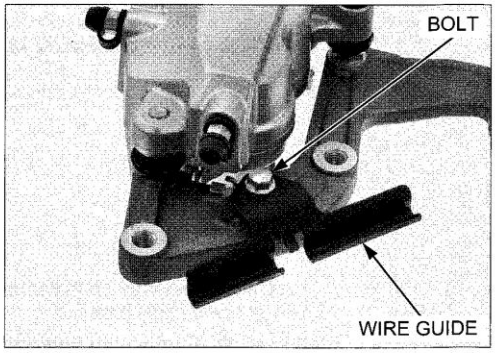
Remove the brake caliper mounting bolts and brake caliper/bracket.

Release the front wheel speed sensor wire from the wire guide.

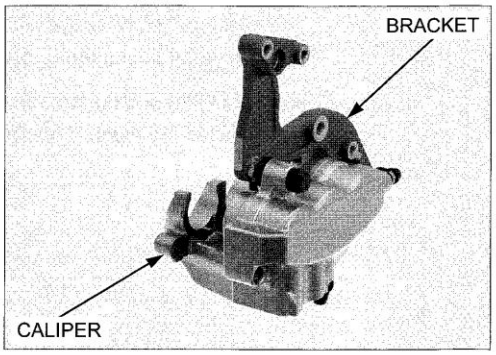


DISASSEMBLY

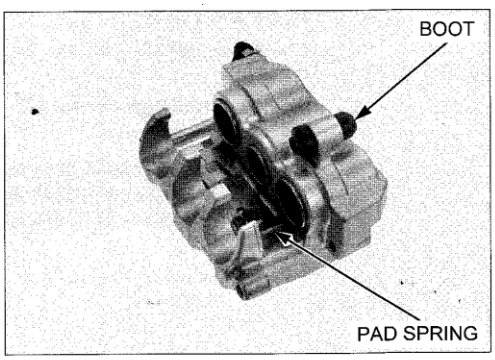
Remove the bolt and wire guide.



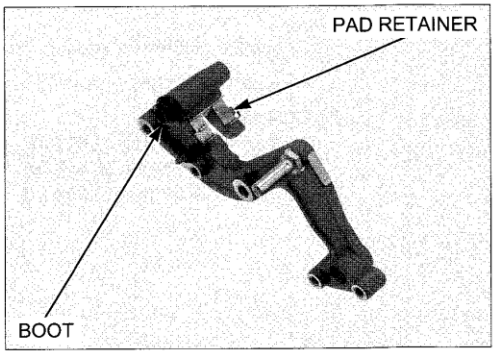
Separate the brake caliper and caliper bracket.



Remove the pad spring and boot from the brake caliper.



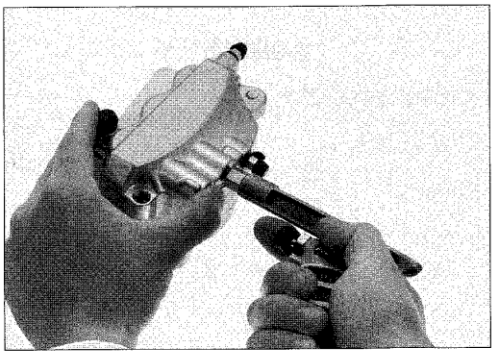
Remove the pad retainer and boot from the caliper bracket.



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

Place a shop towel over the pistons.

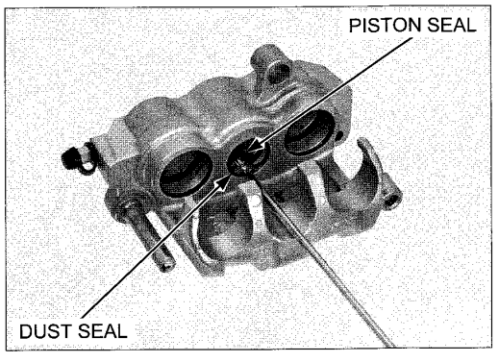
Position the caliper body with the piston facing down and apply short bursts of air pressure to the fluid inlet to remove the pistons.



Be careful not to damage the piston sliding surface.

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

Clean the seal grooves, caliper cylinders and pistons with clean brake fluid.

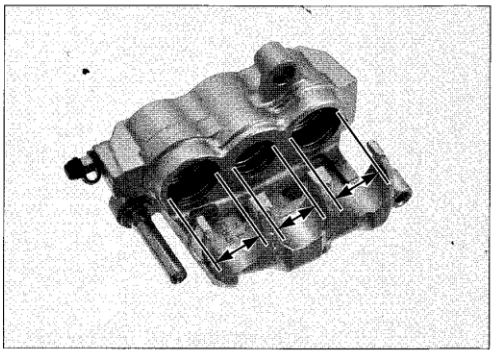


INSPECTION

Check the caliper cylinders for scoring, scratches or damage.

Measure the caliper cylinder I.D.

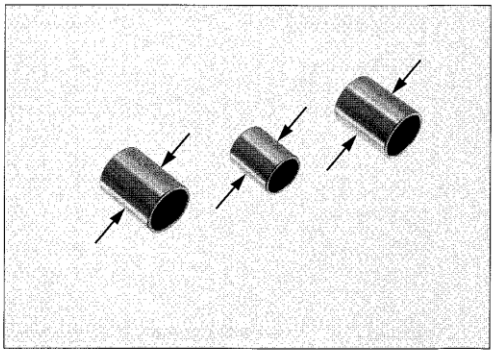
SERVICE LIMITS:
Upper: 27.060 mm (1.0654 in)
Middle: 22.710 mm (0.8941 in)
Lower: 27.060 mm (1.0654 in)



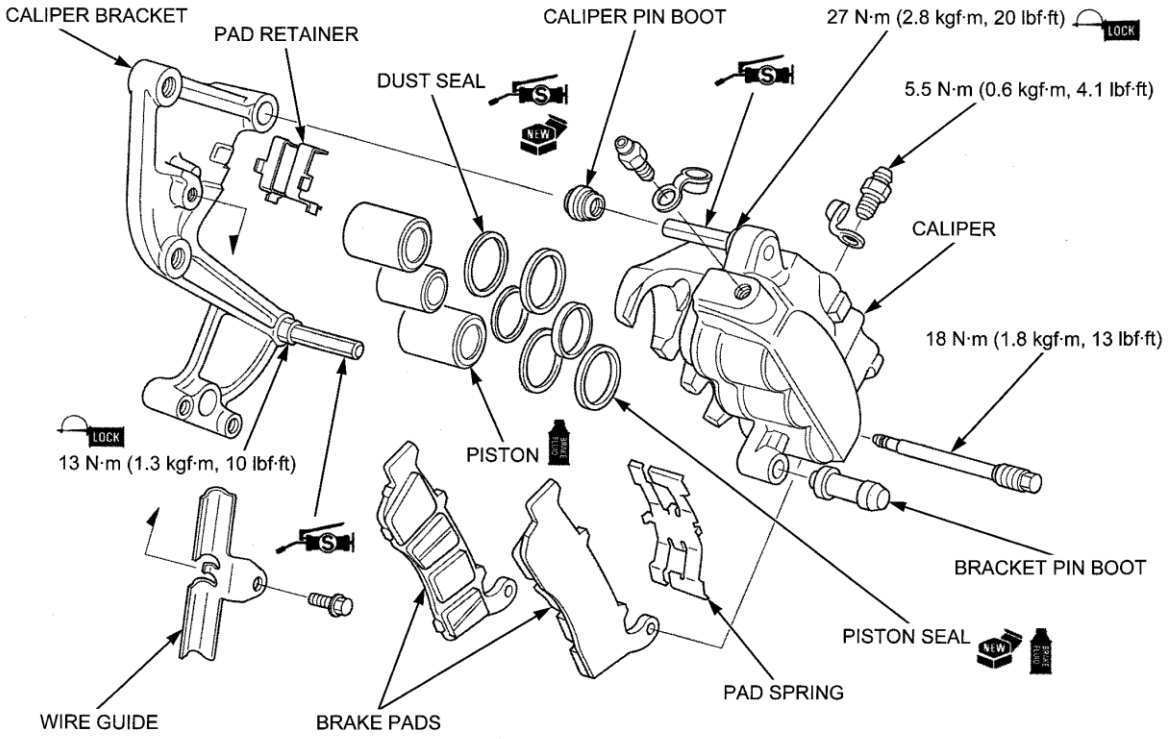
Check the pistons for scoring, scratches or damage.

Measure the caliper piston O.D.

SERVICE LIMITS:
Upper: 26.91 mm (1.059 in)
Middle: 22.56 mm (0.888 in)
Lower: 26.91 mm (1.059 in)



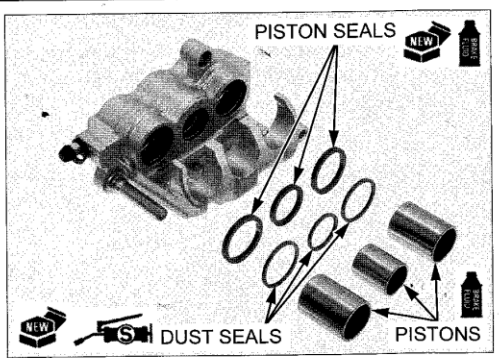
ASSEMBLY



Apply brake fluid to new piston seal lips and install them into the seal grooves in the brake caliper.

Apply silicone grease to new dust seal lips and install them into the seal grooves in the brake caliper.

Apply brake fluid to the caliper piston outer surface and install them into the caliper cylinders with the opening toward the pads.



Check the boot and replace it if it is hard, deteriorated or damaged.

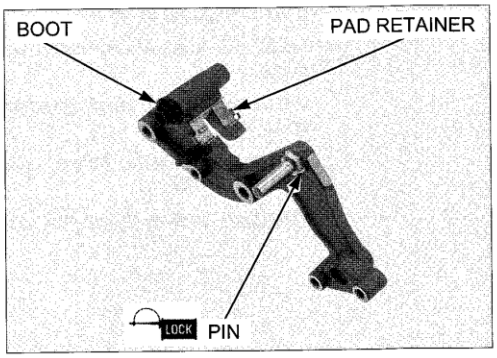
Install the pad retainer and boot to the caliper bracket.

NOTE:

- Note the installation direction of the pad retainer.

If the bracket pin is removed, apply locking agent to the threads and tighten it to the specified torque.

TORQUE: 13 N·m (1.3 kgf·m, 10 lbf·ft)



Check the boot and replace it if it is hard, deteriorated or damaged.

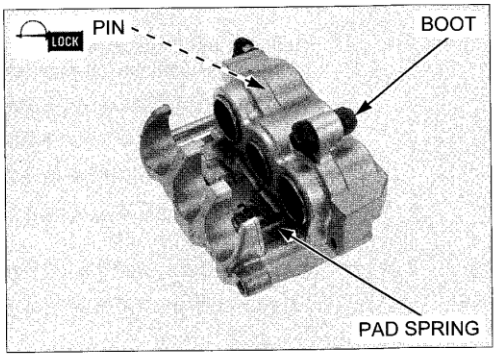
Install the pad spring and boot to the brake caliper.

NOTE:

- Note the installation direction of the pad spring.

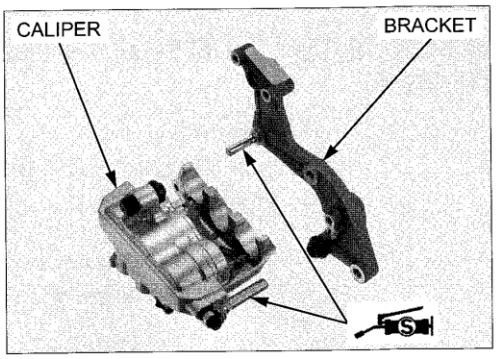
If the caliper pin is removed, apply locking agent to the threads and tighten it to the specified torque.

TORQUE: 27 N·m (2.8 kgf·m, 20 lbf·ft)



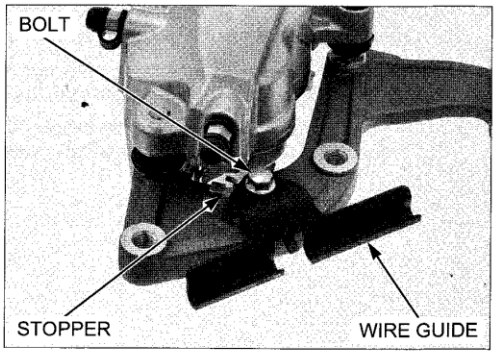
Apply 0.4 g (0.014 oz) minimum of silicone grease to the brake caliper and bracket pins sliding surface.

Install the caliper bracket to the brake caliper.



Install the wire guide and bolt.

Be sure to rest the wire guide against the stopper, then tighten the bolt securely.



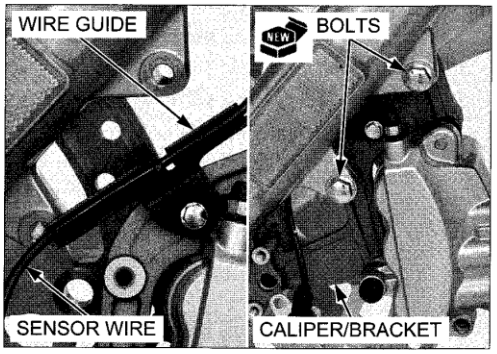
INSTALLATION

Install the front wheel speed sensor wire to the wire guide.

Install the brake caliper/bracket and new mounting bolts.

Tighten the brake caliper mounting bolts to the specified torque.

TORQUE: 31 N·m (3.2 kgf·m, 23 lbf·ft)



Connect the brake hoses to the brake caliper with the oil bolts and new sealing washers.

Be sure to rest the hose joint against the stopper.

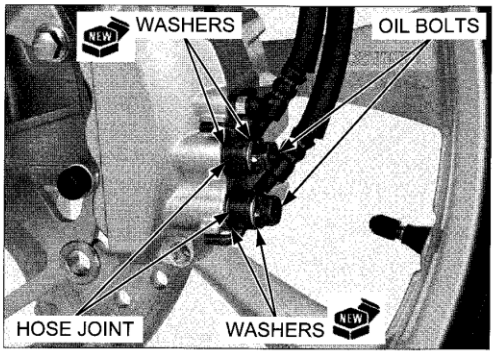
Tighten the oil bolt to the specified torque.

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

Install the front wheel speed sensor to the caliper bracket (page 18-26).

Install the brake pads (page 17-17).

Fill and bleed the hydraulic system (page 17-10).



REAR MASTER CYLINDER/BRAKE PEDAL

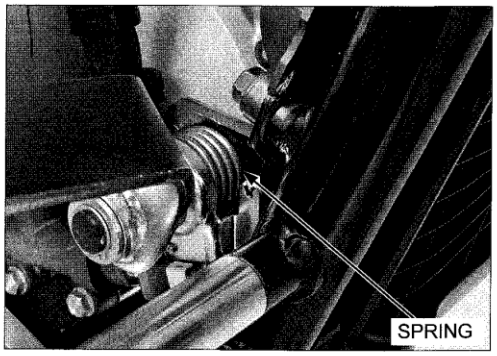
REMOVAL

Drain the brake fluid from the hydraulic system:

- VT1300CX (page 17-7)
- VT1300CXA (page 17-10)

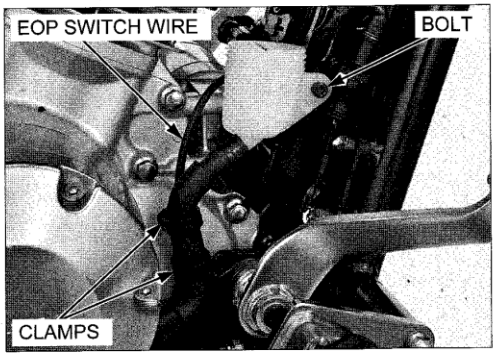
Remove the exhaust system (page 3-10).

Release the rear brake light spring from the brake pedal.



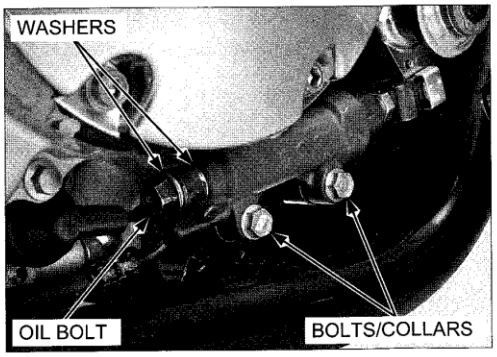
Remove the clamps and release the EOP switch wire.

Remove the socket bolt.



Remove the following:

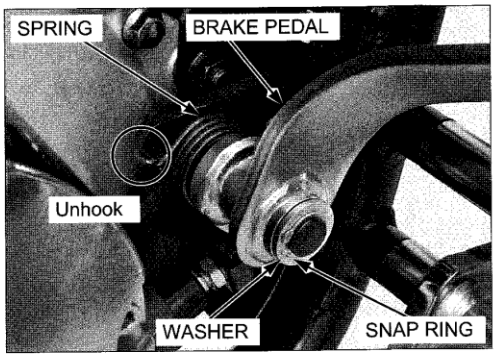
- Oil bolt
- Sealing washers
- Brake hose
- Mounting bolts
- Collars



Remove the snap ring and washer.

Unhook the return spring end from the brake pedal bracket.

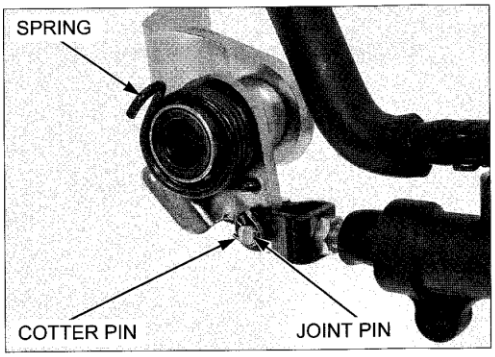
Remove the brake pedal/ master cylinder and return spring.



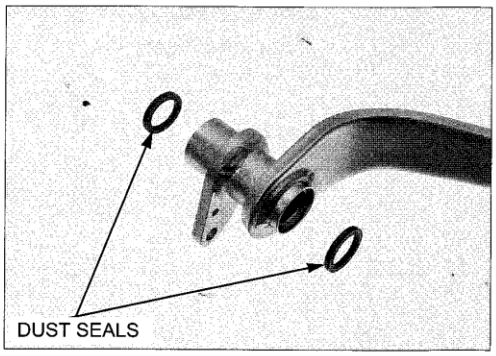
Remove the return spring.

Do not reuse the cotter pin.

Remove the cotter pin and brake pedal joint pin then separate the brake pedal and master cylinder.

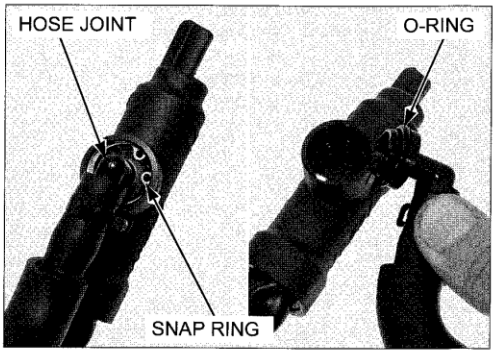


Remove the dust seals from the brake pedal.



MASTER CYLINDER DISASSEMBLY

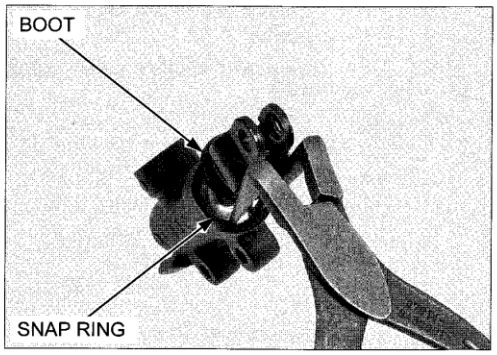
Remove the snap ring, reservoir hose joint and O-ring.



Remove the boot from the master cylinder.

Remove the snap ring using the special tool.

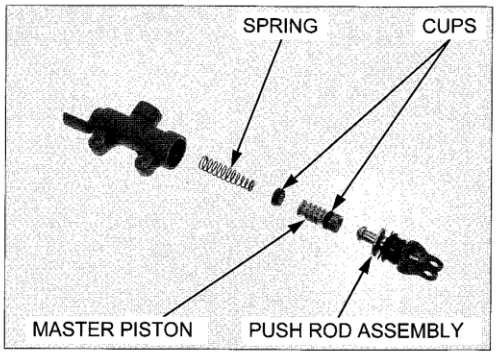
TOOL:
Snap ring pliers **07914-SA50001**



VT1300CX: Remove the following:

- Push rod assembly
- Master piston
- Piston cups
- Spring

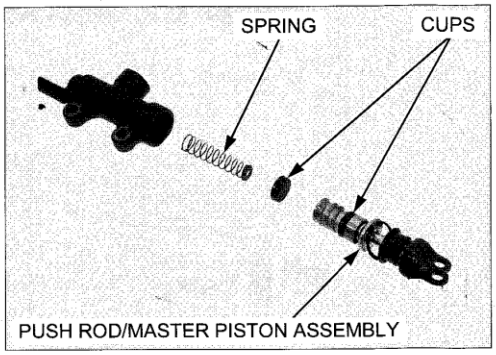
Clean the master cylinder and master piston in clean brake fluid.



VT1300CXA: Remove the following:

- Push rod/master piston assembly
- Piston cups
- Spring

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

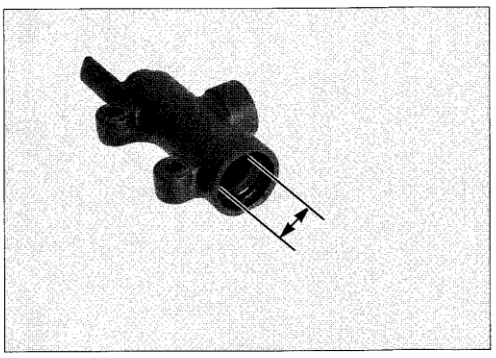


INSPECTION

Check the master cylinder for scoring, scratches or damage.

Measure the master cylinder I.D.

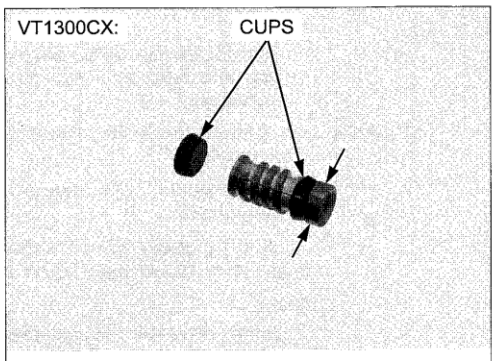
SERVICE LIMITS:
VT1300CX: 14.055 mm (0.5533 in)
VT1300CXA: 17.515 mm (0.6896 in)

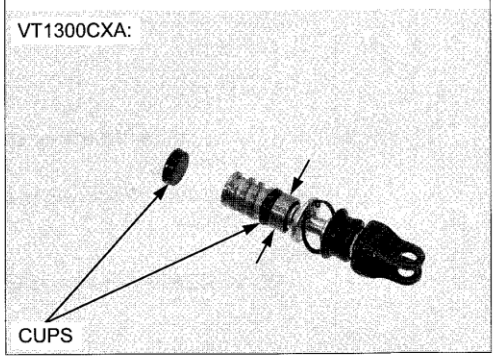


Check the piston scoring, scratches or damage.
Check the cups for fatigue or damage.

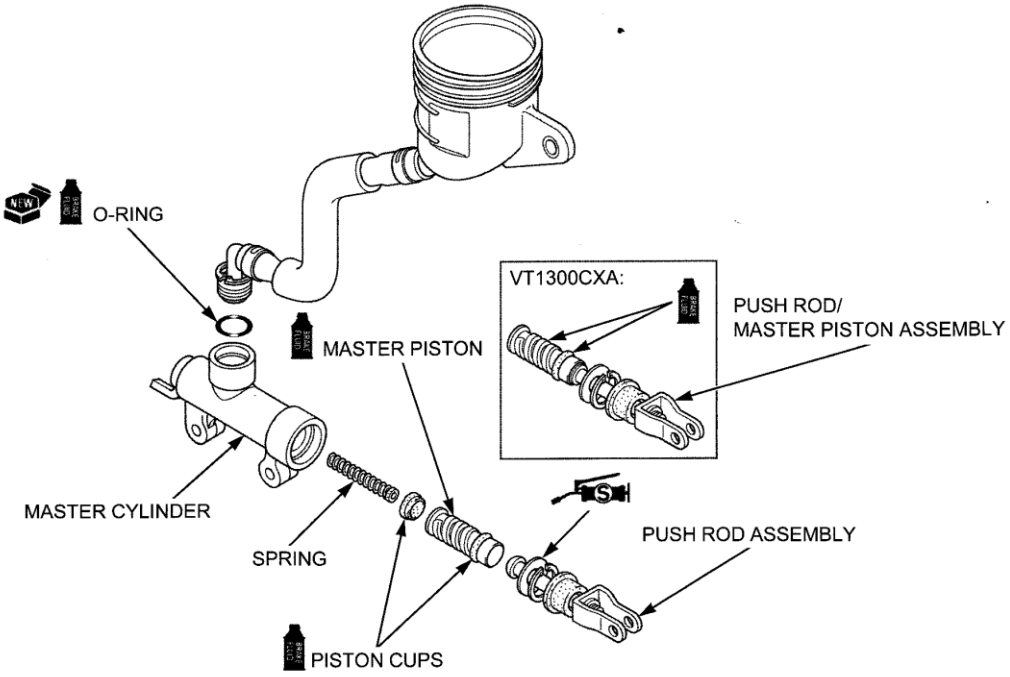
Measure the master piston O.D.

SERVICE LIMITS:
VT1300CX: 13.945 mm (0.5490 in)
VT1300CXA: 17.405 mm (0.6852 in)





MASTER CYLINDER ASSEMBLY



NOTE:

- Replace the master piston, piston cups, spring, snap ring and boot as a set; do not replace the parts individually.

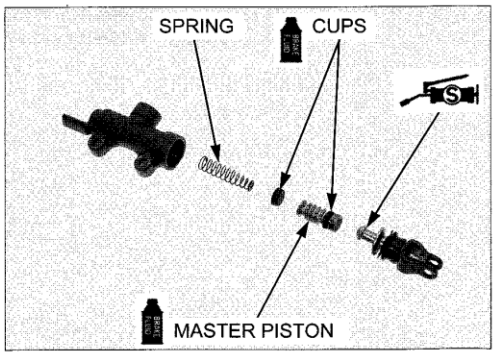
VT1300CX: Apply brake fluid to the master piston outer surface and piston cups.

Install the spring, piston cup and master piston into the master cylinder.

Apply 0.1 g (0.004 oz) of silicone grease to the brake push rod-to-master piston contacting area.

NOTE:

- Do not allow the piston cup lips to turn inside out.

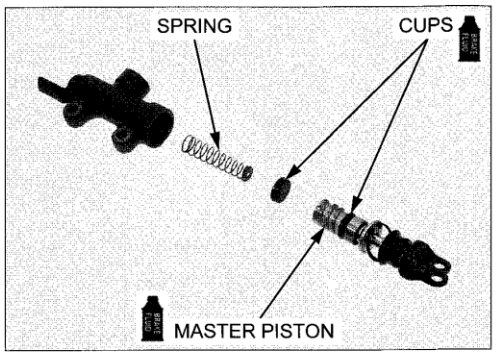


VT1300CXA: Apply brake fluid to the master piston outer surface and piston cups.

Install the spring, piston cup and master piston into the master cylinder.

NOTE:

- Do not allow the piston cup lips to turn inside out.

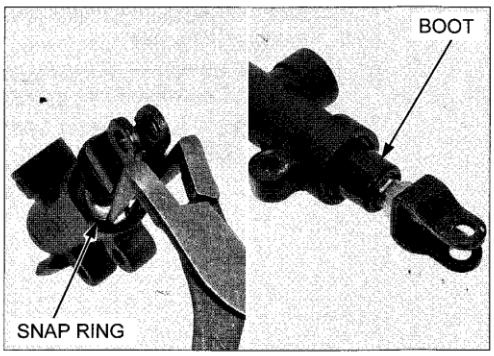


Install the push rod assembly and the snap ring into the groove in the master cylinder using the special tool.

TOOL:
Snap ring pliers **07914-SA50001**

NOTE:
- Install the snap ring with the chamfered edges facing the thrust load side.
- Make sure the snap ring is seated in the groove.

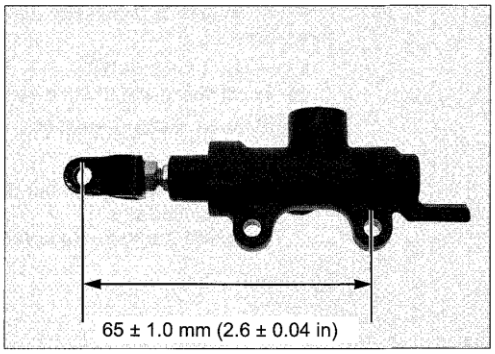
Install the boot into the master cylinder.



If the push rod joint is reinstalled, adjust the push rod length so the distance from the center of the lower mounting bolt hole to the center of the joint pin hole is 65 ± 1.0 mm (2.6 ± 0.04 in).

After adjustment, tighten the nut to the specified torque.

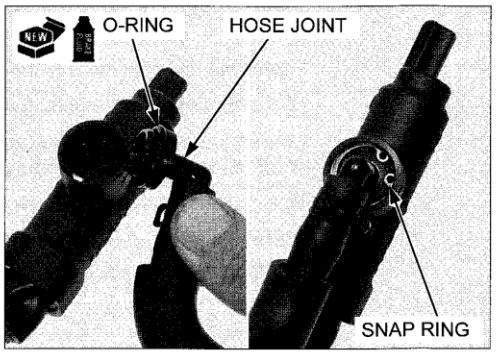
TORQUE: 18 N·m (1.8 kgf·m, 13 lbf·ft)



Apply brake fluid to a new O-ring and install it onto the reservoir hose joint.

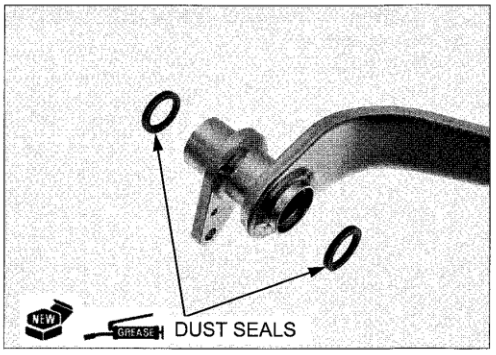
Install the hose joint into the master cylinder and secure it with the snap ring.

NOTE:
- Install the snap ring with the chamfered edges facing the thrust load side.
- Make sure the snap ring is seated in the groove.



INSTALLATION

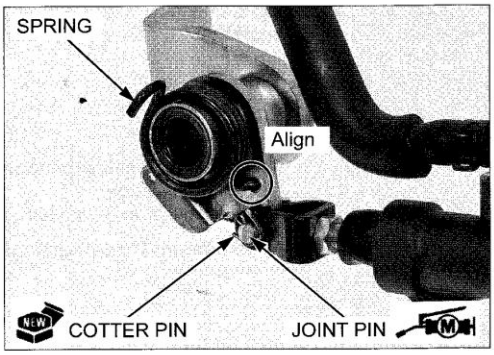
Apply grease to new dust seal lips and install them to the brake pedal.



Apply molybdenum disulfide grease to the brake pedal joint pin sliding area.

Connect the brake pedal to the master cylinder with the joint pin and secure it with a new cotter pin.

Install the return spring by align the spring end with brake pedal hole.



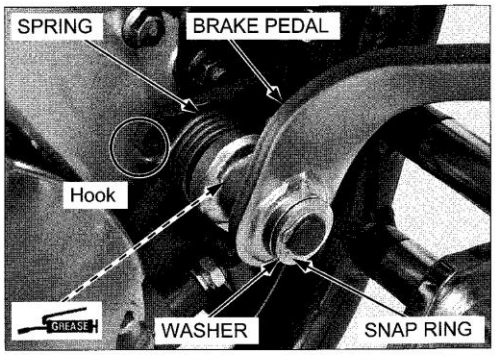
Apply grease to the brake pedal pivot shaft sliding surface.

Install the brake pedal/master cylinder while hooking the return spring end to the brake pedal bracket.

Install the washer and snap ring.

NOTE:

- Install the snap ring with the chamfered edges facing the thrust load side.
- Make sure the snap ring is seated in the groove.



Install the master cylinder with the collars and mounting bolts.

Tighten the mounting bolts to the specified torque.

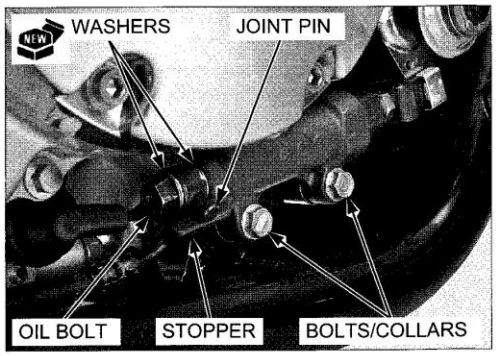
TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Connect the brake hose to the master cylinder with the oil bolt and new sealing washers.

Be sure to rest the hose joint pin against the stopper.

Tighten the oil bolt to the specified torque.

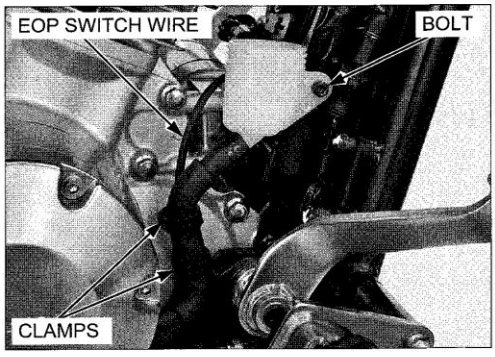
TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)



Temporarily install the socket bolt.

Install the clamps with the EOP switch wire.

Route the EOP switch wire properly (page 1-22).

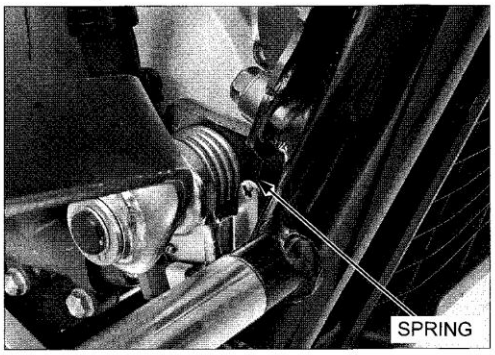


Install the rear brake light spring to the brake pedal.

Install the exhaust system (page 3-17).

Fill and bleed the hydraulic system:

- VT1300CX (page 17-7)
- VT1300CXA (page 17-10)



REAR BRAKE CALIPER (VT1300CX)

REMOVAL

Drain the brake fluid from the hydraulic system (page 17-7).

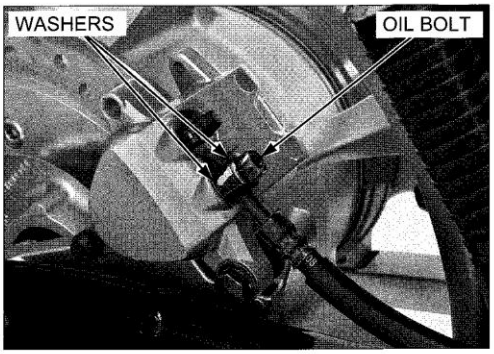
Remove the brake pads (page 17-18).

When removing the oil bolt, cover the end of the hose to prevent contamination.

Remove the following:

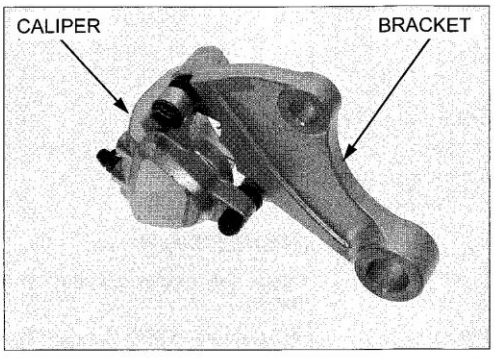
- Oil bolt
- Sealing washers
- Brake hose

Remove the rear wheel (page 16-6).

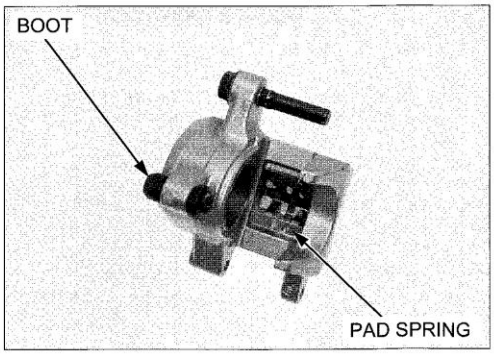


DISASSEMBLY

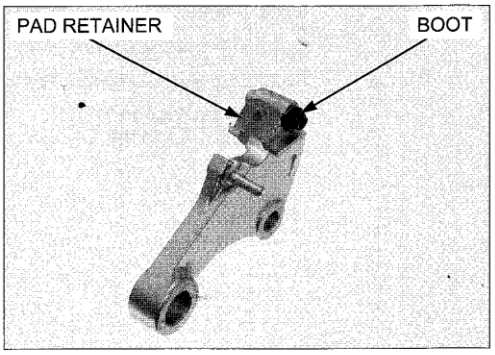
Separate the brake caliper and caliper bracket.



Remove the pad spring and boot from the brake caliper.



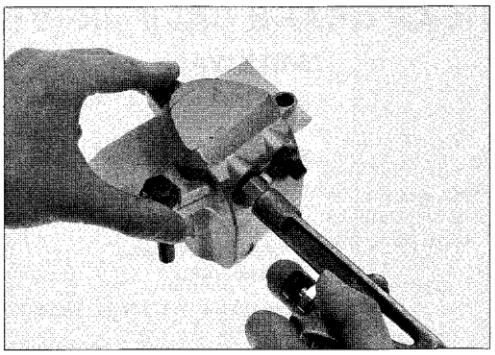
Remove the pad retainer and boot from the caliper bracket.



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

Place a shop towel over the piston.

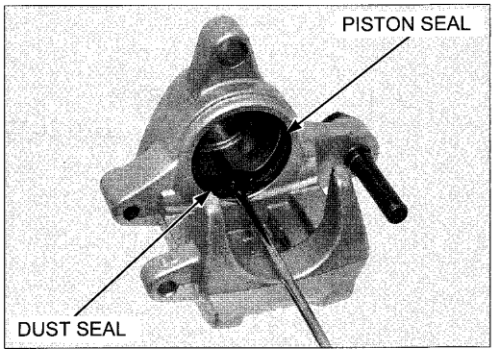
Position the caliper body with the piston facing down and apply short bursts of air pressure to the fluid inlet to remove the piston.



Be careful not to damage the piston sliding surface.

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

Clean the seal grooves, caliper cylinder and piston with clean brake fluid.

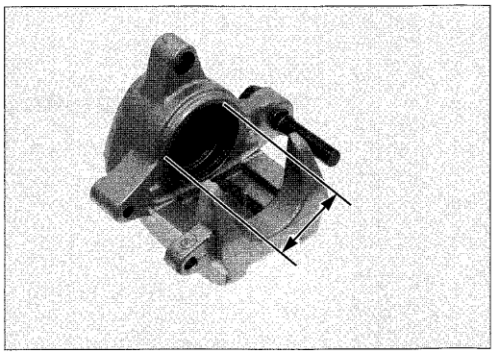


INSPECTION

Check the caliper cylinder for scoring, scratches or damage.

Measure the caliper cylinder I.D.

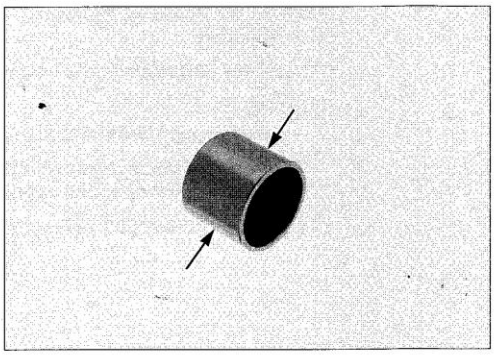
SERVICE LIMIT: 38.24 mm (1.506 in)



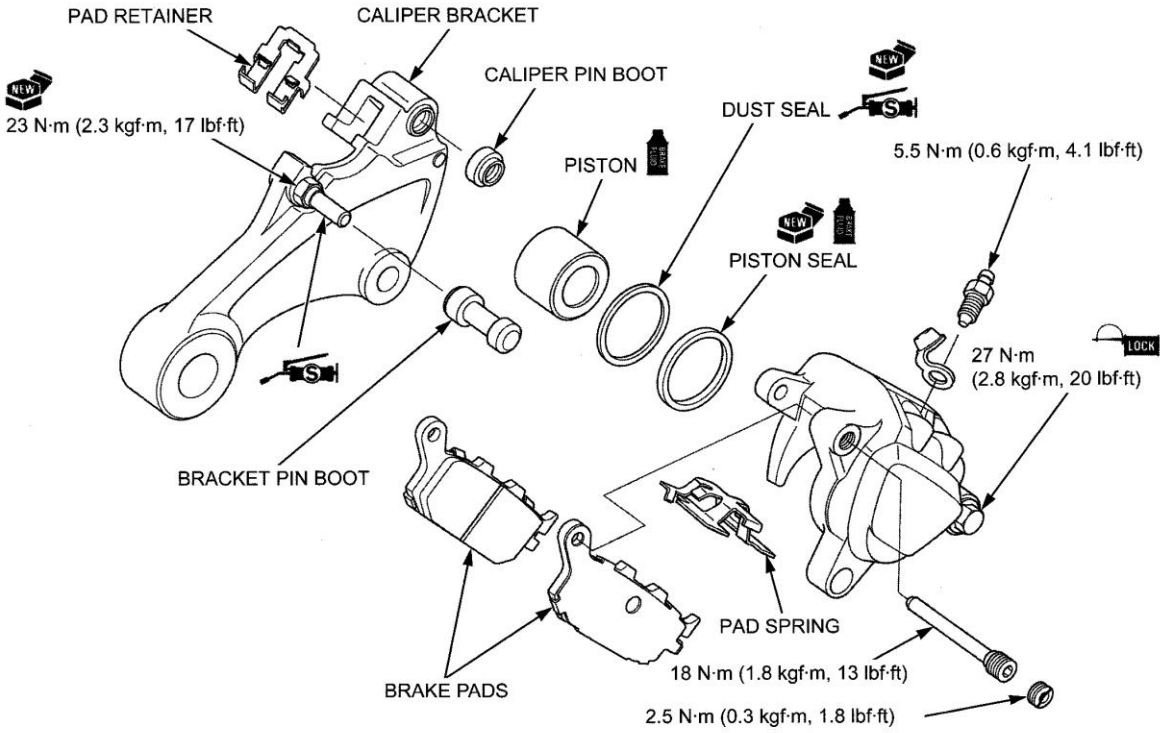
Check the piston for scoring, scratches or damage.

Measure the caliper piston O.D.

SERVICE LIMIT: 38.09 mm (1.500 in)



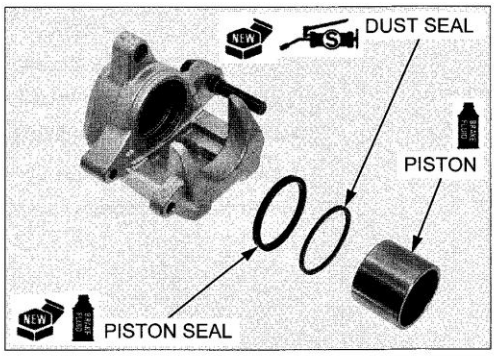
ASSEMBLY



Apply brake fluid to new piston seal lips and install them in the seal groove in the brake caliper.

Apply silicone grease to new dust seal lips and install them into the seal groove in the brake caliper.

Apply brake fluid to the caliper piston outer surface and install it into the caliper cylinder with the opening toward the pads.



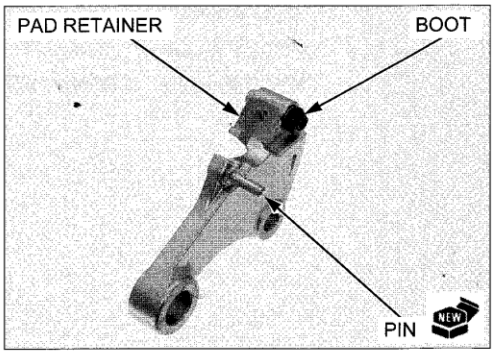
Check the boot and replace it if it is hard, deteriorated or damaged.

Install the pad retainer and boot to the caliper bracket.

NOTE:
- Note the installation direction of the pad retainer.

If the bracket pin is removed, install and tighten a new bracket pin to the specified torque.

TORQUE: 23 N·m (2.3 kgf·m, 17 lbf·ft)



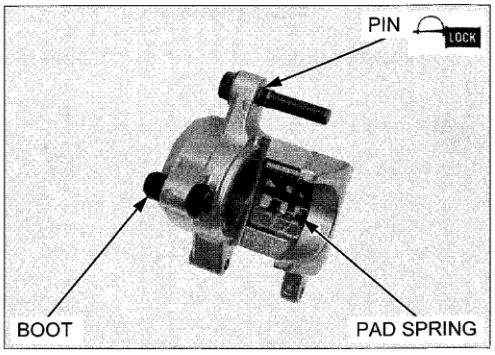
Check the boot and replace it if it is hard, deteriorated or damaged.

Install the pad spring and boot to the brake caliper.

NOTE:
- Note the installation direction of the pad spring.

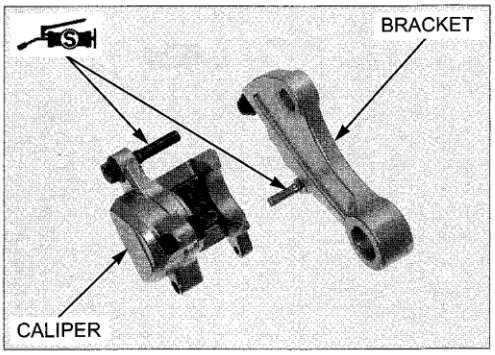
If the caliper pin is removed, apply locking agent to the threads and tighten it to the specified torque.

TORQUE: 27 N·m (2.8 kgf·m, 20 lbf·ft)



Apply 0.4 g (0.014 oz) minimum of silicone grease to the brake caliper and bracket pins sliding surface.

Install the caliper bracket to the brake caliper.



INSTALLATION

Install the rear wheel (page 16-13).

Connect the brake hose to the brake caliper with the oil bolt and new sealing washers.

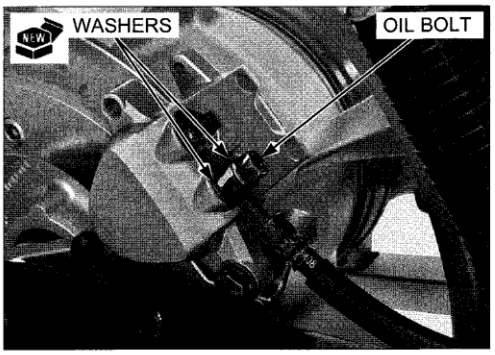
Be sure to rest the hose joint pin against the stopper.

Tighten the oil bolt to the specified torque.

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

Install the brake pads (page 17-18).

Fill and bleed the hydraulic system (page 17-7).



REAR BRAKE CALIPER (VT1300CXA)

REMOVAL

Drain the brake fluid from the hydraulic system (page 17-10).

Remove the brake pads (page 17-19).

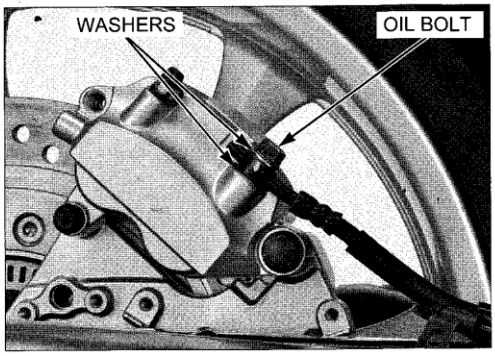
Remove the rear wheel speed sensor and sensor wire from the caliper bracket (page 18-28).

When removing the oil bolt, cover the end of the hose to prevent contamination.

Remove the following:

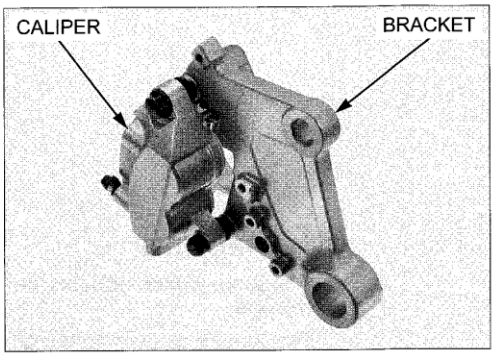
- Oil bolt
- Sealing washers
- Brake hose

Remove the rear wheel (page 16-6).

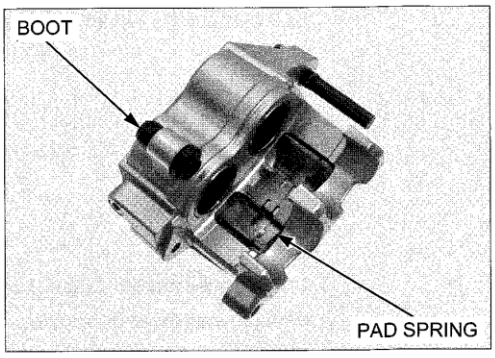


DISASSEMBLY

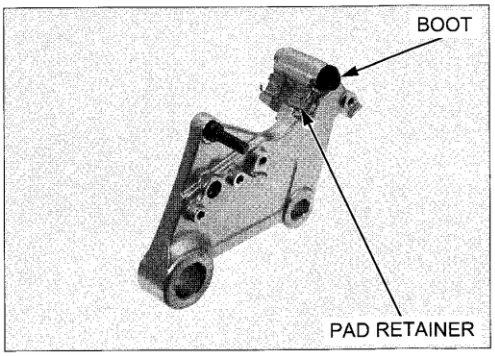
Separate the brake caliper and caliper bracket.



Remove the pad spring and boot from the brake caliper.



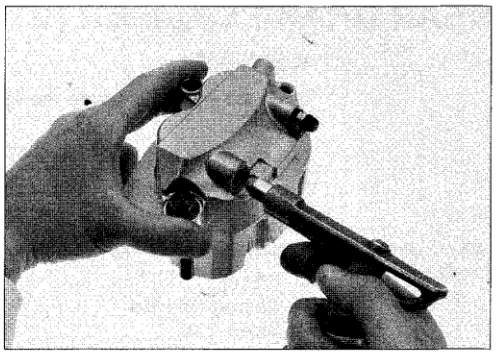
Remove the pad retainer and boot from the caliper bracket.



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

Place a shop towel over the piston.

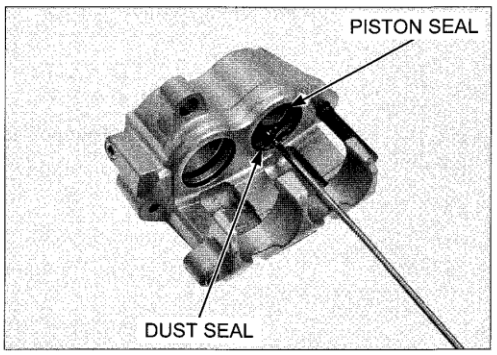
Position the caliper body with the piston facing down and apply short bursts of air pressure to the fluid inlet to remove the piston.



Be careful not to damage the piston sliding surface.

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

Clean the seal grooves, caliper cylinders and pistons with clean brake fluid.

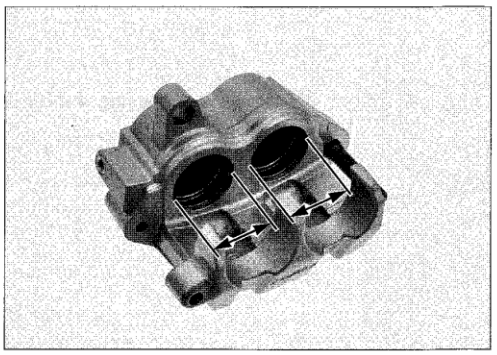


INSPECTION

Check the caliper cylinders for scoring, scratches or damage.

Measure the caliper cylinder I.D.

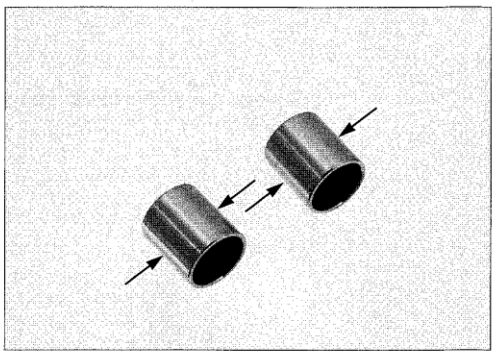
SERVICE LIMIT: 32.090 mm (1.2634 in)



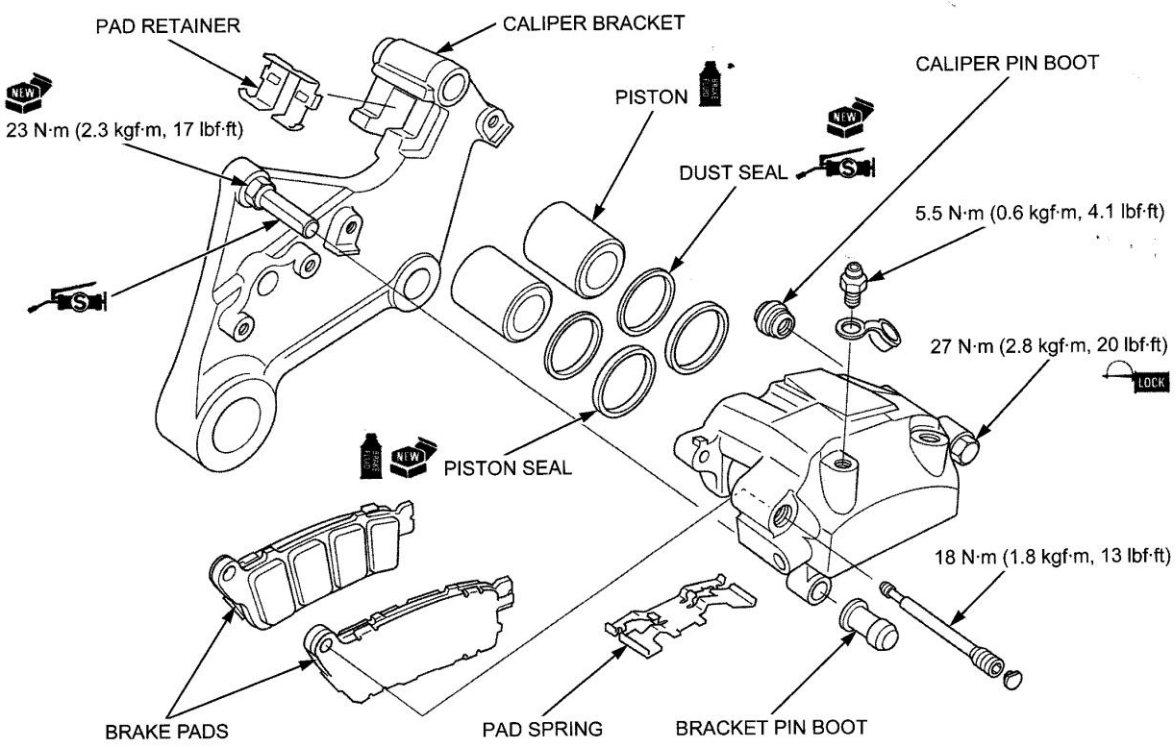
Check the pistons for scoring, scratches or damage.

Measure the caliper piston O.D.

SERVICE LIMIT: 31.94 mm (1.2575 in)



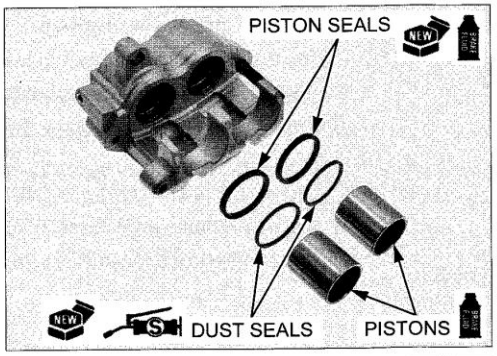
ASSEMBLY



Apply brake fluid to new piston seal lips and install them in the seal grooves in the brake caliper.

Apply silicone grease to new dust seal lips and install them into the seal grooves in the brake caliper.

Apply brake fluid to the caliper piston outer surface and install them into the caliper cylinders with the opening toward the pads.



Check the boot and replace it if it is hard, deteriorated or damaged.

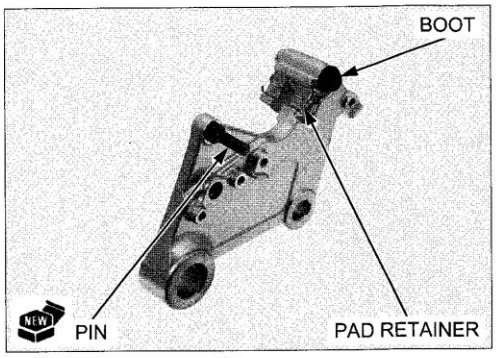
Install the pad retainer and boot to the caliper bracket.

NOTE:

- Note the installation direction of the pad retainer.

If the bracket pin is removed, install and tighten a new bracket pin to the specified torque.

TORQUE: 23 N·m (2.3 kgf·m, 17 lbf·ft)



Check the boot and replace it if it is hard, deteriorated or damaged.

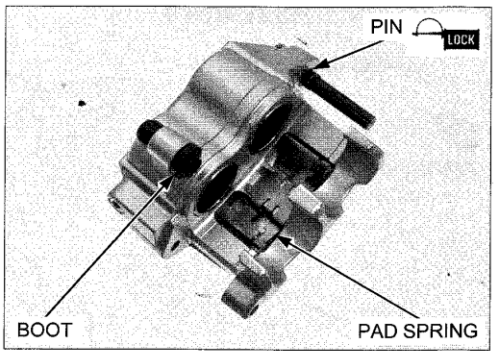
Install the pad spring and boot to the brake caliper.

NOTE:

- Note the installation direction of the pad spring.

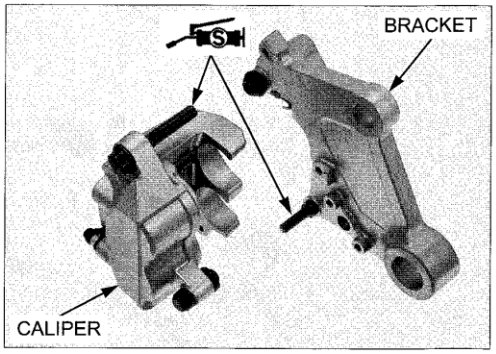
If the caliper pin is removed, apply locking agent to the threads and tighten it to the specified torque.

TORQUE: 27 N·m (2.8 kgf·m, 20 lbf·ft)



Apply 0.4 g (0.014 oz) minimum of silicone grease to the brake caliper and bracket pins sliding surface.

Install the caliper bracket to the brake caliper.



INSTALLATION

Install the rear wheel (page 16-13).

Connect the brake hose to the brake caliper with the oil bolt and new sealing washers.

Be sure to rest the hose joint pin against the stopper.

Tighten the oil bolt to the specified torque.

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

Install the rear wheel speed sensor and sensor wire to the caliper bracket (page 18-26).

Install the brake pads (page 17-19).

Fill and bleed the hydraulic system (page 17-10).