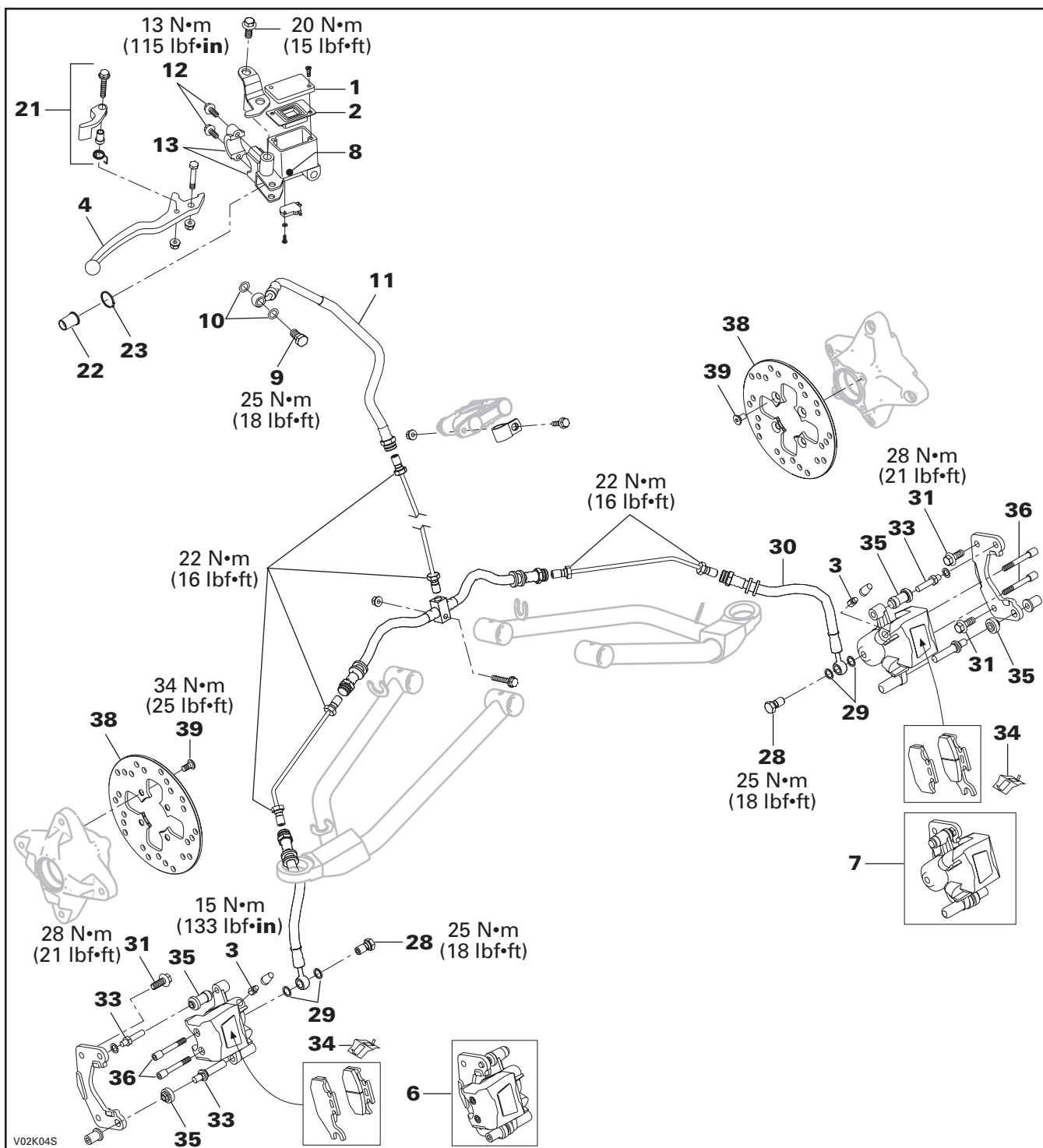


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HYDRAULIC BRAKES

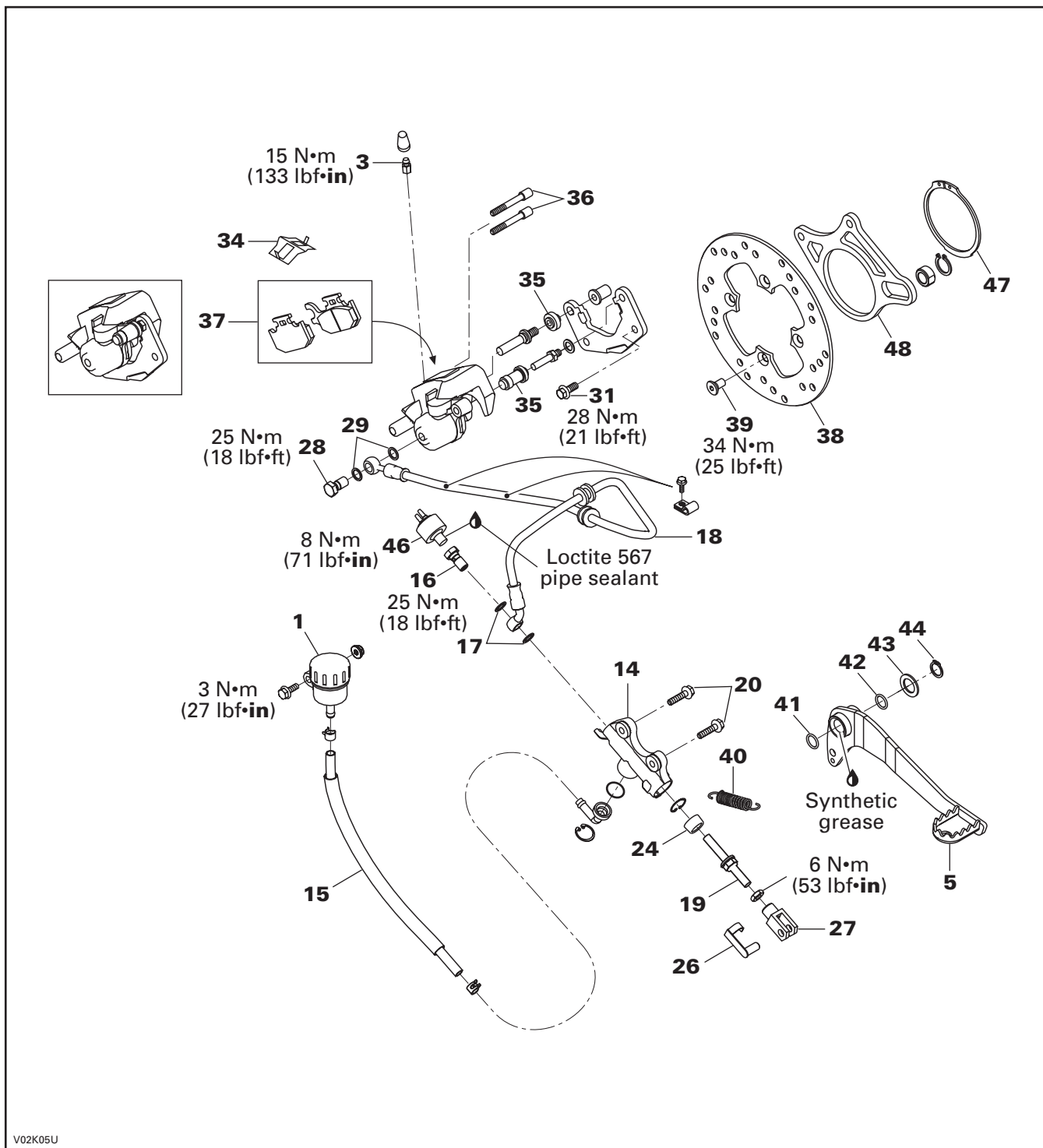
FRONT BRAKES



Section 09 BRAKES

Subsection 02 (HYDRAULIC BRAKES)

REAR BRAKE



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GENERAL

Hydraulic Brakes System

The brake system consists of two separate circuits. Each system has its own master cylinder and reservoir.

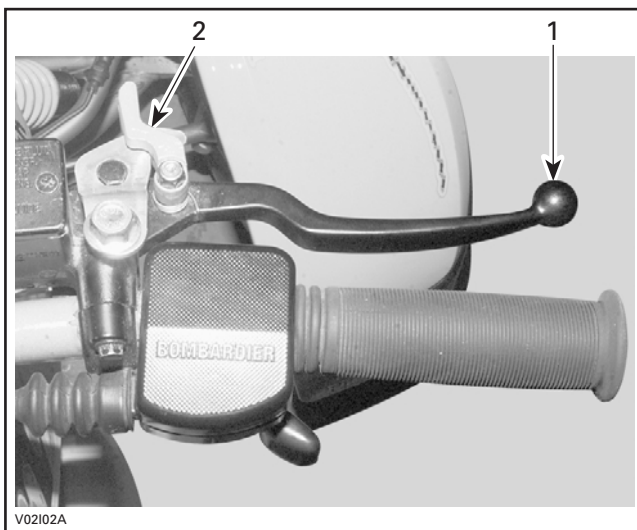
Both front and rear brakes are disc type.

WARNING

Periodically check the brake hoses for damages or leaks. Repair any damage before operate the vehicle.

Parking Device

The parking device operates the front brakes only. It is activated by a locking mechanism on RH brake lever.



1. RH brake lever
2. Locking mechanism

Brake Fluid Replacement

WARNING

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

CAUTION: Avoid spilling brake fluid on plastic, rubber or painted parts. Protect these parts with a rag when servicing brake system.

Brake Fluid Draining

Remove reservoir cover **no. 1** with diaphragm **no. 2**.

Connect bleed hose to bleed valve **no. 3**.

Loosen bleed valve and pump brake lever **no. 4** or brake pedal **no. 5** until no more fluid flows out of bleed valve.

Brake Fluid Filling and Bleeding

Close bleed valve.

Fill reservoir with DOT 4 brake fluid.

CAUTION: Do not mix different types of brake fluid. Use only DOT 4 brake fluid.

Install a commercial available brake bleeder to brake valve. See the manufacturer's operating instructions.

Pump brake bleeder and loosen bleed valve. Close bleed valve and refill reservoir when the fluid level is low.

NOTE: Check fluid level often to prevent air from being pumped into the system.

Repeat the procedures until air bubbles don't appear in bleed hose.

NOTE: For the front brake system, switch to LH and RH caliper. Turn handle bar to full RH side when bleeding right caliper **no. 6** and turn to the LH side for the left caliper **no. 7**. This helps the bleeder to reach air into the caliper.

Close bleed valve and operate brake lever **no. 4** or brake pedal **no. 5**. If it still feels spongy, bleed system again.

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

Install diaphragm and cover on reservoir.

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

Install a tube to bleed valve.

Open bleeder. Fill reservoir and pump lever until fluid freely flows out of the tube.

Close bleed valve.

Pump up system pressure with brake lever or brake pedal until lever or pedal resistance is felt.

Squeeze brake lever or depress brake pedal, open bleed valve and then close it.

Section 09 BRAKES

Subsection 02 (HYDRAULIC BRAKES)

NOTE: Do not release brake lever or brake pedal until bleed valve has been closed. For the front brake system, switch to LH and RH caliper. Turn handle bar to full RH side when bleeding right caliper **no. 6** and turn to the LH side for the left caliper **no. 7**. This helps the bleeder to reach air into the caliper.

Release brake lever or brake pedal slowly.

Repeat the procedures until air bubbles don't appear in tube and lever or pedal is stiff.

MASTER CYLINDER

Removal

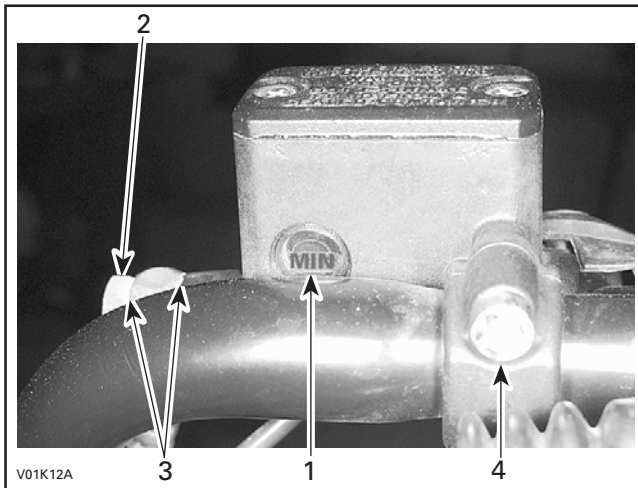
Front Brakes

Drain brake fluid from master cylinder **no. 8**.

Remove bolt **no. 9** and sealing washers **no. 10** retaining brake hose **no. 11** to master cylinder.

Discard sealing washers.

Remove screws **no. 12** from master cylinder holder **no. 13** and remove master cylinder from handlebar.



TYPICAL

1. Oil level mark
2. Bolt
3. Sealing washers
4. Remove screws

Rear Brake

Remove RH foot protector. Refer to BODY.

Unplug brake switch connectors.

Drain brake fluid from rear master cylinder **no. 14**.

Disconnect flexible hose **no. 15** from master cylinder and plug the end to avoid brake fluid spillage.

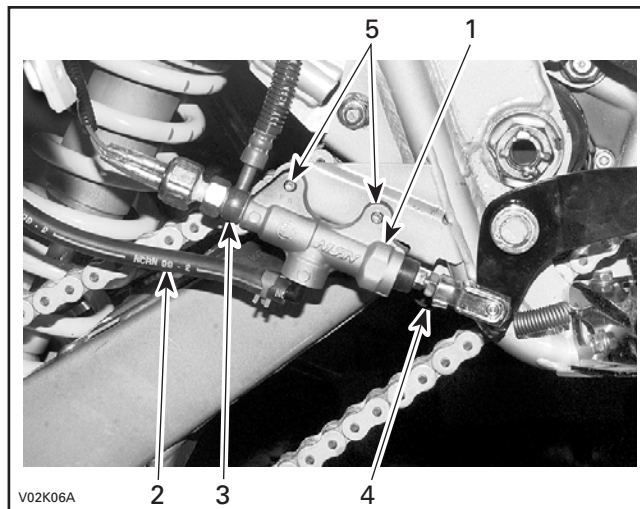
NOTE: At this time, check hoses and fittings for damages or leaks.

Remove banjo fitting **no. 16** and sealing washers **no. 17** retaining brake hose **no. 18** to master cylinder.

Discard sealing washers.

Unhook push rod **no. 19** from brake pedal **no. 5**.

Remove bolts **no. 20** retaining master cylinder to frame.



1. Master cylinder
2. Flexible hose
3. Rear brake hose
4. Push rod
5. Remove bolts

Disassembly

Front Master Cylinder

Remove brake lever **no. 4** and locking mechanism **no. 21** for parking device.

Remove piston boot **no. 22**, snap ring **no. 23**, master piston and spring.

Rear Master Cylinder

Remove boot **no. 24** from master cylinder.

Remove snap ring **no. 25** and push rod **no. 19** using snap ring pliers.

Remove master piston and spring.

Inspection and Lubrication

Discard any remaining fluid inside reservoir.

Clean reservoirs, master pistons and master cylinders thoroughly with clean brake fluid.

Check:

- boots for crack
- springs for damage
- piston cups for wear, deterioration or damage
- master cylinders and pistons for scoring, scratches or other damage.

Change part(s) if necessary.

Check locking pin **no. 26** for excessive wear, replace if necessary.

NOTE: If master cylinder is damaged or leaking, replace as an assembly.

Assembly

Front Master Cylinder

Coat master piston and piston cups with clean brake fluid.

Install:

- spring onto master piston
- master piston into master cylinder
- snap ring into groove in the master cylinder
- boot into master cylinder and the groove in piston.

Apply silicone grease to the brake lever contacting surface of the piston.

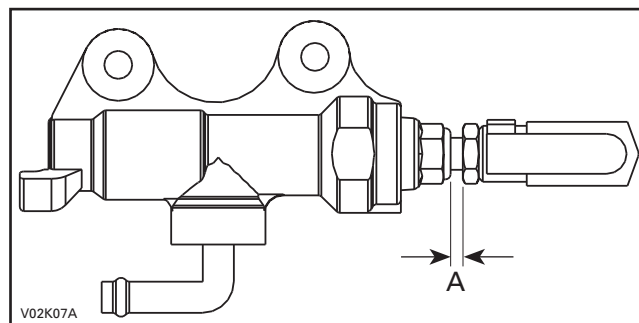
Install brake lever and locking mechanism.

NOTE: Apply silicone grease on lever pivot bolt.

Rear Master Cylinder

For the rear master cylinder use the same procedure that front master cylinder, however pay attention to the following:

If push rod yoke **no. 27** is reinstalled, adjust push rod length, see the following illustration.



A. $3 \pm 1 \text{ mm}$ ($1/8 \pm 1/32 \text{ in}$)

Installation

For the installation, reverse the removal procedure, paying attention to the following details.

Front Brakes

Place the master cylinder **no. 8** on the handlebar.

Position cylinder holding bracket with the UP mark upward.

Install bolts and tighten loosely.

With the handlebar in straight ahead position, position cylinder reservoir parallel to the ground. Tighten upper bolt in first then lower bolt.



TYPICAL

Connect brake hose **no. 11** to master cylinder with bolt **no. 9** and new sealing washers.

Bleed front brake system.

Check for leaks and make sure the brakes operate normally before driving.

Section 09 BRAKES

Subsection 02 (HYDRAULIC BRAKES)

Rear Brake

Install master cylinder to frame.

Install rear brake hose **no. 18** to master cylinder using new sealing washers.

Connect flexible hose from master cylinder.

Fill up reservoir with clean brake fluid.

CAUTION: Do not mix different types of brake fluid. Use only DOT 4 brake fluid.

Bleed rear brake system.

Check for leaks and make sure the brakes operate normally before driving.

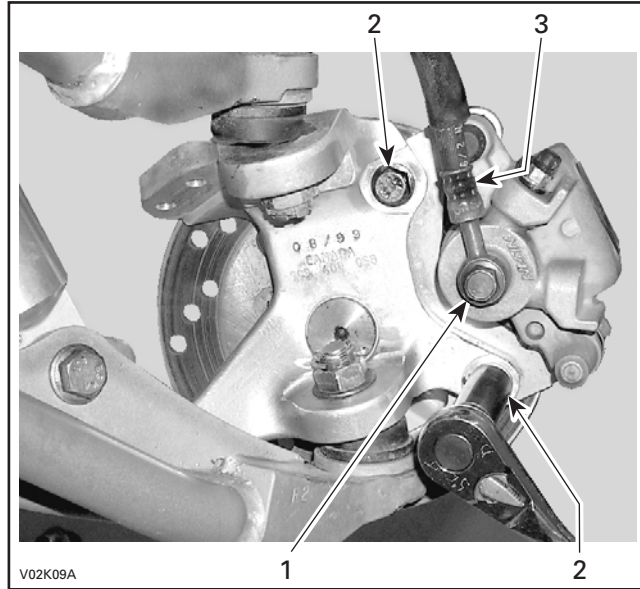
CALIPER

Removal

Loosen wheel nuts.

Raise vehicle and support it securely.

Remove wheels.



1. Remove bolt and washers
2. Unscrew bolts
3. Brake hose

Disassembly

Remove brake pads, see the following section.

Remove:

- caliper bracket **no. 32**
- slide pins **no. 33**
- pad spring **no. 34**.

Place rag over piston.

Place caliper body with piston down and apply small squirts of air pressure to the fluid inlet to remove piston.

WARNING

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

Remove piston seal.

CAUTION: Be careful not damage piston sliding surface.

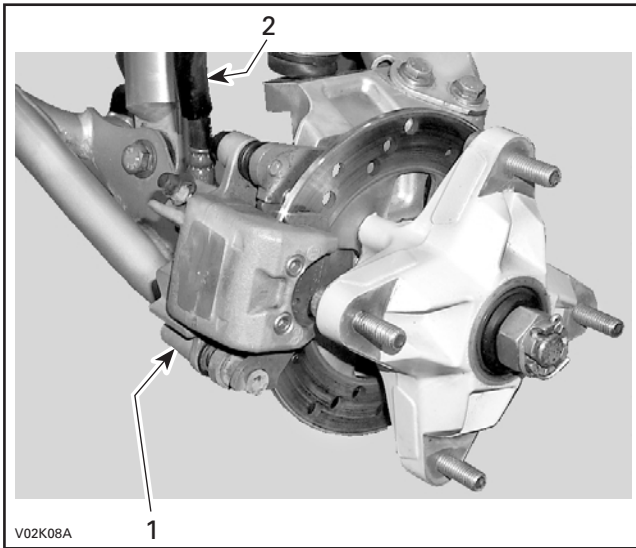
Clean piston grooves, caliper cylinder and piston with clean brake fluid.

Clean slide pins with brake cleaner and a rag.

Inspection

If boots **no. 35** are deteriorated or hard, replace by the new ones.

Check caliper cylinder and piston for scratches, rust or other damages. If so, replace caliper.



RH FRONT BRAKE

1. Caliper
2. Brake hose

Drain brake fluid from brake system.

Remove bolt **no. 28** with sealing washers **no. 29** and detach brake hose **no. 18** or **no. 30** from caliper.

Catch spilled fluid with a rag.

Unscrew bolts **no. 31** retaining caliper to knuckle and remove caliper. Discard bolts.

Assembly

Coat piston seal with clean brake fluid and install it into piston grooves in caliper.

Coat piston with clean brake fluid and install into cylinder with the closing toward caliper body.

Apply silicone grease into sliding bores and install slide pins.

NOTE: Make sure that rubber boots **no. 35** are correctly installed in slide pins grooves.

Install pad spring, caliper bracket and pads.

Installation

For the installation, reverse the removal procedure, paying attention to the following details.

Use new sealing washers when installing bolt retaining brake hose to caliper.

Install caliper to knuckle with the new self-locking bolts.

If hose was disconnected, bleed the brakes.

Check for leaks and make sure the brakes operate normally before driving.

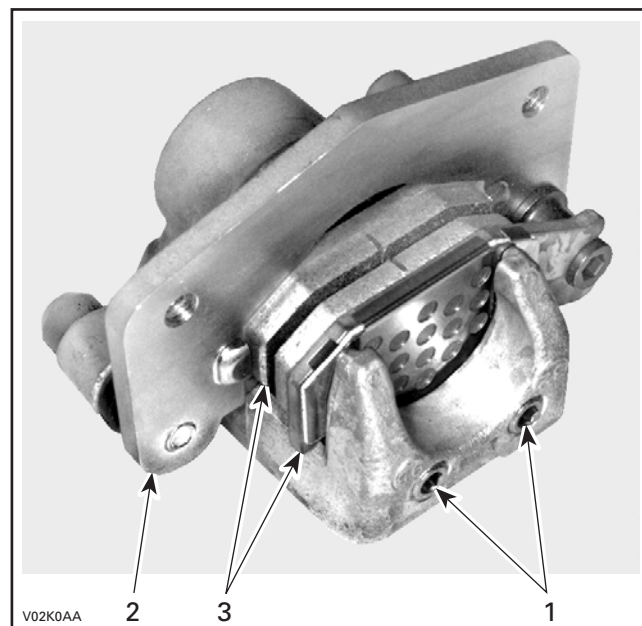
BRAKE PADS

Removal

Raise vehicle and support it securely.

Remove wheels.

Loosen pad pins **no. 36**.



- 1. Pad pins
- 2. Caliper bracket
- 3. Pads

Remove caliper from knuckle.

CAUTION: Don't let the caliper hang by the hose and don't stretch or twist the hose.

It's very important to clean remaining O.D. of piston out from caliper with brake fluid before pushing the piston back in. Make sure the piston is free of any contaminant and is shiny.

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

Unscrew pad pins and remove pads **no. 37**.

Discard pad pins.

Section 09 BRAKES

Subsection 02 (HYDRAULIC BRAKES)

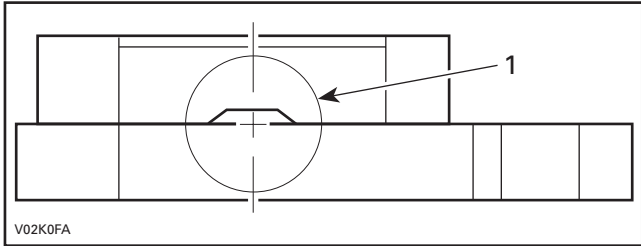
Inspection

CAUTION: Do not clean brake pads in petroleum based solvent. Use brake system cleaner. Soiled brake pads must be replaced by new ones.

Measure brake pad lining thickness.

Brake pads must be replaced when lining is 1 mm (1/32 in) thick or less, or, look the hollow places on both sides on the pad lining.

There are four hollow places on one set of brake pads. When the pad wear reaches one of the hollow places, the pad change is necessary even if the pad wear does not reach another hollow place.



1. Hollow place

BRAKE PAD LINING MINIMUM THICKNESS	1 mm (1/32 in)
---------------------------------------	----------------

CAUTION: Brake pads must always be replaced in pairs.

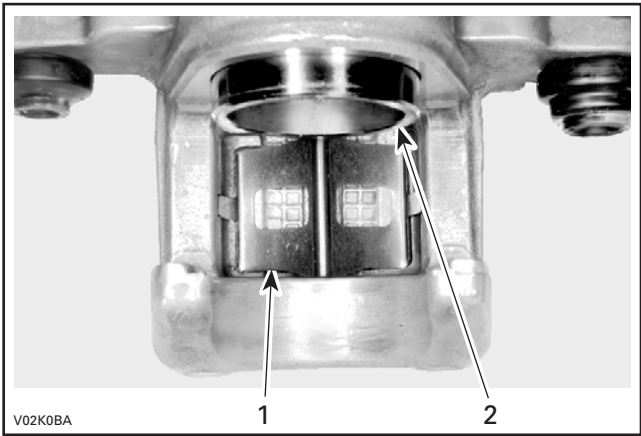
⚠ WARNING

Avoid getting oil or grease on brake pads. Contaminated brake pads can affect stopping capacities. Discard any contaminated pads.

Installation

For installation, reverse the removal procedure. Paying attention to the following details.

Make sure that pad spring **no. 34** is in position.



1. Pad spring
2. Piston

Install new brake pads.

Install new pad pins by pushing in the pads against pad spring to align pad slots in the pads and caliper body.

Install brake caliper so the disc is positioned between pads.

NOTE: Be careful not to damage pads and that pads are correctly inserted in their location.

After the job is completed, firmly depress the brake lever a few times to bring the pads in contact with the disc.

Check for leaks and make sure the brakes operate normally before driving. The pads must rest flat on the disk.

BRAKE DISC

Inspection

Brake discs **no. 38** can be inspected without removing from the vehicle.

Raise vehicle and support it securely. Remove wheels and visually inspect disc surfaces for scratches or grooves. Make sure to check both sides of disc.

Measure thickness of the disc. Minimum thickness is 3.5 mm (0.13 in).

Replace disc if not within specifications.

CAUTION: Brake discs should never be machined.

Turn the disc by hand and check run out.

DISC MINIMUM THICKNESS	3.5 mm (.13 in)
DISC RUN OUT (MAX.)	0.5 mm (.02 in)

Removal

Front Brake Disc

Remove caliper as described previously.

After removing the caliper, suspend it out of the way.

CAUTION: Don't let the caliper hang by the hose and don't stretch or twist the hose.

Wheel hub has to be removed from vehicle to replace brake disc Refer to FRONT DRIVE.

Remove screws **no. 39** retaining brake disc **no. 38** to wheel hub. Discard screws.

NOTE: Heat up disc around screws to facilitate removal.

Rear Brake Disc

Refer to FINAL DRIVE for brake hub removal instructions.

Installation

Install brake disc on wheel hub and tighten in a criss-cross sequence.



Install new self-locking screws and torque screws **no. 39** to 34 N•m (25 lbf•ft).

BRAKE LEVER

Removal and Installation

Use the same procedure that the front master cylinder.

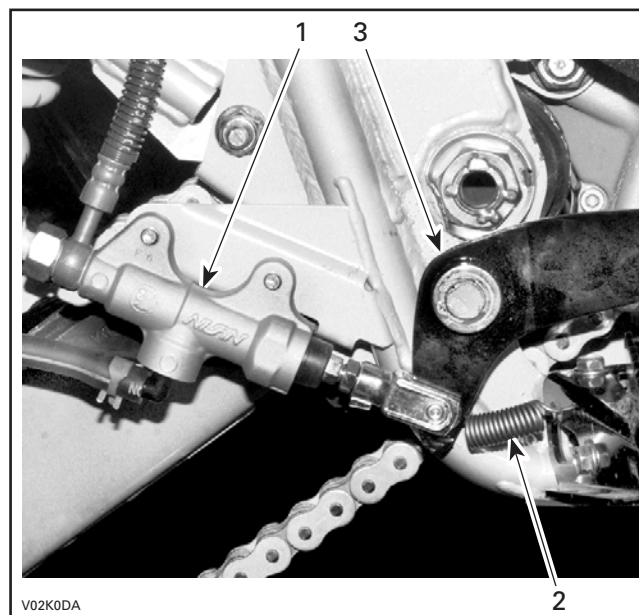
BRAKE PEDAL

Removal

Remove RH side foot protector.

Refer to BODY for removal procedure.

Unhook the return spring **no. 40**.



1. Master cylinder
2. Return spring
3. Brake pedal

Remove circlip **no. 41**, washer **no. 42** and O-ring **no. 43** then remove pedal **no. 5** from pivot.

Remove the O-ring **no. 44** on the pivot.

NOTE: Clean O-ring and pivot pin with BOMBARDIER LUBE (P/N 293 600 016).

Installation

For installation, reverse the removal procedure.

Check O-rings for damage, change if necessary. Apply synthetic grease (P/N 293 550 018).

Section 09 BRAKES

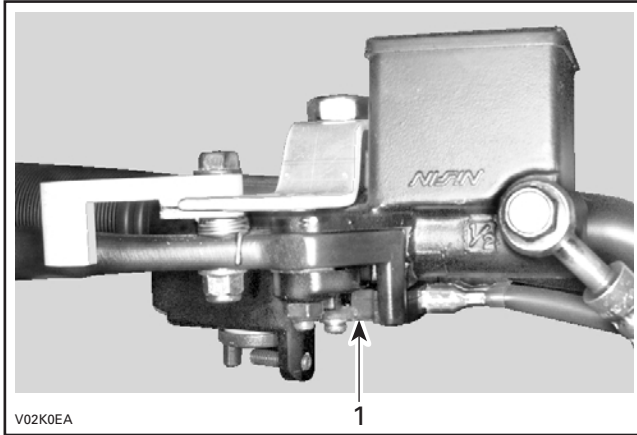
Subsection 02 (HYDRAULIC BRAKES)

BRAKE LIGHT SWITCH

Removal

Front Brake Light Switch

The front brakes switch **no. 45** is located on the master cylinder and cannot be adjusted. Check that switch is securely installed and operates rear light properly.



1. Front brake light switch

Rear Brake Light Switch

The rear brake switch is located on the rear master cylinder banjo fitting **no. 16**.

The rear brake light switch **no. 46** cannot be adjusted.

Remove RH foot protector. Refer to BODY for removal procedure.

Disconnect connectors.

Unscrew rear brake light switch **no. 46** from banjo fitting **no. 16**. Catch spilled fluid with a rag.

Installation

For installation, reverse the removal procedure.

NOTE: Apply pipe sealant on threads.

Bleed the brake system.

REAR CALIPER BRACKET

Removal

Remove brake hub. Refer to FINAL DRIVE.

Remove the large circlip **no. 47**.

Pull the caliper bracket **no. 48**.

Inspection

Check for wear or other damage on the eccentric bearing carrier and on the bracket. Replace parts if free play is excessive.

Installation

For installation, reverse the removal procedure.