

13. FRONT WHEEL/SUSPENSION/STEERING

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SERVICE INFORMATION

GENERAL

WARNING

- Riding on damaged rims impairs safe operation of the vehicle.
- A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.

- A hoist or equivalent is required to support the motorcycle when servicing the front wheel, fork and steering stem.
- Refer to section 15 for brake system service.

SPECIFICATIONS

Unit: mm (in)

ITEM	STANDARD	SERVICE LIMIT
Minimum tire tread depth	—	1.5 (0.06)
Cold tire pressure	Driver only 250 kPa (2.50 kgf/cm ² , 36 psi)	—
	Driver and passenger 250 kPa (2.50 kgf/cm ² , 36 psi)	—
Axle runout	—	0.20 (0.008)
Wheel rim runout	Radial Axial	2.0 (0.08) 2.0 (0.08)
Wheel balance weight	—	60 g (2.1 oz) max.
Fork	Spring free length Tube runout Recommended fluid Fluid level Fluid capacity	309.9 (12.20) — Fork fluid 130 (5.1) 448 ± 2.5 cm ³ (15.2 ± 0.08 US oz, 15.8 ± 0.09 Imp oz)
Steering head bearing preload	1.0–1.6 kgf (2.2–3.5 lbf)	—

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TORQUE VALUES

Handlebar weight mounting screw	10 N·m (1.0 kgf·m, 7 lbf·ft)	ALOC screw
Front master cylinder holder bolt	12 N·m (1.2 kgf·m, 9 lbf·ft)	
Front axle bolt	59 N·m (6.0 kgf·m, 43 lbf·ft)	
Front axle holder bolt	22 N·m (2.2 kgf·m, 16 lbf·ft)	
Front brake disc bolt	20 N·m (2.0 kgf·m, 14 lbf·ft)	ALOC bolt
Front brake caliper mounting bolt	30 N·m (3.1 kgf·m, 22 lbf·ft)	ALOC bolt
Fork cap	23 N·m (2.3 kgf·m, 17 lbf·ft)	
Fork socket bolt	20 N·m (2.0 kgf·m, 14 lbf·ft)	Apply locking agent to the threads
Fork top bridge pinch bolt	23 N·m (2.3 kgf·m, 17 lbf·ft)	
Fork bottom bridge pinch bolt	49 N·m (5.0 kgf·m, 36 lbf·ft)	
Front brake hose clamp bolt (fork side)	10 N·m (1.0 kgf·m, 7 lbf·ft)	
Steering stem nut	103 N·m (10.5 kgf·m, 76 lbf·ft)	
Steering bearing adjustment nut	25 N·m (2.5 kgf·m, 18 lbf·ft)	
Front brake hose clamp bolt	10 N·m (1.0 kgf·m, 7 lbf·ft)	
Front brake hose 3-way joint bolt	10 N·m (1.0 kgf·m, 7 lbf·ft)	

TOOLS

Bearing remover shaft	07746-0050100
Bearing remover head, 20 mm	07746-0050600
Driver	07749-0010000
Attachment, 42×47 mm	07746-0010300
Pilot, 20 mm	07746-0040500
Fork seal driver weight	07947-KA50100
Fork seal driver	07947-KF00100
Steering stem socket	07916-3710101
Ball race remover set	07946-KM90001
— Driver attachment A	07946-KM90100
— Driver attachment B	07946-KM90200
— Driver shaft assembly	07946-KM90300
— Bearing remover A	07946-KM90401
— Bearing remover B	07946-KM90500
— Assembly base	07946-KM90600
Steering stem driver	07946-MB00000

TROUBLESHOOTING

Hard steering

- Steering bearing adjustment nut too tight
- Worn or damaged steering head bearings
- Bent steering stem
- Insufficient tire pressure

Steers one side or does not track straight

- Damaged or loose steering head bearings
- Bent forks
- Bent axle
- Wheel installed incorrectly
- Bent frame
- Worn or damaged wheel bearings
- Worn or damaged swingarm pivot bearings

Front wheel wobbling

- Bent rim
- Worn or damaged front wheel bearings
- Faulty front tire
- Unbalanced front tire and wheel

Front wheel turns hard

- Faulty front wheel bearings
- Bent front axle
- Front brake drag

Soft suspension

- Insufficient fluid in fork
- Incorrect fork fluid weight
- Weak fork springs
- Insufficient tire pressure

Hard suspension

- Bent fork tubes
- Too much fluid in fork
- Incorrect fork fluid weight
- Clogged fork fluid passage

Front suspension noise

- Insufficient fluid in fork
- Loose fork fasteners

HANDLEBAR

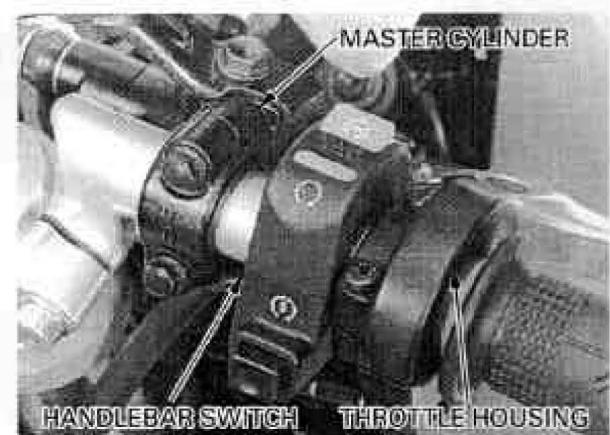
RIGHT HANDLEBAR

REMOVAL

Hold the handlebar weight and remove the mounting screw and the weight.



Disconnect the front brake light switch connectors.
Remove the two bolts, holder and the front brake master cylinder assembly.
Remove the two screws and upper throttle housing.
Remove the two screws and right handlebar switch.



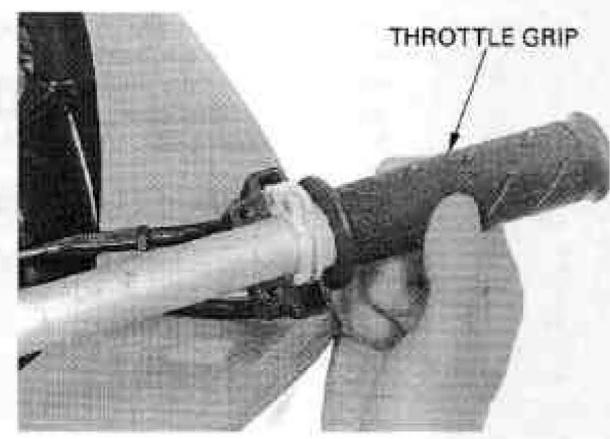
Loosen the handlebar pinch bolt, and remove the stopper ring and handlebar from the fork.



Remove the throttle grip pipe from the handlebar.

INSTALLATION

Apply grease to the throttle grip pipe flange and install the throttle grip pipe onto the handlebar.



FRONT WHEEL/SUSPENSION/STEERING

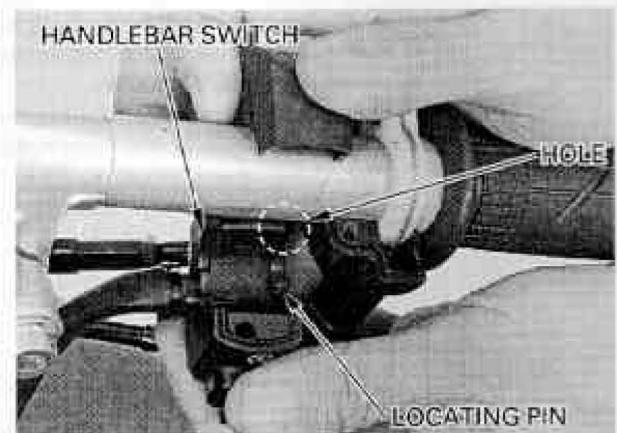
Install the handlebar onto the fork, aligning its boss with the groove in the fork top bridge.

Install the stopper ring and tighten the handlebar pinch bolt.



Install the right handlebar switch, aligning its locating pin with the hole in the handlebar.

Tighten the forward screw first, then the rear screw.



Install the upper throttle housing over the throttle grip pipe flange, aligning its locating pin with the hole in the handlebar.

Tighten the forward screw first, then the rear screw.

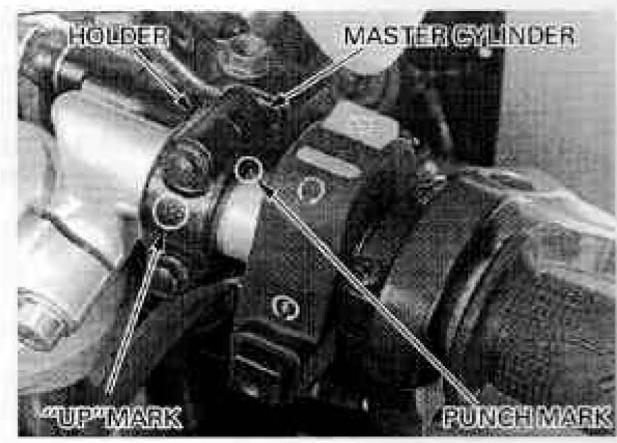


Install the front brake master cylinder and holder with the "UP" mark facing up.

Align the end of the master cylinder with the punch mark on the handlebar, and tighten the upper bolt first, then lower bolt.

TORQUE: 12 N·m (1.2 kgf·m , 9 lbf·ft)

Connect the front brake light switch connectors.

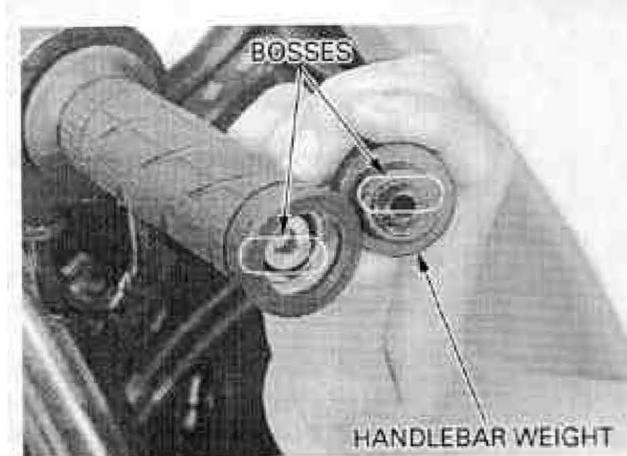


Install the handlebar weight onto the inner weight, aligning the bosses and grooves each other.

Install a new weight mounting screw and tighten it while holding the weight.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

Check the throttle grip operation and free play (page 3-4).



LEFT HANDLEBAR

REMOVAL

Disconnect the clutch switch connectors.

Remove the two bolts, holder and the clutch master cylinder assembly.

Remove the two screws and left handlebar switch.



Hold the handlebar weight and remove the mounting screw and the weight.

Remove the left handlebar grip.



Loosen the handlebar pinch bolt, and remove the stopper ring and handlebar from the fork.

INSTALLATION

Install the handlebar onto the fork, aligning its boss with the groove in the fork top bridge.

Install the stopper ring and tighten the handlebar pinch bolt.



FRONT WHEEL/SUSPENSION/STEERING

Apply Honda Bond A or equivalent to the inside surface of the handlebar grip and to the clean surface of the handlebar. Wait 3–5 minutes and install the grip.

Rotate the grip for even application of the adhesive.

NOTE:

Allow the adhesive to dry for an hour before using.

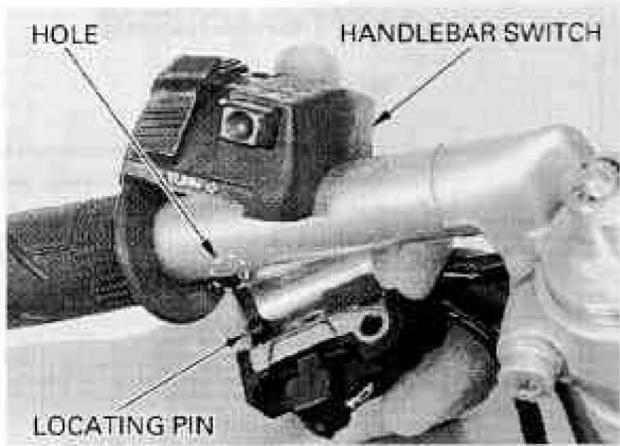
Install the handlebar weight onto the inner weight, aligning the bosses and grooves each other.

Install a new weight mounting screw and tighten it while holding the weight.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

Install the left handlebar switch, aligning its locating pin with the hole in the handlebar.

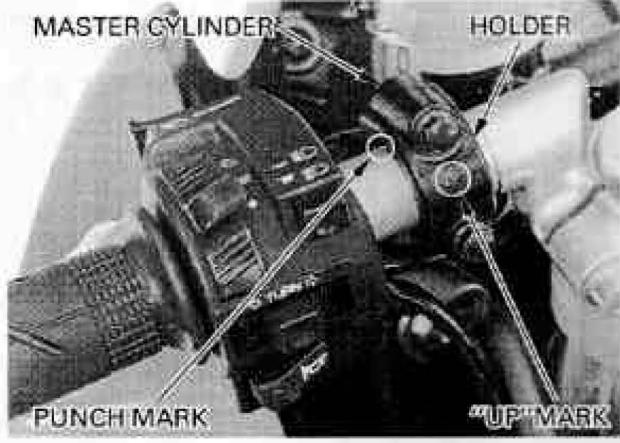
Tighten the forward screw first, then the rear screw.



Install the clutch master cylinder and holder with the "UP" mark facing up.

Align the end of the master cylinder with the punch mark on the handlebar, and tighten the upper bolt first, then lower bolt.

Connect the clutch switch connectors.



FRONT WHEEL

REMOVAL

Support the motorcycle securely using a hoist or equivalent and raise the front wheel off the ground.

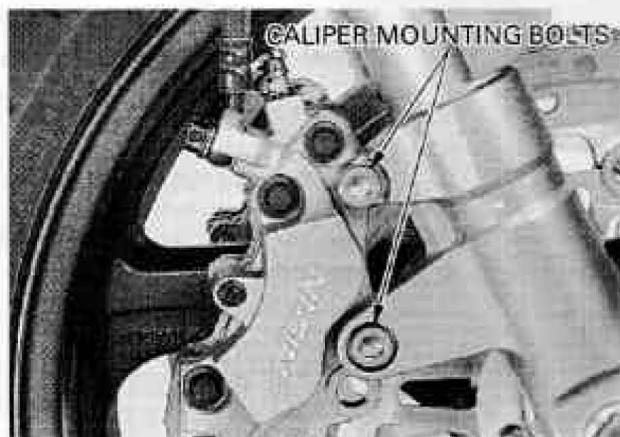
Remove the mounting bolts and front brake calipers.

CAUTION:

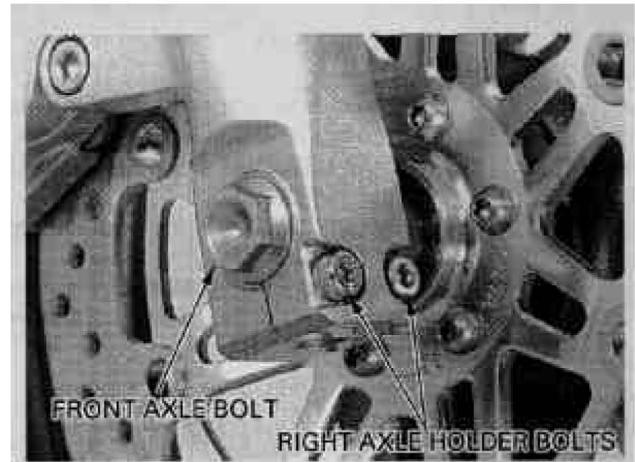
Support the brake caliper so that it does not hang from the brake hose. Do not twist the brake hose.

NOTE:

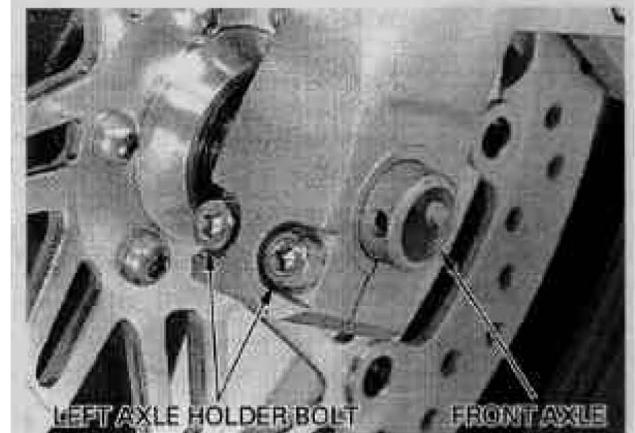
Do not operate the brake lever after removing the brake calipers.



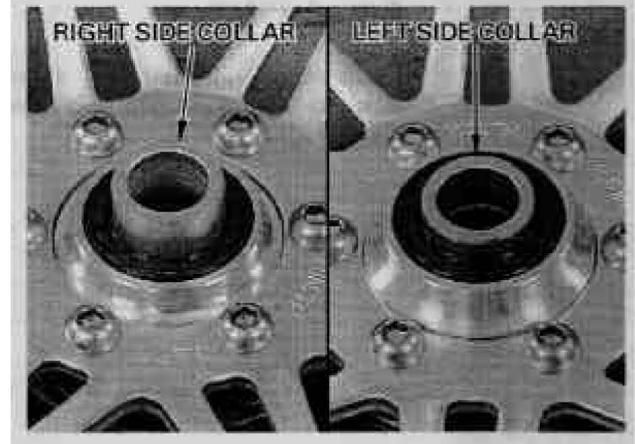
Loosen the right front axle holder bolts.
Remove the front axle bolt.



Loosen the left front axle holder bolts.
Remove the front axle and the front wheel.



Remove the side collars.

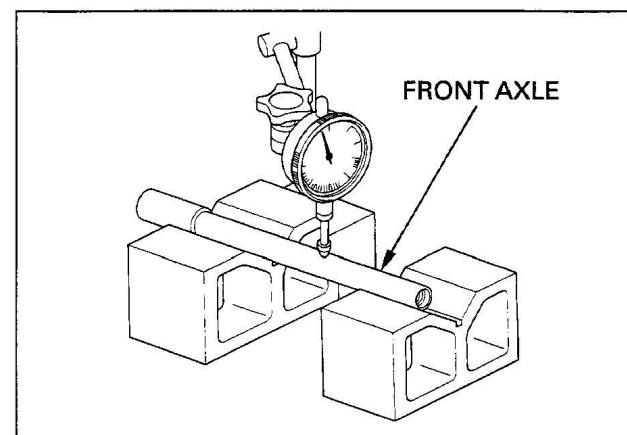


INSPECTION

AXLE

Set the front axle in V-blocks.
Turn the front axle and measure the runout using a dial indicator.
Actual runout is 1/2 the total indicator reading.

SERVICE LIMIT: 0.20 mm (0.008 in)



WHEEL RIM

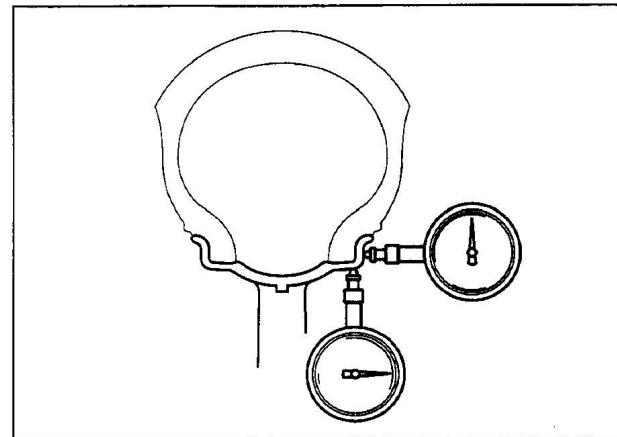
Check the rim runout by placing the wheel in a truing stand.

Spin the wheel slowly and read the runout using a dial indicator.

Actual runout is 1/2 the total indicator reading.

SERVICE LIMITS: Radial: 2.0 mm (0.08 in)

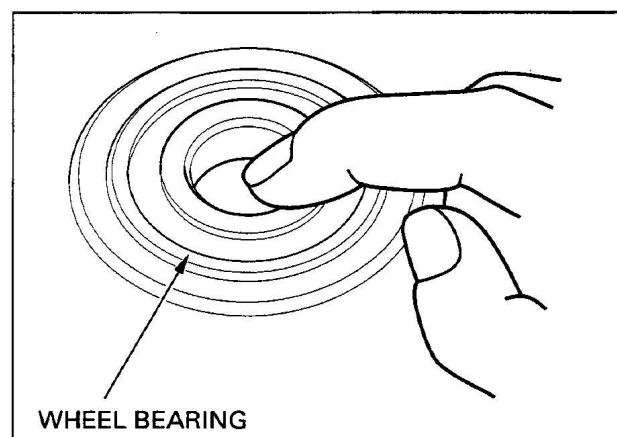
Axial: 2.0 mm (0.08 in)



WHEEL BEARING

Turn the inner race of each bearing with your finger. The bearings should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the hub.

- Replace the wheel bearings in pairs.* Remove and discard the bearings if the races do not turn smoothly and quietly, if they fit loosely in the hub.



DISASSEMBLY

Remove the dust seals from the wheel hub.

Remove the disc bolts and brake discs from the wheel hub.

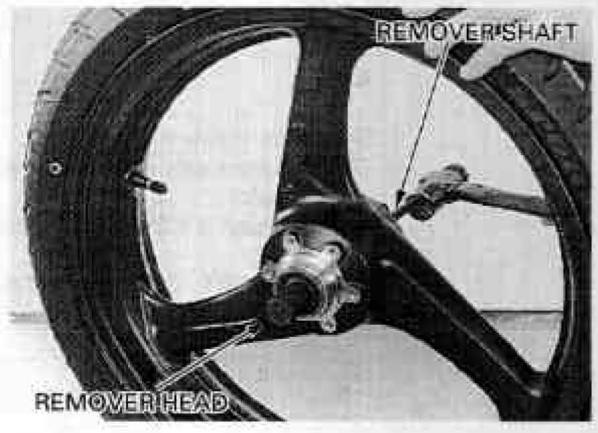


- Replace the wheel bearings in pairs.* Install the bearing remover head into the bearing. From opposite side, install the bearing remover shaft and drive the bearing out of the wheel hub. Remove the distance collar and drive out the other bearing.
- Do not reuse old bearings.*

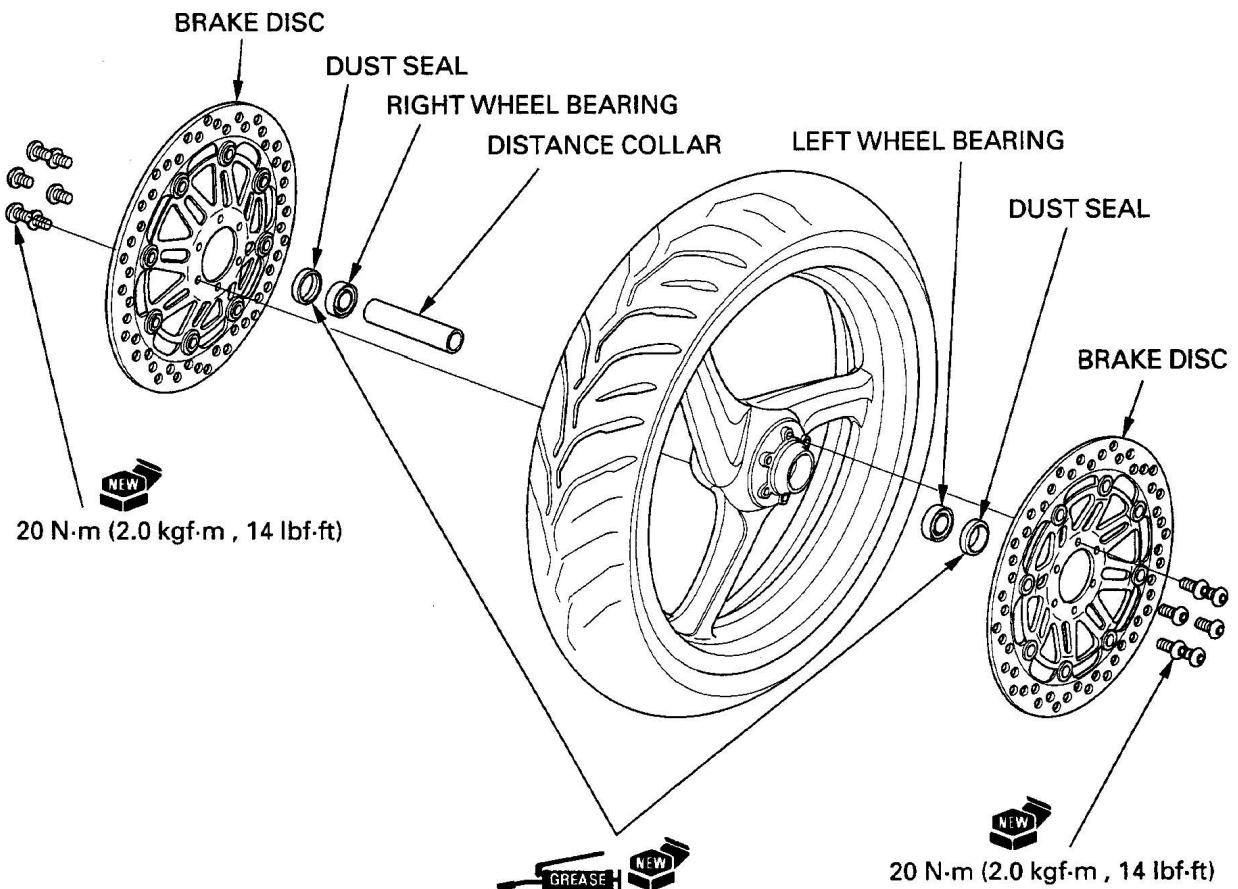
TOOLS:

Bearing remover shaft 07746-0050100

Bearing remover head, 20 mm 07746-0050600



ASSEMBLY



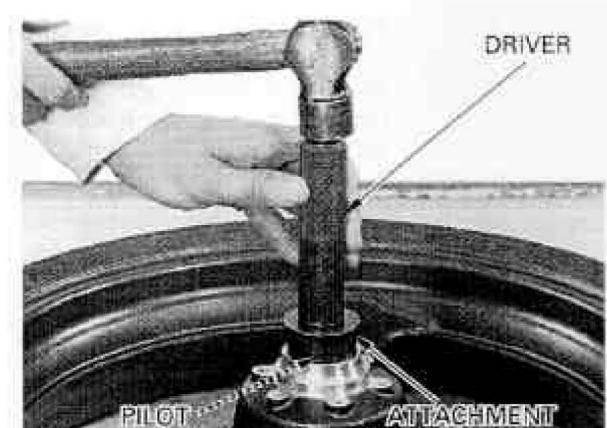
Drive in a new left bearing squarely with the marking side facing up until it is fully seated.

Install the distance collar.

Drive in a new right bearing squarely with the marking side facing up until it is fully seated.

TOOLS:

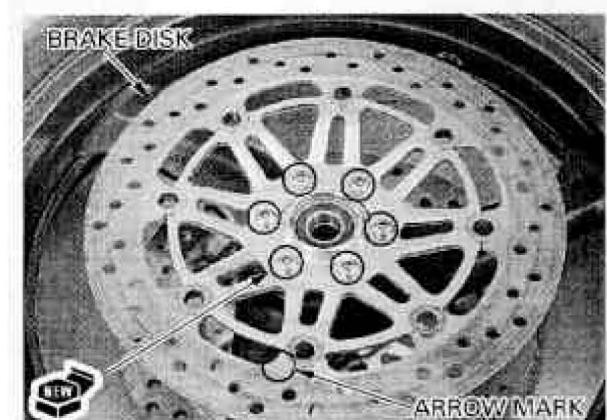
Driver	07749-0010000
Attachment, 42×47 mm	07746-0010300
Pilot, 20 mm	07746-0040500



Install the brake discs with the arrow mark facing in the normal rotating direction.

Install new disc bolts and tighten them in a criss-cross pattern in 2 or 3 steps.

TORQUE: 20 N·m (2.0 kgf·m, 14 lbf·ft)



WHEEL BALANCE

WARNING

Wheel balance directly affects the stability, handling and overall safety of the motorcycle. Carefully check balance before reinstalling the wheel.

NOTE:

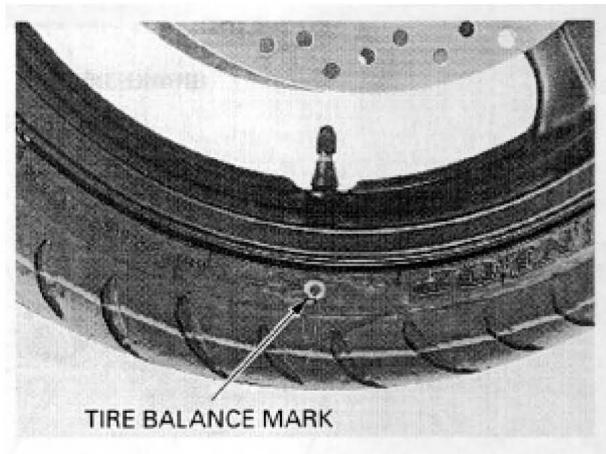
- Mount the tire with the arrow mark facing in the normal rotating direction.
- The wheel balance must be checked when the tire is remounted.
- For optimum balance, the tire balance mark (a paint dot on the side wall) must be located next to the valve stem. Remount the tire if necessary.

Mount the wheel, tire and brake disc assembly on an inspection stand.

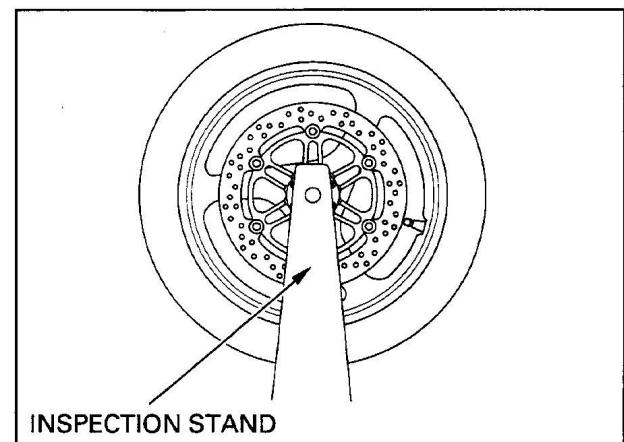
Spin the wheel, allow it to stop, and mark the lowest (heaviest) part of the wheel with chalk.

Do this two or three times to verify the heaviest area.

If wheel is balanced, it will not stop consistently in the same position.

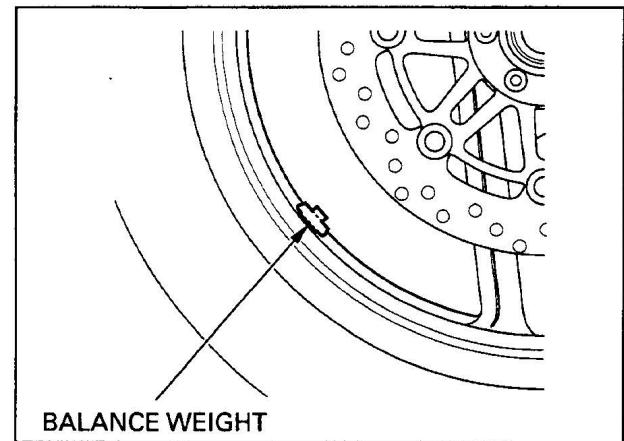


TIRE BALANCE MARK



INSPECTION STAND

To balance the wheel, install balance weights on the lightest side of rim, the side opposite the chalk marks. Add just enough weight so the wheel will no longer stop in the same position when it is spun. Do not add more than 60 g (2.1 oz) to the wheel.



BALANCE WEIGHT

Apply grease to new dust seal lips.

Install the dust seals into the wheel hub.

INSTALLATION

Install the side collars.

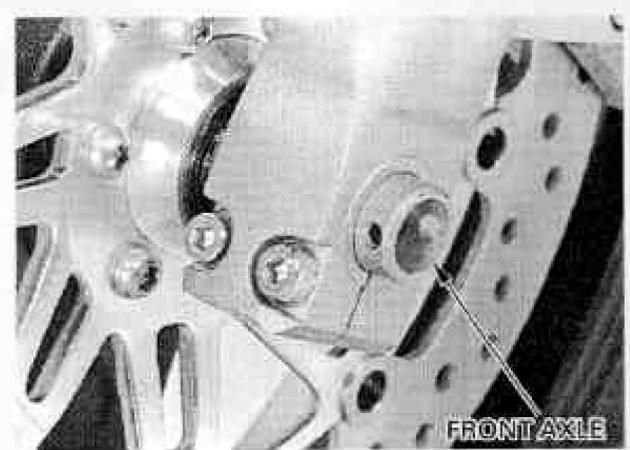
NOTE:

The right side collar is longer than the left side collar.



Install the front wheel between the fork legs.

Apply thin coat of grease to the front axle.
Install the front axle.

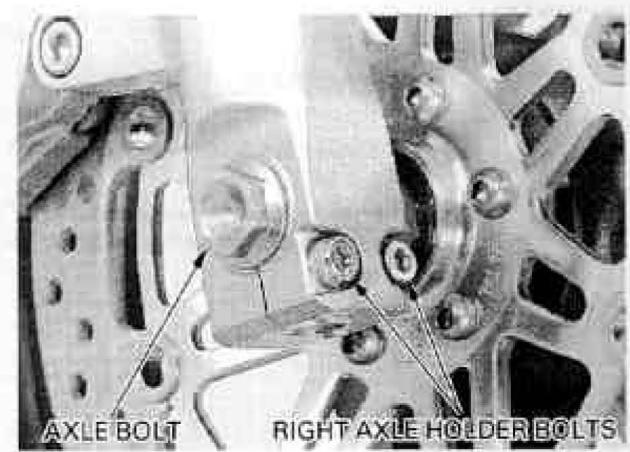


Install the axle bolt and tighten it while holding the axle.

TORQUE: 59 N·m (6.0 kgf·m , 43 lbf·ft)

Tighten the right axle holder bolts.

TORQUE: 22 N·m (2.2 kgf·m , 16 lbf·ft)



Install the brake calipers with new mounting bolts and tighten the mounting bolts.

TORQUE: 30 N·m (3.1 kgf·m , 22 lbf·ft)

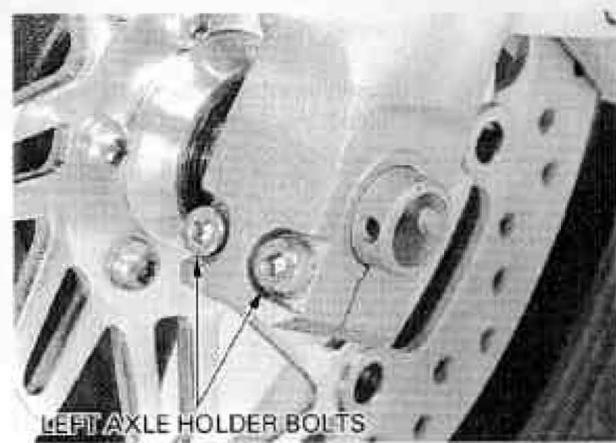


With the front brake applied, pump the forks up and down several times to seat the axle and check brake operation.



Tighten the left axle holder bolts.

TORQUE: 22 N·m (2.2 kgf·m , 16 lbf·ft)



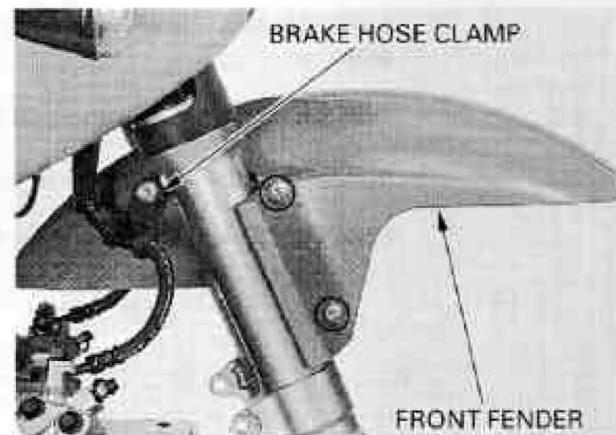
FORK

REMOVAL

Remove the front wheel (page 13-6).

Remove the four bolts and the front fender.

Remove the front brake hose clamp from the fork leg.

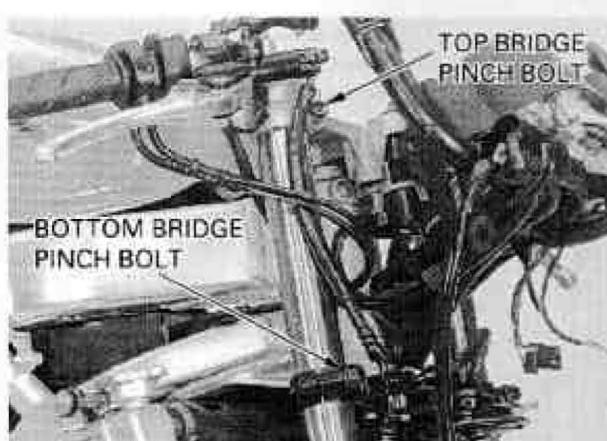


Loosen the handlebar pinch bolt and remove the stopper ring from the fork.

When the fork is ready to be disassembled, loosen the fork cap, but do not remove it.

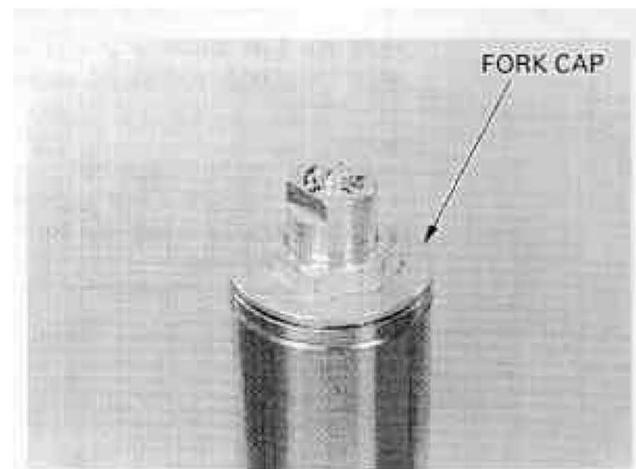


Loosen the fork top and bottom pinch bolts, and remove the fork tube from the fork bridges.



DISASSEMBLY

Remove the fork cap from the fork tube.

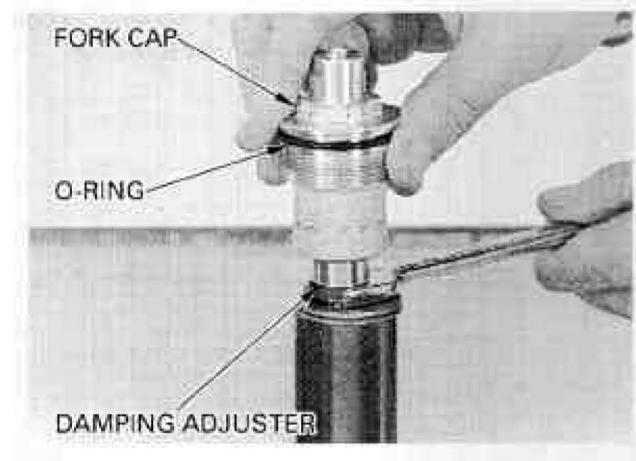


Hold the rebound damping adjuster and remove the fork cap from the damping adjuster.
Remove the O-rings from the fork cap and rebound damping adjuster.

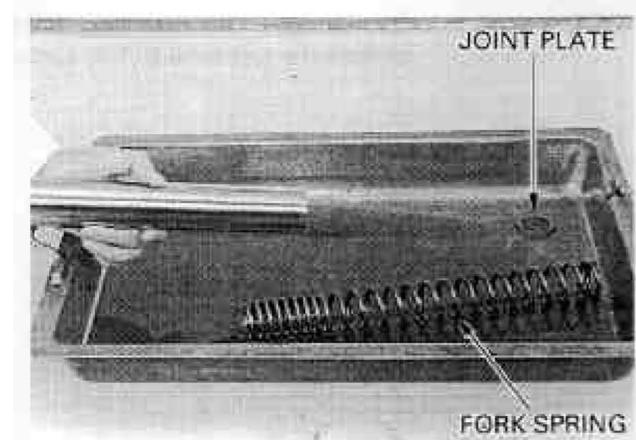
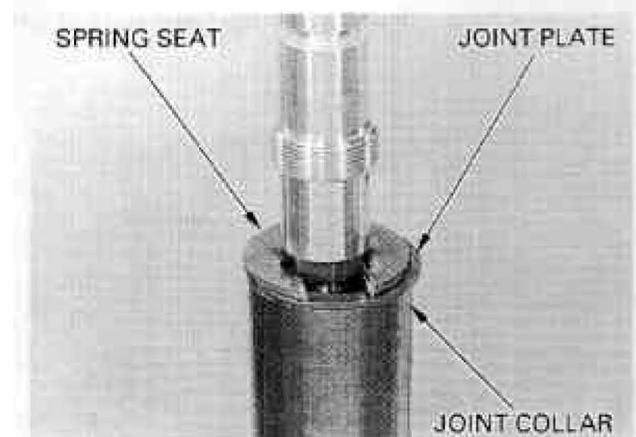
CAUTION:

Do not remove the rebound damping adjuster from the damper rod, or fork damping force will be changed.

Remove the spring seat, joint plate and joint collar.



Remove the joint plate and fork spring.
Pour out the fork fluid by pumping the fork tube several times.



FRONT WHEEL/SUSPENSION/STEERING

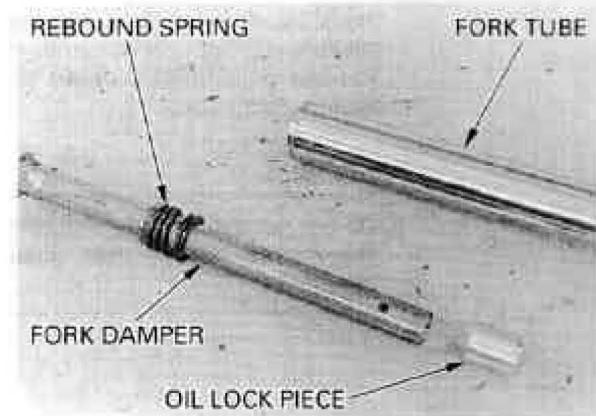
Hold the fork slider in a vise with a soft jaws or shop towel and remove the socket bolt.

NOTE:

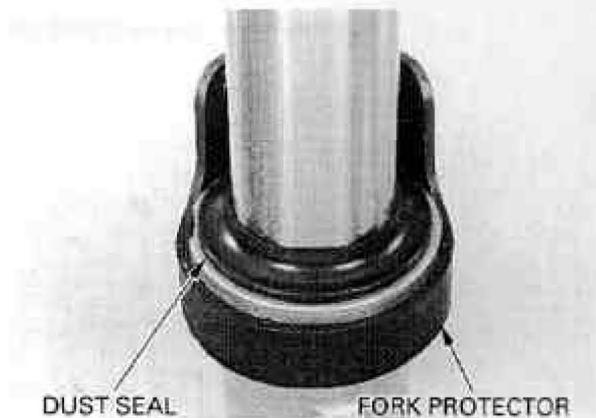
If the fork damper turns together with the socket bolt, temporarily install the fork spring, spring collar and spring seat.



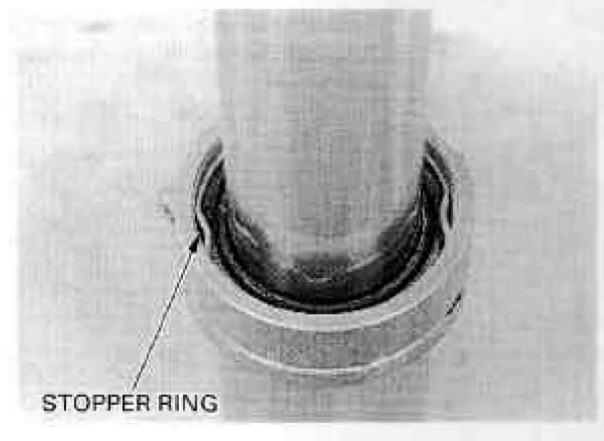
Remove the fork damper, rebound spring and oil lock piece from the fork tube.



Remove the dust seal and fork protector.



Remove the stopper ring being careful not to scratch the fork tube sliding surface.



Using quick successive motions, pull the fork tube out of the fork slider.

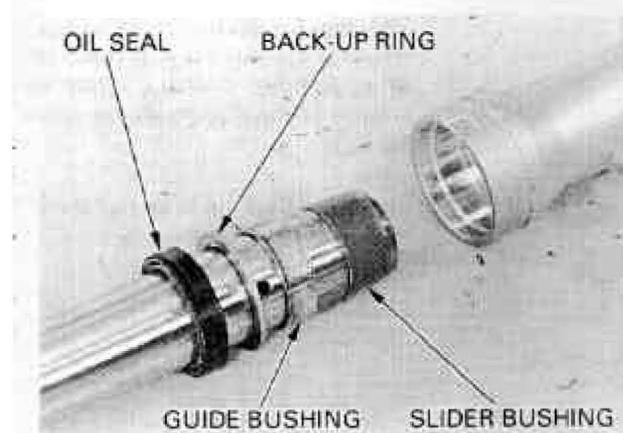


Remove the oil seal, back-up ring and guide bushing from the fork tube.

NOTE:

Do not remove slider bushing unless it is necessary to replace it with a new one.

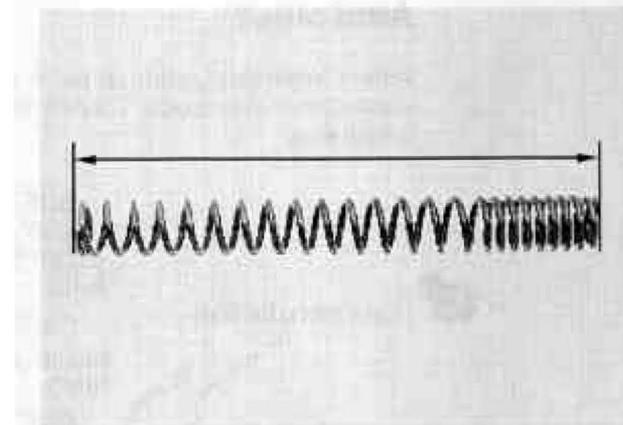
Carefully remove the slider bushing by prying the slot with a screwdriver until the bushing can be pulled off by hand.



INSPECTION

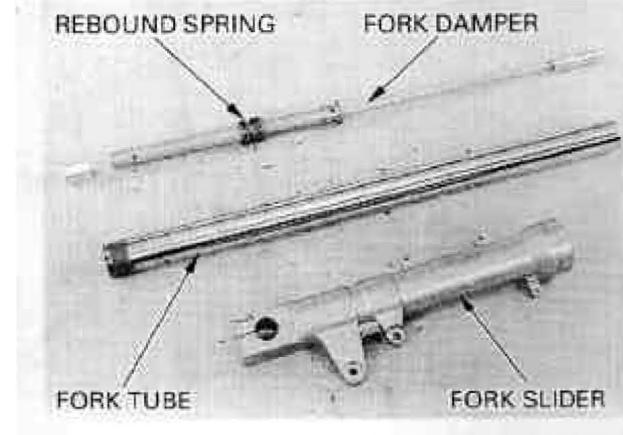
Measure the fork spring free length.

SERVICE LIMIT: 303.7 mm (11.96 in)



Check the fork tube, slider and damper piston for score marks, and excessive or abnormal wear. Check the rebound spring for fatigue or damage.

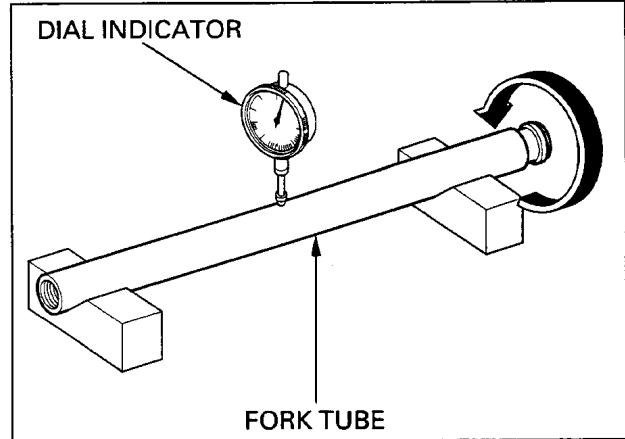
Replace the component if necessary.



FRONT WHEEL/SUSPENSION/STEERING

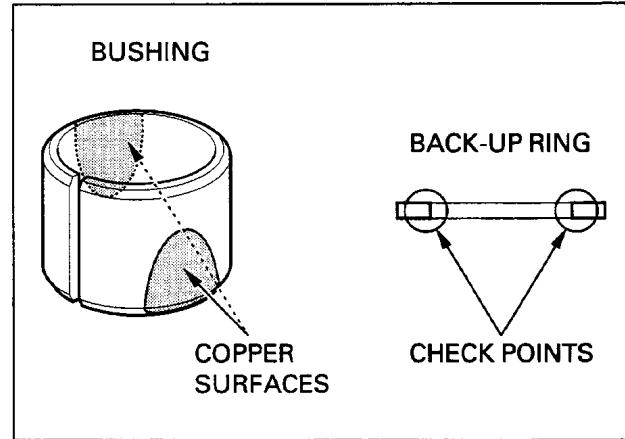
Set the fork tube in V-blocks and measure the fork tube runout with a dial indicator.
Actual runout is 1/2 the total indicator reading.

SERVICE LIMIT: 0.20 mm (0.008 in)



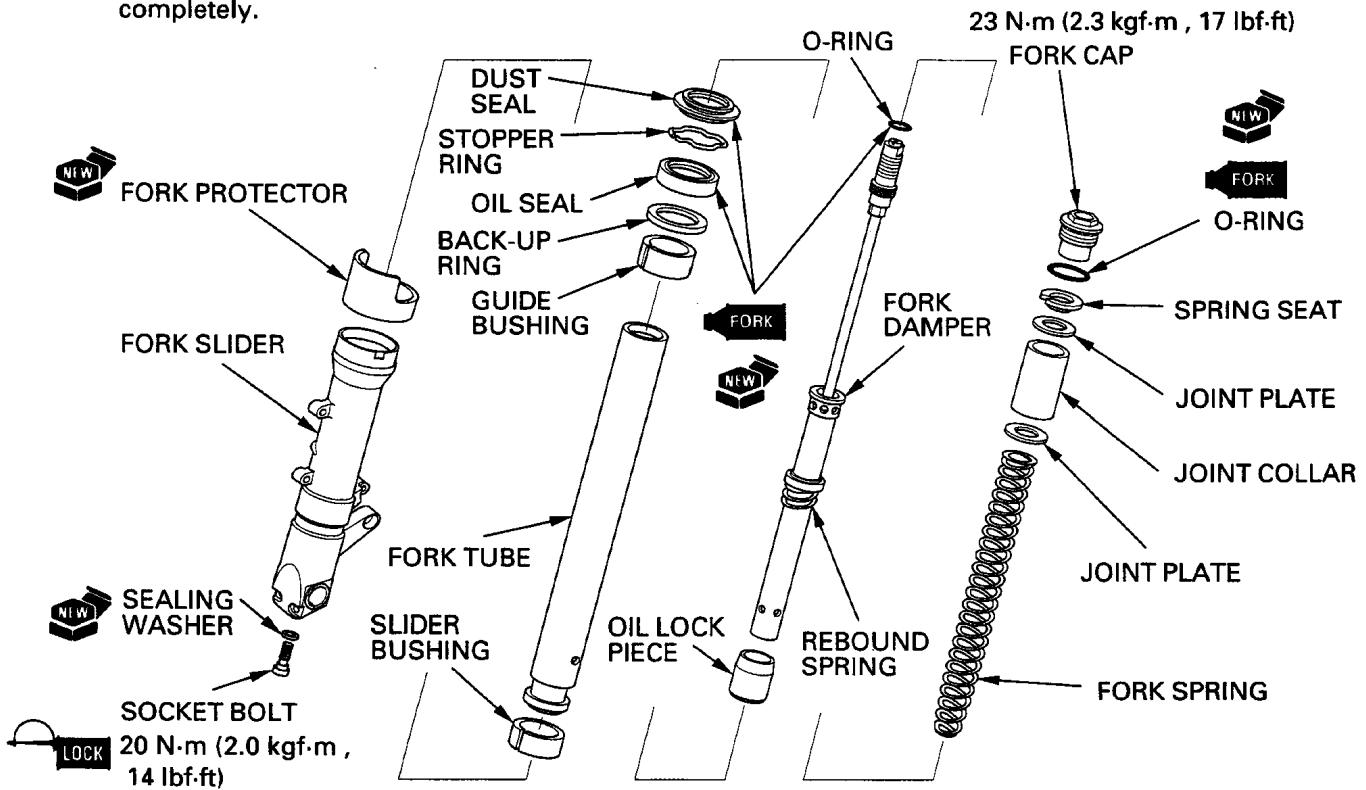
Visually inspect the slider and guide bushings.
Replace the bushings if there is excessive scoring or scratching, or if the teflon is worn so that the copper surface appears on more 3/4 of the entire surface.

Check the back-up ring; replace it if there is any distortion at the points shown.



ASSEMBLY

Before assembly, wash all parts with a high flash point or non-flammable solvent and wipe them off completely.



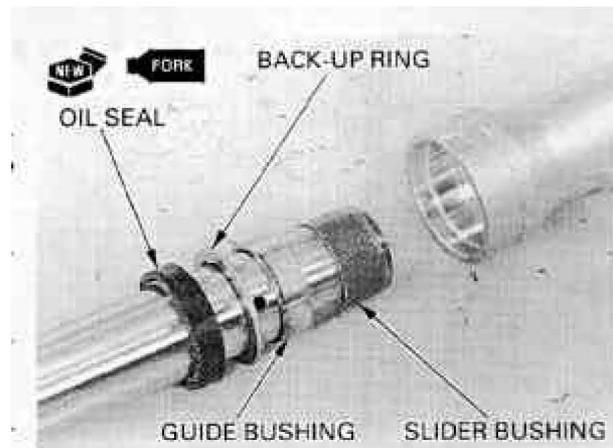
Install a new slider bushing if it has been removed.

CAUTION:

- Be careful not to damage the coating of the bushing.
- Do not open the bushing more than necessary.

NOTE:

Remove the burrs from the bushing mating surface, being careful not to peel off the coating.



Install the guide bushing and back-up ring.

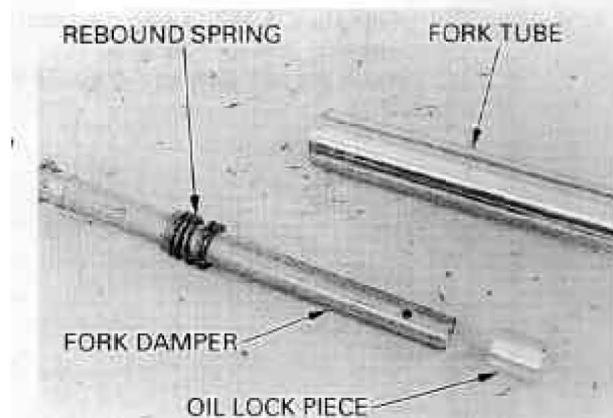
Apply fork fluid to a new oil seal lip.

Install the oil seal with the marking side facing up.

Install the fork tube into the fork slider.

Install the rebound spring and oil lock piece onto the damper piston.

Install the fork damper into the fork tube.



Hold the fork slider in a vise with a soft jaws or shop towel.

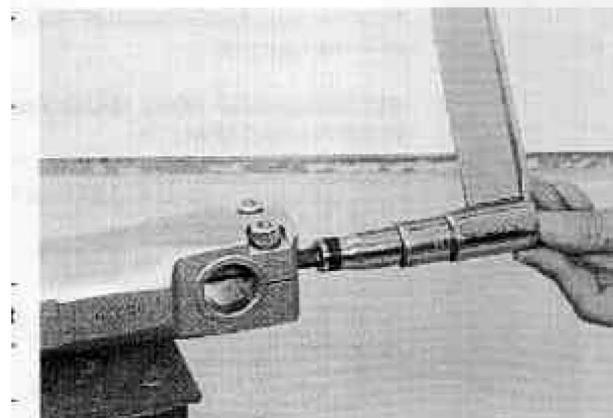
Apply locking agent to the socket bolt threads.

Install the socket bolt with a new sealing washer and tighten it.

TORQUE: 20 N·m (2.0 kgf·m , 14 lbf·ft)

NOTE:

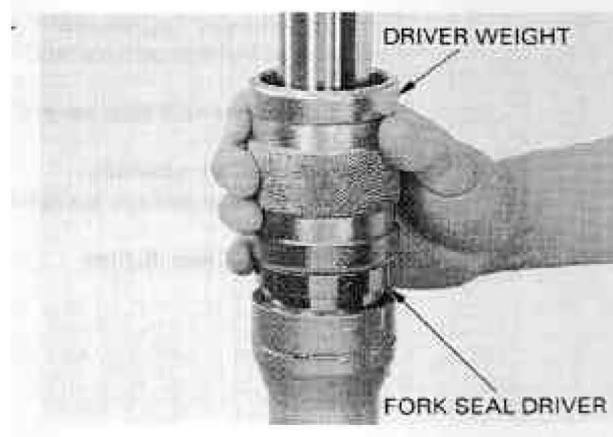
If the fork damper turns together with the socket bolt, temporarily install the fork spring, spring collar and spring seat.



Drive the oil seal into the fork slider until the stopper ring groove is visible, using the special tool.

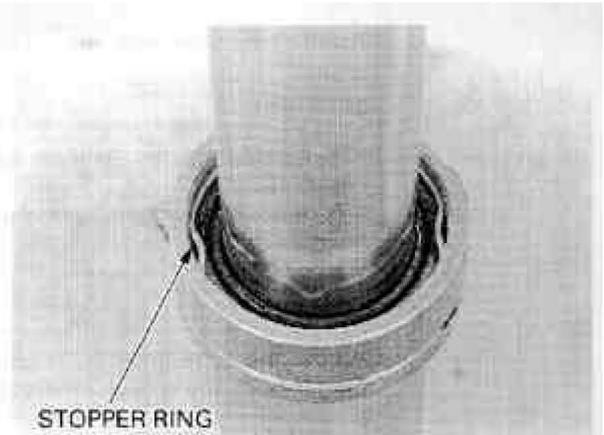
TOOLS:

Fork seal driver weight	07947-KA50100
Fork seal driver	07947-KF00100



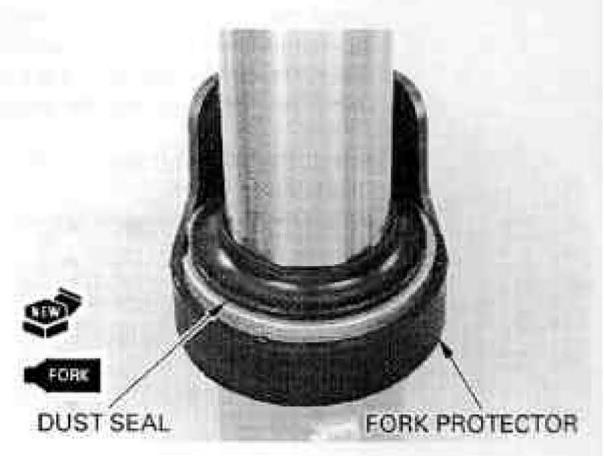
FRONT WHEEL/SUSPENSION/STEERING

Install the stopper ring into the groove in the fork slider.



Apply fork fluid to a new dust seal lip and install the dust seal into the fork slider.

Install the fork protector onto the fork slider.

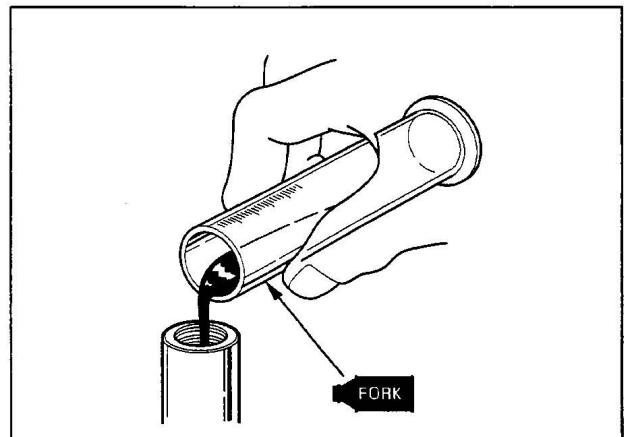


Pour the specified amount of recommended fork fluid in the fork tube.

RECOMMENDED FORK FLUID: Fork fluid

FORK FLUID CAPACITY:

$448 \pm 2.5 \text{ cm}^3$ (15.2 \pm 0.08 US oz,
15.8 \pm 0.09 Imp oz)



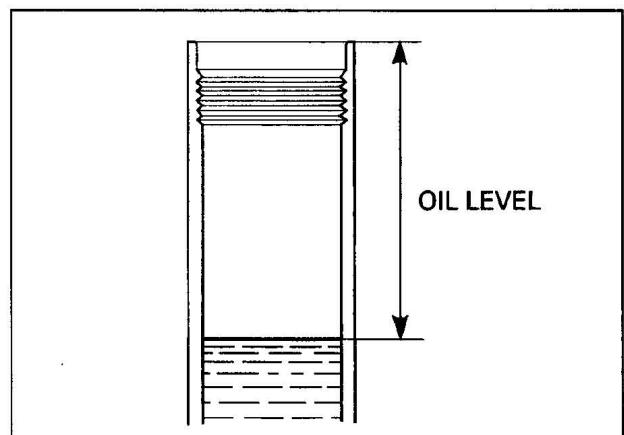
Pump the damper rod several times until the fork fluid flow out of the oil hole in the rebound damping adjuster.

Slowly pump the fork tube several times to remove trapped air.

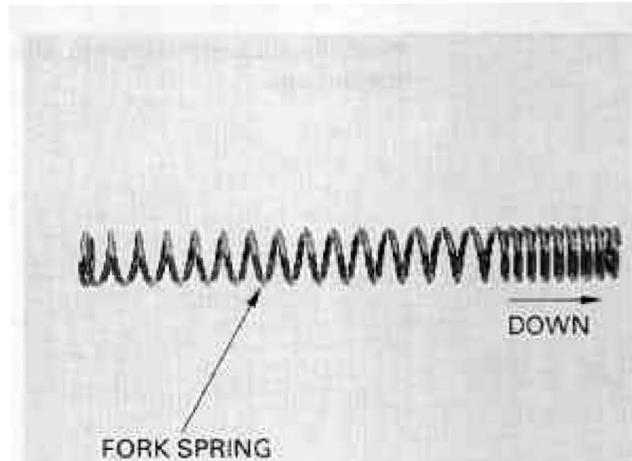
Compress the fork tube fully.

Measure the oil level from the top of the fork tube.

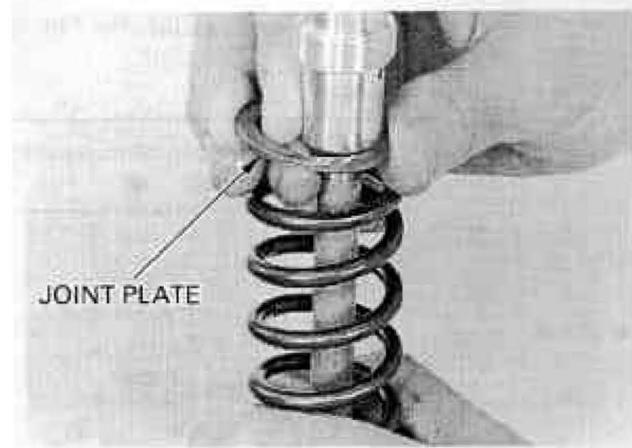
OIL LEVEL: 130 mm (5.1 in)



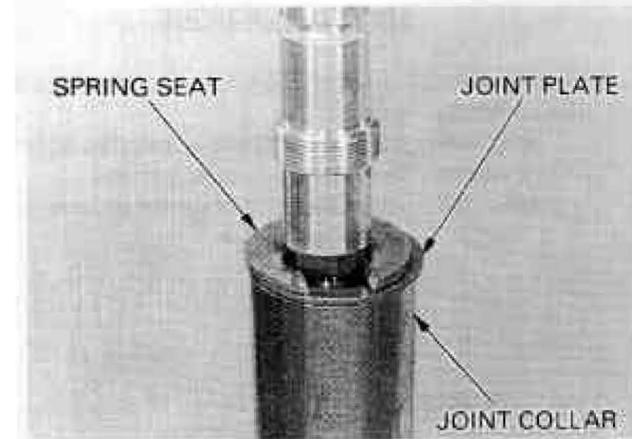
Pull up the damper rod fully.
Install the fork spring with the tightly wound end facing down.



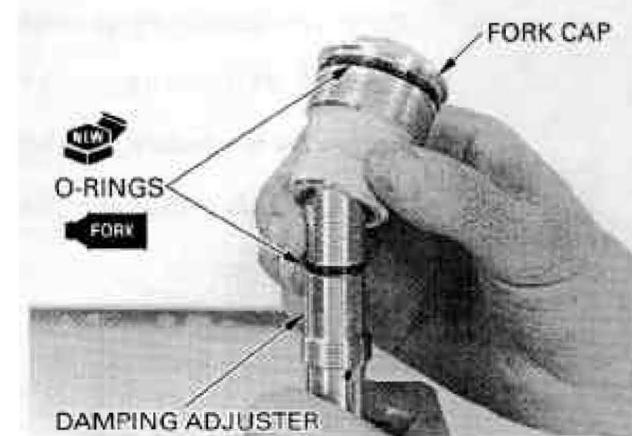
Install the joint plate.



Install the spring collar, joint plate and spring seat.



Coat new O-rings with fork fluid and install them into the grooves in the rebound damping adjuster and fork cap.
Install the fork cap onto the rebound damping adjuster.



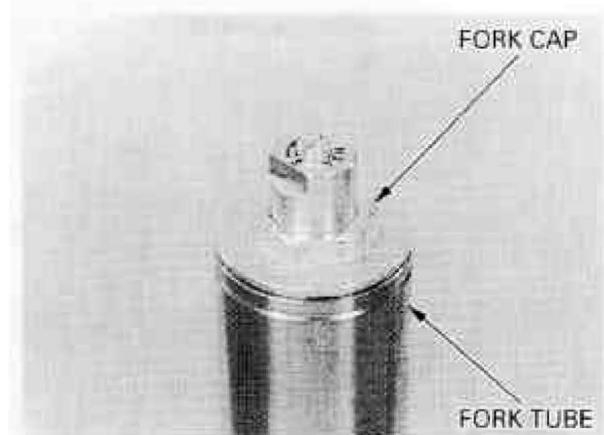
Hold the rebound damping adjuster and screw in the fork cap.



Install the fork cap into the fork tube.

NOTE:

Tighten the fork cap after installing the fork tube into the fork bridges.



INSTALLATION

- Route the cables, wire harnesses and hoses properly (page 1-18).*
- Install the fork tube into the fork bridges and handlebar.
 - Make sure that the handlebar boss is positioned in the fork top bridge groove.
 - Align the stopper ring groove with the top surface of the handlebar.



Tighten the fork top bridge pinch bolt.

TORQUE: 23 N·m (2.3 kgf·m , 17 lbf·ft)

Tighten the fork bottom bridge pinch bolt.

TORQUE: 49 N·m (5.0 kgf·m , 36 lbf·ft)



Tighten the fork cap.

TORQUE: 23 N·m (2.3 kgf·m , 17 lbf·ft)

Install the stopper ring and tighten the handlebar pinch bolt.

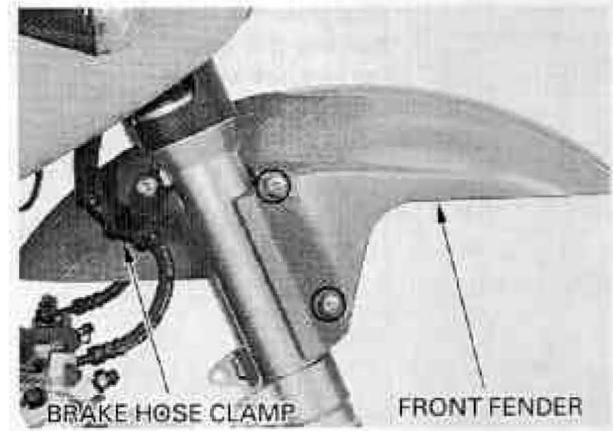


Install the front brake hose clamp onto the fork leg and tighten the bolt.

TORQUE: 10 N·m (1.0 kgf·m , 7 lbf·ft)

Install the front fender and tighten the four bolts.

Install the front wheel (page 13-10).



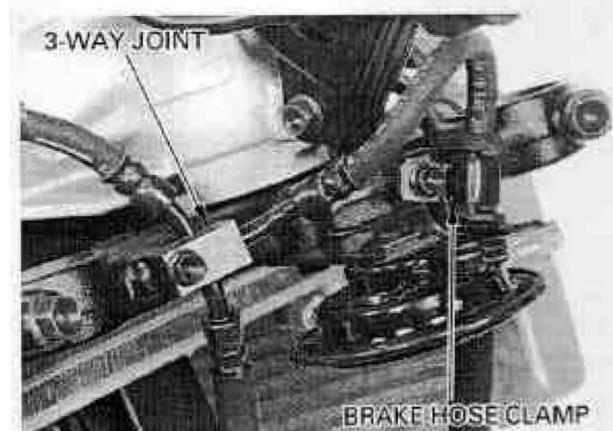
STEERING STEM

REMOVAL

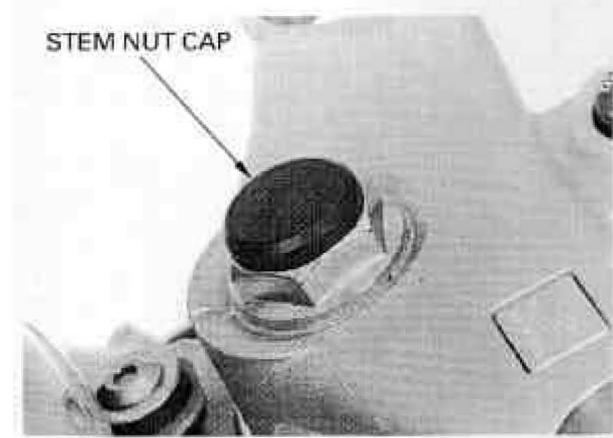
Remove the front fairing (page 2-3).

Remove the left and right forks (page 13-12).

Remove the front brake hose clamp and 3-way joint from the steering stem.

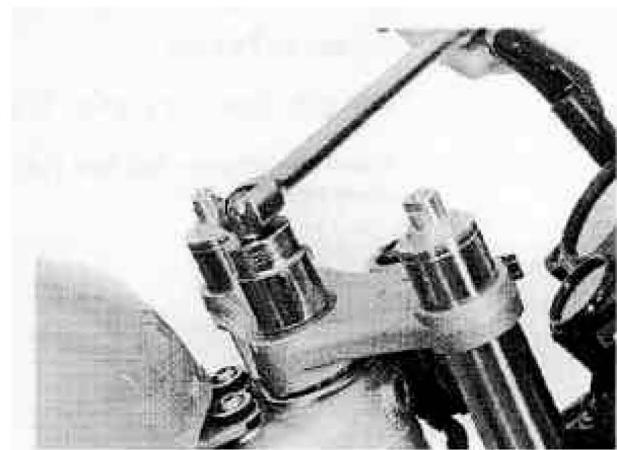


Remove the steering stem nut cap.

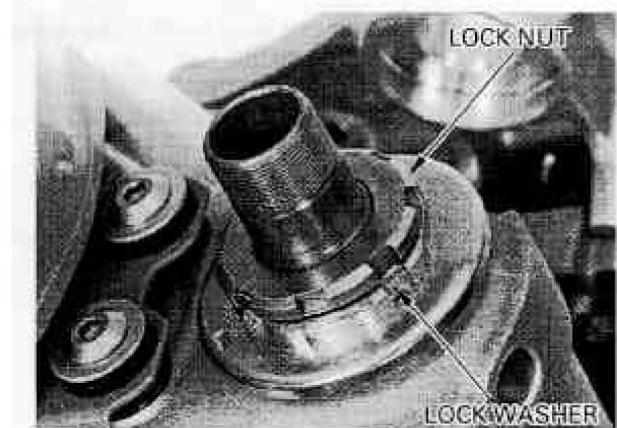


FRONT WHEEL/SUSPENSION/STEERING

Temporarily install the forks into the fork bridges.
Loosen the steering stem nut.
Remove the forks, stem nut and fork top bridge.

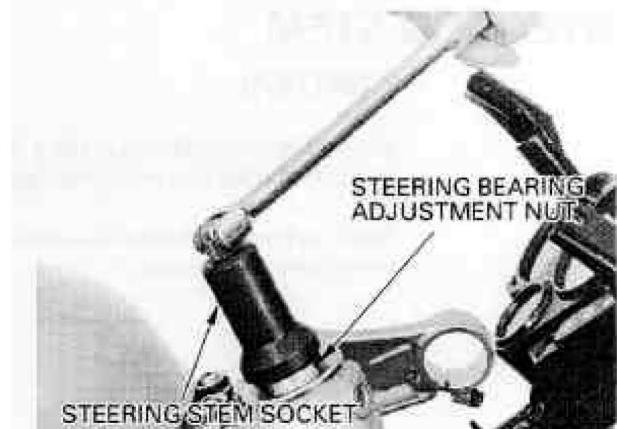


Straighten the lock washer tabs.
Remove the steering bearing adjustment nut lock nut and lock washer.

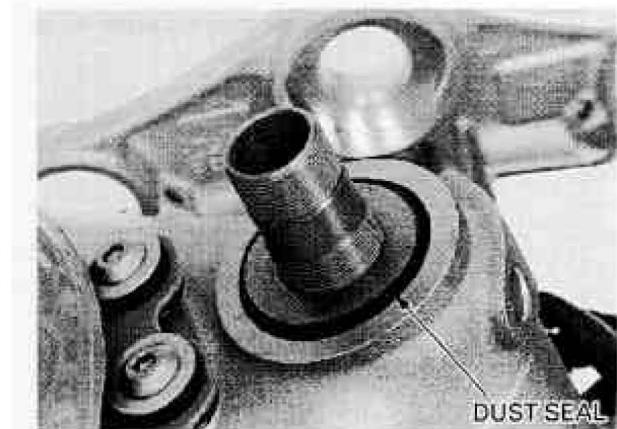


Remove the steering bearing adjustment nut using the special tool.

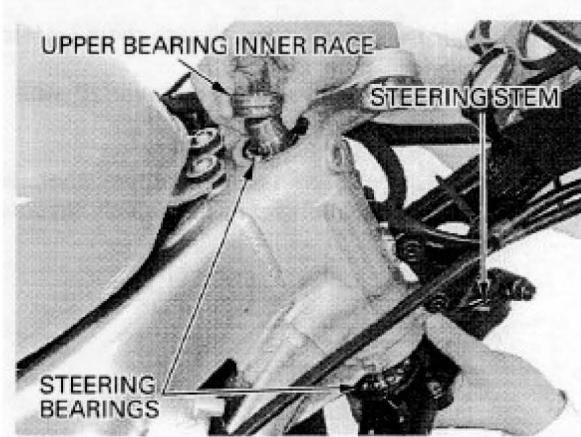
TOOL:
Steering stem socket 07916-3710101



Remove the dust seal.



Remove the upper bearing inner race, steering stem, upper and lower steering bearings.



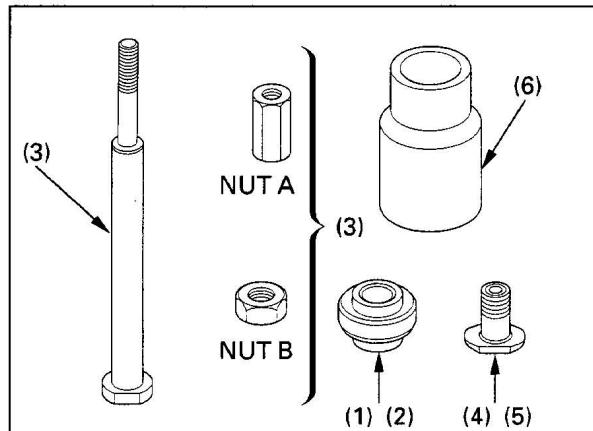
STEERING BEARING REPLACEMENT

Always replace the bearings and races as a set.

Replace the steering bearing outer races using the ball race remover set.

TOOLS:

Ball race remover set	07946-KM90001
— Driver attachment A (1)	07946-KM90100
— Driver attachment B (2)	07946-KM90200
— Driver shaft assembly (3)	07946-KM90300
— Bearing remover A (4)	07946-KM90401
— Bearing remover B (5)	07946-KM90500
— Assembly base (6)	07946-KM90600



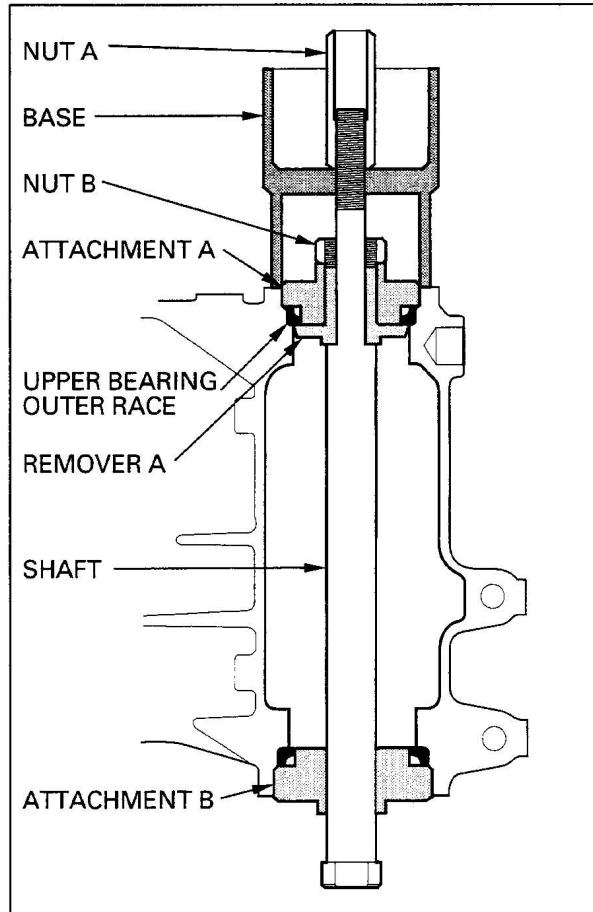
Note the installation direction of the assembly base.

Install the ball race remover into the steering head pipe as shown.

Align bearing remover A with the groove in the steering head.

Lightly tighten nut B.

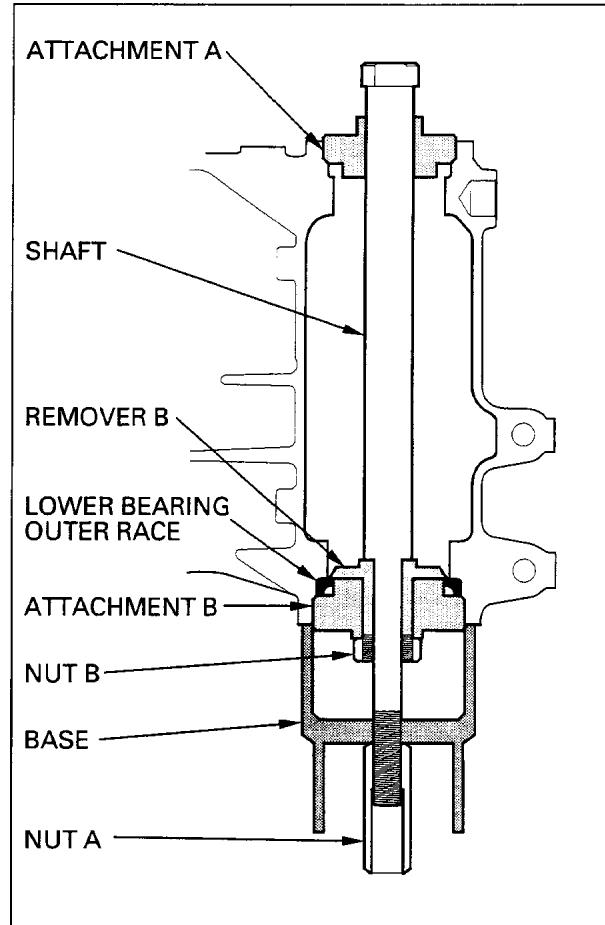
While holding the driver shaft, turn nut A gradually to remove the upper bearing outer race.



FRONT WHEEL/SUSPENSION/STEERING

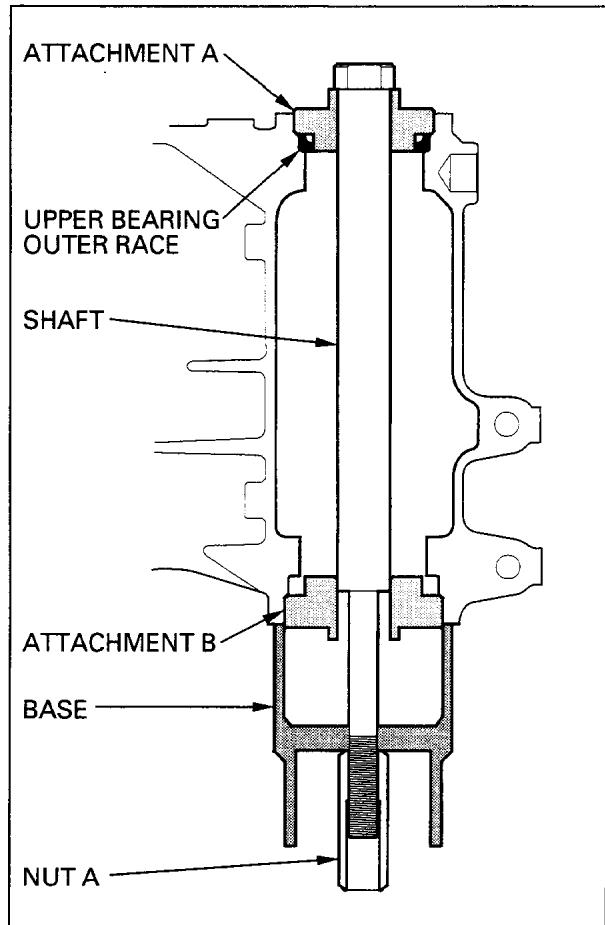
Note the installation direction of the assembly base.

Install the ball race remover into the steering head pipe as shown.
Align bearing remover B with the groove in the steering head.
Lightly tighten nut B.
While holding the driver shaft, turn nut A gradually to remove the lower bearing outer race.



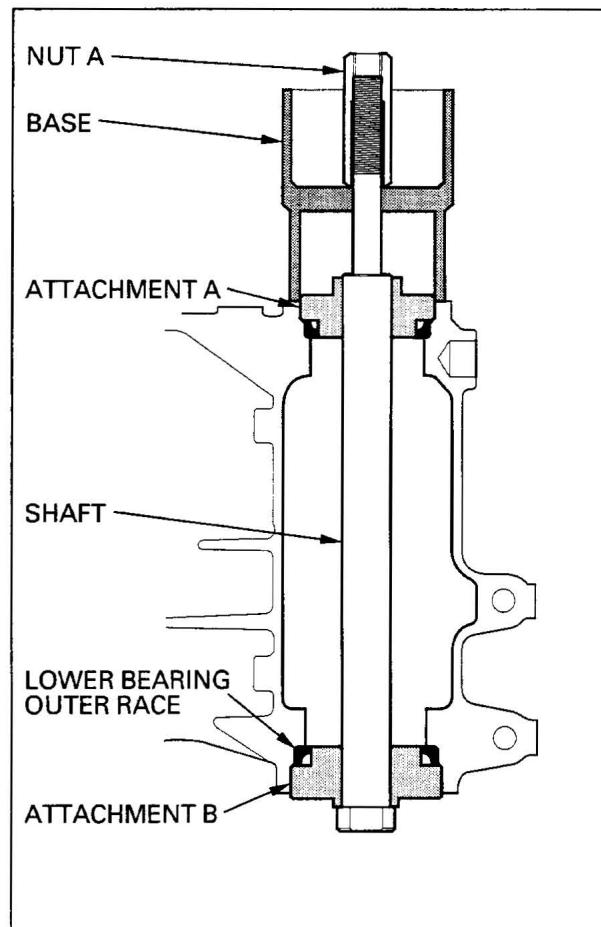
Install a new upper bearing outer race and the ball race remover as shown.

While holding the driver shaft, turn nut A gradually until the groove in driver attachment A aligns with the upper end of the steering head. This will allow you to install the upper bearing outer race.



Install a new lower bearing outer race and the ball race remover as shown.

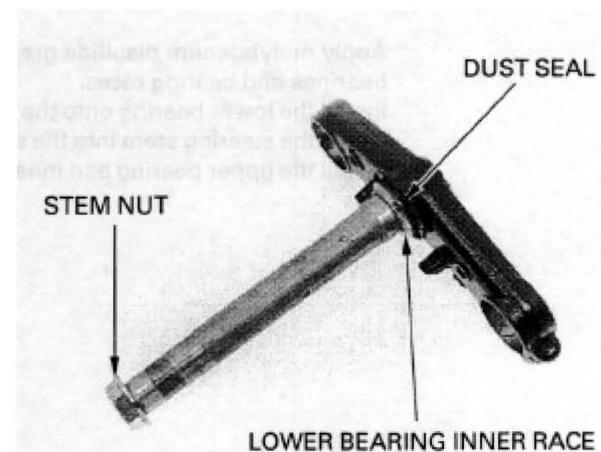
While holding the driver shaft, turn nut A gradually until the groove in driver attachment B aligns with the lower end of the steering head. This will allow you to install the upper bearing outer race.



Install the stem nut onto the stem to prevent the threads from being damage when removing the lower bearing inner race from the stem.

Remove the lower bearing inner race with a chisel or equivalent tool, being careful not to damage the stem.

Remove the dust seal.



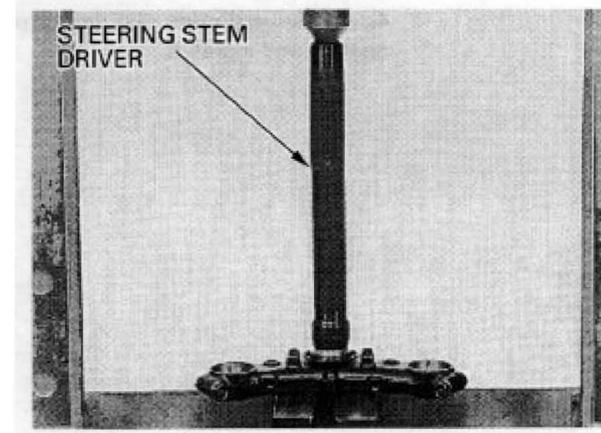
Apply molybdenum disulfide grease to a new dust seal lip and install it to the steering stem.

Press a new lower bearing inner race onto the steering stem using the special tool.

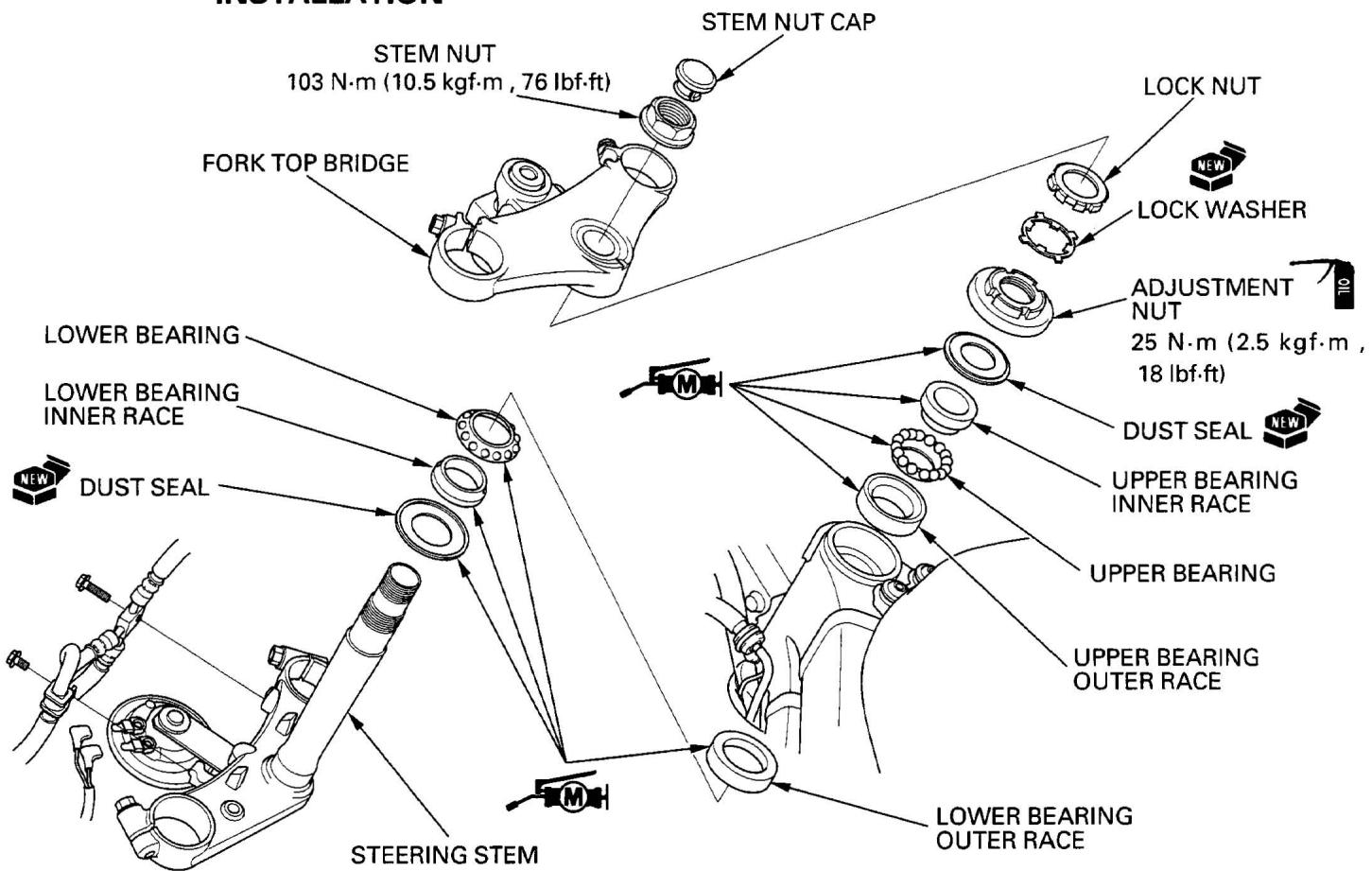
TOOL:

Steering stem driver

07946-MB00000



INSTALLATION

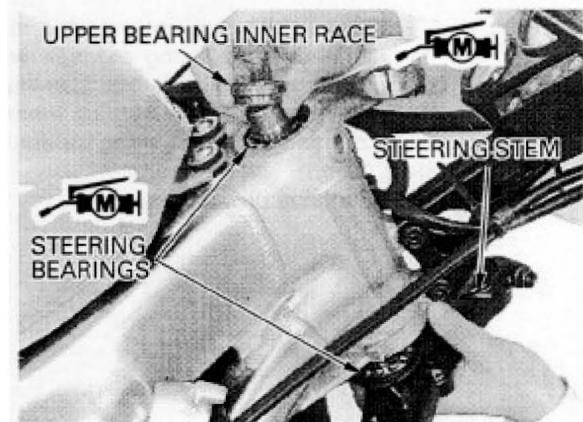


Apply molybdenum disulfide grease to the steering bearings and bearing races.

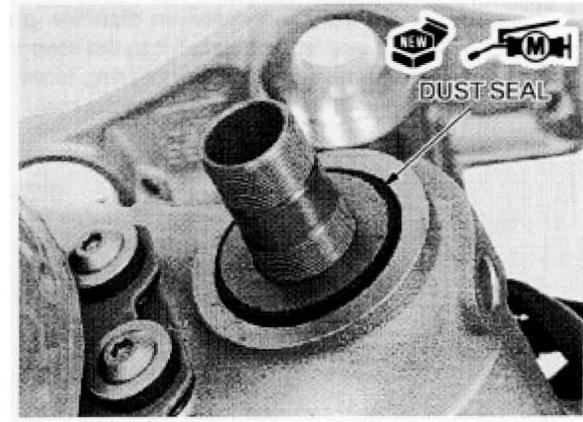
Install the lower bearing onto the steering stem.

Install the steering stem into the steering head pipe.

Install the upper bearing and inner race.



Apply molybdenum disulfide grease to a new dust seal lip and install it.



Apply oil to the bearing adjustment nut threads.
Install and tighten the steering stem adjustment nut.

TOOL:

Steering stem socket 07916-3710101

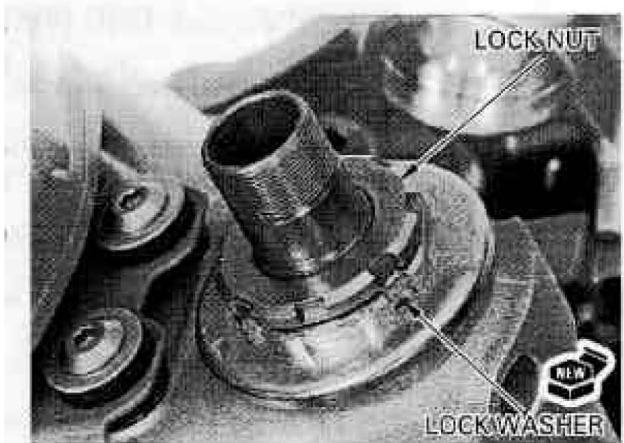
TORQUE: 25 N·m (2.5 kgf·m , 18 lbf·ft)

Turn the steering stem right and left, lock-to-lock at least five times to seat the bearings.
Retighten the steering stem adjustment nut to the same torque.



Install a new lock washer and bend the two opposite tabs down into the grooves in the adjustment nut.

Install and finger tighten the lock nut all the way.
Hold the steering adjustment nut and further tighten the lock nut, within 90 degrees, to align its grooves with the tabs of the lock washer.
Bend up the lock washer tabs into the grooves of the lock nut.



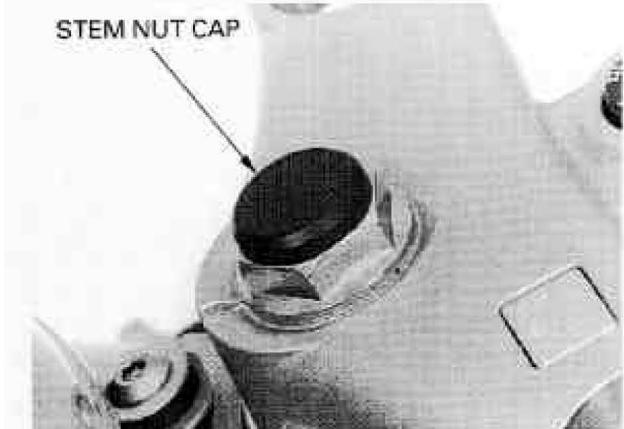
Install the fork top bridge and steering stem nut.
Temporarily install the forks into the fork bridges.
Tighten the steering stem nut.

TORQUE: 103 N·m (10.5 kgf·m , 76 lbf·ft)

Remove the forks.
Make sure that the steering stem moves smoothly, without play or binding.



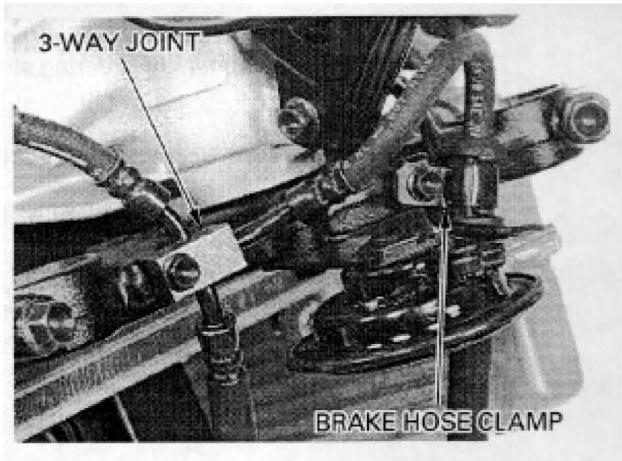
Install the steering stem nut cap.



Install the front brake hose 3-way joint and clamp, and tighten the bolts.

TORQUE: 10 N·m (1.0 kgf·m , 7 lbf·ft)

Install the forks (page 13-20).
Install the front fairing (page 2-3).



STEERING BEARING PRELOAD

Remove the front fairing (page 2-3).

Support the motorcycle securely using safety stands or a hoist and raise the front wheel off the ground.

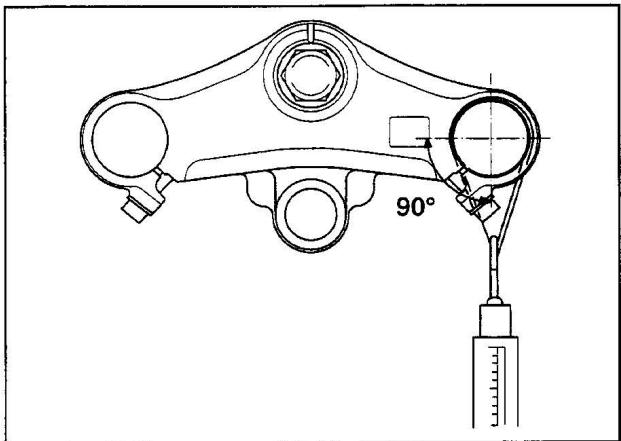
Position the steering stem to the straight ahead position.

Hook a spring scale to the fork tube between the fork top and bottom bridges.

Make sure that there is no cable, wire harness or hose interference.

Pull the spring scale keeping it right angle to the steering stem.

Read the scale at the point where the steering stem just starts to move.

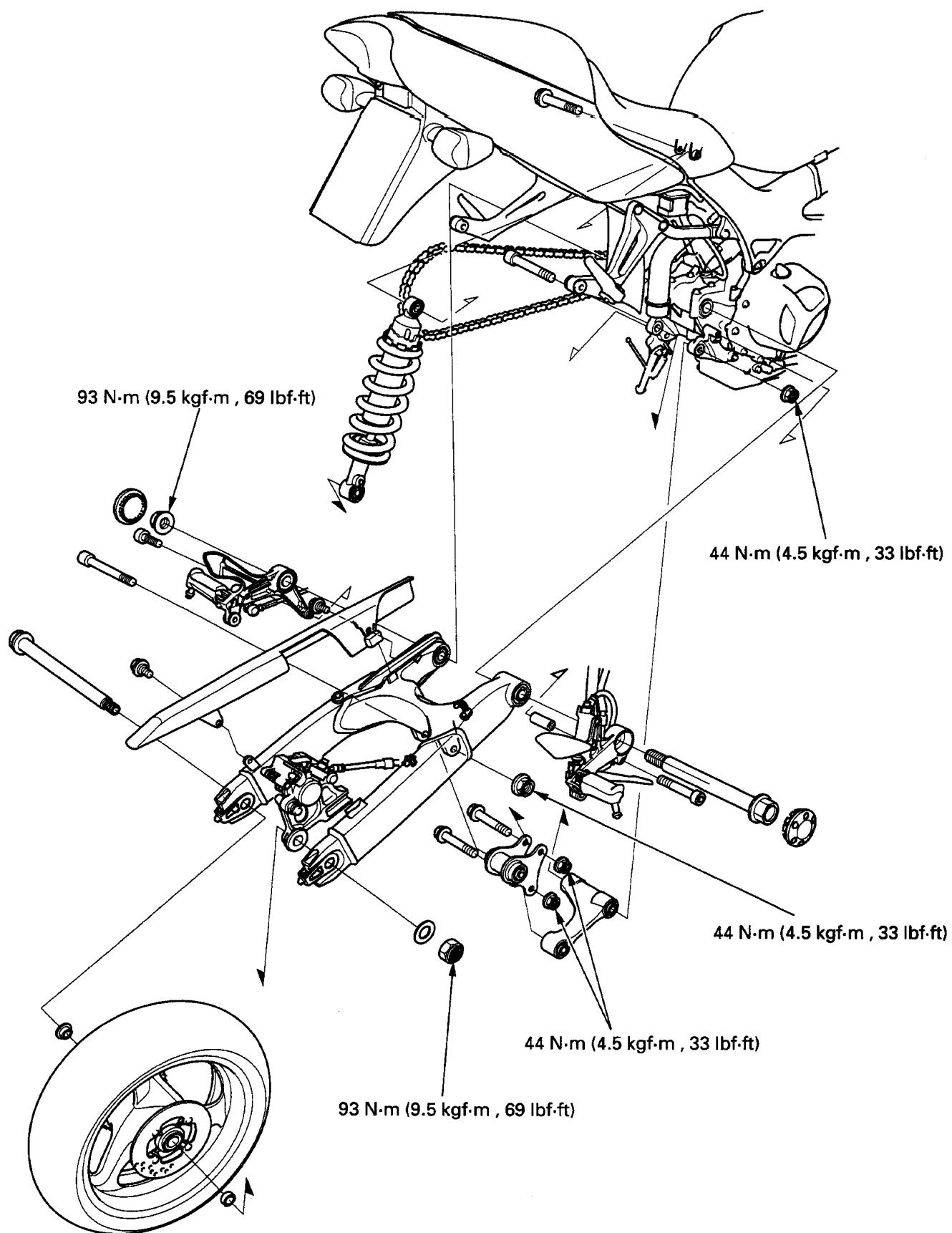


STEERING BEARING PRELOAD:

1.0—1.6 kgf (2.2—3.5 lbf)

If the readings do not fall within the limits, readjust the steering bearing adjustment.

Install the front fairing (page 2-3).



14. REAR WHEEL/SUSPENSION

SERVICE INFORMATION	14-1	SHOCK ABSORBER	14-8
TROUBLESHOOTING	14-2	SUSPENSION LINKAGE	14-11
REAR WHEEL	14-3	SWINGARM	14-15

SERVICE INFORMATION

GENERAL

WARNING

- *Riding on damaged rims impairs safe operation of the vehicle.*
- *A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.*
- *The shock absorber contains nitrogen gas under high pressure. Do not allow fire or heat near the shock absorber.*
- *Before disposal of the shock absorber, release the nitrogen.*
- *The damper unit is filled with nitrogen gas under high pressure, do not try to disassemble.*

- A hoist or equivalent is required to support the motorcycle when servicing the rear wheel and suspension.
- Use genuine Honda replacement bolts and nuts for all suspension pivots and mounting points.
- Refer to section 15 for brake system service.

SPECIFICATIONS

Unit: mm (in)

ITEM	STANDARD	SERVICE LIMIT
Minimum tire tread depth	—	2.0 (0.08)
Cold tire pressure	Driver only 290 kPa (2.90 kgf/cm ² , 42 psi) Driver and passenger 290 kPa (2.90 kgf/cm ² , 42 psi)	—
Axle runout	—	0.20 (0.008)
Wheel rim runout	Radial 2.0 (0.08) Axial 2.0 (0.08)	—
Wheel balance weight	—	60 g (2.1 oz) max.

14

TORQUE VALUES

Rear axle nut	93 N·m (9.5 kgf·m, 69 lbf·ft)	
Rear brake disc bolt	42 N·m (4.3 kgf·m, 31 lbf·ft)	ALOC bolt
Final driven sprocket bolt	108 N·m (11.0 kgf·m, 80 lbf·ft)	U-nut
Shock absorber upper mounting bolt	44 N·m (4.5 kgf·m, 33 lbf·ft)	ALOC bolt
Shock absorber lower mounting nut	44 N·m (4.5 kgf·m, 33 lbf·ft)	U-nut
Shock arm-to-swingarm nut	44 N·m (4.5 kgf·m, 33 lbf·ft)	U-nut
Shock arm-to-shock link nut	44 N·m (4.5 kgf·m, 33 lbf·ft)	U-nut
Shock link-to-bracket nut	44 N·m (4.5 kgf·m, 33 lbf·ft)	U-nut
Swingarm pivot nut	93 N·m (9.5 kgf·m, 69 lbf·ft)	U-nut
Drive chain slider bolt	9 N·m (0.9 kgf·m, 6.5 lbf·ft)	ALOC bolt
Rear brake hose clamp screw	4 N·m (0.43 kgf·m, 3.1 lbf·ft)	ALOC screw

TOOLS

Bearing remover shaft	07746-0050100
Bearing remover head, 20 mm	07746-0050600
Driver	07749-0010000
Attachment, 42 × 47 mm	07746-0010300
Pilot, 20 mm	07746-0040500
Attachment, 52 × 55 mm	07746-0010400
Pilot, 22 mm	07746-0041000
Pin driver	07GMD-KT80100
Attachment, 24 × 26 mm	07746-0010700
Pilot, 17 mm	07746-0040400
Driver shaft	07946-MJ00100
Needle bearing remover	07HMC-MR70100
Attachment, 32 × 35 mm	07746-0010100
Attachment, 37 × 40 mm	07746-0010200
Pilot, 28 mm	07746-0041100
Bearing remover, 17 mm	07936-3710300
Bearing remover handle	07936-3710100
Sliding weight	07741-0010201

TROUBLESHOOTING

Soft suspension

- Weak shock absorber spring
- Incorrect suspension adjustment
- Oil leakage from damper unit
- Insufficient tire pressure

Hard suspension

- Incorrect suspension adjustment
- Damaged rear suspension pivot bearings
- Bent damper rod
- Tire pressure too high

Rear wheel wobbling

- Bent rim
- Worn or damaged rear wheel bearings
- Faulty rear tire
- Unbalanced rear tire and wheel
- Insufficient rear tire pressure
- Faulty swingarm pivot bearings

Rear wheel turns hard

- Faulty rear wheel bearings
- Bent rear axle
- Rear brake drag
- Drive chain too tight

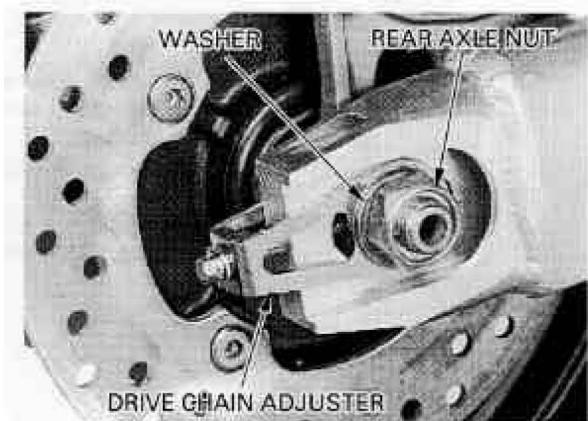
Rear suspension noise

- Faulty rear shock absorber
- Loose rear suspension fasteners
- Worn rear suspension pivot bearings

REAR WHEEL

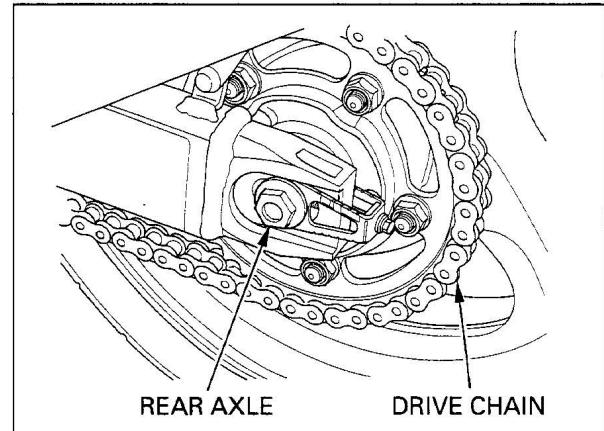
REMOVAL

Loosen the drive chain adjusters and rear axle nut.
Raise the rear wheel off the ground and support the motorcycle securely with a hoist or equivalent.
Remove the rear axle nut and washer.

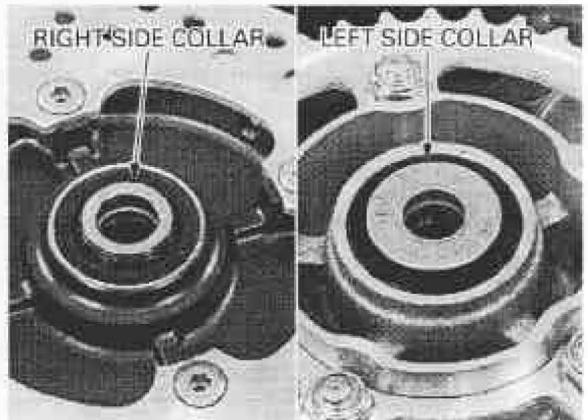


Push the rear wheel forward and derail the drive chain from the final driven sprocket.

Remove the rear axle and the rear wheel.



Remove the side collars.

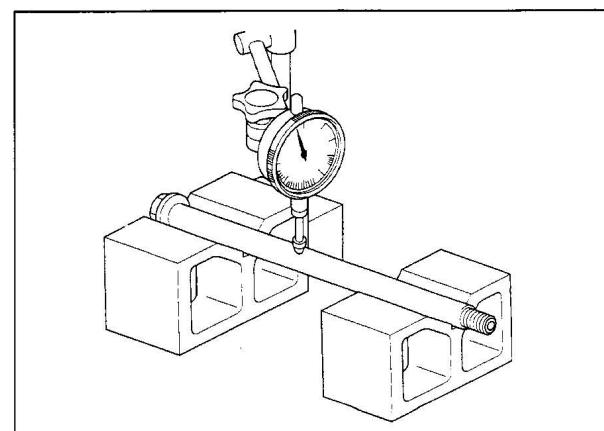


INSPECTION

AXLE

Place the axle in V-blocks and measure the runout.
Actual runout is 1/2 the total indicator reading.

SERVICE LIMIT: 0.20 mm (0.008 in)

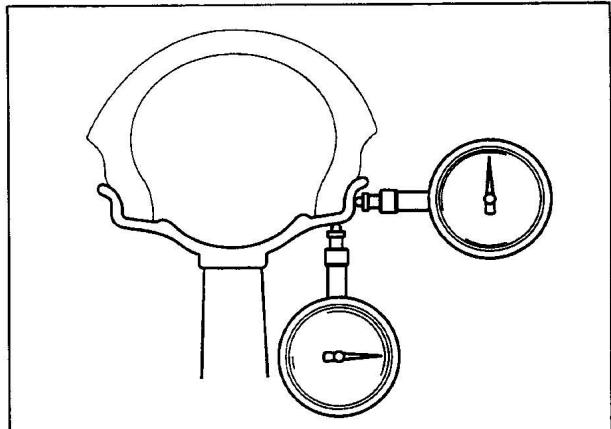


REAR WHEEL/SUSPENSION

WHEEL

Check the rim runout by placing the wheel in a truing stand. Spin the wheel slowly and read the runout using a dial indicator. Actual runout is 1/2 the total indicator reading.

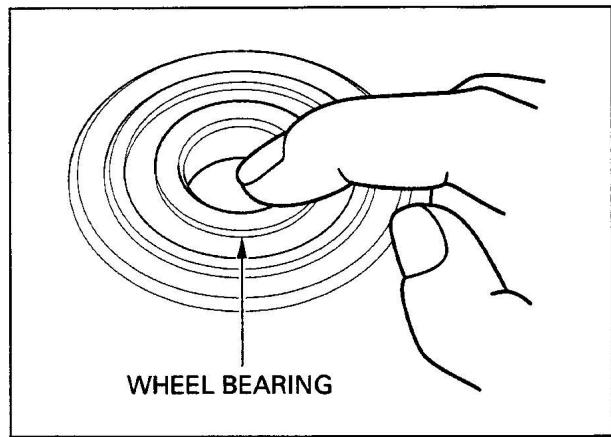
SERVICE LIMITS: RADIAL: 2.0 mm (0.08 in)
AXIAL: 2.0 mm (0.08 in)



WHEEL BEARING

Turn the inner race of each bearing with your finger. The bearings should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the hub.

Replace the wheel bearings in pairs. Remove and discard the bearings if the races do not turn smoothly and quietly, or if they fit loosely in the hub.

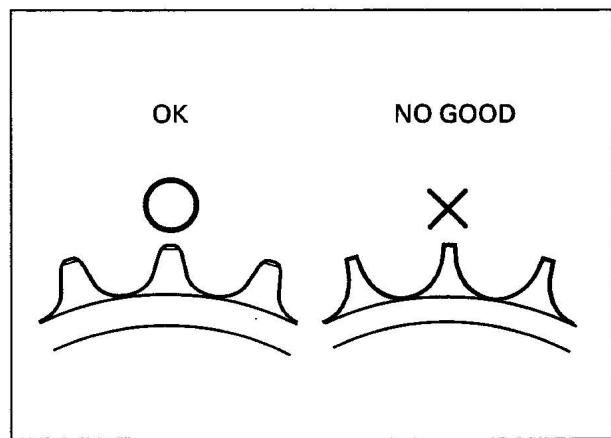


DRIVEN SPROCKET

Check the condition of the driven sprocket teeth. Replace the sprocket if worn or damaged.

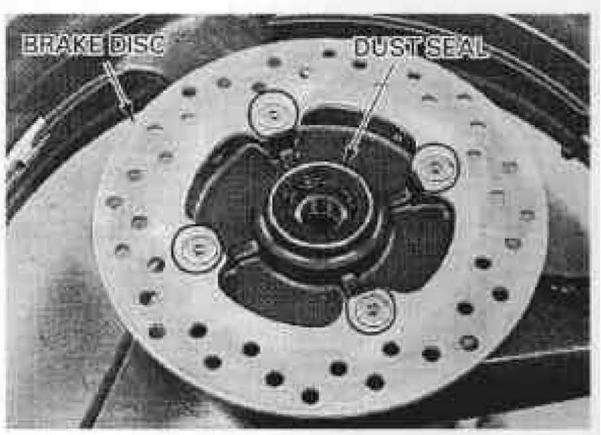
NOTE:

- If the driven sprocket requires replacement, inspect the drive chain and drive sprocket.
- Never install a new drive chain on a worn sprocket or a worn chain on new sprockets. Both chain and sprocket must be in good condition, or the replacement chain or sprocket will wear rapidly.



DISASSEMBLY

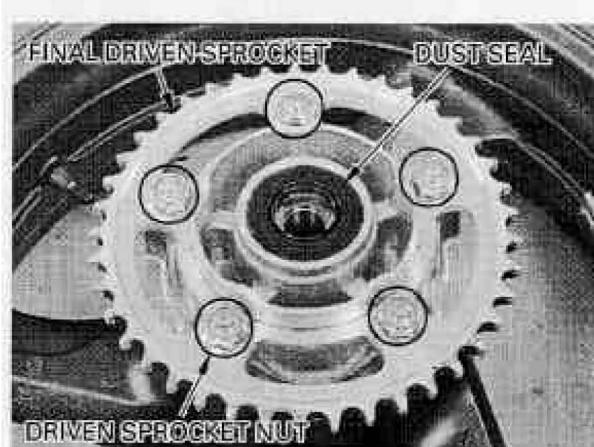
Remove the right dust seal.
Remove the bolts and brake disc.



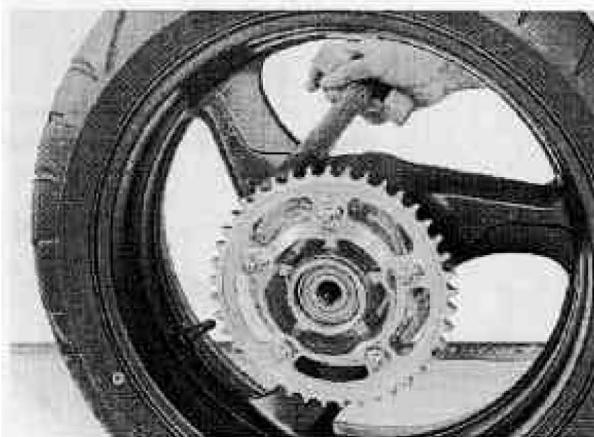
Remove the left dust seal.

NOTE:

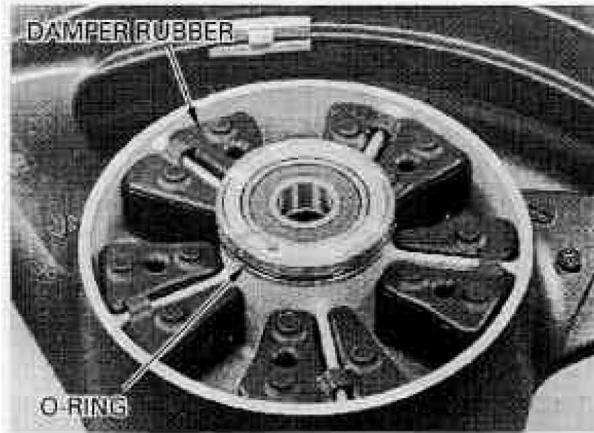
If you will replace the final driven sprocket, loosen the driven sprocket nuts.



Remove the final driven flange assembly from the left wheel hub.



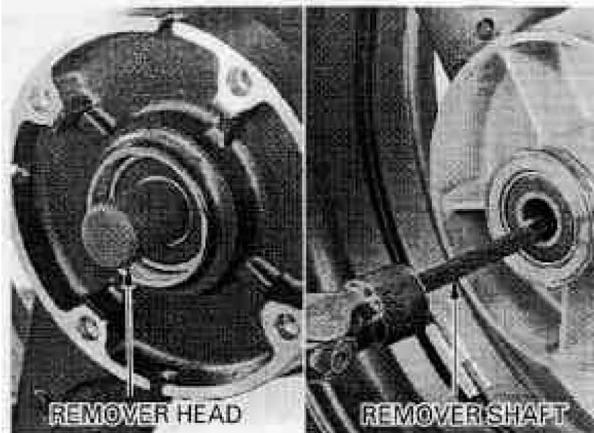
Remove the damper rubbers and O-ring.



*Replace the wheel bearings in pairs.
Do not reuse old bearings.*
Install the bearing remover head into the bearing.
From opposite side, install the bearing remover shaft and drive the bearing out of the wheel hub.
Remove the distance collar and drive out the other bearing.

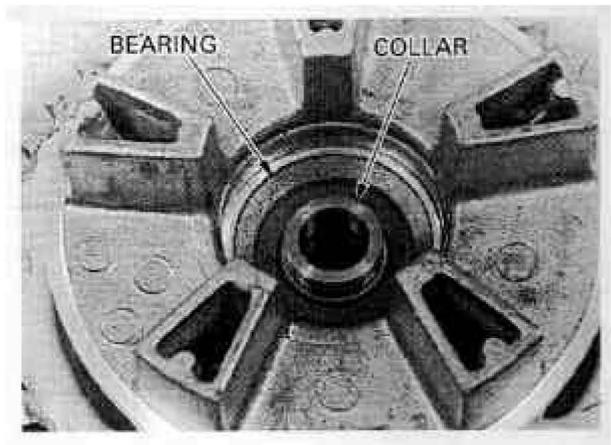
TOOLS:

Bearing remover shaft 077460050100
Bearing remover head, 20 mm 07746-0050600



Remove the driven flange collar.

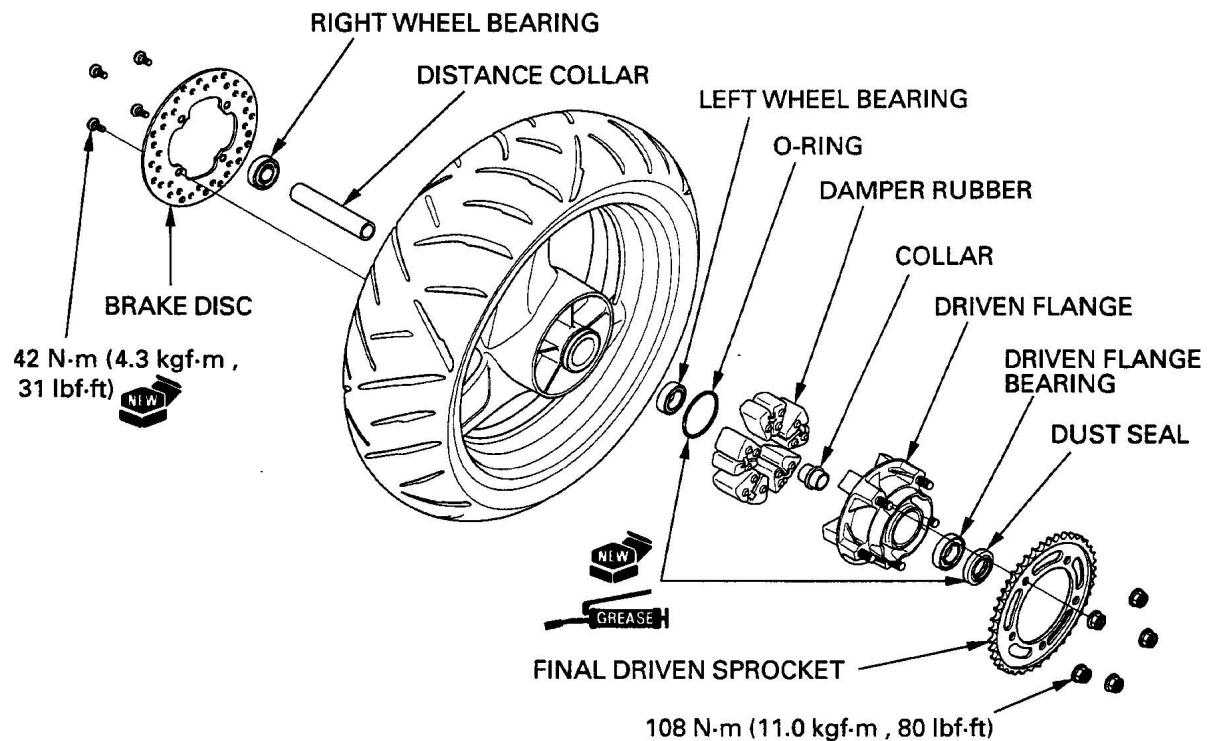
Remove the driven flange bearing.



ASSEMBLY

NOTE:

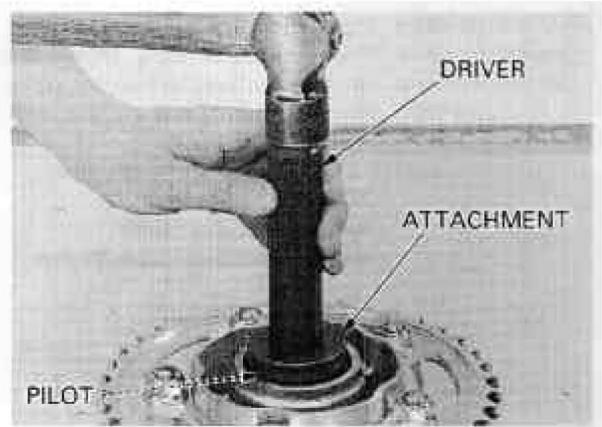
Refer to page 13-10 for wheel balance.



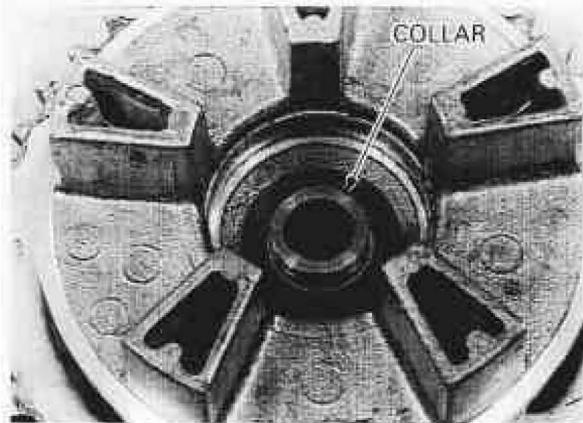
Drive in a new driven flange bearing squarely with the marking side facing up until it is fully seated, using the special tools.

TOOLS:

Driver	07749-0010000
Attachment, 52 × 55 mm	07746-0010400
Pilot, 22 mm	07746-0041000



Install the driven flange collar.



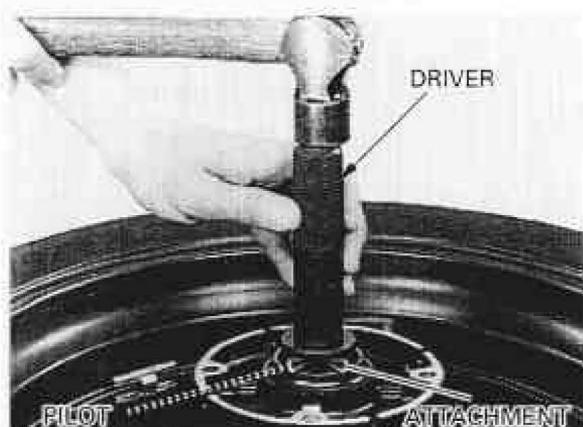
Drive in a new right bearing squarely with the marking side facing up until it is fully seated, using the special tools.

Install the distance collar.

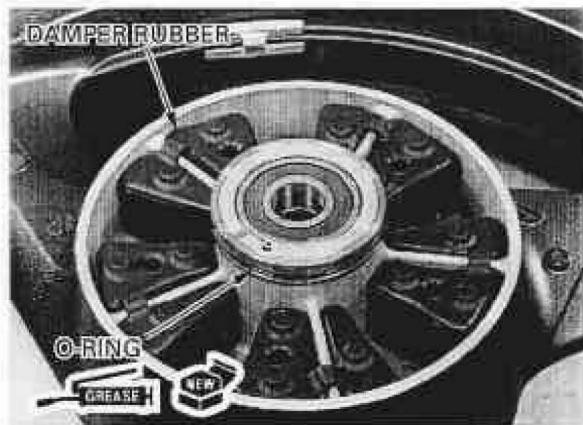
Drive in a new left bearing squarely with the marking side facing up until it is fully seated.

TOOLS:

Driver	07749-0010000
Attachment, 42 × 47 mm	07746-0010300
Pilot, 20 mm	07746-0040500



Install the damper rubbers into the left wheel hub.
Coat a new O-ring with grease and install it into the left wheel hub groove.



Install the driven flange assembly into the left wheel hub.

When the driven sprocket is replaced, install a new sprocket and tighten the nuts.

TORQUE: 108 N·m (11.0 kgf·m , 80 lbf·ft)

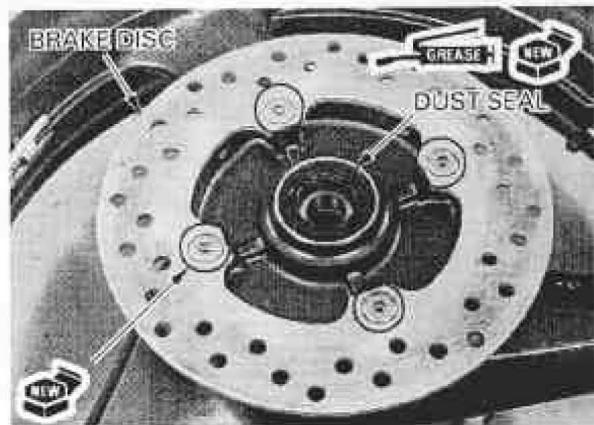
Apply grease to a new dust seal lip and install it into the driven flange.



Install the brake disc onto the right wheel hub.
Install new disc bolts and tighten them in a criss-cross pattern in 2 or 3 steps.

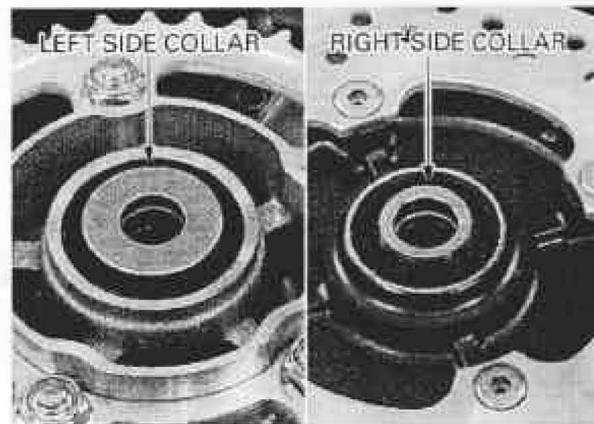
TORQUE: 42 N·m (4.3 kgf·m , 31 lbf·ft)

Apply grease to a new dust seal lip and install it into the right wheel hub.



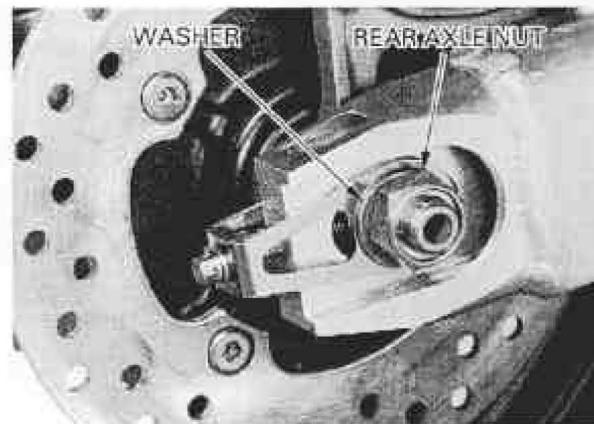
INSTALLATION

Install the side collars.



Make sure that the rear brake caliper is in position.
Place the rear wheel in the swingarm and install the drive chain over the driven sprocket.
Insert the rear axle through the swingarm, wheel and caliper bracket.
Install the washer and axle nut.

Adjust the drive chain slack (page 3-14).



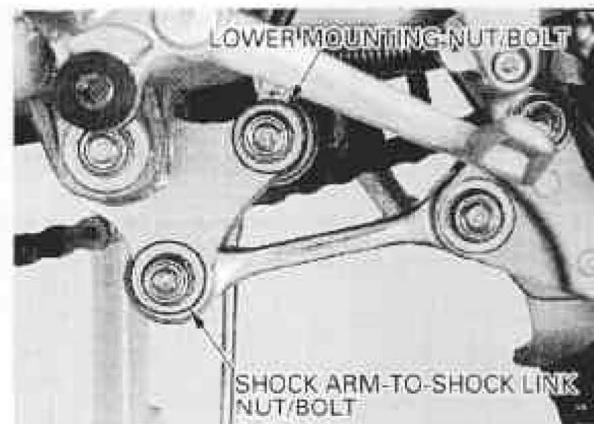
SHOCK ABSORBER

REMOVAL

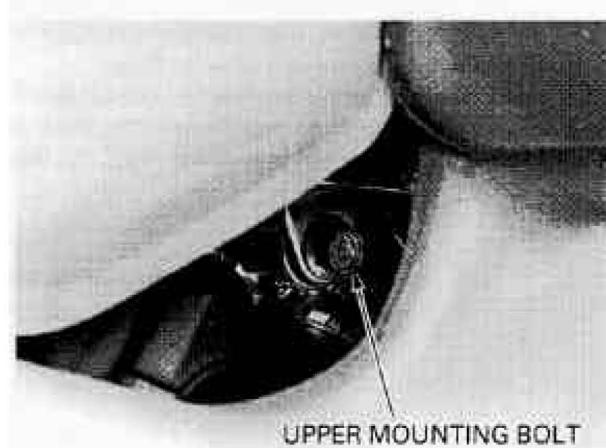
Support the motorcycle securely with a hoist or equivalent.

Remove the exhaust pipe (page 2-5).

Remove the shock arm-to-shock link nut and bolt.
Remove the shock absorber lower mounting nut and bolt.

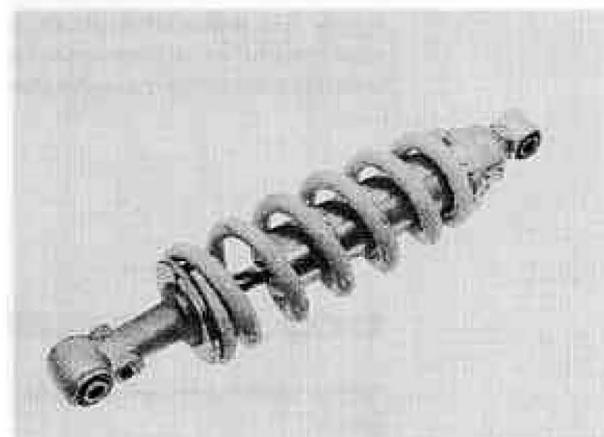


Remove the shock absorber upper mounting bolt and the shock absorber.



INSPECTION

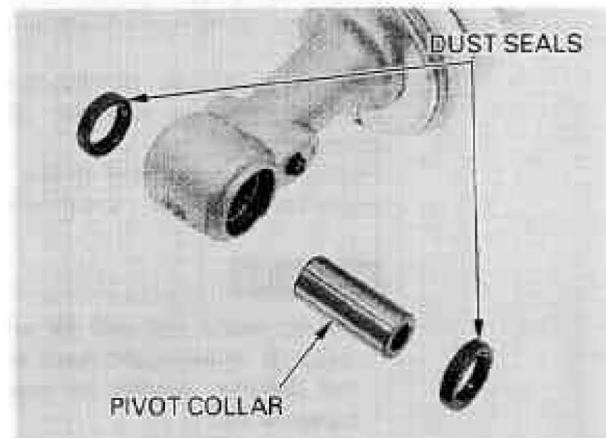
Check the damper unit for leakage or other damage.
Check the upper joint bushing for wear or damage.
Replace the shock absorber assembly if necessary.



Remove the lower joint pivot collar.
Check the dust seals and needle bearing for wear or damage; replace them if necessary.

NEEDLE BEARING REPLACEMENT

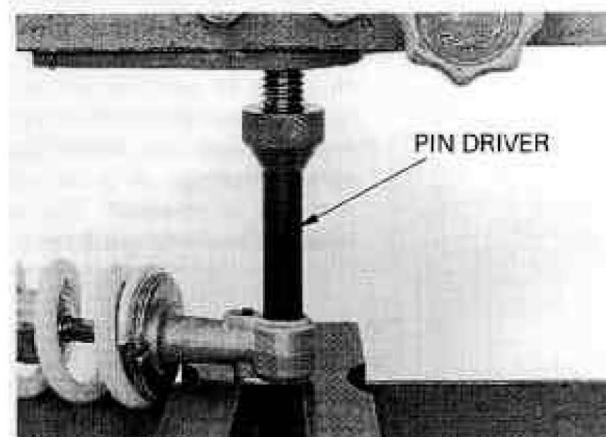
Remove the dust seals.



Set the lower joint in a hydraulic press with the rebound damping adjuster facing up when pressing in and out the bearing.

Press the needle bearing out of the lower joint using the special tool.

TOOL
Pin driver 07GMD-KT80100



Press in the bearing with the marking side facing up. Apply molybdenum disulfide grease to the needle rollers of a new bearing.

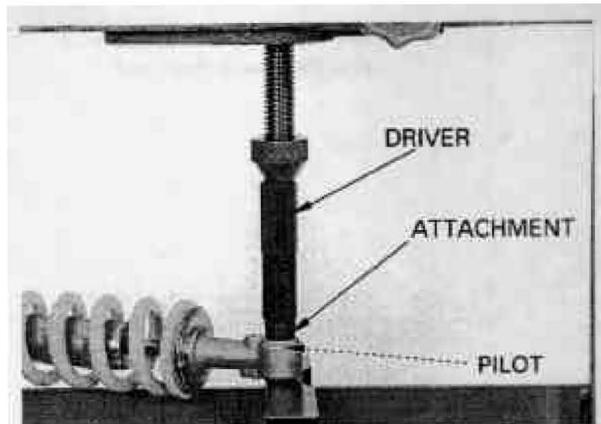
Carefully press the needle bearing in the lower joint until the depth from the lower joint outer surface is 5.0–5.5 mm (0.20–0.22 in), using the special tool.

TOOLS:

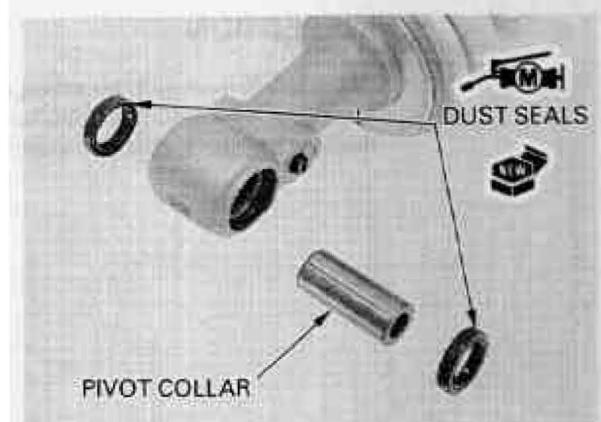
Driver 07749-0010000

Attachment, 24 × 26 mm 07746-0010700

Pilot, 17 mm 07746-0040400



Apply molybdenum disulfide grease to new dust seal lips and install them into the lower joint. Install the lower joint pivot collar.



SHOCK ABSORBER DISPOSAL

Center punch the damper case to mark the drilling point.

DRILLING POINT:

30.0 mm (1.18 in) from top surface

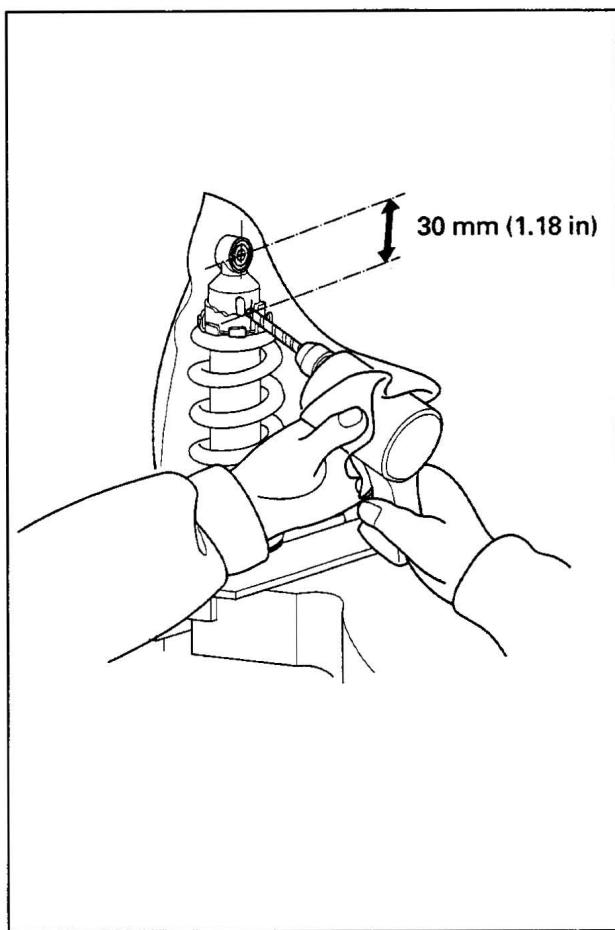
Wrap the shock absorber inside a plastic bag. Support the shock absorber upright in a vise as shown.

Through the open end of the bag, insert a drill motor with a sharp 2–3 mm (5/64–1/8 in) drill bit.

WARNING

- *Do not use a dull drill bit which could cause a build-up of excessive heat and pressure inside the damper, leading to explosion and severe personal injury.*
- *The shock absorber contains nitrogen gas and oil under high pressure. Do not drill any further down the damper case than the measurement given above, or you may drill into the oil chamber; oil escaping under high pressure may cause serious personal injury.*
- *Always wear eye protection to avoid getting metal shavings in your eyes when the gas pressure is released. The plastic bag is only intended to shield you from the escaping gas.*

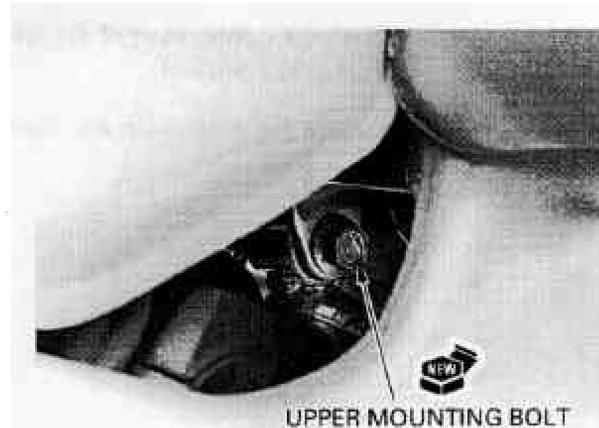
Hold the bag around the drill motor and briefly run the drill motor inside the bag; this will inflate the bag with air from the motor and help keep the bag from the getting caught in the bit when you start.



INSTALLATION

Install the shock absorber in the frame with the rebound damping adjuster facing to the right.
Install and tighten a new upper mounting bolt.

TORQUE: 44 N·m (4.5 kgf·m , 33 lbf·ft)



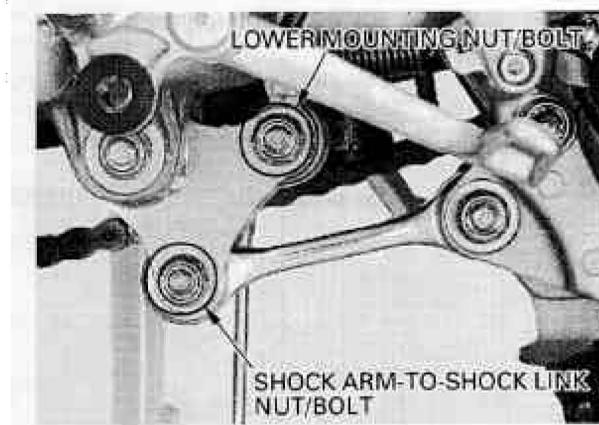
Install the lower mounting bolt and tighten the nut.

TORQUE: 44 N·m (4.5 kgf·m , 33 lbf·ft)

Install the shock arm-to-shock link bolt and tighten the nut.

TORQUE: 44 N·m (4.5 kgf·m , 33 lbf·ft)

Install the exhaust pipe and mufflers (page 2-6).



SUSPENSION LINKAGE

REMOVAL

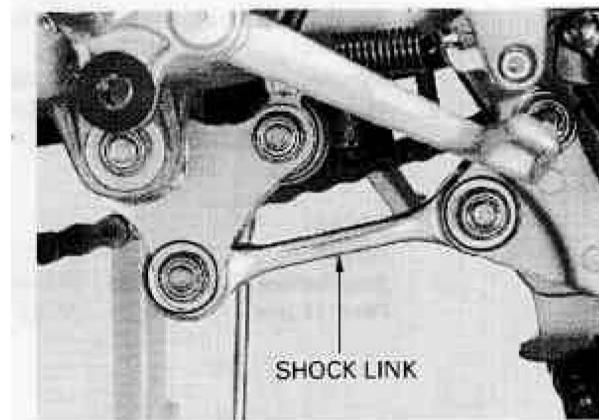
Support the motorcycle securely with a hoist or equivalent.

Remove the exhaust pipe (page 2-5).

Remove the following:

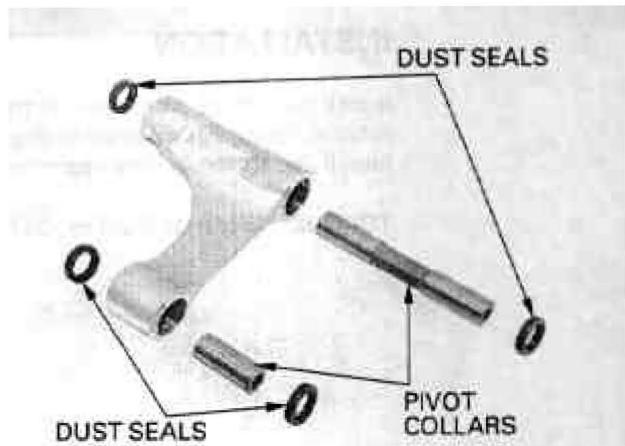
- shock arm-to-shock link nut and bolt
- shock link-to-bracket nut and bolt
- shock link

- shock arm-to-swingarm nut and bolt
- shock absorber lower mounting nut and bolt
- shock arm



SHOCK LINK PIVOT BEARING REPLACEMENT

Remove the pivot collars and dust seals.

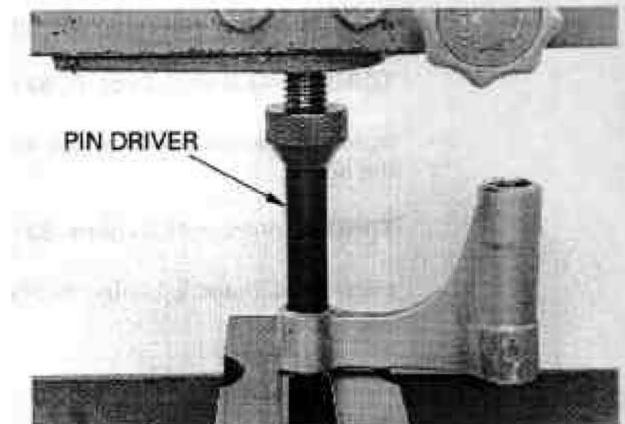


SHOCK ARM SIDE

Press the needle bearing out of the shock link pivot using the special tool.

TOOL:
Pin driver

07GMD-KT80100



Press in the bearing with the marking side facing up. Apply molybdenum disulfide grease to the needle rollers of a new bearing.

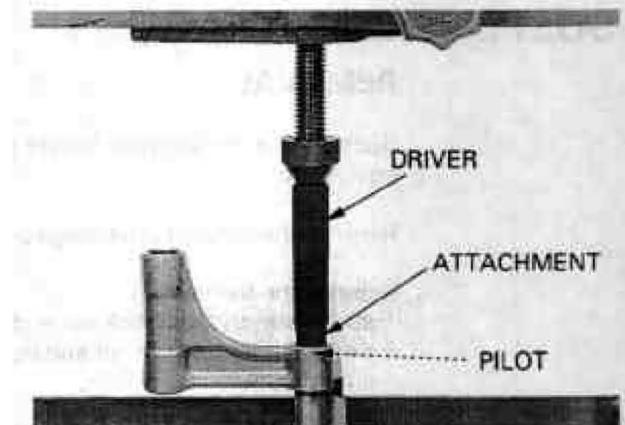
Carefully press the needle bearing in the shock link pivot until the depth from the shock link outer surface is 5.2–5.7 mm (0.20–0.22 in), using the special tool.

TOOLS:

Driver 07749-0010000

Attachment, 24 × 26 mm 07746-0010700

Pilot, 17 mm 07746-0040400



SHOCK LINK BRACKET SIDE

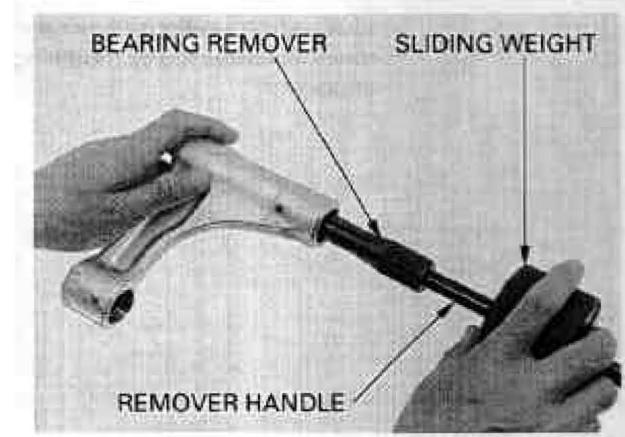
Remove the needle bearings from the shock link pivot using the special tools.

TOOLS:

Bearing remover, 17 mm 07936-3710300

Bearing remover handle 07936-3710100

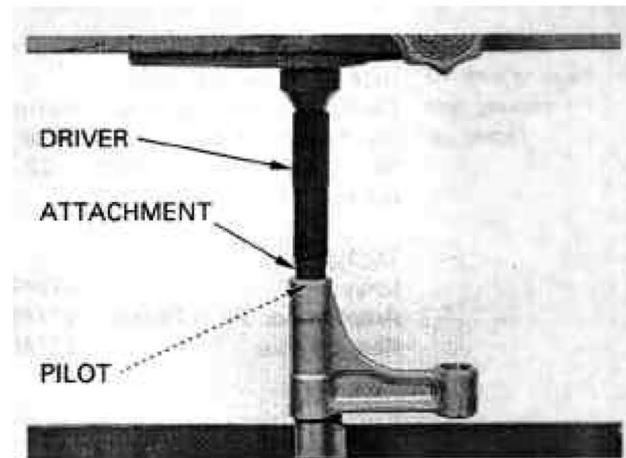
Sliding weight 07741-0010201



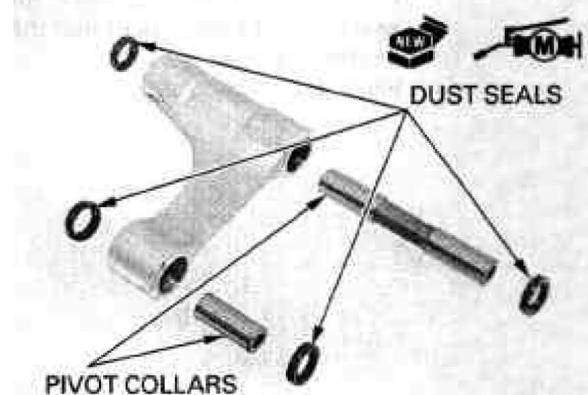
Press in the bearing with the marking side facing up. Apply molybdenum disulfide grease to the needle rollers of new bearings. Carefully press the needle bearing in the shock link pivot until the depth from the shock link outer surface is 5.2–5.7 mm (0.20–0.22 in), using the special tool.

TOOLS:

Driver	07749-0010000
Attachment, 24 × 26 mm	07746-0010700
Pilot, 17 mm	07746-0040400

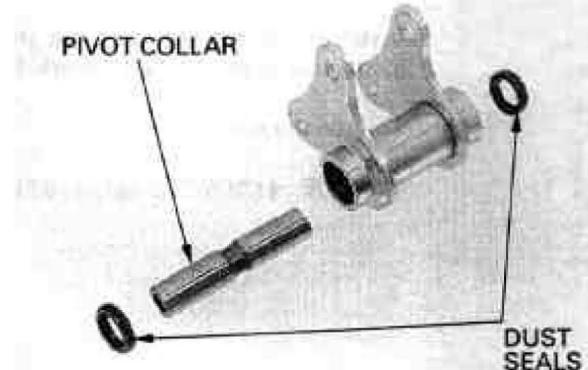


Apply molybdenum disulfide grease to new dust seal lips and install them into the shock link pivots until they are seated. Install the pivot collars.



SHOCK ARM PIVOT BEARING REPLACEMENT

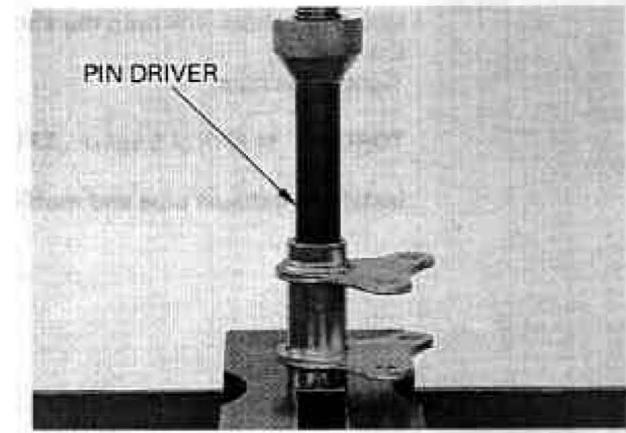
Remove the pivot collar and dust seals.



Press the needle bearings out of the shock arm pivot using the special tool.

TOOL:

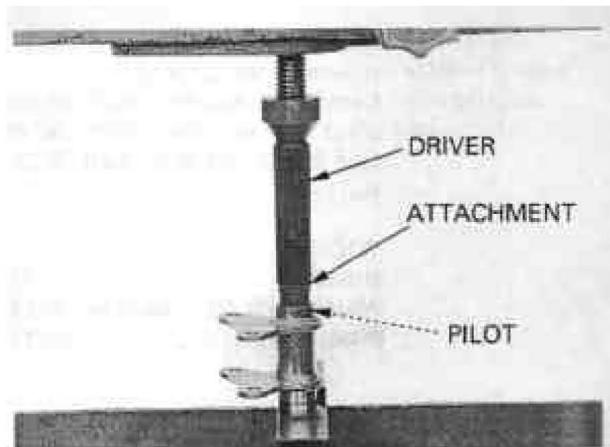
Pin driver 07GMD-KT80100



- Press in the bearing with the marking side facing up.* Apply molybdenum disulfide grease to the needle rollers of new bearings. Carefully press the needle bearing in the shock link pivot until the depth from the shock link outer surface is 5.2–5.7 mm (0.20–0.22 in), using the special tool.

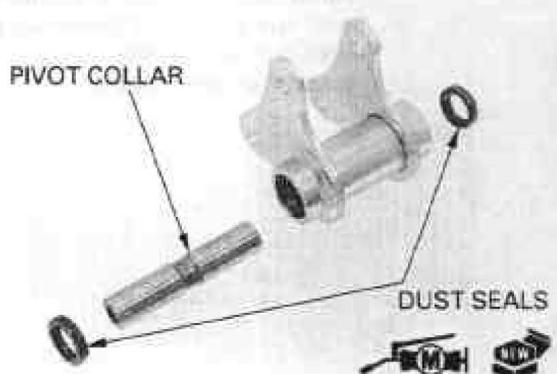
TOOLS:

Driver	07749-0010000
Attachment, 24 × 26 mm	07746-0010700
Pilot, 17 mm	07746-0040400



Apply molybdenum disulfide grease to new dust seal lips and install them into the shock link pivots until they are seated.

Install the pivot collar.

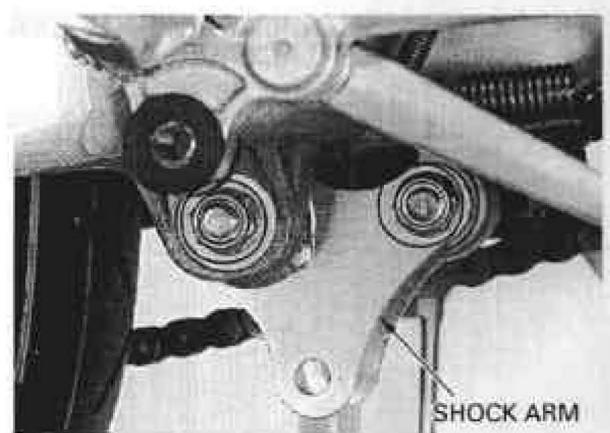


INSTALLATION

Install the shock arm onto the shock absorber and swingarm with the "FR" mark (arrow) facing forward.

Tighten the nuts.

TORQUE: 44 N·m (4.5 kgf·m , 33 lbf·ft)

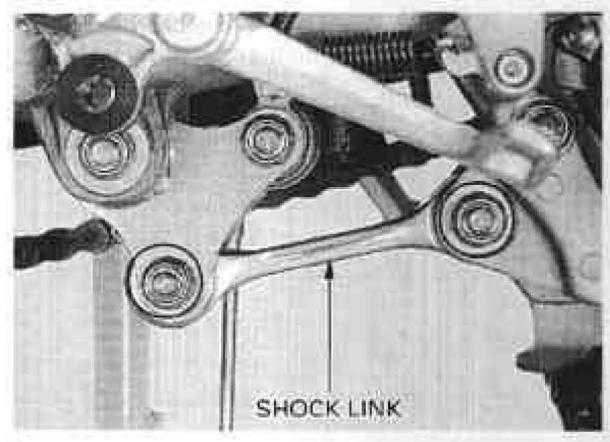


Install the shock link onto the shock arm and shock link bracket.

Tighten the nuts.

TORQUE: 44 N·m (4.5 kgf·m , 33 lbf·ft)

Install the exhaust pipe and mufflers (page 2-6).

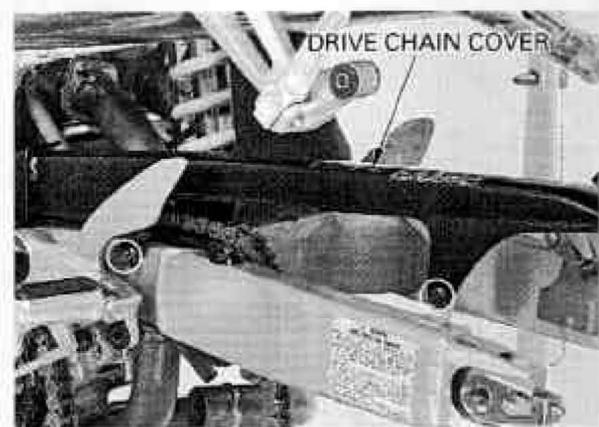


SWINGARM

REMOVAL

Remove the left and right mufflers (page 2-5).
Remove the rear wheel (page 14-3).

Remove the two bolts and drive chain cover.



Remove the rear brake hose from the clamps and remove the rear brake caliper/bracket assembly from the swingarm.



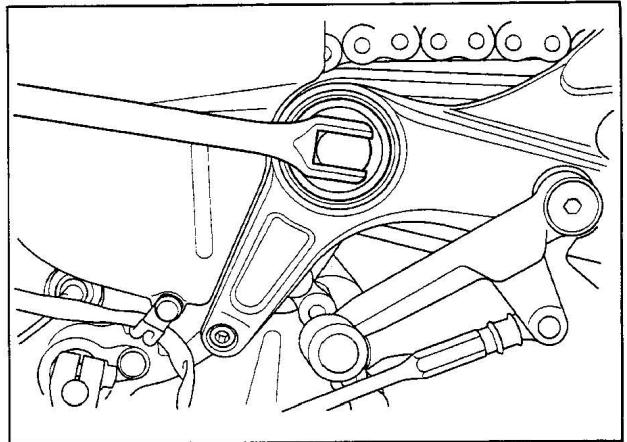
Remove the shock arm-to-swingarm nut and bolt.



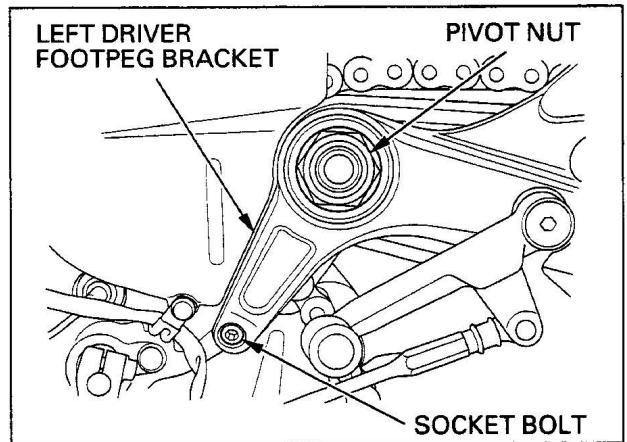
Remove the left and right swingarm pivot caps.



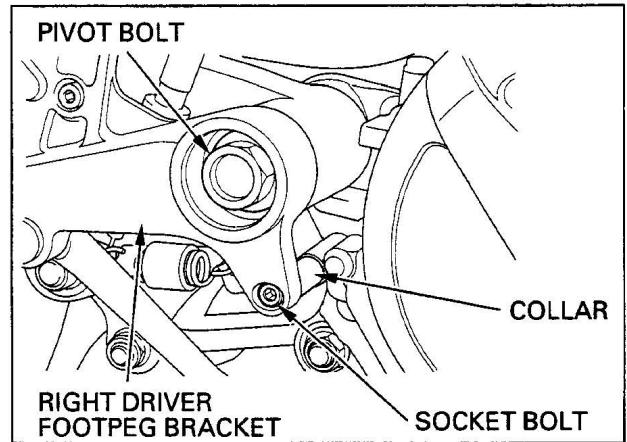
Loosen the swingarm pivot nut.



Remove the socket bolt, swingarm pivot nut and left driver footpeg bracket.

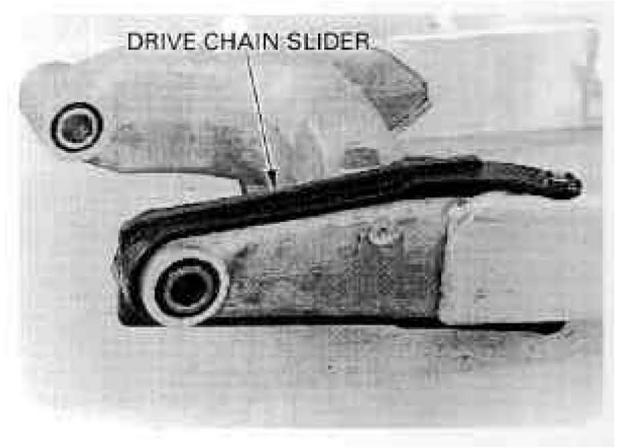


Remove the socket bolt and collar.
Remove the swingarm pivot bolt and right driver footpeg bracket.
Remove the swingarm from the frame.

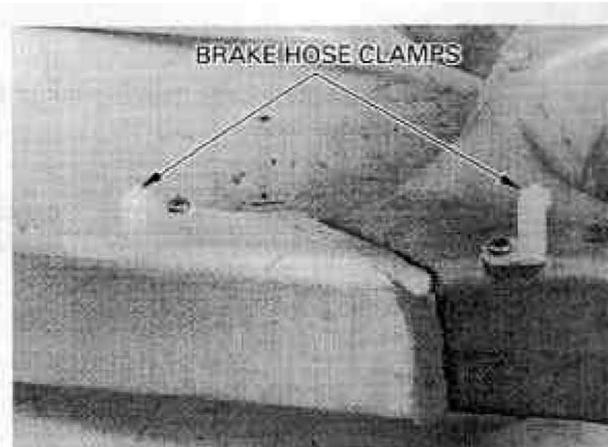


DISASSEMBLY

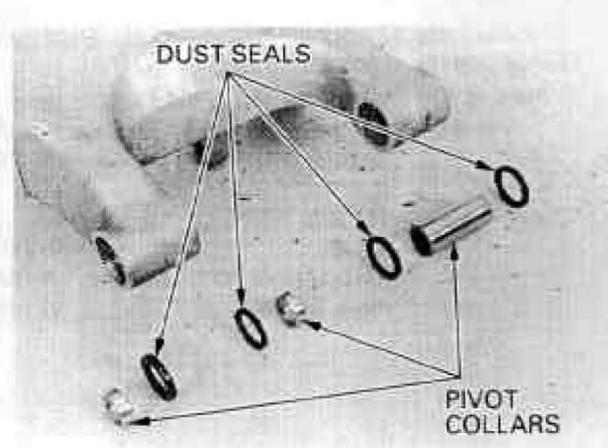
Remove the two bolts and drive chain slider if necessary.



Remove the screws and brake hose clamps if necessary.



Remove the pivot collars and dust seals.



PIVOT BEARING REPLACEMENT

RIGHT PIVOT BEARING

Remove the snap ring.

Drive ball bearings and distance collar out of the pivot.

Pack new bearing cavities with molybdenum disulfide grease.

Press the inner bearing into the pivot with the marking side facing up until it is fully seated, using the special tools.

TOOLS:

Driver	07749-0010000
Attachment, 32 × 35 mm	07746-0010100
Pilot, 20 mm	07746-0040500

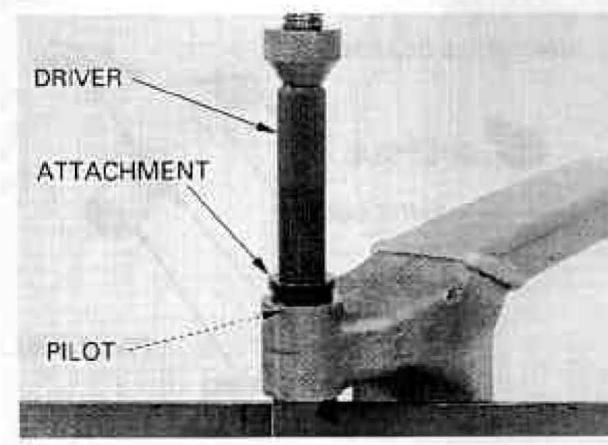
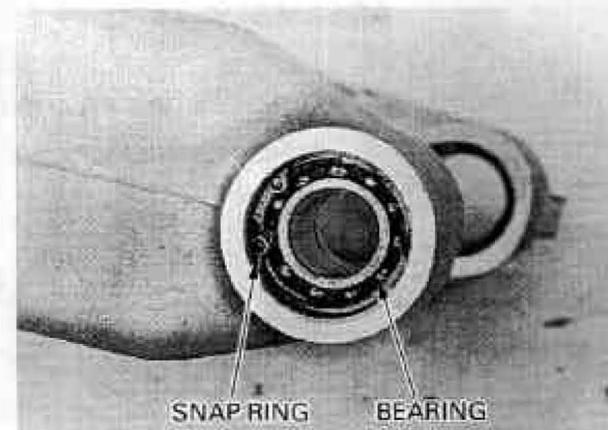
Install the distance collar.

Press the outer bearing into the pivot with the marking side facing up until it is seated, using the special tools.

TOOLS:

Driver	07749-0010000
Attachment, 37 × 40 mm	07746-0010200
Pilot, 20 mm	07746-0040500

Install the snap ring.

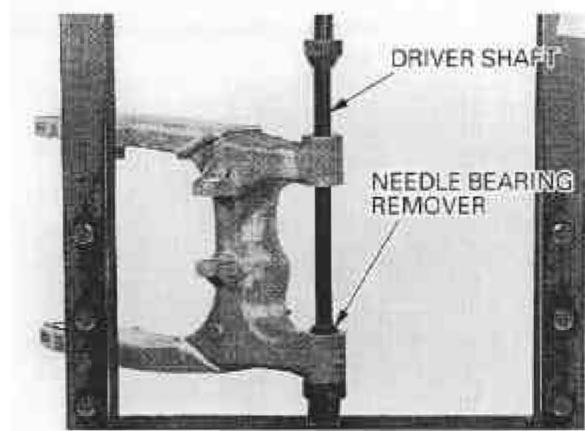


LEFT PIVOT BEARING

Press the needle bearing out of the pivot using the special tools.

TOOLS:

Driver shaft	07946-MJ00100
Needle bearing remover	07HMC-MR70100

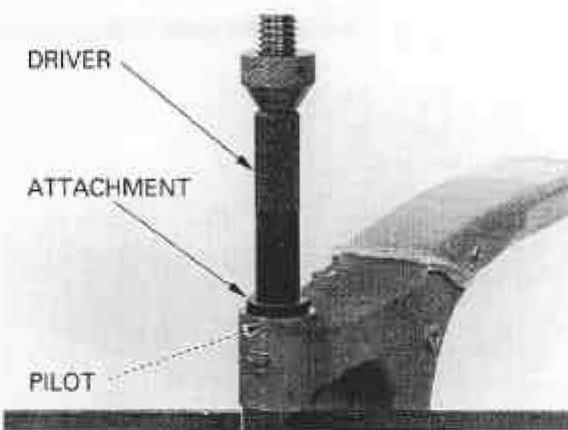


Press in the bearing with the marking side facing up. Apply molybdenum disulfide grease to the needle rollers of a new bearing.

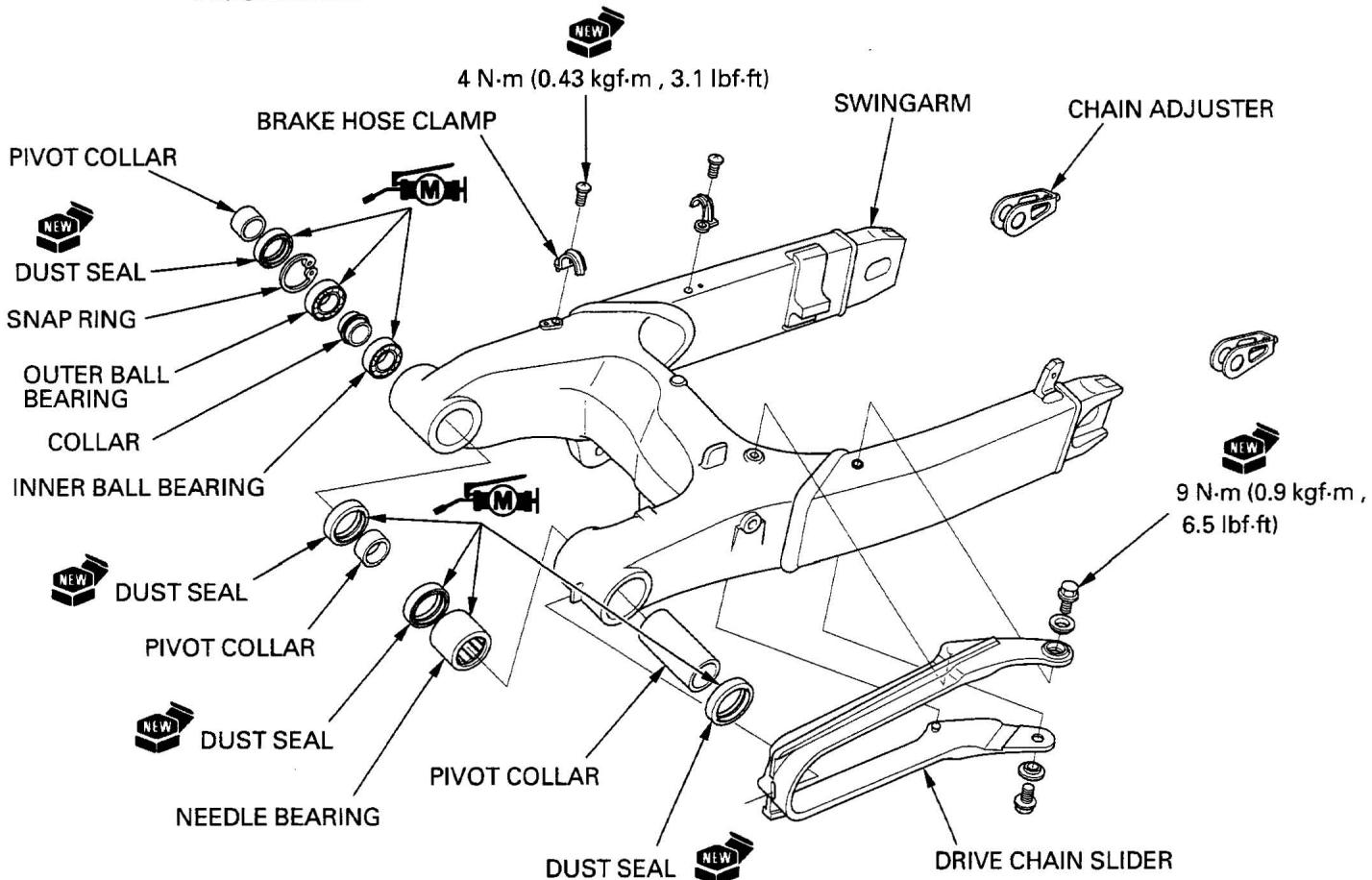
Carefully press the needle bearing into pivot until the depth from the swingarm outer surface is 14–15 mm (0.55–0.59 in), using the special tool.

TOOLS:

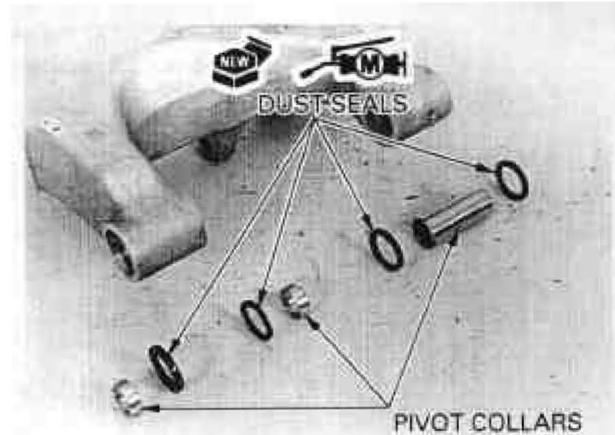
Driver	07749-001000
Attachment, 37 × 40 mm	07746-0010200
Pilot, 28 mm	07746-0041100



ASSEMBLY

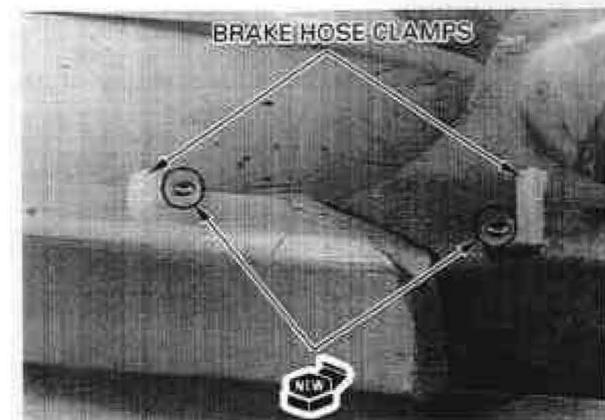


Apply molybdenum disulfide grease to new dust seal lips and install them into the swingarm pivots. Install the pivot collars.



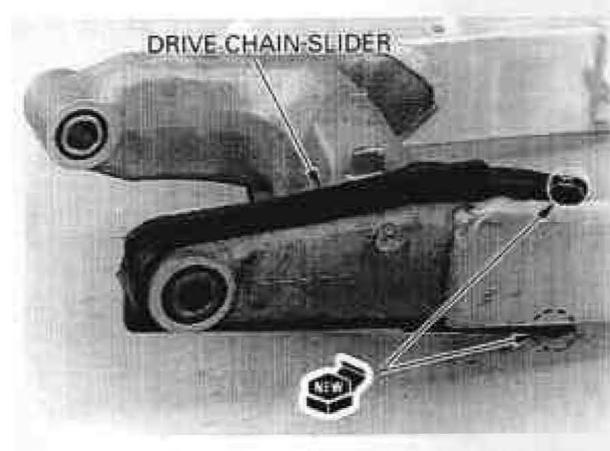
Install the brake hose clamps if removed, aligning the boss with the hole in the swingarm. Install and tighten new screws.

TORQUE: 4 N·m (0.43 kgf·m , 3.1 lbf·ft)



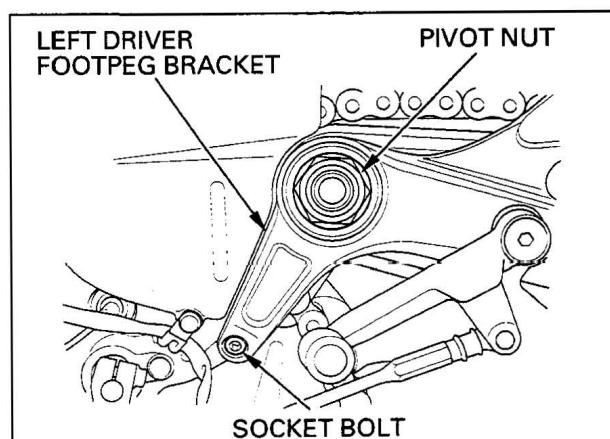
Install the drive chain slider if removed, aligning the hole with the boss of the swingarm. Install and tighten new bolts.

TORQUE: 9 N·m (0.9 kgf·m , 6.5 lbf·ft)



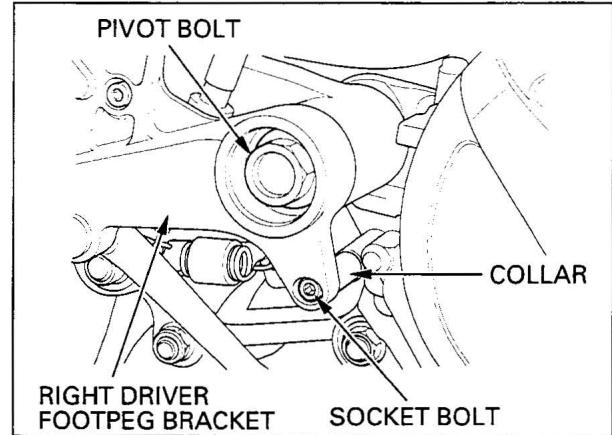
INSTALLATION

Install the swingarm onto the engine and insert the pivot bolt through the right driver footpeg bracket, swingarm, engine and left driver footpeg bracket. Install the swingarm pivot nut. Install the left driver footpeg bracket onto the shock link bracket and tighten the socket bolt.



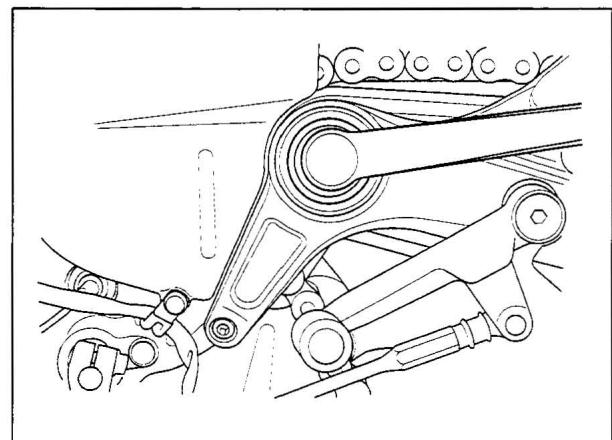
REAR WHEEL/SUSPENSION

Install the collar between the right driver footpeg bracket and shock link bracket, and tighten the socket bolt.

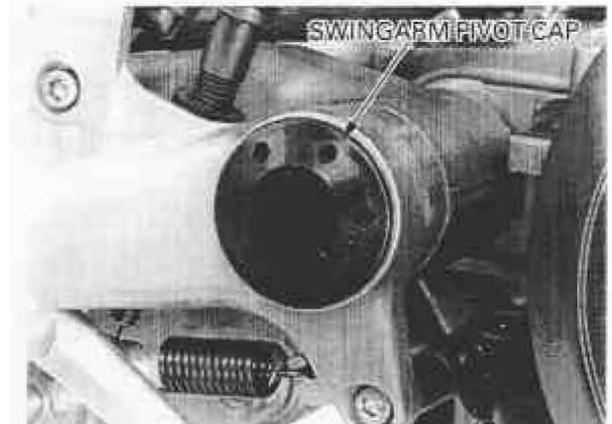


Tighten the swingarm pivot nut.

TORQUE: 93 N·m (9.5 kgf·m , 69 lbf·ft)

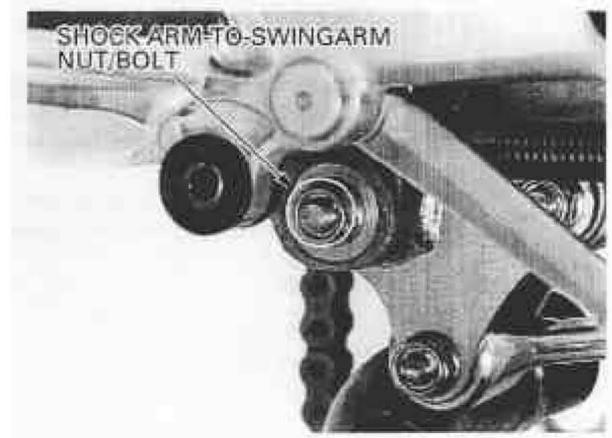


Install the left and right swingarm pivot caps.



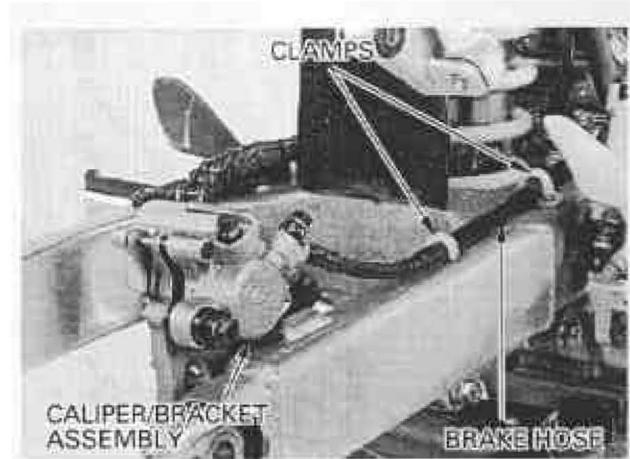
Install the shock arm-to-swingarm bolt and tighten the nut.

TORQUE: 44 N·m (4.5 kgf·m , 33 lbf·ft)



Install the rear brake caliper/bracket assembly onto the boss of the swingarm.

Install the rear brake hose in the clamps.



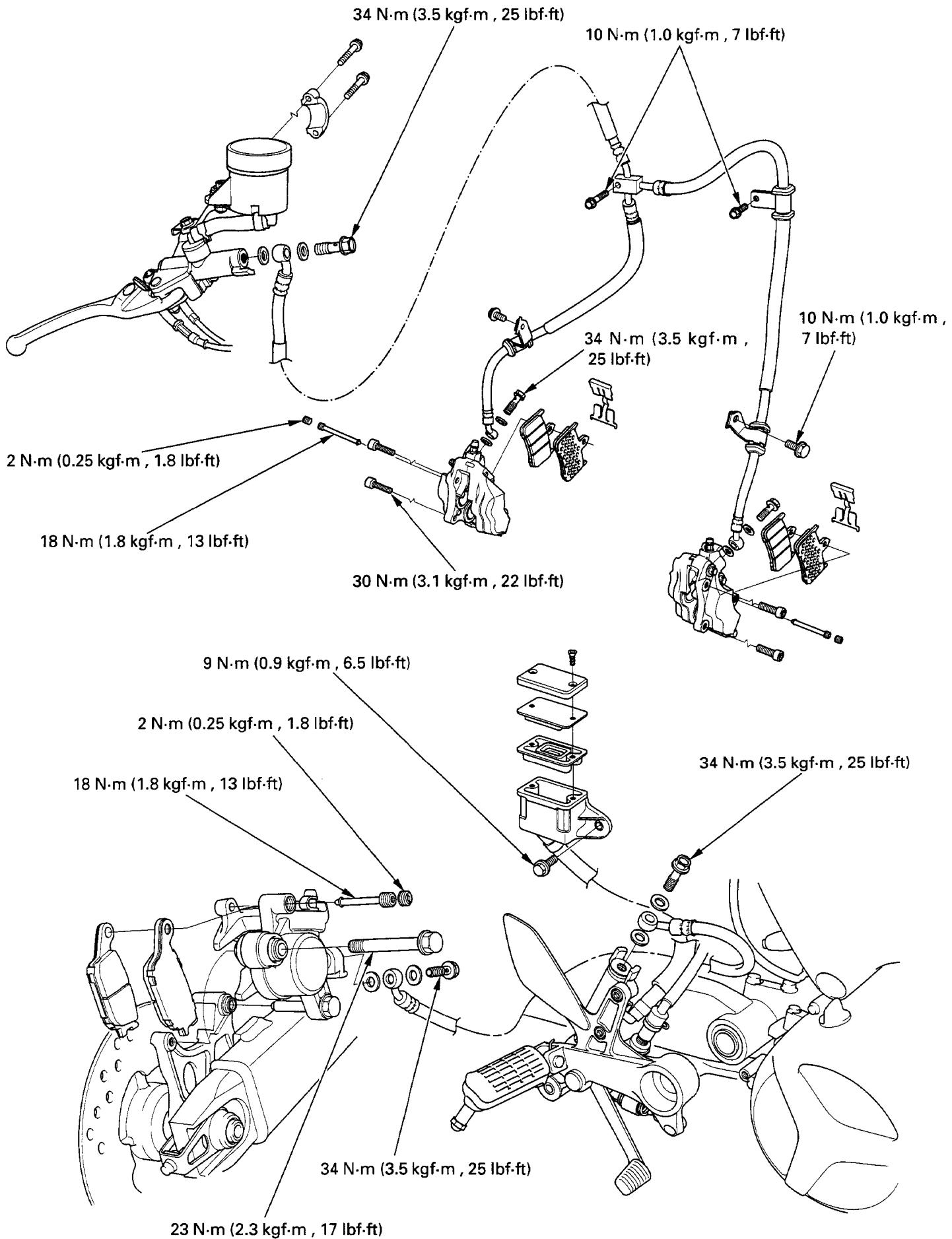
Install the drive chain cover aligning the slot with the boss of the swingarm, and tighten the two bolts.

Install the rear wheel (page 14-8).

Install the left and right mufflers (page 2-6).



HYDRAULIC BRAKE



15. HYDRAULIC BRAKE

SERVICE INFORMATION	15-1	FRONT MASTER CYLINDER	15-7
TROUBLESHOOTING	15-2	REAR MASTER CYLINDER/ BRAKE PEDAL	15-12
BRAKE FLUID REPLACEMENT/ AIR BLEEDING	15-3	FRONT BRAKE CALIPER	15-16
BRAKE PAD/DISC	15-5	REAR BRAKE CALIPER	15-19

SERVICE INFORMATION

GENERAL

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.

- Spilled brake fluid will severely damage the plastic parts and painted surfaces. It is also harmful to some rubber parts. Be careful whenever you remove the reservoir cap; make sure the reservoir is horizontal first.
- Never allow contaminants (dirt, water, etc.) to get into 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.
- A hoist or equivalent is required to support the motorcycle when servicing the rear master cylinder.

SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Front	Specified brake fluid	DOT 4	—
	Brake disc thickness	4.4—4.6 (0.17—0.18)	3.5 (0.14)
	Brake disc runout	—	0.30 (0.012)
	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.	A 30.23—30.28 (1.190—1.192) B 27.000—27.050 (1.0630—1.0650)	30.29 (1.193) 27.060 (1.0654)
	Caliper piston O. D.	A 30.148—30.198 (1.1869—1.1889) B 26.918—26.968 (1.0598—1.0617)	30.14 (1.187) 26.91 (1.059)
	Specified brake fluid	DOT 4	—
	Brake disc thickness	4.8—5.2 (0.19—0.20)	4.0 (0.16)
Rear	Brake disc runout	—	0.30 (0.012)
	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)

TORQUE VALUES

Brake caliper bleed valve	6 N·m (0.6 kgf·m , 4.3 lbf·ft)
Pad pin plug	2 N·m (0.25 kgf·m , 1.8 lbf·ft)
Pad pin	18 N·m (1.8 kgf·m , 13 lbf·ft)
Brake hose oil bolt	34 N·m (3.5 kgf·m , 25 lbf·ft)
Front brake lever pivot nut	6 N·m (0.6 kgf·m , 4.3 lbf·ft)
Front brake fluid reservoir mounting nut	6 N·m (0.6 kgf·m , 4.3 lbf·ft) U-nut
Front master cylinder holder bolt	12 N·m (1.2 kgf·m , 9 lbf·ft)
Rear brake fluid reservoir mounting bolt	9 N·m (0.9 kgf·m , 6.5 lbf·ft)
Rear master cylinder mounting bolt	10 N·m (1.0 kgf·m , 7 lbf·ft)
Rear master cylinder joint nut	18 N·m (1.8 kgf·m , 13 lbf·ft)
Swingarm pivot nut	93 N·m (9.5 kgf·m , 69 lbf·ft) U-nut
Front brake caliper mounting bolt	30 N·m (3.1 kgf·m , 22 lbf·ft) ALOC bolt
Front brake caliper assembly bolt	32 N·m (3.3 kgf·m , 24 lbf·ft) Apply locking agent to the threads
Rear brake caliper bolt	23 N·m (2.3 kgf·m , 17 lbf·ft)
Rear brake caliper pin bolt	27 N·m (2.8 kgf·m , 20 lbf·ft) Apply locking agent to the threads

TOOL

Snap ring pliers	07914-3230001
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TROUBLESHOOTING**Brake lever/pedal soft or spongy**

- Air in hydraulic system
- Leaking hydraulic system
- Contaminated brake pad/disc
- Worn caliper piston seals
- Worn master cylinder piston cups
- Worn brake pad/disc
- Contaminated caliper
- Contaminated master cylinder
- Caliper not sliding properly
- Low brake fluid level
- Clogged fluid passage
- 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

Brake drag

- Contaminated brake pad/disc
- Misaligned wheel
- Badly worn brake pad/disc
- Warped/deformed brake disc
- Caliper not sliding properly
- Clogged/restricted fluid passage
- Sticking caliper piston

BRAKE FLUID REPLACEMENT/AIR BLEEDING

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.

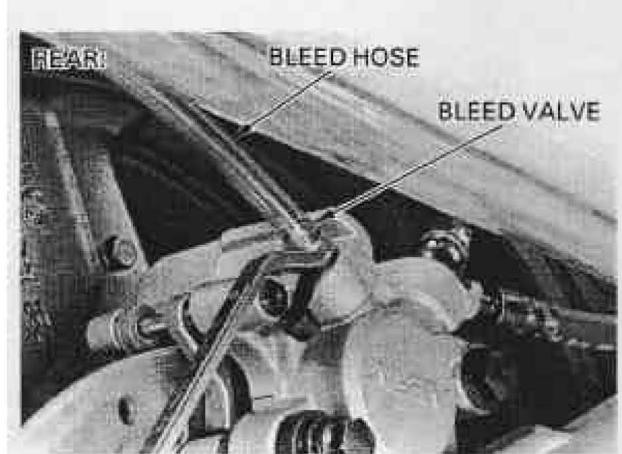
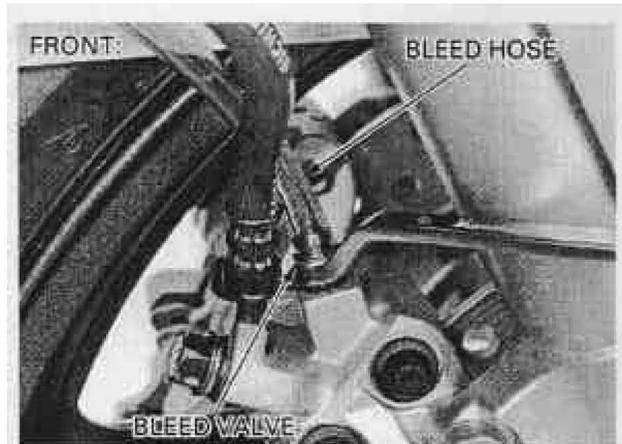
CAUTION:

- **Do not allow foreign material to enter the system when filling the reservoir.**
- **Avoid spilling fluid on painted, plastic or rubber parts. Place a rag over these parts whenever the system is serviced.**
- **Use only DOT 4 brake fluid from a sealed container.**
- **Do not mix different types of fluid. They are not compatible.**

BRAKE FLUID DRAINING

Remove the reservoir cap, set plate and diaphragm (page 3-18 for front, page 3-19 for rear).

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.



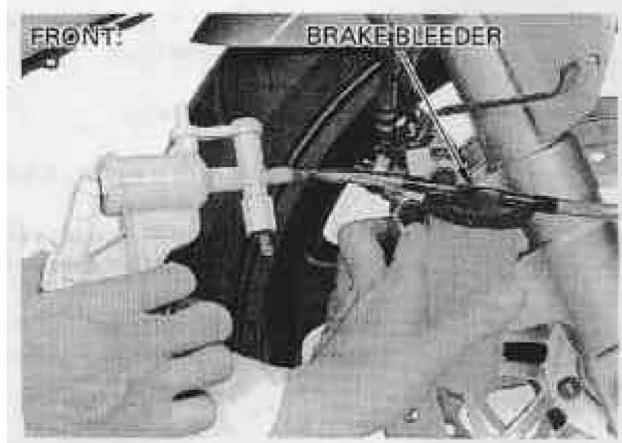
BRAKE FLUID FILLING/BLEEDING

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

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

NOTE:

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



HYDRAULIC BRAKE

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

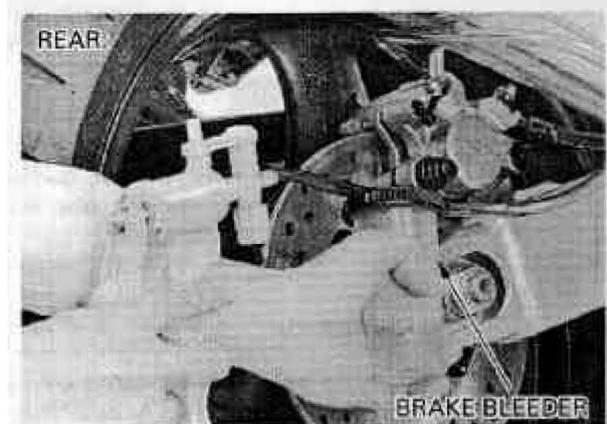
NOTE:

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

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

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

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



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

1. Squeeze the brake lever or depress the brake pedal, open the bleed valve 1/2 turn and then close it.

NOTE:

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

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

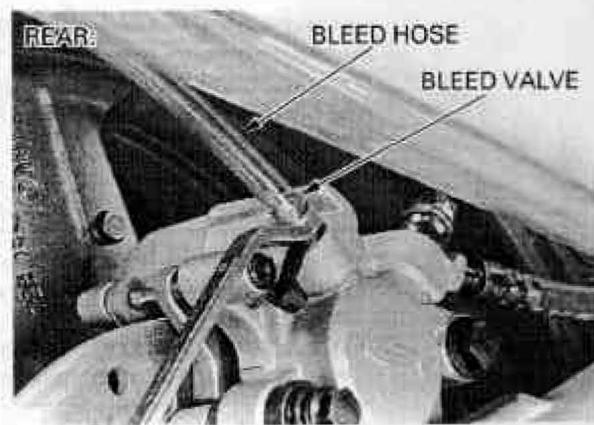
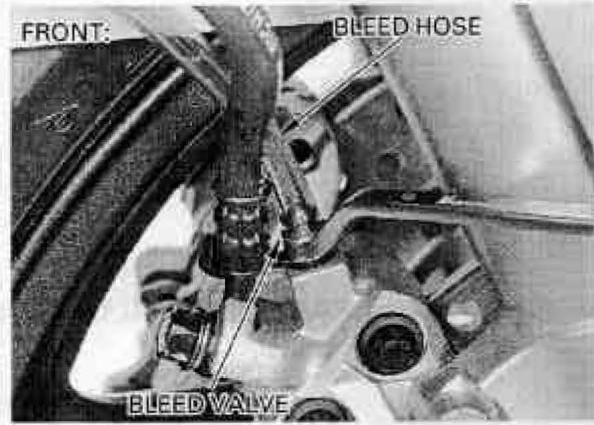
Repeat the steps 1 and 2 until air bubbles do not appear in the bleed hose.

Tighten the bleed valve.

TORQUE: 6 N·m (0.6 kgf·m , 4.3 lbf·ft)

Fill the reservoir to the upper level line with DOT 4 brake fluid from a sealed container.

Install the diaphragm, set plate and reservoir cap (page 3-18 for front, page 3-19 for rear).



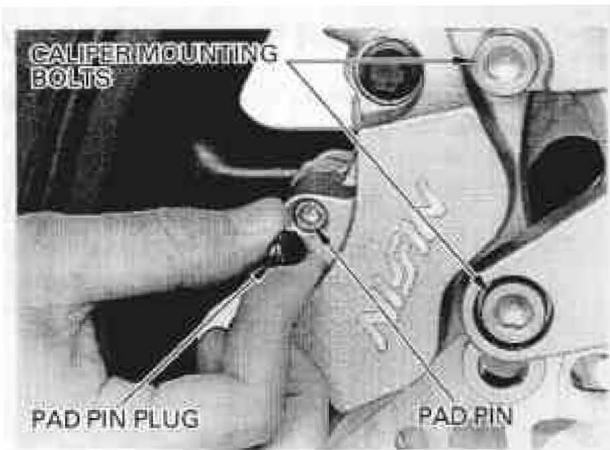
BRAKE PAD/DISC

FRONT BRAKE PAD REPLACEMENT

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

Remove the pad pin plug and loosen the pad pin.

Remove the mounting bolts and front brake caliper.



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

NOTE:

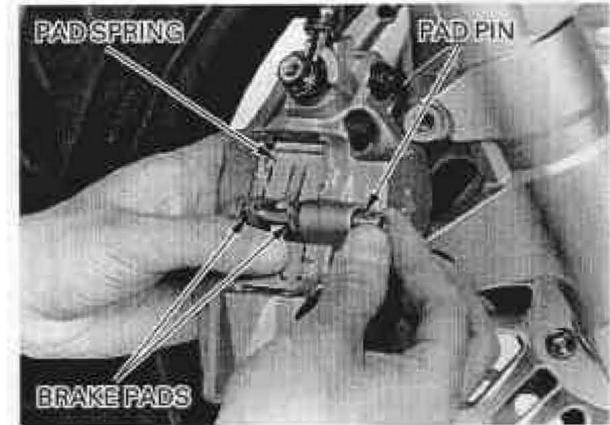
Check the brake fluid level in the brake reservoir as this operation causes the level to rise.



Remove the pad pin while pushing in the pad spring, then remove the pad spring and brake pads.

Install new brake pads and the pad spring with its tabs with the grooves in the caliper body grooves.

Install the pad pin while pushing in the pad spring.



Install the front brake caliper so the disc is positioned between the pads, being careful not to damage the pads.

Install and tighten new mounting bolts.

TORQUE: 30 N·m (3.1 kgf·m , 22 lbf·ft)

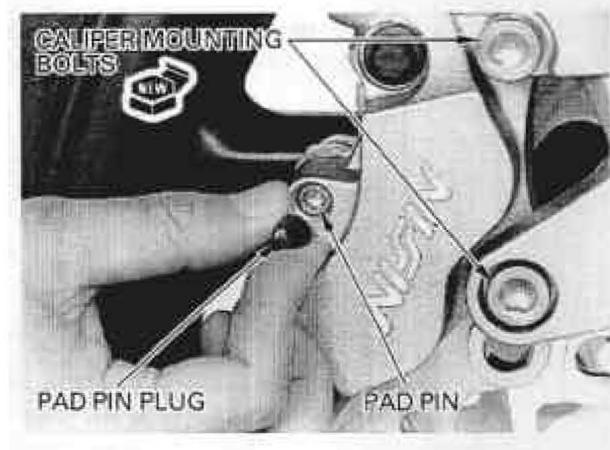
Tighten the pad pin.

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

Install and tighten the pad pin plug.

TORQUE: 2 N·m (0.25 kgf·m , 1.8 lbf·ft)

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



REAR BRAKE PAD REPLACEMENT

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

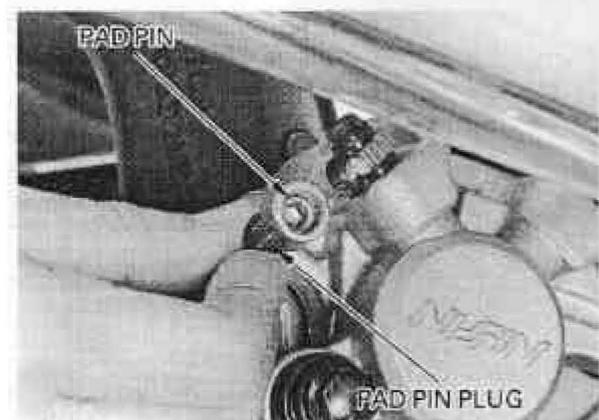
Push the caliper piston all the way in to allow installation of new brake pads.

NOTE:

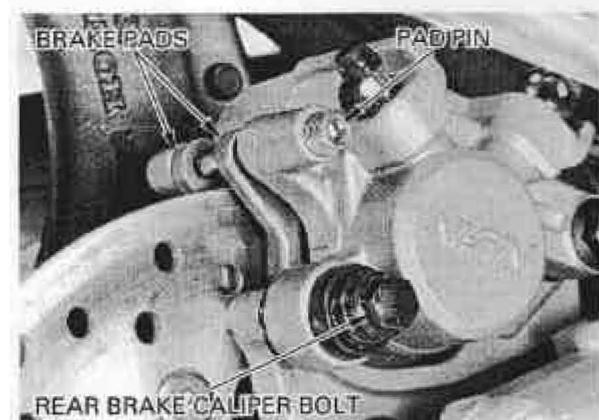
Check the brake fluid level in the brake reservoir as this operation causes the level to rise.



Remove the pad pin plug and loosen the pad pin.



Remove the rear brake caliper bolt.
Pivot the caliper up, and remove the pad pin and brake pads.

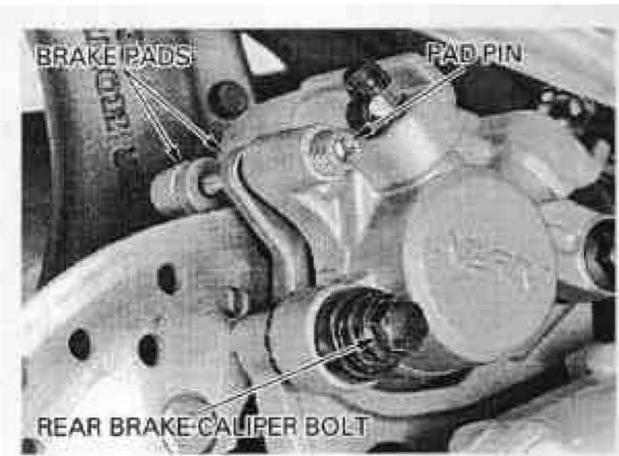


Install new brake pads so that their ends positioned onto the retainer on the caliper bracket as shown.



Lower the caliper and install the pad pin.
Install and tighten the rear brake caliper bolt.

TORQUE: 23 N·m (2.3 kgf·m , 17 lbf·ft)



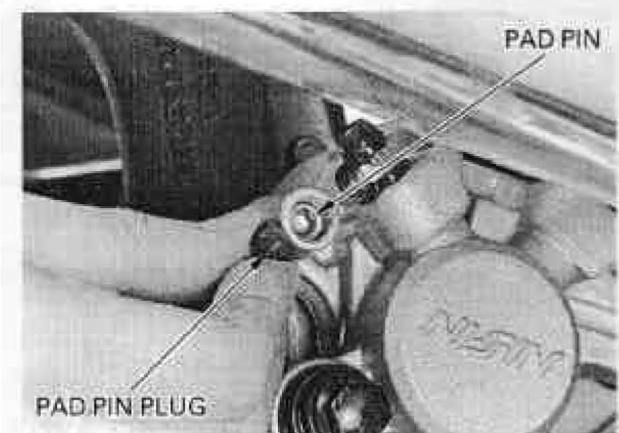
Tighten the pad pin.

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

Install and tighten the pad pin plug.

TORQUE: 2 N·m (0.25 kgf·m , 1.8 lbf·ft)

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



BRAKE DISC INSPECTION

Visually inspect the disc for damage or cracks.

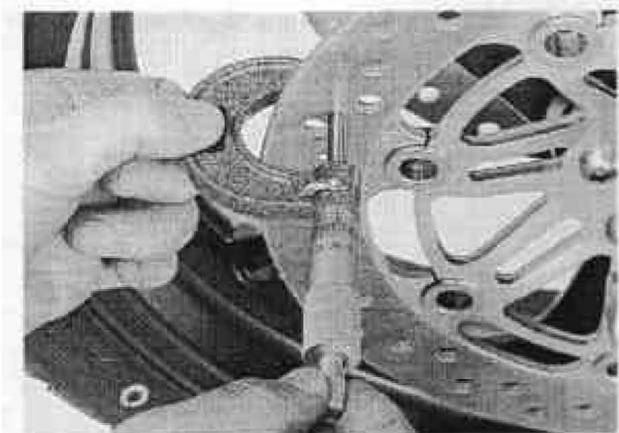
Measure the brake disc thickness at several points.

SERVICE LIMITS: Front: 3.5 mm (0.14 in)
Rear: 4.0 mm (0.16 in)

FRONT MASTER CYLINDER

CAUTION:

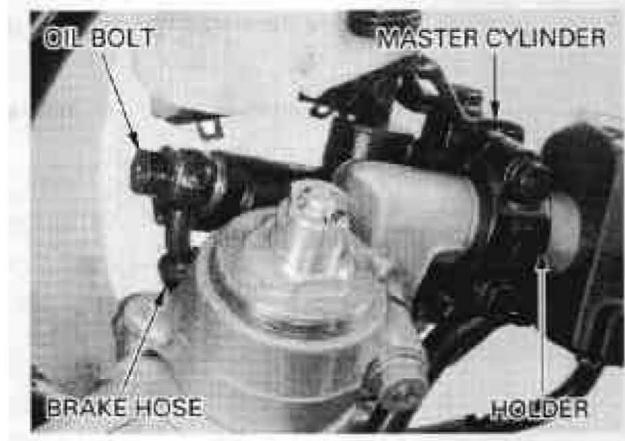
- **Avoid spilling fluid on painted, plastic or rubber parts. Place a rag over these parts whenever the system is serviced.**
- **When removing the oil bolt, cover the end of the hose to prevent contamination.**



DISASSEMBLY

Drain the brake fluid from the front brake hydraulic system (page 15-3).

Disconnect the front brake light switch connectors.
Disconnect the brake hose from the master cylinder by removing the oil bolt and sealing washers.
Remove the master cylinder holder bolts, holder and the master cylinder.

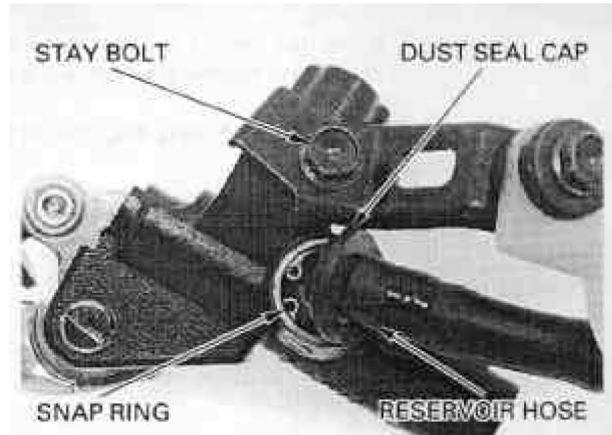


HYDRAULIC BRAKE

Remove the dust seal cap, snap ring and reservoir hose from the master cylinder.

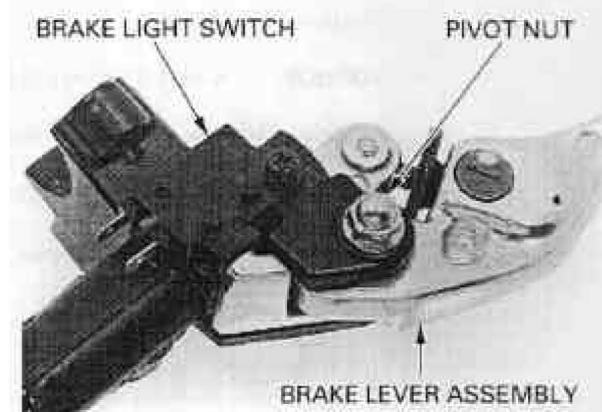
Remove the O-ring.

Remove the stay bolt and fluid reservoir with the stay and hose.



Remove the pivot nut, bolt and brake lever assembly.

Remove screw and brake light switch.



Remove the boot from the master cylinder and master piston.

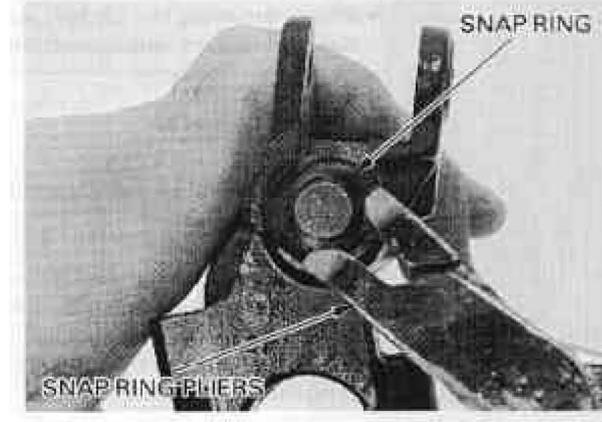


Remove the snap ring using the special tool.

TOOL:

Snap ring pliers

07914-3230001



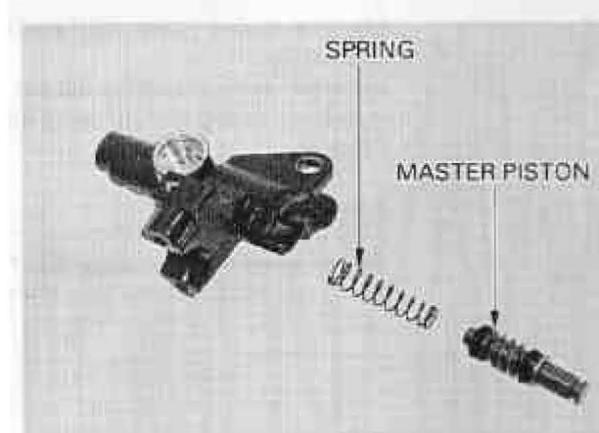
Remove the master piston and spring from the master cylinder.

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

INSPECTION

Check the piston cups for wear, deterioration or damage.

Check the spring for damage.



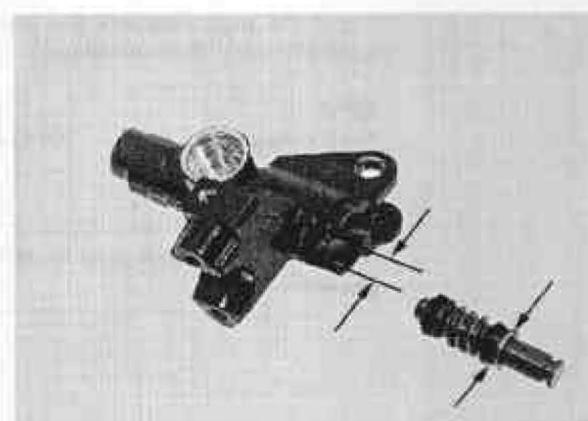
Check the master cylinder and piston for scoring, scratches or damage.

Measure the master cylinder I. D.

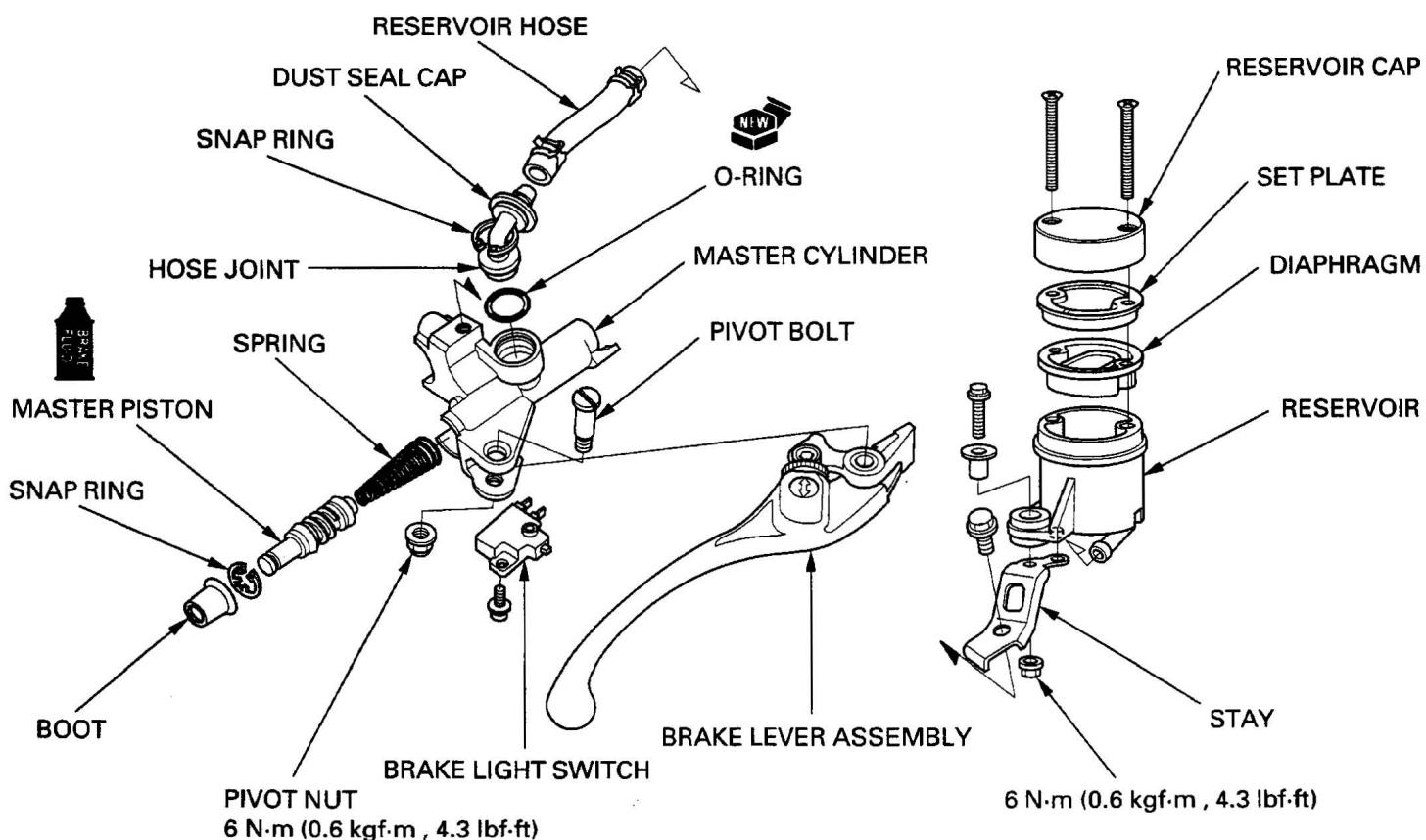
SERVICE LIMIT: 14.055 mm (0.5533 in)

Measure the master piston O. D.

SERVICE LIMIT: 13.945 mm (0.5490 in)



ASSEMBLY



HYDRAULIC BRAKE

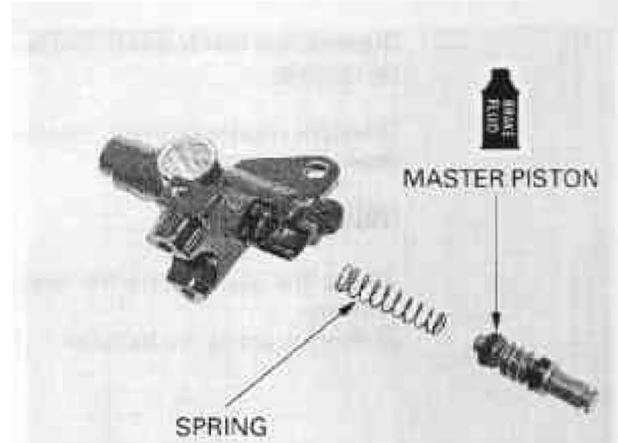
Coat the master piston and piston cups with clean brake fluid.

Install the spring onto the master piston.

Install the spring and master piston into the master cylinder.

CAUTION:

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



Install the snap ring into the groove in the master cylinder, using the special tool.

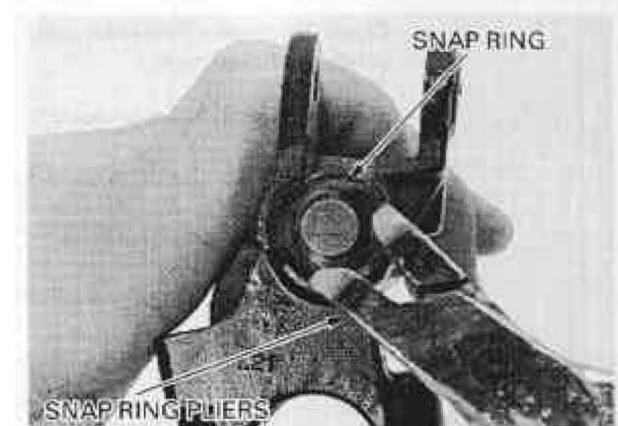
TOOL:

Snap ring pliers

07914-3230001

CAUTION:

Be certain the snap ring is firmly seated in the groove.



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

Apply silicone grease to the brake lever contacting area of the master piston.



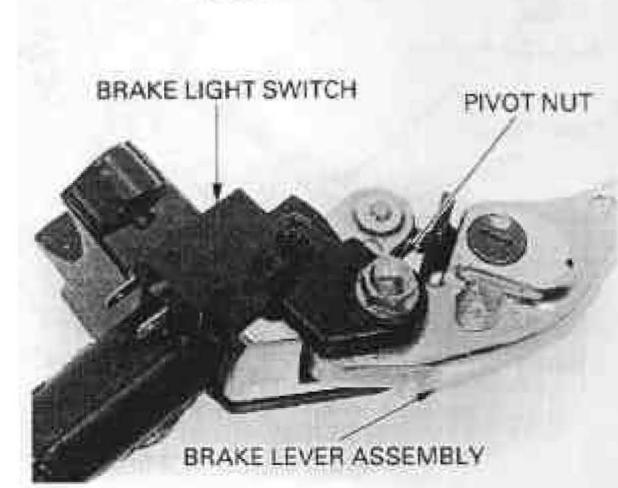
Apply silicone grease to the pivot bolt sliding surface.

Install the brake lever assembly and pivot bolt.

Install and tighten the pivot nut.

TOOL: 6 N·m (0.6 kgf·m , 4.3 lbf·ft)

Install the front brake light switch with the screw.

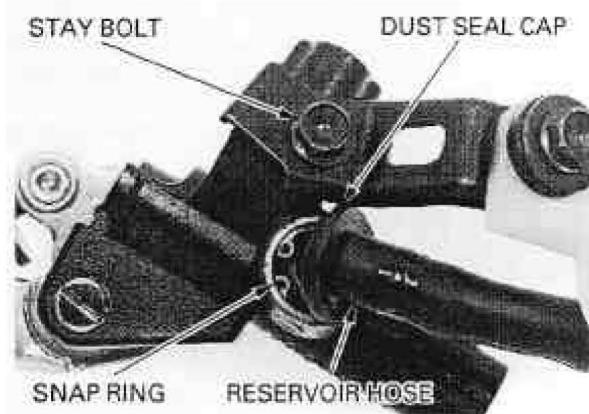


Coat a new O-ring with brake fluid and install it into the master cylinder.



Install the fluid reservoir with the stay and hose, and tighten the stay bolt.

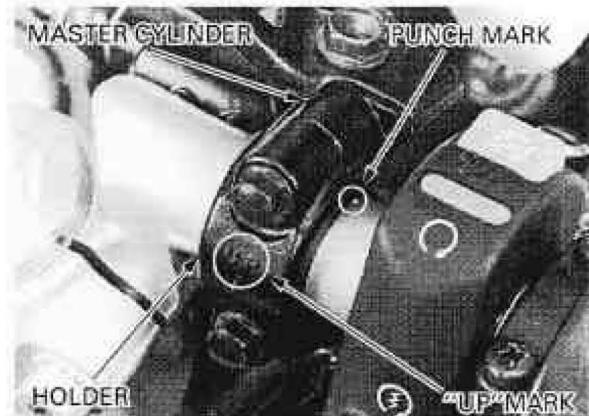
Install the reservoir hose joint, secure it with the snap ring and install the dust seal cap.



Install the master cylinder and holder with the "UP" mark facing up.

Align the end of the master cylinder with the punch mark on the handlebar, and tighten the upper bolt first, then tighten the lower bolt.

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, and tighten the oil bolt.

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

Connect the front brake light switch connectors.

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



REAR MASTER CYLINDER/BRAKE PEDAL**CAUTION:**

- **Avoid spilling fluid on painted, plastic or rubber parts. Place a rag over these parts whenever the system is serviced.**
- **When removing the oil bolt, cover the end of the hose to prevent contamination.**

DISASSEMBLY

Drain the brake fluid from the rear brake hydraulic system (page 15-3).

Disconnect the brake hose from the master cylinder by removing the oil bolt and sealing washers.
Loosen the master cylinder mounting bolts.

Support the motorcycle securely with a hoist or equivalent.

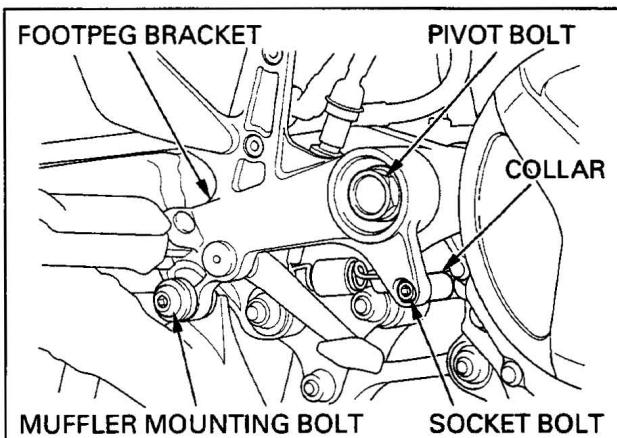
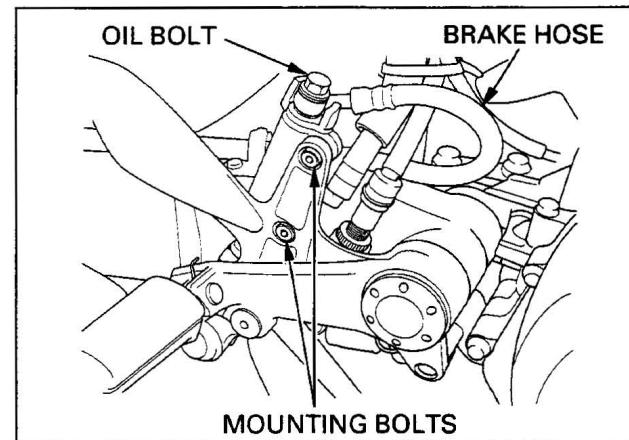
Remove the swingarm pivot caps.

Remove the lower muffler mounting bolt and washer.

Remove the swingarm pivot nut.

Remove the socket bolt, collar, swingarm pivot bolt and right driver footpeg bracket.

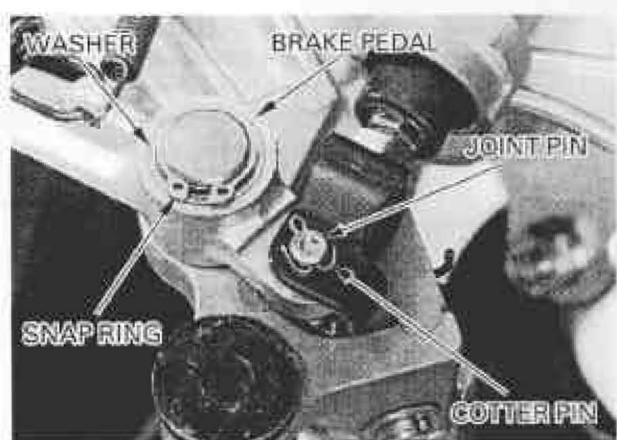
Remove the master cylinder mounting bolts.



Remove the snap ring, washer and brake pedal from the pedal pivot shaft.

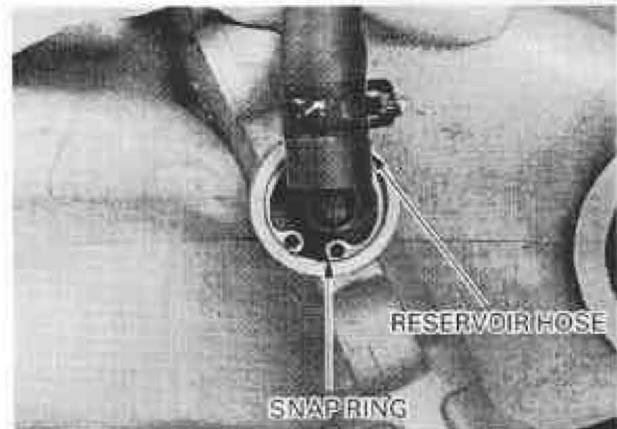
Remove the cotter pin from the joint pin.

Remove the joint pin and master cylinder from the brake pedal.



Remove the snap ring and reservoir hose joint from the master cylinder.

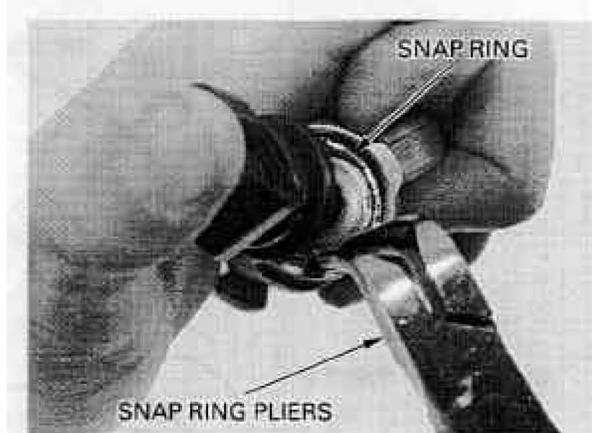
Remove the O-ring.



Remove the dust seal from the master cylinder.
Remove the snap ring using the special tool.

TOOL:**Snap ring pliers**

07914-3230001



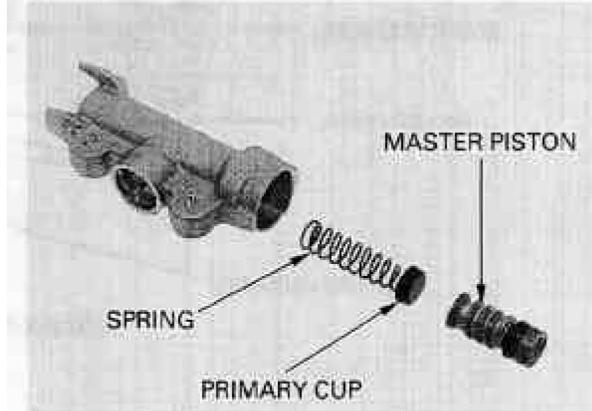
Remove the master piston, primary cup and spring.

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

INSPECTION

Check the piston cups for wear, deterioration or damage.

Check the spring for damage.



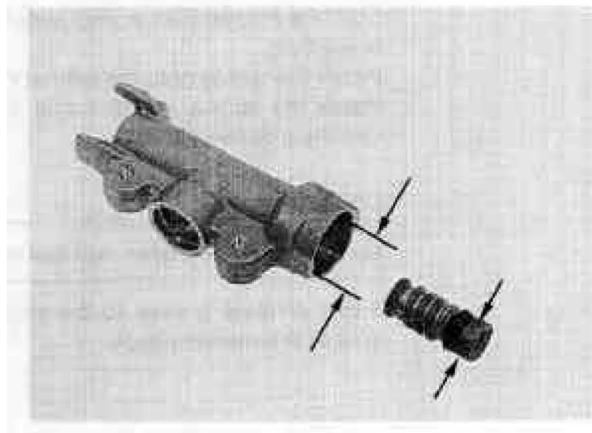
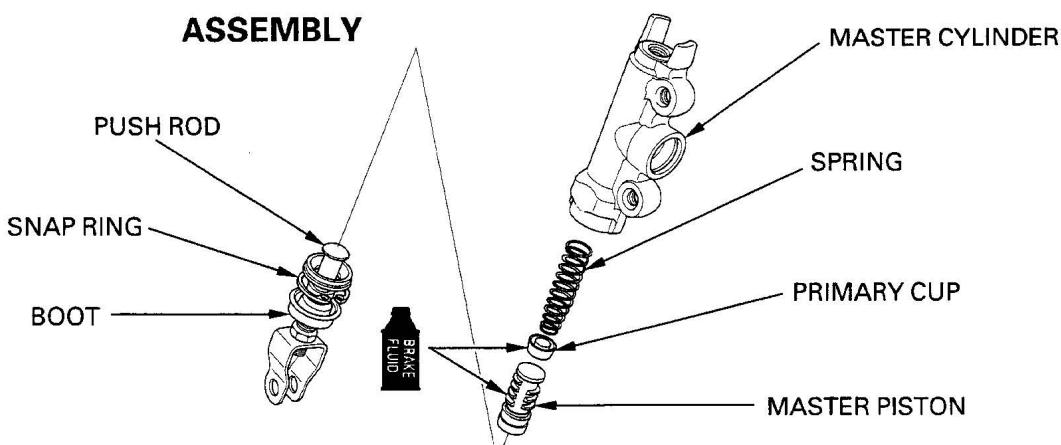
Check the master cylinder and piston for scoring or damage.

Measure the master cylinder I. D.

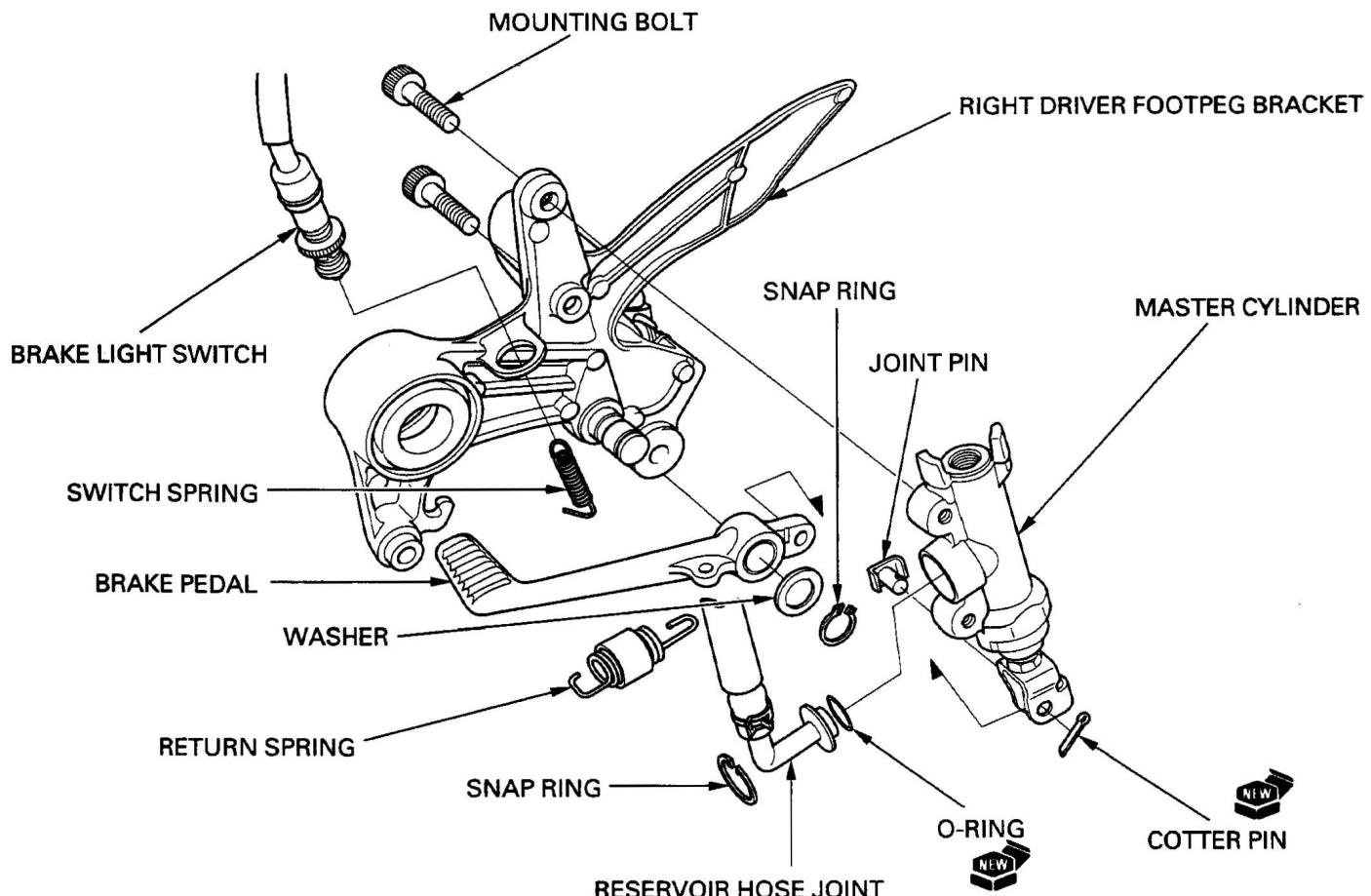
SERVICE LIMIT: 14.055 mm (0.5533 in)

Measure the master piston O. D.

SERVICE LIMIT: 13.945 mm (0.5490 in)

**ASSEMBLY**

HYDRAULIC BRAKE



Coat the master piston and piston cups with clean brake fluid.

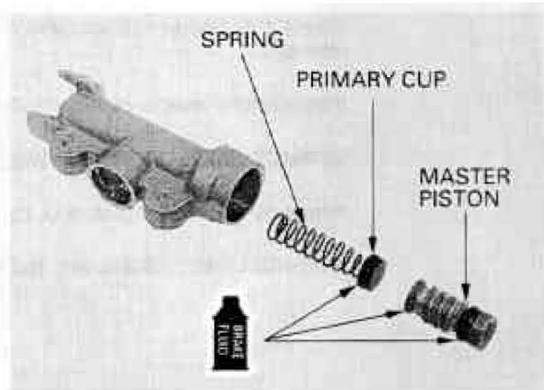
Install the spring onto the primary cup.

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

CAUTION:

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

Apply silicone grease to the push rod contacting area of the master piston.



Install the push rod into the master cylinder.

Install the snap ring into the groove in the master cylinder, using the special tool.

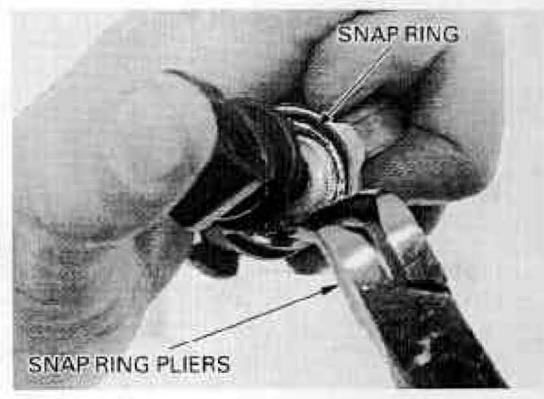
TOOL:

Snap ring pliers

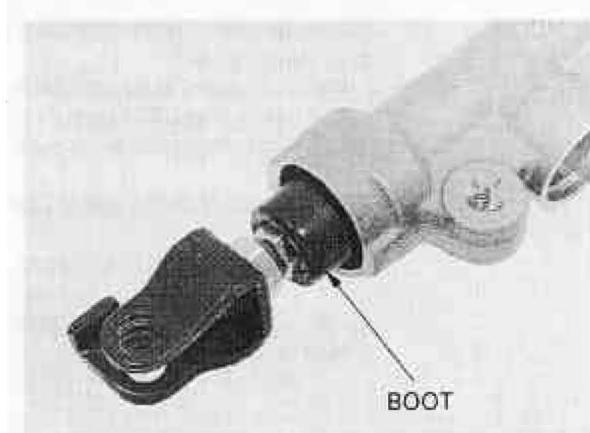
07914-3230001

CAUTION:

Be certain the snap ring is firmly seated in the groove.



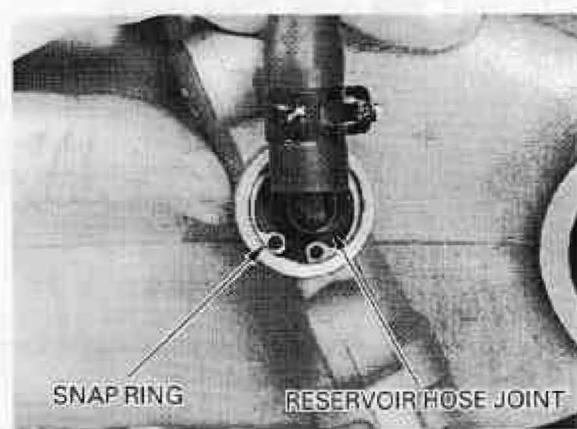
Install the boot into the master cylinder.



Coat a new O-ring with brake fluid and install it into the master cylinder.



Install the reservoir hose joint and secure it with the snap ring.



Connect the master cylinder push rod joint to the brake pedal with the joint pin and a new cotter pin.

Apply grease to the brake pedal pivot.

Connect the rear brake light switch spring to the brake pedal.

Install the brake pedal onto the pivot shaft.

Install the washer and snap ring onto the pivot shaft.

Connect the pedal return spring.

Install the master cylinder mounting bolts.

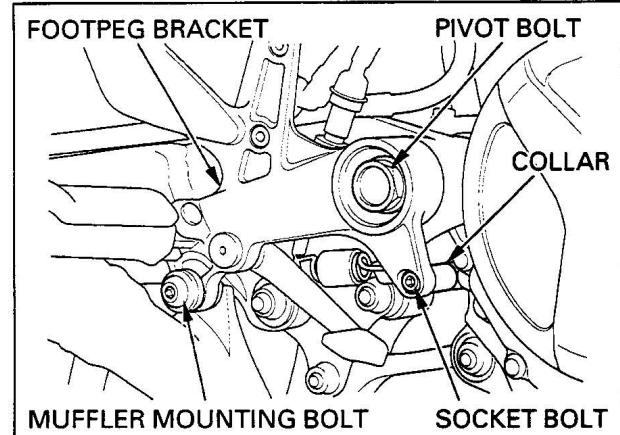


Install the right driver footpeg bracket, swingarm pivot bolt and nut.
Install the collar between the footpeg bracket and shock link bracket, and tighten the socket bolt.
Tighten the swingarm pivot nut.

TORQUE: 93 N·m (9.5 kgf·m , 69 lbf·ft)

Install the swingarm pivot caps.

Install the lower muffler mounting bolt with the washer and tighten it.



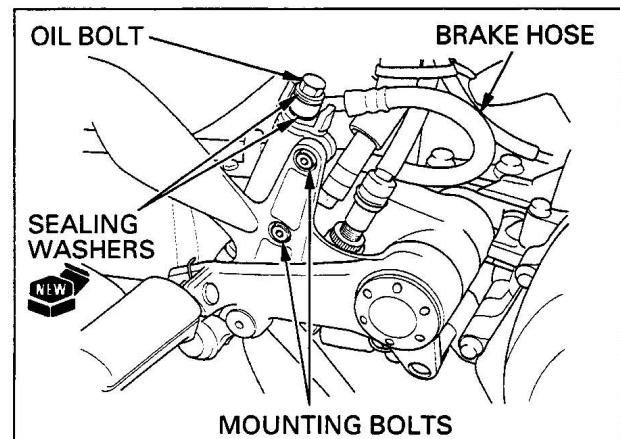
Tighten the master cylinder mounting bolts.

TORQUE: 10 N·m (1.0 kgf·m , 7 lbf·ft)

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

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

Fill and bleed the rear brake hydraulic system (page 15-3).



FRONT BRAKE CALIPER

CAUTION:

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

DISASSEMBLY

Drain the brake fluid from the front brake hydraulic system (page 15-3).

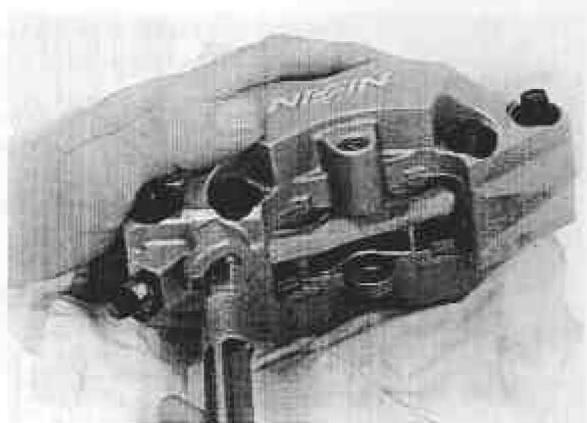
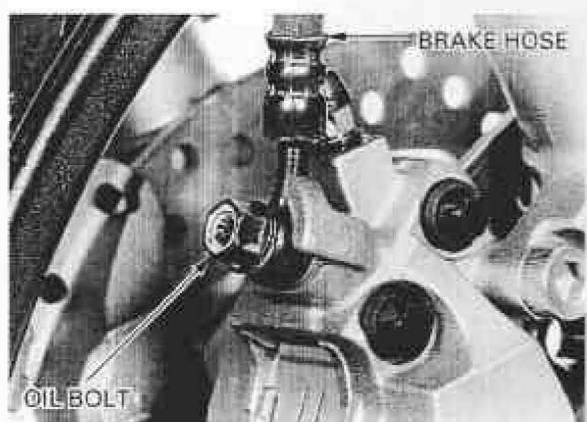
Disconnect the brake hose from the front brake caliper by removing the oil bolt and sealing washers.
Remove the front brake pads (page 15-5).

Install a corrugated cardboard or soft wood sheet between the pistons.

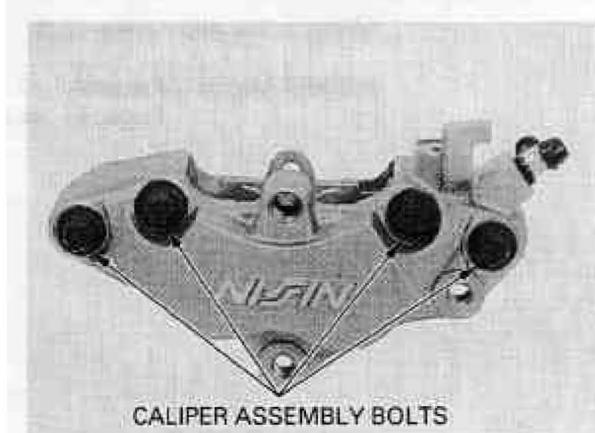
Apply small squirts of air pressure to the fluid inlet to remove the pistons.

WARNING

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

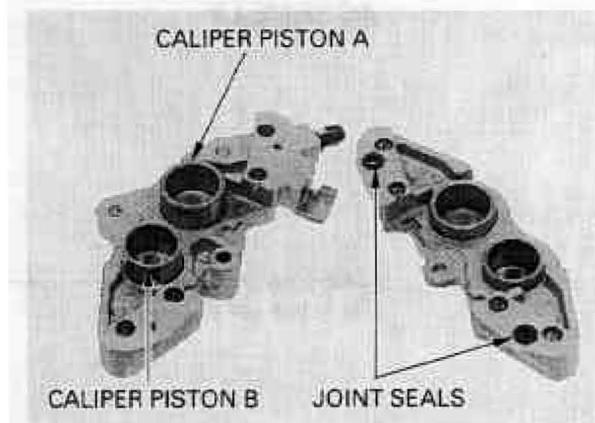


Remove the four caliper assembly bolts and separate the caliper body halves.



Remove the following:

- joint seals
- caliper piston A
- caliper piston B

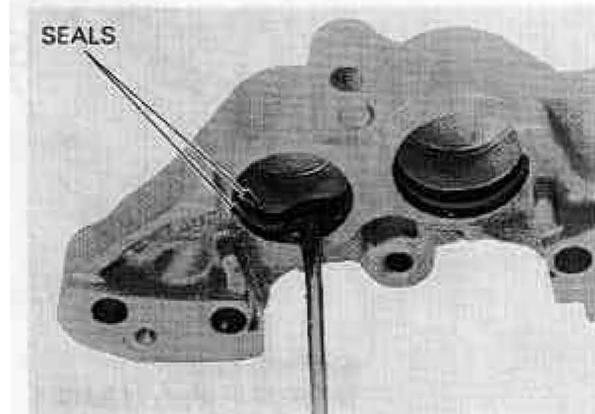


Push the dust seals and piston seals in and lift them out.

CAUTION:

Be careful not to damage the piston sliding surface.

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



INSPECTION

Check the caliper cylinders and pistons for scoring, scratches or damage.

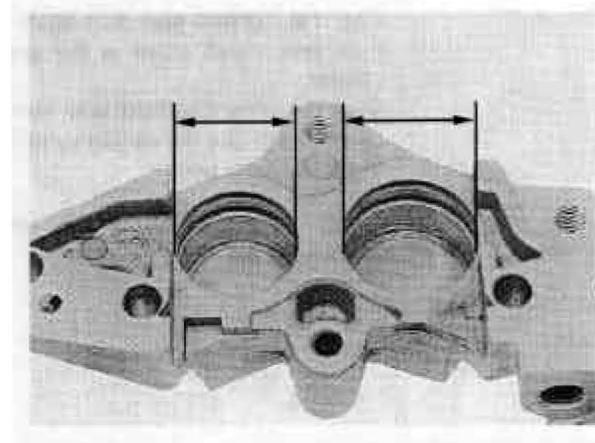
Measure the caliper cylinder I. D.

SERVICE LIMITS: **Cylinder A:**

30.29 mm (1.193 in)

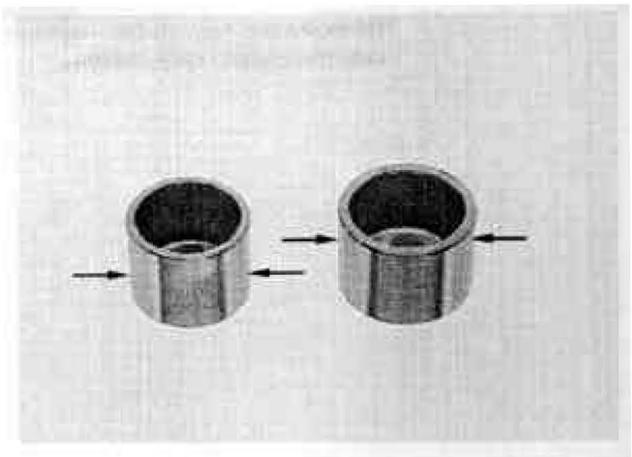
Cylinder B:

27.060 mm (1.0654 in)

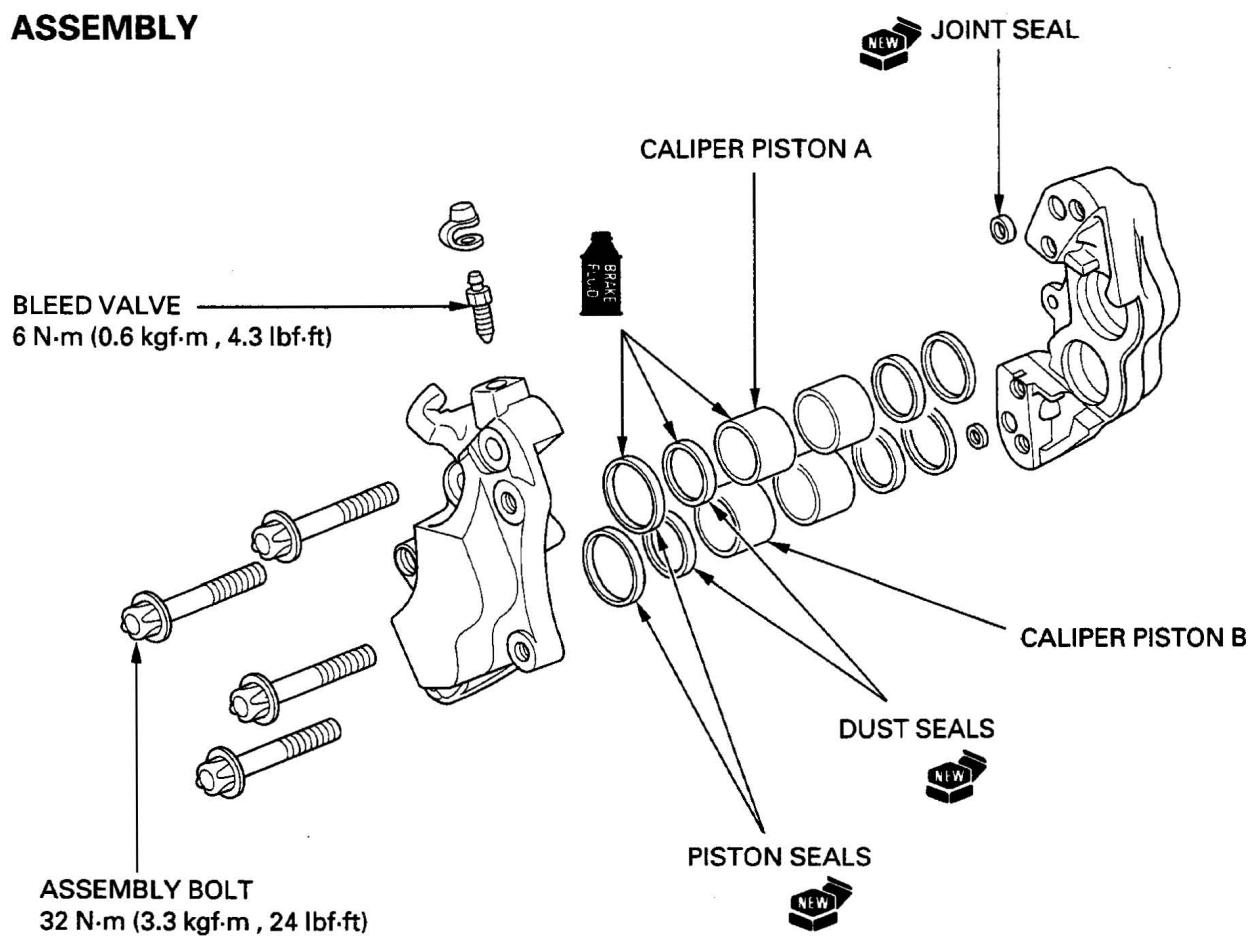


Measure the caliper piston O. D.

SERVICE LIMITS: **Piston A:** 30.14 mm (1.187 in)
Piston B: 26.91 mm (1.059 in)



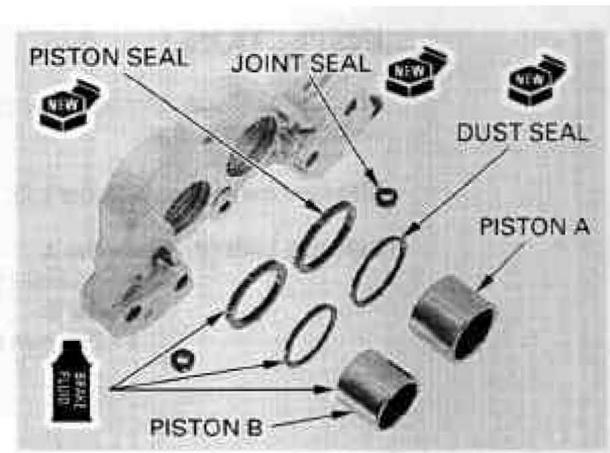
ASSEMBLY



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

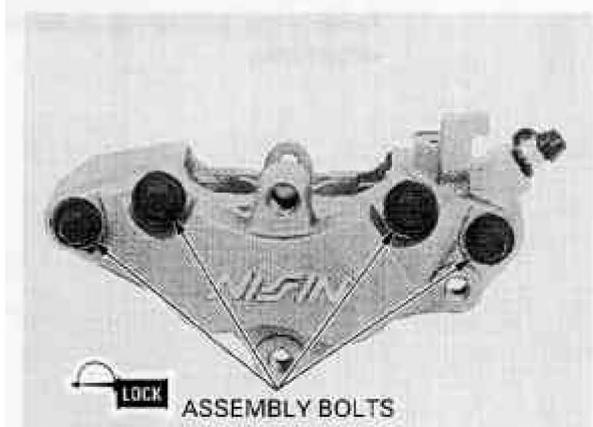
Coat the caliper pistons with clean brake fluid and install them into the caliper cylinders with the opening toward the pads.

Install new joint seals into the fluid passage grooves in the caliper body.



- Assemble the caliper body halves.
Apply locking agent to the caliper assembly bolt threads.
Install and tighten the assembly bolts.

TORQUE: 32 N·m (3.3 kgf·m , 24 lbf·ft)

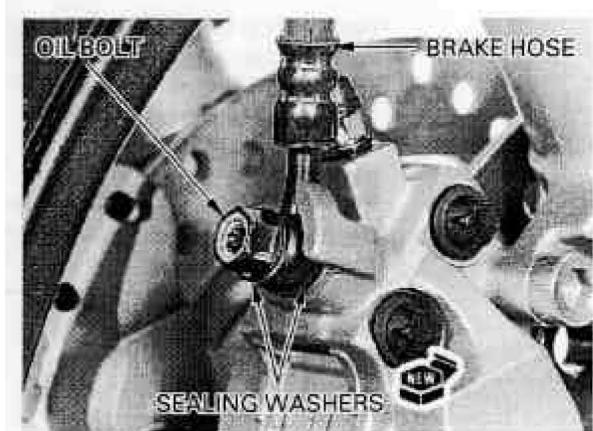


Install the brake pads (page 15-5).

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

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

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



REAR BRAKE CALIPER

CAUTION:

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

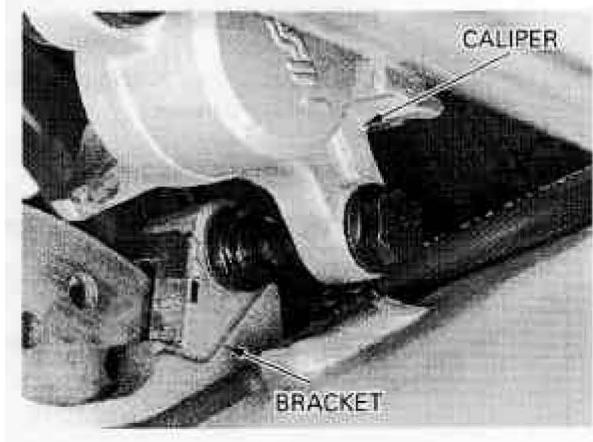
DISASSEMBLY

Drain the brake fluid from the rear brake hydraulic system (page 15-3).

Disconnect the brake hose from the rear brake caliper by removing the oil bolt and sealing washers.

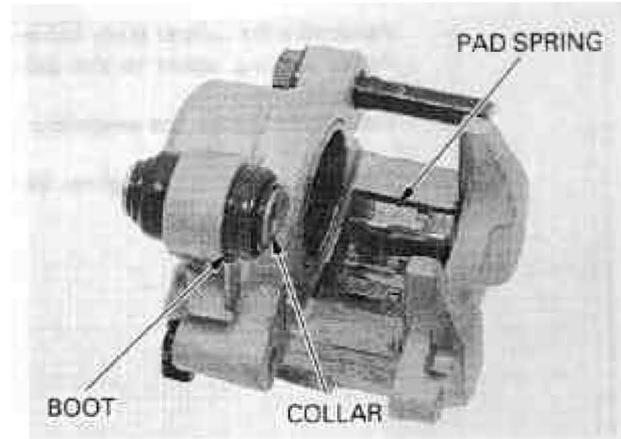
Remove the rear brake pads (page 15-6).

Remove the rear brake caliper from the bracket.



HYDRAULIC BRAKE

Remove the pad spring, collar and boot from the caliper body.

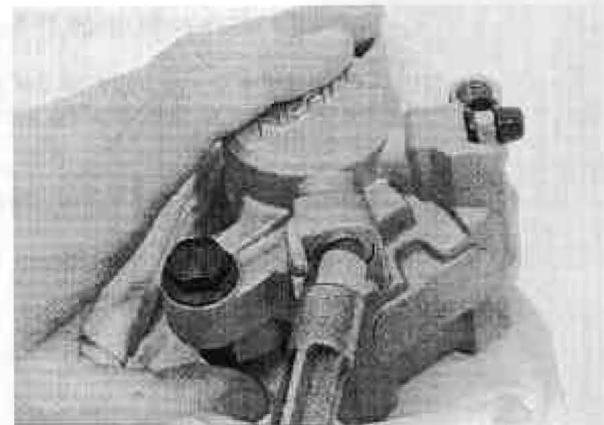


Place a shop towel over the piston.

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

WARNING

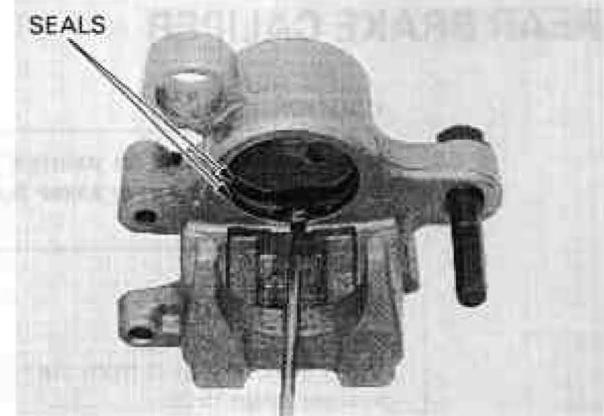
Do not use high pressure air or bring the nozzle too close to the inlet.



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

CAUTION:

Be careful not to damage the piston sliding surface.



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

INSPECTION

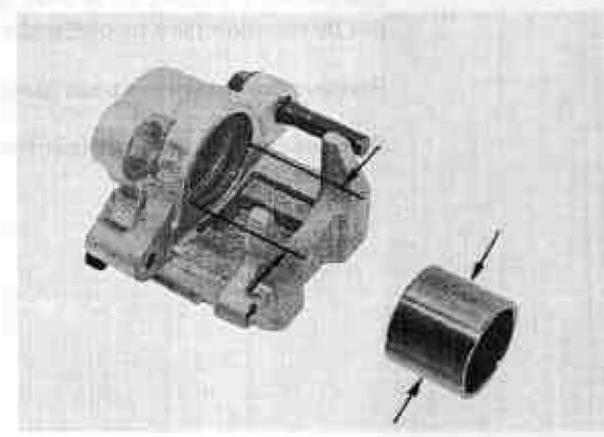
Check the caliper cylinder and piston for scoring, scratches or damage.

Measure the caliper cylinder I. D.

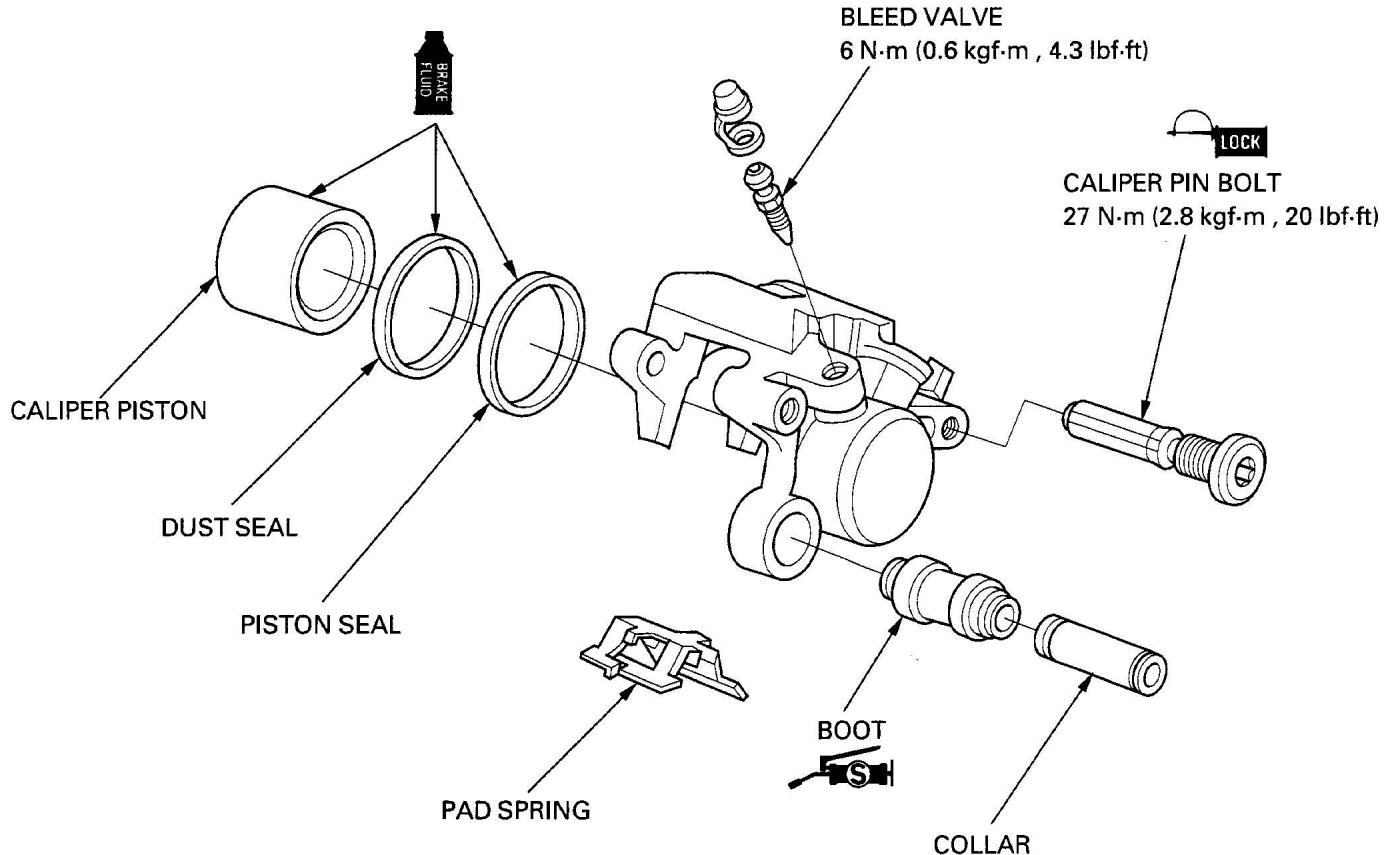
SERVICE LIMIT: 38.24 mm (1.506 in)

Measure the caliper piston O. D.

SERVICE LIMIT: 38.09 mm (1.500 in)



ASSEMBLY



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

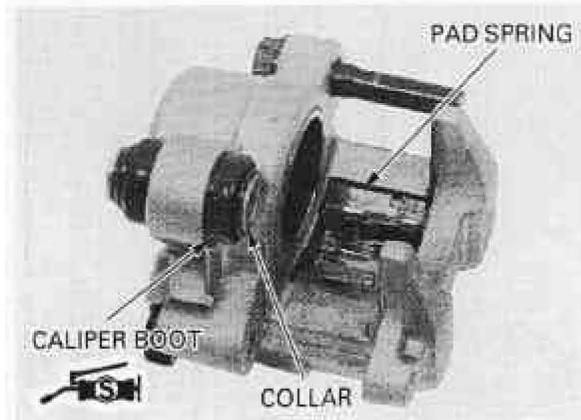
Coat the caliper piston with clean brake fluid and install it into the caliper cylinder with the opening toward the pads.



Install the pad spring onto the caliper body as shown.

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

Apply silicone grease to the inside of the boot.
Install the boot and collar into the caliper.

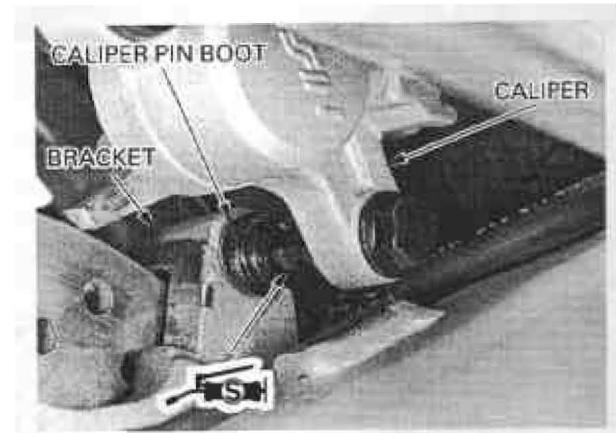


HYDRAULIC BRAKE

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

Apply silicone grease to the caliper pin and install the caliper onto the bracket.

Install the rear brake pads (page 15-6).



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

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

Fill and bleed the rear brake hydraulic system (page 15-3).

