

14. REAR WHEEL/SUSPENSION

SERVICE INFORMATION	14-1	SHOCK ABSORBER	14-9
TROUBLESHOOTING	14-2	SHOCK LINKAGE	14-24
REAR WHEEL	14-3	SWINGARM	14-28

SERVICE INFORMATION

GENERAL

▲ WARNING

- Use only nitrogen pressurize the shock absorber. The use of an unstable gas can cause a fire or explosion resulting in serious injury.
- The shock absorber contains nitrogen under high pressure. Do not allow fire or heat near the shock absorber.
- Before disposal of the shock absorber, release the nitrogen by pressing the valve core. Then remove the valve from the shock absorber.

- Keep grease off of brake pads and disc.

▲ WARNING

- A contaminated brake disc or pad reduce stopping power. Discard contaminated pads with a high quality brake degreasing agent.
- Use genuine Honda bolts for the rear suspension linkage and shock absorber pivot and mounting; ordinary bolts lack adequate strength for these applications. Also take note of the installation direction of these bolts since they must be installed correctly.
- A box or work stand is required to support the motorcycle.
- Refer to section 15 for brake system information.

SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Cold tire pressure	(ED, DK types)	100 kPa (1.0 kgf/cm ² , 15 psi)	—
	(U type)	125 kPa (1.25 kgf/cm ² , 18 psi)	—
Axle runout		—	0.2 (0.01)
Wheel rim runout	Radial	—	2.0 (0.08)
	Axial	—	2.0 (0.08)
Wheel rim-to-hub distance		22.75 (0.896)	—
Drive chain slack		30 – 40 (1-1/4 – 1-5/8)	—
Drive chain length	(ED, DK types)	—	1,659 (65.3)
	(U type)	—	1,611 (63.4)
Replacement drive chain		D.I.D. 520 VC5 or RK520MOZ9	—
Drive chain guide slider thickness		—	To the indicator
Drive chain slider thickness		—	4.0 (0.15)
Recommended shock oil		Fork fluid (SS8)	—
Damper gas pressure/compressed gas		981 kPa (10 kgf/cm ² , 142 psi)/Nitrogen	—
Shock absorber spring free length		190.0 (7.5)	186.2 (7.33)
Shock absorber spring preload length		181.5 (7.15)	173.5 – 185.5 (6.83 – 7.30)

REAR WHEEL/SUSPENSION

TORQUE VALUES

Rear axle nut	93 N·m (9.5 kgf·m, 69 lbf·ft) U-nut.
Driven sprocket nut	32 N·m (3.3 kgf·m, 24 lbf·ft) U-nut.
Rear brake disc plate bolt	42 N·m (4.3 kgf·m, 31 lbf·ft) ALOC bolt., Replace with a new one.
Rear brake hose guide screw	4.3 N·m (0.43 kgf·m, 3.1 lbf·ft) Apply a locking agent to the threads.
Swingarm pivot nut	88 N·m (9.0 kgf·m, 65 lbf·ft) U-nut.
Rear shock absorber mounting bolt (upper)	44 N·m (4.5 kgf·m, 33 lbf·ft)
(lower)	44 N·m (4.5 kgf·m, 33 lbf·ft) U-nut.
Shock arm-to-swingarm bolt/nut	69 N·m (7.0 kgf·m, 51 lbf·ft) U-nut.
Shock link-to-frame bolt/nut	49 N·m (5.0 kgf·m, 36 lbf·ft) U-nut.
Shock link-to-shock arm bolt/nut	44 N·m (4.5 kgf·m, 33 lbf·ft) U-nut.
Damper rod end nut	37 N·m (3.8 kgf·m, 27 lbf·ft) U-nut.
Damping adjuster	20 N·m (2.0 kgf·m, 14 lbf·ft)
Spoke nipple	3.8 N·m (0.38 kgf·m, 2.7 lbf·ft)
Rim lock	15 N·m (1.5 kgf·m, 11 lbf·ft)

TOOLS

Special

Bushing driver pin assembly	07GMD – KT80100
Needle bearing remover	07946 – KA50000
Needle bearing remover	07931 – MA70000
Slider guide attachment	07974 – KA50102
Slider guide, 14 mm	07974 – KA40001
Spherical bearing driver	07HMF – KS60100

Common

Attachment, 24 x 26 mm	07746 – 0010700
Attachment, 37 x 40 mm	07746 – 0010200
Attachment, 42 x 47 mm	07746 – 0010300
Bearing remover head, 17 mm	07746 – 0050500
Bearing remover shaft	07746 – 0050100
Driver	07749 – 0010000
Nipple wrench	07701 – 0020300
Pilot, 17 mm	07746 – 0040400

TROUBLESHOOTING

Soft suspension

- Weak spring
- Oil leakage from damper unit

Hard suspension

- Incorrectly mounted suspension components
- Bent swingarm pivot
- Damaged swingarm bearings
- Damaged shock absorber

Steers to one side or does not track straight

- Bent rear axle
- Axle alignment/chain adjustment not equal on both sides

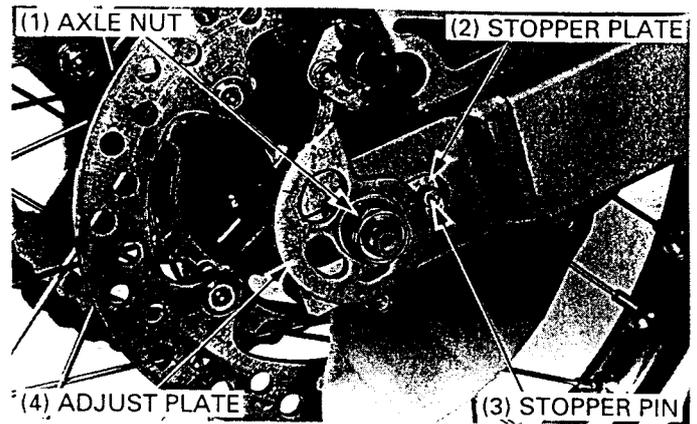
Rear wheel wobbling

- Bent rim
- Worn rear wheel bearings
- Faulty tire

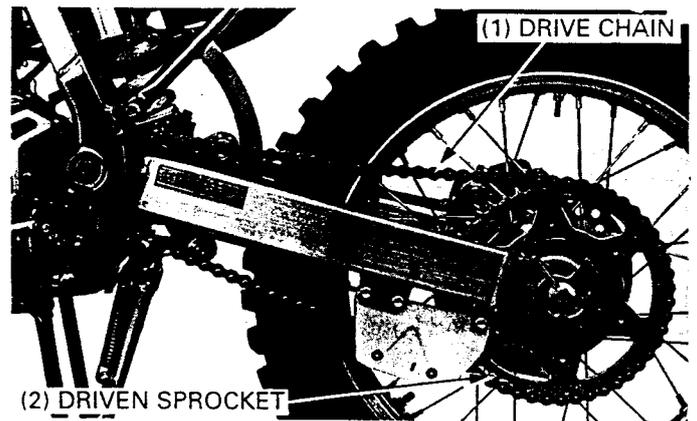
REAR WHEEL

REMOVAL

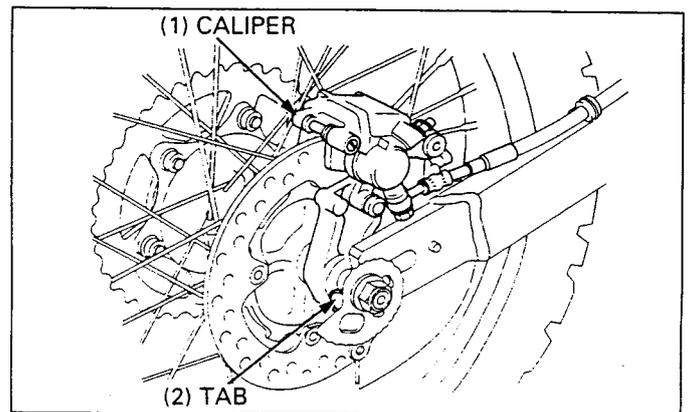
Loosen the rear axle and turn the adjusters so the rear wheel can be moved all the way forward.
 Raise the rear wheel off the ground with a box or work stand under the engine.
 Remove the stopper plate from the stopper pin.



Move the rear wheel forward for maximum drive chain slack.
 Remove the drive chain from the driven sprocket.



Move the rear wheel back to free the tab from the swingarm.
 Remove the brake caliper.



CAUTION

- When removing the rear wheel, be careful not to damage the brake pads with the disc.

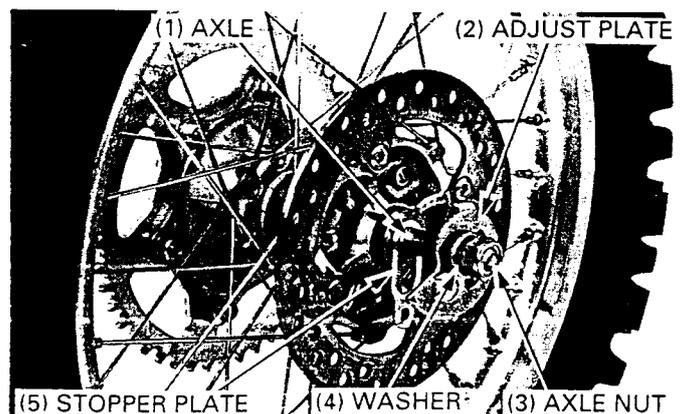
NOTE

- Do not depress the brake pedal after the rear wheel is removed. The caliper piston will move out and make reassembly difficult.

Remove the rear wheel.

If you plan to disassemble the rear wheel, remove the following.

- Axle nut
- Washer
- Right adjust plate
- Stopper plate
- Axle shaft/left adjust plate



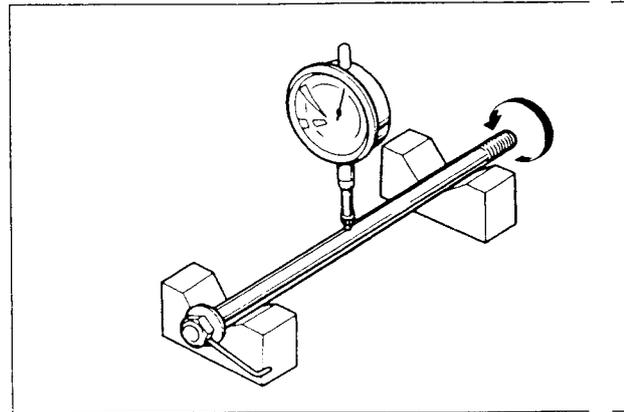
REAR WHEEL/SUSPENSION

INSPECTION

Axle

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

SERVICE LIMIT: 0.2 mm (0.01 in)



Wheel rim

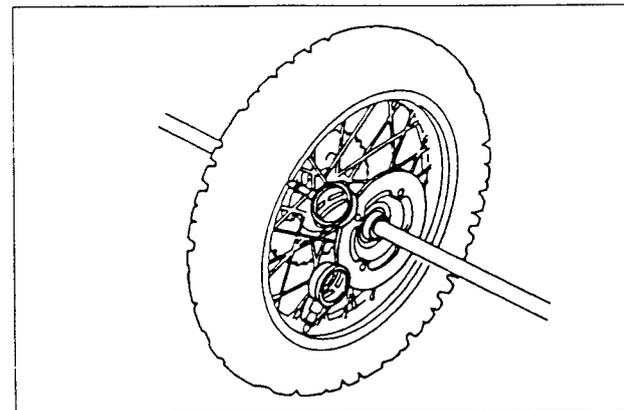
Check the rim runout by placing the wheel on a truing stand.

Spin the wheel by hand, and read the runout using a dial indicator.

Actual runout is 1/2 of the total indicator reading.

**SERVICE LIMITS: Radial: 2.0 mm (0.08 in)
Axial: 2.0 mm (0.08 in)**

Check the spokes and tighten any that are loose.



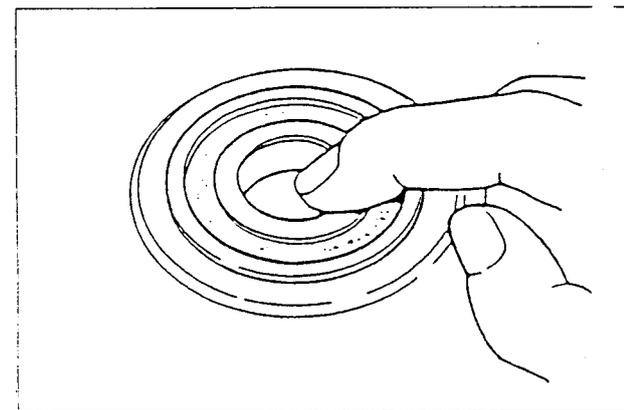
Wheel bearings

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

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

NOTE

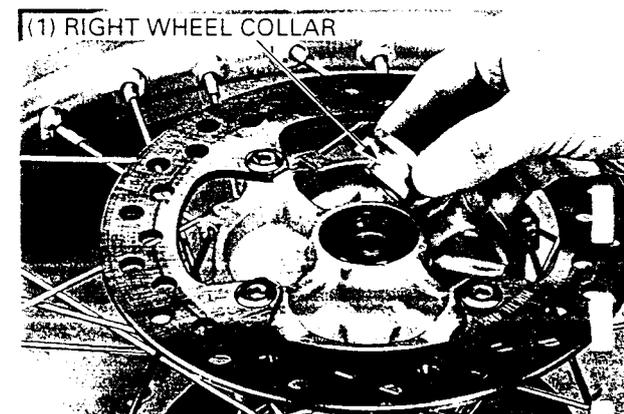
- Replace the wheel bearings in pairs.



DISASSEMBLY

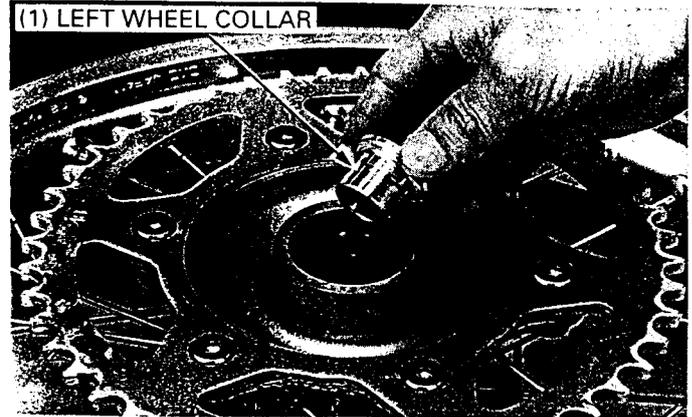
Remove the following:

- Right wheel collar

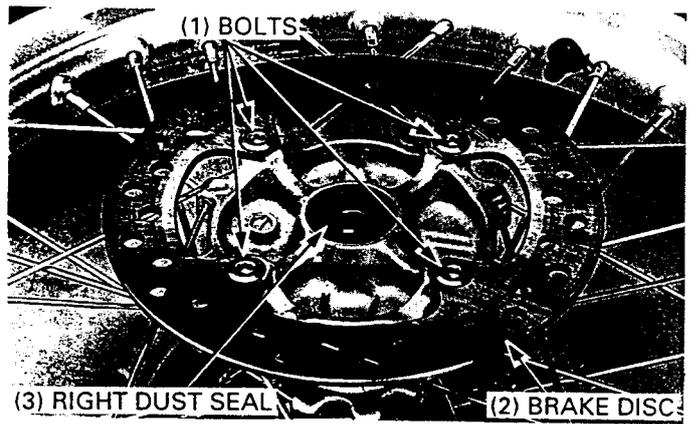


REAR WHEEL/SUSPENSION

Remove the following:
— Left wheel collar



— Rear brake disc bolts
— Rear brake disc
— Right dust seal

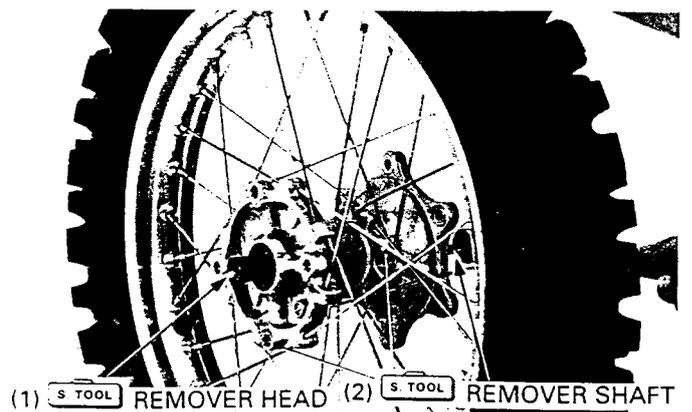


— Driven sprocket bolts/washers/nuts
— Driven sprocket
— Left dust seal



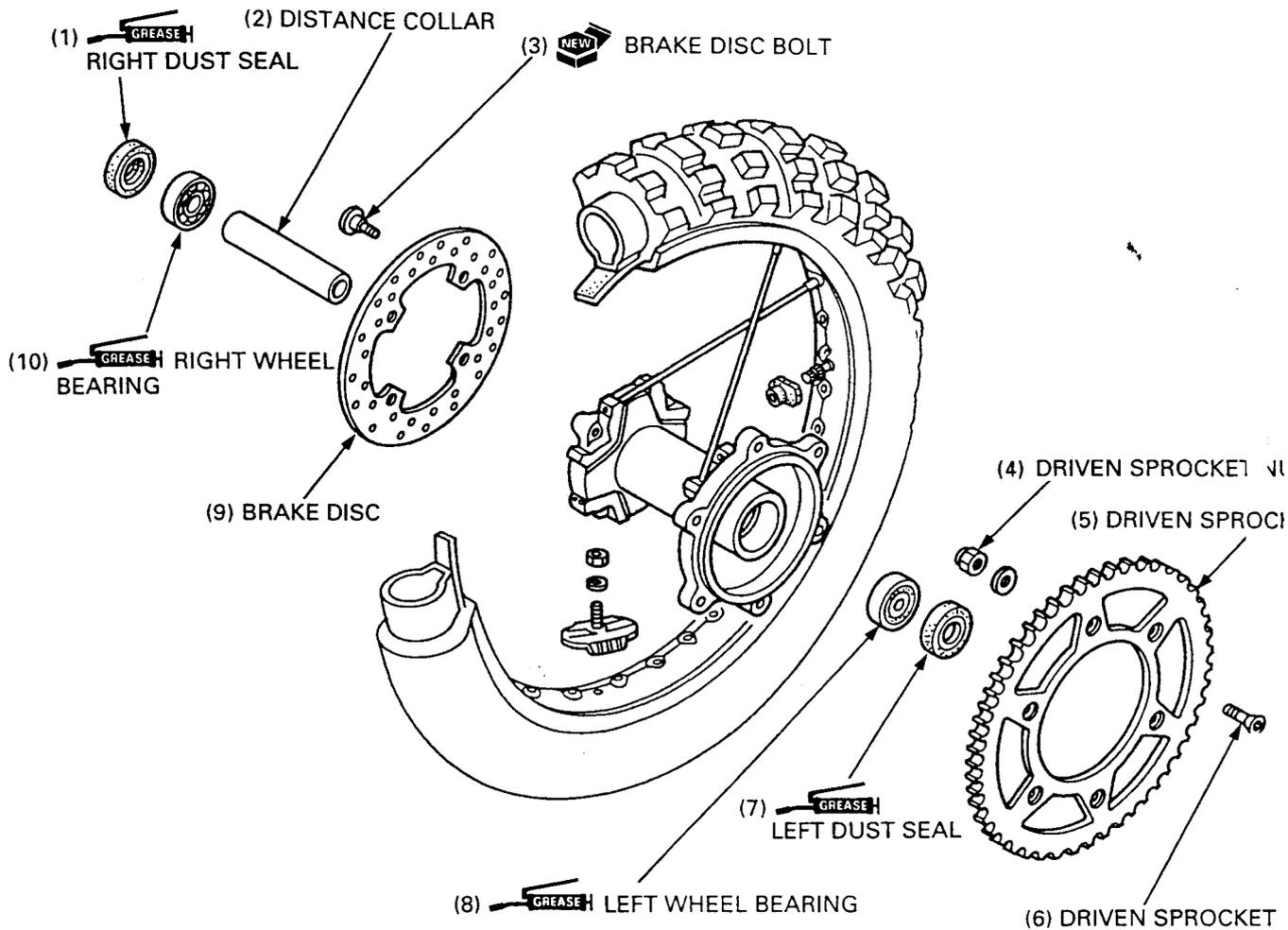
Remove the bearing and distance collar using the following tools.

TOOL:
Bearing remover head, 17 mm 07746 - 0050500
Bearing remover shaft 07746 - 0050100



REAR WHEEL/SUSPENSION

ASSEMBLY



Place the rim on a work bench.

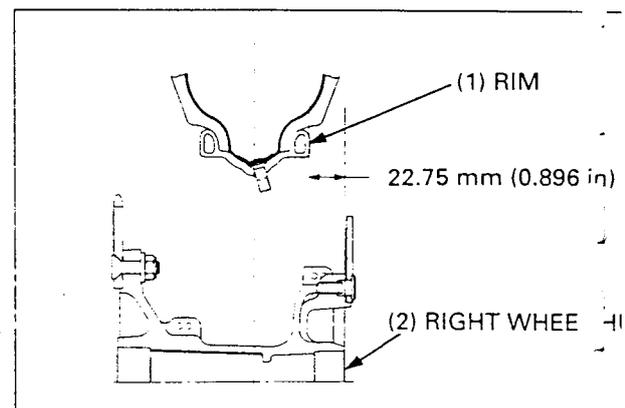
Clean the spoke and nipple threads.
Adjust the hub position to set the distance from the hub right end surface to the side of rims as shown.

WHEEL RIM-TO-HUB STANDARD DISTANCE:
22.75 mm (0.896 in)

Torque the spokes in 2 or 3 progressive steps and adjust the wheel rim runout.

TOOL:
Nipple wrench 07701 - 0020300

TORQUE: 3.8 N·m (0.38 kgf·m, 2.7 lbf·ft)

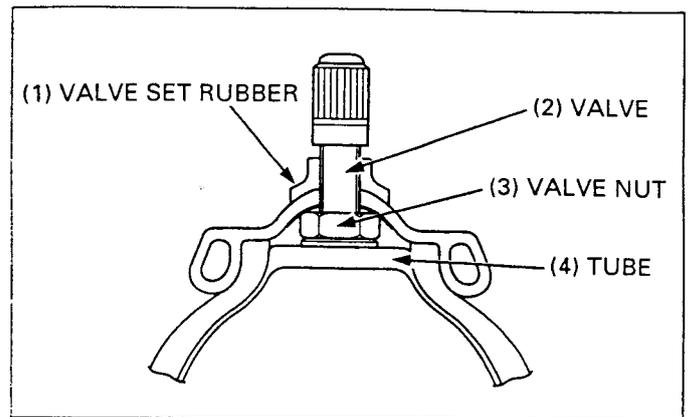


REAR WHEEL/SUSPENSION

Install the valve nut on the valve.
Install the valve into the wheel rim with the valve setting rubber.

Install and tighten the rim lock nut.

TORQUE: 15 N·m (1.5 kgf·m, 11 lbf·ft)



Apply grease to the wheel bearings.

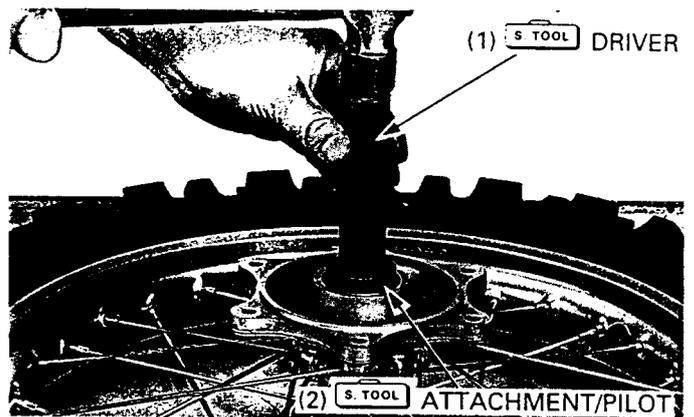
Drive in the left wheel bearing using the following tools.

TOOL:

Driver	07749 - 0010000
Attachment, 42 x 47 mm	07746 - 0010300
Pilot, 17 mm	07746 - 0040400

NOTE

- Drive the bearing in squarely, with the sealed sides facing out.

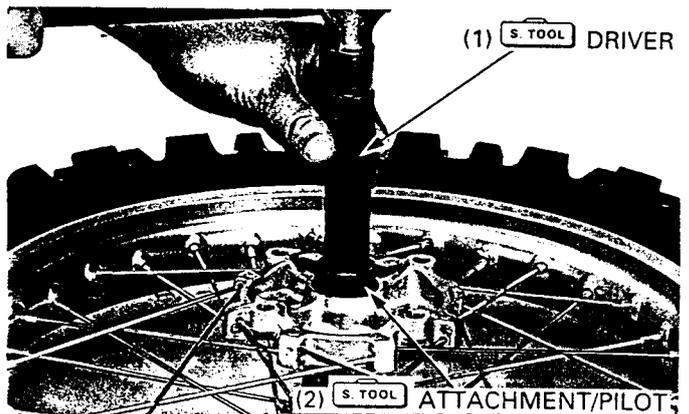


Install the distance collar.

Drive in the right wheel bearing using the following tools.

TOOL:

Driver	07749 - 0010000
Attachment, 37 x 40 mm	07746 - 0010200
Pilot, 17 mm	07746 - 0040400



Apply grease to the left dust seal lip.

Install the left dust seal.

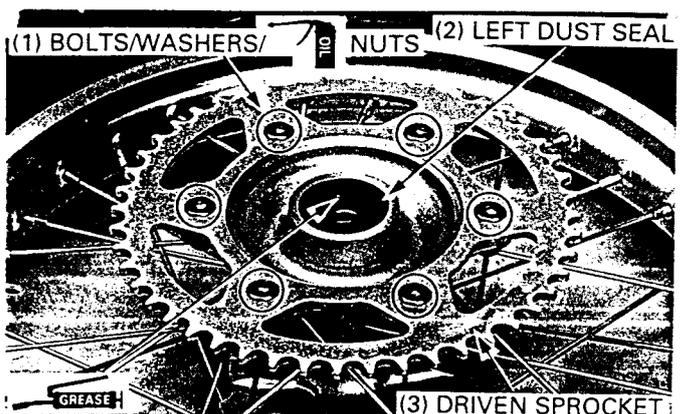
Install the driven sprocket and six bolts.

Apply engine oil to the threads and seating surfaces of the driven sprocket nuts.

Install the washers and nuts.

Tighten the nuts to the specified torque.

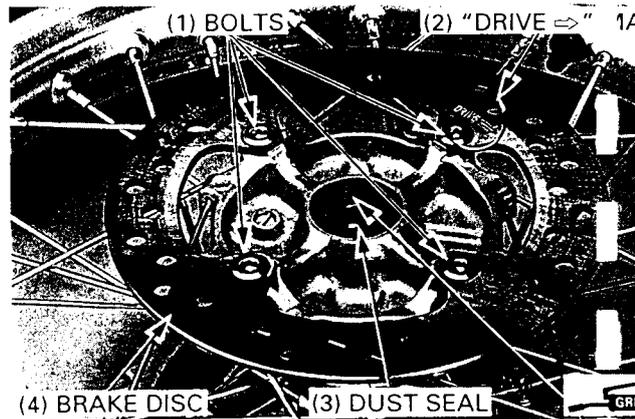
TORQUE: 32 N·m (3.3 kgf·m, 24 lbf·ft)



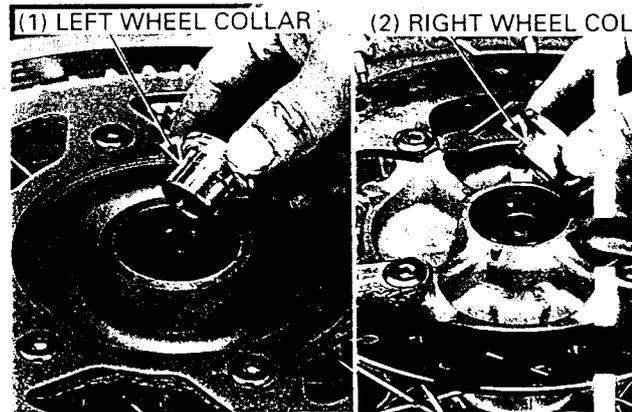
REAR WHEEL/SUSPENSION

Apply grease to the right dust seal lip.
Install the right dust seal.
Install the rear brake disc with the "DRIVE ⇌" mark facing out.
Install and tighten the disc bolts to the specified torque.

TORQUE: 42 N·m (4.3 kgf·m, 31 lbf·ft)



Install the right wheel collar.
Install the left wheel collar.

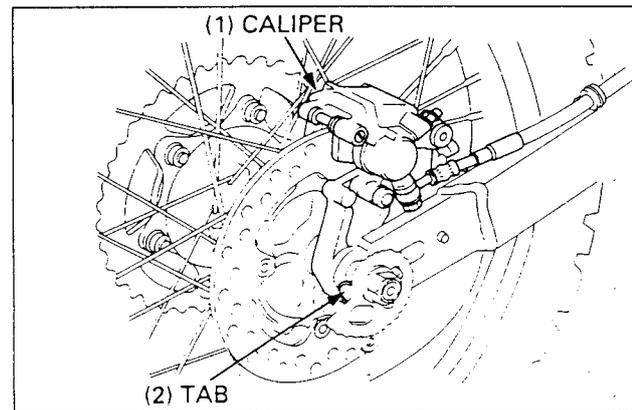


INSTALLATION

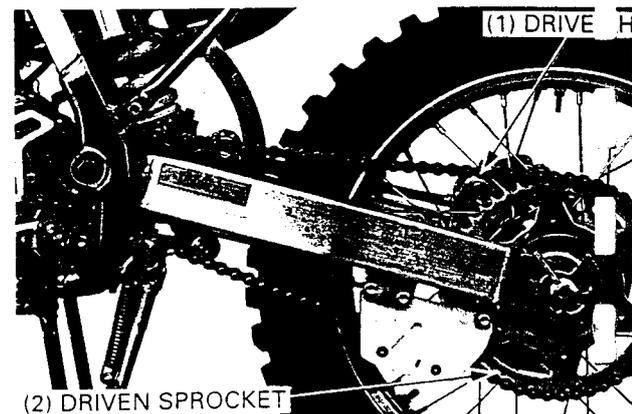
If you disassembled the rear wheel, install the following.

- Axle shaft (from the left side)/Left adjuster plates
- Washer
- Right adjuster plates
- Stopper plate
- Axle nut

Install the rear wheel, hooking the tab on the swingarm.
Install the rear brake caliper to the axle shaft.
Align the bracket with the slide rail on the swingarm.



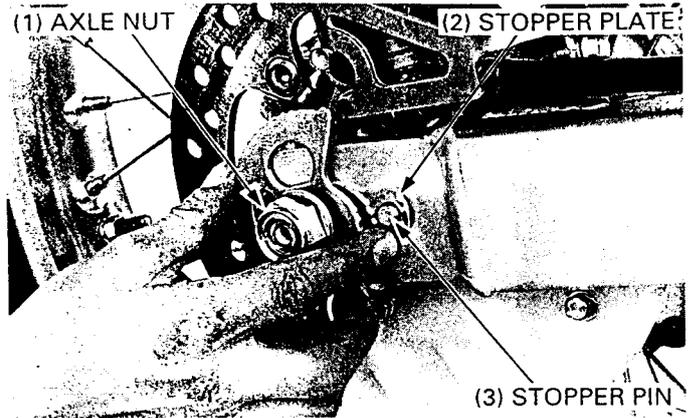
Install the drive chain to the driven sprocket.



REAR WHEEL/SUSPENSION

Push the rear wheel forward, then slip the stopper plate over the pin on the swingarm.
Adjust the drive chain slack (page 3-13).
Tighten the rear axle nut to the specified torque.

TORQUE: 93 N·m (9.5 kgf·m, 69 lbf·ft)

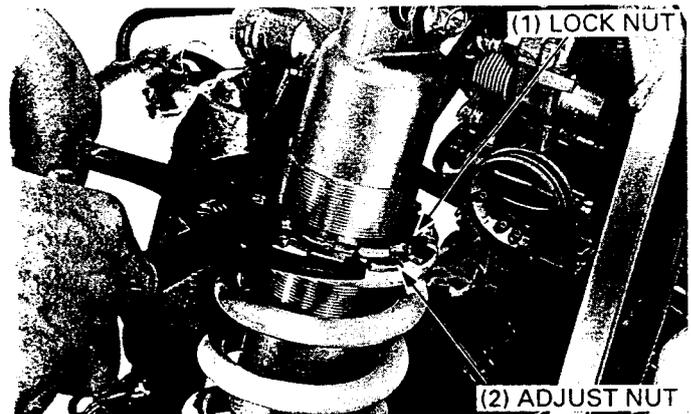


SHOCK ABSORBER

REMOVAL

▲ WARNING

- Use only nitrogen gas to pressurize the shock absorber. The use of an unstable gas can cause a fire or explosion resulting in serious injury.
- The shock absorber contains nitrogen under high pressure. Do not allow fire or heat near the shock absorber.
- Before disposal of the shock absorber, release the nitrogen by pressing the valve core. Then remove the valve from the shock absorber.



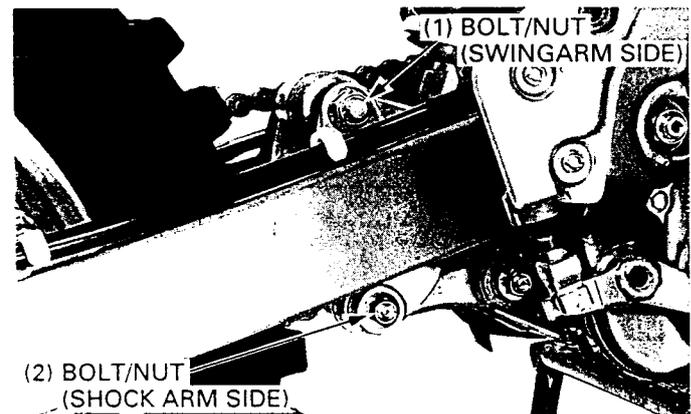
Remove the air cleaner housing (page 5-3).
Raise the rear wheel off the ground by placing a work stand or box under the engine.

NOTE

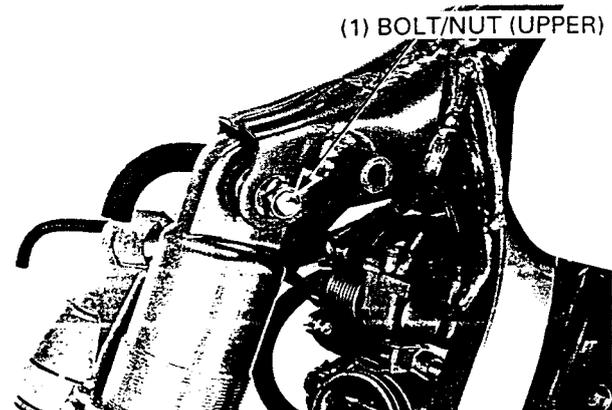
- If you plan to disassemble the shock absorber, loosen the spring lock nut and adjusting nut.

Remove the following:

- Shock arm bolt/nut (swingarm side)
- Shock link bolt/nut (shock arm side)



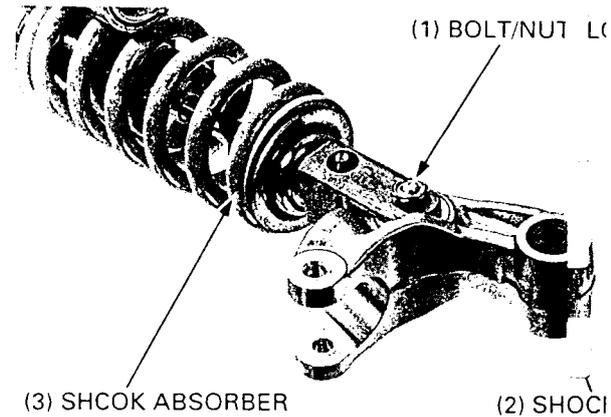
- Shock absorber bolt/nut (upper)
- Shock absorber/shock arm



REAR WHEEL/SUSPENSION

— Shock absorber bolt/nut (lower)

Separate the shock arm from the shock absorber.

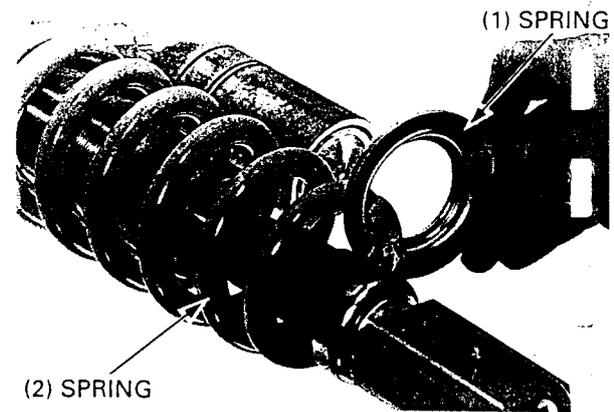


DISASSEMBLY

Measure the record the spring length to use during assembly. Loosen the lock nut and adjusting nut.

Remove the following from the damper unit:

- Spring seat
- Spring
- Adjusting nut
- Lock nut



BLADDER REPLACEMENT

NOTE

- Replace the bladder if oil leaks around the chamber cap or oil spills out when releasing the nitrogen from the reservoir.
- Perform this procedure before draining the oil from the damper.

Depress the valve core to release the nitrogen from the reservoir.

▲ WARNING

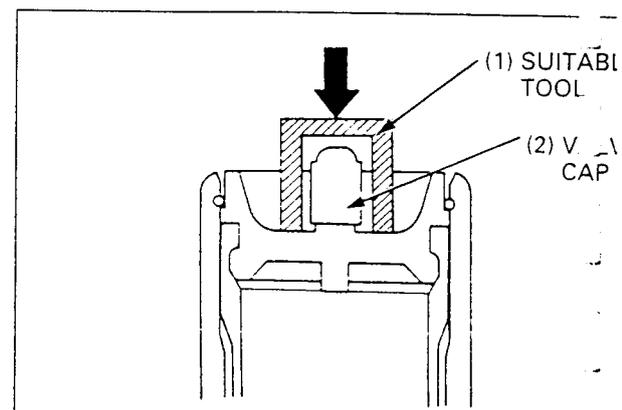
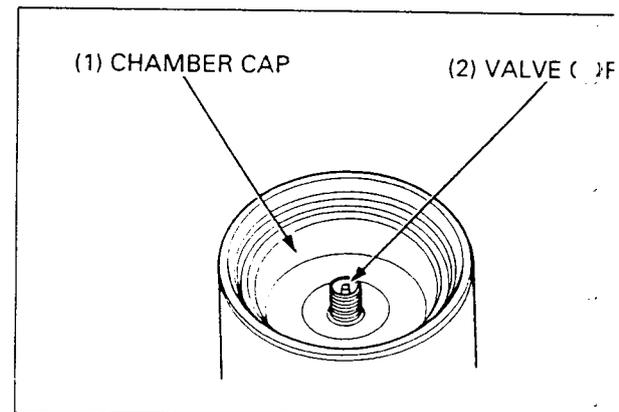
- *Release all nitrogen pressure before disassembly; otherwise the chamber cap will be under significant pressure and could cause severe injury or death.*
- *Wear protective clothing and adequate eye protection to protect against injury and prevent debris from getting in your eyes.*
- *Point the valve away from you to prevent debris from getting in your eyes.*

Remove the valve core.

Put a suitable tool on the chamber cap and push it in by lightly tapping on the tool with a plastic hammer until you have good access to the stopper ring.

CAUTION

- *To avoid damaging the threads of the gas valve, install the cap before depressing the chamber cap.*

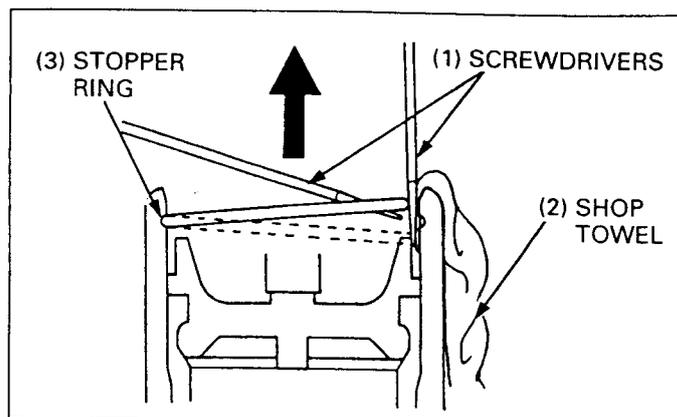


NOTE

- Depress the chamber cap just the minimum amount necessary for stopper ring access.

You'll need two small screwdrivers and a shop towel to remove the stopper ring.

The stopper ring groove in the reservoir is ramped toward the inside to give the stopper ring a square shoulder on which to seat securely.



CAUTION

- To avoid damaging the inside surfaces of the reservoir, cover the screwdriver with shop towel.

To remove the stopper ring, first push one end of the stopper ring out of its groove, then slip the second screwdriver between the stopper ring and the reservoir to act as a ramp.

Now use the other screwdriver to pull the stop ring completely out.

NOTE

- Check the stopper ring groove for damage. Remove any burrs with fine emery cloth before pulling the damper rod out of the case.

Hold the shock absorber in a vise with shop towel or soft jaws.

Using a suitable squeeze bottle, fill the reservoir with the recommended shock oil.

RECOMMENDED SHOCK OIL: Fork fluid (SS8)

Slowly pump the damper rod until no air bubbles appear in the valve core hole, then pull the damper rod all the way. Install the valve core securely.

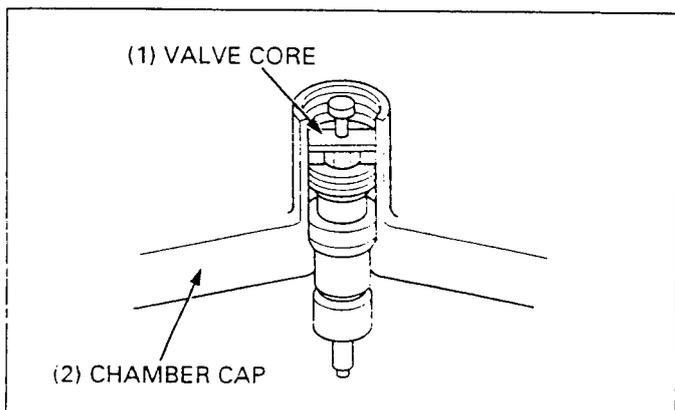
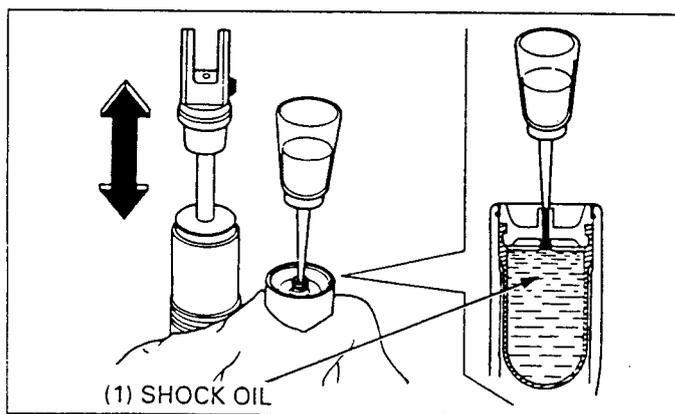
Remove the chamber cap and bladder following the procedure below:

Wrap a shop towel around the chamber cap.

1. Compress the damper rod slowly, to force the chamber cap out.

WARNING

- The chamber cap will be removed with hydraulic pressure so its force can be significant considering the air in the bladder. Wear protective clothing and a face guard to protect your eyes and face in a case the chamber cap pops out quickly and forcibly.



REAR WHEEL/SUSPENSION

- Place the damper in a vice with soft jaws with the damping adjuster facing up. Be careful not to distort the damper body.

CAUTION

- Do not overtighten the vise. Damage to the shock body will result.

Remove the damping adjuster.

- Fill the damper with shock oil through the damping adjuster hole, while slowly pulling the damper rod out.
- Reinstall the damping adjuster after filling the damper.

NOTE

- The damper must be kept upright to prevent oil from leaking out.

- Place the damper with the reservoir chamber cap facing up.
- Repeat steps 1 to 5 until the chamber cap is removed from the reservoir.

Remove the bladder from the chamber cap.

CAUTION

- Do not use any sort of tool to remove the bladder, because it may damage the chamber cap.
- Replace the bladder with a new one. Do not reuse the removed one.

Attach a new bladder to the chamber cap.

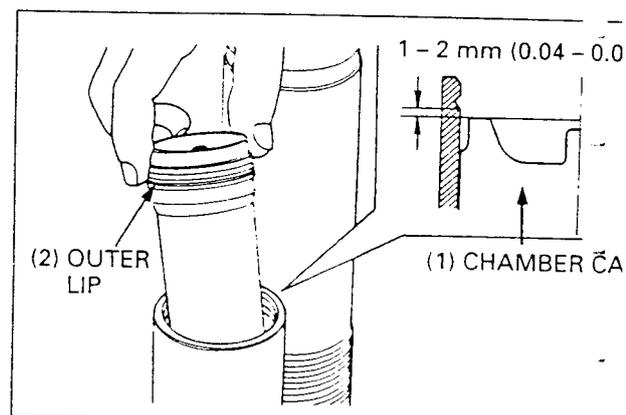
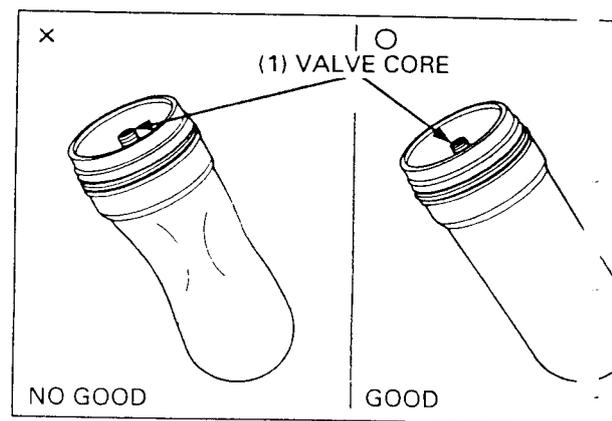
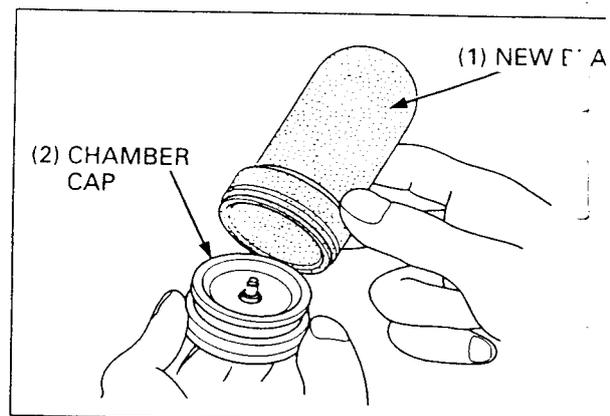
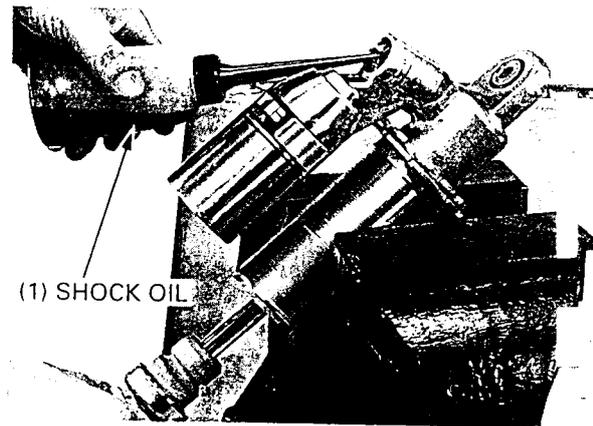
If the bladder becomes distorted during installation, depress the valve core to reform it.

Clean the inside of the reservoir and fill it with the recommended shock oil.

RECOMMENDED SHOCK OIL: Fork fluid (SS8)

Apply a light coating of shock oil to the lip of the bladder, and press the chamber cap in the reservoir to about 1 - 2 mm (0.04 - 0.08 in) below the stop ring groove.

Install the stop ring in the groove of the reservoir securely. Temporarily fill the reservoir with 7.1 psi (49 kPa) of air slowly until the chamber cap seats against the stop ring.



▲ WARNING

- *Be sure the stop ring is seated in the ring groove all the way around or the chamber cap can come apart when riding the motorcycle.*

Make sure that chamber cap face is level with the reservoir face.

▲ WARNING

- *If the chamber cap does not seat fully, it may fly out when filling the reservoir with nitrogen.*

Release the air from the reservoir by depressing the valve core. Bleed the air from the shock absorber (page 14-20). Fill the reservoir with nitrogen to the specified pressure (page 14-21).

DAMPER DISASSEMBLY

Depress the valve core to release nitrogen from the reservoir.

▲ WARNING

- *Point the valve away from you to prevent debris getting in your eyes.*
- *Before disposal of the shock absorber, release the nitrogen by pressing the valve core. Then remove the valve from the shock absorber.*

Remove the damping adjuster.

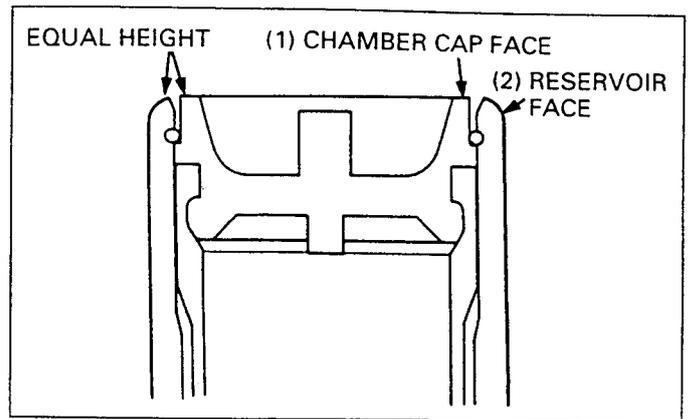
Drain most of the shock oil from the damper and reservoir by pumping the damper rod in and out several times.

Clamp the shock absorber in a vise at the damper case, protected on both sides by pieces of wood.

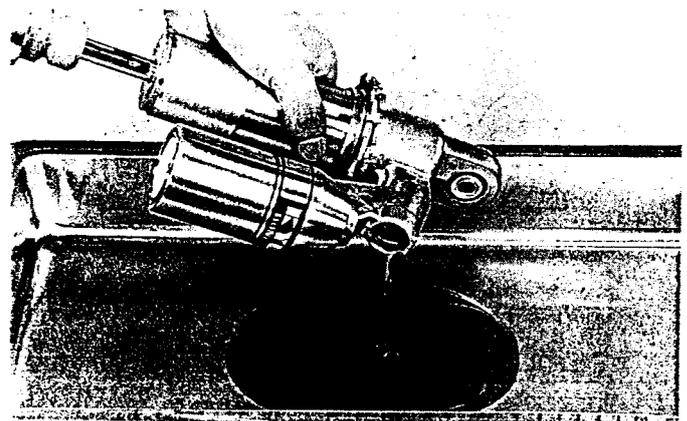
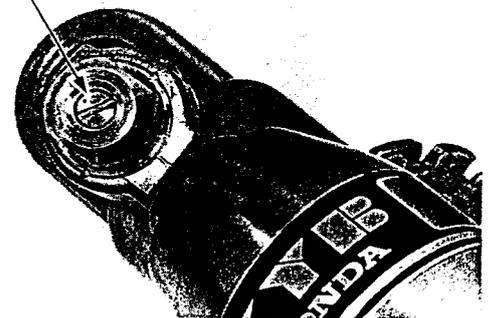
Remove the end plate and tape or tie it to the bump rubber so it won't get in the way.

Push in the damper seal until you have good access to the stopper ring.

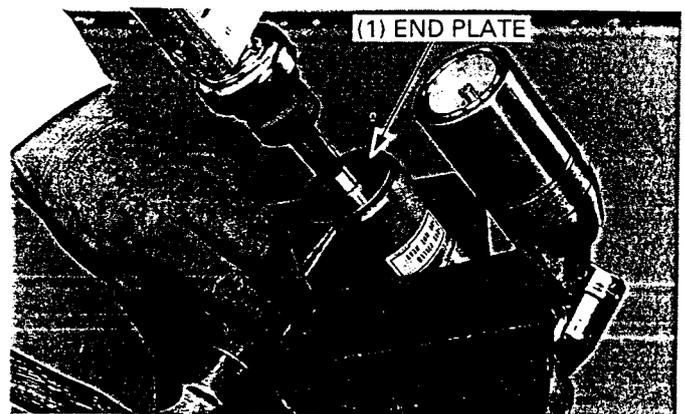
You'll need two small screwdrivers to remove the stopper ring. The stopper ring groove in the damper case is ramped towards the inside to give the stopper ring a square shoulder on which to seat securely.



(1) DAMPING ADJUSTER



(1) END PLATE



REAR WHEEL/SUSPENSION

To remove the stopper ring, first push one end of the stopper ring out of its groove, then slip the second screwdriver between the stopper ring and the damper case to act as a ramp.

Now, use the other screwdriver to pull the stopper ring completely out.

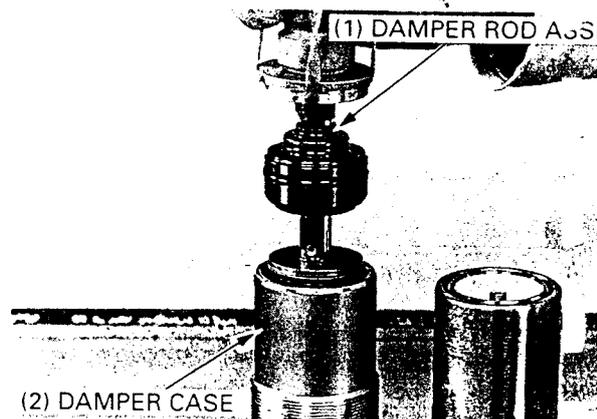
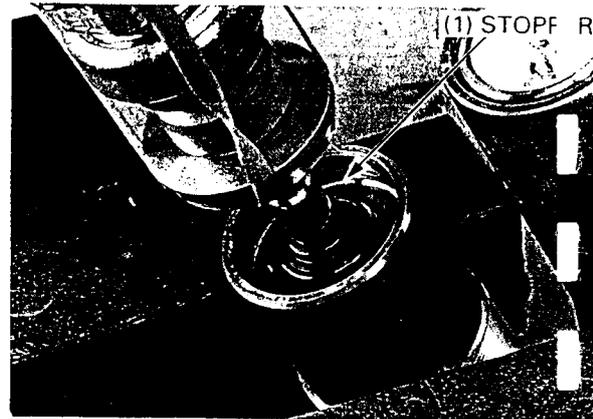
NOTE

- Check the stopper ring groove for burrs. Remove any burrs with fine emery cloth before pulling the damper rod out of the case.

CAUTION

- *Burrs will damage the damper rod piston ring.*

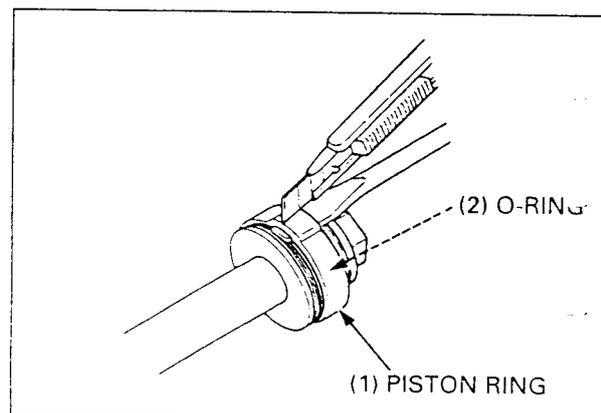
Carefully pull the damper rod assembly out of the damper case.



PISTON RING REPLACEMENT

Inspect the piston ring.

If the piston ring is damaged, cut the piston ring as shown. Replace it and the O-ring with new parts as shown below.

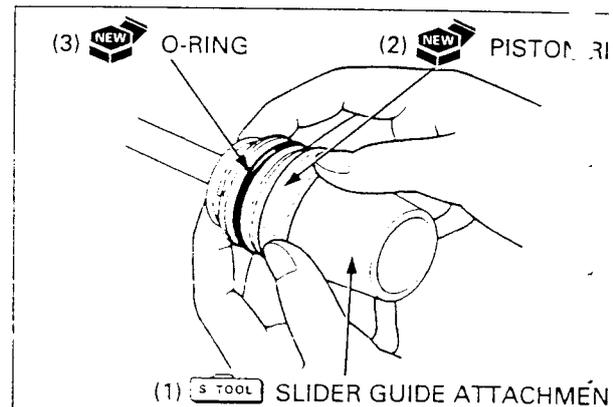


Place the slider guide attachment over the piston and install a new O-ring and piston ring into place with your finger.

TOOL:

Slider guide attachment 07974 - KA50102

Compress the piston ring against the ring groove, and seat the piston ring into the ring groove.

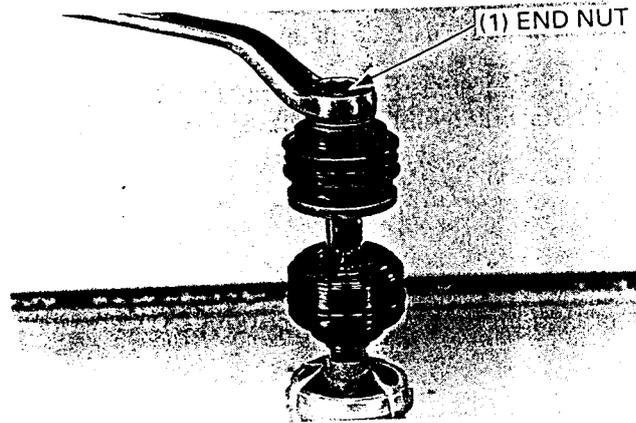


DAMPER ROD DISASSEMBLY

CAUTION

- To keep lint or dirt from getting onto damper rod parts, do not wear gloves while working on the damper rod.

Place the damper in a vise with soft jaws or a shop towel, being careful not to distort the lower mount. Remove the end nut and discard it.



NOTE

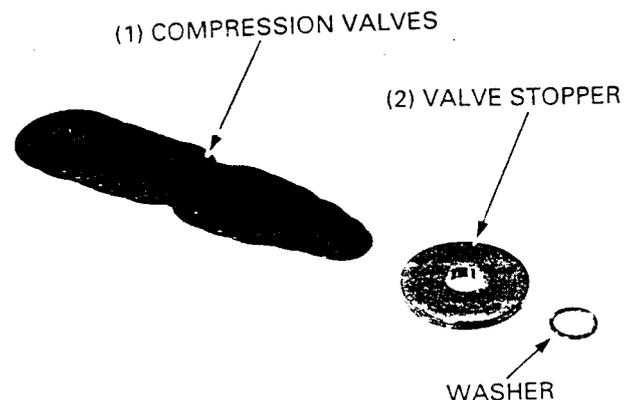
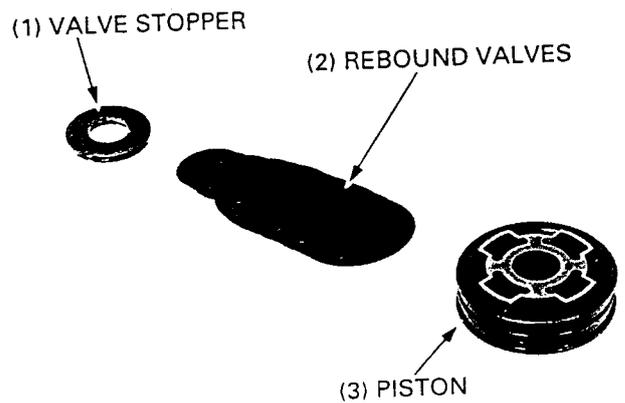
- If the damper rod is cracked or damaged when removing the end nut, replace the damper rod assembly with a new one.
- Remove all burrs from the end of the damper rod.

Remove the valve stopper, rebound valves and piston from the damper rod.

NOTE

- Pass a piece of thin wire through the removed valves to ensure correct reassembly.
- Keep dust and abrasives away from all damper rod parts.
- Thoroughly clean the valves in solvent and blow them dry with compressed air, if they have been disassembled and separated.
- Be careful not to get solvent on the O-ring and piston ring.
- The valve arrangement and number of valves shown is typical and may not represent this model exactly.

Remove the compression valves, valve stopper and washer.

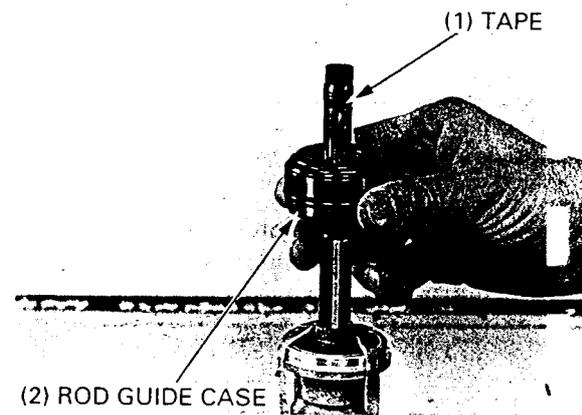


REAR WHEEL/SUSPENSION

Wrap the top threads of the damper rod with tape.

Remove the rod guide case from the damper rod. Remove the end plate, bump rubber and rubber seat from the damper rod.

Remove the tape.

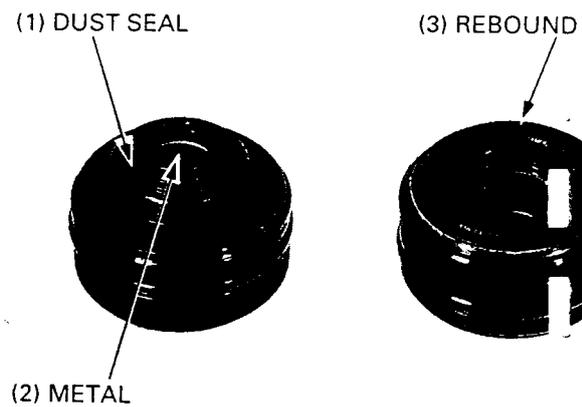


ROD GUIDE CASE INSPECTION

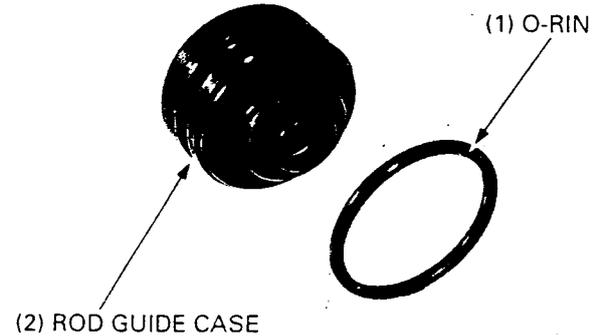
Inspect the rebound rubber for wear or damage and replace the rod guide case with a new one if necessary.

Inspect the dust seal lips for wear, scratches or damage and replace the rod guide case with a new one if necessary.

Visually inspect the rod guide case metal. If the metal is worn so that the copper surface appears, replace the rod guide case with a new one.



Remove the O-ring from the rod guide case and replace it with a new one.



DAMPER ROD INSPECTION

Inspect the damper rod for damage or distortion.



DAMPER ASSEMBLY

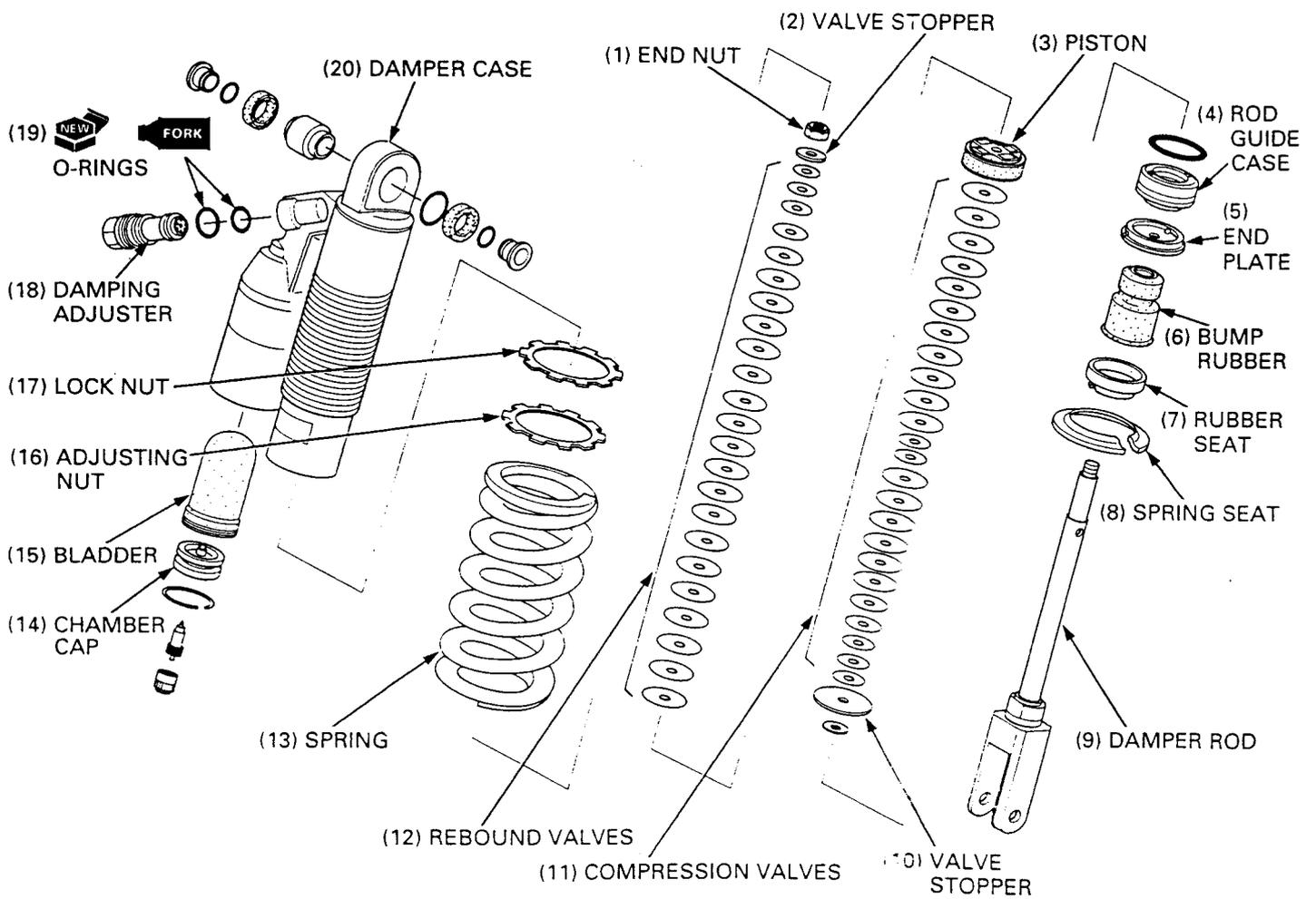
Before assembly, wash all parts with solvent and blow them dry with compressed air.
Be sure that there is no dust or lint on any of the parts.

CAUTION

- Do not get solvent on the piston ring or O-ring.
- The exact valve arrangement and number of valves may differ from those shown.

NOTE

- Never assemble valves which might have gotten dusty or otherwise contaminated during the disassembly process. Disassemble them, thoroughly clean with solvent and blow them dry with compressed air before assembly.



REAR WHEEL/SUSPENSION

Hold the lower shock mount in a vise with soft jaws or a shop towel.

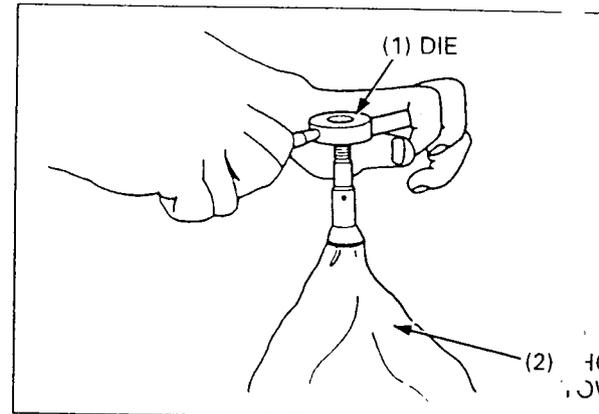
Remove the burrs from the damper rod end with a file and correct the threads with a die.

DIE: 12 x 1.5 mm

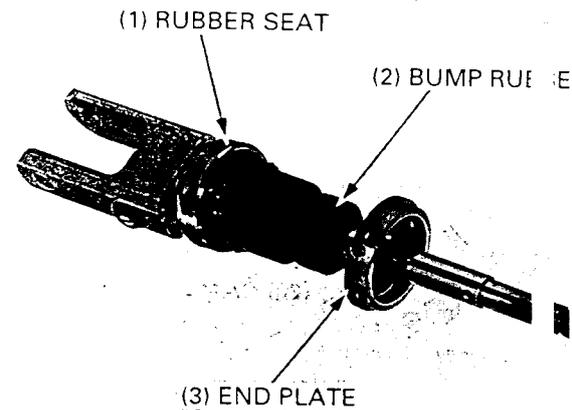
Clean the damper rod with solvent after correcting the threads.

NOTE

- Make sure that burrs are not stuck in the damper rod I.D..



Install the rubber seat, bump rubber and end plate.



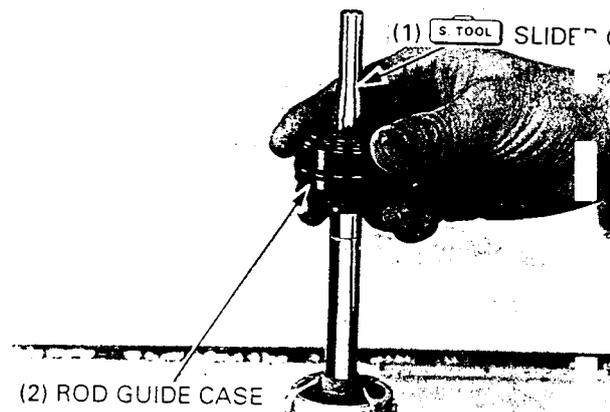
Install the special tool onto the damper rod.

TOOL:
Slider guide, 14 mm 07974 - KA40001

Carefully install the rod guide case, with the rebound rubber facing up, over the damper rod.

NOTE

- The rod guide case oil seal is filled with grease.
- Be careful not to remove grease from the seal.
- Be careful not to damage the dust seal lip or turn it inside out.



Remove the special tool.

Install the washer, valve stopper and compression valves onto the damper rod.

NOTE

- The valve arrangement and number of valves may vary from those shown.

