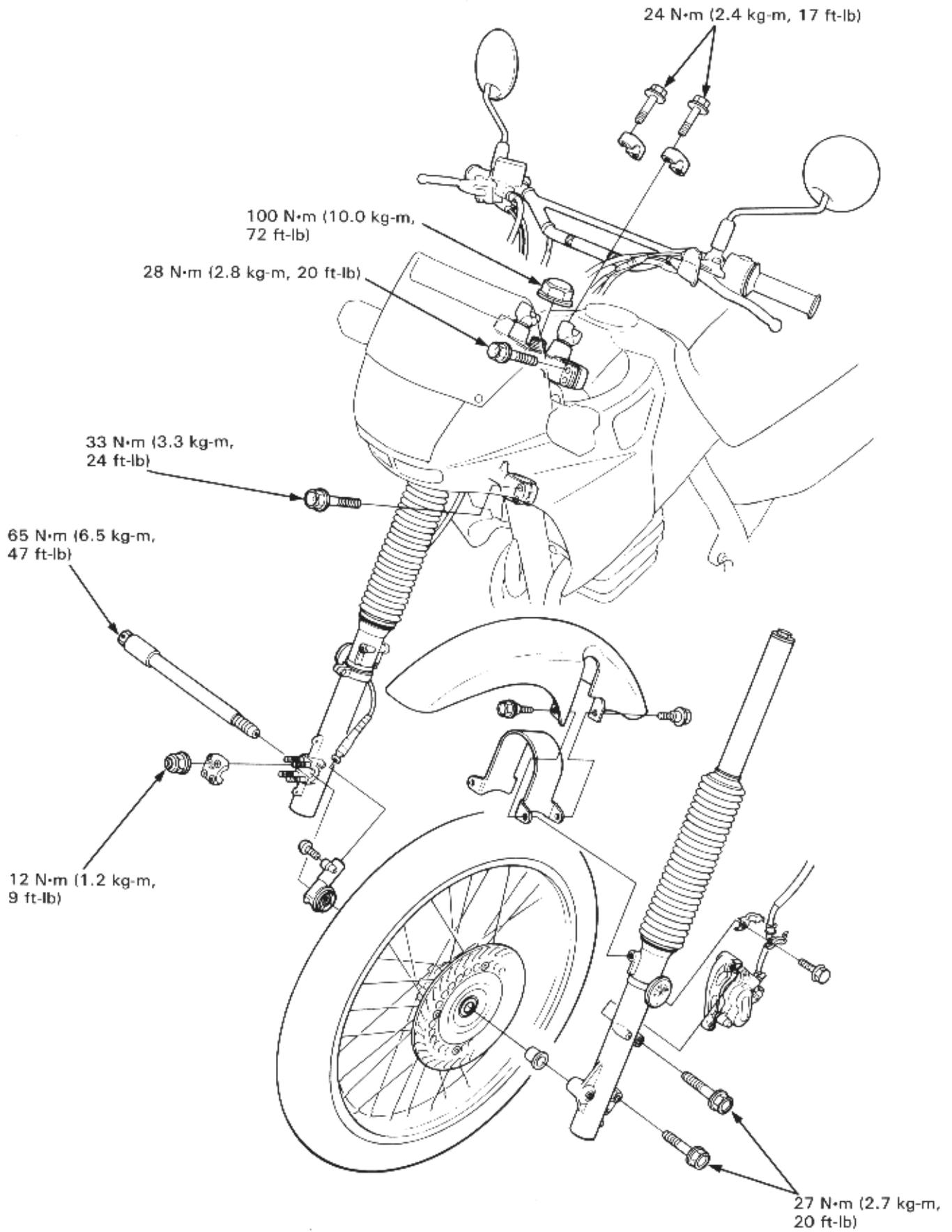


# FRONT WHEEL/SUSPENSION/STEERING



# 12. FRONT WHEEL/SUSPENSION/STEERING

SERVICE INFORMATION	12-1	FRONT WHEEL	12-5
TROUBLESHOOTING	12-2	FORK	12-10
HANDLEBARS	12-3	STEERING STEM	12-17

## SERVICE INFORMATION

### GENERAL

- A box or work stand is required to support the motorcycle.

#### ⚠ WARNING

*Brake dust may contain asbestos.*

- *Inhaled asbestos fibers have been found to cause respiratory disease and cancer. Never use an air hose or dry brush to clean brake assemblies.*
- *In the United States, use an OSHA approved vacuum cleaner or alternate method approved by OSHA designed to minimize the hazard caused by airborne asbestos fibers.*

### SPECIFICATIONS

ITEM	STANDARD	SERVICE LIMIT
Axle runout	—	0.2 mm (0.01 in)
Front wheel rim runout	Radial	2.0 mm (0.08 in)
	Axial	2.0 mm (0.08 in)
Fork spring free length	599.3 mm (23.59 in)	593.3 mm (23.36 in)
Fork tube runout	—	0.2 mm (0.01 in)
Front fork oil capacity	592 cc (20.0 US oz, 20.8 Imp oz)	—
Fork oil level	120 mm (4.7 in)	—

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### TORQUE VALUES

Handlebars upper holder	24 N·m (2.4 kg-m, 17 ft-lb)
Handlebars lower holder	24 N·m (2.4 kg-m, 17 ft-lb)
Front hub cover screw	1.5 N·m (0.15 kg-m, 1.1 ft-lb)
Brake disc bolt	15 N·m (1.5 kg-m, 11 ft-lb)
Front axle	65 N·m (6.5 kg-m, 47 ft-lb)
Front axle holder nut	12 N·m (1.2 kg-m, 9 ft-lb)
Fork slider socket bolt	20 N·m (2.0 kg-m, 14 ft-lb) Apply locking agent to the threads
Lower fork pinch bolt	33 N·m (3.3 kg-m, 24 ft-lb)
Fork cap bolt	23 N·m (2.3 kg-m, 17 ft-lb)
Upper fork pinch bolt	24 N·m (2.4 kg-m, 17 ft-lb)
Brake caliper bracket bolt	25 N·m (2.5 kg-m, 18 ft-lb)
Steering adjustment nut	5 N·m (0.5 kg-m, 3.6 ft-lb)
Steering stem nut	100 N·m (10.0 kg-m, 72 ft-lb)

### TOOLS

#### Special

Fork seal driver	07947-KA50100
Fork seal driver attachment	07947-KF00100
Steering stem socket	07916-KA50100
Steering stem driver	07946-4300101 or 07946-MB00000
Ball race remover	07953-MJ10000 or 07953-MJ1000A (U.S.A. only)
— Ball race remover attachment	07953-MJ10100
— Driver handle	07953-MJ10200
Adjustable pin spanner	07702-0020001
Steering bearing attachment	GN HT54 (U.S.A. only)

## FRONT WHEEL/SUSPENSION/STEERING

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### Common

Bearing remover head, 15mm	07746-0050400	} or equivalent commercially available in U.S.A.
Bearing remover shaft	07746-0050100	
Driver	07749-0010000	
Attachment, 32 x 35 mm	07746-0010100	
Pilot, 15 mm	07746-0040300	
Lock nut wrench, 30 x 32 mm	07716-0020400	} or equivalent commercially available in U.S.A.
Extension bar	07716-0020500	
Attachment, 42 x 47 mm	07746-0010300	

## TROUBLESHOOTING

### Hard Steering

- Steering adjustment too tight
- Faulty steering stem bearings
- Insufficient air in front tire

### Steers to One Side or Does Not Track Straight

- Bent fork
- Bent front axle, wheel installed incorrectly
- Unequal oil quantity in fork tubes

### Front Wheel Wobbling

- Distorted rim
- Worn front wheel bearings
- Loose or broken spokes
- Faulty tire
- Axle or axle holder not tightened properly

### Soft Suspension

- Weak fork springs
- Insufficient fluid in fork legs

### Hard Suspension

- Fork oil level too high
- Fork tube(s) bent or fork slider(s) damaged

### Front Suspension Noise

- Fork slider binding
- Insufficient fluid in fork legs
- Loose fork fasteners

## HANDLEBARS

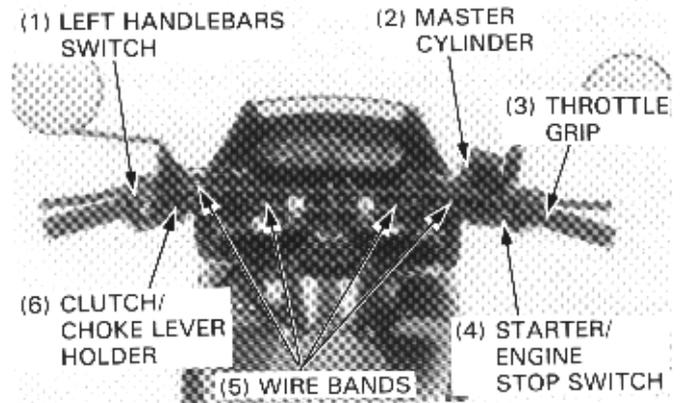
### REMOVAL

Remove the following parts:

- Wire bands
- Left handlebars switch
- Clutch/choke lever holder
- Front brake master cylinder
- Starter/engine stop switch
- Throttle grip

Remove the upper holders and handlebars.

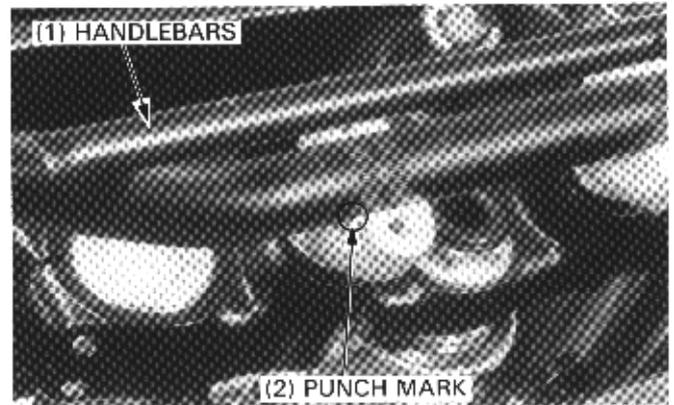
Remove the lower holders if necessary.



### INSTALLATION

Install the washers, lower holders and nuts if removed.

Place the handlebars on the lower holders by aligning the punch marks on the handlebars with the upper surface of the lower holder.



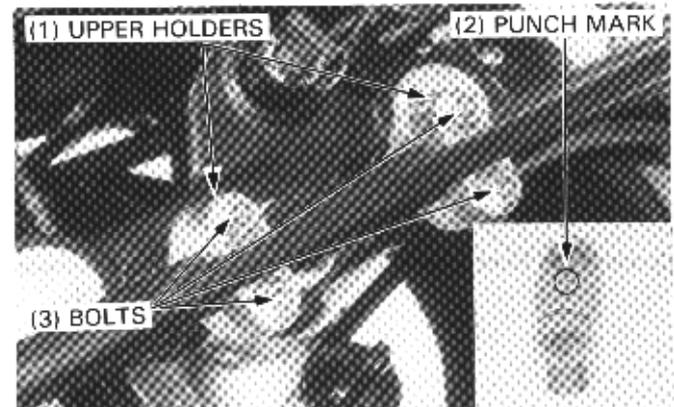
Install the upper holders with the punch marks facing forward.

Tighten the forward bolts first then the rearward.

**TORQUE: 24 N·m (2.4 kg-m, 17 ft-lb)**

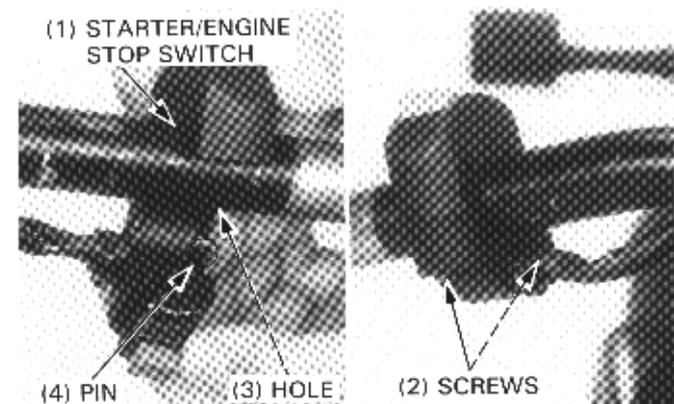
Tighten the lower holder nuts to the specified torque.

**TORQUE: 24 N·m (2.4 kg-m, 17 ft-lb)**



Install the starter/engine stop switch by aligning the pin with the hole in the handlebars.

Tighten the forward screw first, then tighten the rearward.



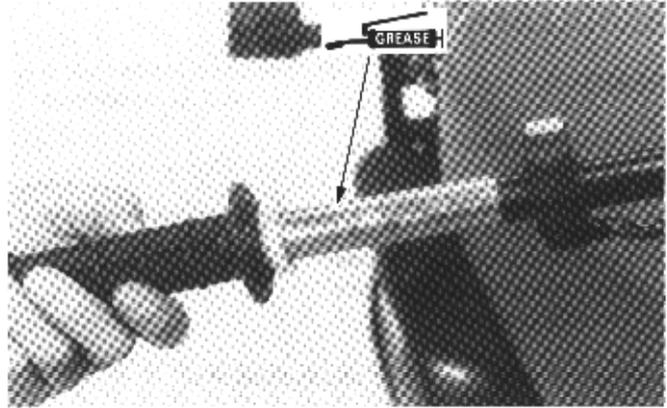
## FRONT WHEEL/SUSPENSION/STEERING

If the grips were removed, apply Honda Bond A or Honda Grip Cement (U.S.A. only) to the inside surfaces of the grips and to the clean surface of the left handlebar and throttle grip pipe. Wait 3–5 minutes and install the grips. Rotate the grips for even application of the adhesive.

### NOTE

- Allow the adhesive to dry for an hour before using.

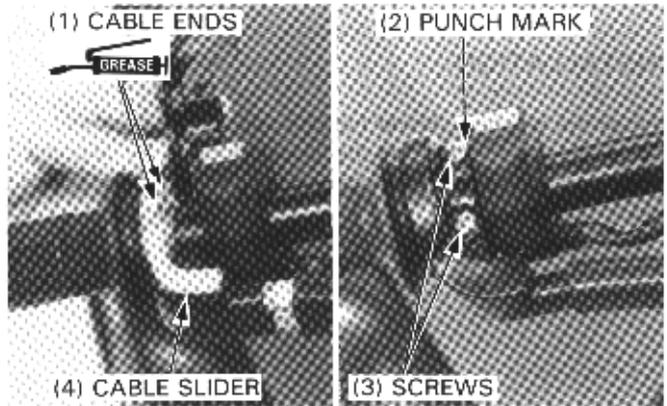
Apply grease to the throttle grip sliding surface and cable guide.



Apply grease to the throttle cable ends, and connect the throttle cable ends to the throttle grip.

Apply grease to the throttle cable slider, and install the slider as shown.

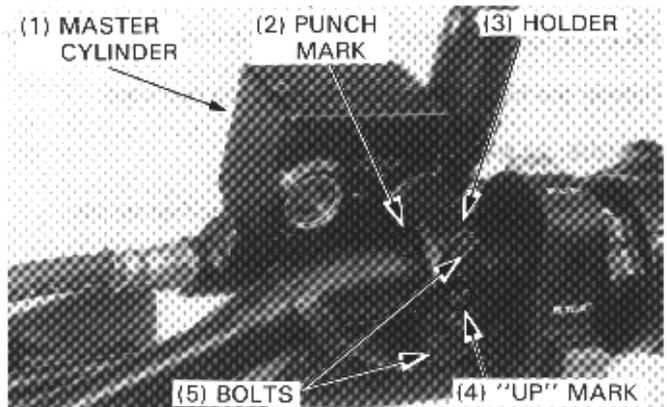
Assemble the throttle housing halves, and align the mating surface of the halves with the punch mark on the handlebars. Tighten the upper screw first, then the lower one.



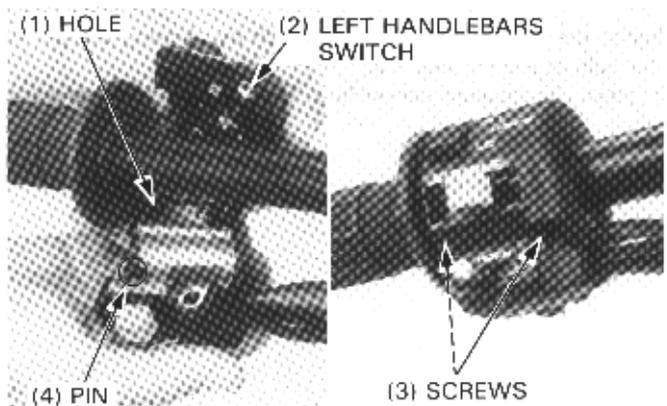
Install the master cylinder and position the master cylinder holder with "up" mark facing up, and loosely install the holder bolts.

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

Connect the front stop switch wires to the switch terminals.



Install the left handlebars switch by aligning the pin with the hole in the handlebars, and tighten the forward screw first, then the rearward screw.



Install the clutch/choke lever holders and loosely install the holder bolts.

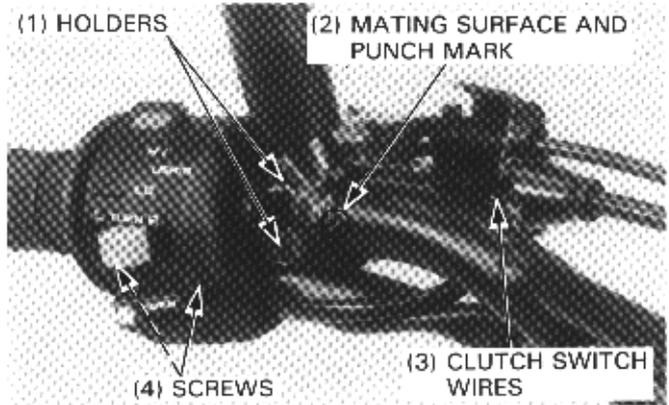
Align the mating surface of the clutch/choke lever holder with the punch mark on the handlebars and tighten the forward screw first, then tighten the rearward screw.

Connect the clutch switch wires to the switch terminals.

Route the switch wires and secure them with the wire bands (page 1-12).

Adjust the following:

- throttle grip free play (page 3-4)
- clutch lever free play (page 3-12).



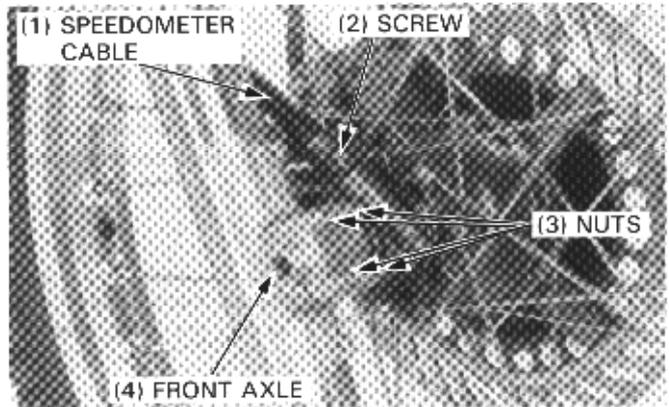
## FRONT WHEEL

### REMOVAL

Raise the front wheel off the ground by placing a box or work stand under the engine.

Disconnect the speedometer cable from the speedometer gearbox at the front wheel.

Loosen the axle holder nuts and then remove the front axle. Remove the front wheel.

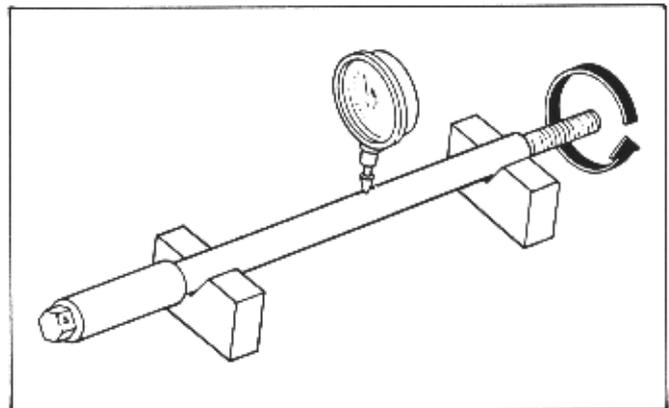


### INSPECTION

#### FRONT AXLE

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

**SERVICE LIMIT: 0.2 mm (0.01 in)**



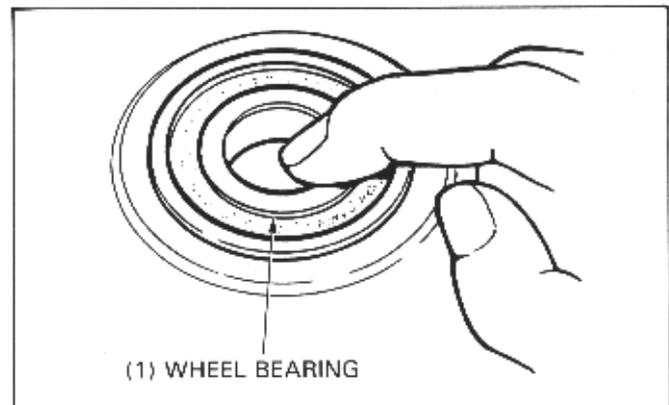
#### WHEEL BEARINGS

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

#### NOTE

- Replace wheel bearings in pairs.

For bearings replacement, see page 12-7.



## FRONT WHEEL/SUSPENSION/STEERING

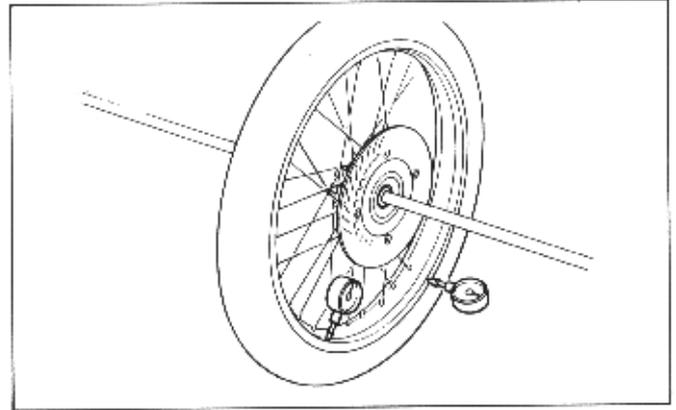
### WHEEL RIM RUNOUT

Check the rim runout by placing the wheel on a truing stand. Then spin the wheel by hand, and read the runout using a dial indicator.

### SERVICE LIMITS:

**RADIAL:** 2.0 mm (0.08 in)

**AXIAL:** 2.0 mm (0.08 in)



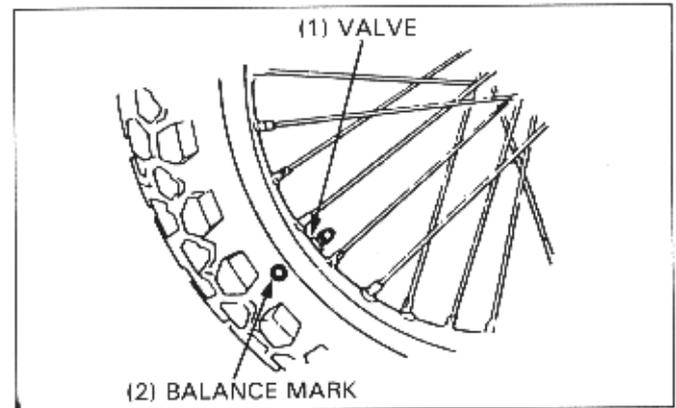
### WHEEL BALANCING

#### CAUTION

- *Wheel balance directly affects the stability, handling and overall safety of the motorcycle. Always check balance when the tire are removed from the rim.*

#### NOTE

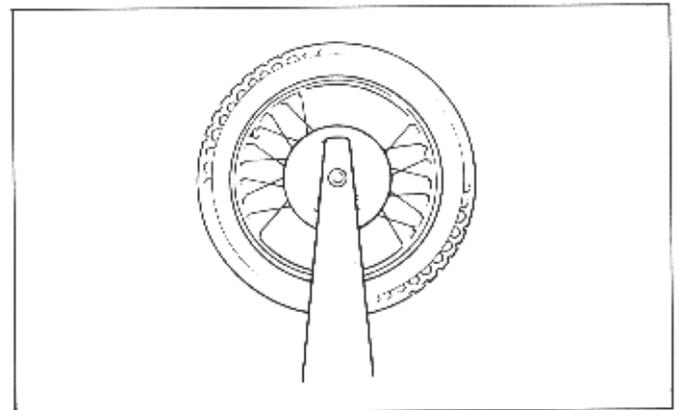
- For optimum balance, the tire balance mark (a paint dot on the sidewall) must be located next to the valve stem.



Mount the front wheel in a inspection stand.

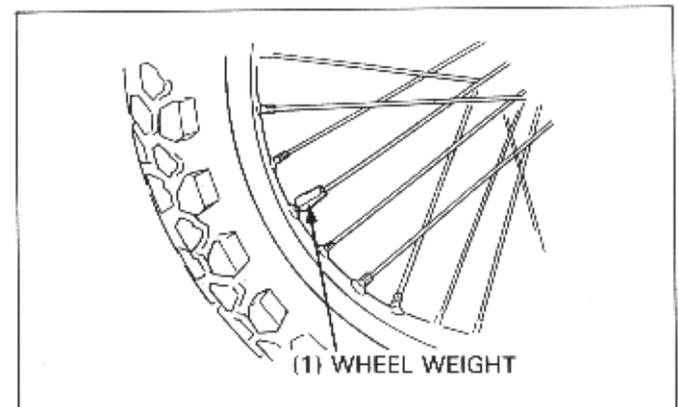
Spin the wheel, allow it to stop, and mark the lowest (heaviest) part of the wheel with chalk. Do this two or three times to verify the heaviest area.

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



To balance the wheel, install wheel weights on the highest side of the rim, the side opposite to the chalk marks. Add just enough weight so the wheel does not stop in the same position when it is spun.

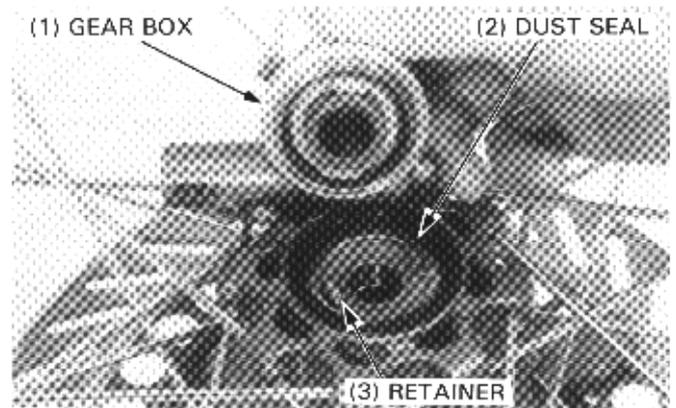
Do not add more than 60 grams.



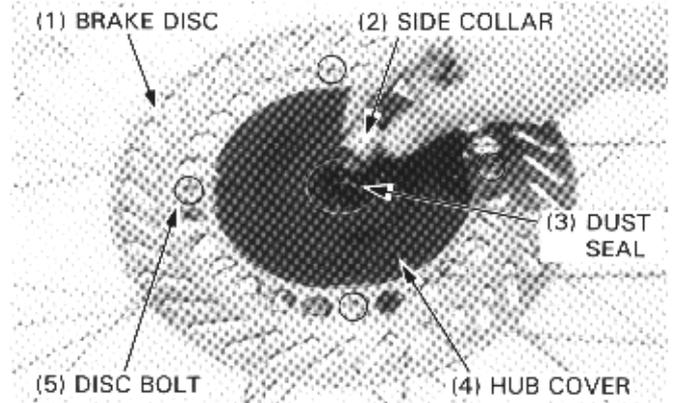
**DISASSEMBLY**

Remove the speedometer gearbox from the right side of wheel hub.

Remove the dust seal and speedometer gear retainer.



Remove the side collar, front brake disc, dust seal and the hub cover.



Remove the wheel bearings and distance collar.

**TOOLS:**

Bearing remover head

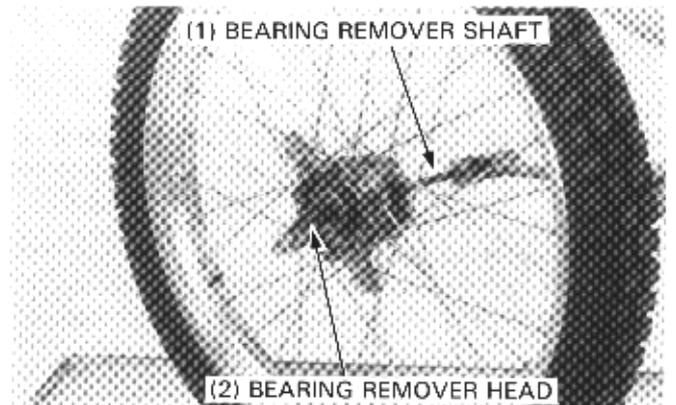
07746-0050400 or equivalent commercially available in U.S.A.

Bearing remover shaft

07746-0050100 or equivalent commercially available in U.S.A.

**NOTE**

- Replace the wheel bearing with a new one, whenever the bearing is removed.
- Replace the wheel bearings in pairs.

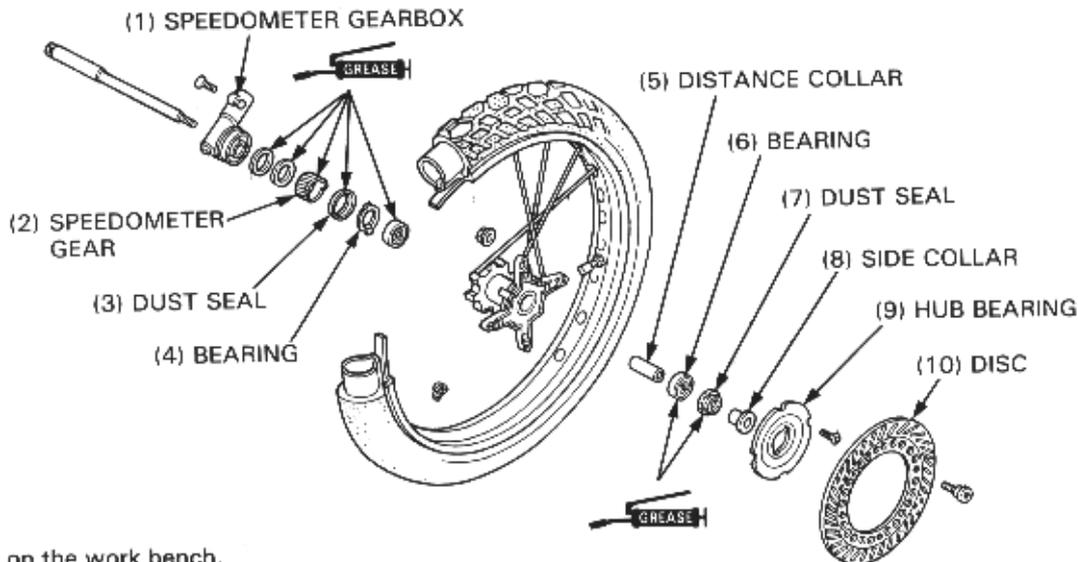


## FRONT WHEEL/SUSPENSION/STEERING

### ASSEMBLY

#### ⚠ WARNING

- Do not get grease on the brake disc or stopping power will be reduced.



Place the rim on the work bench.

Place the hub with the disc side down and begin lacing with new spokes.

Adjust the hub position so that the distance from the disc outside surface to the side of rim is 22.25 mm (0.876 in) as shown.

Tighten the spokes in 2 or 3 progressive steps.

**TORQUE: 4 N·m (0.4 kg-m, 3 ft-lb)**

#### TOOL:

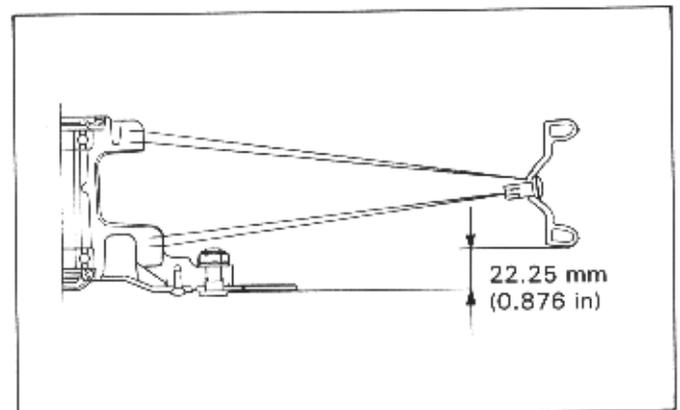
**SPOKE WRENCH C, 5.8 x 6.1 mm 07701-0020300 or equivalent commercially available in U.S.A.**

Pack new wheel bearings with grease.

Drive in the right bearing first until it seats completely. Install the distance collar and drive in the left bearing.

#### NOTE

- Install the bearings with their sealed ends facing outside.
- Drive the bearings in perpendicularly.



#### TOOLS:

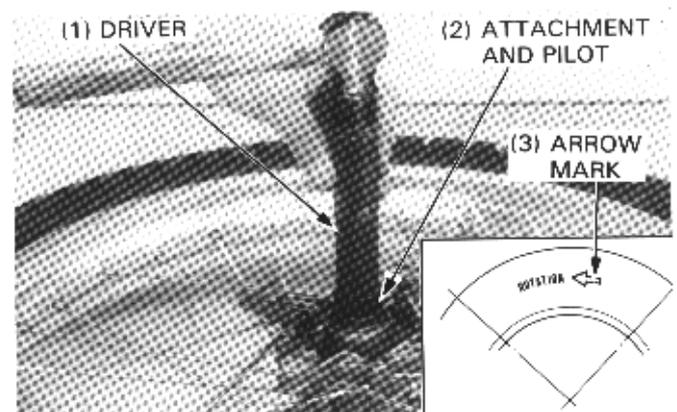
<b>Driver</b>	<b>07749-0010000</b>
<b>Attachment, 32 x 35 mm</b>	<b>07746-0010100</b>
<b>Pilot, 15 mm</b>	<b>07746-0040300</b>

Check the wheel runout (page 12-6).

Install the rim lock, rim band, tube and tire.

#### NOTE

- Install the tire with its directional arrow pointing in the direction of normal rotation for forward motion.

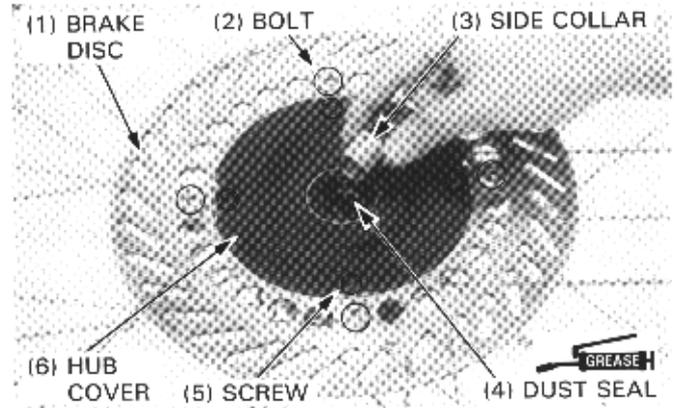


Apply a locking agent to the threads of the hub cover screws, and secure the hub cover with the screws.

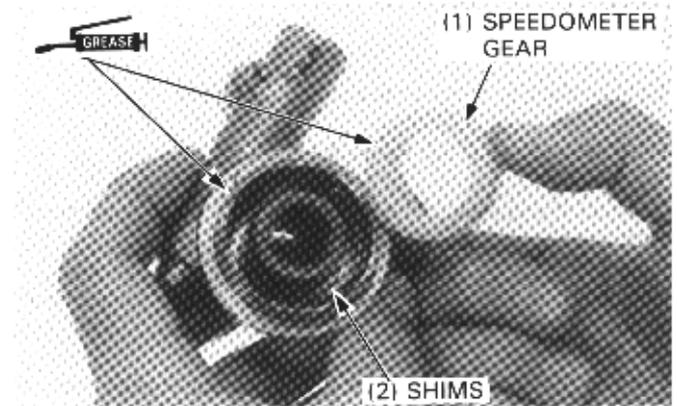
Install the brake disc with the stamped side facing out, and secure the disc with four bolts.

**TORQUE: 15 N·m (1.5 kg-m, 11 ft-lb)**

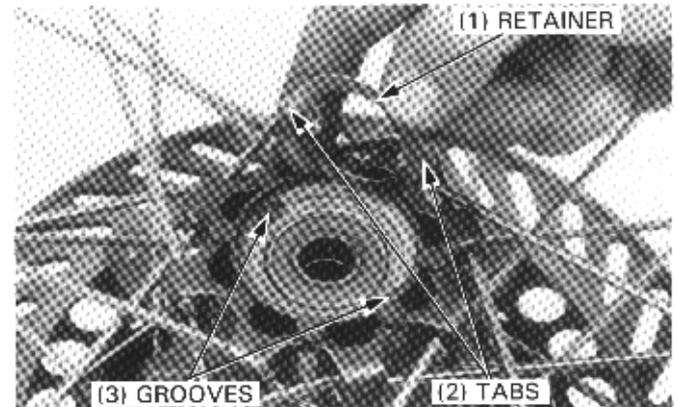
Apply grease to the dust seal lips and install it. Install the left side collar.



Install the shims into the speedometer gearbox. Apply grease to the inside surface of the gearbox and gear teeth, and install the gear into the gearbox.

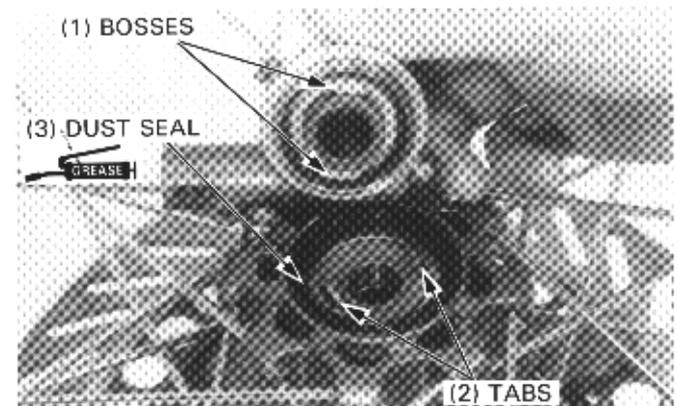


Install the speedometer gear retainer, aligning tabs of the retainer with the grooves in the wheel hub.



Apply grease to the dust seal lip, and install it into the wheel hub.

Install the speedometer gearbox onto the dust seal, engaging the tabs of the gear retainer with the bosses of the speedometer gear each other.



## FRONT WHEEL/SUSPENSION/STEERING

### INSTALLATION

Place the front wheel between the fork legs.  
Fit the caliper over the brake disc, taking care not to damage the brake pads.

Clean the axle and holder.  
Install the axle through the speedometer gearbox and wheel hub.

Set the speedometer gearbox tab against the behind of the tang on the fork slider.

If you removed the axle holder, install it with "UP" mark facing up.

Install the axle holder nuts loosely.

Tighten the front axle to the specified torque.

**TORQUE: 65 N·m (6.5 kg·m, 47 ft-lb)**

Connect the speedometer cable to the gearbox, and secure it with the screw.

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

Tighten the front axle holder nuts, the upper nuts first, then the lower nuts in 2–3 steps.

**TORQUE: 12 N·m (1.2 kg·m, 9 ft-lb)**

## FORK

### REMOVAL

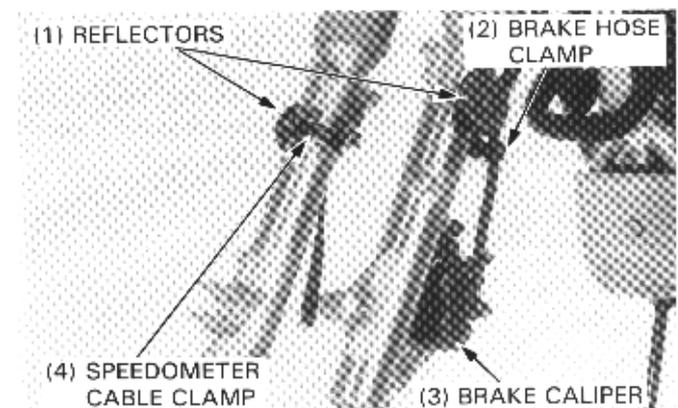
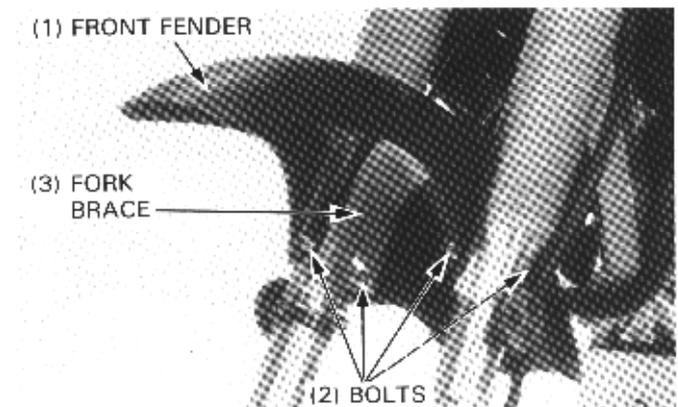
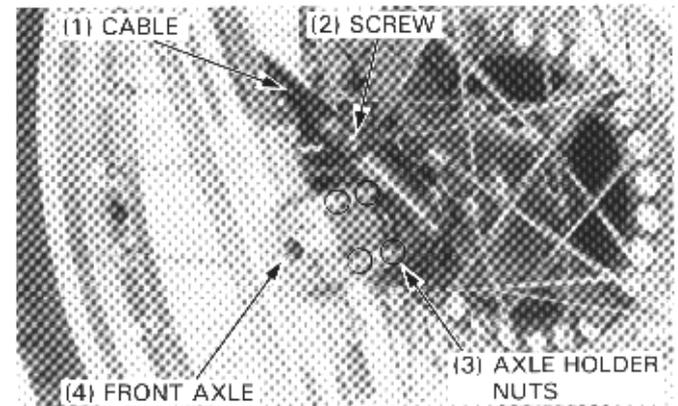
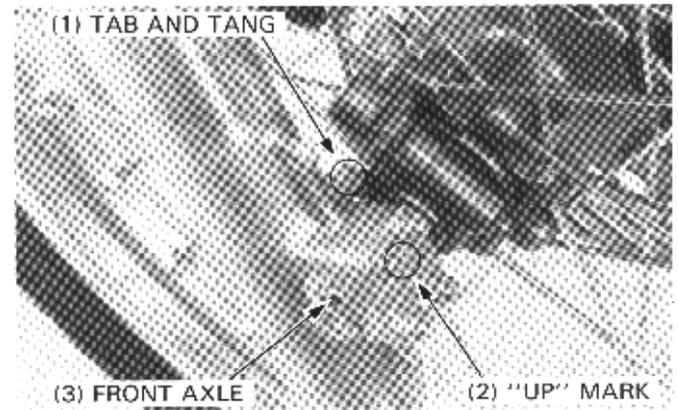
Remove the following parts.

- Front wheel (page 12-5)
- Front fender
- Fork brace

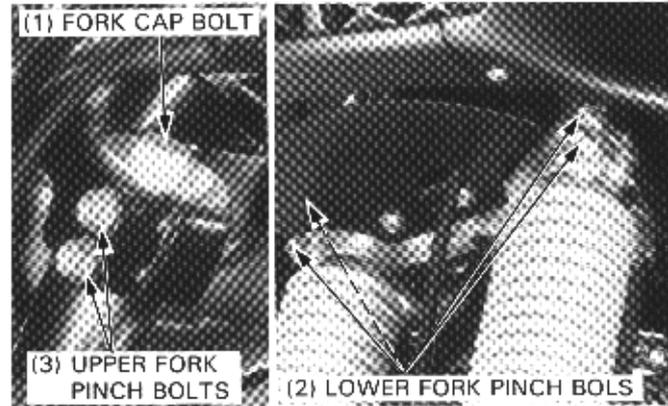
- Reflectors
- Speedometer cable clamp.
- Brake hose clamp
- Brake caliper (page 14-9)

### NOTE

- It is not necessary to disconnect the brake hose.

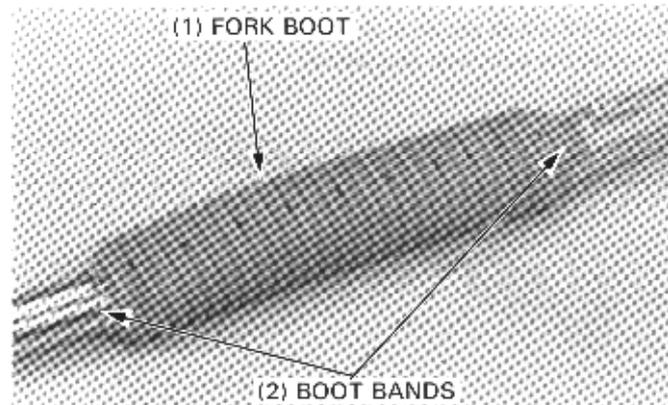


Loosen the upper fork pinch bolts first, then the fork cap bolts. Holding the fork legs, loosen the lower fork pinch bolts, then remove the fork legs.



### DISASSEMBLY

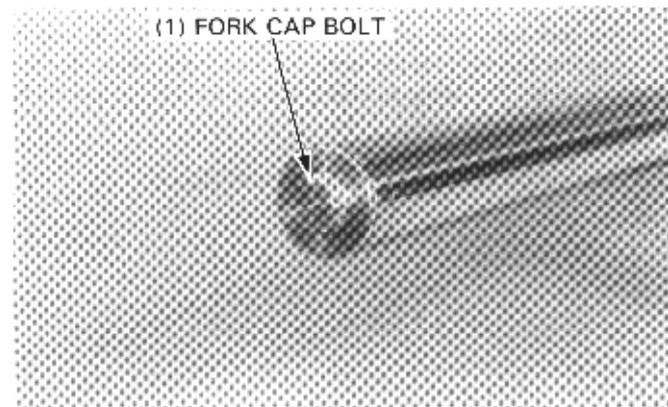
Loosen the boot band screws and remove the fork boot and boot bands.



Remove the fork cap bolt.

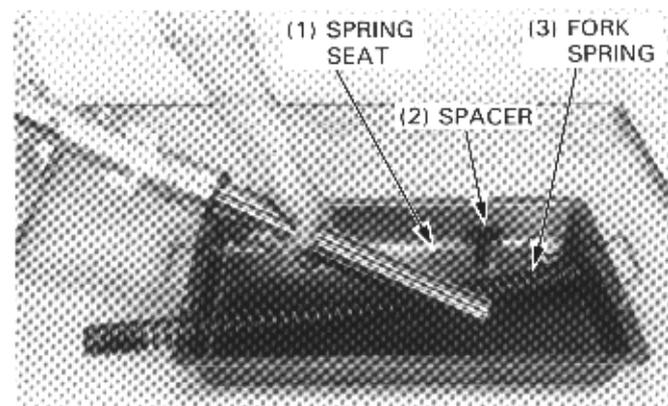
#### ⚠ WARNING

- *The cap bolts are under spring pressure. Use care when removing and wear eye and face protection.*



Remove the spacer, spring seat and fork spring. Drain the fork fluid by pumping the fork tube in and out several times.

Check the spacer and spring seat for wear or damage.

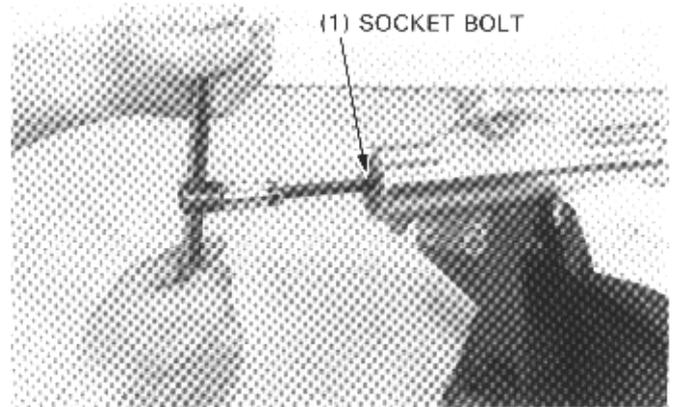


## FRONT WHEEL/SUSPENSION/STEERING

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

### CAUTION

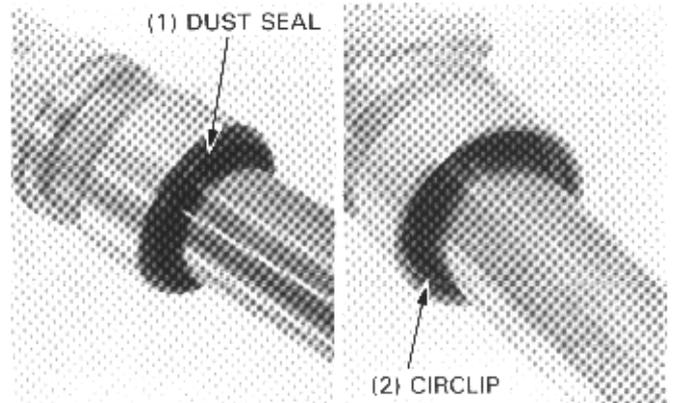
- *Do not distort the fork slider in a vise.*



Remove the fork piston and rebound spring.  
Remove the dust seal and circlip.

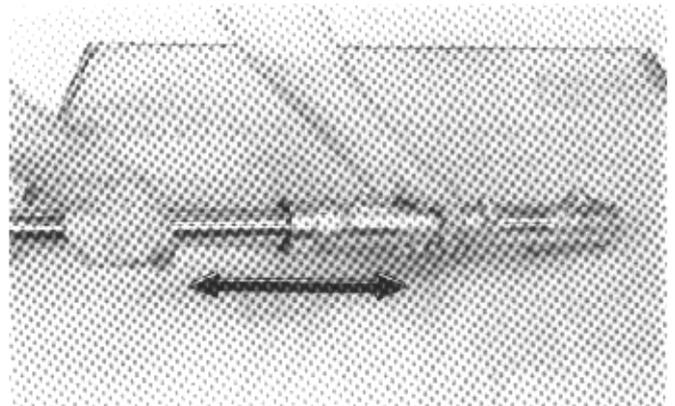
### CAUTION

- *Be careful not to damage the fork tube.*



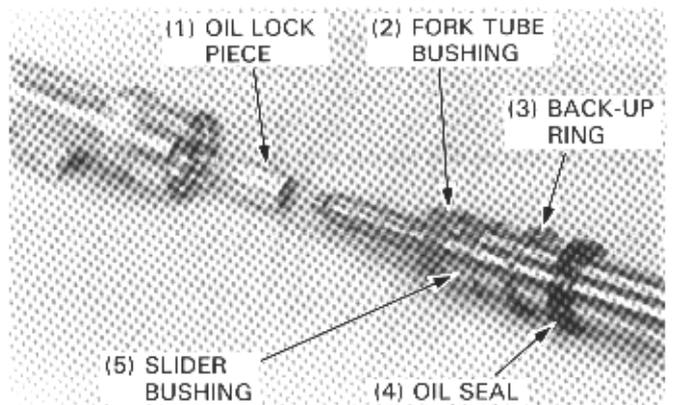
Pull the fork tube out until it stops. Then move it in and out, tapping the bushing lightly until the fork tube separates from the fork slider. The slider bushing will be forced out by the fork tube bushing.

Remove the oil lock piece from the fork slider.



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

Do not remove the fork tube bushing until inspection determines it is necessary (page 12-13).



INSPECTION

Measure the fork spring free length.

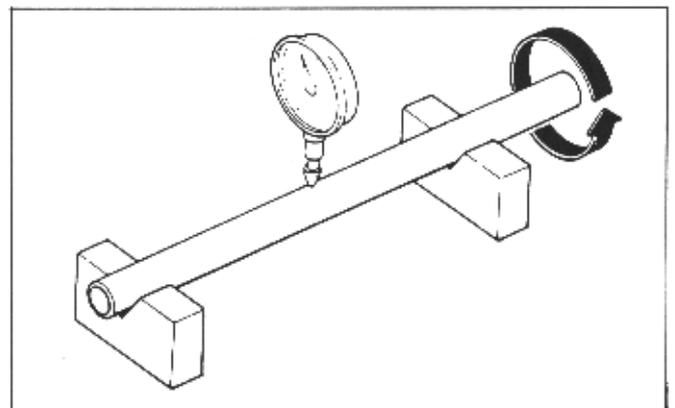
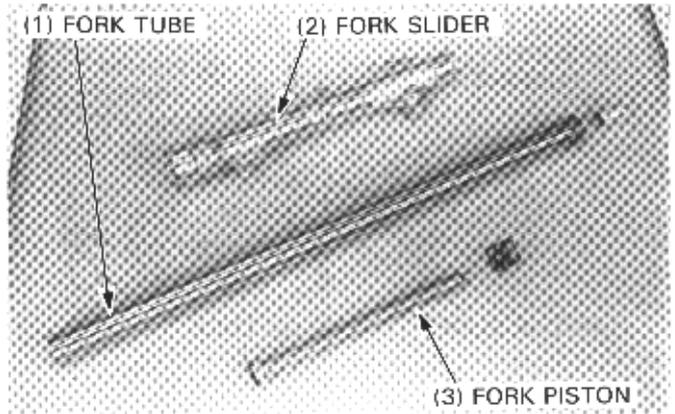
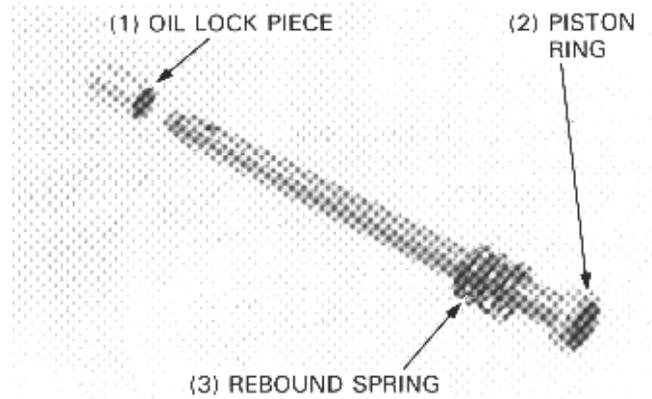
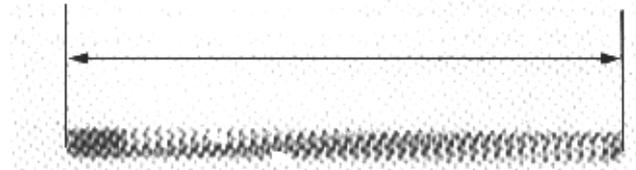
**SERVICE LIMIT: 593.3 mm (23.36 in)**

Check the oil lock piece, rebound spring and fork tube piston ring for damage or wear.  
Replace if necessary.

Check the fork slider, fork tube and fork piston for scoring, scratches, deformation or excessive wear.  
Replace any components which are worn or damaged.

Set the fork tube on V blocks and measure the runout.  
The actual runout is 1/2 of the total indicator reading.

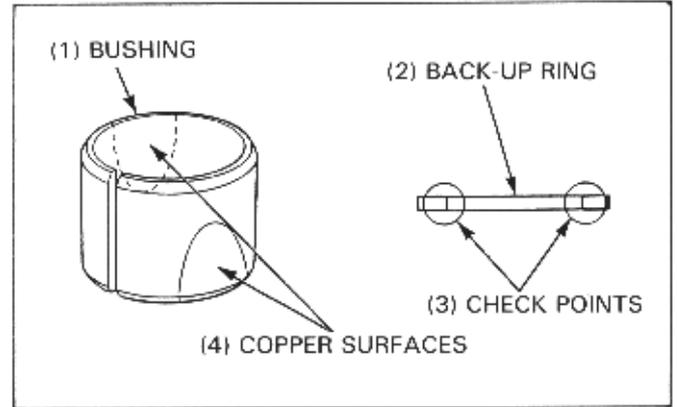
**SERVICE LIMIT: 0.2 mm (0.01 in)**



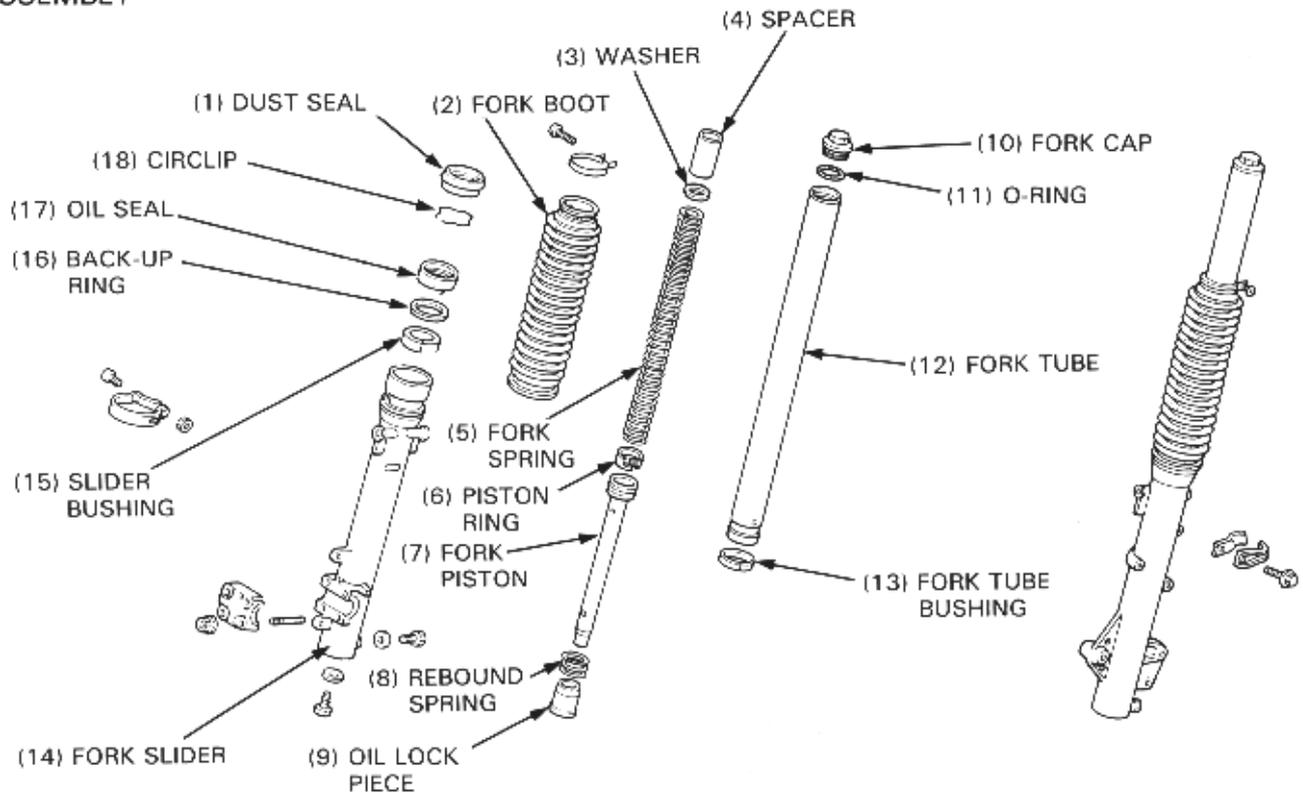
## FRONT WHELL/SUSPENSION/STEERING

Visually inspect the slider and fork tube 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 than 3/4 of the entire surface.

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



## ASSEMBLY



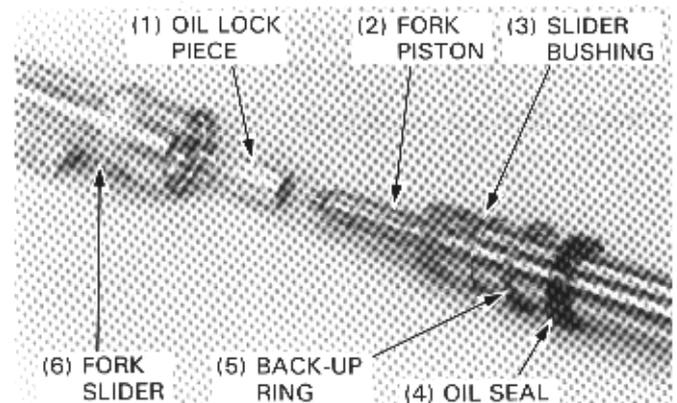
Insert the fork piston with the rebound spring and with its piston ring side facing up.

Apply ATF to a new oil seal lip. Install the slider bushing, back-up ring and new oil seal onto the fork tube.

### NOTE

- Install the oil seal with the marks facing up.

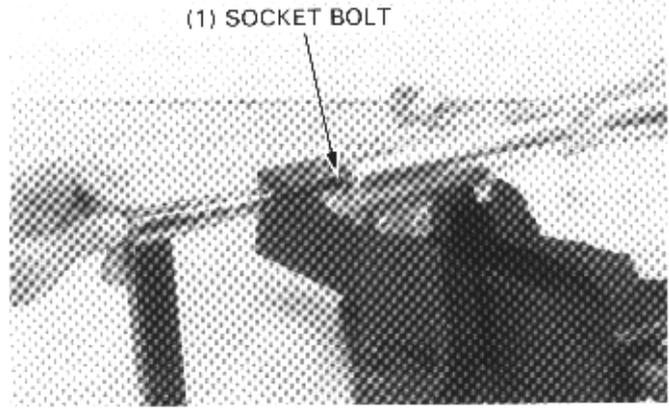
Set the oil lock piece onto the end of the fork piston, then insert the fork tube into the fork slider.



Temporarily install the fork spring, spring seat, spacer, washer and fork cap bolt into the fork tube.

Place the fork slider in a vise with soft jaws or a shop towel. Apply a locking agent to the socket bolt threads and torque the fork slider socket bolt.

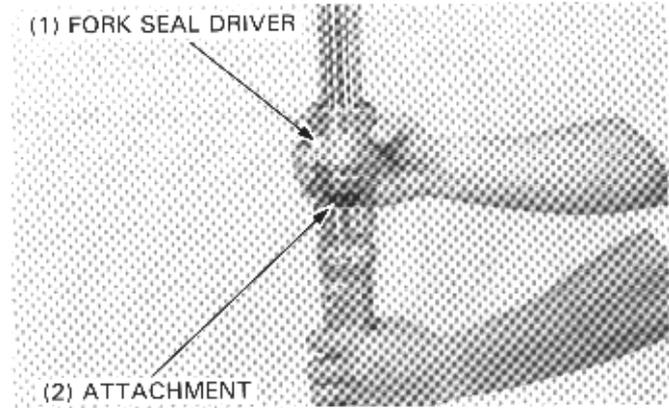
**TORQUE: 20 N·m (2.0 kg-m, 14 ft-lb)**



Drive the oil seal into place using a fork seal driver and attachment.

**TOOLS:**

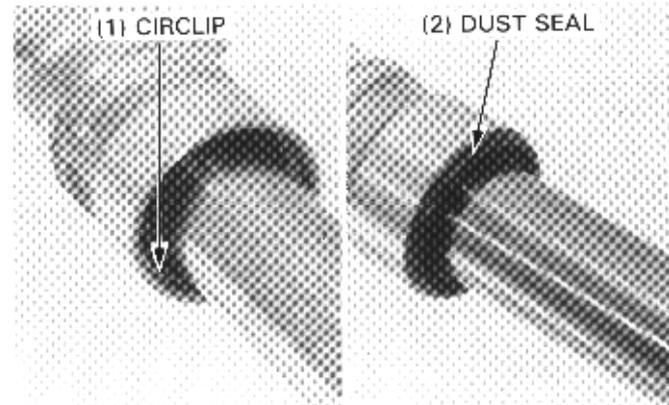
- Fork seal driver **07947-KA50100**
- Fork seal driver attachment **07947-KF00100**



Install the circlip and dust seal.

**NOTE**

- Be careful not to damage the fork tube sliding surface.
- Make sure the circlip is seated securely in the fork slider groove.



Remove the fork cap bolt, washer, spacer, spring seat and fork spring.

Pour in the specified amount of ATF.

**SPECIFIED FLUID: ATF**

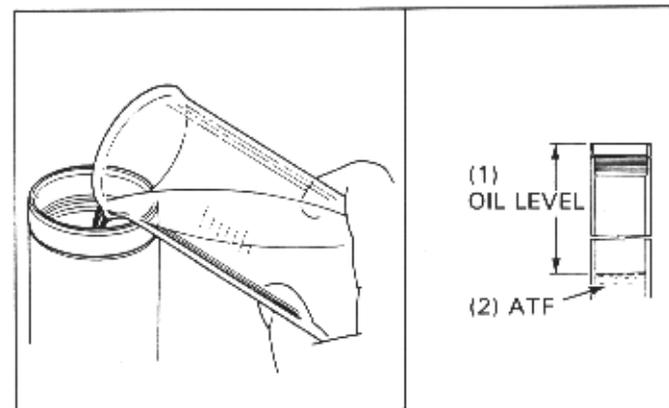
**CAPACITY: 592 cc (20.0 US oz, 20.8 Imp oz)**

Slowly compress the fork leg up and down about five times, then measure the oil level from the top of the tube with the fork leg fully compressed.

**NOTE**

- Make sure the oil level is the same in both fork tubes.

**STANDARD OIL LEVEL: 120 mm (4.7 in)**

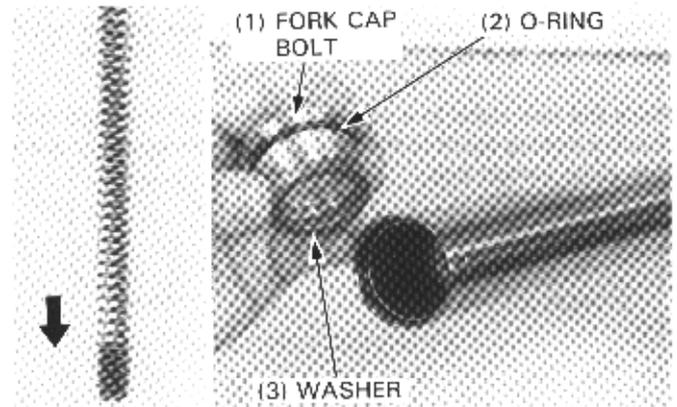


## FRONT WHEEL/SUSPENSION/STEERING

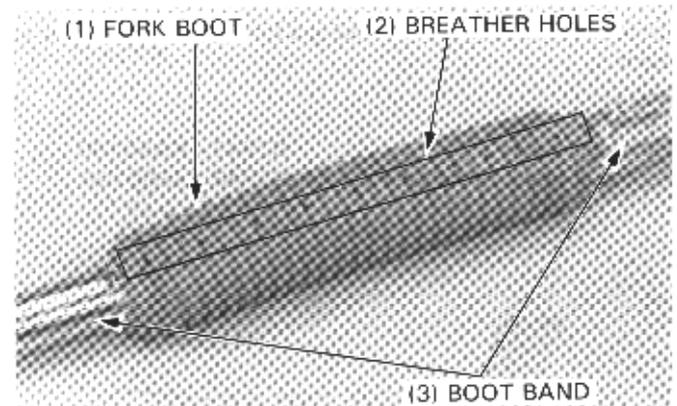
Wipe any oil off the fork spring.

Install the fork spring into the fork tube with its narrow pitch end facing down, and install the spring seat and spacer.

Apply ATF to a new O-ring and install it onto the fork cap bolt. Put the washer onto the fork cap bolt, and screw the cap bolt in the fork tube.



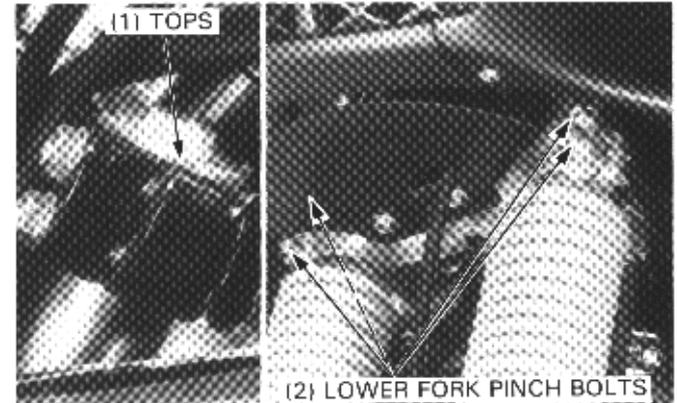
Install the fork boot with the breather holes facing the rear. Install the lower band with the screw head facing out, and tighten it. Loosely install the upper band with the screw head facing out.



## INSTALLATION

Install the fork legs through the steering stem and steering top bridge. Align the tops of the fork tube and steering top bridge and tighten the lower fork pinch bolts.

**TORQUE: 33 N·m (3.3 kg-m, 24 ft-lb)**

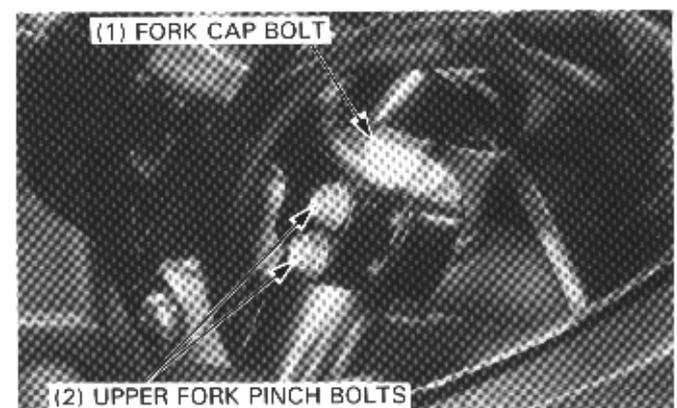


Tighten the fork cap bolts to the specified torque.

**TORQUE: 34 N·m (2.3 kg-m, 17 ft-lb)**

Tighten the upper fork pinch bolts to the specified torque.

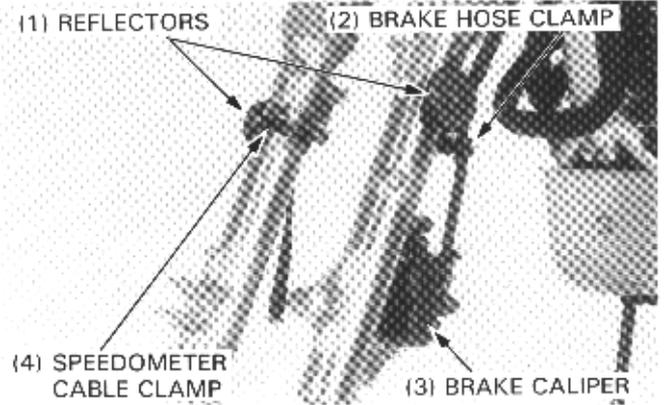
**TORQUE: 28 N·m (2.8 kg-m, 20 ft-lb)**



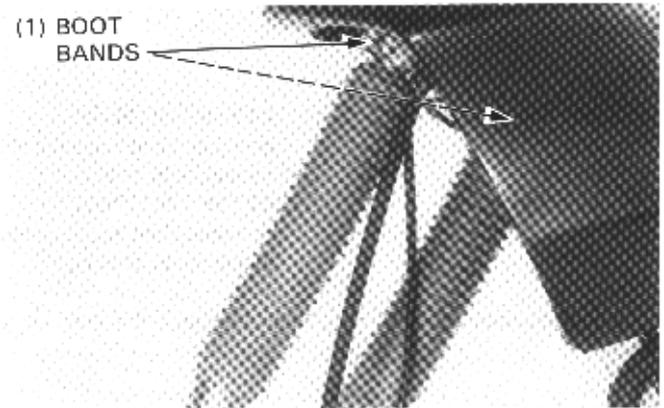
Install the brake caliper and caliper bracket onto the left fork slider, and secure the bracket with the bolts.

**TORQUE: 25 N·m (2.5 kg-m, 18 ft-lb)**

Secure the brake hose with the brake hose clamp.  
Secure the speedometer with the speedometer clamp.  
Install the reflectors as shown.

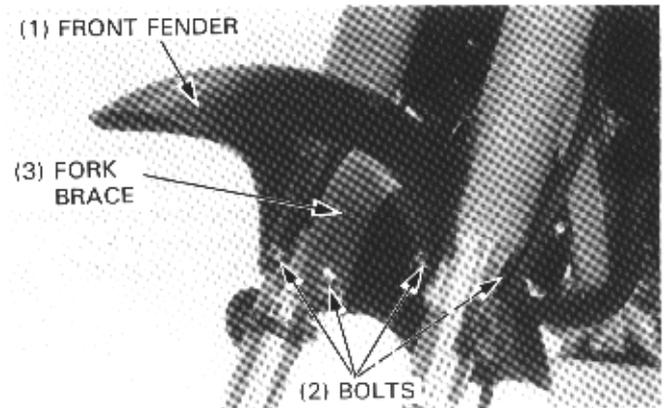


Pull the fork boots up to the steering bottom bridge, and tighten the boot band screws.



Install the fork brace and front fender onto the fork legs and secure them with the four bolts.

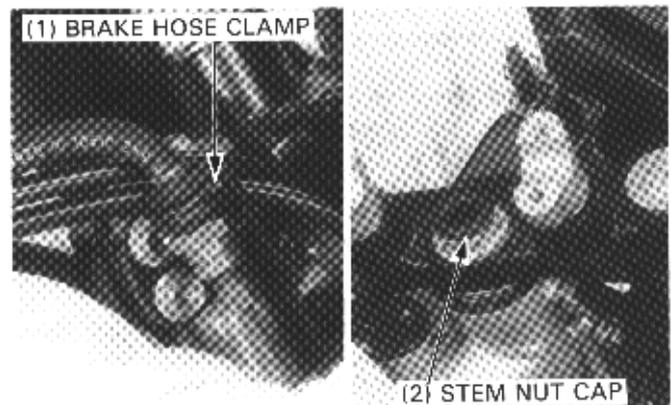
Install the front wheel (page 12-10)



## STEERING STEM

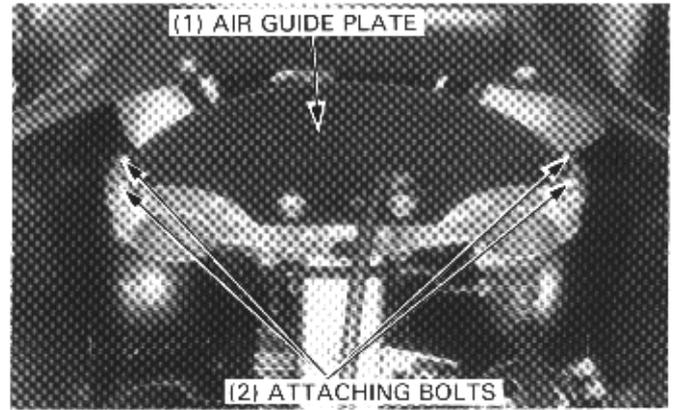
### REMOVAL

- Remove the following:
- handlebars (page 12-3)
  - ignition switch (page 19-6)
  - front wheel (page 12-5)
  - stem nut cap
  - brake hose clamp



## FRONT WHEEL/SUSPENSION/STEERING

Remove the air guide plate and brake pipe attaching bolts.

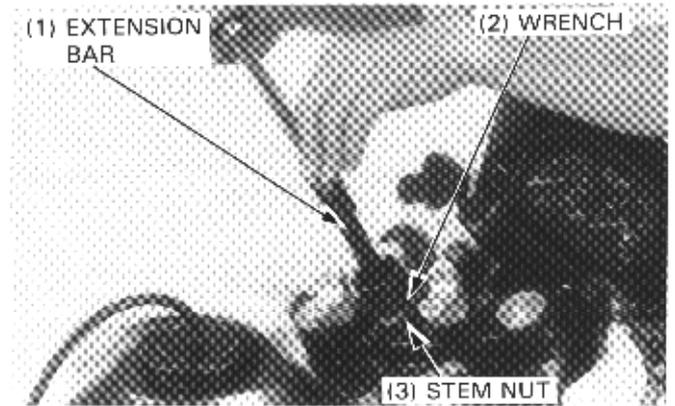


Remove the steering stem nut.

### TOOLS:

**Lock nut wrench, 30 x 32 mm** 07716-0020400  
or equivalent commercially available in U.S.A.

**Extension bar** 07716-0020500  
or equivalent commercially available in U.S.A.



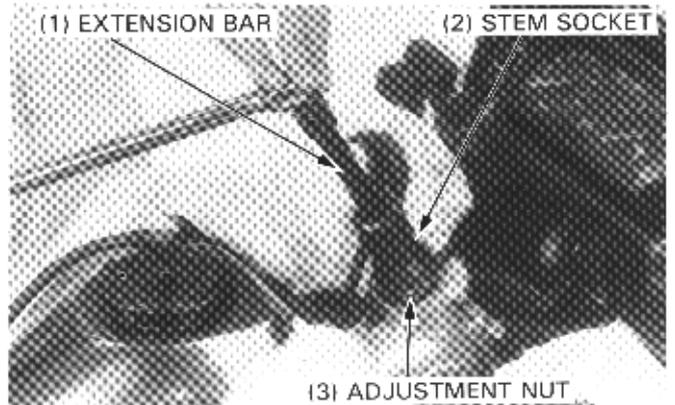
Loosen the upper fork pinch bolts and remove the steering top bridge.

Remove the fork legs.

Hold the steering stem to prevent it from falling.  
Remove the steering adjustment nut.

### TOOLS:

**Steering stem socket** 07916-KA50100  
**Extension bar** 07716-0020500  
or equivalent commercially available in U.S.A.  
or  
**Adjustable pin spanner** 07702-0020001

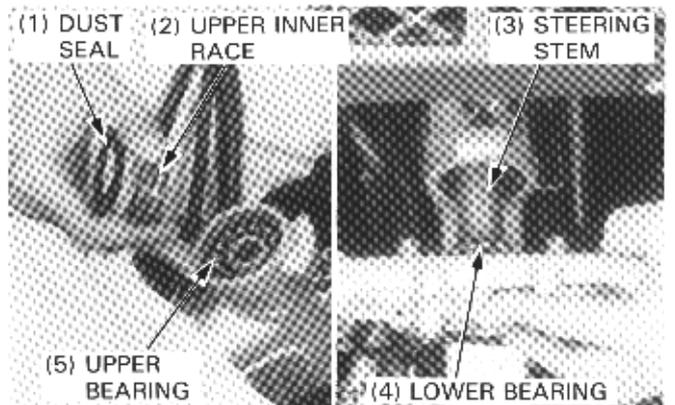


Remove the following:

- dust seal
- upper bearing inner race
- upper bearing
- steering stem

Check the dust seal, inner race, upper and lower bearings and outer races for wear or damage.  
Replace if necessary.

Remove the lower bearing from the steering stem.



**BEARING REPLACEMENT**

**NOTE**

- Always replace the bearing and race as a set.

Remove the bearing inner race and dust seal from the steering stem.

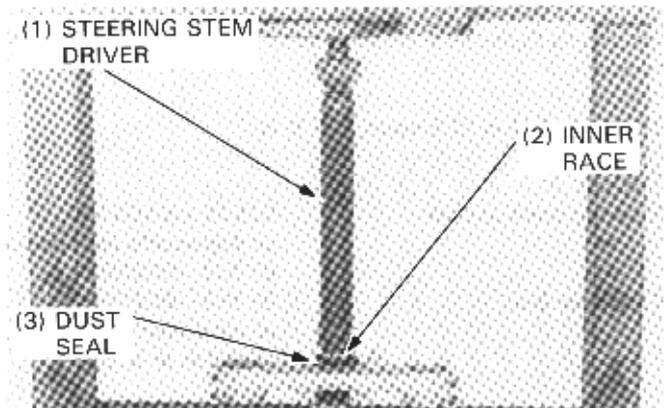
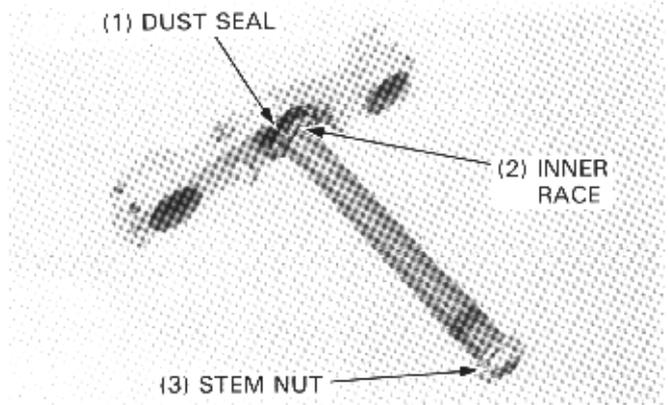
**NOTE**

- Temporarily install the steering stem nut onto the steering stem to prevent the stem threads from being damaged when removing lower inner race.

Install a new dust seal onto the steering stem and press the lower bearing inner race onto the stem with the special tool.

**TOOLS:**

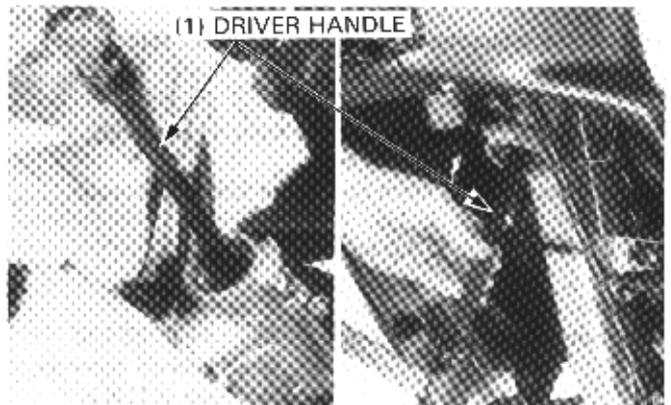
- |                             |                         |
|-----------------------------|-------------------------|
| Steering stem driver        | 07946-4300101           |
| or                          | Not available in U.S.A. |
| Steering stem driver with   | 07946-MB00000           |
| Steering bearing attachment | GN HT54 (U.S.A. only)   |



Remove the upper and lower outer races using special tool.

**TOOLS:**

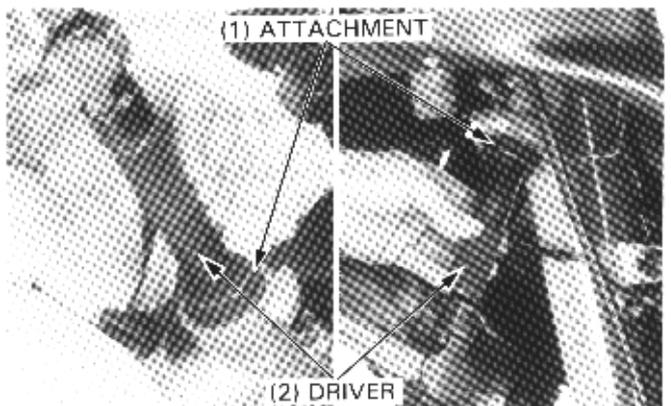
- |                                |                         |
|--------------------------------|-------------------------|
| Ball race remover              | 07953-MJ10000           |
|                                | Not available in U.S.A. |
| - Ball race remover attachment | 07953-MJ10100           |
|                                | Not available in U.S.A. |
| - Driver handle                | 07953-MJ10200           |
| or                             | Not available in U.S.A. |
| Ball race remover              | 07953-MJ1000A           |
|                                | (U.S.A. only)           |



Drive new outer races into the steering head.

**TOOLS:**

- |                        |               |
|------------------------|---------------|
| Driver                 | 07749-0010000 |
| Attachment, 42 x 47 mm | 07746-0010300 |



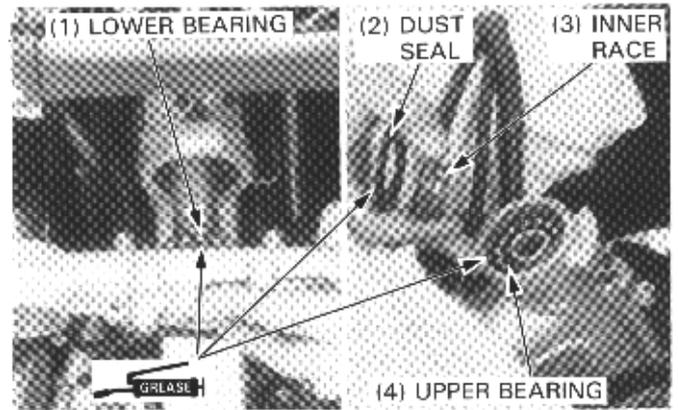
## FRONT WHEEL/SUSPENSION/STEERING

### INSTALLATION

Pack a new bearing cavities with grease.

Install the lower bearing onto the steering stem, then insert the steering stem through the steering head.  
Install the upper bearing and bearing inner race.

Apply grease to the dust seal, and install it onto the steering head.



Install and tighten the steering adjustment nut to the specified torque.

**TORQUE: 5 N·m (0.5 kg·m, 3.6 ft·lb)**

#### TOOLS:

Steering stem socket

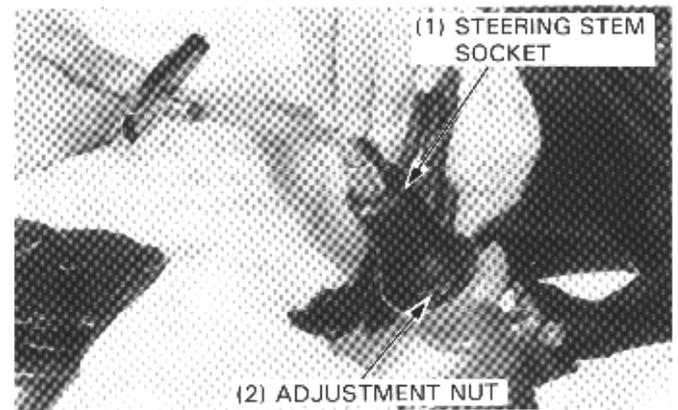
07916—KA50100  
or Adjustable pin spanner  
07702—0020001

Extension bar

07716—0020500  
or equivalent commercially  
available in U.S.A.

Turn the steering stem lock to lock 5—6 times to seat the bearings, and check the steering stem for up-and-down movement.

Tighten the adjustment nut to the specified torque again.



Install the steering top bridge and steering stem nut.  
Temporarily install the fork legs.  
Tighten the steering stem nut to the specified torque.

**TORQUE: 100 N·m (10.0 kg·m, 72 ft·lb)**

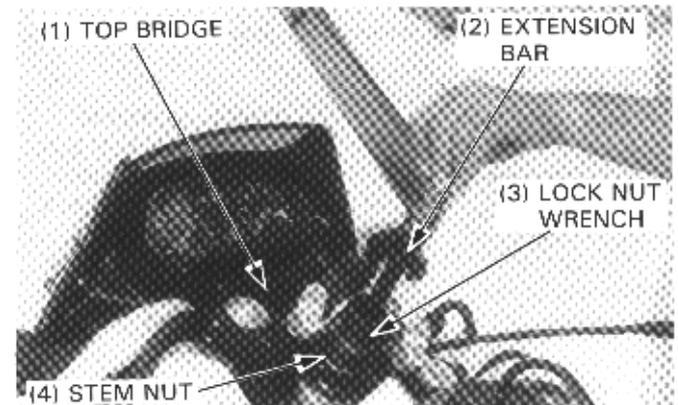
#### TOOLS:

Lock nut wrench, 30 x 32 mm

07716—0020400  
or equivalent commercially  
available in U.S.A.

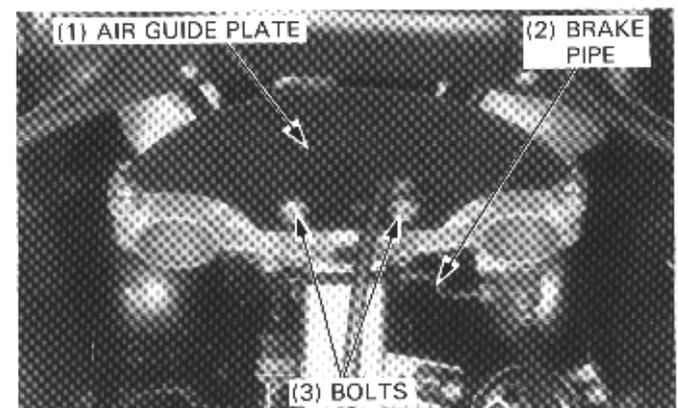
Extension bar

07716—0020500  
or equivalent commercially  
available in U.S.A.



Secure the brake pipe to the steering bottom bridge with two bolts.

Install the air guide plate with two bolts.



Install the following components:

- Fork legs (page 12-16)
- Brake hose clamp
- Stem nut cap
- Ignition switch (page 19-7)
- Handlebars (page 12-3)
- Front wheel (page 12-10)

