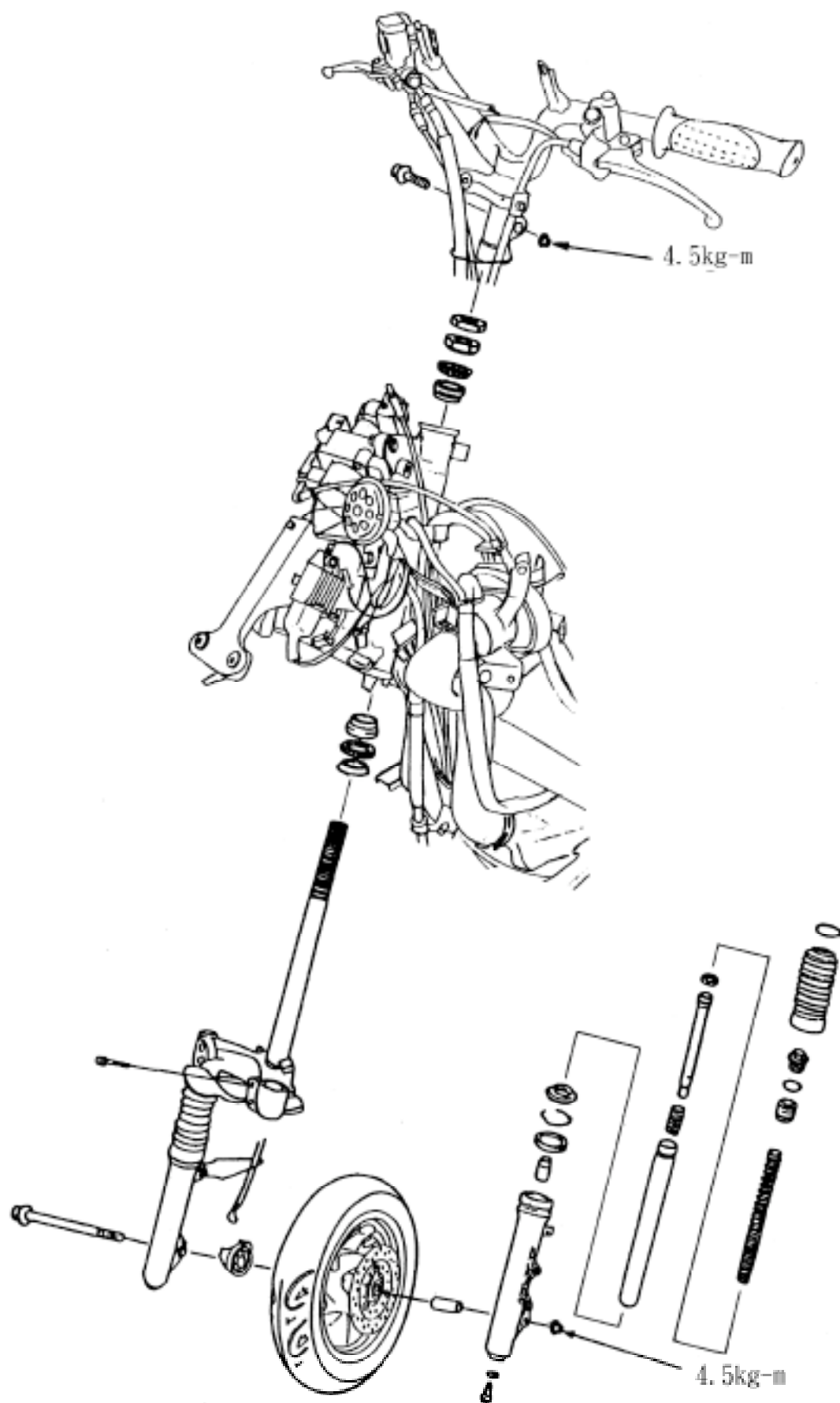


## 12. FRONT WHEEL/FRONT BRAKE/ FRONT SUSPENSION



**12**

## 12. FRONT WHEEL/FRONT BRAKE/ FRONT SUSPENSION



FILLY LX 50

SERVICE INFORMATION.....	12-1	FRONT BRAKE .....	12- 7
TROUBLESHOOTING .....	12-2	FRONT SHOCK ABSORBER .....	12-18
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FRONT WHEEL.....	12-4		

### SERVICE INFORMATION

#### GENERAL INSTRUCTIONS

- Remove the motorcycle frame covers before removing the front wheel. Jack the motorcycle front wheel off the ground and be careful to prevent the motorcycle from falling down.
- During servicing, keep oil or grease off the brake drum and brake linings.

#### SPECIFICATIONS

Item		Standard (mm)	Service Limit (mm)
Axle shaft runout		□	0.2
Front wheel rim runout	Radial	□	2.0
	Axial	□	2.0
Front brake drum I.D		110(SG20AB)	111(SG20AB)
Front brake lining thickness		4.0(SG20AB)	2.0(SG20AB)
Front shock absorber spring free length		210.9	206.4

#### TORQUE VALUES

Handlebar bolt	4.5~5.5kgf-m
Steering stem lock nut	6.0~8.0kgf-m
Steering top cone race	0.5~1.3kgf-m
Front shock absorber bolt	3.0kgf-m
Front axle nut	5.0~7.0kgf-m
Brake arm bolt	0.8~1.2kgf-m

#### SPECIAL TOOLS

Long socket wrench, 32mm 8angle

### TROUBLESHOOTING

#### Hard steering (heavy)

- Excessively tightened steering stem top cone race
- Broken steering balls
- Insufficient tire pressure

#### Steers to one side or does not track straight

- Uneven front shock absorbers
- Bent front fork
- Bent front axle or uneven tire

#### Poor brake performance

- Incorrectly adjusted brake
- Worn brake linings
- Contaminated brake lining surface
- Worn brake shoes at cam contacting area
- Worn brake drum
- Poorly connected brake arm

#### Front wheel wobbling

- Bent rim
- Excessive wheel bearing play
- Bent spoke plate
- Faulty tire
- Improperly tightened axle nut

#### Soft front shock absorber

- Weak shock springs
- Insufficient damper oil

#### Front shock absorber noise

- Slider bending
- Loose fork fasteners
- Lack of lubrication

## 12. FRONT WHEEL/FRONT BRAKE/ FRONT SUSPENSION



FILLY LX 50

### STEERING HANDLEBAR

#### REMOVAL

Remove the handlebar front and rear covers.  
(⇒2-2)

Remove the two bolts attaching each of the  
front and rear brake levers.

Remove the front and rear brake levers.

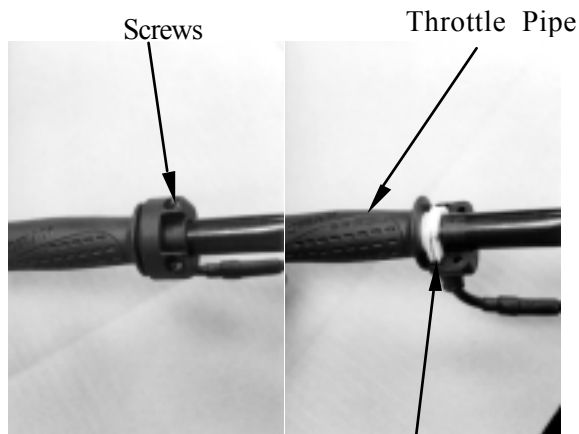


Bolts

Bolts

Remove the two throttle holder screws and  
throttle holder.

Disconnect the throttle cable from the throttle  
pipe and then remove the throttle pipe from  
the handlebar.



Screws

Throttle Pipe

Throttle

Remove the handlebar lock nut and bolt to  
remove the handlebar.



Nut

Bolt

#### INSTALLATION

Install the handlebar onto the steering stem  
by aligning the tab on the handlebar with the  
groove on the steering stem.

Install and tighten the handlebar bolt and lock  
nut.

**Torque:** 4.5\_ 5.5kgf-m



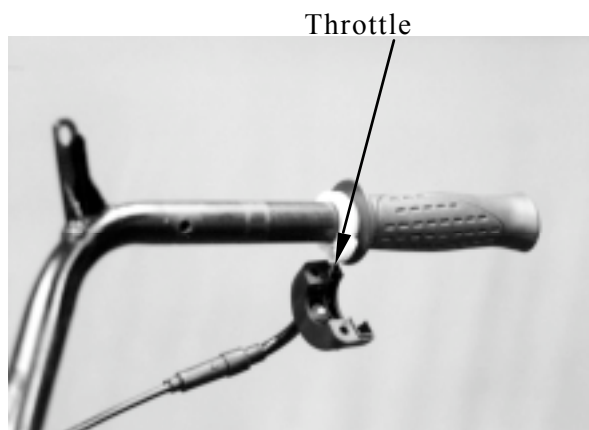
Tab/Groove

## 12. FRONT WHEEL/FRONT BRAKE/ FRONT SUSPENSION

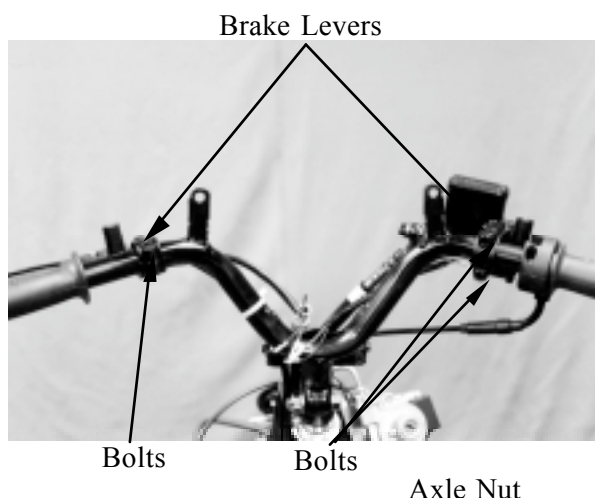


FILLY LX 50

Apply grease to the tip of the throttle pipe.  
Install the throttle pipe and connect the  
throttle cable.



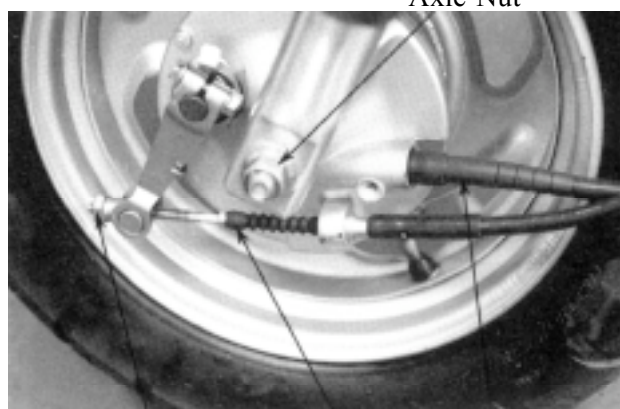
Install the front and rear brake levers in the  
reverse order of removal.



### FRONT WHEEL

#### REMOVAL

Jack the motorcycle front wheel off the  
ground.  
Remove the speedometer cable set screw and  
disconnect the speedometer cable.  
Remove the front brake cable.  
Remove the front axle nut and pull out the  
axle.  
Remove the front wheel.  
Remove the front brake panel and side collar.

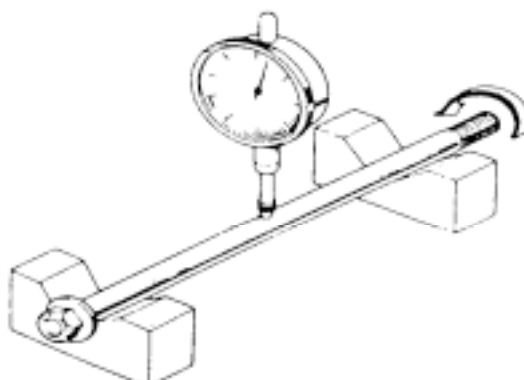


#### INSPECTION

##### AXLE RUNOUT

Set the axle in V blocks and measure the  
runout using a dial gauge.  
The actual runout is  $\frac{1}{2}$  of the total indicator  
reading.

**Service Limit:** 0.2mm replace if over



## 12. FRONT WHEEL/FRONT BRAKE/ FRONT SUSPENSION



FILLY LX 50

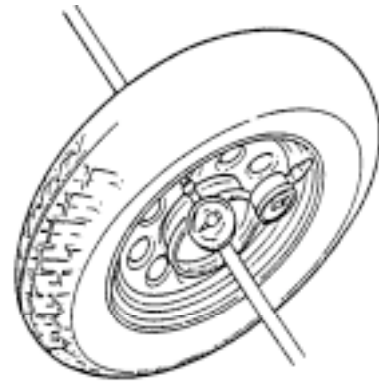
### WHEEL RIM

Check the wheel rim runout.

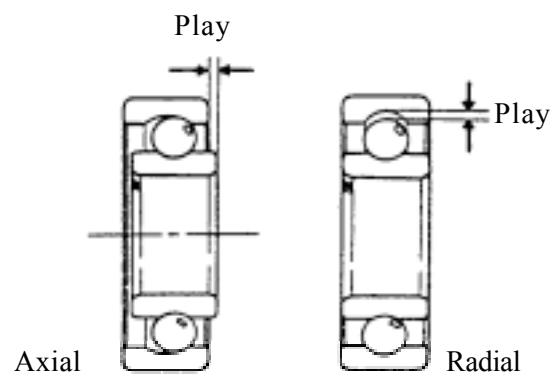
**Service Limits:**

**Radial:** 2.0mm replace if over

**Axial:** 2.0mm replace if over



Turn the wheel bearings and replace the bearings if they are noisy or have excessive play.



### DISASSEMBLY

Remove the dust seal.



## 12. FRONT WHEEL/FRONT BRAKE/ FRONT SUSPENSION



FILLY LX 50

Remove the front wheel bearings and distance collar.

Special

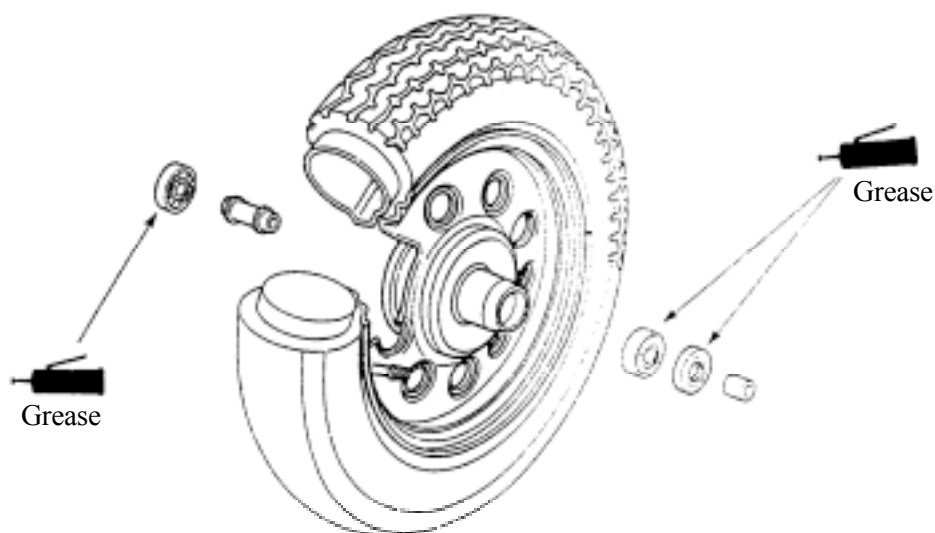
Bearing Puller

Bearing Puller



Pilot

### ASSEMBLY



Pack all bearing cavities with grease.  
Drive in the left bearing.  
Install the distance collar.  
Drive in the right bearing.

\* Drive in the bearing squarely with the sealed end facing out.



Outer Driver  
Pilot

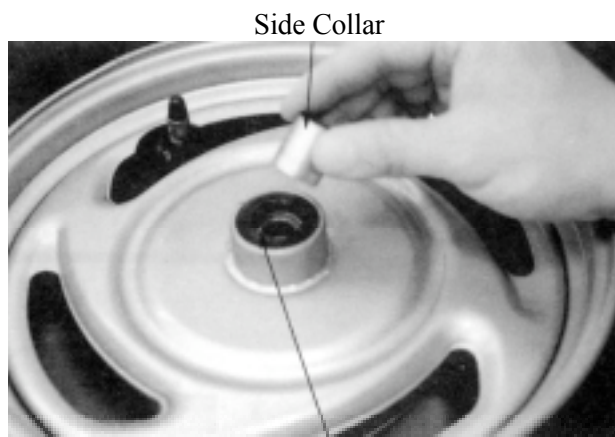


## 12. FRONT WHEEL/FRONT BRAKE/ FRONT SUSPENSION



FILLY LX 50

Apply grease to a new dust seal lip and  
install the dust seal.  
Install the side collar.



Side Collar

Dust Seal

### INSTALLATION

Install the front wheel by aligning the brake  
panel groove with the front fork tab.  
Insert the axle shaft and tighten the axle nut.

**Torque:** 4.5kg-m

Connect the speedometer cable and secure it  
with the screw.

Install the front brake cable and adjust the  
front brake lever free play.



Groove

Tab

### FRONT BRAKE

Remove the front wheel. (⇒ 12-4)

Remove the front brake panel.

### INSPECTION

Measure the brake drum I.D.

**Service Limit:** 111mm replace if over



Brake Shoe Springs

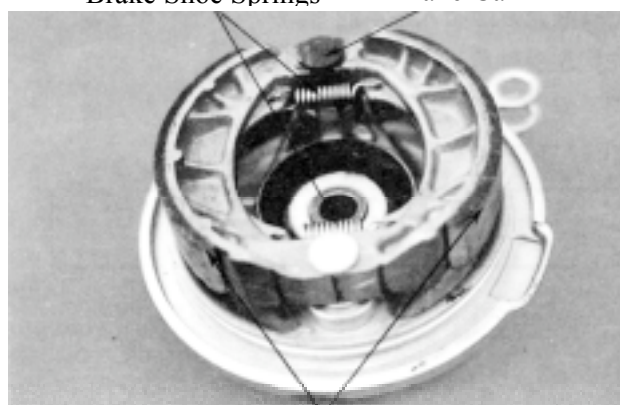
Brake Cam

Measure each brake lining thickness.

**Service Limit:** 2.00mmmm replace if below

\*

Keep oil or grease off the brake linings.



Brake Linings



## 12. FRONT WHEEL/FRONT BRAKE/ FRONT SUSPENSION

### DISASSEMBLY

Do not swing the brake arm to expand the brake shoes.

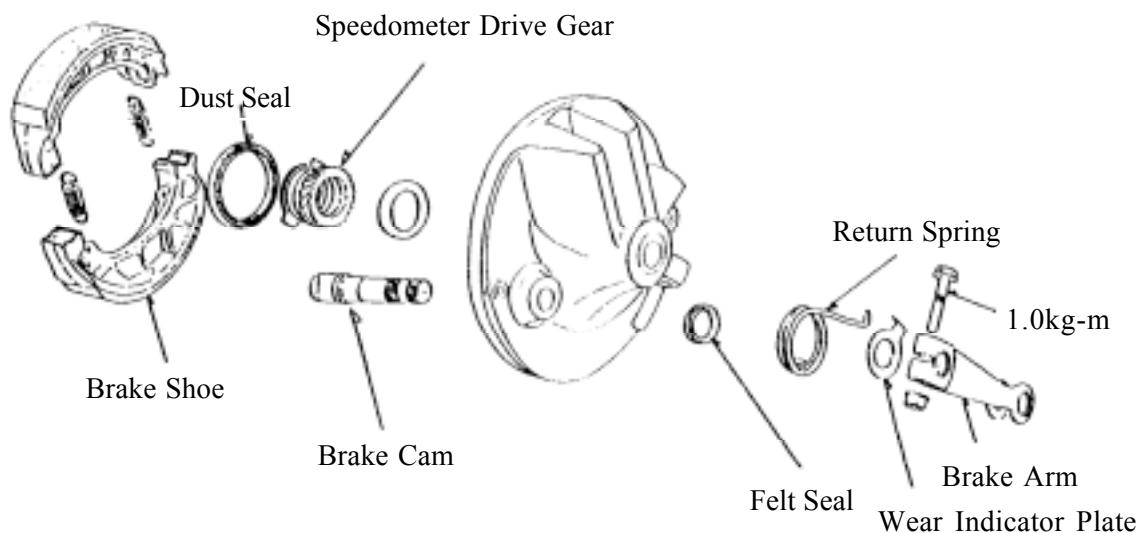
Remove the brake shoes by removing the brake shoe springs using a screw driver.

Remove the brake arm and return spring.

Remove the wear indicator plate and felt seal.

Remove the brake cam.

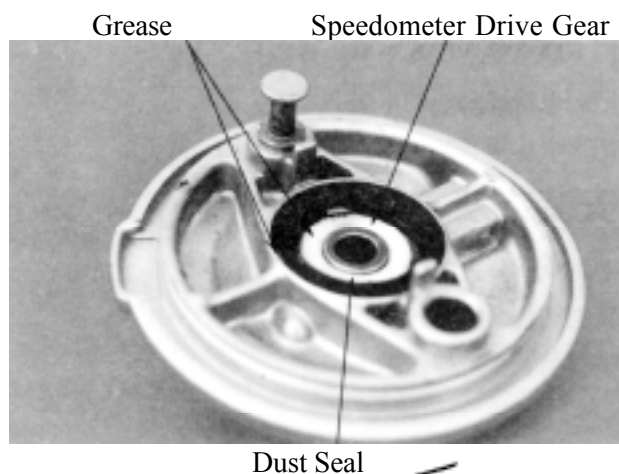
Remove the dust seal and speedometer drive gear.



### ASSEMBLY

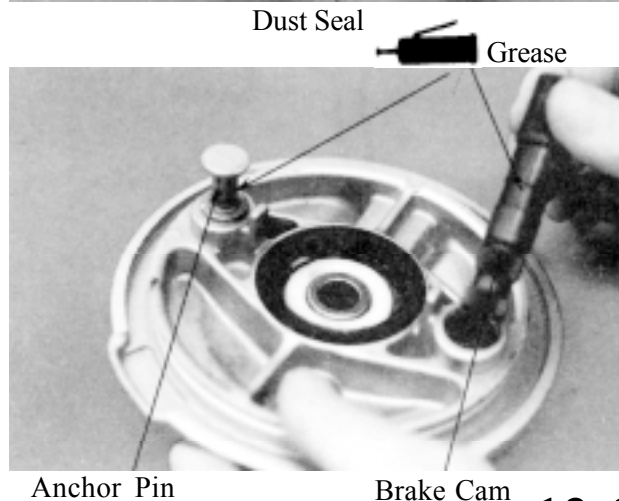
Apply grease to the speedometer drive gear and then install it into the brake panel.

Apply grease to the dust seal lip and install it into the brake panel.



Apply grease to the anchor pin and brake cam.

Install the brake cam.



Anchor Pin

Brake Cam

## 12. FRONT WHEEL/FRONT BRAKE/ FRONT SUSPENSION

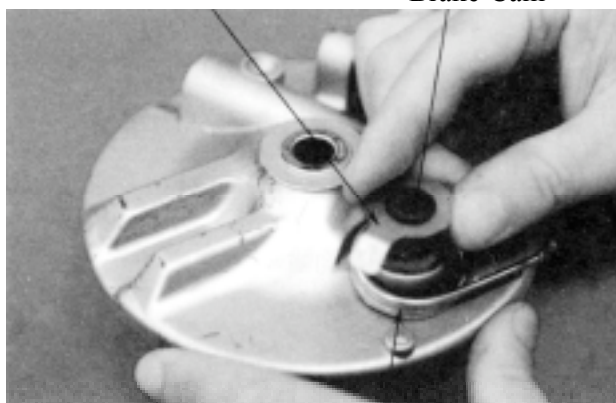


FILLY LX 50

Install the return spring by aligning the spring hook end with the hole in the brake panel.  
Apply a small amount of engine oil to the felt seal and install it to the brake panel.  
Install the wear indicator plate on the brake cam by aligning the tooth on the plate with the groove on the brake cam.

Wear Indicator Plate

Brake Cam

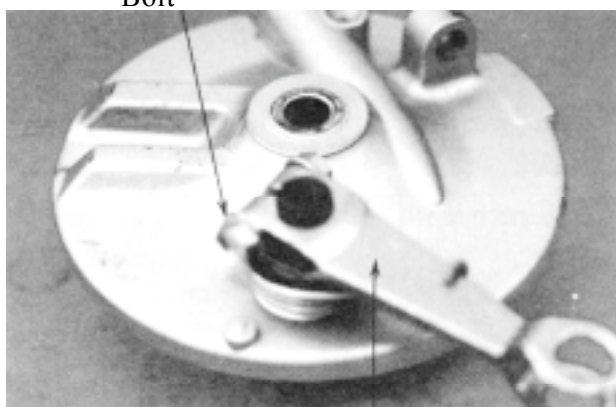


Return Spring

Install the brake arm on the brake cam by aligning the punch mark on the brake arm and the scribed line on the brake cam.  
Install and tighten the brake arm bolt.

**Torque:** 0.8~1.2kgf-m

Bolt



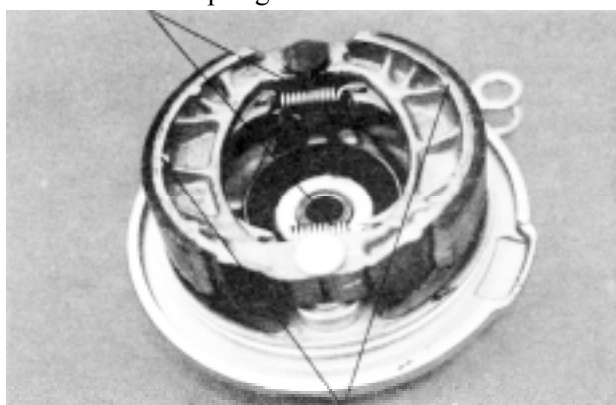
Brake Arm

Install the brake shoe springs to the brake shoes and then install the brake shoes into the brake panel.

### INSTALLATION

Install the brake panel onto the front wheel.  
Install the front wheel. (⇒ 12-7)  
Adjust the front brake lever free play.

Brake Shoe Springs



Brake Shoes

## 12. FRONT WHEEL/FRONT BRAKE/ FRONT SUSPENSION



FILLY LX 50

### HYDRAULIC BRAKE (FRONT BRAKE)

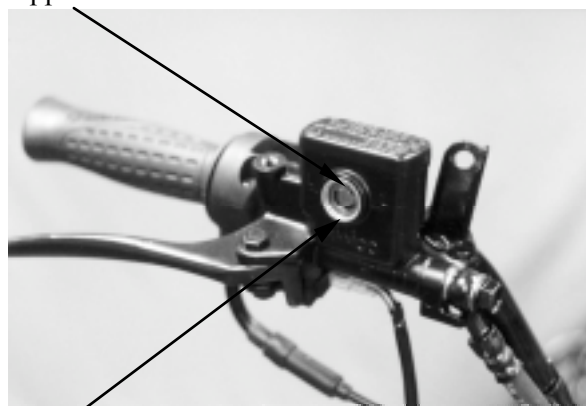
Brake Fluid Replacement/Air Bleeding

Check the brake fluid level on level ground.

\*

- When operating the brake lever, the brake reservoir cap must be tightened securely to avoid spill of brake fluid.
- When servicing the brake system, use shop towels to cover plastic parts and coated surfaces to avoid damage caused by spill of brake fluid.

Upper Limit



Lower Limit

### Brake Fluid Bleeding

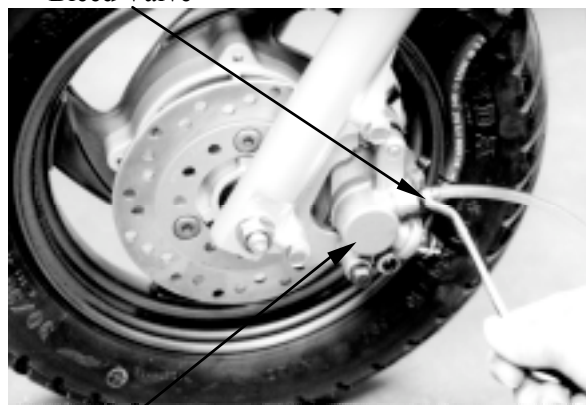
In order to avoid spill of brake fluid, connect a transparent hose to the bleed valve.

#### Warning

Brake fluid spilled on brake pads or brake disk will reduce the braking effect. Clean the brake pads and brake disk with a high quality brake degreaser.

Fully apply the brake lever and then loosen the brake caliper bleed valve to drain the brake fluid until there is no air bubbles in the brake fluid. Then, tighten the bleed valve. Repeat these steps until the brake system is free of air.

Bleed Valve



Front Brake Caliper

### Brake Fluid Refilling

Add DOT-4 brake fluid to the brake reservoir.

\*

- When bleeding, be careful not to allow air in the brake reservoir flowing into the brake system.
- When using a brake bleeder, follow the manufacturer's instructions.
- Never use dirty or unspecified brake fluid or mix different brake fluids because it will damage the brake system.

Make sure to bleed air from the brake system.

## 12. FRONT WHEEL/FRONT BRAKE/ FRONT SUSPENSION



FILLY LX 50

### Brake Pad/Disk Replacement

- \* The brake pads must be replaced as a set to ensure the balance of the brake disk.

Remove the two bolts attaching the brake caliper.  
Remove the brake caliper.

Remove the brake pad pins to remove the brake pads.

Pad Pin



Front Brake Caliper

Install the brake pads in the reverse order of removal.

Tighten the brake pad pin bolts.

**Torque:** 1.5\_ 2.0kgf-m

- \* Keep grease or oil off the brake pads to avoid brake failure.
- \* Do not reuse the brake pad pin bolts that have been removed.

Brake Pads



Front Brake Caliper

### Brake Disk

Measure the brake disk thickness.

**Service Limit:** 3.0mm

Measure the brake disk runout.

**Service Limit:** 0.3mm



## 12. FRONT WHEEL/FRONT BRAKE/ FRONT SUSPENSION

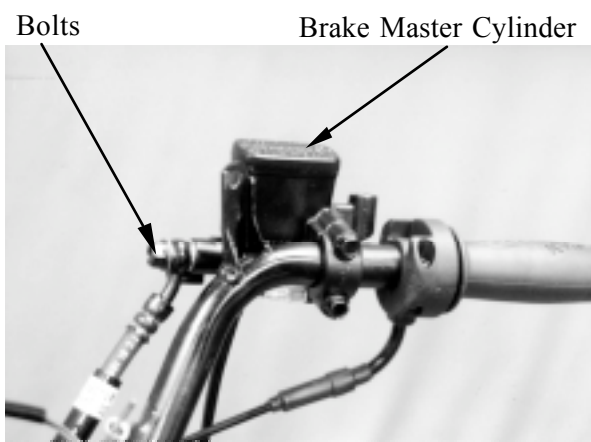
### BRAKE MASTER CYLINDER

#### Removal

First drain the brake fluid from the hydraulic brake system.

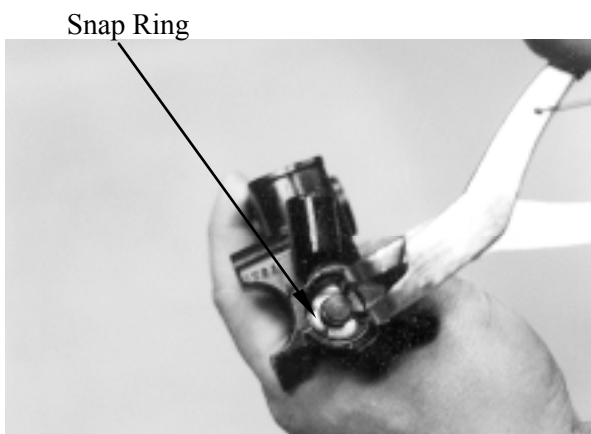
**\***

- When servicing the brake system, use shop towels to cover rubber and plastic parts and coated surfaces to avoid being contaminated by brake fluid.
- When removing the brake fluid pipe bolt, be sure to plug the pipe to avoid

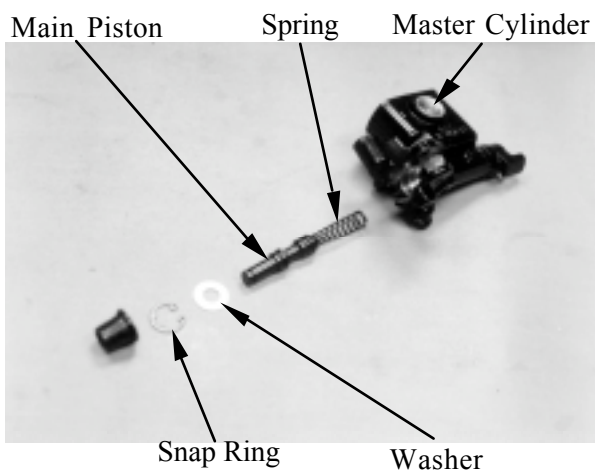


#### Disassembly

Remove the piston rubber cover and snap ring from the brake master cylinder.



Remove the washer, main piston and spring from the brake master cylinder. Clean the inside of the master cylinder and brake reservoir with brake fluid.





## 12. FRONT WHEEL/FRONT BRAKE/ FRONT SUSPENSION



FILLY LX 50

### Inspection

Measure the brake master cylinder I.D.

**Service Limit:** 12.75mm

Inspect the master cylinder for scratch or crack.



Measure the brake master cylinder piston O.D.

**Service Limit:** 12.6mm

Before assembly, inspect the 1st and 2nd rubber cups for wear.



### Assembly

Before assembly, apply brake fluid to all removed parts.

Install the spring together with the 1st rubber cup.

\*

- During assembly, the main piston and spring must be installed as a unit without exchange.
- When assembling the piston, soak the cups in brake fluid for a while.
- Install the cups with the cup lips facing the correct direction.



Install the main piston, spring and snap ring.

Install the rubber cover.

Install the brake lever.

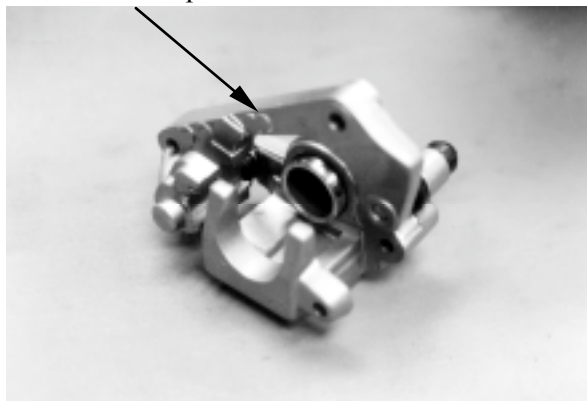


## 12. FRONT WHEEL/FRONT BRAKE/ FRONT SUSPENSION

### Disassembly

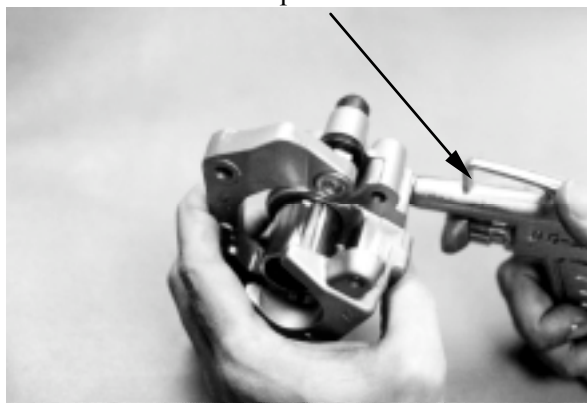
Remove the brake caliper seat from the brake caliper.

Brake Caliper Seat



Remove the piston from the brake caliper. If necessary, use compressed air to squeeze out the piston through the brake fluid inlet opening and place a shop towel under the caliper to avoid contamination caused by the removed piston. Check the piston cylinder for scratch or wear and replace if necessary.

Compressed Air

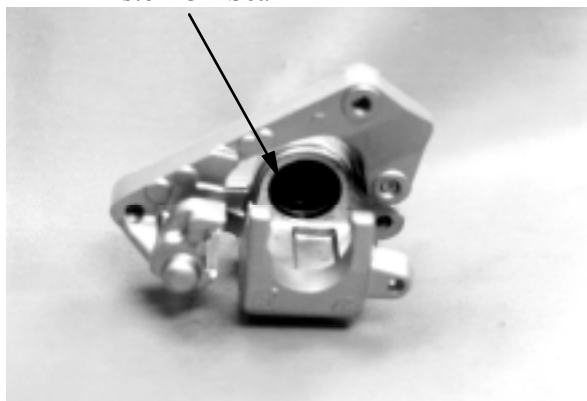


Push the piston oil seal outward to remove it. Clean the oil seal groove with brake fluid.

**\***

Be careful not to damage the piston surface.

Piston Oil Seal



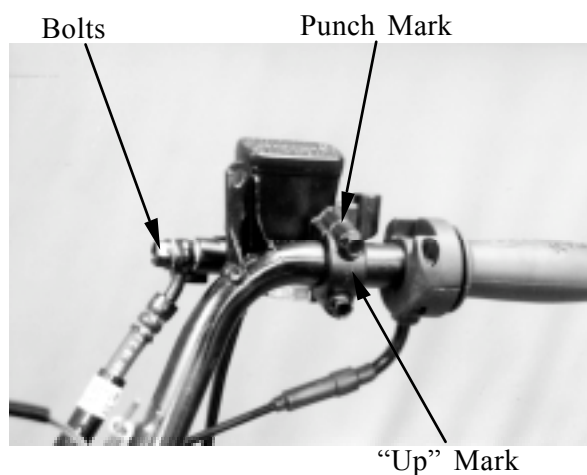
## 12. FRONT WHEEL/FRONT BRAKE/ FRONT SUSPENSION



FILLY LX 50

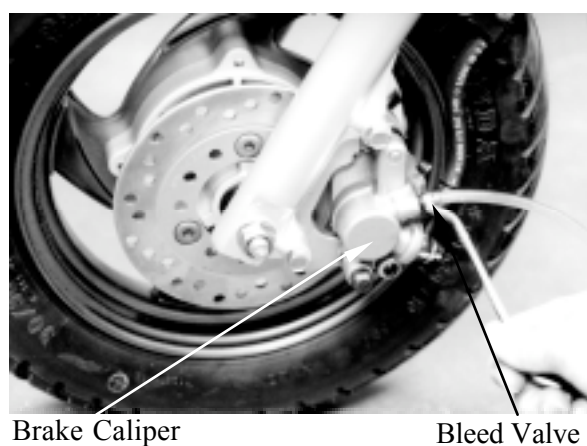
Place the brake master cylinder on the handlebar and install the holder with “up” mark facing up. Be sure to align the punch mark with the holder joint. First tighten the upper bolt and then tighten the lower bolt.

**Torque:** 3.0\_ 4.0kgf-m



Install the brake fluid pipe with the attaching bolt and two sealing washers.

Install the handlebar covers. (⇒ 12-3)  
Fill the brake reservoir with recommended brake fluid to the upper limit and bleed air according to the method stated in 12-10.



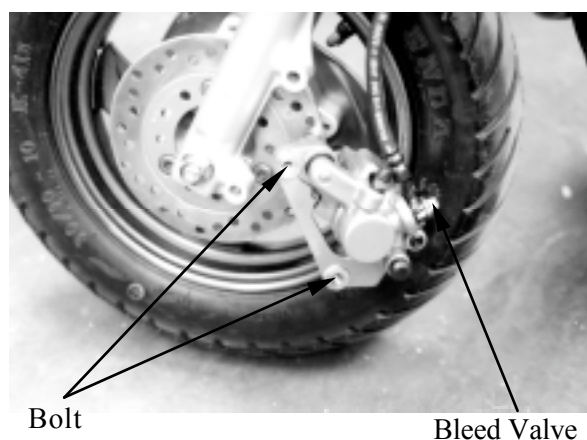
### BRAKE CALIPER (FRONT)

#### Removal

Remove the brake caliper.  
Place a clean container under the brake caliper and disconnect the brake fluid pipe from the caliper.

\*

Do not spill brake fluid on any coated surfaces.



## 12. FRONT WHEEL/FRONT BRAKE/ FRONT SUSPENSION

Check the piston for scratch or wear.  
Measure the piston O.D. with a micrometer.  
**Service Limit:** 26.3mm



Check the caliper cylinder for scratch or wear  
and measure the cylinder bore.  
**Service Limit:** 26.45mm



### Assembly

Clean all removed parts.  
Apply silicon grease to the piston and oil seal. Lubricate the brake caliper cylinder inside wall with brake fluid.  
Install the brake caliper piston with grooved side facing out.

**\***

Install the piston with its outer end 3\_5mm protruding beyond the brake caliper.

Wipe off excessive brake fluid with a clean shop towel. Apply silicon grease to the brake caliper seat pin and caliper inside.  
Install the brake caliper seat.



## 12. FRONT WHEEL/FRONT BRAKE/ FRONT SUSPENSION

### Installation

Install the brake caliper and tighten the two bolts.

**Torque:** 2.9\_ 3.5kg-m



Bolts

Connect the brake fluid pipe to the brake caliper and tighten the fluid pipe bolt.

**Torque:** 2.5\_ 3.5kg-m

Fill the brake reservoir with recommended brake fluid and bleed air from the brake system. (⇒ 12-10)



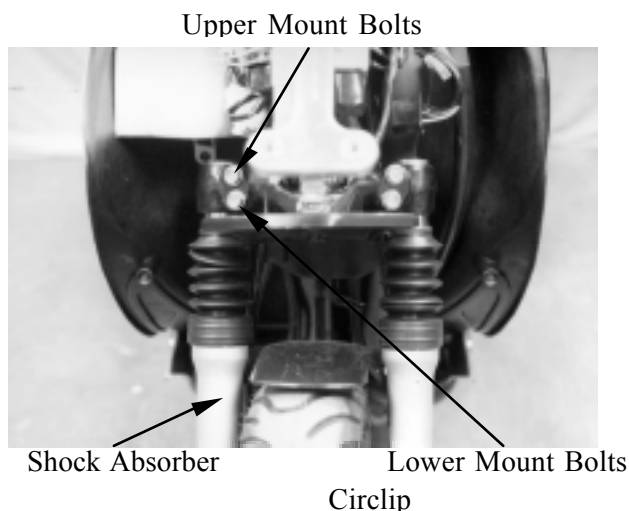
Bolt

## 12. FRONT WHEEL/FRONT BRAKE/ FRONT SUSPENSION

### FRONT SHOCK ABSORBER

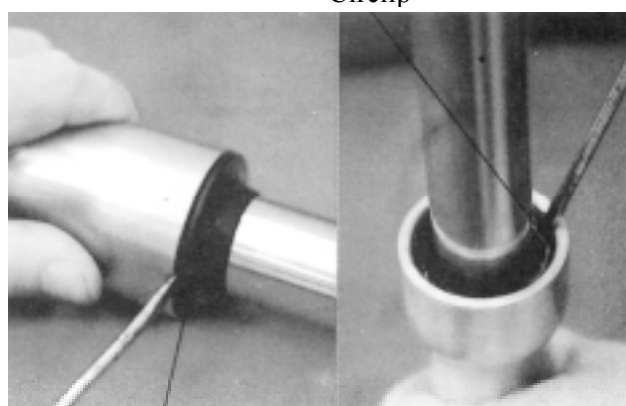
#### REMOVAL

Remove the front wheel. (⇒12-4)  
Remove the front lower cover. (⇒2-2)  
Remove the front inner fender.  
Remove the front shock absorber upper mount bolts.  
Loosen the lower mount bolts to remove the front shock absorbers.

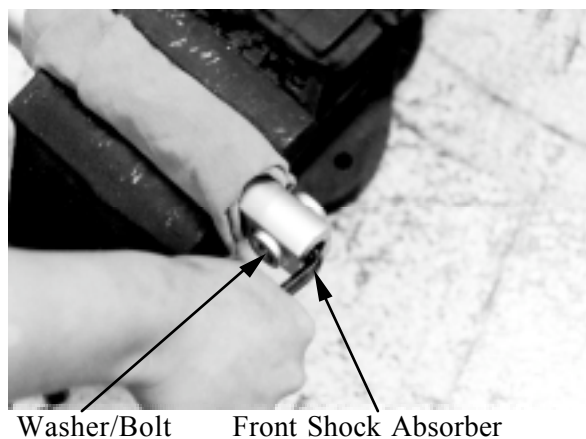


#### DISASSEMBLY

Remove the dust boot.  
Remove the circlip.



Set the front shock absorber in a vise.  
Remove the damper rod, hex bolt and copper washer.  
Pull out the front shock absorber tube.



Set the front shock absorber tube in a vise.  
Remove the top nut, shock spring, damper, and damper spring from the front shock absorber tube.

**\***

- When holding the shock absorber tube, place a shop towel to protect it and do not apply too much force.

Shock Absorber Tube



## 12. FRONT WHEEL/FRONT BRAKE/ FRONT SUSPENSION



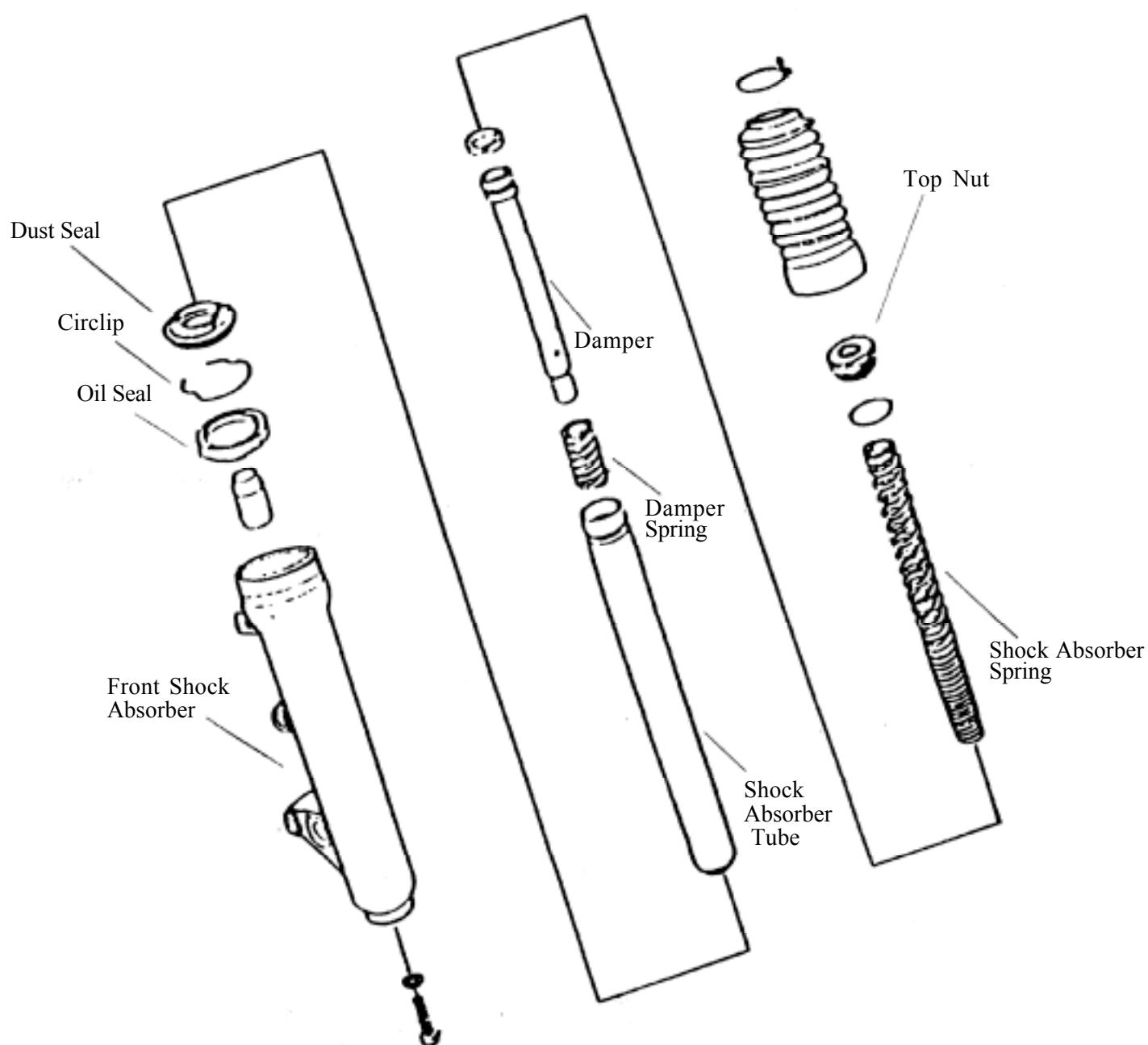
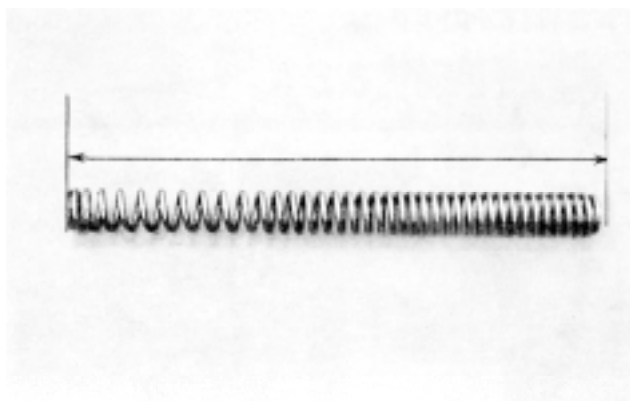
FILLY LX 50

Measure the front shock absorber spring free length.

**Service Limits:** Right : 206.4mm

Left : 206.4mm

### ASSEMBLY





## 12. FRONT WHEEL/FRONT BRAKE/ FRONT SUSPENSION

Install the damper spring onto the damper rod and then install them into the front shock absorber tube.

Install the shock absorber spring onto the front shock absorber tube and tighten the top nut.

- \* Install the front shock absorber spring with the closely wound coils facing down.



Shock Absorber Tube  
Circlip

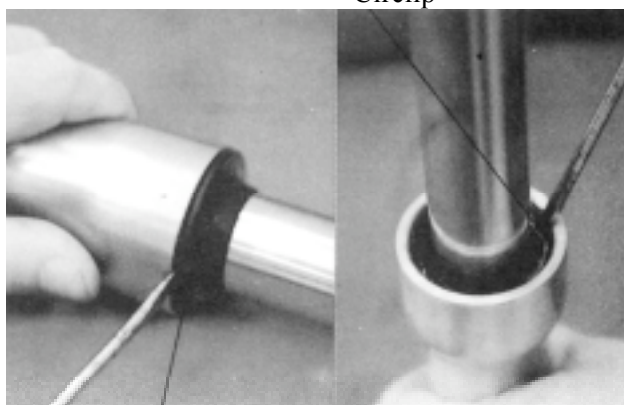
Set the front shock absorber in a vise. Insert the shock absorber tube into the shock absorber and tighten the hex bolt. (Apply locking agent to the washer and install it together with the hex bolt.)

**Torque:** 3.0kgf-m

Add engine oil into the front shock absorber.

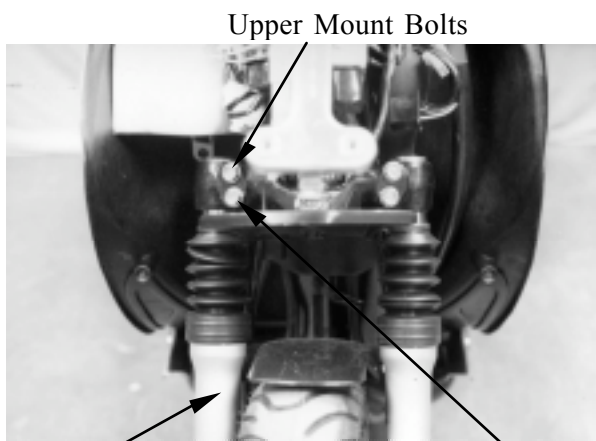
**Specified Oil:** SS#8

**Oil Capacity:** 38±1cc



Dust Boot

Install the circlip.  
Install the dust boot.



Upper Mount Bolts  
Front Shock Absorber  
Lower Mount Bolts

### INSTALLATION

Install the front shock absorbers onto the steering stem.

Install and tighten the front shock absorber upper mount bolts.

Tighten the lower mount bolts.

- \* Align the upper mount bolt hole with the groove on the front fork.

Install the front wheel. (⇒ 12-7)

## 12. FRONT WHEEL/FRONT BRAKE/ FRONT SUSPENSION



FILLY LX 50

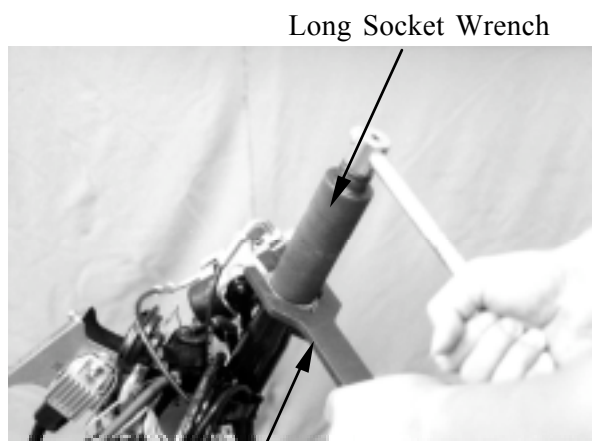
### FRONT FORK

#### REMOVAL

Remove the steering handlebar. (⇒ 12-3)  
Remove the front wheel. (⇒ 12-4)  
Disconnect the speedometer cable.  
Remove the steering stem lock nut using long socket wrench.

Specia

Long Socket Wrench, 32mm 8Angle



Lock Nut Wrench

Remove the top cone race and remove the steering stem.

\*

- Be careful not to lose the steel balls (26 on top race and 29 on bottom race).

Inspect the ball races and cone races for wear or damage and replace if necessary.



Top Cone Race

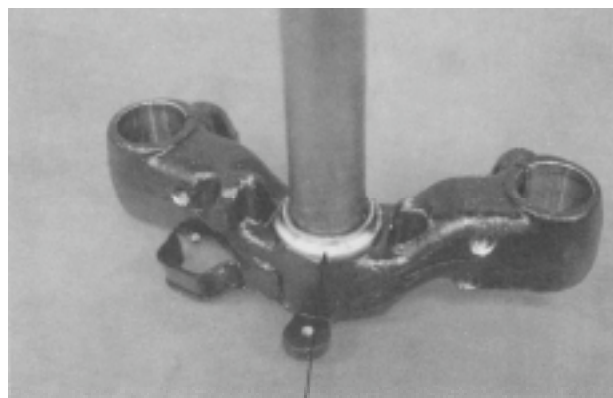
#### BOTTOM CONE RACE REPLACEMENT

Remove the bottom cone race using a chisel.

\*

- Be careful not to damage the steering stem and front fork.

Drive a new bottom cone race into place with a proper driver.

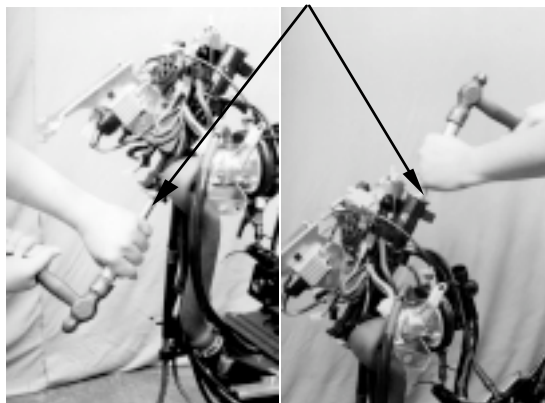


Bottom Cone Race

#### BALL RACE REPLACEMENT

Drive out the top and bottom ball races.

Ball Race Remover



## 12. FRONT WHEEL/FRONT BRAKE/ FRONT SUSPENSION

Drive new top and bottom ball races into the steering head using the outer driver.

**\***

Be sure to completely drive in the ball races.

Driver Handle A



Outer Driver, 37x40mm

### INSTALLATION

Apply grease to the top and bottom ball races and install 26 steel balls on the top ball race and 29 steel balls on the bottom ball race. Apply grease to the ball races and install the front fork.



Steel Balls

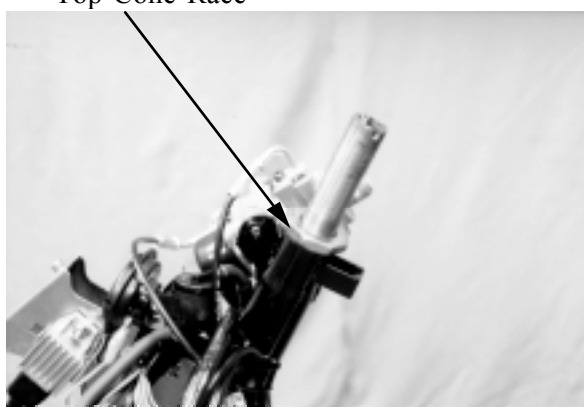
Apply grease to the top cone race and install it.

Tighten the top cone race and then turn the steering stem right and left several times to make steel balls contact each other closely.

**\***

Check that the steering stem rotates freely without vertical play.

Top Cone Race



Install the steering stem lock nut and tighten it while holding the top cone race.

**Torque:** 6.0\_ 8.0kgf-m

Install the front wheel. (⇒12-7)

Install the steering handlebar. (⇒12-3)

Install the speedometer cable. (⇒12-7)

Specia

Long Socket Wrench, 32mm 8Angle

Long Socket Wrench



Lock Nut Wrench