

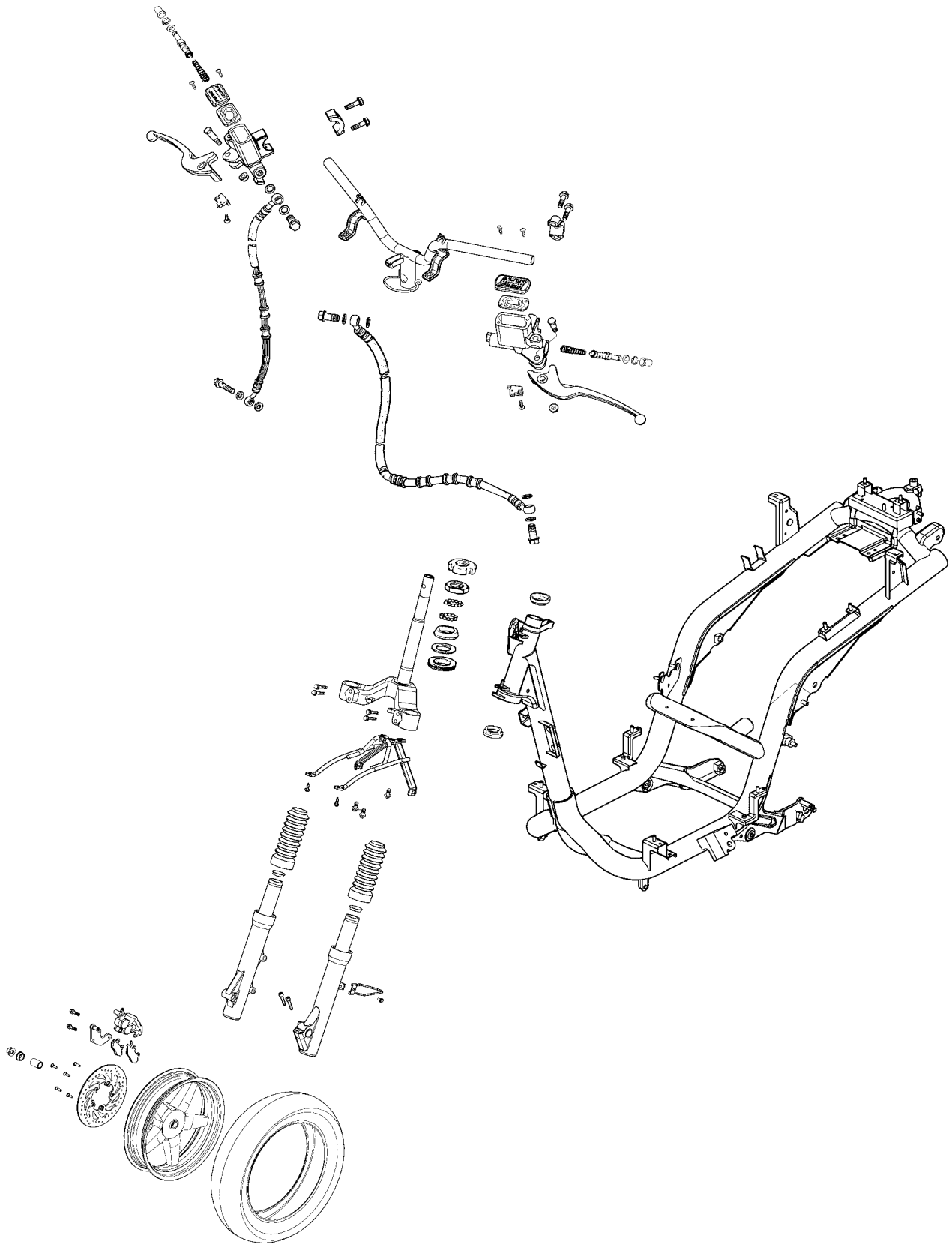
**14. STEERING HANDLEBAR/FRONT WHEEL/FRONT
BRAKE/FRONT SHOCK ABSORBER/FRONT FORK**

**STEERING HANDLEBAR/FRONT WHEEL/FRONT
BRAKE/FRONT SHOCK ABSORBER/FRONT FORK**

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**14. STEERING HANDLEBAR/FRONT WHEEL/FRONT
BRAKE/FRONT SHOCK ABSORBER/FRONT FORK**

SCHEMATIC DRAWING



14. STEERING HANDLEBAR/FRONT WHEEL/FRONT BRAKE/FRONT SHOCK ABSORBER/FRONT FORK

SERVICE INFORMATION

GENERAL INSTRUCTIONS

- Remove the motorcycle frame covers before removing the front wheel, steering handlebar, front shock absorber and front fork. 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 pads and brake disk.

SPECIFICATIONS

Item		Standard (mm)	Service Limit (mm)
Axle shaft runout		—	0.2
Front wheel rim runout	Radial	—	2.0
	Axial	—	2.0
Brake disk thickness		4.0	3.0
Brake disk runout		—	0.30
Brake caliper piston O.D.		25.33~25.36	25.3
Brake caliper cylinder I.D.		25.4~25.45	25.45
Brake master cylinder O.D.		12.65~12.68	12.64
Brake master cylinder I.D.		12.70~12.74	12.75

TORQUE VALUES

Steering stem lock nut	40~50N-m
Steering top cone race	4.9~12.7N-m
Front shock absorber bolt	29~35N-m
Front axle	29~35N-m
Brake caliper holder bolt	29~35N-m

SPECIAL TOOLS

Lock nut wrench	F002
Oil seal & bearing installer	E014

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

- Worn brake pads
- Contaminated brake pad surface
- Deformed brake disk
- Air in brake system
- Deteriorated brake fluid
- Worn brake master cylinder piston oil seal
- Clogged brake fluid line
- Unevenly worn brake caliper

Front wheel wobbling

- Bent rim
- Loose front axle
- Bent spoke plate
- Faulty tire
- Improperly tightened axle nut

Soft front shock absorber

- Weak shock springs
- Insufficient damper oil

Front shock absorber noise

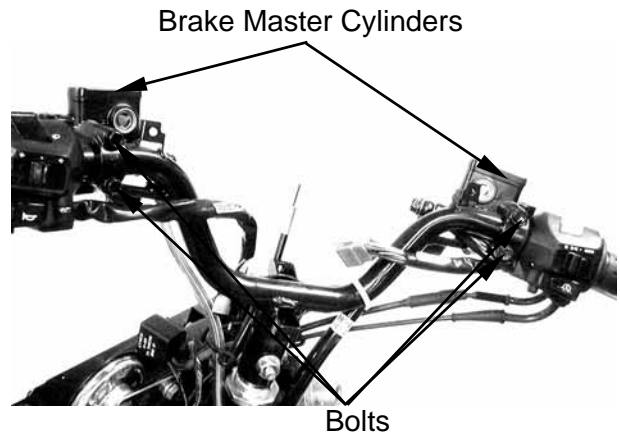
- Slider bending
- Loose fork fasteners
- Lack of lubrication

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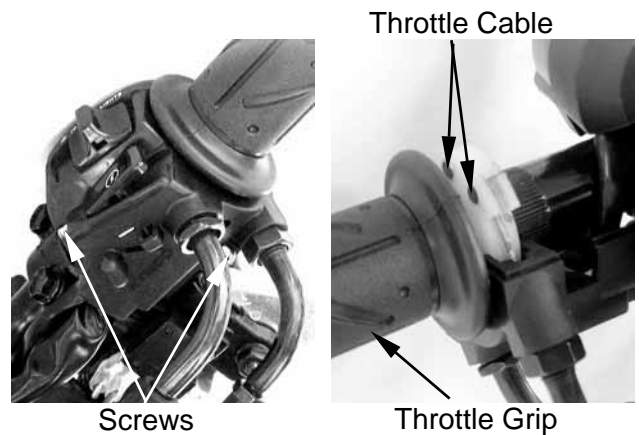
STEERING HANDLEBAR

REMOVAL

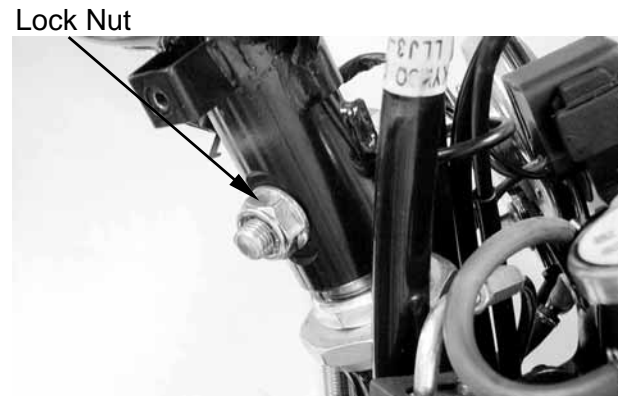
Remove the handlebar front and rear covers.
(⇒2-3)
Remove the front and rear brake master cylinder attaching bolts.



Remove the four screws attaching the right and left handlebar switches.
Disconnect the throttle cable from the throttle grip and remove the throttle grip from the handlebar.

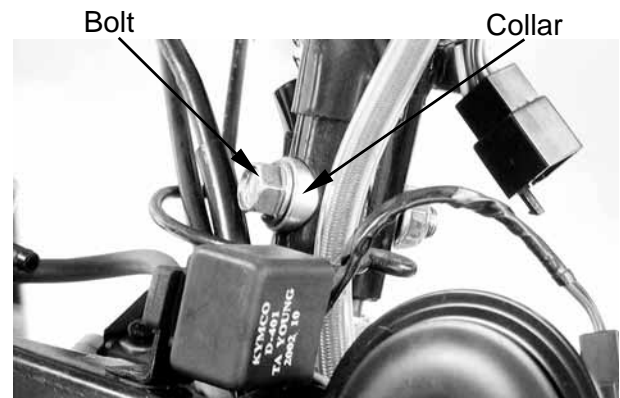


Remove the handlebar lock nut then take out the bolt and collar.
Remove the handlebar.



INSTALLATION

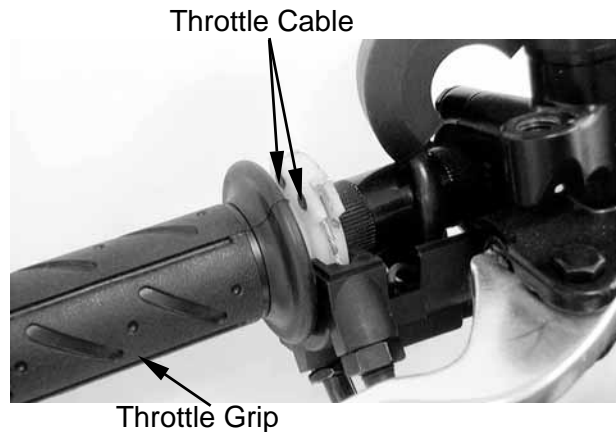
Install the handlebar onto the steering stem and install the handlebar collar, lock nut and bolt.
Tighten the bolt to the specified torque.
Torque: 40~50N-m



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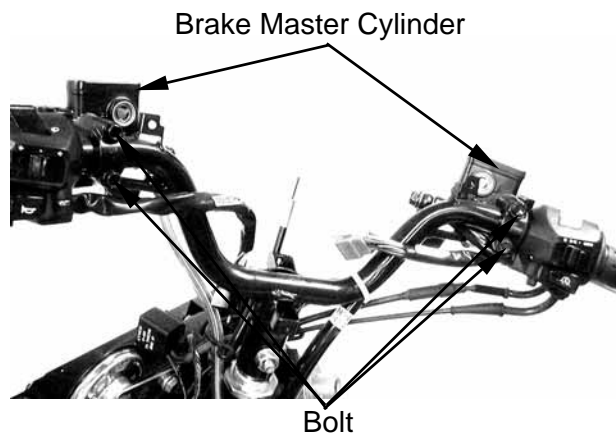
Lubricate the throttle grip front end with grease and then install the throttle grip. Connect the throttle cable to the throttle grip. Install the right and left handlebar switches and tighten the screws.

- * Adjust the throttle grip free play to the specified range of 2~6mm.



Install the front and rear brake master cylinders.

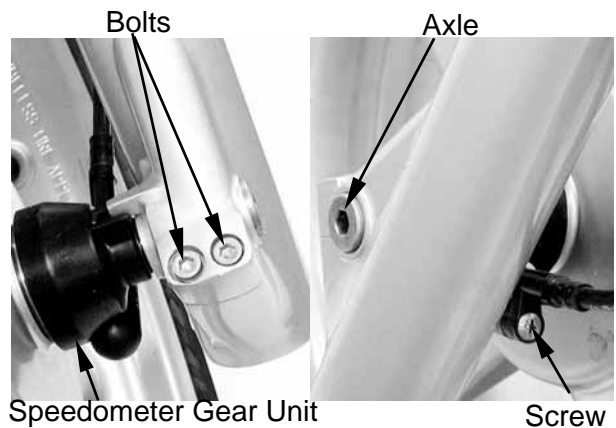
- * Install the brake master cylinders by aligning the index marks.



FRONT WHEEL

REMOVAL

Remove the two bolts from the left front absorber.
Remove the screw from the speedometer gear unit then disconnect the speed wire from the speedometer gear unit.
Remove the front axle to pull out the axle.
Remove the front wheel and the speedometer gear unit.

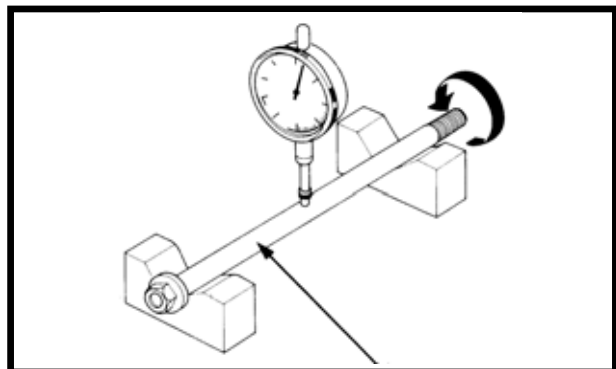


INSPECTION

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



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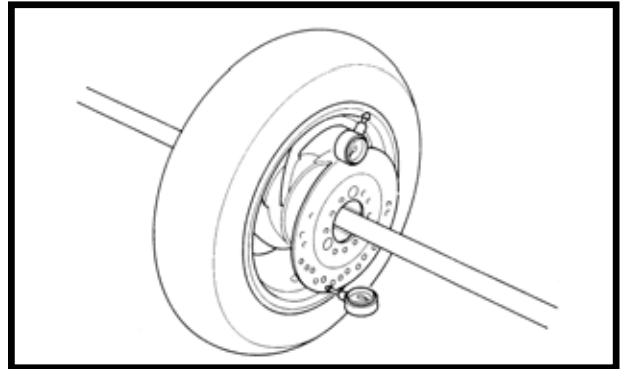
WHEEL RIM

Check the wheel rim runout.

Service Limits:

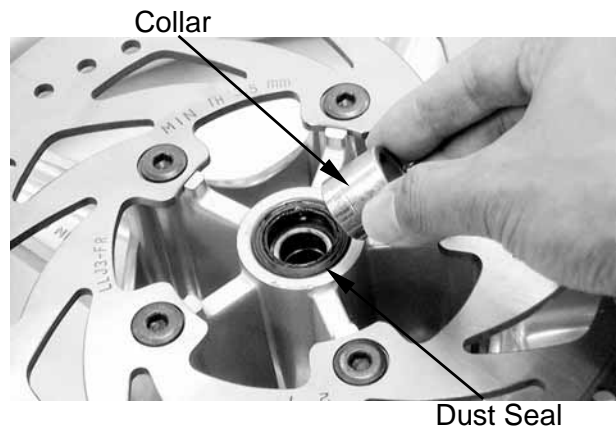
Radial: 2.0mm replace if over

Axial: 2.0mm replace if over



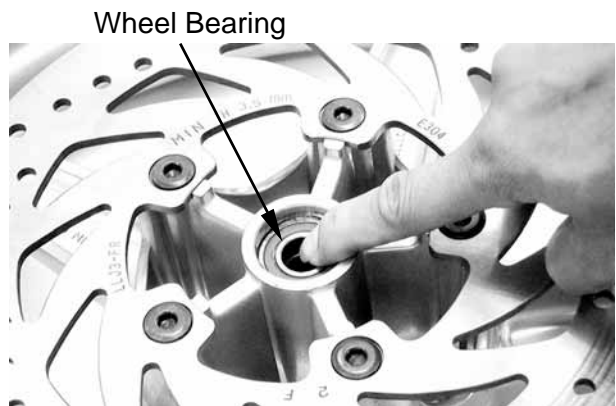
FRONT WHEEL BEARING

Remove the side collar and dust seal.



Turn the inner race of each bearing with your finger to see if they turn smoothly and quietly. Also check if the outer race fits tightly in the hub.

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



BEARING REPLACEMENT

Remove the front wheel bearings and distance collar.



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

- * Do not allow the bearings to tilt while driving them in.
- * Drive in the bearing squarely with the sealed end facing out.

Special Tools

Oil seal & bearing installer E014

INSTALLATION

Apply grease to the speedometer gear unit.
Install the speedometer gear unit by aligning its retaining pawl with the hub cutout.

- * If not aligned, the retaining pawl will be deformed when the axle nut is tightened.
- * After installing the axle, turn the wheel to make sure that the speedometer drive shaft rotates freely.

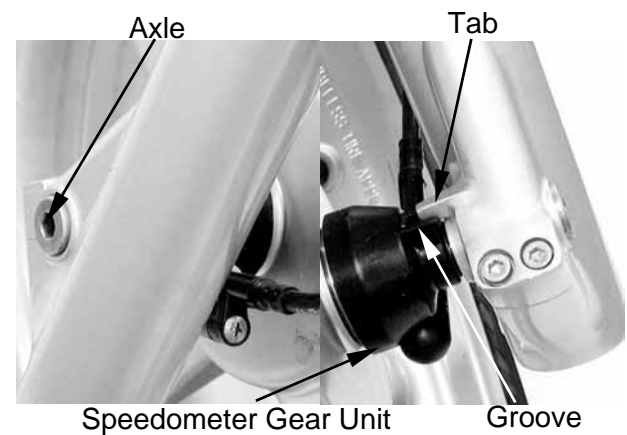
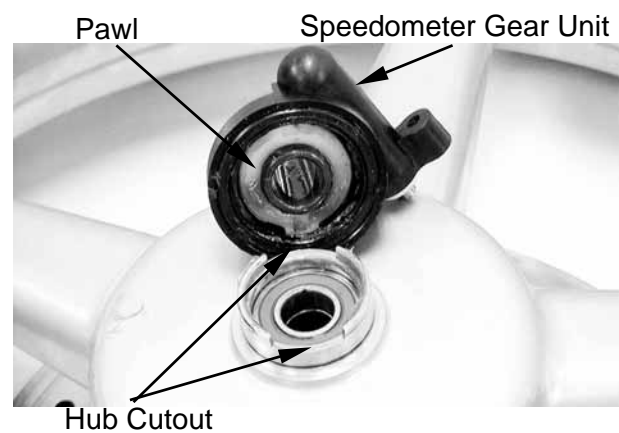
Install the front wheel by aligning the speedometer gear unit groove with the front shock absorber tab.
Insert the axle and tighten the axle.

- * When installing the front wheel, position the brake disk between the two brake pads.

Torque: 29~35N-m

Install and tighten the two bolts.

Torque: 29~35N-m



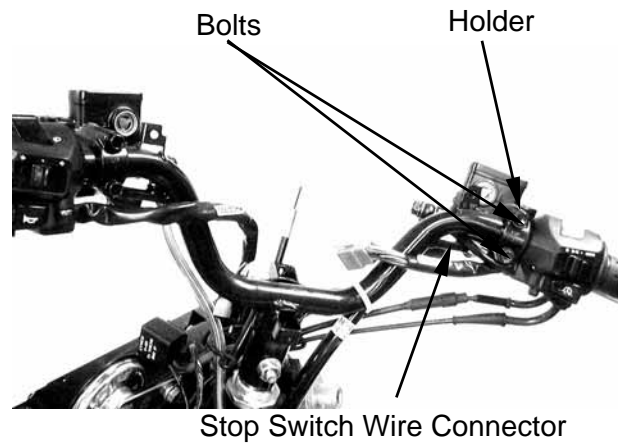
14. STEERING HANDLEBAR/FRONT WHEEL/FRONT BRAKE/FRONT SHOCK ABSORBER/FRONT FORK

FRONT BRAKE

BRAKE MASTER CYLINDER

REMOVAL

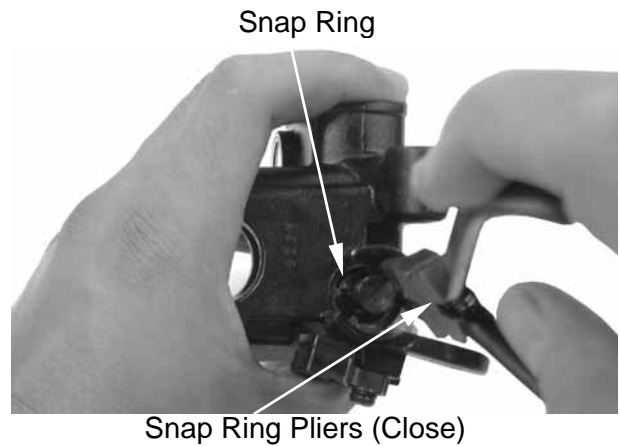
Remove the handlebar covers. (⇒2-3)
First drain the brake fluid from the hydraulic brake system.
Disconnect the front stop switch wire connector.
Remove the brake fluid tube bolt.
Remove the two bolts attaching the brake master cylinder
Remove the brake master cylinder.



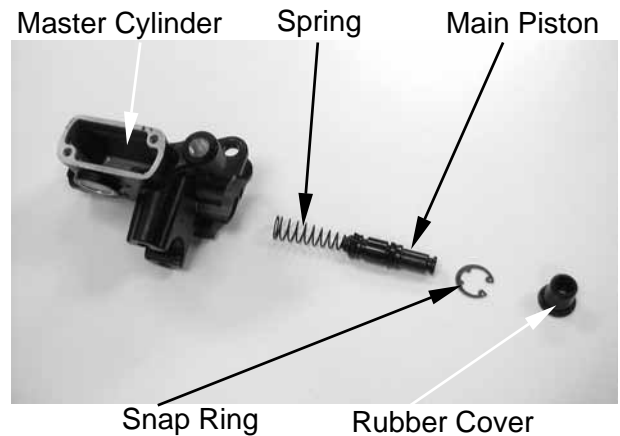
- * When servicing the brake system, use shop towels to cover rubber and plastic parts and coated surfaces to avoid being contaminated by brake fluid.
- * When removing the brake fluid tube bolt, be sure to plug the tube end to avoid brake fluid leakage.

DISASSEMBLY

Remove the brake lever bolt and the brake lever.
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.



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INSPECTION

Measure the brake master cylinder I.D.
Inspect the master cylinder for scratches or cracks.

Service Limit: 12.75mm



Measure the brake master cylinder piston O.D.

Service Limit: 12.64mm

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



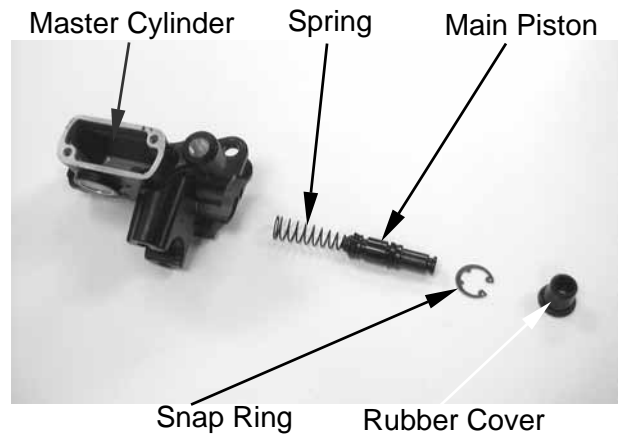
ASSEMBLY

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.



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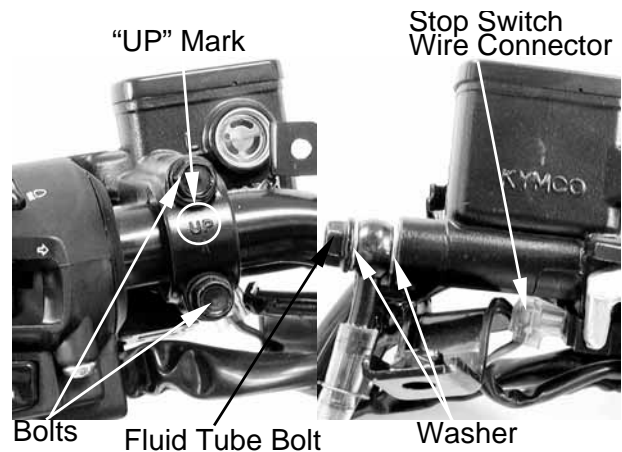
Place the brake master cylinder on the handlebar and install the holder with the "up" mark facing up. Also align the punch mark with the holder joint seam.

First tighten the upper bolt and then tighten the lower bolt.

Torque: 10~14N·m

Install the brake fluid tube with the attaching bolt and two sealing washers, then tighten the fluid tube bolt.

Connect the front stop switch wire connector. Install the handlebar covers. (⇒2-3)



BRAKE FLUID REFILLING

Keep the handlebar upright and remove the brake reservoir cover and diaphragm. 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.



BRAKE FLUID BLEEDING

Keep the handlebar upright and remove the brake reservoir cover and diaphragm. Add the specified brake fluid to the upper limit.

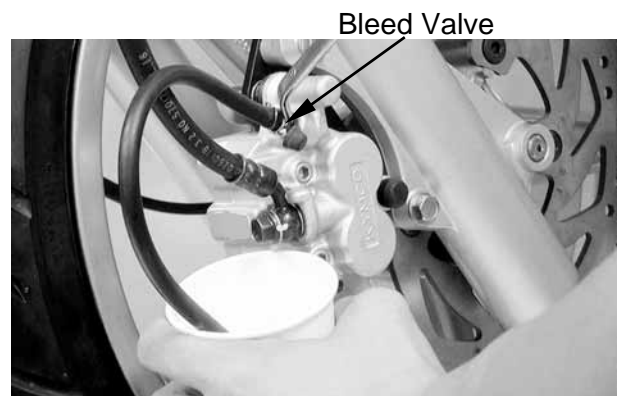
- * Do not allow dust or water to enter the brake system during refilling.
- * When servicing the brake system, use shop towels to cover plastic parts and coated surfaces to avoid damage caused by splash of brake fluid.

In order to avoid spilling 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.



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BRAKE CALIPER

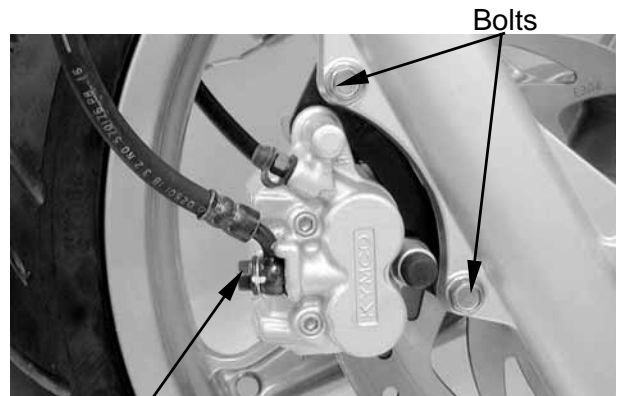
REMOVAL

First drain the brake fluid from the hydraulic brake system.

Remove the brake fluid tube bolt.

Remove the two bolts attaching the brake caliper.

Remove the brake caliper.

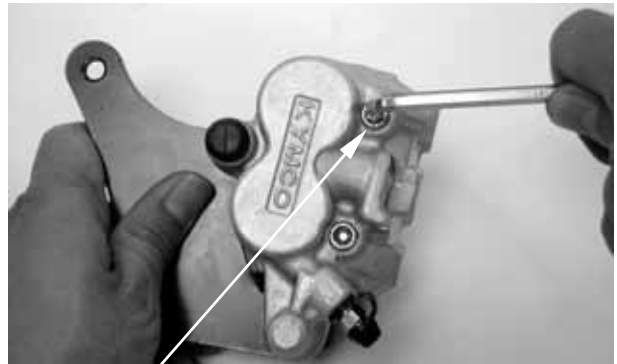


Fluid Tube Bolt

DISASSEMBLY

Remove the two brake pad dowel pins from the brake caliper.

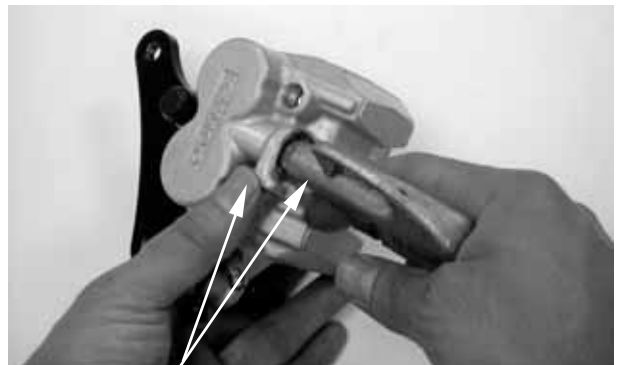
Remove the brake pads.



Dowel Pin

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 scratches 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.

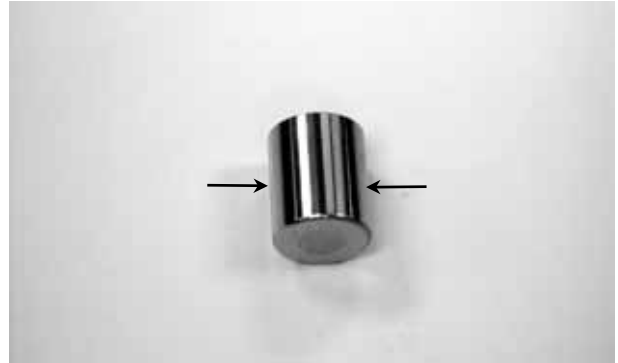


Piston Oil Seal

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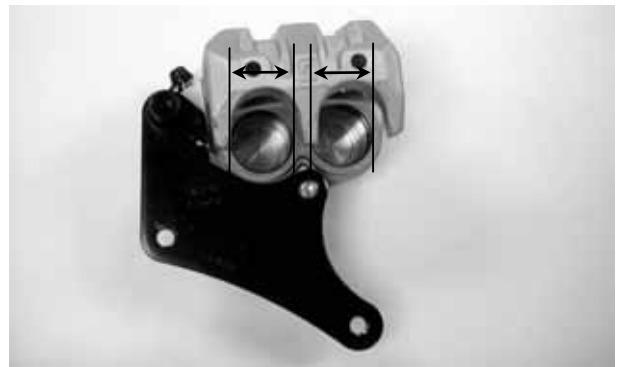
Check the piston for scratches or wear.
Measure the piston O.D. with a micrometer gauge.

Service Limit: 25.30mm



Check the caliper cylinder for scratches or wear and measure the cylinder bore.

Service Limit: 25.45mm



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 protruding 3~5mm 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.



INSTALLATION

Install the two brake pads.
Install the two brake pad dowel pin and tighten them.

* When installing the brake caliper, be sure to position the brake disk between the two brake pads.



Brake Pads

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Install the brake caliper to the shock absorber and tighten the two bolts.

Torque: 29~35N-m

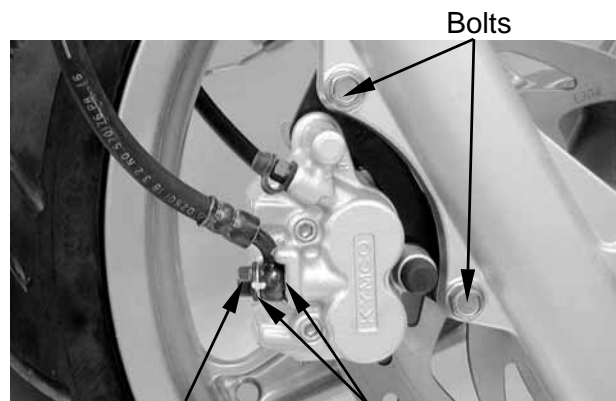
Connect the brake fluid tube with the attaching bolt and two sealing washers to the brake caliper and tighten the fluid tube bolt.

Torque: 24~30N-m

Fill the brake reservoir with the specified brake fluid and bleed air from the brake system. (⇒14-10)

*

When installing the brake fluid tube, be sure to install the two sealing washers.

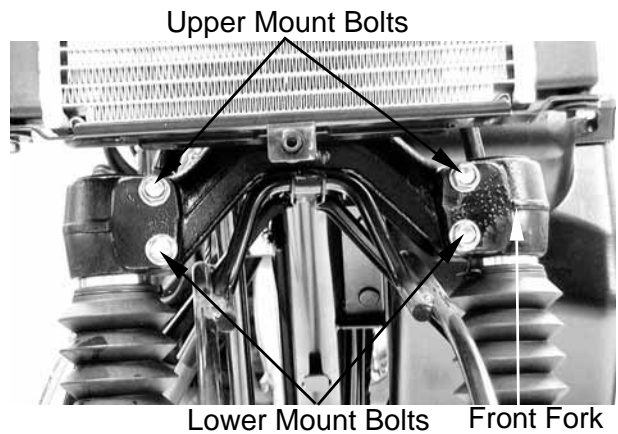


Brake Fluid Tube Washers

FRONT SHOCK ABSORBER

REMOVAL

Remove the front cover. (⇒2-5)
Remove the front fender cover A and B. (⇒2-5)
Remove the front wheel. (⇒14-5)
Remove the front brake caliper. (⇒14-11)
Remove the front shock absorber upper mount bolts.
Loosen the lower mount bolts to remove the front shock absorbers.



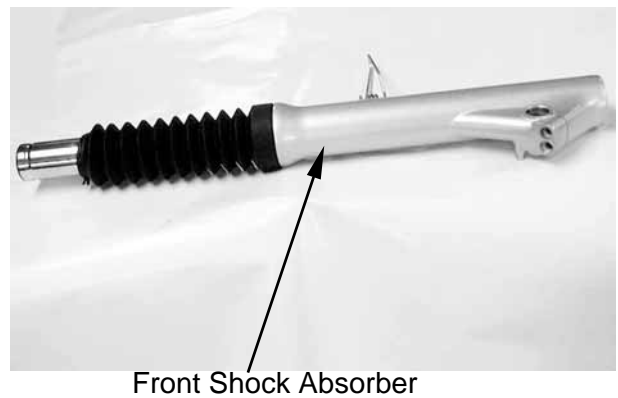
INSTALLATION

Install the front shock absorbers onto the front fork.
Install and tighten the front shock absorber upper mount bolts.
Tighten the lower mount bolts.

Torque: 29~35N-m

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

Install the front wheel. (⇒14-7)



14. STEERING HANDLEBAR/FRONT WHEEL/FRONT BRAKE/FRONT SHOCK ABSORBER/FRONT FORK

FRONT FORK

REMOVAL

Remove the handlebar covers. (⇒2-3)
Remove the steering handlebar. (⇒14-4)
Remove the front cover. (⇒2-5)
Remove the front leg shield. (⇒2-8)
Remove the front fender cover A and B. (⇒2-6)
Remove the front wheel. (⇒14-5)
Remove the front brake caliper. (⇒14-11)
Remove the front shock absorbers.
Hold the steering stem top cone race and remove the steering stem lock nut.
Remove the top cone race and remove the front fork.

* Be careful not to lose the steel balls (26 on top race and 19 on bottom race).

Inspect the ball races, cone races and steel balls for wear or damage. Replace if necessary.

BOTTOM CONE RACE REPLACEMENT

Remove the bottom cone race using a chisel.

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

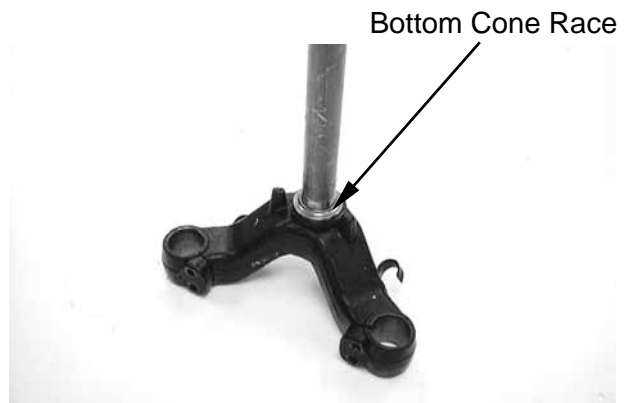
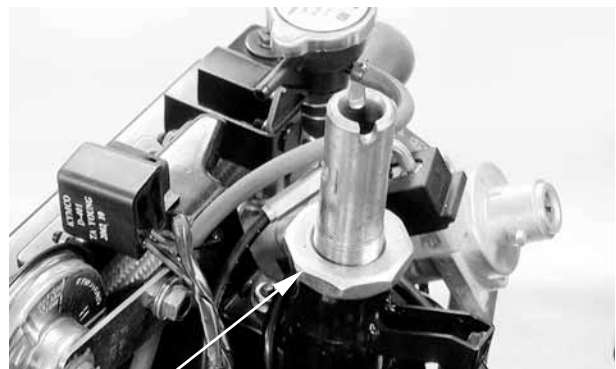
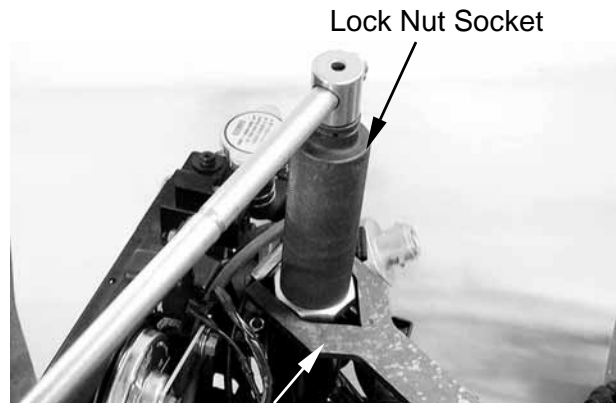
* Be careful not to damage the steering stem and front fork.

BALL RACE REPLACEMENT

Drive out the ball races.

Drive in new ball races.

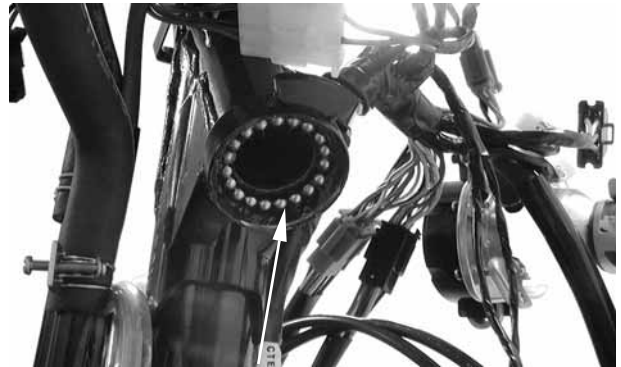
* Be sure to drive the ball races into place completely.



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INSTALLATION

Apply grease to the top and bottom ball races and install 26 steel balls on the top ball race and 19 steel balls on the bottom ball race. Then, install the front fork.

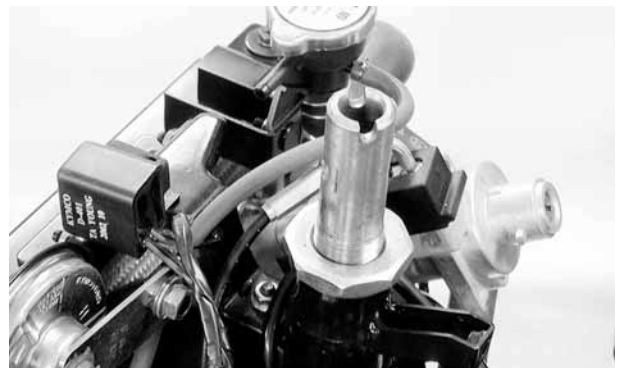


Bottom Ball Race

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.
--



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

Torque: 80~120N-m

Install the front wheel. (⇒14-7)

Install the front brake caliper. (⇒14-12)

Install the front fender cover A and B. (⇒2-6)

Install the throttle grip and the right and left handlebar switches. (⇒14-5)

Install the right and left brake master cylinders. (⇒14-5)



Lock Nut Wrench

Lock Nut Wrench