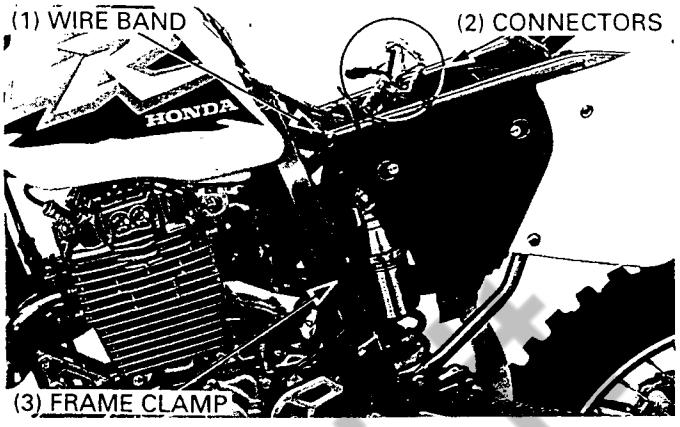
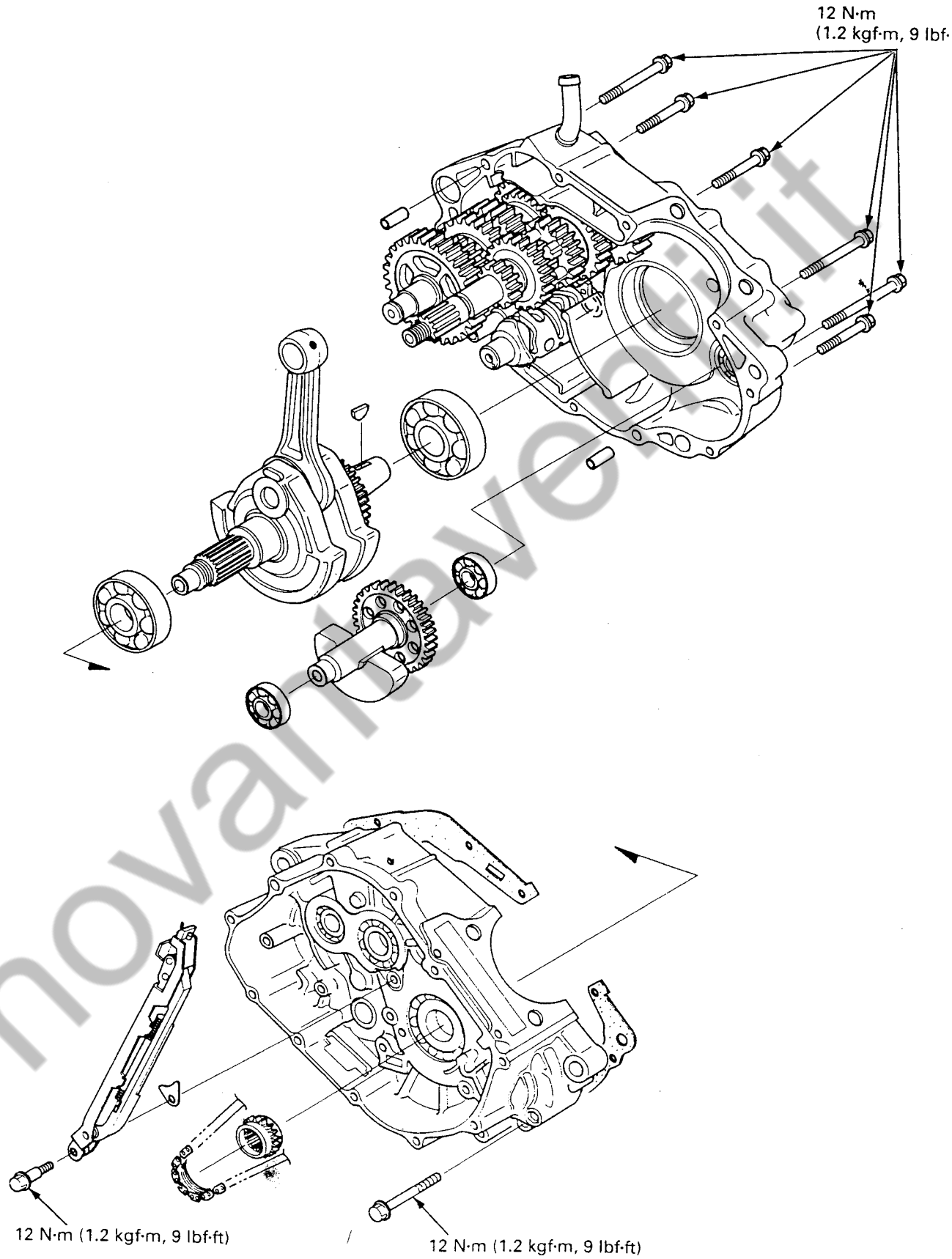
Connect the alternator connectors and ignition pulse generator connector.
Secure the wire with the frame clamp and wire band.





11. CRANKCASE/CRANKSHAFT/BALANCER

SERVICE INFORMATION

GENERAL

- The crankcase must be separated to repair the crankshaft, connecting rod, transmission and balancer.
- Remove the following parts before separating the crankcase.

— ENGINE REMOVAL	Section 6
— CYLINDER HEAD	Section 7
— CYLINDER/PISTON	Section 8
— CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE	Section 9
— OIL PUMP	Section 4
— ALTERNATOR	Section 10

SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Crankshaft, Connecting rod	Connecting rod big end side clearance	0.050 – 0.500 (0.0019 – 0.0197)	0.80 (0.031)
	Crankshaft runout	———	0.05 (0.002)

TORQUE VALUES

Crankcase bolt	12 N·m (1.2 kgf·m, 9 lbf·ft)
Cam chain tensioner bolt	12 N·m (1.2 kgf·m, 9 lbf·ft) Apply a locking agent to the threads.

TOOLS

Special

Bearing remover head, 13 mm	07LMC – KZ10100
Bearing remover set, 15 mm	07936 – KC10000
— remover head, 15 mm	07936 – KC10200
— remover shaft, 15 mm	07936 – KC10100
— remover weight	07741 – 0010201
Bearing remover shaft	07936 – 1660120
Bearing remover weight	07741 – 0010201
Crankcase assembly tool	07965 – VM00000
— assembly collar	07965 – VM00100
— assembly shaft	07965 – VM00200
— thread adapter	07965 – VM00300

Common

Attachment, 32 x 35 mm	07746 – 0010100
Attachment, 37 x 40 mm	07746 – 0010200
Attachment, 42 x 47 mm	07746 – 0010300
Attachment, 52 x 55 mm	07746 – 0010400
Attachment, 72 x 75 mm	07746 – 0010600
Driver	07749 – 0010000
Pilot, 15 mm	07746 – 0040300
Pilot, 17 mm	07746 – 0040400
Pilot, 20 mm	07746 – 0040500
Pilot, 22 mm	07746 – 0041000
Pilot, 28 mm	07746 – 0041100
Universal bearing puller	07631 – 0010000

TROUBLESHOOTING

Excessive noise

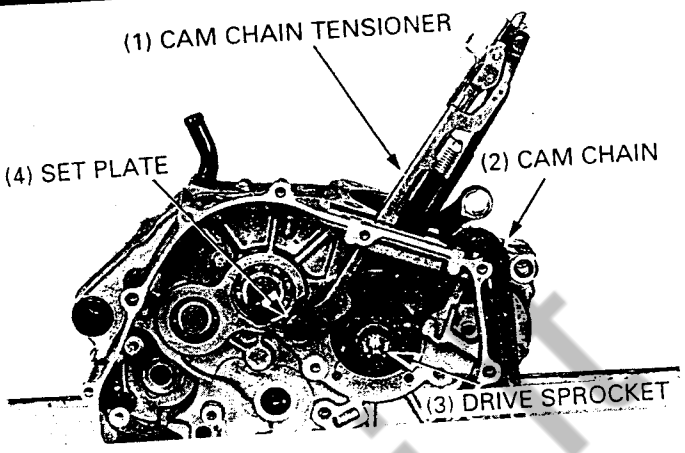
- Crankshaft
  - — Worn connecting rod bearings
  - — Bent connecting rod
  - — Worn crankshaft bearings
- Balancer
  - — Improper installation

Abnormal vibration

- Improper balancer timing

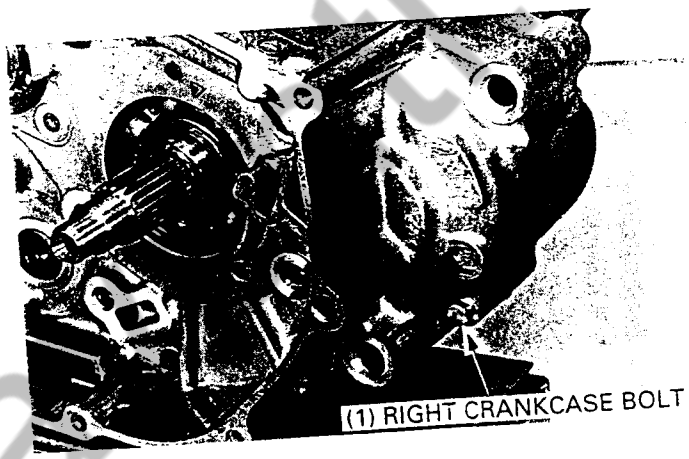
CRANKCASE SEPARATION

Remove the engine from the frame (page 6-3).
Remove the following from the engine.
— Cylinder head (page 7-7)
— Cylinder (page 8-3)
— Piston (page 8-4)
— Alternator (page 10-2)
— Clutch (page 9-5)
— Kickstarter (page 9-12)
— Oil pump (page 4-3)
— Gearshift cam (page 9-16)
— Primary drive gear (page 9-8)



Remove the cam chain tensioner bolt.
Remove the cam chain tensioner and bearing set plate.
Remove the cam chain and cam chain drive sprocket.

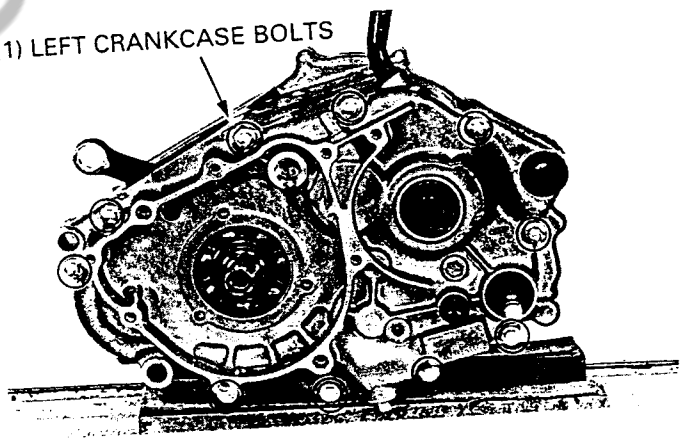
Remove the right crankcase bolt.



Remove the left crankcase bolts.

NOTE

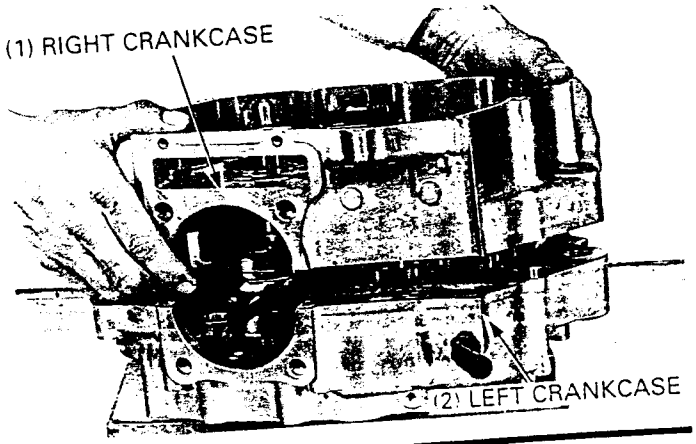
- Loosen the bolts in a crisscross pattern in 2-3 steps.



Place the left crankcase side down and separate the right crankcase from the left crankcase while tapping them at several locations with a soft hammer.

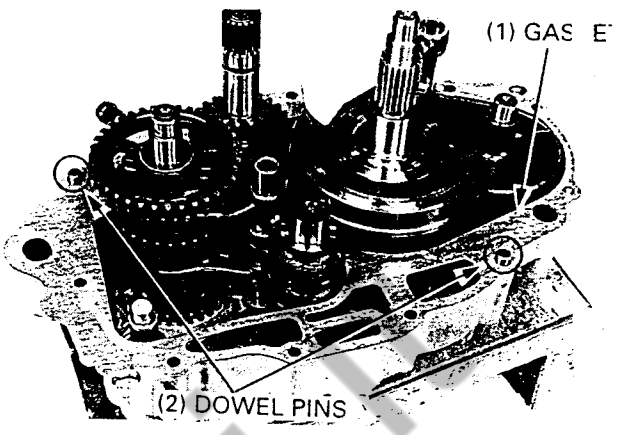
CAUTION

- *Do not pry the left and right crankcase apart.*



BALANCER/CRANKSHAFT REMOVAL

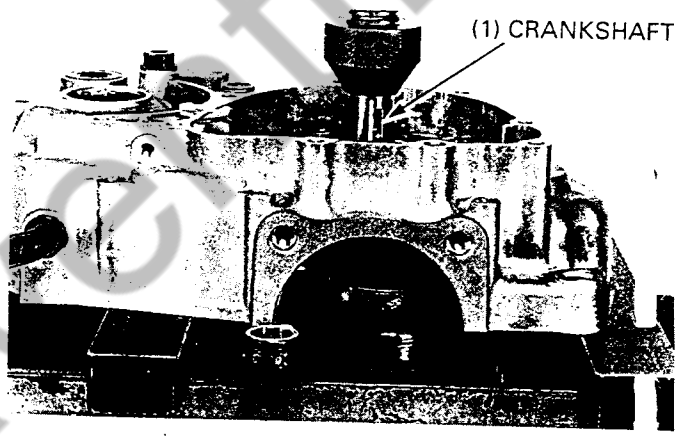
Remove the gasket and dowel pins.
Remove the transmission (page 12-3).



Remove the crankshaft and balancer from the left crankcase with a press.

CAUTION

- *Be careful not to damage the crankcase gasket surface.*

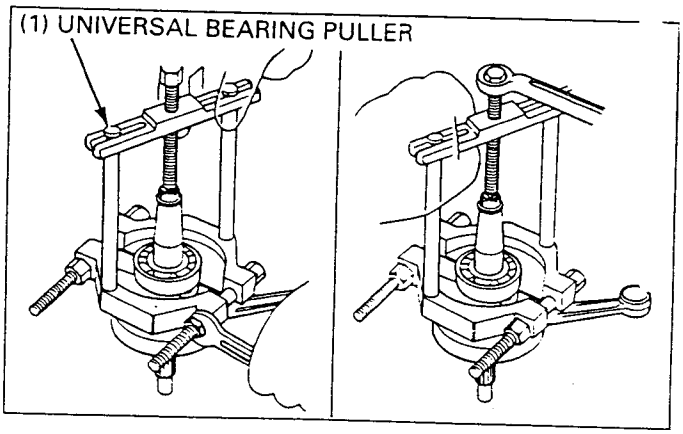


Remove the left crankshaft bearing with a bearing puller if it comes out with the crankshaft. Discard the bearing.

TOOL:
Universal bearing puller **07631 – 0010000**

CAUTION

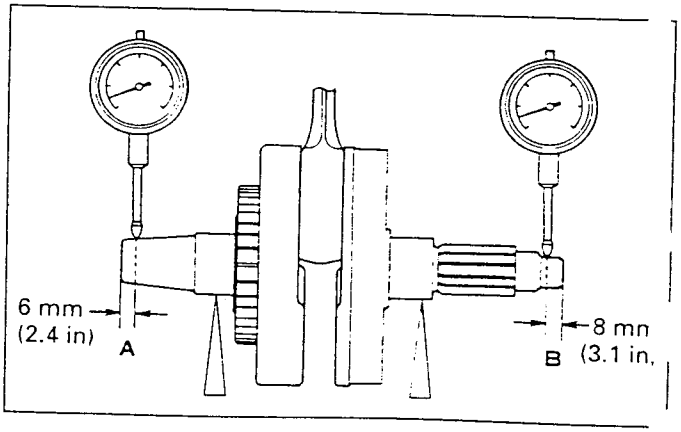
- *Always replace the left bearing with a new one if it comes out with the crankshaft.*



CRANKSHAFT INSPECTION

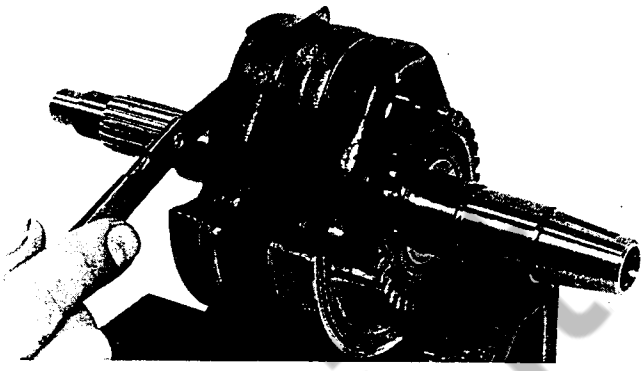
Set the crankshaft on a turning stand or V blocks and measure the runout using a dial indicator.

SERVICE LIMIT: 0.05 mm (0.002 in)



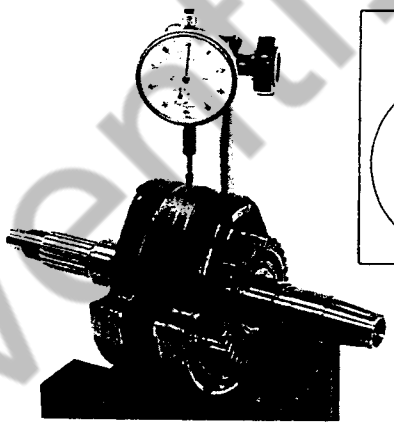
Measure the connecting rod big end side clearance with a feeler gauge.

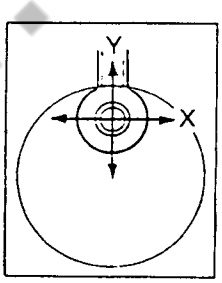
SERVICE LIMIT: 0.08 mm (0.031 in)



Measure the connecting rod big end radial clearance.

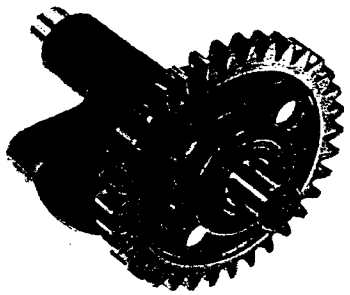
SERVICE LIMIT: 0.05 mm (0.002 in)





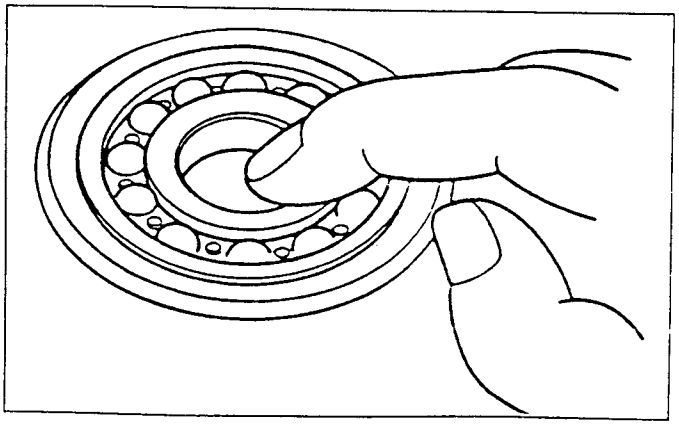
BALANCER GEAR INSPECTION

Check the balancer gear for wear or damage.



CRANKSHAFT BEARING/TRANSMISSION BEARING INSPECTION

Turn the inner race of bearings with your finger.
The bearings should turn smoothly and quietly.
Also check that the bearing outer races fit tightly in the crank-case.

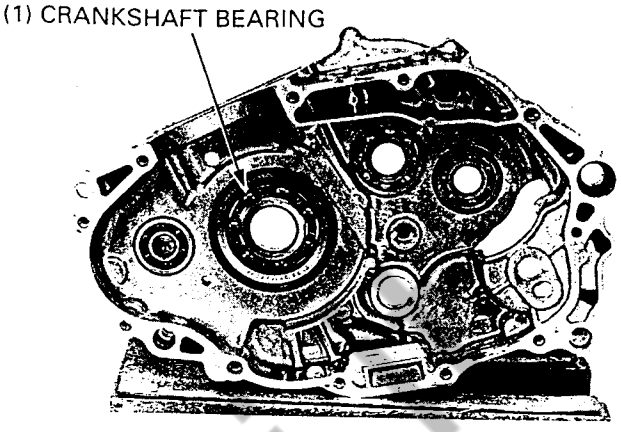


CRANKCASE BEARING REPLACEMENT

CRANKSHAFT BEARING REPLACEMENT

Remove the crankshaft bearing from the right crankcase.

Remove the left crankshaft bearing if it is left in the crankcase.



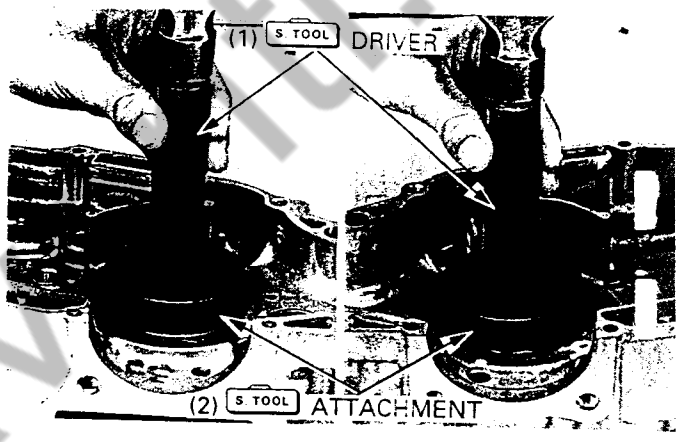
Drive new crankshaft bearings into both cases using the special tools.

TOOL:

Attachment, 72 x 75 mm	**07746 – 0010600**
Driver	**07749 – 0010000**
Pilot, 28 mm	**07746 – 0041100**

NOTE

- Install the bearings with the seal side facing toward the outside of the crankcase.

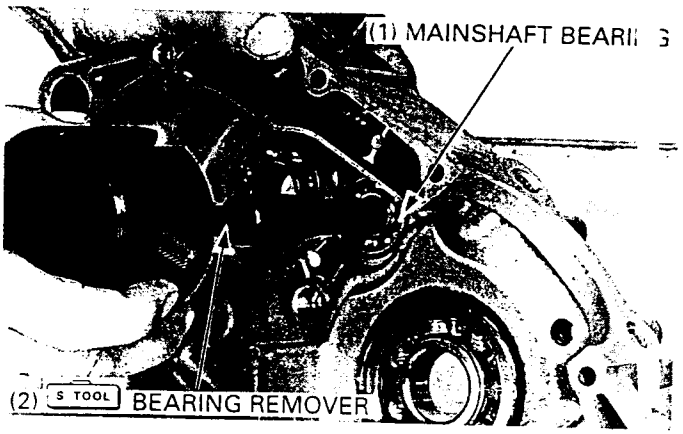


TRANSMISSION BEARING REPLACEMENT

Left crankcase bearings
Remove the left mainshaft bearing using the special tools.

TOOL:

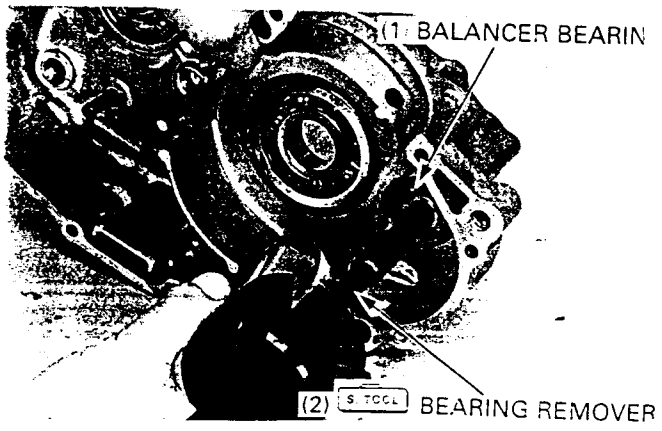
Bearing remover set, 15 mm	**07936 – KC10000**
— remover head, 15 mm	**07936 – KC10200**
— remover shaft, 15 mm	**07936 – KC10100**
— remover weight	**07741 – 0010201**



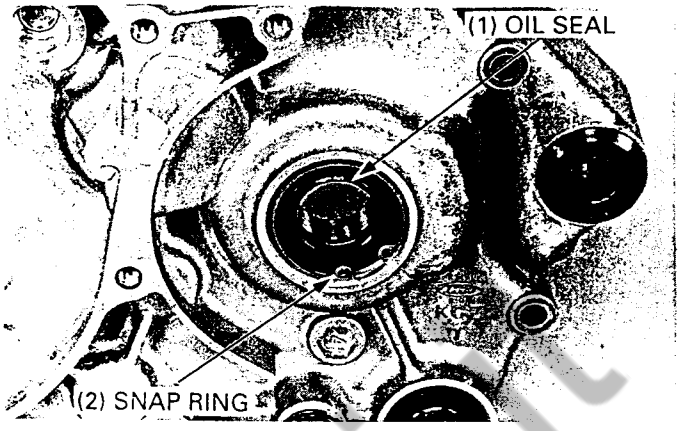
Remove the balancer bearing.

TOOL:

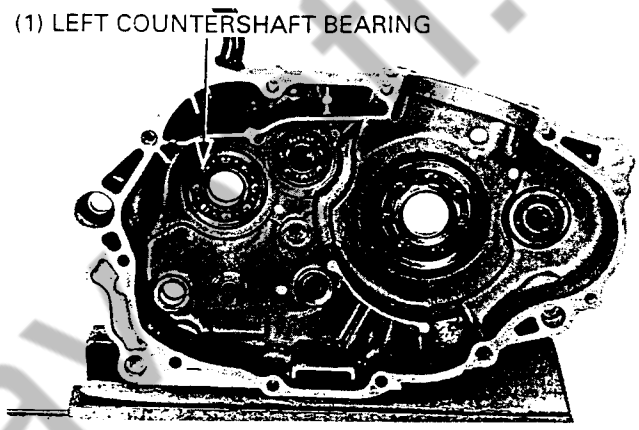
Bearing remover head, 13 mm	**07LMC – KZ10100**
Bearing remover shaft	**07936 – 1660120**
Bearing remover weight	**07741 – 0010201**



Remove the snap ring.
Remove the countershaft oil seal.



Remove the left countershaft bearing.



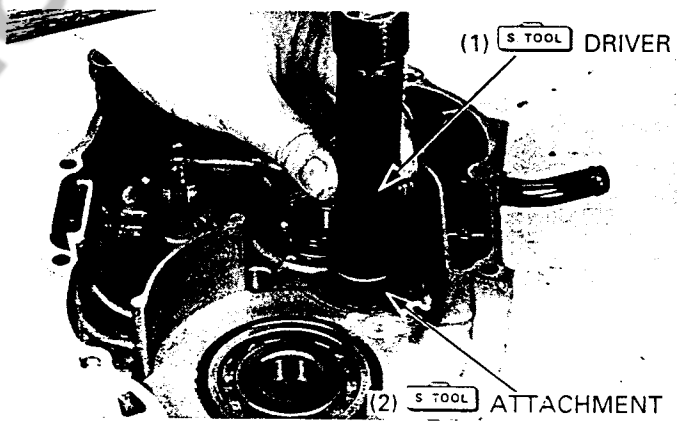
Install a new left main shaft bearing.

NOTE

- Install the bearing with the seal side facing toward the outside of the crankcase.

TOOL:

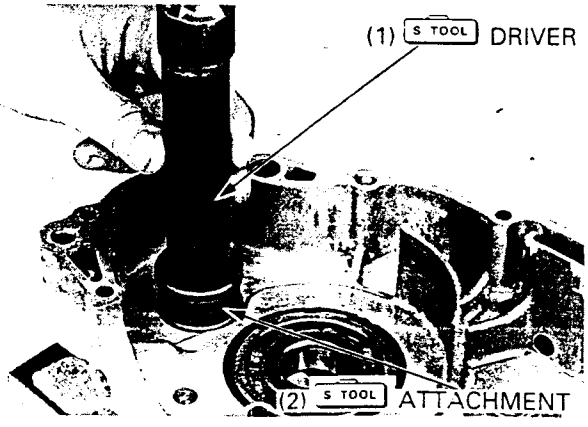
Attachment, 32 x 35 mm	**07746 – 0010100**
Driver	**07749 – 0010000**
Pilot, 15 mm	**07746 – 0040300**



Install a new left balancer shaft bearing.

TOOL:

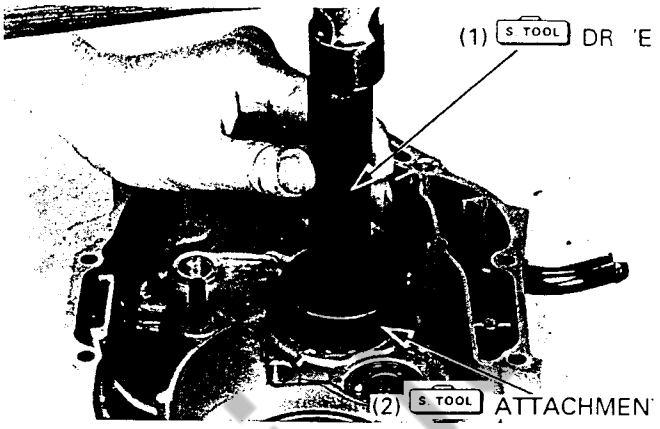
Attachment, 37 x 40 mm	**07746 – 0010200**
Driver	**07749 – 0010000**



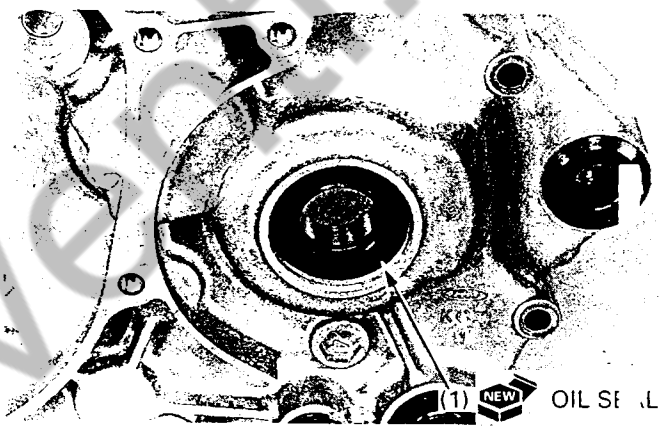
Install a new countershaft bearing.

TOOL:

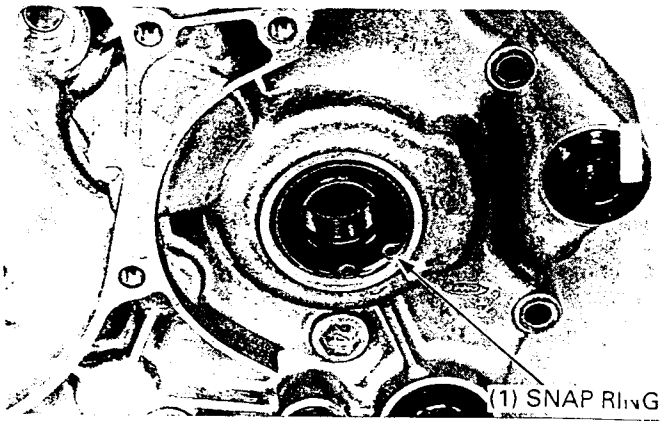
Attachment, 52 x 55 mm	**07746 – 0010400**
Driver	**07749 – 0010000**
Pilot, 22 mm	**07746 – 0041000**



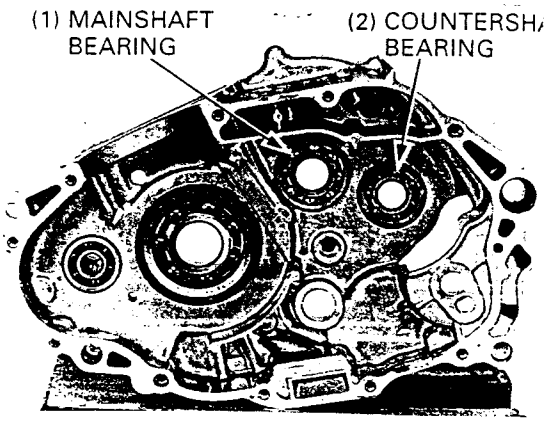
Install a new left countershaft oil seal.



Install the snap ring.



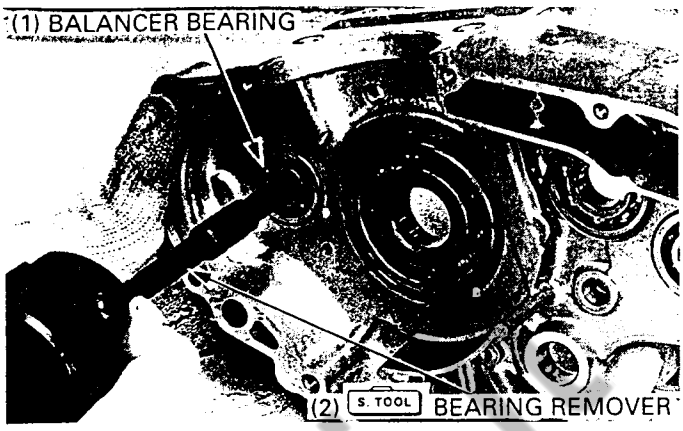
Right crankcase bearings
Remove the countershaft bearing and mainshaft bearing.



Remove the balancer bearing.

TOOL:

Bearing remover head, 13 mm	**07LMC – KZ10100**
Bearing remover shaft	**07936 – 1660120**
Bearing remover weight	**07741 – 0010201**



Install a new right countershaft bearing.

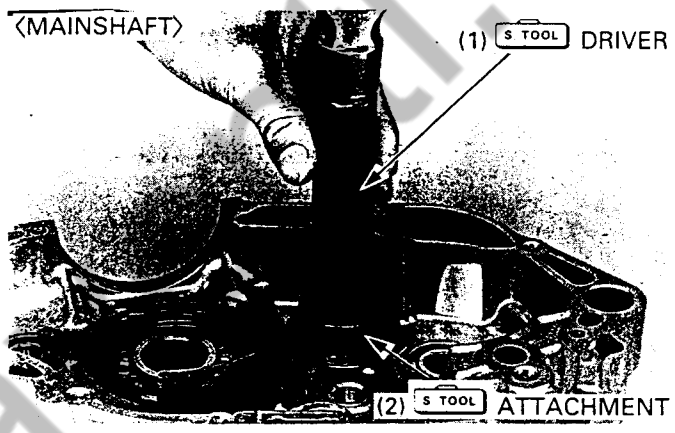
TOOL:

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

Install a new right mainshaft bearing.

TOOL:

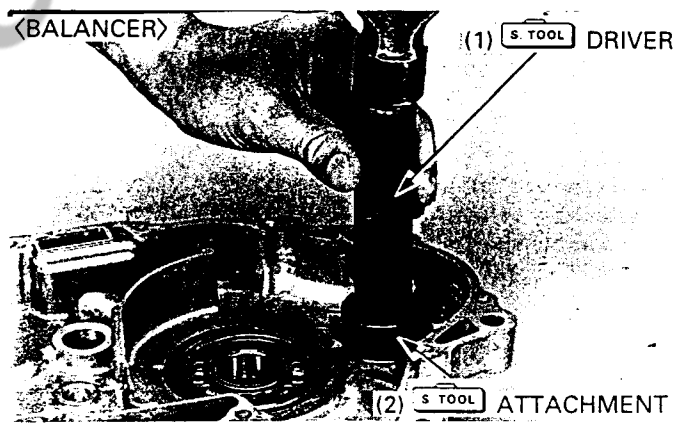
Attachment, 42 x 47 mm	**07746 – 0010300**
Driver	**07749 – 0010000**
Pilot, 20 mm	**07746 – 0040500**



Install a new left balancer bearing.

TOOL:

Attachment, 37 x 40 mm	**07746 – 0010200**
Driver	**07749 – 0010000**

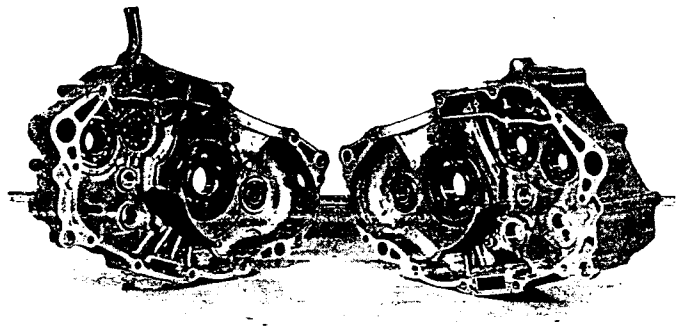


BALANCER/CRANKSHAFT INSTALLATION

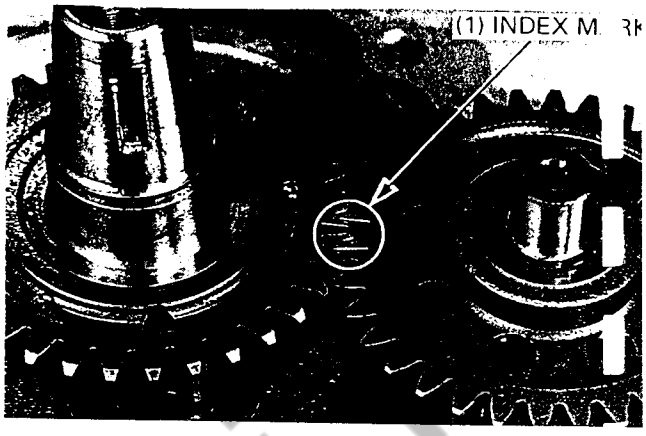
Clean the crankcase mating surfaces before assembling and check for wear or damage.

NOTE

- If there is minor roughness or irregularities on the crankcase mating surfaces, dress them with an oil stone.
- After cleaning, lubricate the crankshaft bearings, balancer bearings and connecting rod big end with clean engine oil.

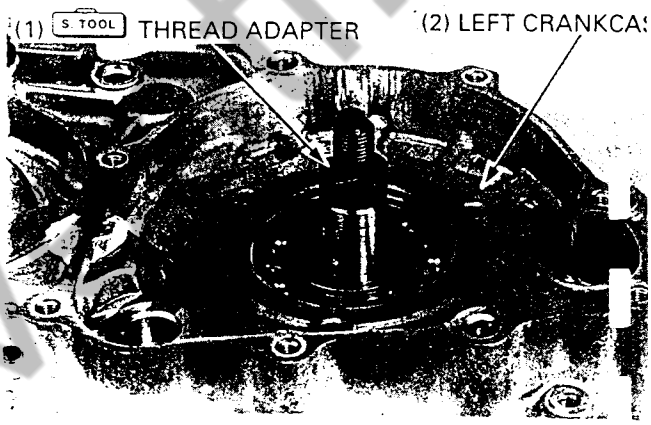


Align the index mark on the crankshaft gear with the index marks on the balancer gear as shown.
Temporarily install the crankshaft with the balancer into the right crankcase.



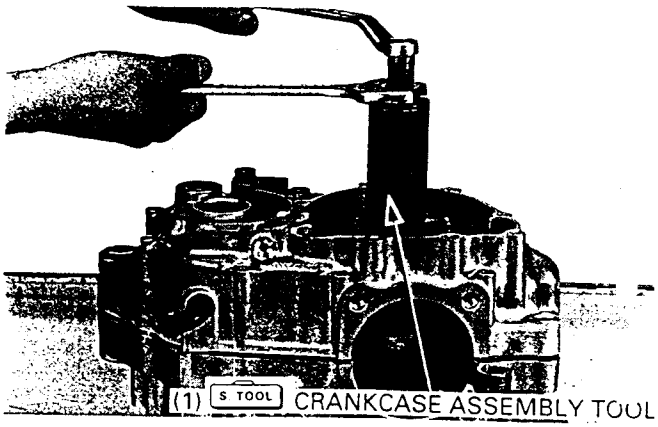
Place the left crankcase onto the right crankcase and install the thread adapter onto the crankshaft.

TOOL:
Thread adapter **07965 – VM00300**



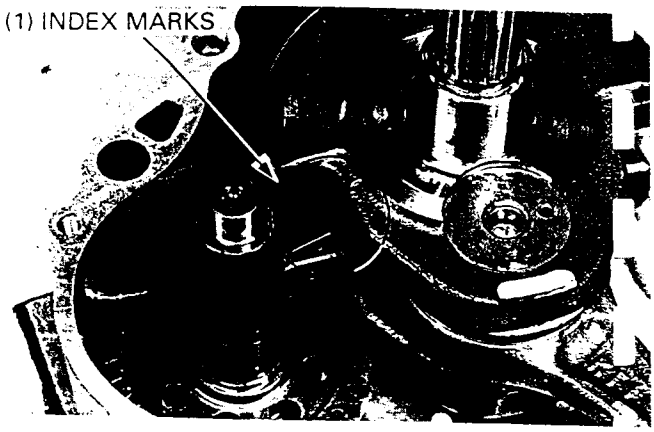
Temporarily assemble the crankcase halves using the crankcase assembly tool to draw the crankshaft into the left crankcase.

TOOL:
Crankcase assembly tool **07965 – VM00000**
— assembly collar **07965 – VM00100**
— assembly shaft **07965 – VM00200**
— thread adapter **07965 – VM00300**



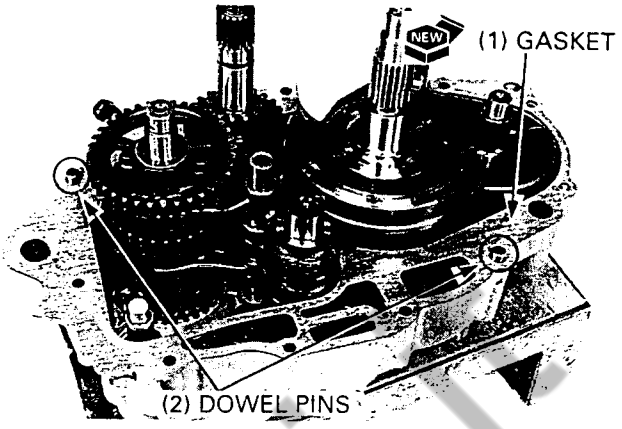
Remove the tool and attachment.
Remove the right crankcase.

Make sure that the line on the crankshaft weight is aligned with the balancer shaft weight line.



CRANKCASE ASSEMBLY

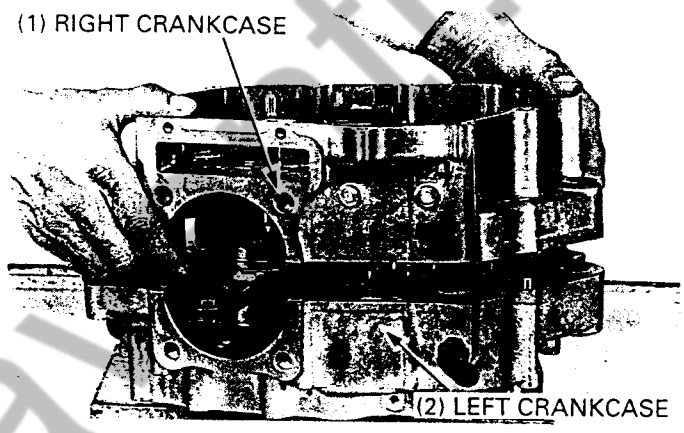
Install the transmission (page 12-6).
Install the dowel pins and new gasket.



Assemble the right and left crankcase being careful to align the dowel pins and shafts.

CAUTION

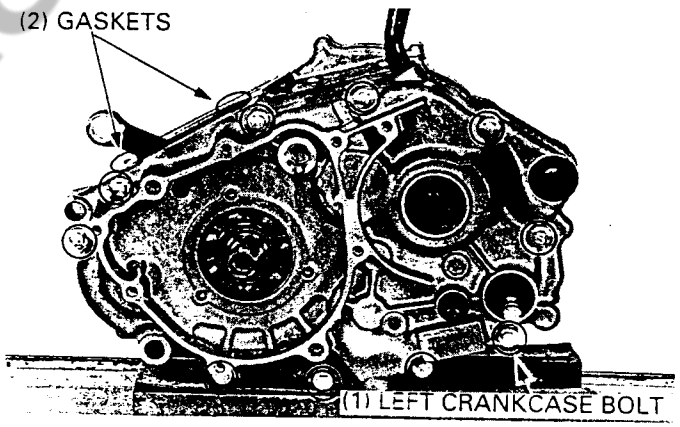
- *Do not force the crankcase halves together; if there is excessive force required, something is wrong. Remove the right crankcase and check for misaligned parts.*



Install and tighten the left crankcase bolts in a crisscross pattern in 2-3 steps.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

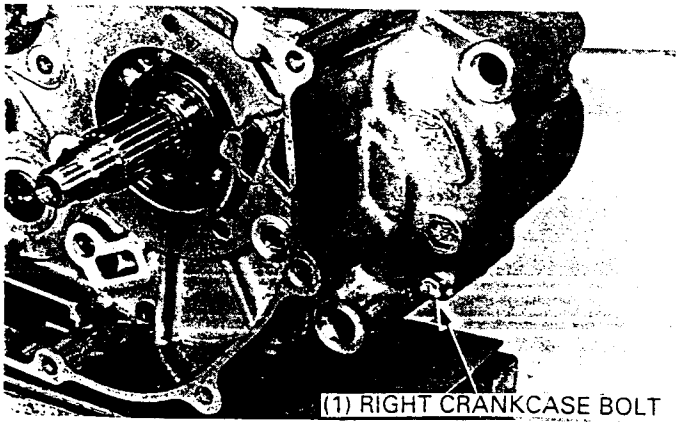
Cut the gaskets along the cylinder mating surfaces.



Install and tighten the right crankcase bolt.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

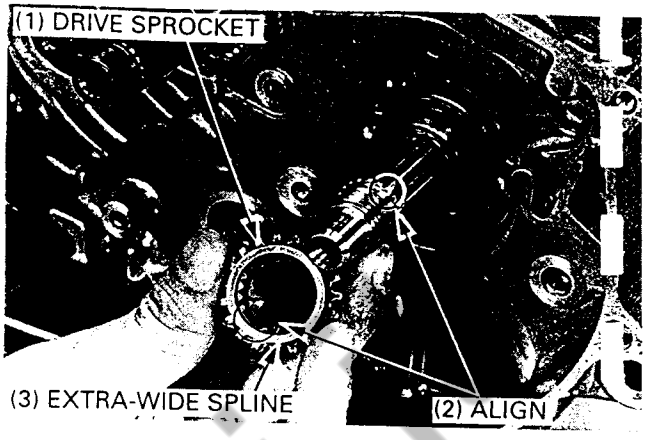
After installation, check the rotation of the crankshaft, mainshaft and countershaft.



Install the cam chain drive sprocket.

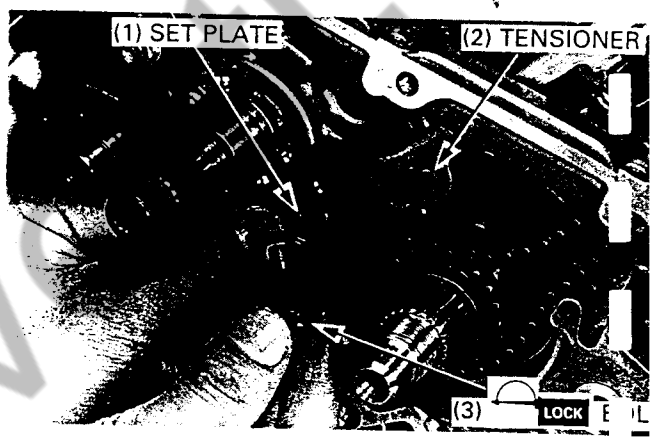
NOTE

- The cam chain drive sprocket goes on only one way because of an extra-wide aligning spline.



Install the bearing set plate and cam chain tensioner.
Apply thread lock to the cam chain tensioner set plate bolt.
Install and tighten the cam chain tensioner set plate bolt.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

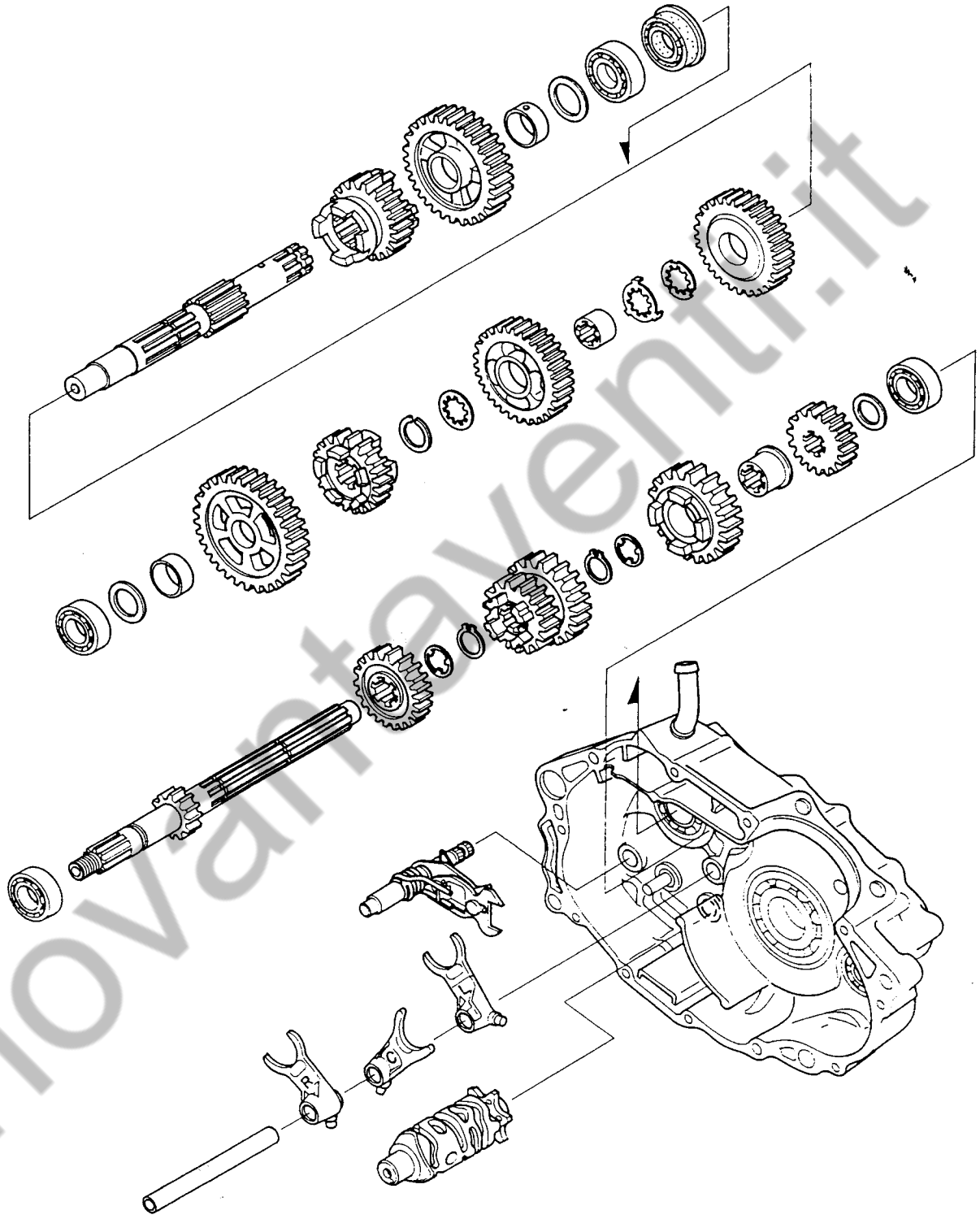


Install and tighten the cam chain tensioner bolt.
Install the cam chain to the cam chain drive sprocket.
Install the following:
— Piston (page 8-6)
— Cylinder (page 8-7)
— Cylinder head (page 7-15)

Install the engine into the flame (page 6-5).

Reinstall the following:
— Primary drive gear (page 9-9)
— Gearshift cam (page 9-17)
— Oil pump (page 4-7)
— Kickstarter (page 9-14)
— Clutch (page 9-10)
— Alternator (page 10-4)

MEMO



12. TRANSMISSION

SERVICE INFORMATION

GENERAL

- The crankcase must be separated to service the transmission.
- The gearshift cam plate can be serviced with the engine installed in the frame (Section 9).

SPECIFICATIONS

Unit: mm (in)

ITEM				STANDARD	SERVICE LIMIT
Transmission	Gear I.D.	M5		20.000 – 20.021 (0.7874 – 0.7882)	20.08 (0.791)
		M6		23.000 – 23.021 (0.9055 – 0.9063)	23.07 (0.908)
		C1		23.000 – 23.021 (0.9055 – 0.9063)	23.07 (0.908)
		C2		25.020 – 25.041 (0.9850 – 0.9859)	25.09 (0.988)
		C3		25.000 – 25.021 (0.9843 – 0.9851)	25.07 (0.987)
		C4		22.000 – 22.021 (0.8661 – 0.8670)	22.07 (0.869)
	Gear bushing	M6	O.D.	22.959 – 22.980 (0.9039 – 0.9047)	22.92 (0.902)
		C1	I.D.	18.000 – 18.018 (0.7087 – 0.7094)	18.08 (0.712)
			O.D.	22.959 – 22.980 (0.9039 – 0.9047)	22.90 (0.902)
		C2	I.D.	22.000 – 22.021 (0.8661 – 0.8670)	22.10 (0.870)
			O.D.	24.979 – 25.000 (0.9834 – 0.9843)	24.90 (0.980)
		C3	O.D.	24.959 – 24.980 (0.9826 – 0.9835)	24.90 (0.980)
	Mainshaft O.D.	M5		19.959 – 19.980 (0.7858 – 0.7866)	19.91 (0.784)
		Clutch outer guide		19.959 – 19.980 (0.7858 – 0.7866)	19.91 (0.784)
	Countershaft O.D.	Starter idle gear		14.966 – 14.984 (0.5892 – 0.5899)	14.91 (0.587)
		C1		17.966 – 17.984 (0.7073 – 0.7080)	17.91 (0.705)
		C2, C4		21.959 – 21.980 (0.8645 – 0.8654)	21.91 (0.863)
	Shift drum O.D. at right crankcase bearing portion			19.959 – 19.980 (0.7858 – 0.7866)	19.90 (0.783)
	Gear-to-bushing clearance	M6, C1, C2, C3		0.020 – 0.062 (0.0008 – 0.0022)	0.10 (0.004)
	Gear-to-shaft clearance	M5, C4		0.020 – 0.062 (0.0008 – 0.0022)	0.15 (0.006)
	Bushing-to-shaft clearance	C1		0.016 – 0.052 (0.0006 – 0.0020)	0.10 (0.004)
		C2		0.020 – 0.062 (0.0008 – 0.0022)	0.10 (0.004)
Shift fork, Shaft	Shift fork	I.D.		13.000 – 13.021 (0.5118 – 0.5126)	13.05 (0.514)
		Operation area thickness	R, L	4.93 – 5.00 (0.194 – 0.197)	4.50 (0.177)
			C	4.90 – 5.00 (0.193 – 0.197)	4.50 (0.177)
	Shift fork shaft O.D.			12.966 – 12.984 (0.5105 – 0.5112)	12.90 (0.508)

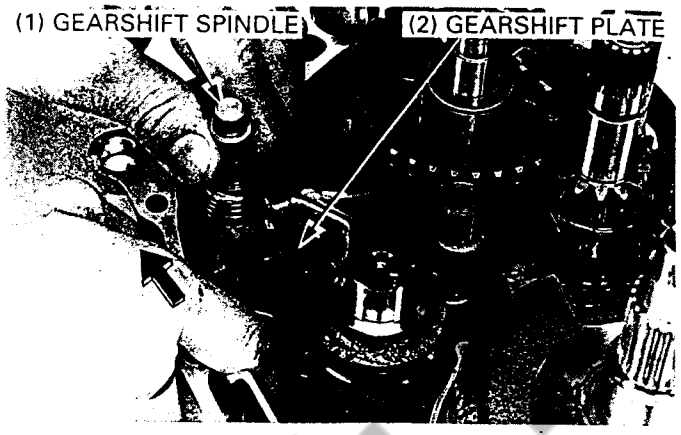
TROUBLESHOOTING

Hard to shift
- Improper clutch adjustment; too much free play
- Shift forks bent
- Shift shaft bent
- Shift drum cam groove damaged

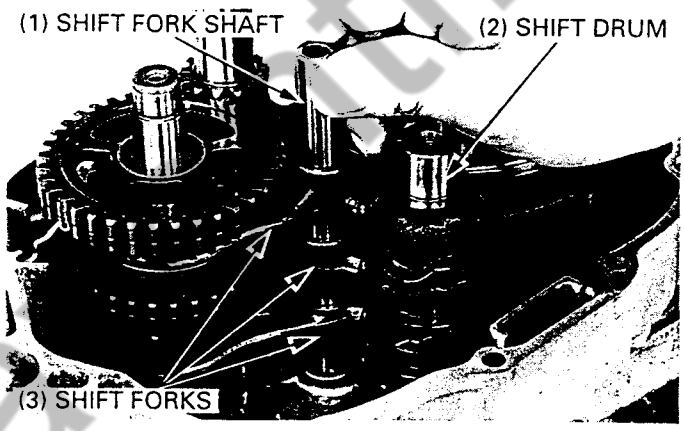
Transmission jumps out of gear
- Gear dogs worn
- Shift shaft bent
- Shift drum stopper broken
- Shift forks bent

TRANSMISSION REMOVAL/ DISASSEMBLY

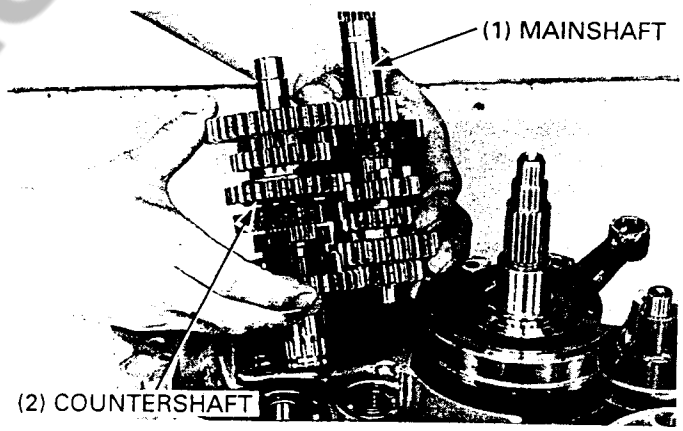
Separate the crankcase (Section11).
Pull the gearshift plate toward the spindle and remove the gearshift spindle.



Remove the shift fork shaft.
Remove the shift drum and shift forks.

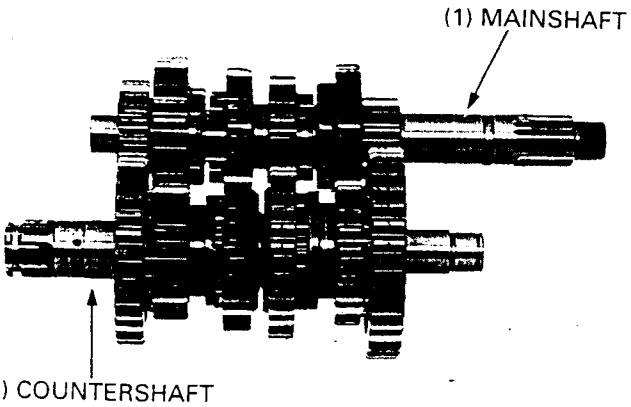


Remove the mainshaft and countershaft as an assembly.

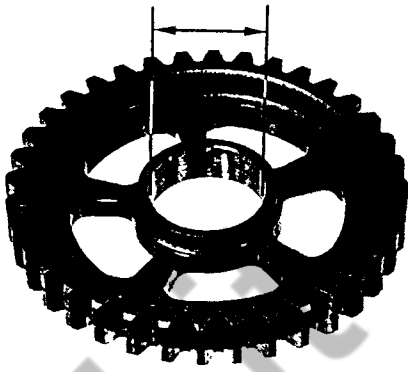


TRANSMISSION INSPECTION

Disassemble the mainshaft and countershaft.
Inspect each gear for wear or damage and replace if necessary. Check the gear teeth and engagement dogs for wear or damage. Check the mainshaft and countershaft splines and sliding surfaces for wear or damage.

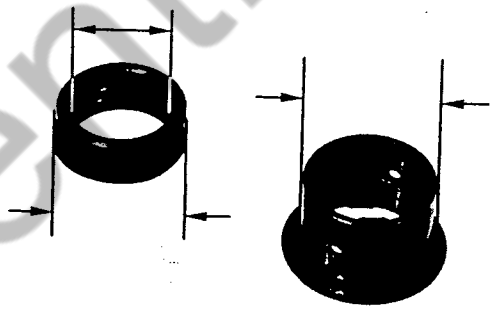


Measure the I.D. of each spinning gear.



SERVICE LIMITS:
M5: 20.08 mm (0.791 in)
M6: 23.07 mm (0.908 in)
C1: 23.07 mm (0.908 in)
C2: 25.09 mm (0.988 in)
C3: 25.07 mm (0.987 in)
C4: 22.07 mm (0.869 in)

Measure the I.D. and O.D. of the gear bushings.

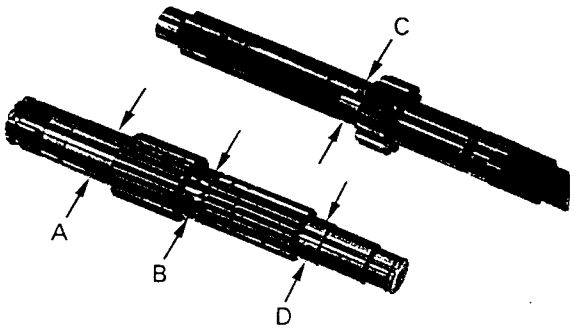


SERVICE LIMITS:
I.D.: C1: 18.08 mm (0.712 in)
C2: 22.10 mm (0.870 in)
O.D.: M6: 22.92 mm (0.902 in)
C1: 22.90 mm (0.902 in)
C2: 24.90 mm (0.980 in)
C3: 24.90 mm (0.980 in)

Calculate the clearances between the gears and bushings.

SERVICE LIMITS:
M6, C1, C2, C3: 0.10 mm (0.004 in)

Measure the O.D. of the mainshaft and countershaft in the locations shown.

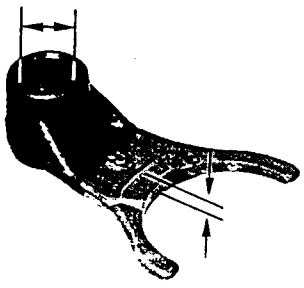


SERVICE LIMITS:
A: C2 bushing: 21.91 mm (0.863 in)
B: C4 gear: 21.91 mm (0.863 in)
C: M5 gear: 19.91 mm (0.784 in)
D: C1 bushing: 17.91 mm (0.705 in)

Calculate the clearance between the shaft and gears or bushings.

SERVICE LIMITS:
M5 gear: 0.15 mm (0.006 in)
C4 gear: 0.15 mm (0.006 in)
C1 bushing: 0.10 mm (0.004 in)
C2 bushing: 0.10 mm (0.004 in)

Inspect the shift forks and replace any shift fork if it is bent or damaged.
Measure the I.D. of the shift fork.



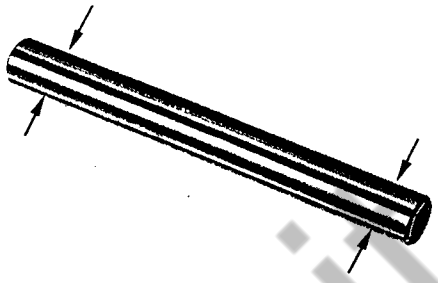
SERVICE LIMIT: 13.05 mm (0.514 in)

Measure the thickness of the shift fork contact area.

SERVICE LIMIT: 4.50 mm (0.177 in)

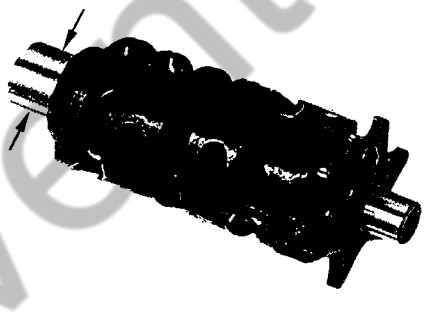
Inspect the shift fork shaft and replace the shift fork shaft if it is bent or damaged.
Measure the O.D. of the shift fork.

SERVICE LIMIT: 12.90 mm (0.508 in)



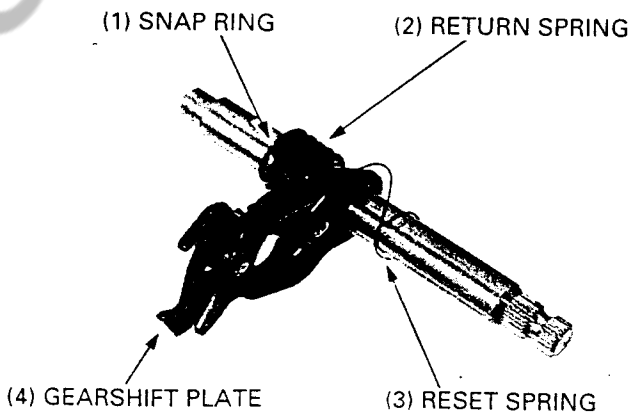
Inspect the shift drum grooves and replace the drum if they are damaged or worn.
Measure the O.D. of the shift drum right crankcase bearing surface.

SERVICE LIMIT: 19.90 mm (0.783 in)



GEARSHIFT SPINDLE INSPECTION

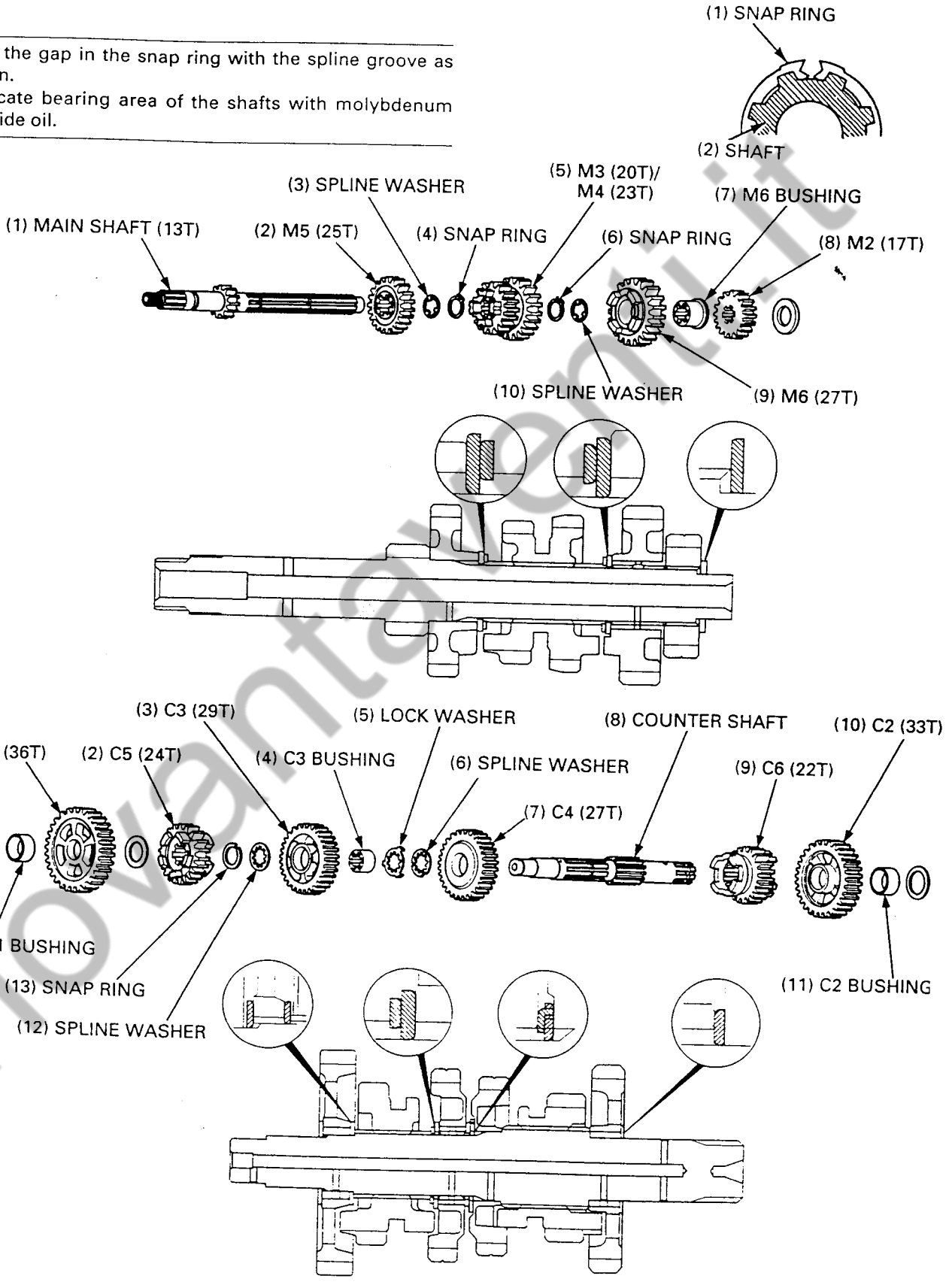
Remove the snap ring and spring.
Inspect the gearshift spindle and gearshift plate claw wear or damage.
Replace if it's worn and damaged.
Inspect the return spring and replace if it's damaged.
Inspect the reset spring and replace if it's damaged.



TRANSMISSION ASSEMBLY/ INSTALLATION

NOTE

- Align the gap in the snap ring with the spline groove as shown.
- Lubricate bearing area of the shafts with molybdenum disulfide oil.

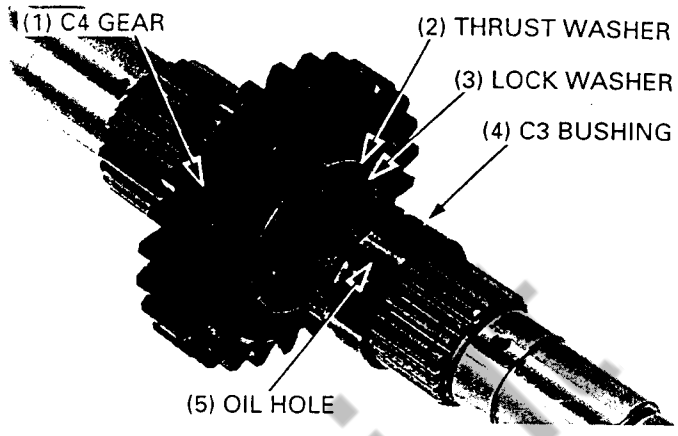


Apply engine oil to the following:
— All gear teeth
— Mainshaft bearing
— Countershaft bearing
— Shift drum bearing

Apply molybdenum disulfide oil to the shift fork grooves of the M3/4, C5, C6 gear.
Assemble the transmission.

NOTE

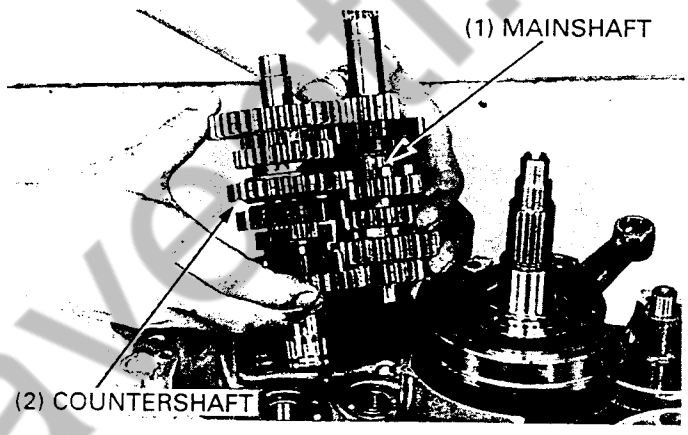
- Align the cut-outs of the C4 gear splined washer with the tabs of the C4 gear thrust washer lock plate.
- Install the C3 gear bushing with its oil hole aligning with the hole in the countershaft.
- Install the M6 gear bushing with its oil hole aligning with the hole in the mainshaft.



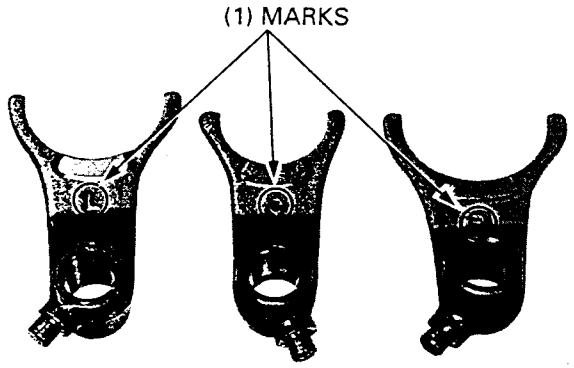
Install the mainshaft and countershaft into the left crankcase as an assembly.

NOTE

- Be careful not to turn over the countershaft oil seal lip in the left crankcase when installing the countershaft.

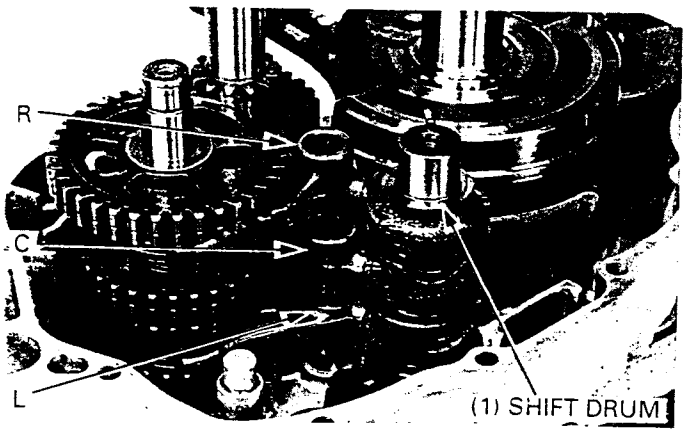


Each shift fork has an identification mark; "R" (Right), "C" (Center) or "L" (Left).

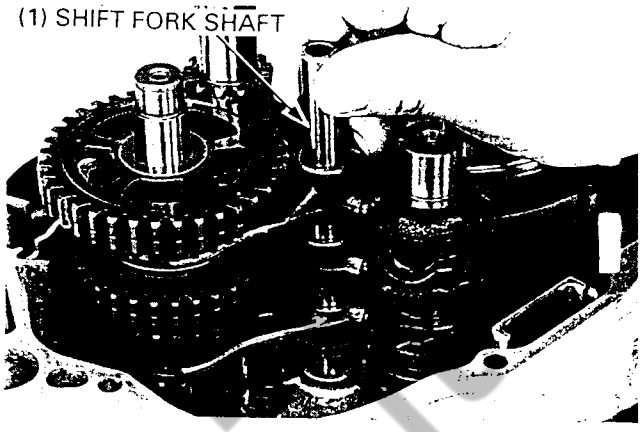


Apply engine oil to the following:
— Shift drum guide groove
— Shift fork claws
— Shift fork guide pin
— Shift fork I.D.
— Shift fork shaft
Install the following:
— Shift drum
— Shift forks

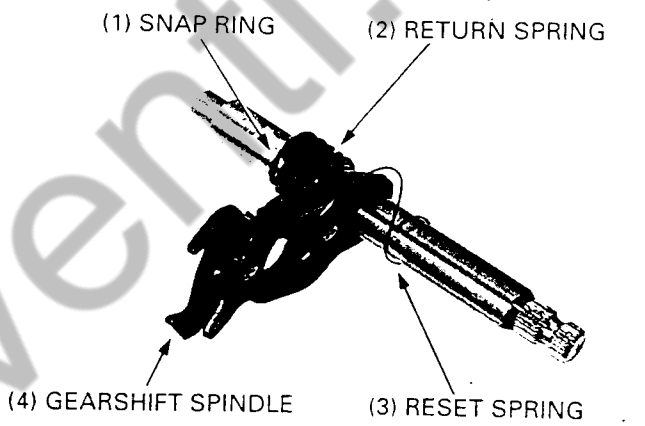
Install the shift forks in the correct position with their marks facing up.



Install the shift fork shaft.



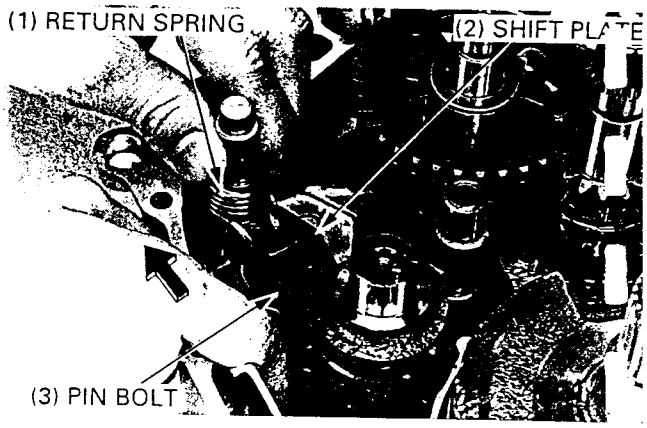
Install the following onto the gearshift spindle:
— Return spring
— Snap ring
— Reset spring



Align the return spring with the pin bolt and install the shift spindle while pulling the shift plate toward the spindle.

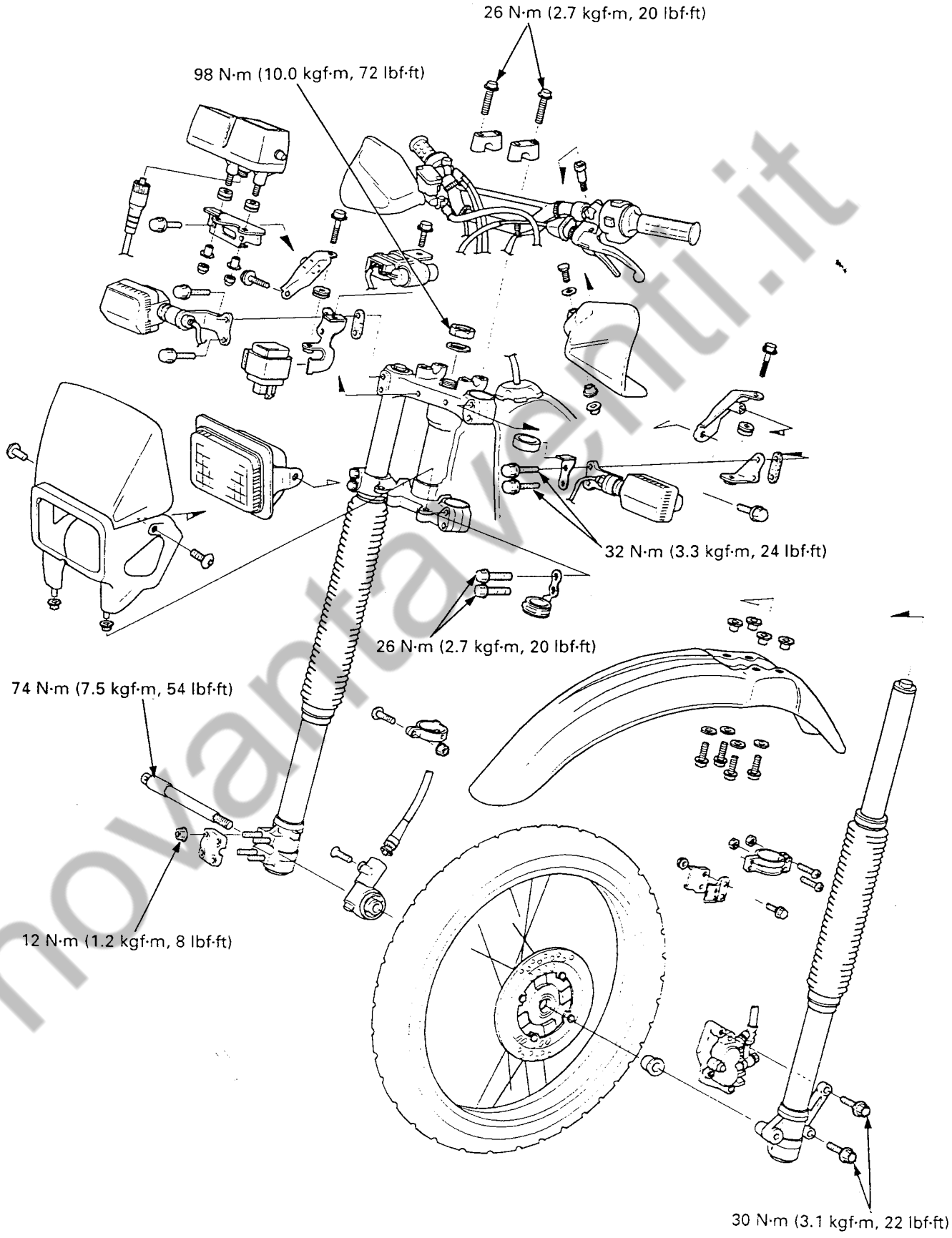
NOTE

- Be careful not to turn over the spindle oil seal lip in the left crankcase when installing shift spindle.



Install the right crankcase (page 11-11).
Install the shift cam and stopper arm (page 9-17).
Install the gearshift pedal and check the transmission for smooth shifting.

MEMO



13. FRONT WHEEL/SUSPENSION/STEERING

SERVICE INFORMATION

GENERAL

- Keep grease off of brake pads and disc.

⚠ WARNING

- *A contaminated brake disc or pad reduce stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.*

- This section covers maintenance of the front wheel, fork and steering stem.
- 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/cm², 15 psi)	———
	(U type)	150 kPa (1.50 kgf/cm², 22 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		20.25 (0.797)	———
Fork spring free length		442.5 (17.42)	438.1 (17.25)
Fork tube runout		———	2.0 (0.08)
Recommended fork oil		Fork fluid (SS8)	———
Fork oil level		82 (3.2)	77 – 108 (3.0 – 4.2)
Fork oil capacity		477 cm³ (16.13 US oz, 16.79 Imp oz)	———

TORQUE VALUES

Handlebar holder bolt	26 N·m (2.7 kgf·m, 20 lbf·ft)	
Steering stem nut	98 N·m (10.0 kgf·m, 72 lbf·ft)	
Steering top thread	5 N·m (0.5 kgf·m, 3.6 lbf·ft)	
Top bridge pinch bolt	32 N·m (3.3 kgf·m, 24 lbf·ft)	
Bottom bridge pinch bolt	26 N·m (2.7 kgf·m, 20 lbf·ft)	
Front axle	74 N·m (7.5 kgf·m, 54 lbf·ft)	
Front axle holder nut	12 N·m (1.2 kgf·m, 9 lbf·ft)	U-nut.
Front brake caliper bracket bolt	30 N·m (3.1 kgf·m, 22 lbf·ft)	Apply a locking agent to the threads.
Front brake disc plate bolt	20 N·m (2.0 kgf·m, 14 lbf·ft)	ALOC bolt; Replace with a new one.
Master cylinder holder bolt	9 N·m (0.9 kgf·m, 6.5 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

Fork damper holder	07PMB – KZ40101
Fork seal driver	07947 – KA50100
Fork seal driver attachment	07947 – KF00100
Oil seal remover	07948 – 4630100
Steering stem driver	07946 – 4300101
Steering stem socket	07916 – KA50100

Common

Attachment, 32 x 35 mm	07746 – 0010100
Attachment, 42 x 47 mm	07746 – 0010300
Bearing remover head, 15 mm	07746 – 0050400
Bearing remover shaft	07746 – 0050100
Driver	07749 – 0010000
Nipple wrench	07701 – 0020300
Pilot, 15 mm	07746 – 0040300

TROUBLESHOOTING

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

Steers to one side or does not track straight
- Bent front forks
- Bent front axle
- Wheel installed incorrectly

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

Soft suspension
- Weak fork springs
- Insufficient fluid in front forks

Hard suspension
- Incorrect fluid weight in front forks
- Fork tube bent

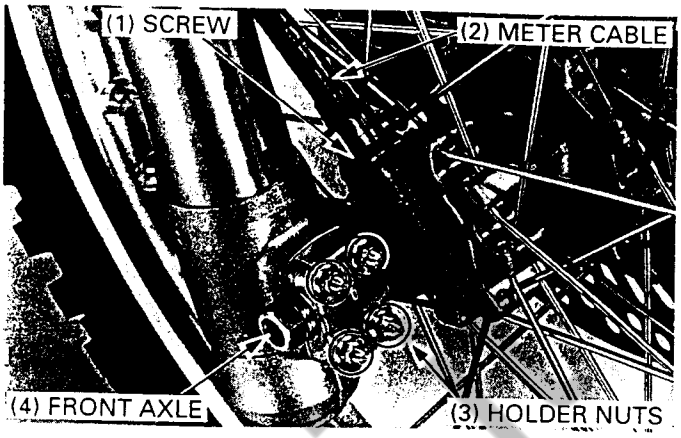
Front suspension noise
- Slider binding
- Insufficient fluid in forks
- Loose front fork fasteners

FRONT WHEEL

REMOVAL

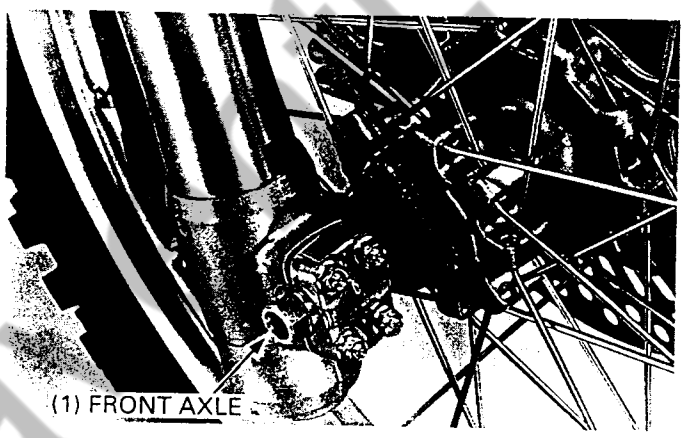
Remove the screw and disconnect the speedometer cable from the speedometer gearbox.
Loosen the front axle holder nuts.
Loosen the front axle.

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



NOTE

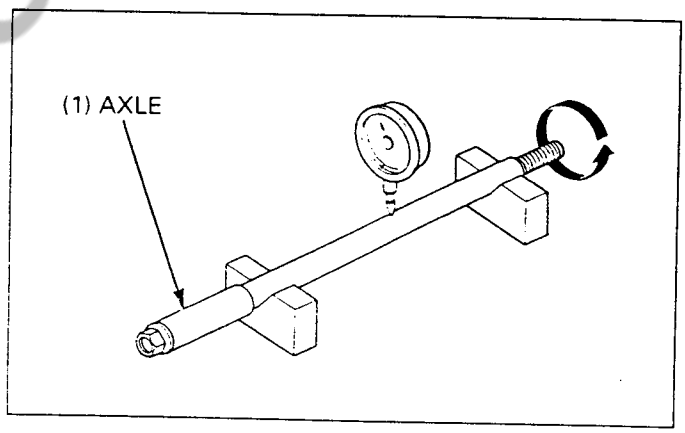
- Do not depress the brake lever after the front wheel is removed. The caliper piston will move out and make reassembly difficult.



INSPECTION

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

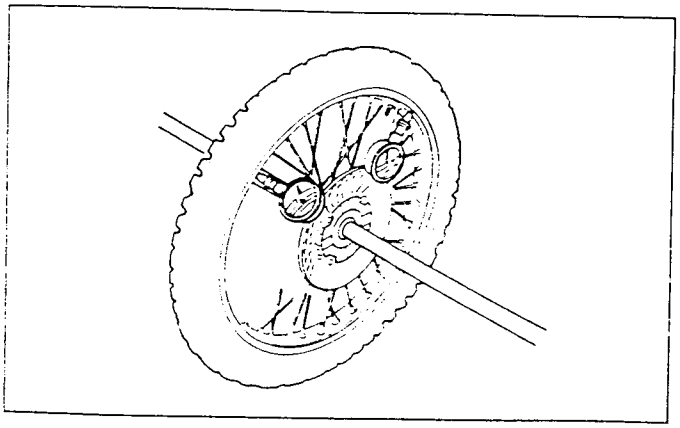
SERVICE LIMIT: 0.2 mm (0.01 in)



Wheel
Check the rim runout by placing the wheel on a turning 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.

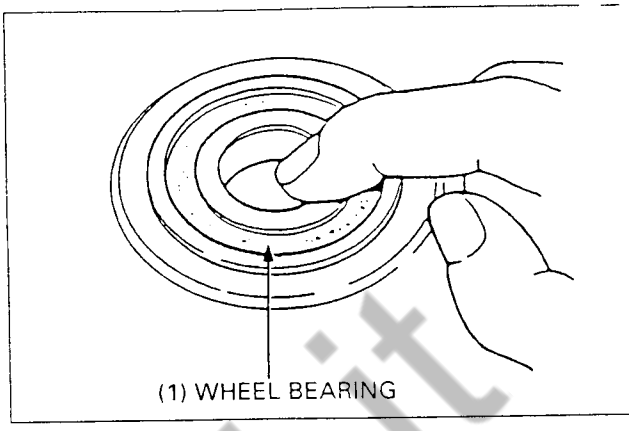


Wheel bearing
Turn the inner race of each bearing with your finger. The bearing should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the hub.

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

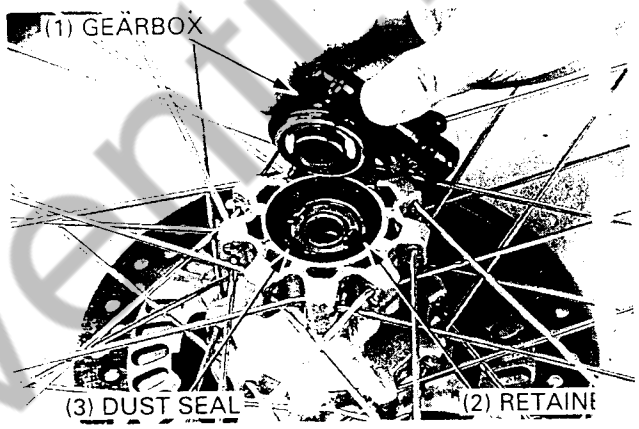
NOTE

- Replace the wheel bearings in pairs.

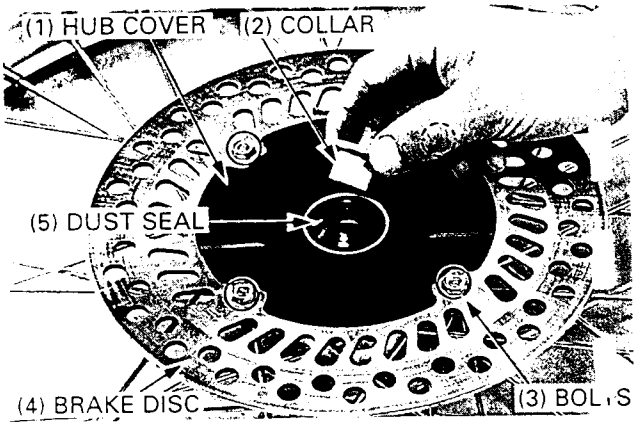


DISASSEMBLY

Remove the following:
— Speedometer gearbox
— Right dust seal
— Speedometer gear retainer



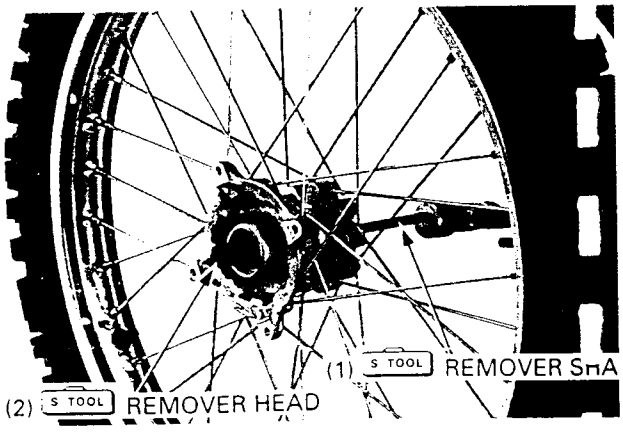
— Left wheel collar
— Front brake disc bolt
— Front brake disc
— Hub cover
— Left dust seal



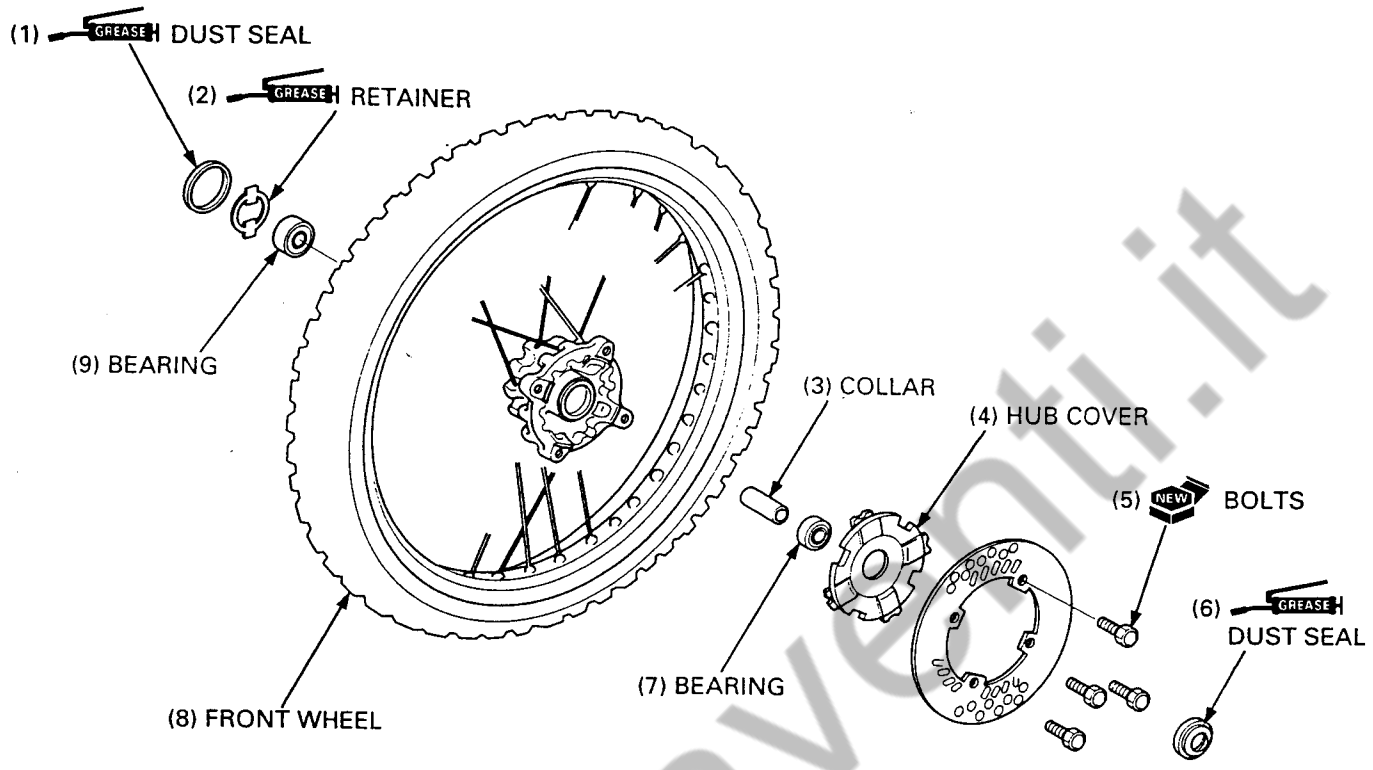
Remove the bearing and distance collar.

TOOL:

Bearing remover head, 15 mm	**07746 – 0050400**
Bearing remover shaft	**07746 – 0050100**



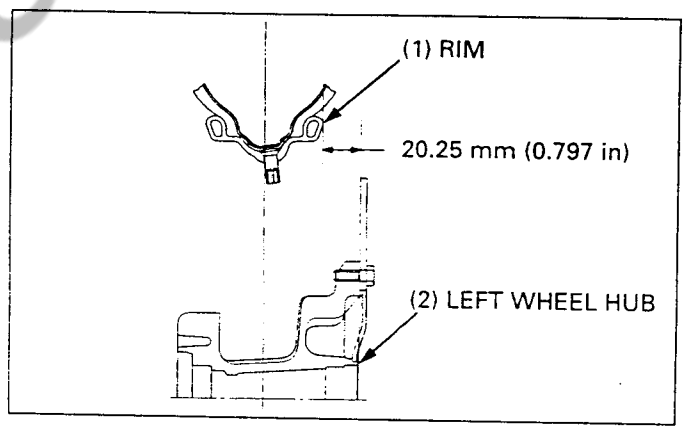
ASSEMBLY



Place the rim on a work bench.

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

WHEEL RIM-TO-HUB STANDARD DISTANCE:
20.25 mm (0.797 in)



Torque the spokes in 2 or 3 progressive steps.

TOOL:
Nipple wrench **07701 – 0020300**

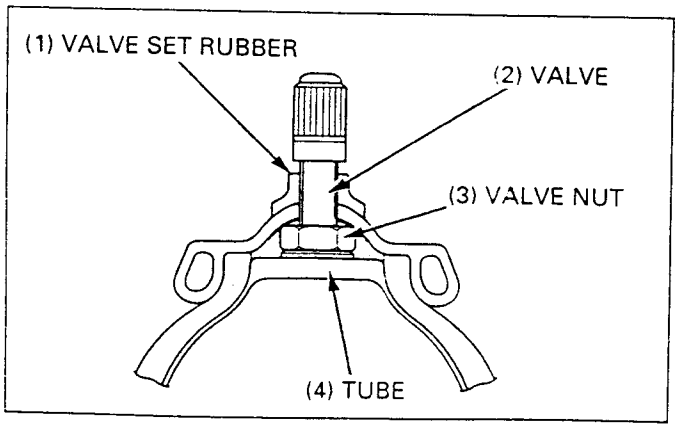
TORQUE: 3.8 N·m (0.38 kgf·m, 2.7 lbf·ft)

Install the valve nut to the valve.
Install the valve to 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)

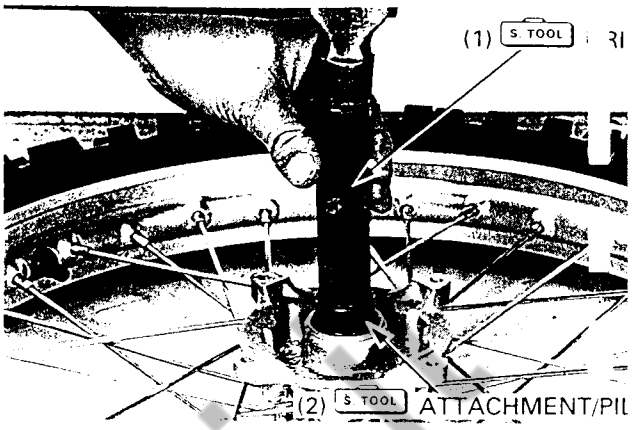
Pack all bearing cavities with grease.



Drive the new right wheel bearing into the hub using the special tools as shown.
Install the distance collar.
Drive the new left wheel bearing into the hub using the special tools as shown.

TOOL:

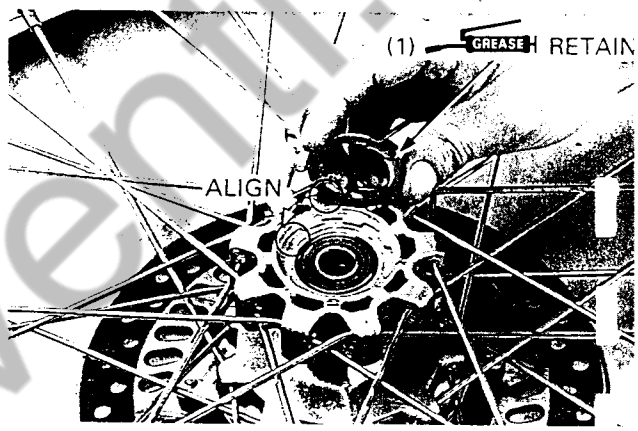
Attachment, 32 x 35 mm	**07746 – 0010100**
Driver	**07749 – 0010000**
Pilot, 15 mm	**07746 – 0040300**



NOTE

- Install the bearing with the seal side facing out.

Apply grease to the tripmeter gear retainer.
Install the tripmeter gear retainer into the wheel hub, align the tangs with the slots.



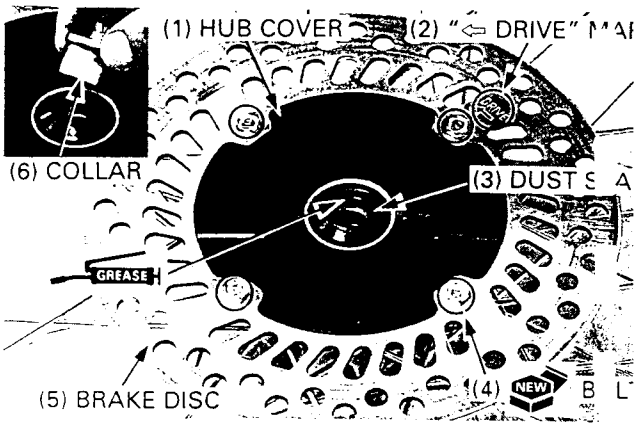
Apply grease to the left dust seal lip.
Install the left dust seal and hub cover.
Install the front brake disc.

NOTE

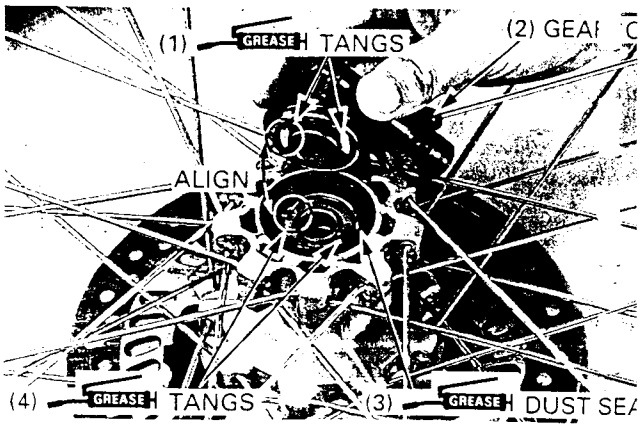
- Install the brake disc with the "⇦DRIVE" mark facing out.

Install and tighten the new brake disc bolts.

TORQUE: 20 N·m (2.0 kgf·m, 14 lbf·ft)



Install the left wheel collar.
Apply grease to the right dust seal lip and install the front wheel.
Apply grease to the speedometer gearbox tangs and retainer tangs.
Install the speedometer gearbox into the wheel hub, aligning the gearbox tangs and retainer tangs.



INSTALLATION

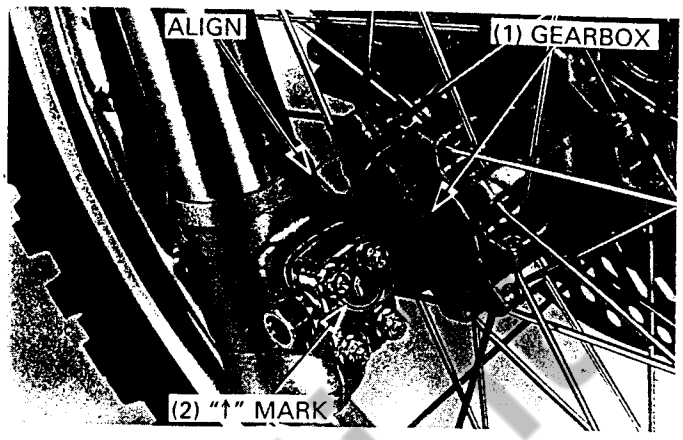
Install the front wheel.

NOTE

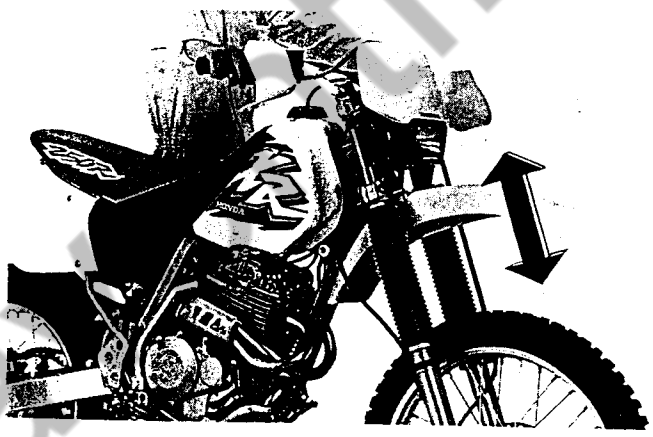
- If you removed the axle holder, install it with the "↑" mark facing upwards.

Install the front axle.
Align the speedometer gearbox with the tang on the right fork leg as shown.
Tighten the axle to the specified torque.

TORQUE: 74 N·m (7.5 kgf·m, 54 lbf·ft)



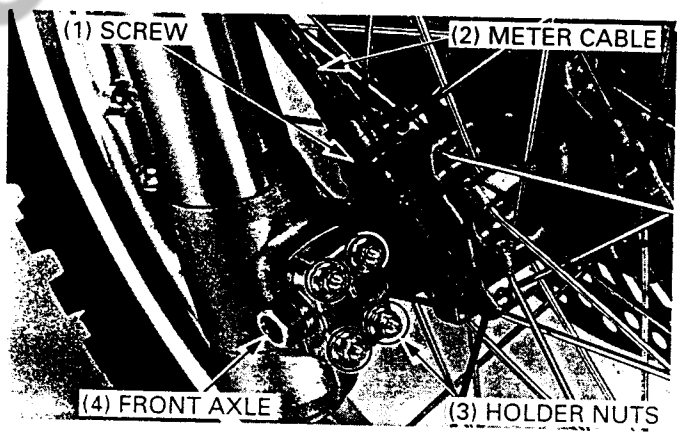
With the front brake applied, pump the front forks up and down several times to seat the axle and check front brake operation.



Tighten the axle holder nuts: the upper nuts first, then the lower nuts.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

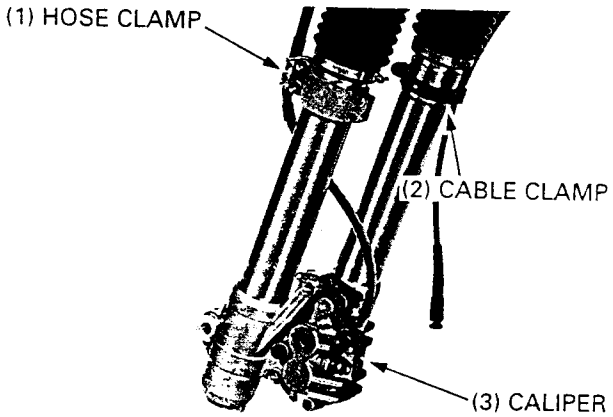
Connect the speedometer cable to the gearbox.



FORK

REMOVAL

Remove the following:
— Headlight case (page 16-11)
— Front wheel (page 13-3)
— Brake hose clamp (left side)
— Front brake caliper (page 15-7)
— Speedometer cable clamp (right side)



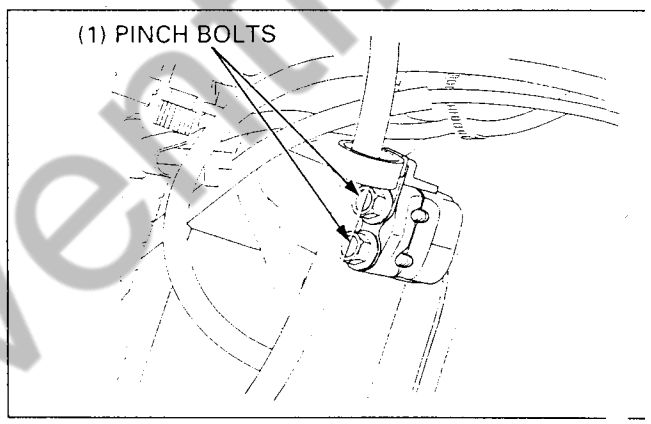
NOTE

- Do not hang the brake caliper by the brake hose.
- It is not necessary to disconnect the brake hose.

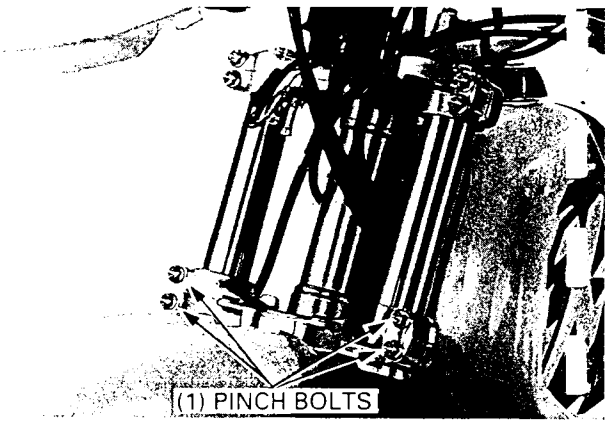
Loosen the top bridge pinch bolts.

NOTE

- If the fork legs will be disassembled, loosen the fork caps, lower socket bolts and upper fork boot screws before loosening the fork pinch bolts.

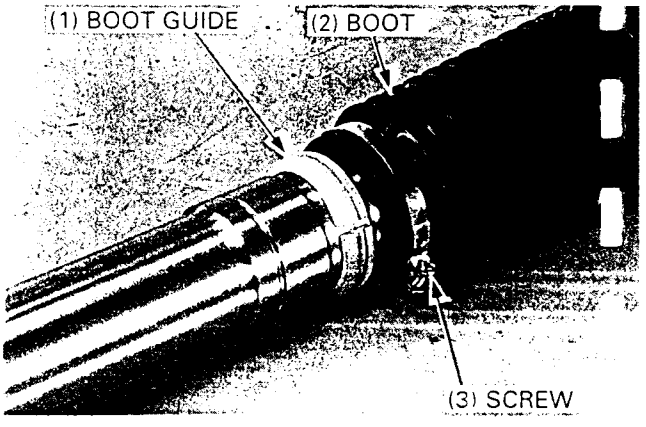


Loosen the bottom bridge pinch bolts.
Remove the fork.



DISASSEMBLY

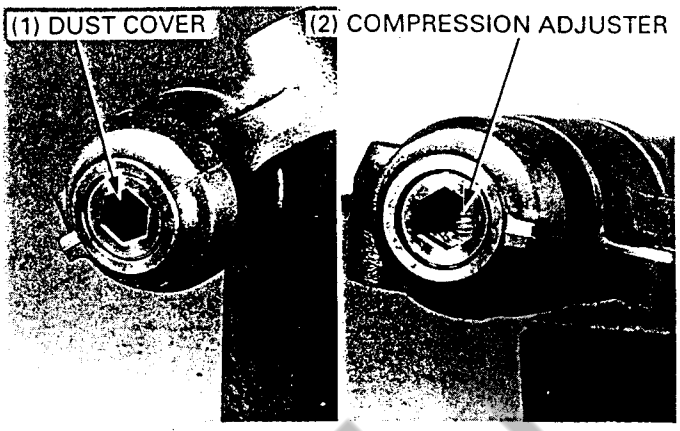
Loosen the lower fork boot screw.
Remove the fork boot and fork boot guide.



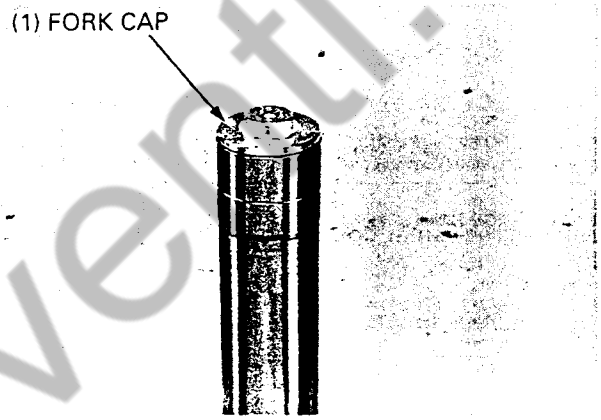
Remove the compression adjuster dust cover.
Turn the adjuster counterclockwise to the softest position.

NOTE

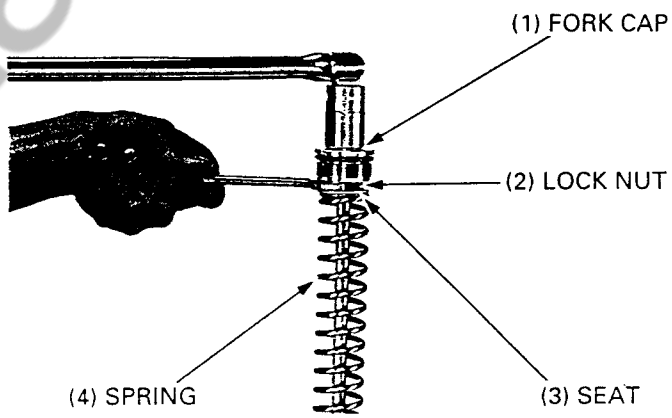
- Record the number of clicks to the softest position.



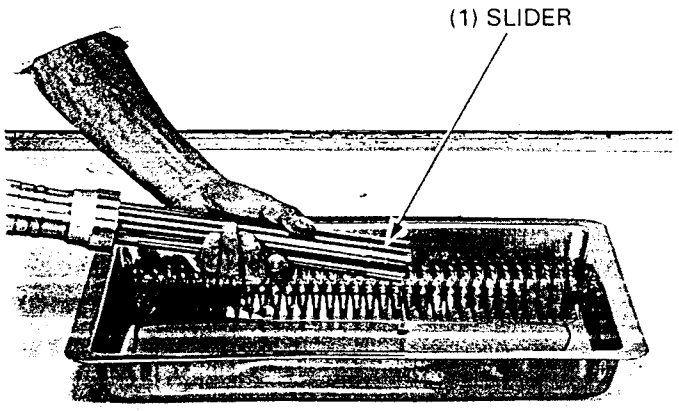
Remove the fork cap from the fork tube.



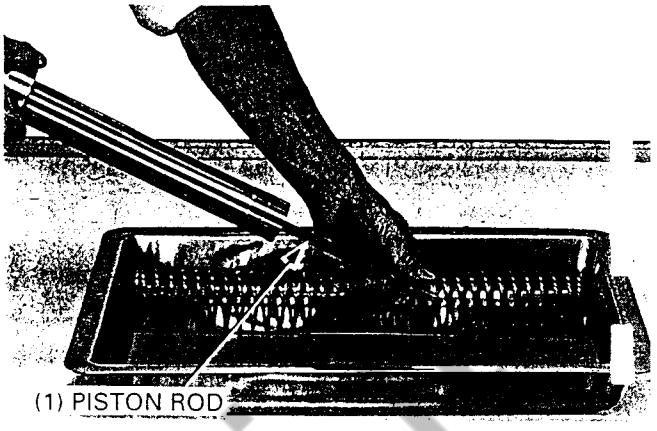
Hold the lock nut and remove the fork cap from the piston rod.
Remove the spring seat and spring.



Empty the fork oil from the fork by pumping the slider 8 – 10 times.



Empty the fork oil form the fork cylinder by pumping the piston rod 8 – 10 times.



Hold the caliper bracket of the outer tube in a vise protected with a piece of wood or soft jaws.

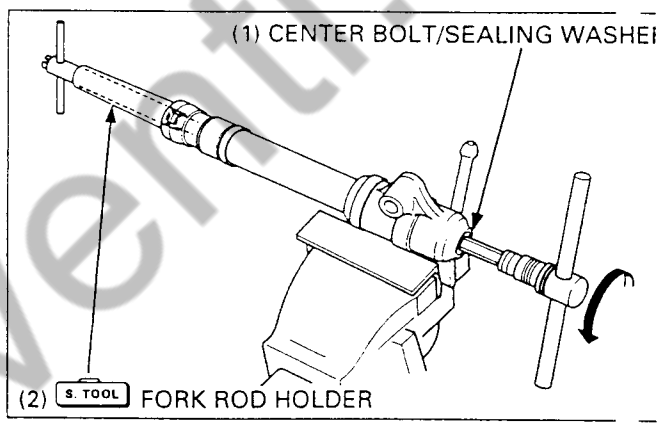
CAUTION

- *Do not overtighten the caliper bracket.*

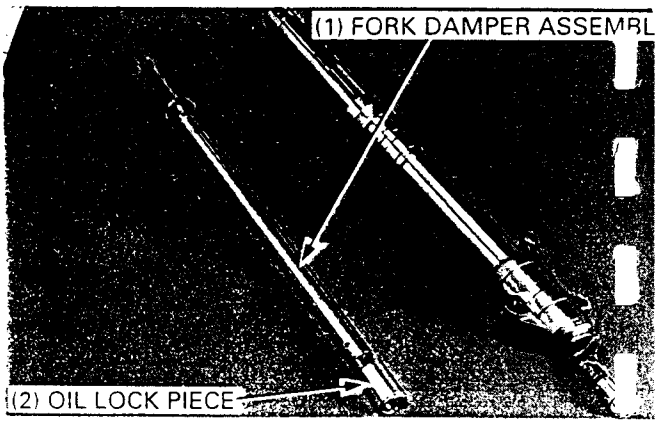
Loosen the center bolt using the special tool as shown.

TOOL:
Fork damper holder **07PMB – KZ40101**

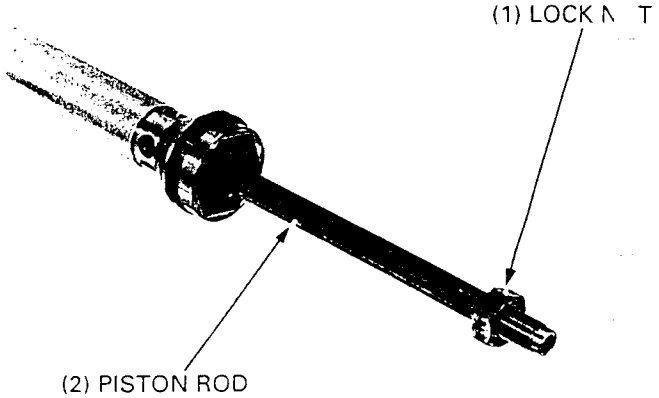
Remove the center bolt and sealing washer.



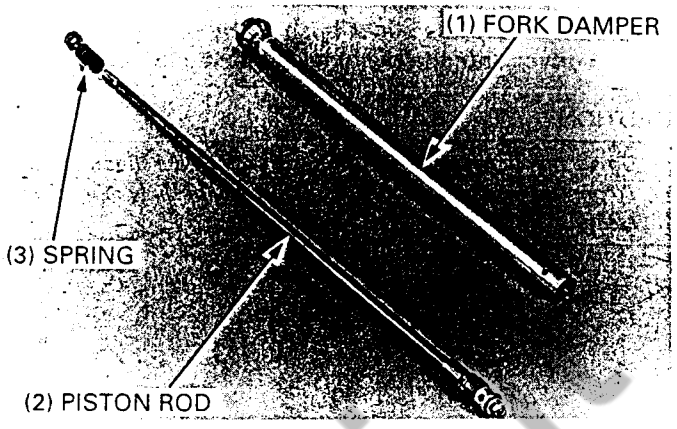
Remove the fork damper assembly and oil lock piece from the fork assembly.



Remove the lock nut from the piston rod.



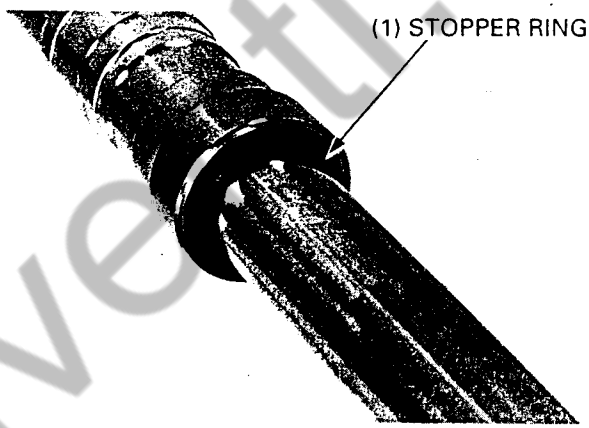
Remove the piston rod and spring from the fork damper.



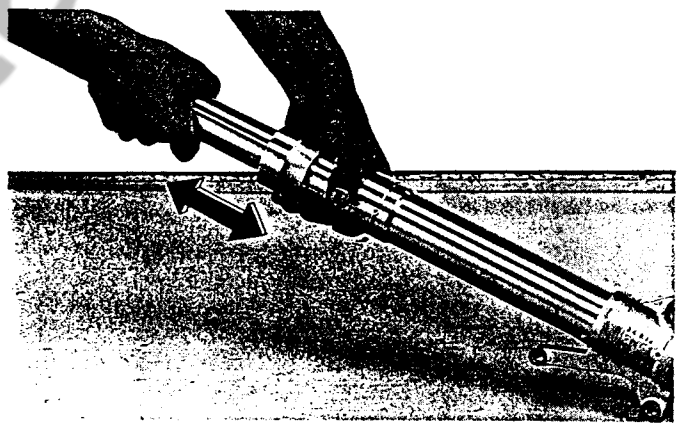
Remove the stop ring from the outer tube.

CAUTION

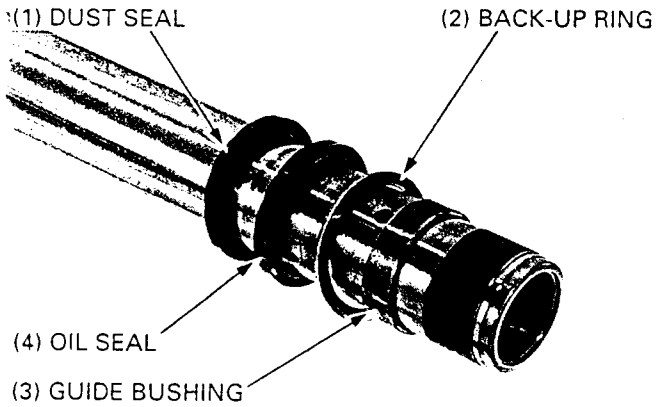
- *Be careful not to scratch the slider.*



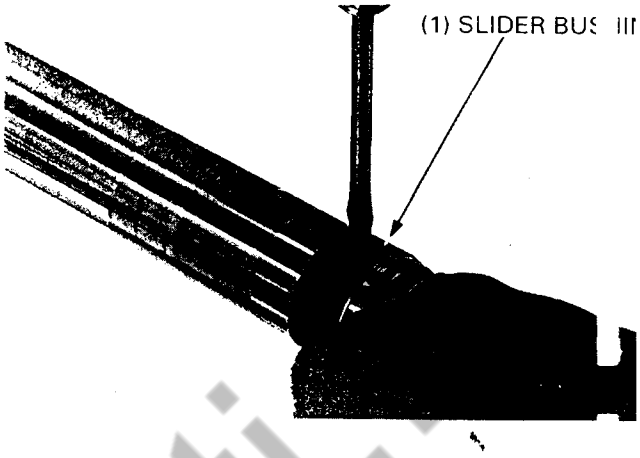
In quick successive motions, pull the slider and guide bushing out of the outer tube.



Remove the following:
— Dust seal
— Oil seal
— Back-up ring
— Guide bushing



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

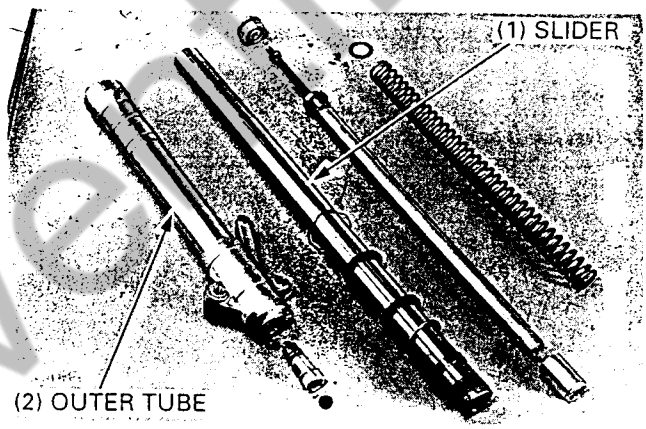


CAUTION

- *Do not damage the slider bushing, especially the sliding surface.*
- *To prevent loss of tension, do not open the bushing more than necessary.*

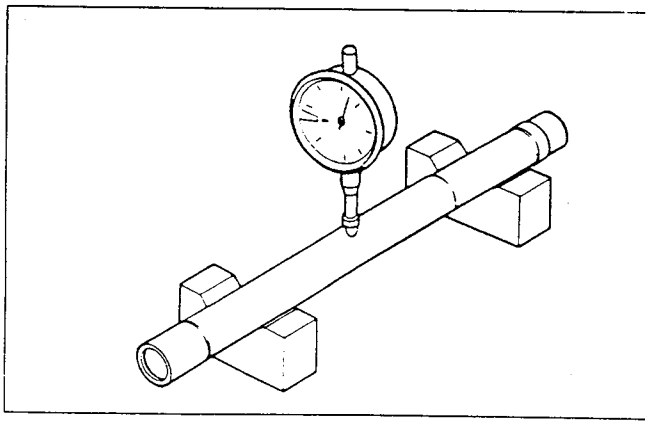
INSPECTION

Slider/Outer tube
Check the slider for score marks, scratches and excessive or abnormal wear.
Check the outer tube for damage or deformation.



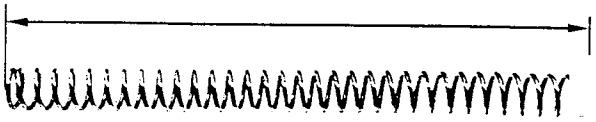
Set the slider in V blocks and read the runout.
The actual runout is 1/2 of the total indicator reading.

SERVICE LIMIT: 0.2 mm (0.01 in)

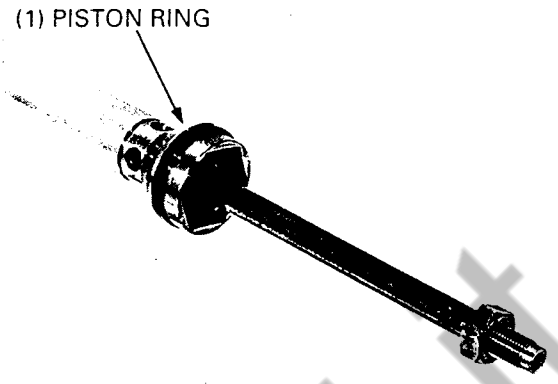


Fork spring
Measure the fork spring free length.

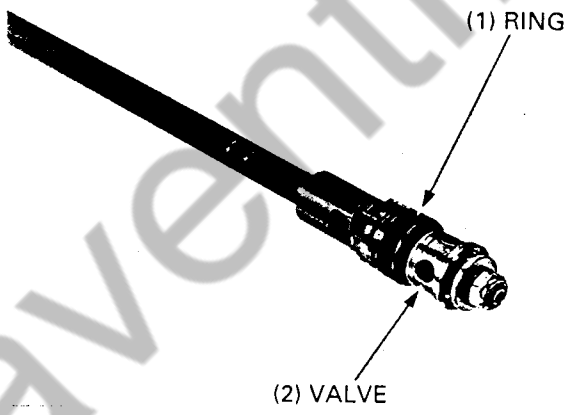
SERVICE LIMIT: 438.1 mm (17.25 in)



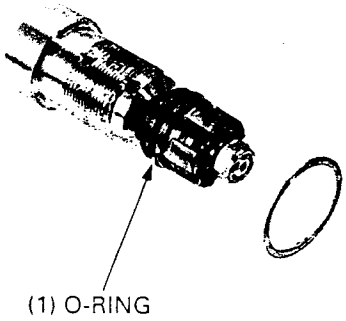
Fork damper/Piston rod/Spring
Check the piston ring for wear or damage.



Check the ring and valve of the piston rod for damage.
Check the oil lock valve for wear or damage.
Replace the piston rod assembly if there is abnormal wear or damage.

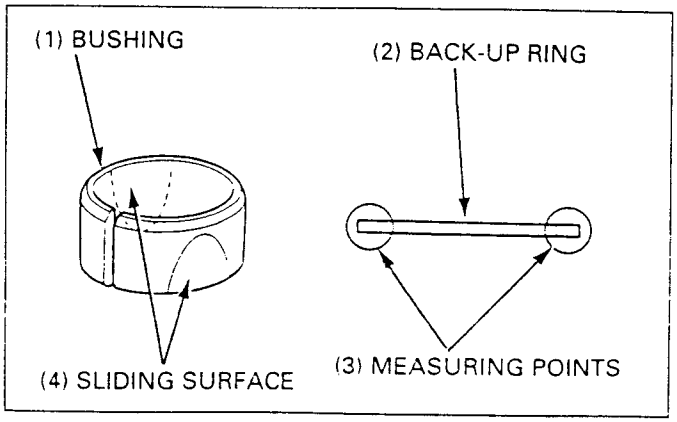


Fork center bolt
Check the O-ring of the fork center bolt for damage.

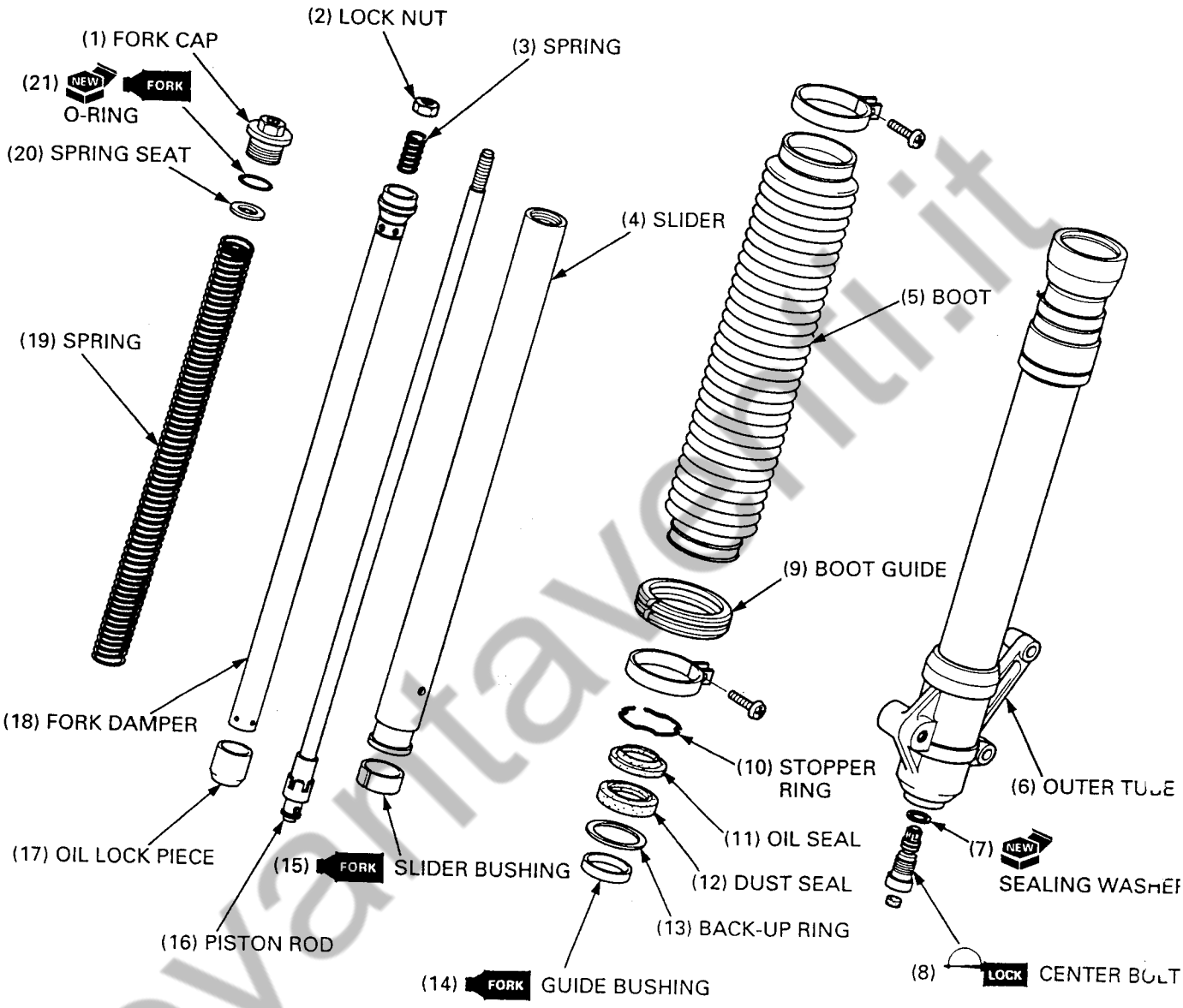


Slider bushing/Guide bushing/Back-up ring
Check the bushings for excessive wear or scratches. If copper appears on the entire surface, replace the bushings.
Replace the back-up ring if there is distortion at the points shown.

Remove any metal power from the slider and guide bushings with a nylon brush and fork oil.



ASSEMBLY



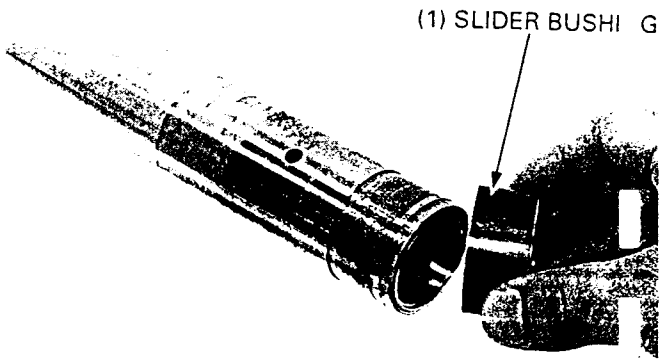
NOTE

- Clean the disassembled parts thoroughly with non-flammable or high flash point solvent before assembly.

Install the slider bushing.

NOTE

- Remove any burrs from the bushing, taking care not to peel off its coating.

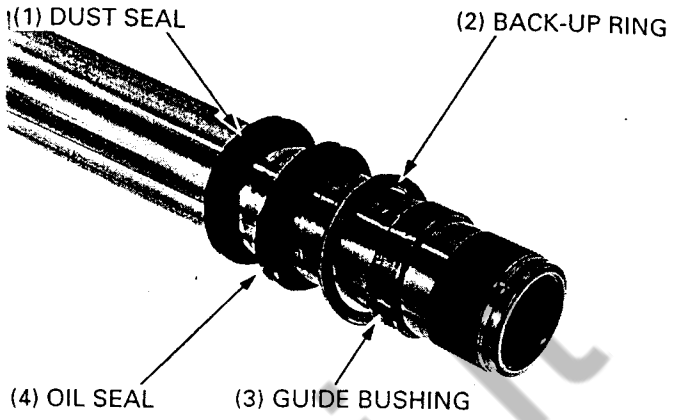


Wrap the end of the slider with tape.

Install the following:
— Guide bushing
— Back-up ring
— Oil seal
— Dust seal

NOTE

- Install the oil seal with its marked side facing the dust seal.

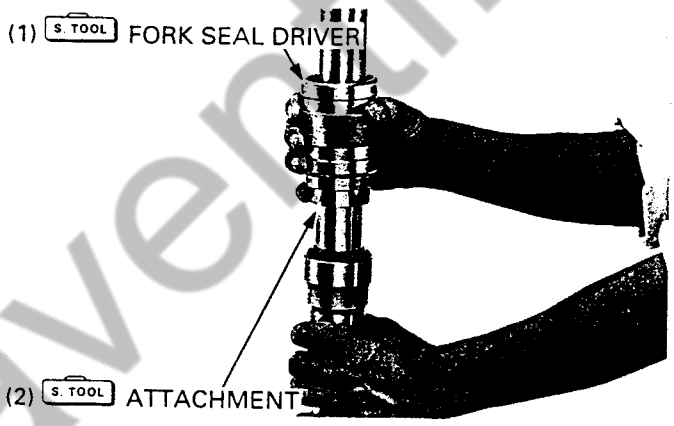


Remove the tape.

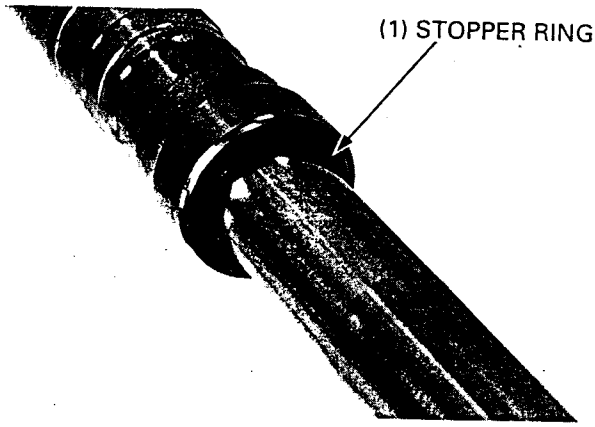
Coat the slider bushing and guide bushing with fork oil.
Install the slider to the outer tube.
Drive in the dust seal to just under the edge of the stopper ring groove, using the special tool.

TOOL:

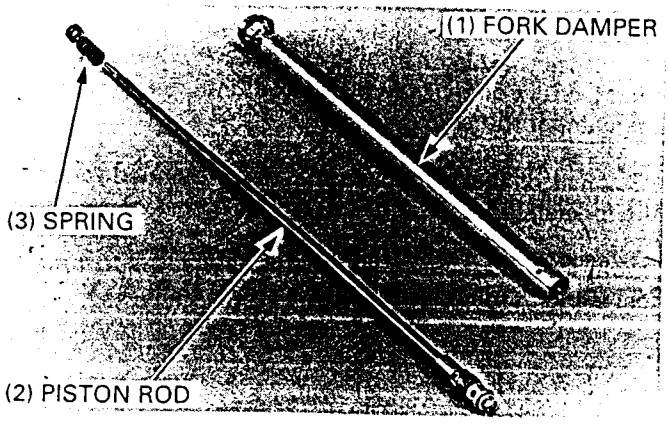
Fork seal driver	**07947 – KA50100**
Fork seal driver attachment	**07947 – KF00100**



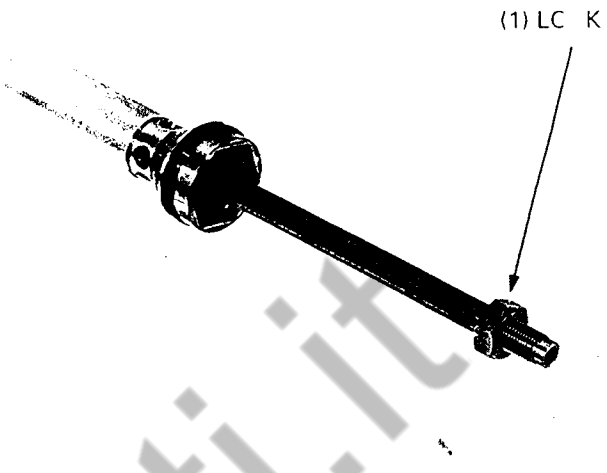
Install the stopper ring.



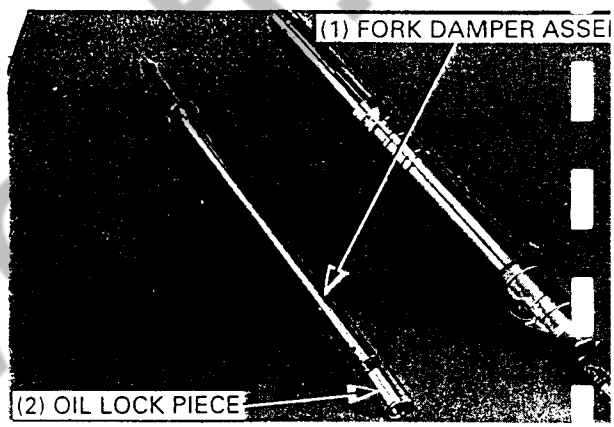
Install the piston rod and spring to the fork damper.



Install the lock nut onto the piston rod.



Install the fork damper assembly and oil lock piece into the fork assembly.



Hold the caliper bracket of the outer tube in a vise protected with a piece of wood or soft jaws.

CAUTION

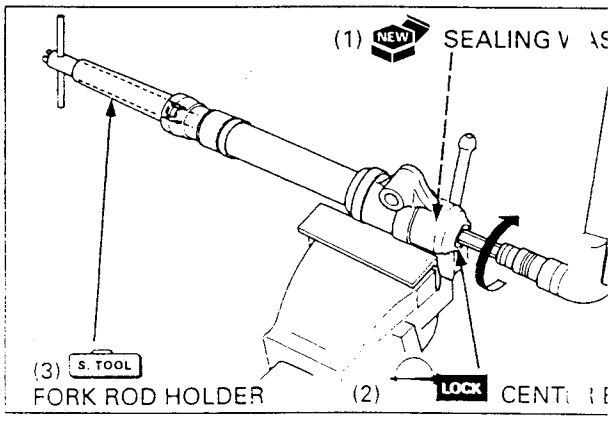
- *Do not overtighten the caliper bracket.*

Apply a locking agent to the center bolt threads.
Install a new sealing washer and install the center bolt.

Tighten the center bolt using the special tool as shown.

TOOL:
Fork damper holder **07PMB – KZ40101**

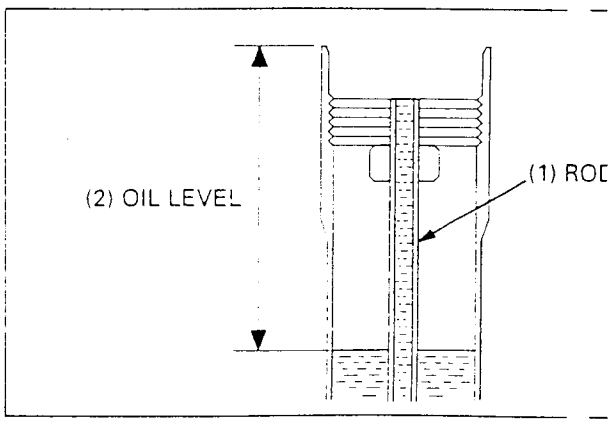
TORQUE: 20 N·m (2.0 kgf·m, 14 lbf·ft)



Compress the piston rod all the way and pour the recommended fork oil into the piston rod until the oil flows out of the damper rod end.

Pour half of the amount of the recommended fork oil into the fork leg.

Pump the slider and piston rod slowly 8 – 10 times and leave it for 5 minutes to let the oil level settle.

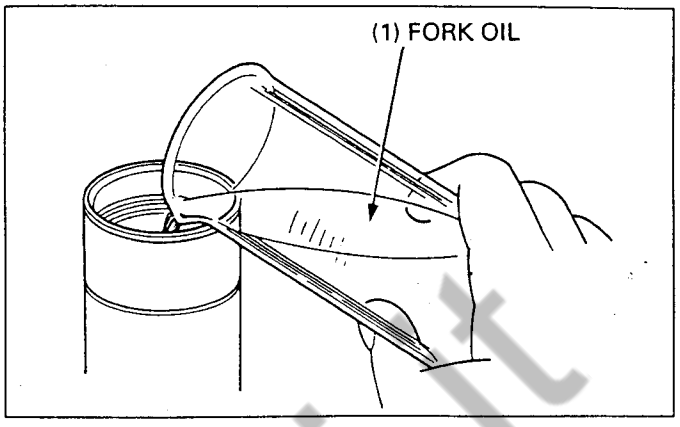


Compress the front fork and piston rod all the way and measure the oil level from the top of the tube.
Add oil as necessary.

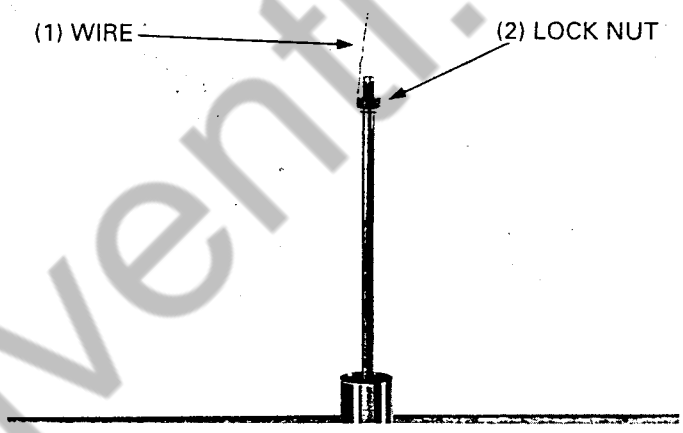
RECOMMENDED OIL: **Fork fluidm (SS8)**
STANDARD OIL CAPACITY: **477 cm³ (16.13 US oz, 16.79 Imp oz)**
STANDARD OIL LEVEL: **82 mm (3.2 in)**

NOTE

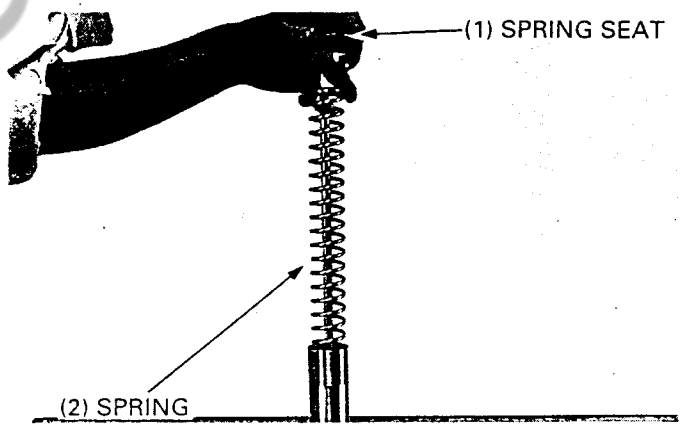
- Be sure the oil level is the same in both fork legs.



Screw the lock nut onto the piston rod by hand, to the end of the threads.
Attach a 600 mm (2 feet) length of mechanic's wire to the lock nut on the piston rod.

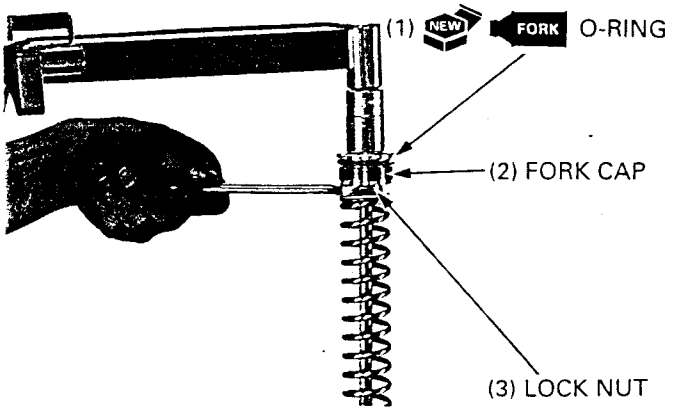


Install the fork spring and spring seat.

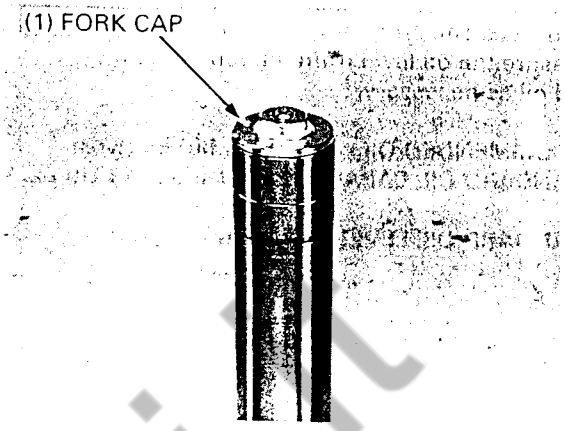


Remove the mechanic's wire while holding the lock nut.
Coat a new fork cap O-ring with fork oil and install it.
Hold the lock nut and tighten the fork cap to the specified torque.

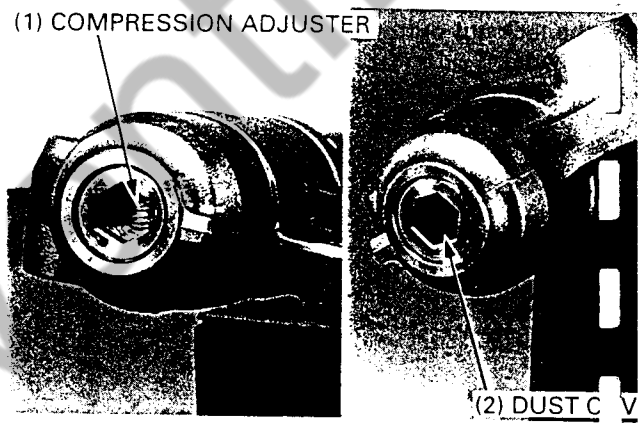
TORQUE: 23 N·m (2.3 kgf·m, 17 lbf·ft)



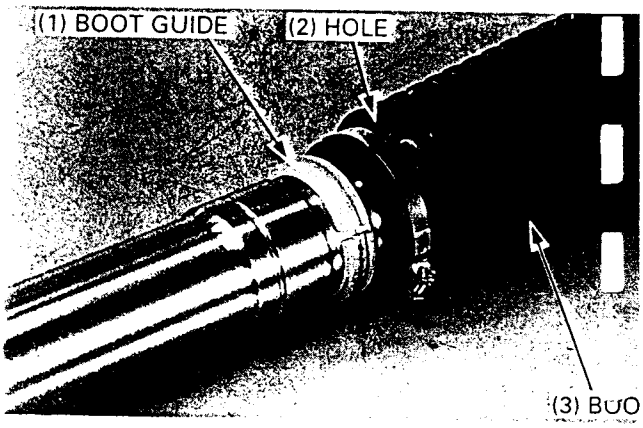
Install the fork cap into the fork tube.



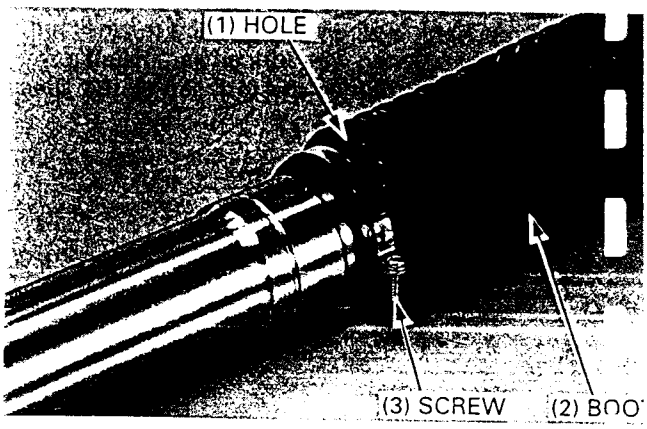
Return the compression adjuster to its original position as noted during removal.
Install the dust cover.



Install the fork boot guide.
Install the fork boot with the breather holes towards the bottom and outside.



Install the fork boot on the boot guide.
Tighten the lower screw.



INSTALLATION

Install the front fork.
Tighten the bottom bridge pinch bolts to the specified torque.

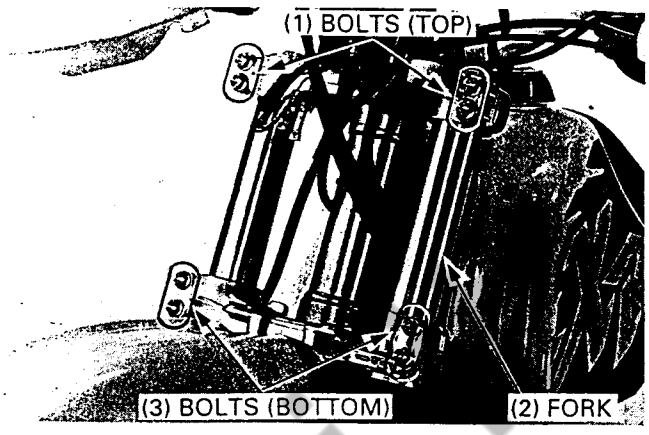
TORQUE: 26 N·m (2.7 kgf·m, 20 lbf·ft)

Tighten the fork cap to the specified torque.

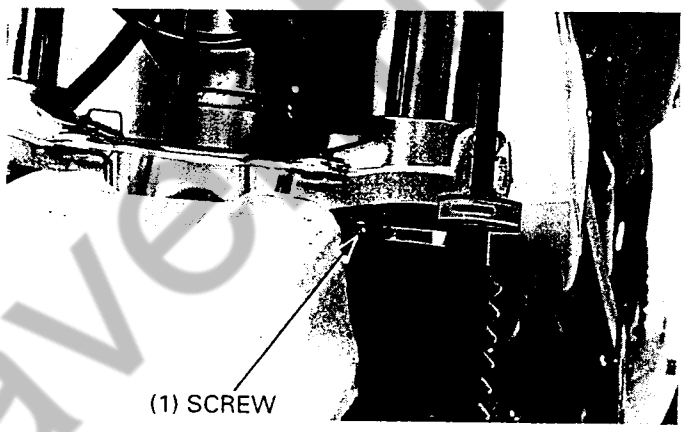
TORQUE: 29 N·m (3.0 kgf·m, 22 lbf·ft)

Tighten the top bridge pinch bolts to the specified torque.

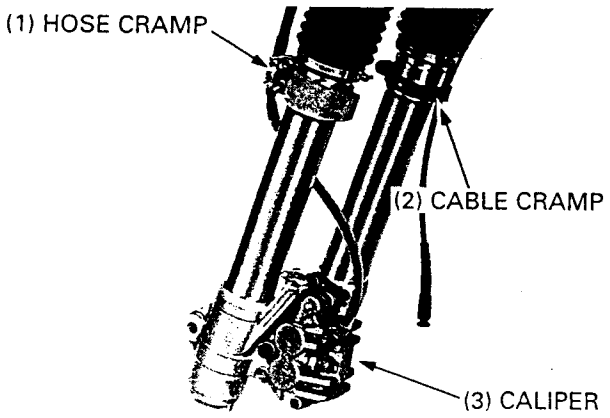
TORQUE: 32 N·m (3.3 kgf·m, 24 lbf·ft)



Push the fork boots up until they just touch the steering stem and tighten the boot clamps, with the clamp screws.



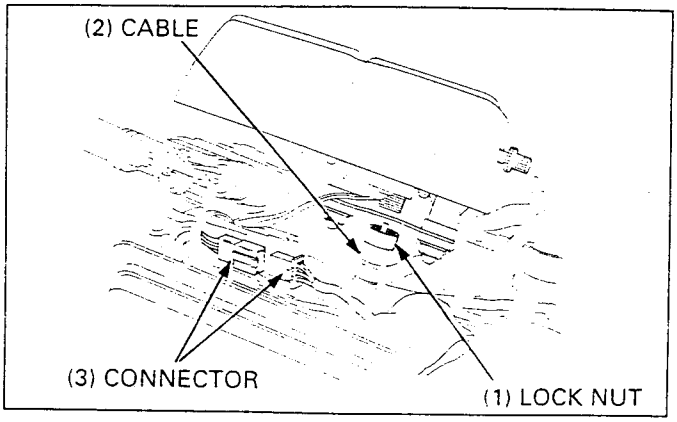
Install the following:
— Speedometer cable clamp (right side)
— Brake hose clamp (left side)
— Front brake caliper (page 15-11)
— Front wheel (page 13-7)
— Headlight case (page 16-12)



SPEEDOMETER

REMOVAL

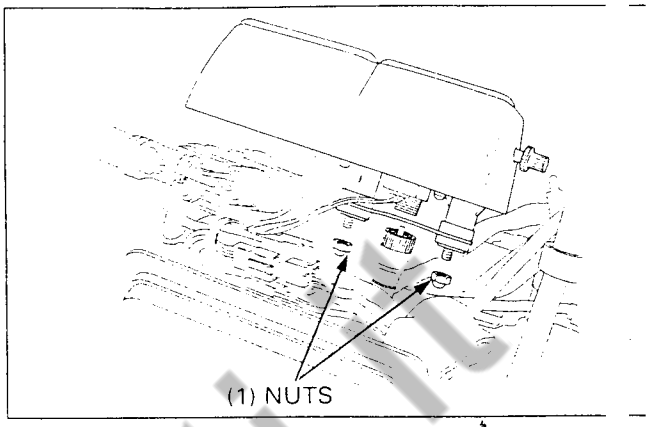
Remove the headlight case (page 16-12).
Loosen the lock nut and disconnect the cable from the speedometer.
Disconnect the wire connector.



Remove the two nuts and speedometer.

INTALLATION

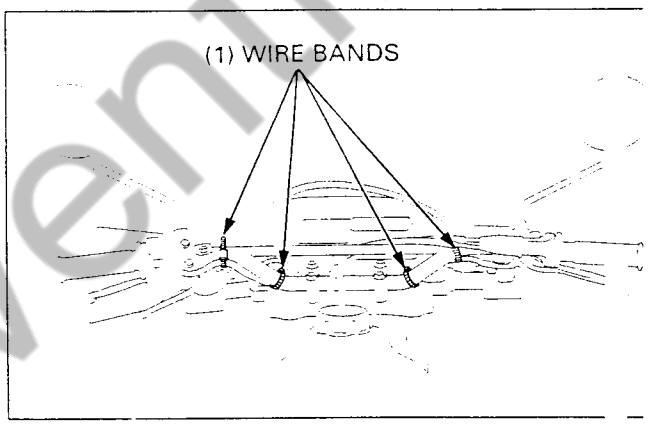
Installation is in the reverse order of removal.



STEERING

HANDLEBAR REMOVAL

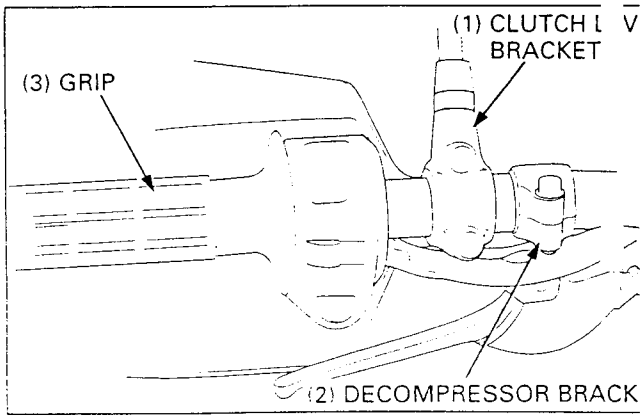
Remove the following:
— Wire bands



— Left handlebar switch
— Clutch lever bracket

Loosen the decompressor lever bracket bolts.

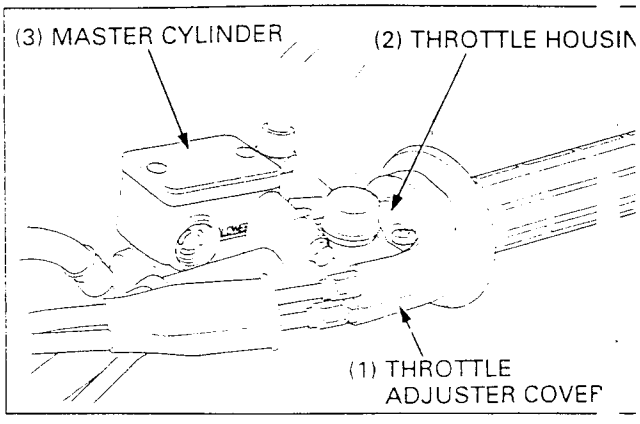
Remove the following:
— Decompressor cable
— Left handle grip
— Decompressor bracket



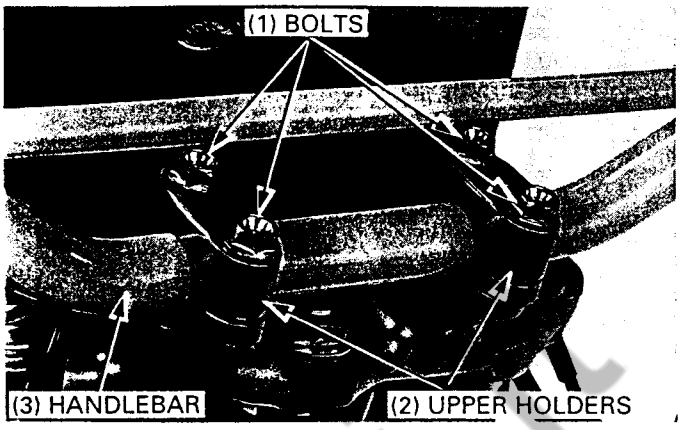
Slide the throttle adjuster cover down.
Remove the screws and throttle housing.
Disconnect the throttle cable and remove the throttle grip.
Remove the front master cylinder from the handlebar.
Remove the engine stop switch.

NOTE

- Do not hang the brake master cylinder by the brake hose.
- It is not necessary to disconnect the brake hose.



Remove the handlebar holder bolts, upper holders and handlebar.

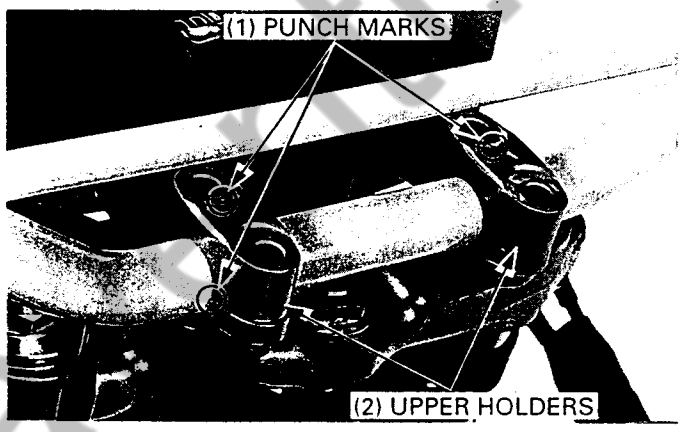


HANDLEBAR INSTALLATION

Install the handlebar.
Align the punch mark on the handlebar with the top of the lower holder.
Place the upper holder on the handlebar with the punch marks facing forward.

Install and tighten the front handlebar holder bolts first, then tighten the rear bolts.

TORQUE: 26 N·m (2.7 kgf·m, 20 lbf·ft)



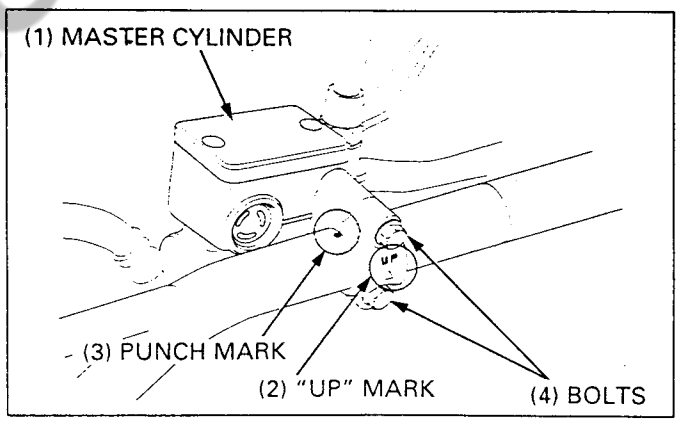
Position the brake master cylinder on the handlebar.
Install the master cylinder holder with the "UP" mark up, and align the end of the holder with the punch mark on the handlebar.

Tighten the master cylinder holder bolts.

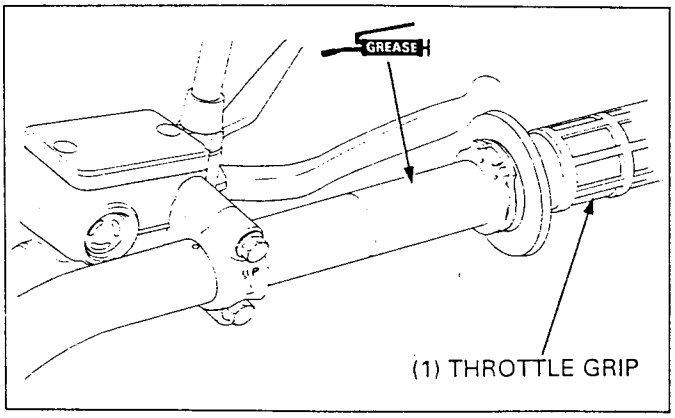
NOTE

- Tighten the upper bolt first, then the lower bolt.

TORQUE: 9 N·m (0.9 kgf·m, 6.5 lbf·ft)



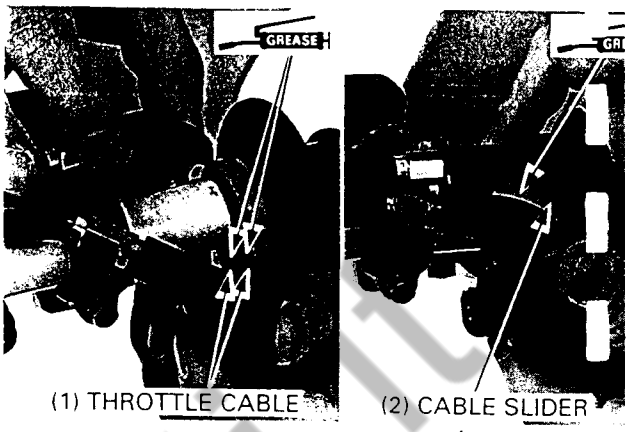
Apply a thin coat of grease to the sliding surfaces the throttle grip.
Install the throttle grip.



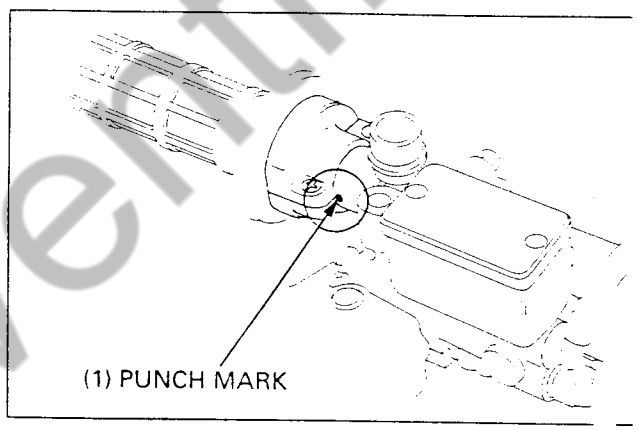
Apply grease to the sliding area of the throttle cable end and cable slider.
Connect the throttle cable to the throttle grip.

NOTE

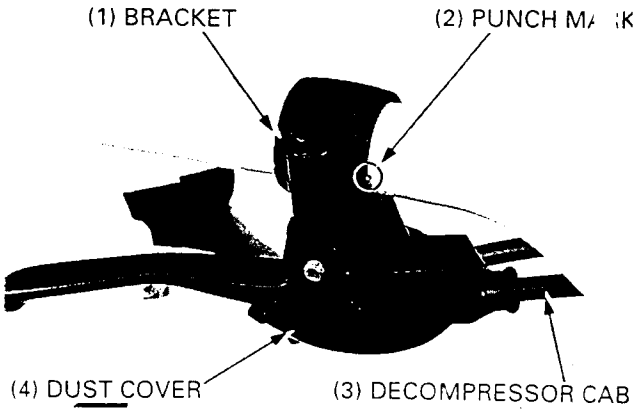
- Make sure that the cable slider is in place.



Align the split line of the throttle grip with the punch mark on the handlebar.
Tighten the forward screw first, then the rear screw.



Install the decompressor bracket to the handlebar.
Connect the decompressor cable and install the dust cover.
Align the split line of the decompressor bracket with the punch mark on the handlebar and tighten the pinch screw securely.

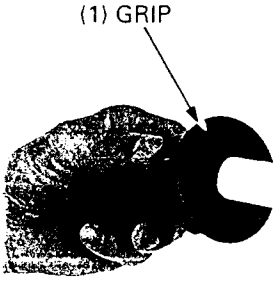


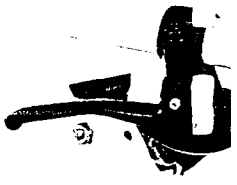
Apply Honda Bond A or Cemedine #540 to the inside surface of the grip and to the clean surface of the left handlebar.

Wait 3 – 5 minutes and install the grip.
Rotate the grip for even application of the adhesive.

NOTE

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

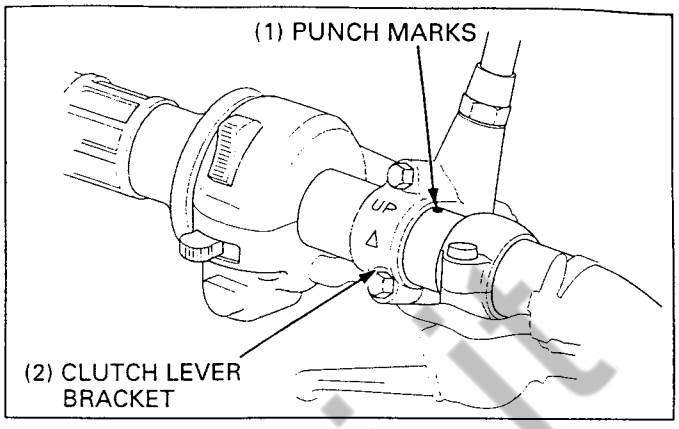




Install the clutch lever bracket and holder with the punch mark on the holder up, and the end of the holder aligned with the punch mark on the handlebar.
Install the left handlebar switch.

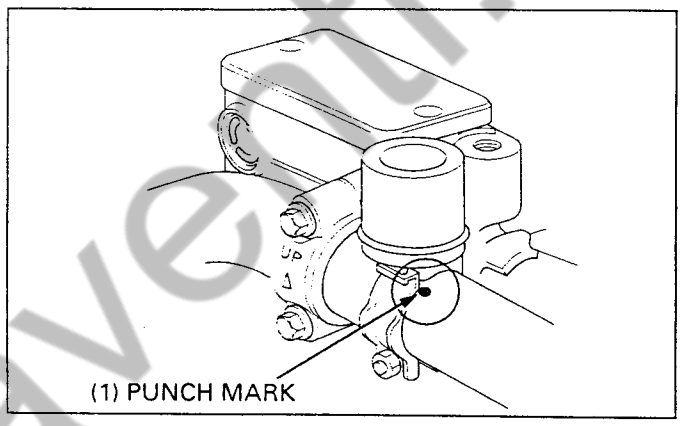
NOTE

- Tighten the upper bolt first, then the lower bolt.



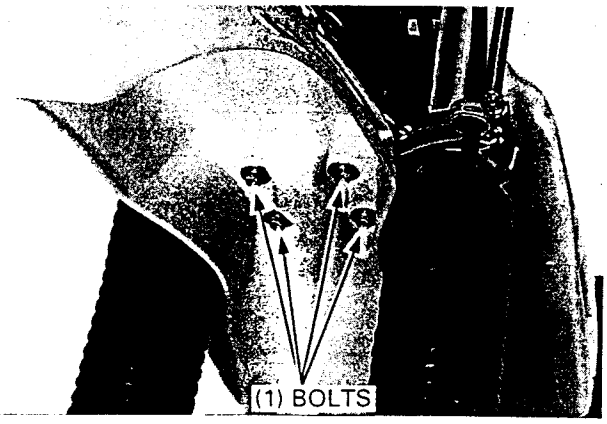
Align the split line of the engine stop switch with the punch mark on the handlebar.
Install and tighten the screw with the black cord.
Install the wire bands (page 1-21).

Adjust the decompressor cable free play (page 3-12).
Adjust the throttle cable free play (page 3-5).

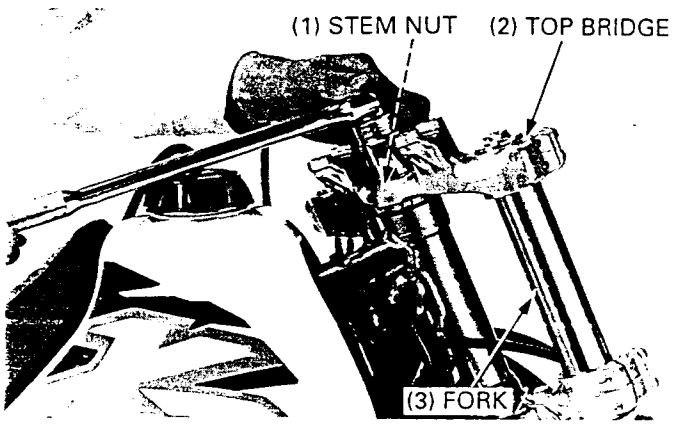


STEERING STEM REMOVAL

Remove the following:
— Front wheel (page 13-3)
— Front brake caliper (page 15-7)
— Headlight case (page 16-10)
— Speedometer (page 13-19)
— Handlebar (page 13-20)
— Bolts, washers
— Front fender

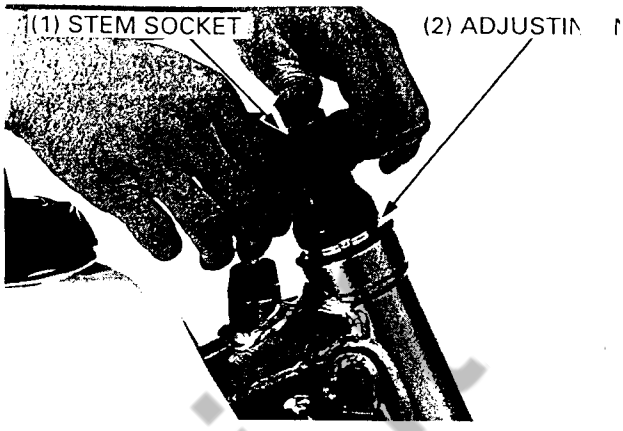


— Steering stem nut
— Washer
— Fork (page 13-7)
— Top bridge



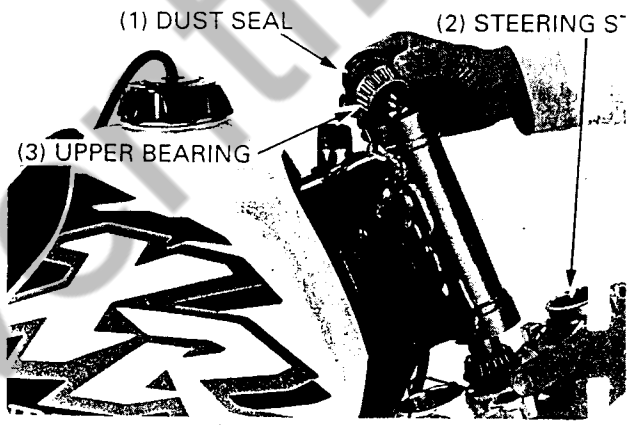
Remove the following:
— Steering stem adjusting nut

TOOL:
Steering stem socket **07916 – KA50100**



— Upper dust seal
— Upper bearing
— Steering stem

Check the upper and lower bearings for damage.
Check the bearing outer race in the head pipe for damage.



STEERING STEM BEARING REPLACEMENT

NOTE

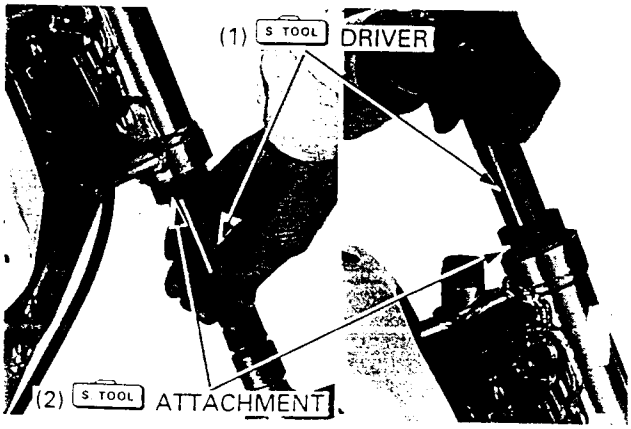
- Always replace the bearing and bearing races as a set.

Remove the upper and lower bearing outer races from the head pipe.

TOOL:
Oil seal remover **07948 – 4630100**

Install new bearing races.

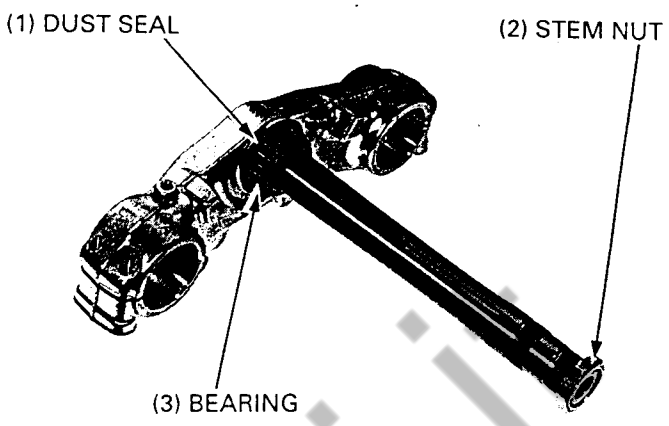
TOOL:
Driver **07749 – 0010000**
Attachment, 42 x 47 mm **07746 – 0010300**



Remove the lower tapered roller bearing and dust seal from the steering stem.

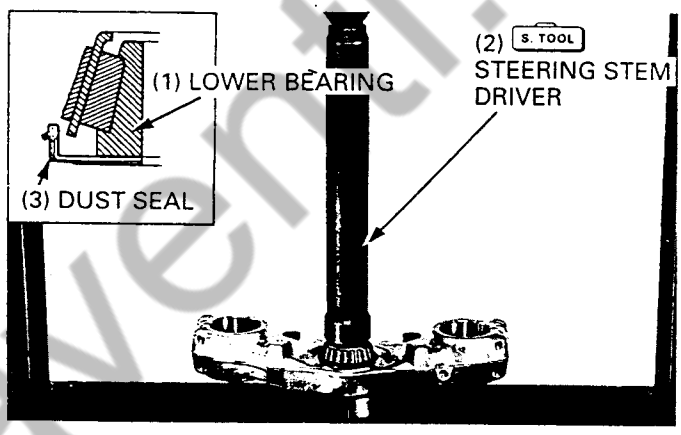
NOTE

- To avoid damaging the steering stem threads, temporarily install the stem nut.



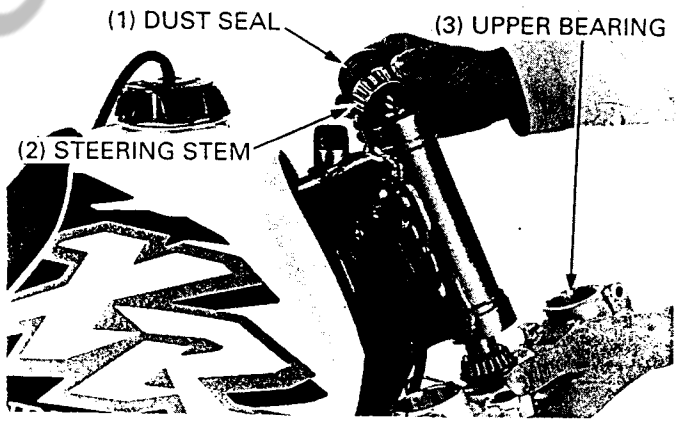
Install a new dust seal and lower bearing.

TOOL:
Steering stem driver **07946 – 4300101**



STEERING STEM INSTALLATION

Install the following:
— Steering stem
— Upper bearing
— Upper dust seal

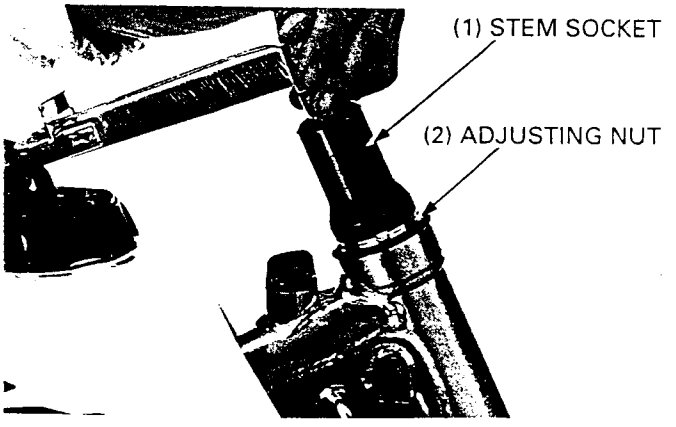


— Steering stem adjusting nut

TORQUE: 5 N·m (0.5 kgf·m, 3.6 lbf·ft)

TOOL:
Steering stem socket **07916 – KA50100**

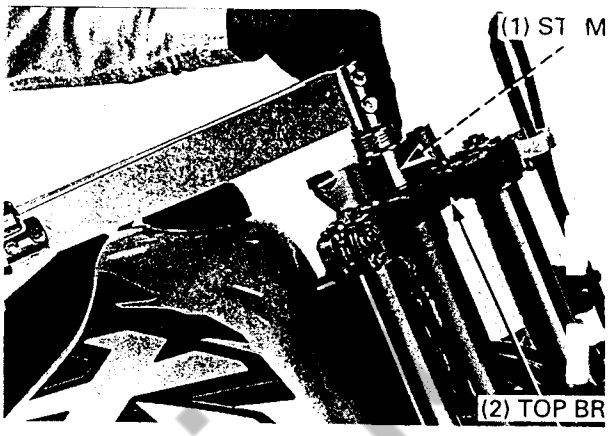
Turn the steering stem lock-to-lock 5 times to seat the bearings and tighten the adjusting nut again.



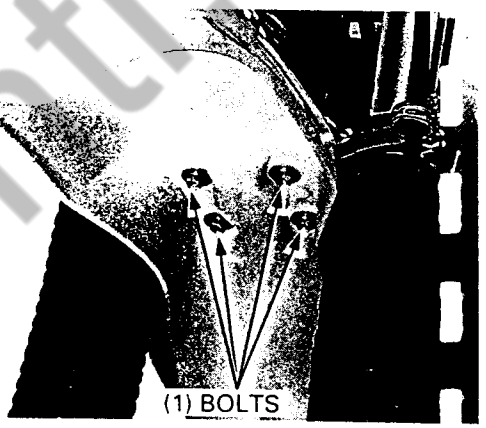
Install the top bridge to the stem and temporarily install the fork.
Install the stem nut and washer.
Tighten the nut to the specified torque.

TORQUE: 98 N·m (10.0 kgf·m, 72 lbf·ft)

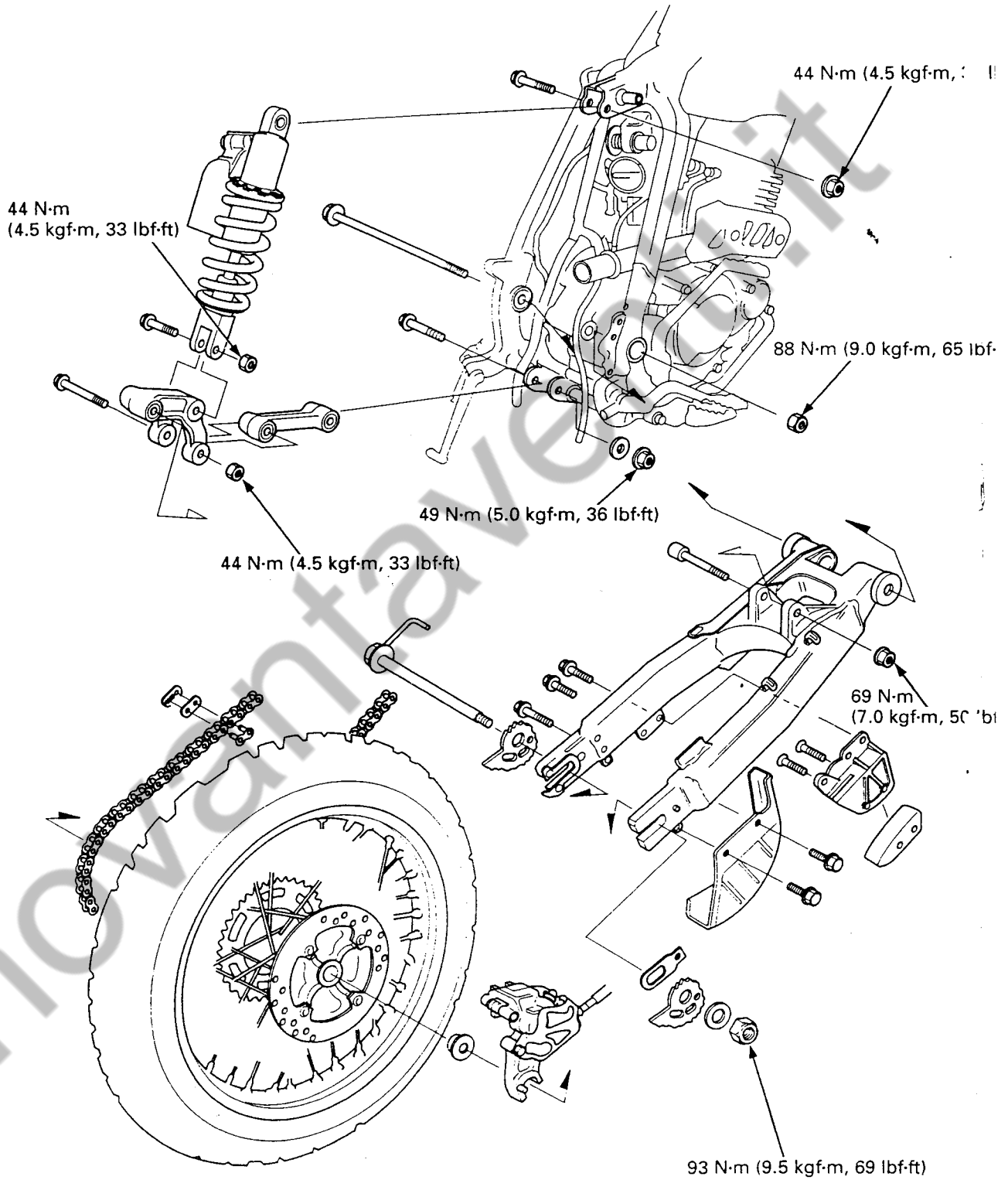
Install the fork (page 13-19).



Install the following:
— Front fender
— Front brake caliper (page 15-11)
— Handlebar (page 13-21)
— Speedometer (page 13-20)
— Headlight case (page 16-10)



MEMO



14. REAR WHEEL/SUSPENSION

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 serous 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 stet 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/cm², 15 psi)	———
	(U type)	125 kPa (1.25 kgf/cm², 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/cm², 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)

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

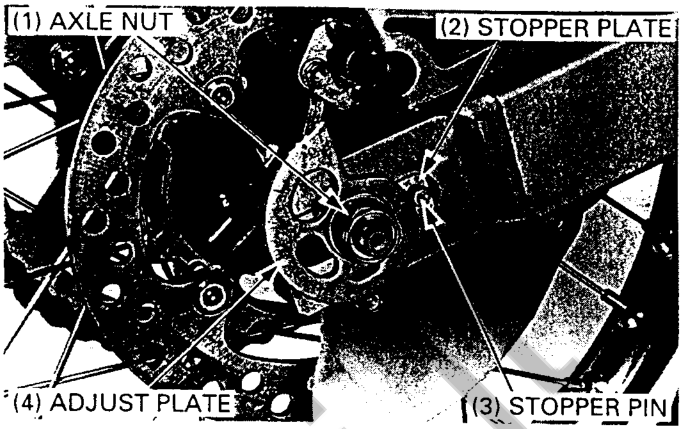
Steers to one side or does not track straight
- Bent rear axle
- Axle alignment/chain adjustment not equa sides

Rear wheel wobbling
- Bent rim
- Worn rear wheel bearings
- Faulty tire

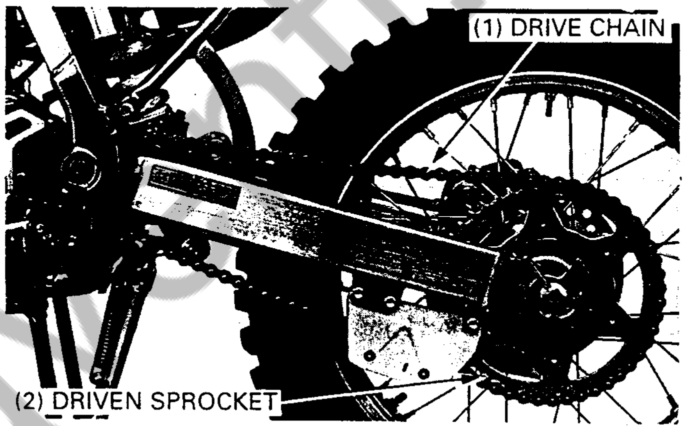
REAR WHEEL

REMOVAL

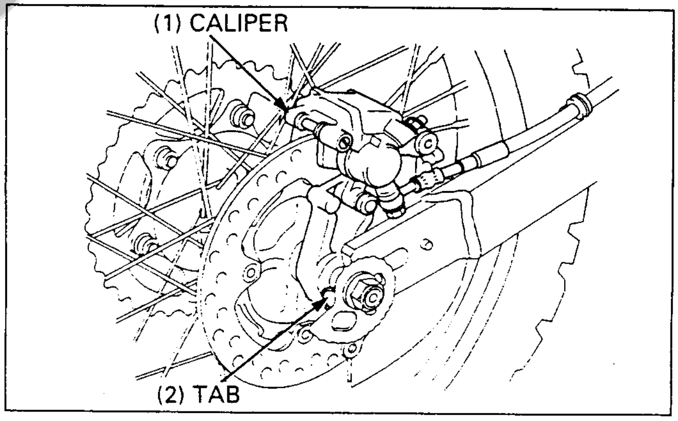
Loosen the rear axle and turn the adjusters so the rear wheel can be moved all the way forward.
Raise the rear wheel off the ground with a box or work stand under the engine.
Remove the stopper plate from the stopper pin.



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

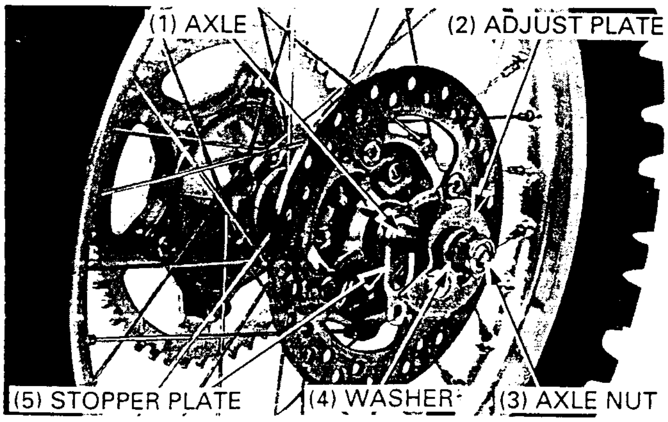
- *When removing the rear wheel, be careful not to damage the brake pads with the disc.*

NOTE

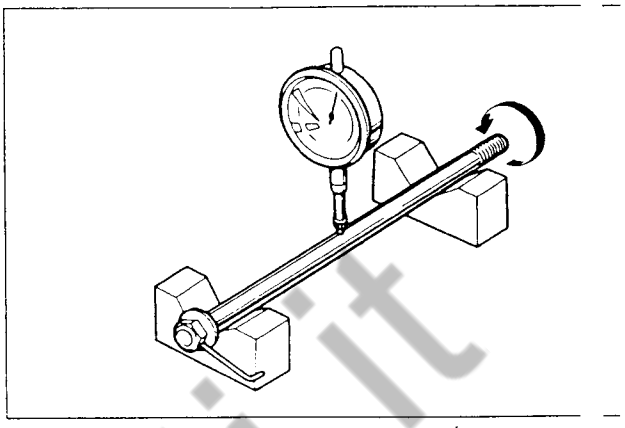
- Do not depress the brake pedal after the rear wheel is removed. The caliper piston will move out and make reassembly difficult.

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

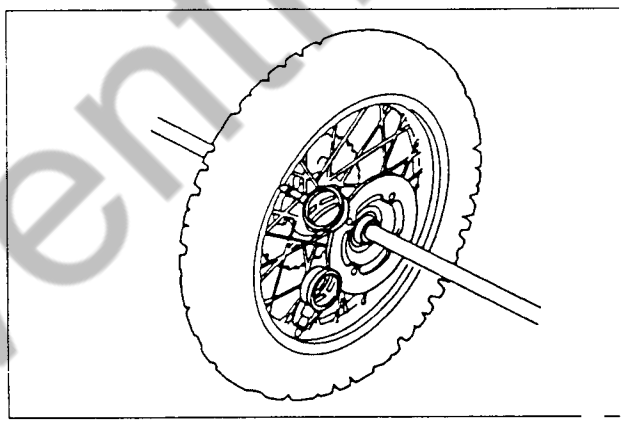


INSPECTION



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

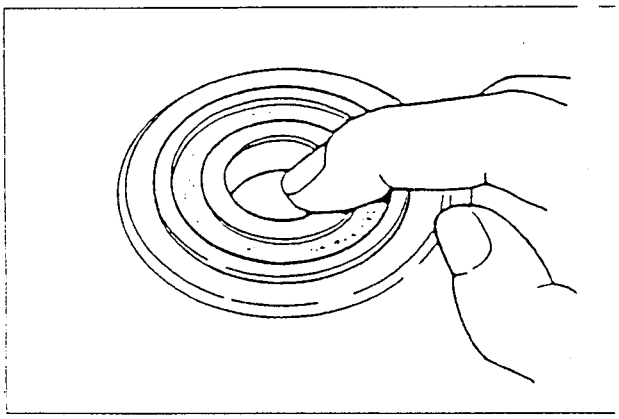
SERVICE LIMIT: 0.2 mm (0.01 in)



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.



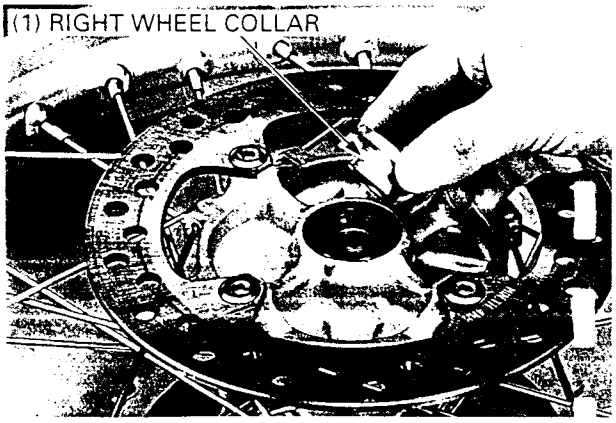
Wheel bearings
Turn the inner race of each bearing with your finger. The bearing should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the hub.

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

NOTE

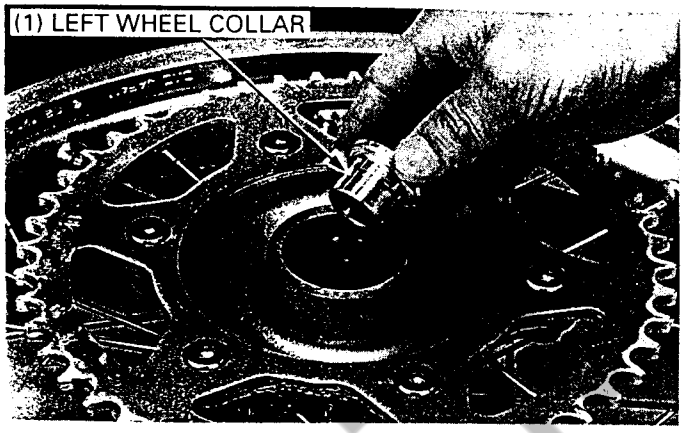
- Replace the wheel bearings in pairs.

DISASSEMBLY

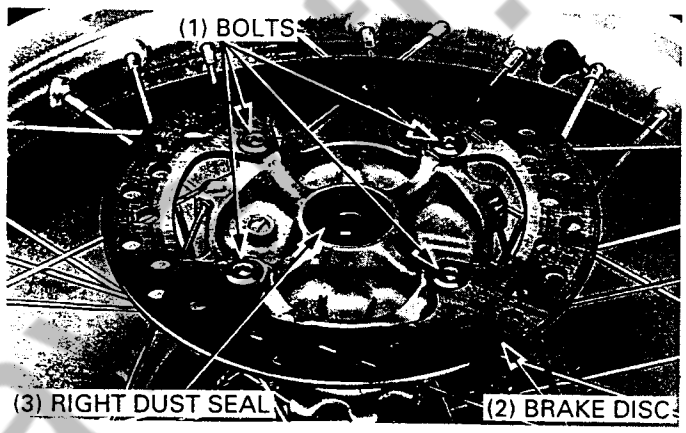


Remove the following:
— Right wheel collar

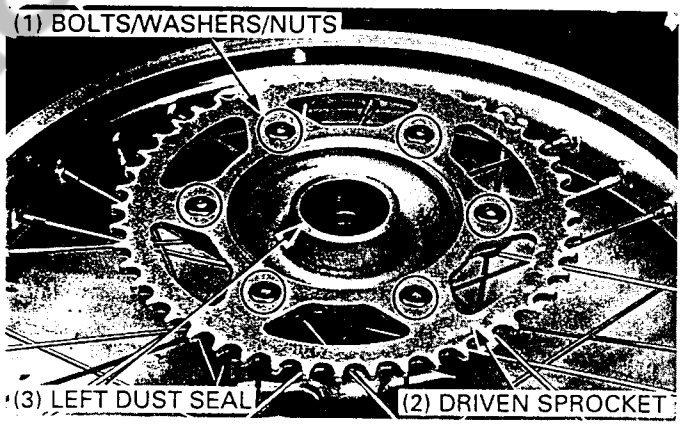
Remove the following:
— Left wheel collar



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



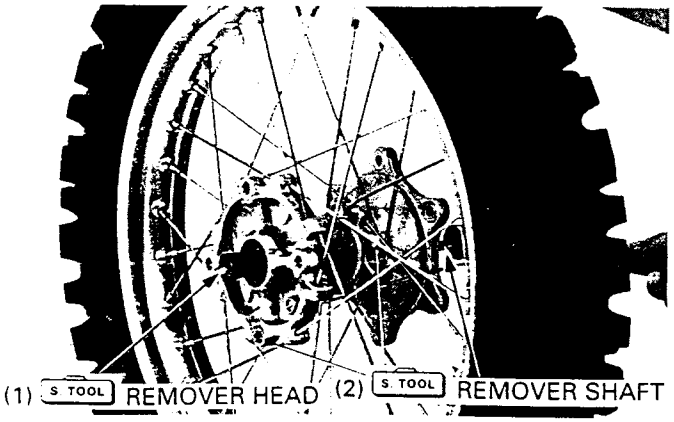
— Driven sprocket bolts/washers/nuts
— Driven sprocket
— Left dust seal



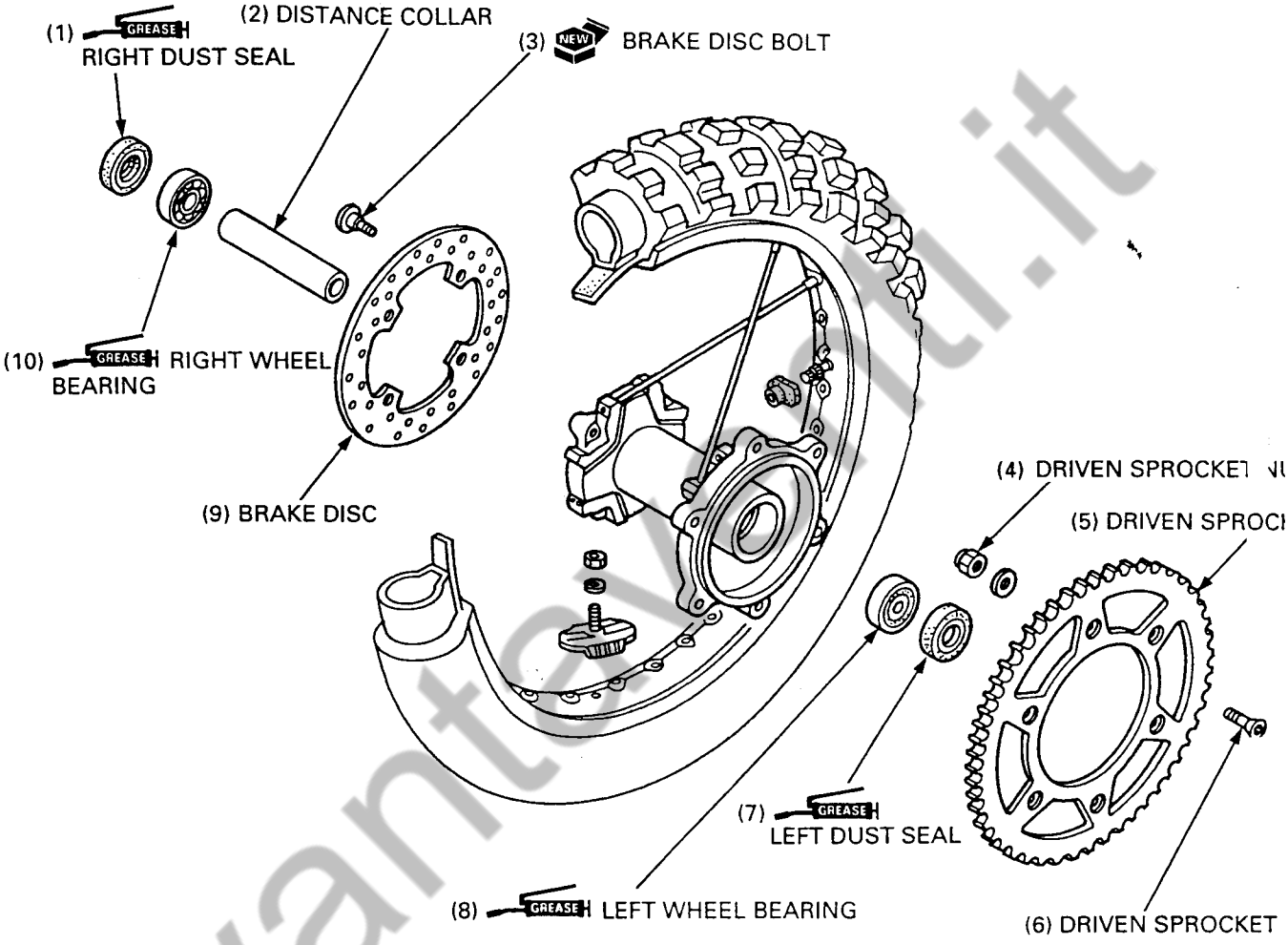
Remove the bearing and distance collar using the following tools.

TOOL:

Bearing remover head, 17 mm	**07746 – 0050500**
Bearing remover shaft	**07746 – 0050100**



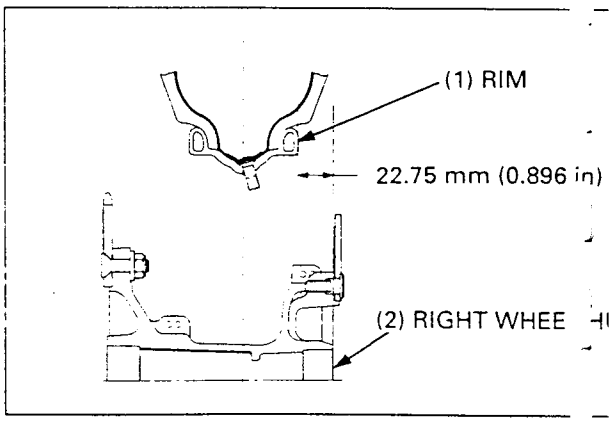
ASSEMBLY



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.

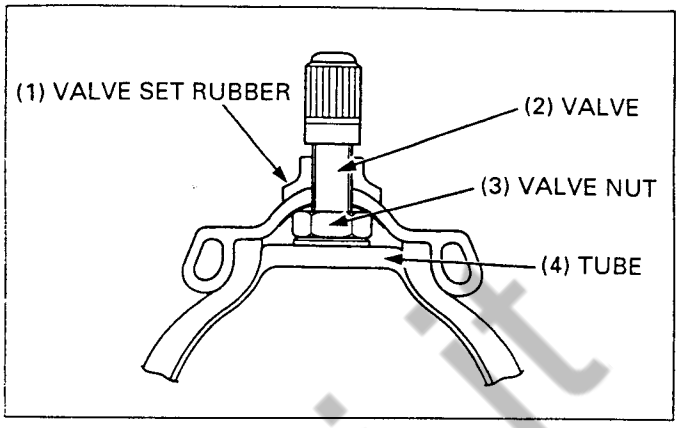
TOOL:
Nipple wrench **07701 – 0020300**

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

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.

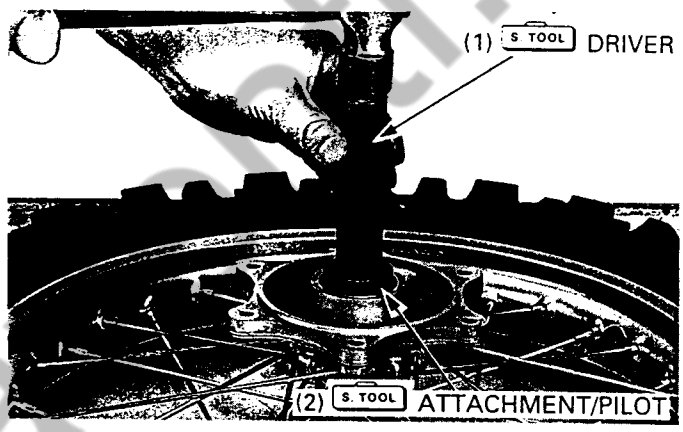
Drive in the left wheel bearing using the following tools.

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.

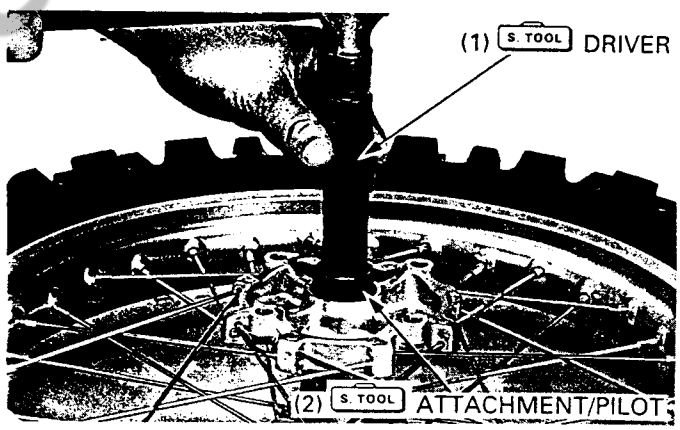


Install the distance collar.

Drive in the right wheel bearing using the following tools.

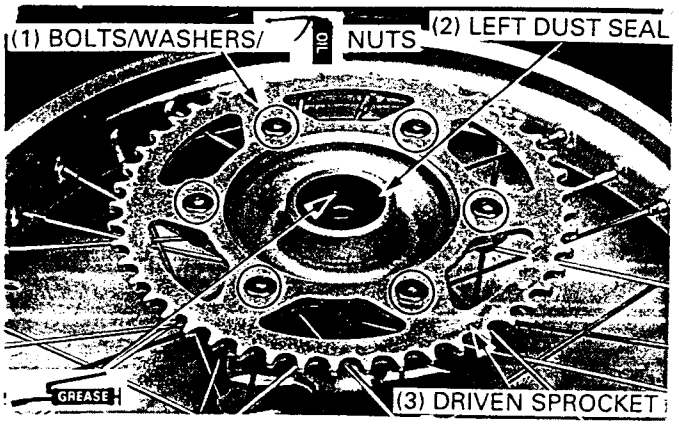
TOOL:

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



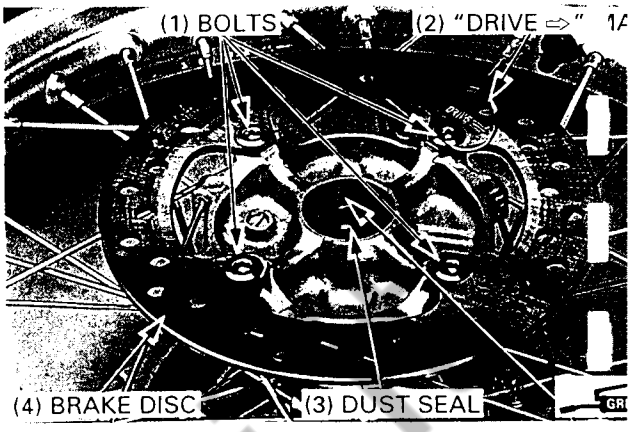
Apply grease to the left dust seal lip.
Install the left dust seal.
Install the driven sprocket and six bolts.
Apply engine oil to the threads and seating surfaces of the driven sprocket nuts.
Install the washers and nuts.
Tighten the nuts to the specified torque.

TORQUE: 32 N·m (3.3 kgf·m, 24 lbf·ft)

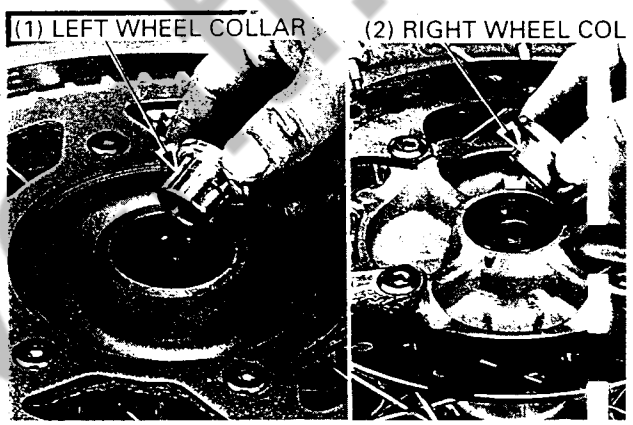


Apply grease to the right dust seal lip.
Install the right dust seal.
Install the rear brake disc with the "DRIVE ⇨" mark facing out.
Install and tighten the disc bolts to the specified torque.

TORQUE: 42 N·m (4.3 kgf·m, 31 lbf·ft)



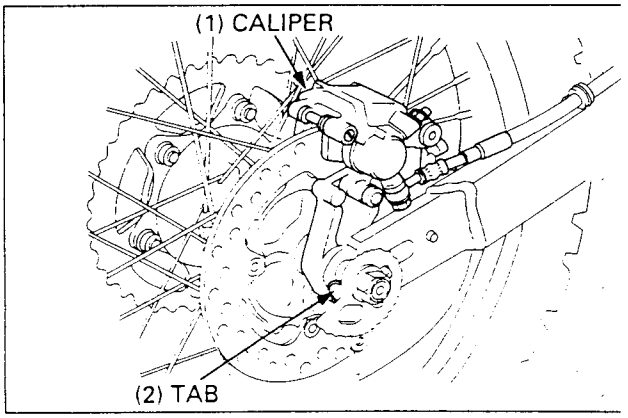
Install the right wheel collar.
Install the left wheel collar.



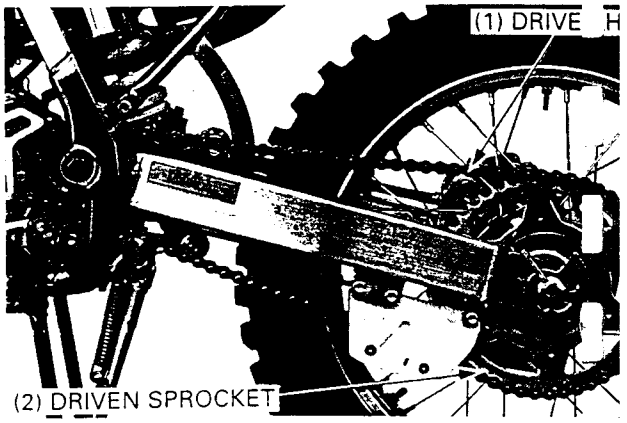
INSTALLATION

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.

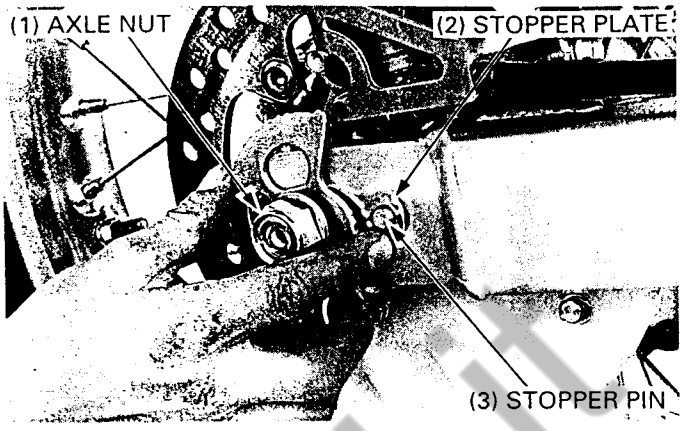


Install the drive chain to the driven sprocket.



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)

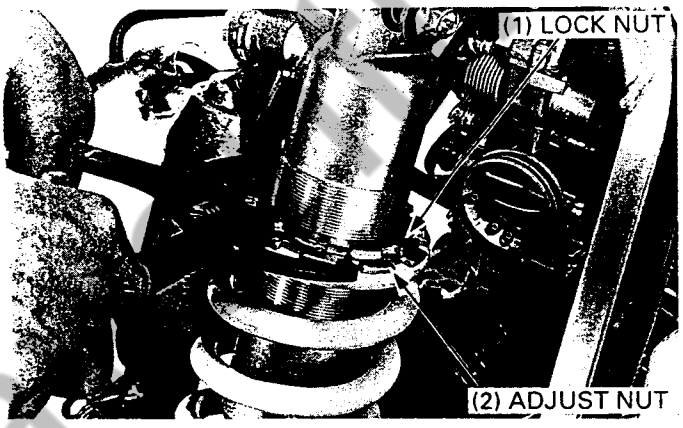


SHOCK ABSORBER

REMOVAL

⚠ WARNING

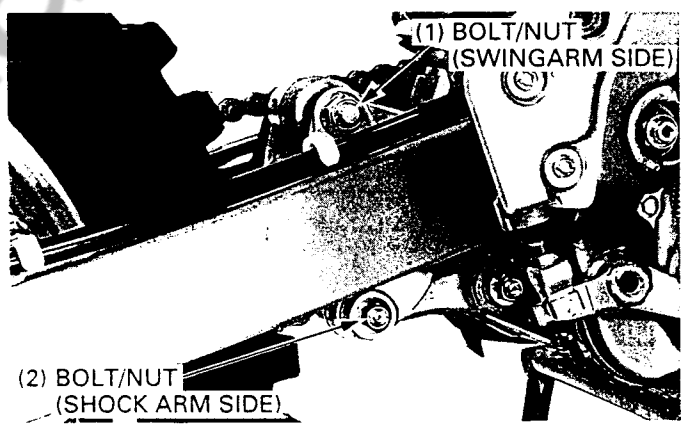
- ***Use only nitrogen gas to pressurize the shock absorber. The use of an unstable gas can cause a fire or explosion resulting in serous injury.***
- ***The shock absorber contains nitrogen under high pressure. Do not allow fire or heat near the shock absorber.***
- ***Before disposal of the shock absorber, 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.

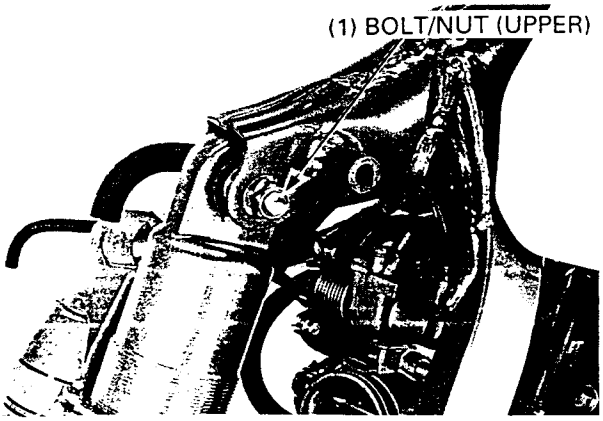
NOTE

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



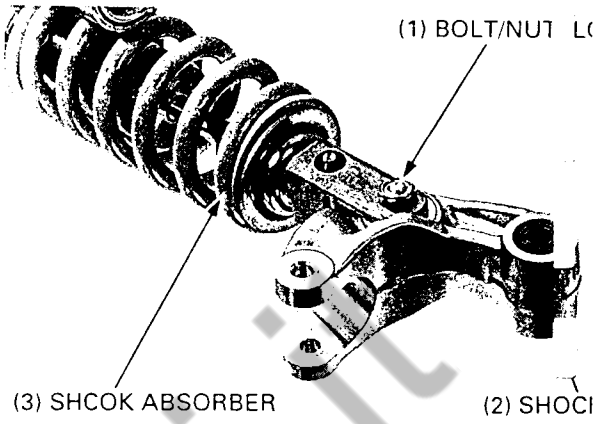
Remove the following:
— Shock arm bolt/nut (swingarm side)
— Shock link bolt/nut (shock arm side)

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



— Shock absorber bolt/nut (lower)

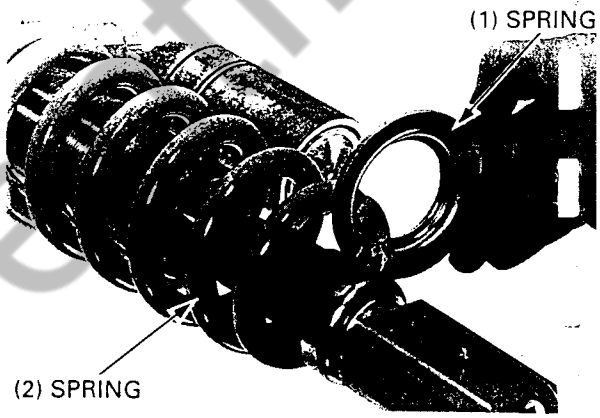
Separate the shock arm from the shock absorber.



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

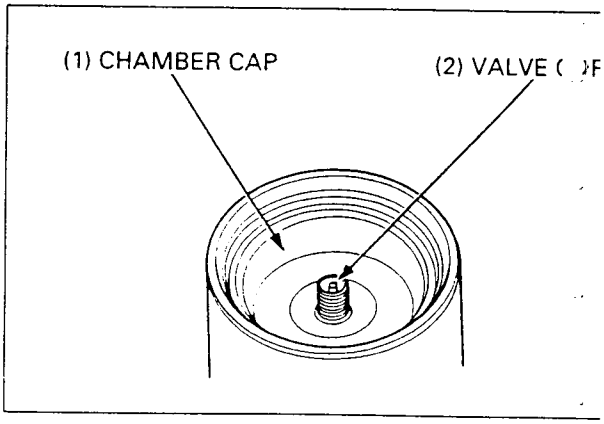
NOTE

- 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.

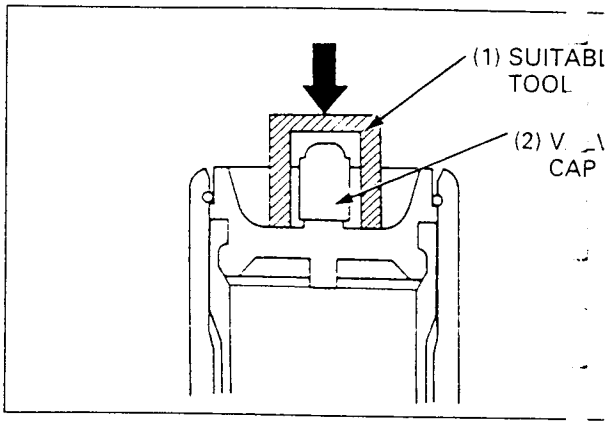
⚠ WARNING

- *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

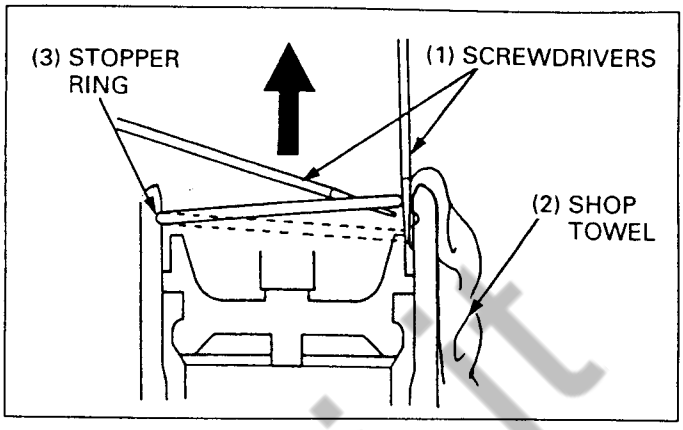
- *To avoid damaging the threads of the gas valve, install the cap before depressing the chamber cap.*

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 resevoir, 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.

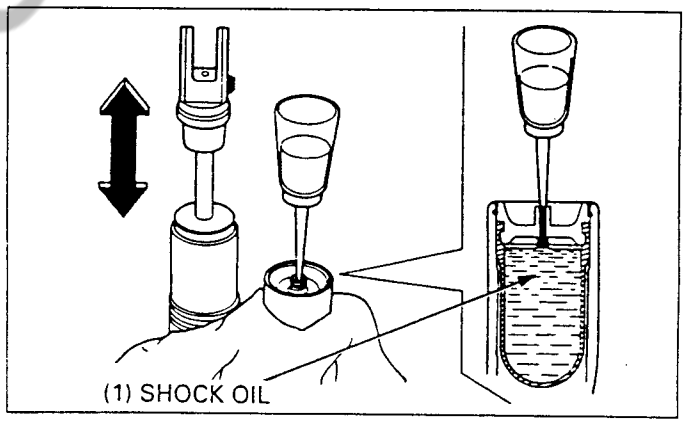
Now use the other screwdriver to pull the stop ring completely out.

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)

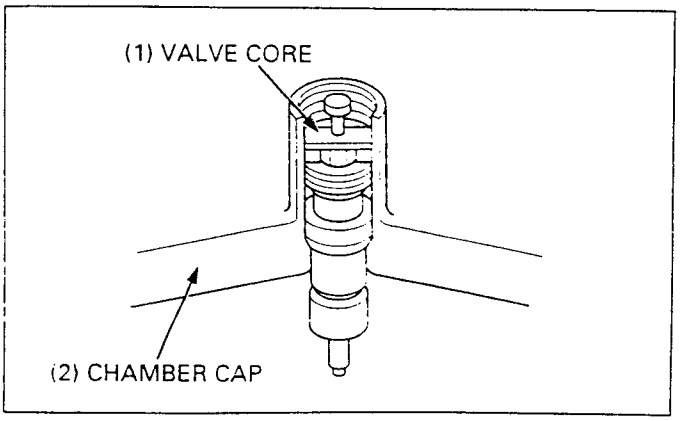


Slowly pump the damper rod until no air bubbles appear in the valve core hole, then pull the damper rod all the way.
Install the valve core securely.
Remove the chamber cap and bladder following the procedure below:
Wrap a shop towel around the chamber cap.

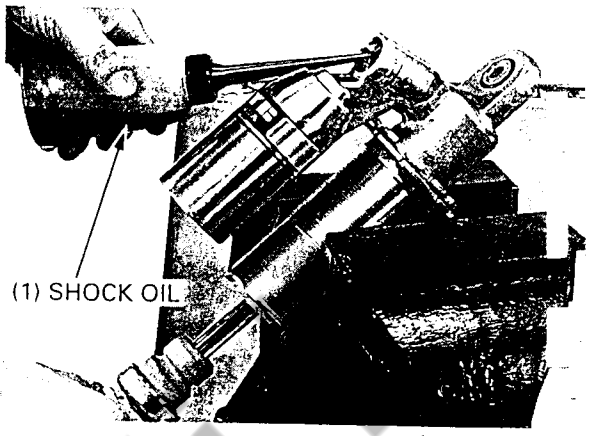
1. Compress the damper rod slowly, to force the chamber cap out.

⚠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.***



2. 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 wil result.*

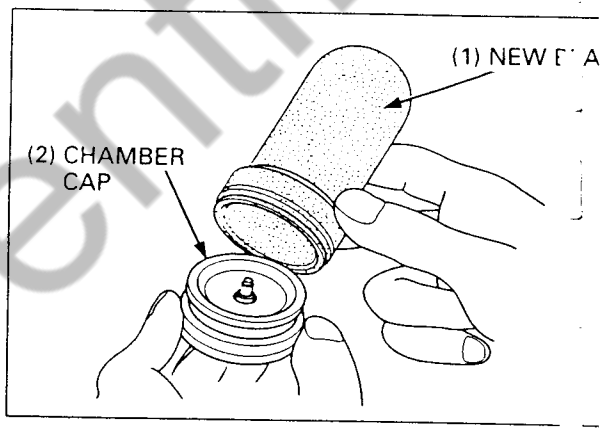
Remove the damping adjuster.

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

NOTE

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

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



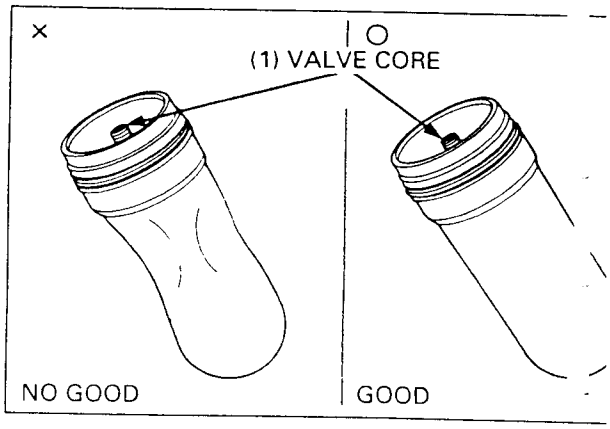
Remove the bladder from the chamber cap.

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.

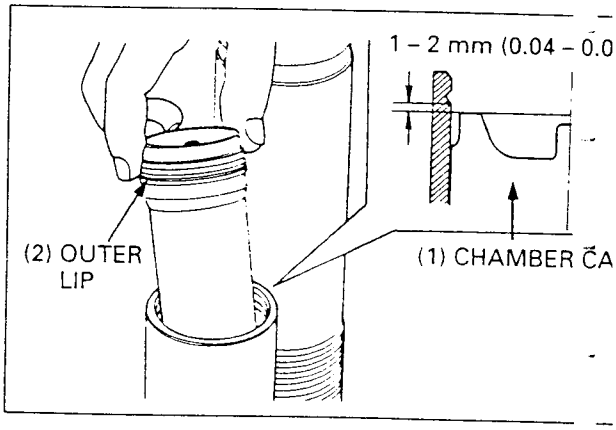


Clean the inside of the reservoir and fill it with the recommended shock oil.

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

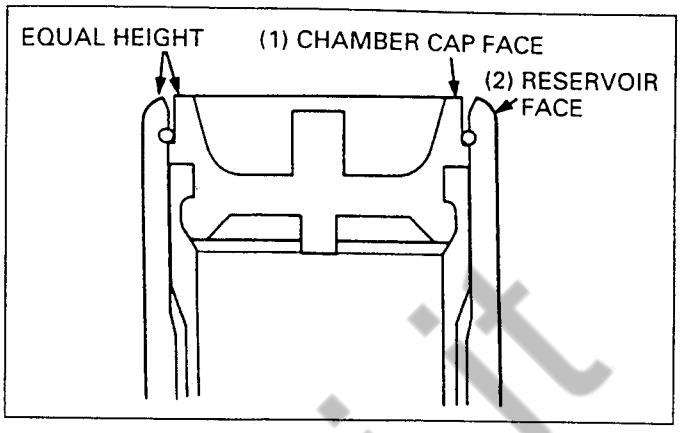
- ***Be sure the stop ring is seated in the ring groove all the way around or the chamber cap can come apart when riding the motorcycle.***

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).

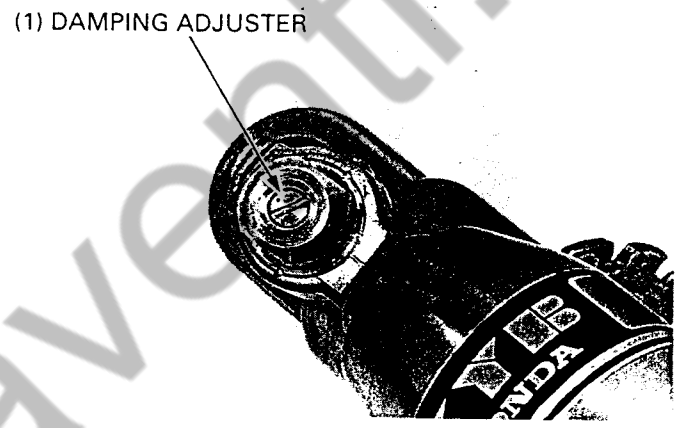


DAMPER DISASSEMBLY

Depress the valve core to release nitrogen from the reservoir.

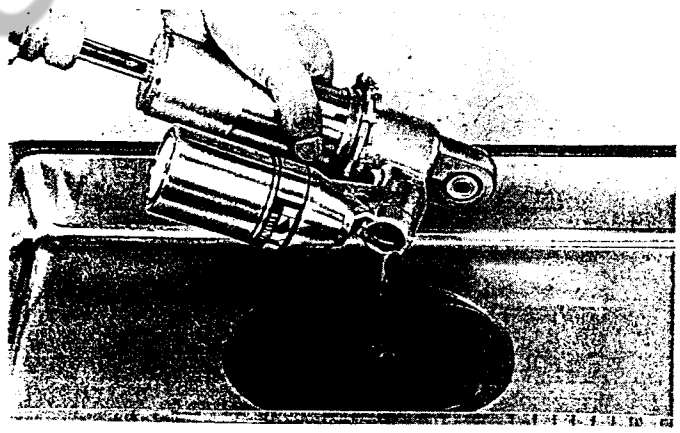
⚠ WARNING

- ***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.

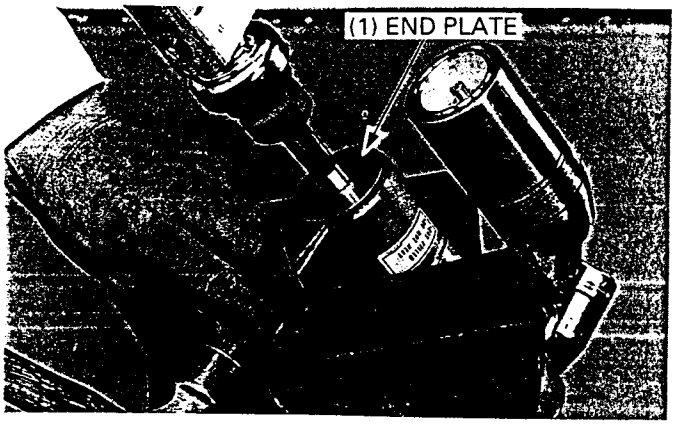
Drain most of the shock oil from the damper and reservoir by pumping the damper rod in and out several times.



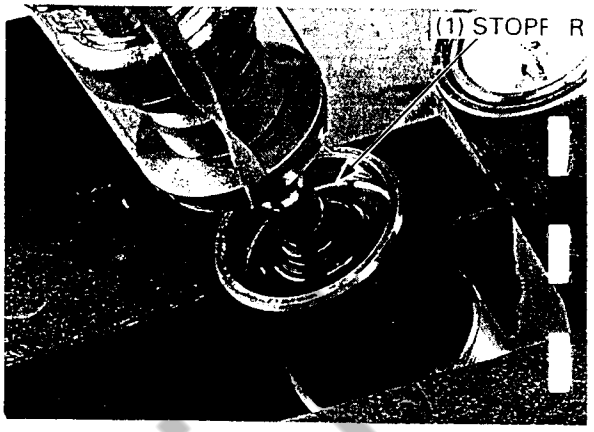
Clamp the shock absorber in a vise at the damper case, protected on both sides by pieces of wood.

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.



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.



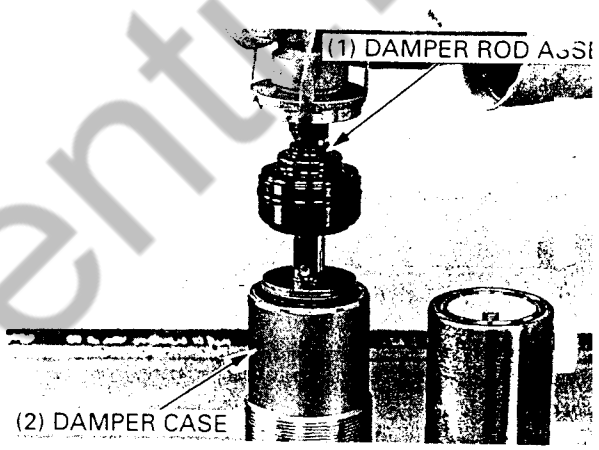
NOTE

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

CAUTION

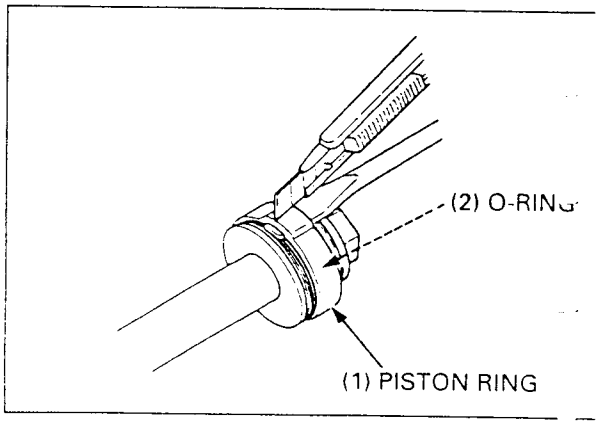
- *Burrs will damage the damper rod piston ring.*

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



PISTON RING REPLACEMENT

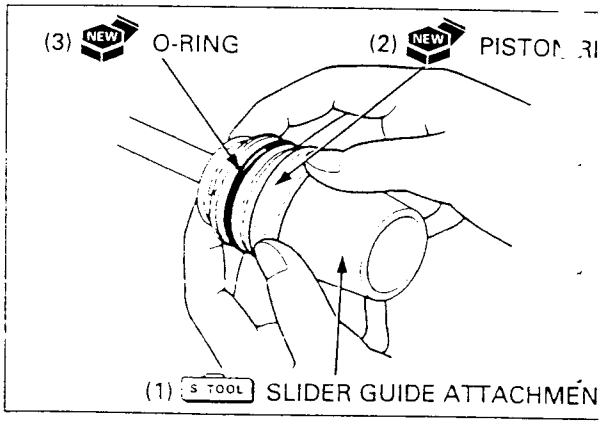
Inspect the piston ring.
If the piston ring is damaged, cut the piston ring as shown.
Replace it and the O-ring with new parts as shown below.



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.

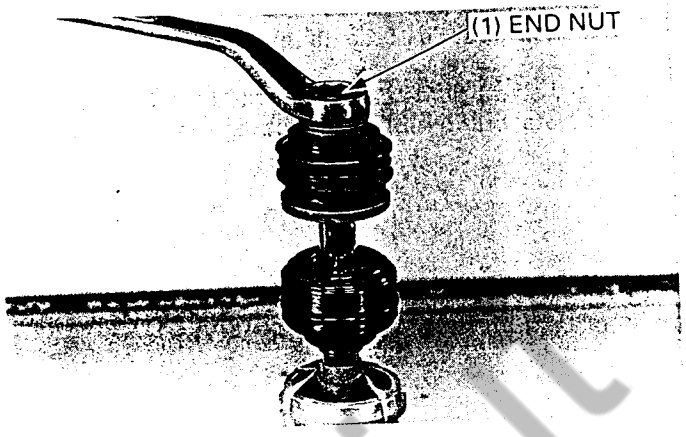


DAMPER ROD DISASSEMBLY

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.



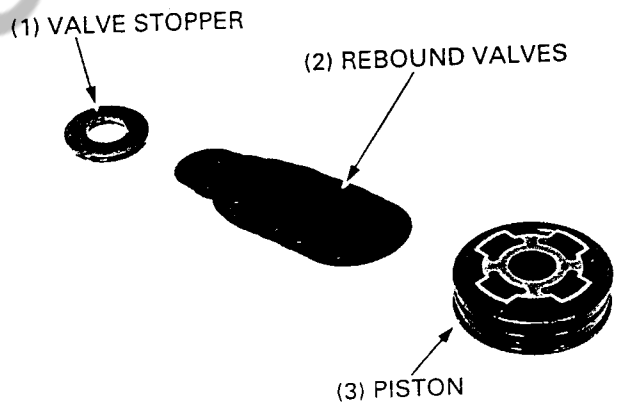
NOTE

- 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.

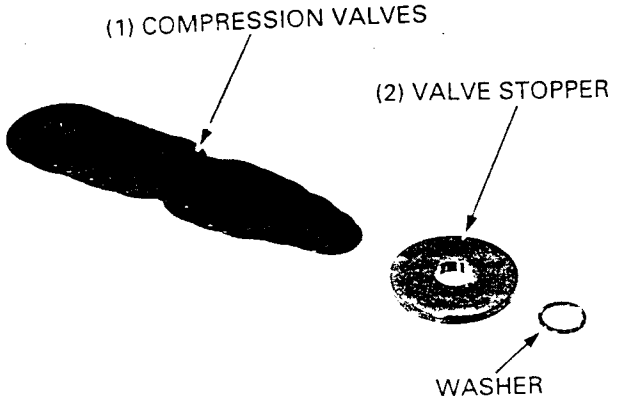
Remove the valve stopper, rebound valves and piston from the damper rod.

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.

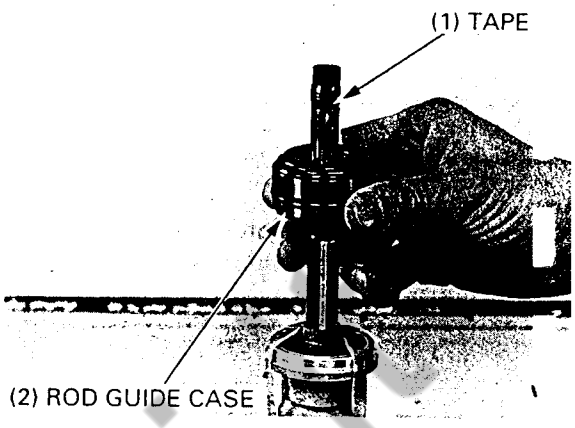


Remove the compression valves, valve stoper and washer.



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.
Ramove the tape.

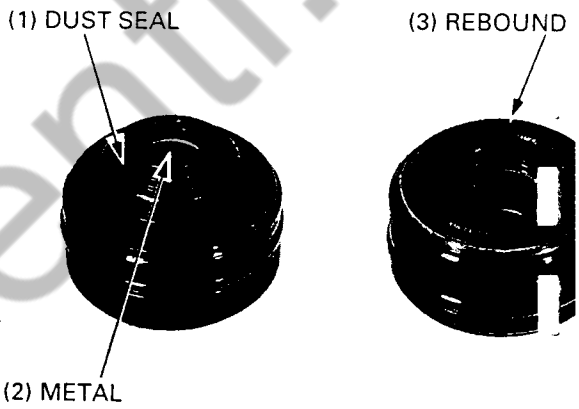


ROD GUIDE CASE INSPECTION

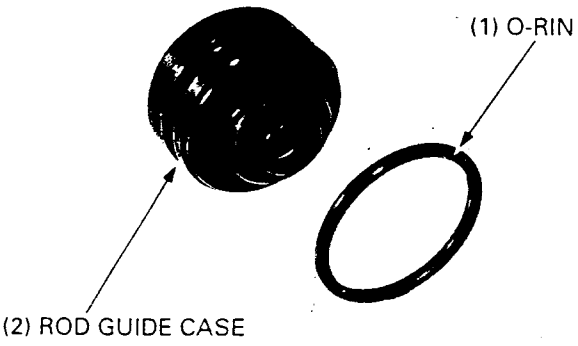
Inspect the rebound rubber for wear or damage and replace the rod guide case with a new one if necessary.

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.

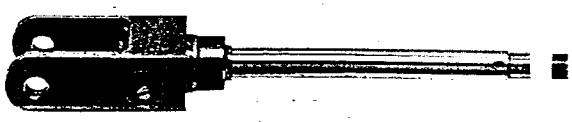


Remove the O-ring from the rod guide case and replace it with a new one.



DAMPER ROD INSPECTION

Inspect the damper rod for damage or distortion.



DAMPER ASSEMBLY

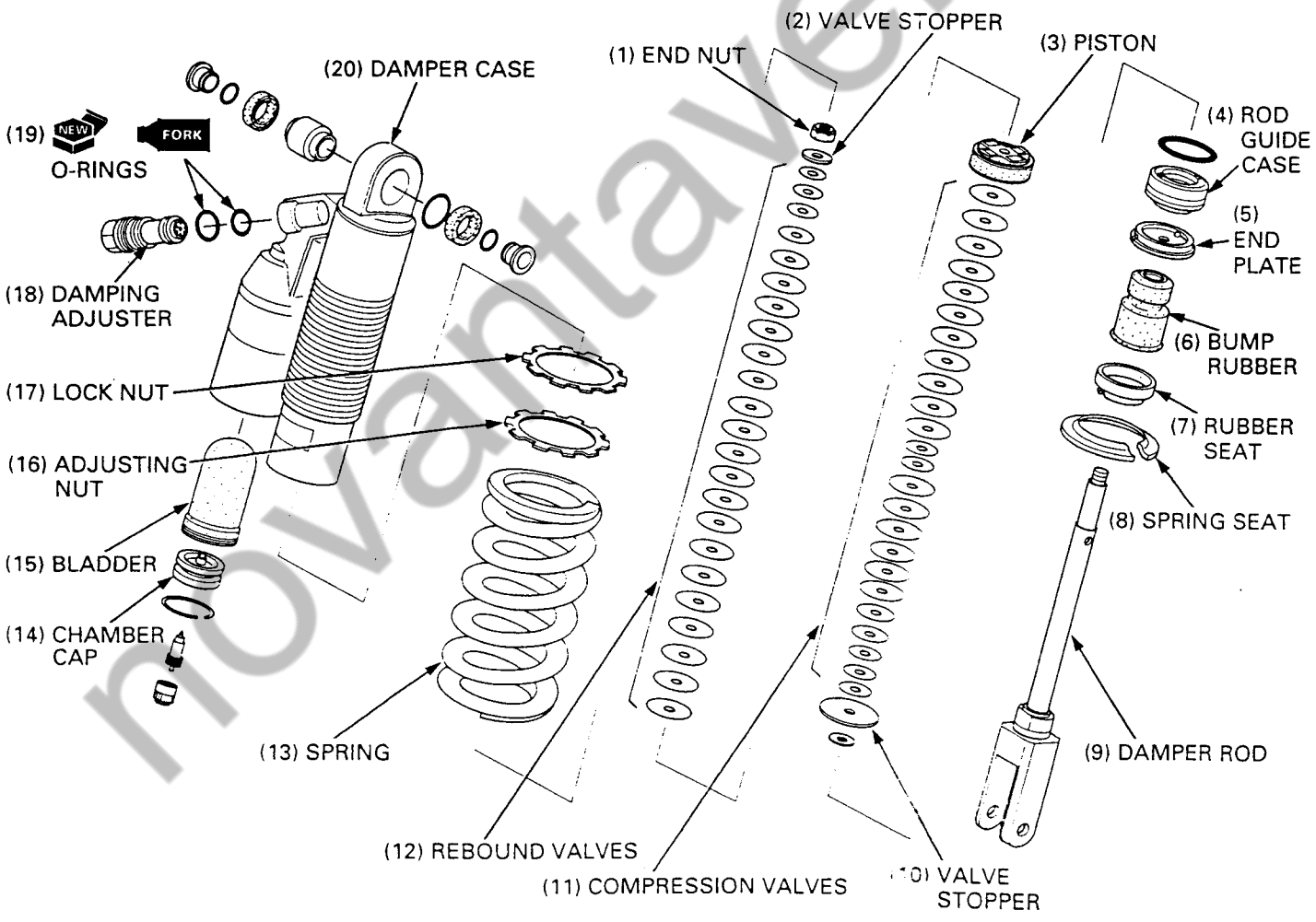
Before assembly, wash all parts with solvent and blow them dry with compressed air.
Be sure that there is no dust or lint on any of the parts.

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.



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

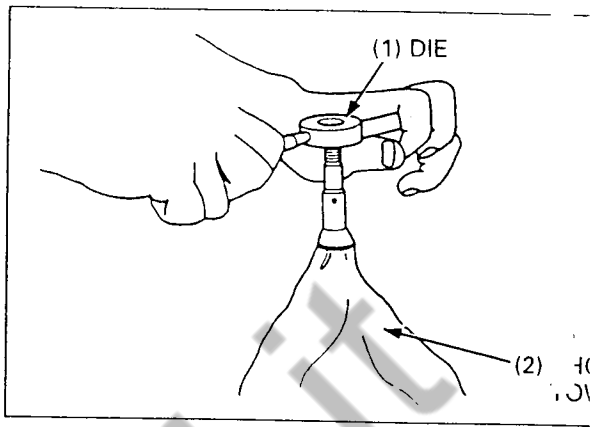
Remove the burrs from the damper rod end with a file and correct the threads with a die.

DIE: 12 x 1.5 mm

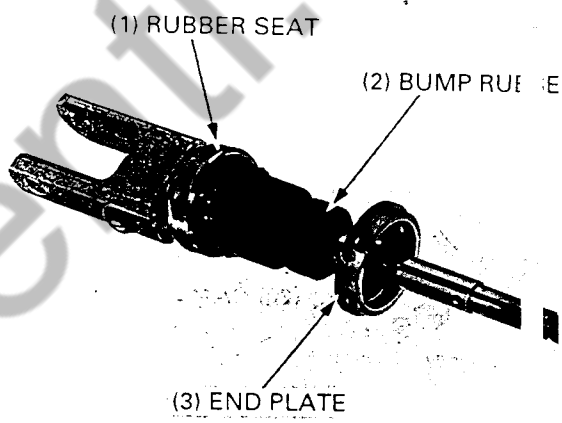
Clean the damper rod with solvent after correcting the threads.

NOTE

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



Install the rubber seat, bump rubber and end plate.



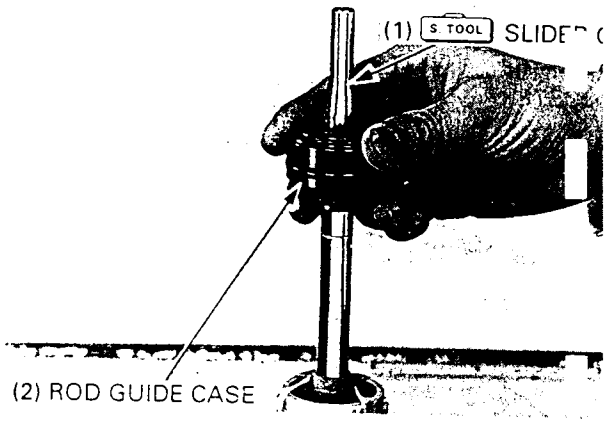
Install the special tool onto the damper rod.

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.

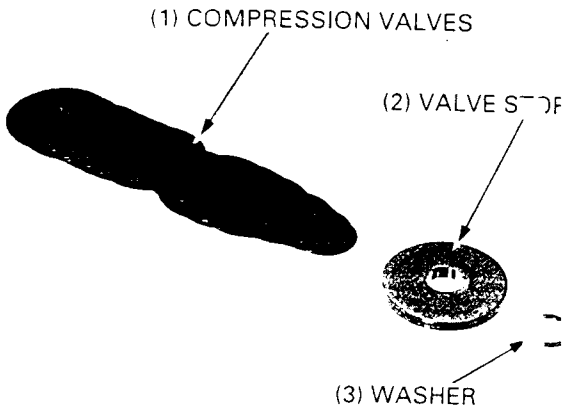


Remove the special tool.

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

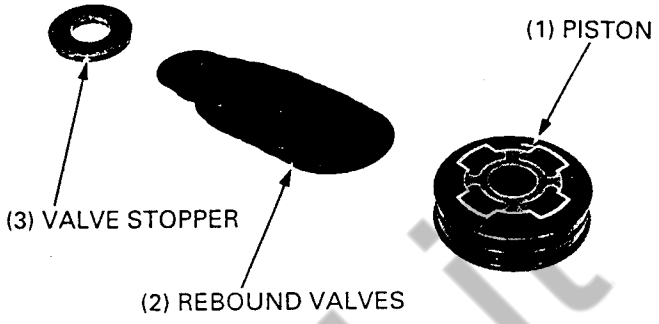
NOTE

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



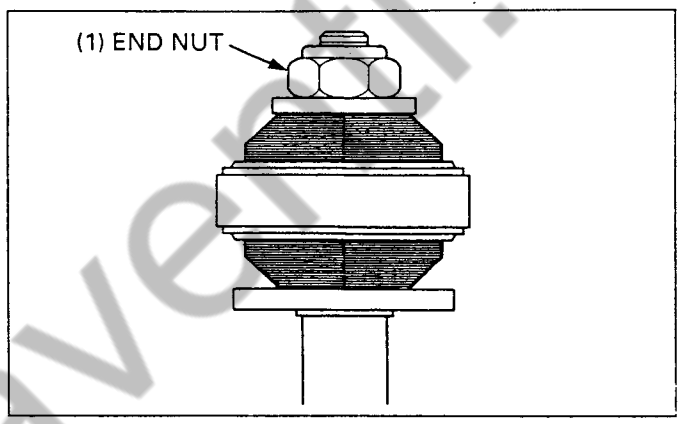
Install the piston onto the damper rod.

Install the rebound valves with their polished surfaces facing down.
Install the valve stopper.



NOTE

- Note the installation direction of the piston and valves.
- Be careful not to bind the valves when installing the piston onto the damper rod. Also, check that they are concentric with the damper rod.

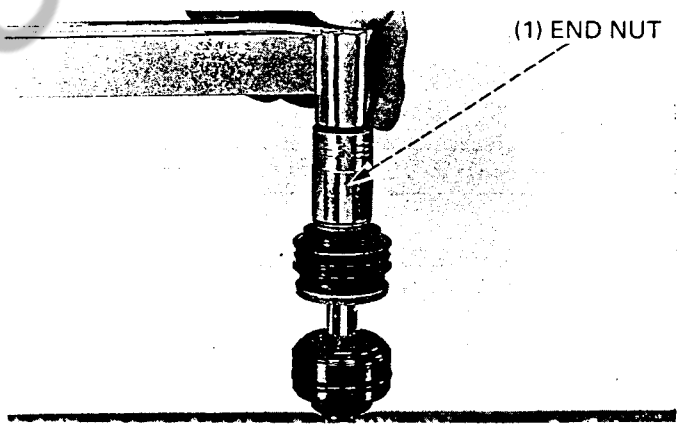


Install and tighten a new end nut to the specified torque.

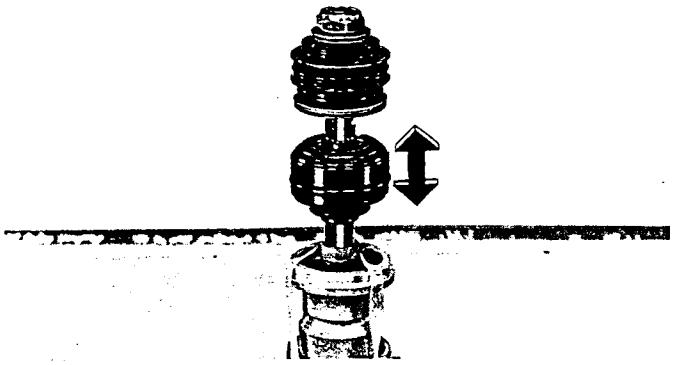
TORQUE: 37 N·m (3.8 kgf·m, 27 lbf·ft)

NOTE

- To prevent damage to the lower mount, use a shop towel or vise with soft jaws.



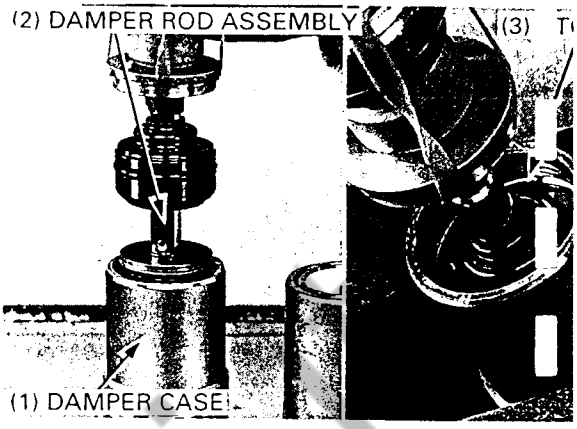
Coat the damper rod with fork fluid (SS8). Check the rod guide case by sliding it up and down fully to be sure there is no restriction.



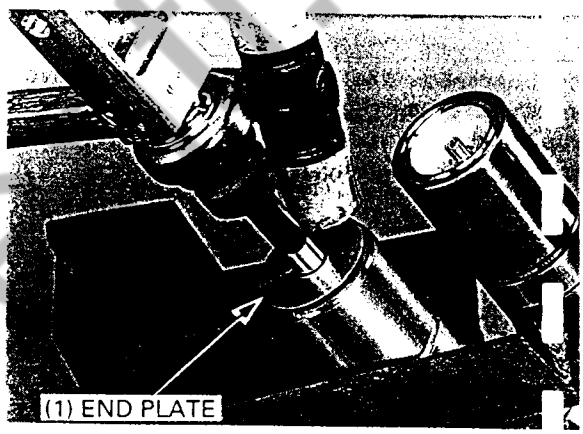
Coat the damper case inner surface, piston and O-ring with fork fluid (SS8), and insert the damper rod assembly carefully.
Install the stop ring into the groove in the damper case.

NOTE

- After assembling, check that the stop ring is seated in the groove of the damper case completely. You should not be able to pull it out of the damper case.



Drive the end plate squarely and evenly into the damper case, with a plastic hammer.



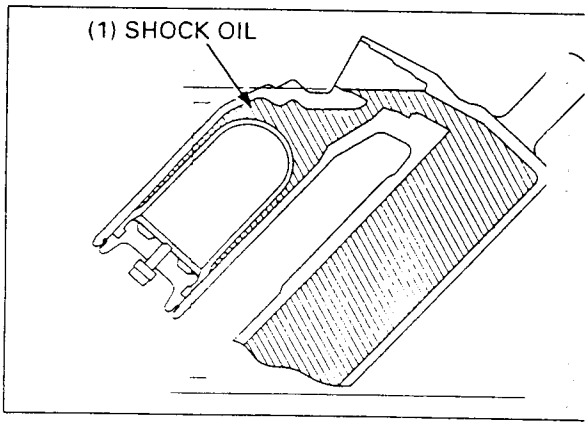
Hold the shock absorber gently in a vise by the damper case protected on both side by pieces of wood.

CAUTION

- *Do not overtighten the vise and distort the damper case.*

NOTE

- Hold the shock absorber at the angle shown.



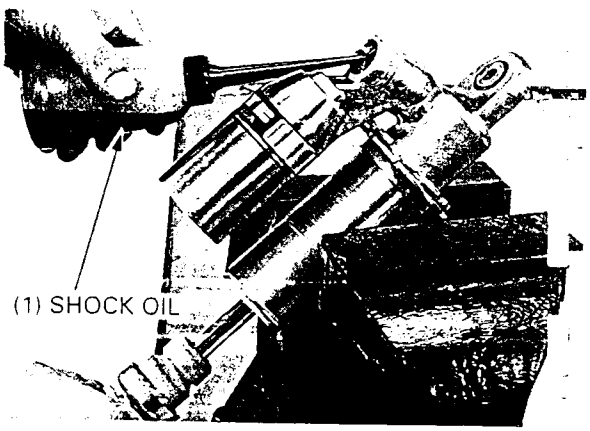
Fill the damper case and reservoir with the recommended oil through the damping adjuster hole.

RECOMMENDED SHOCK OIL: Fork fluid (SS8)

Slowly pump the damper rod until there are no bubbles in the oil that overflows from the damper case.

NOTE

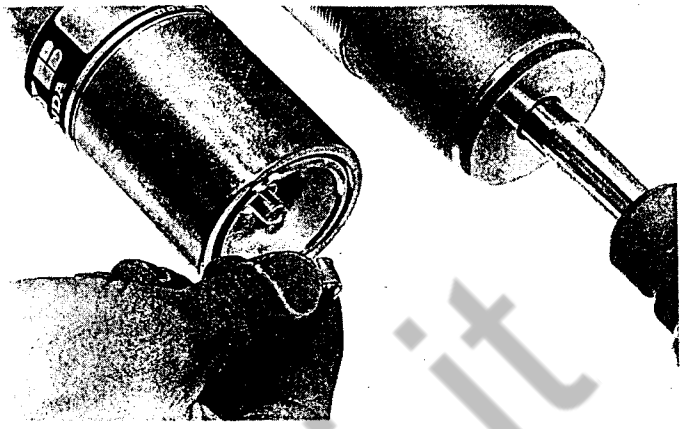
- Do not allow oil to flow out of the reservoir.



Temporarily charge the reservoir with 7.1 psi (49 kPa, 0.5 kg/cm²) of air slowly to inflate the bladder inside.

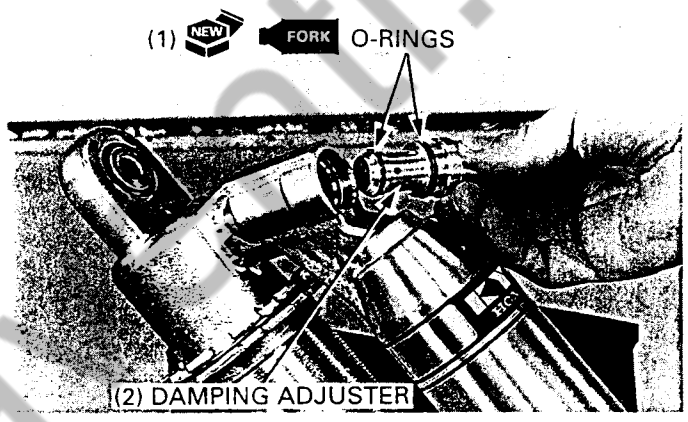
NOTE

- Check for any oil that may leak out of the valve while pressurizing. Replenish oil as necessary. Be sure that the reservoir pressure is correct with an accurate pressure gauge.

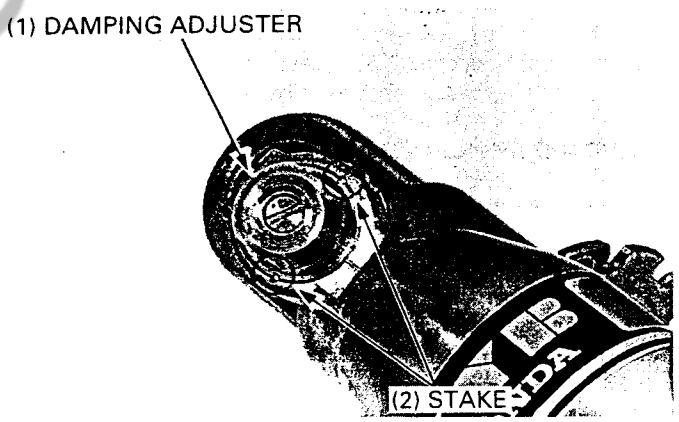


Fill the damper with the recommended shock oil up to the damping adjuster hole neck.
Apply oil to the new O-rings and install them on the damping adjuster.
Dip the damping adjuster in clean shock oil.
Slowly install the damping adjuster, and tighten it to the specified torque.

TORQUE: 20 N·m (2.0 kgf·m, 14 lbf·ft)



Stake the damping adjuster as shown.

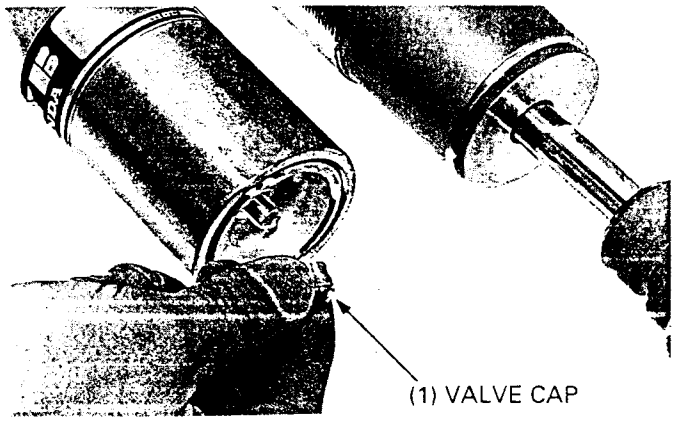


Wipe off all oil from the damper rod; oil left on the damper rod can lead to premature failure of the oil seal.
Check for oil leaks.
Release the 49 kPa (0.5 kg/cm², 7.1 psi) of air that was in the reservoir at precompression.
Fill the reservoir with 981 kPa (10.0 kgf/cm², 142 psi) of nitrogen gas.

⚠WARNING

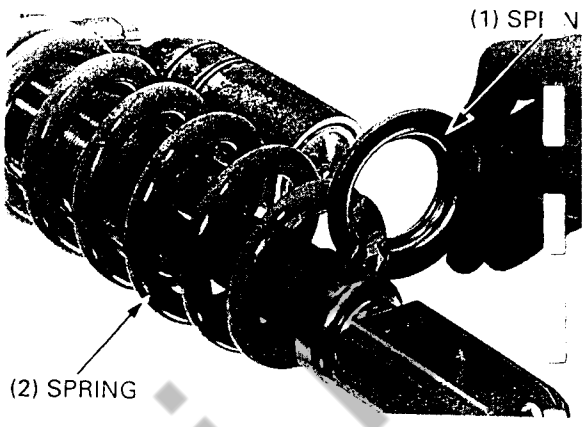
- *The shock absorber is fitted with a gas-filled reservoir.*
- *Use only nitrogen gas to pressurize the shock absorber.*
- *The use of an unstable gas can cause a fire or explosion resulting in serious injury.*

Install the valve cap.

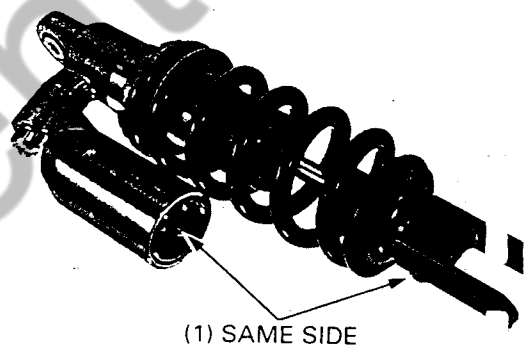


Install the shock spring with its narrow wound end facing down.
Install the spring seat.

Temporarily tighten the adjusting nut and lock nut.



Turn the shock absorber lower mount so that the rebound adjuster screw is on the same side of the shock as the reservoir as shown.

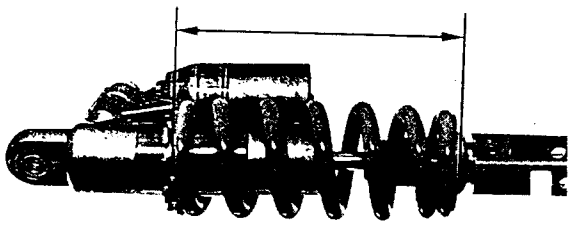


Turn the spring adjusting nut until the spring length measurement recorded at disassembly is reached or until the spring length is as specified below.

STANDARD SPRING INSTALLED LENGTH: 181.5 mm (7.15 in)

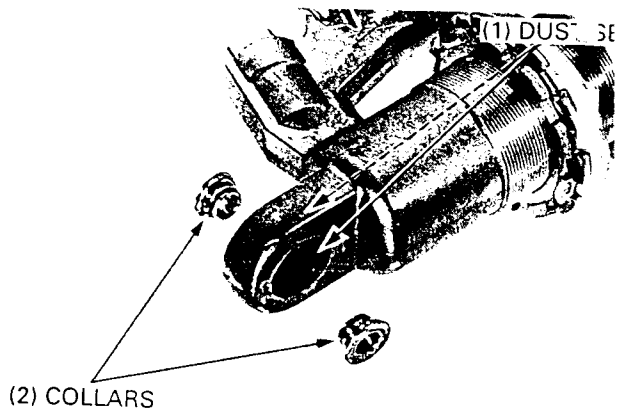
Hold the adjusting nut and tighten the lock nut.

Use this standard spring length just as a base line. See the owner's manual for detailed instructions on adjusting preload and damping settings for rider weight and setting damping for riding conditions and rider skill.

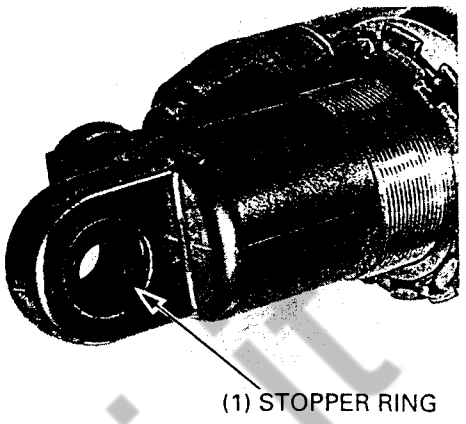


SPHERICAL BEARING REPLACEMENT

Remove the collars and dust seals.

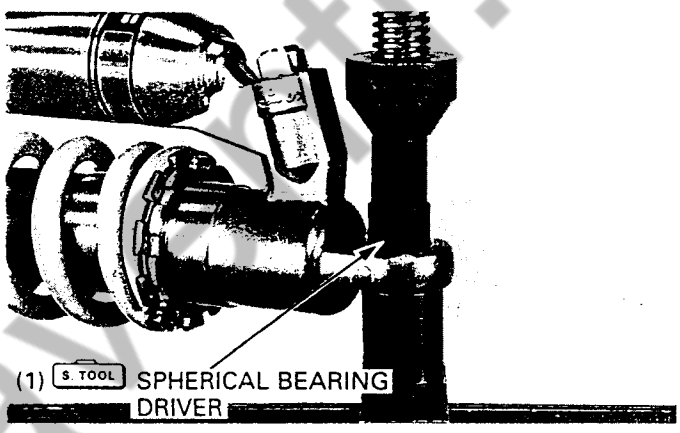


Remove the stop ring.



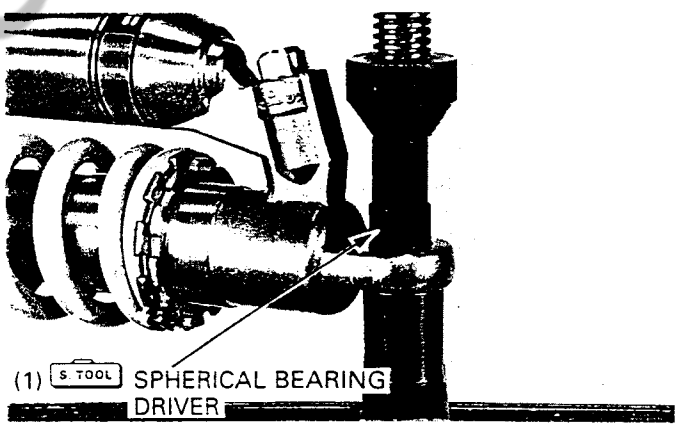
Remove the spherical bearing with using the special tool and a hydraulic press.

TOOL:
Spherical bearing driver **07HMF – KS60100**

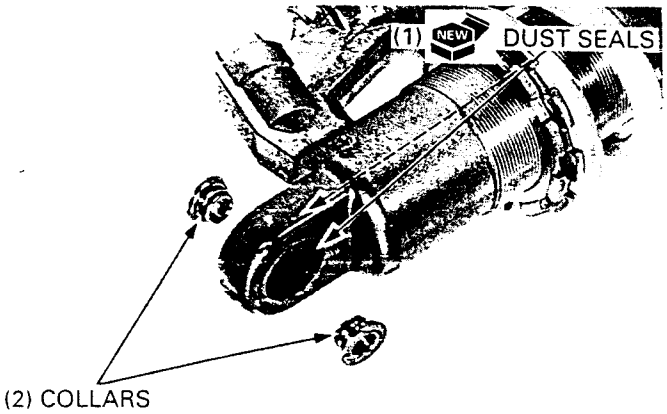


Apply grease to the new spherical bearing.
Install the stop ring into the groove of the upper mount securely.
Press the spherical bearing into the upper mount until it seats against the stop ring end, using the special tool and a hydraulic press.

TOOL:
Spherical bearing driver **07HMF – KS60100**



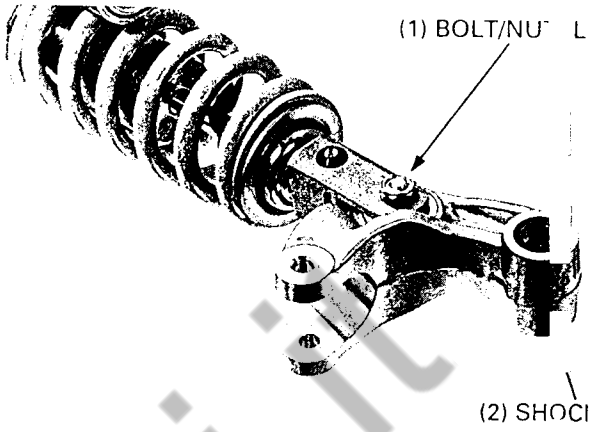
Install new dust seals.
Install the collars.



INSTALLATION

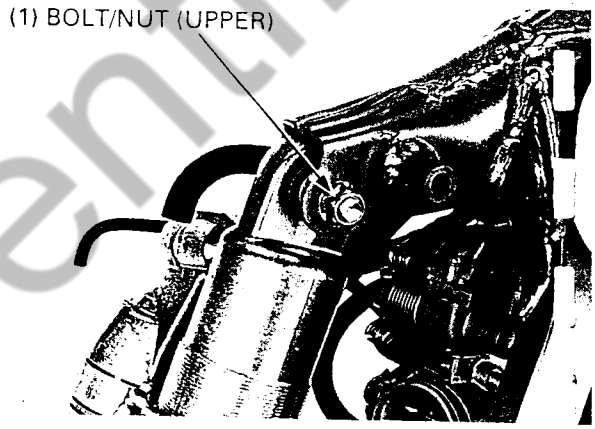
Install the following:
— Shock arm
— Shock absorber bolt/nut (lower)

TORQUE: 44 N·m (4.5 kgf·m, 33 lbf·ft)



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

TORQUE: 44 N·m (4.5 kgf·m, 33 lbf·ft)



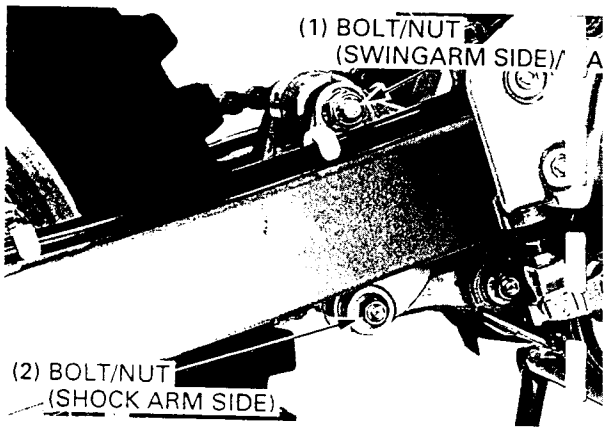
— Washer
— Shock link bolt/nut (shock arm side)

TORQUE: 44 N·m (4.5 kgf·m, 33 lbf·ft)

— Shock arm bolt/nut (swingarm side)

TORQUE: 69 N·m (7.0 kgf·m, 51 lbf·ft)

Install the air cleaner housing (page 5-4).

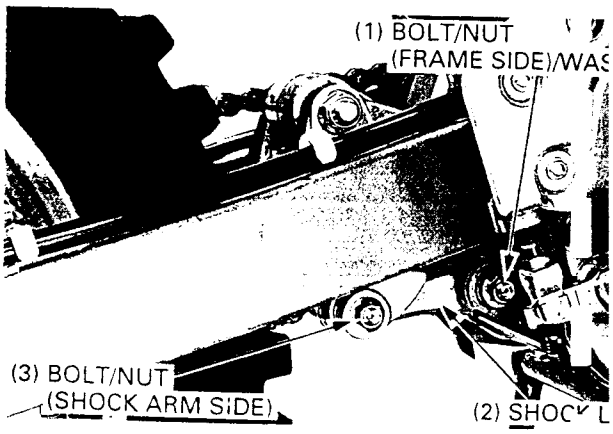


SHOCK LINKAGE

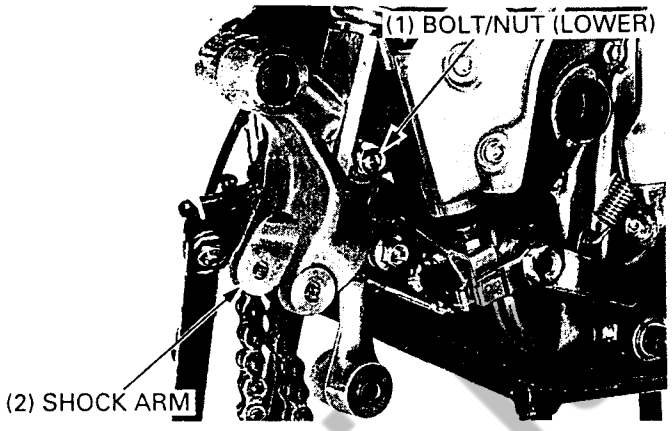
REMOVAL

Shock link
Raise the rear wheel off the ground with a box or work stand under the engine.

Remove the following:
— Shock link bolt/nut (shock arm side)
— Shock link bolt/nut (frame side)
— Washer
— Shock link

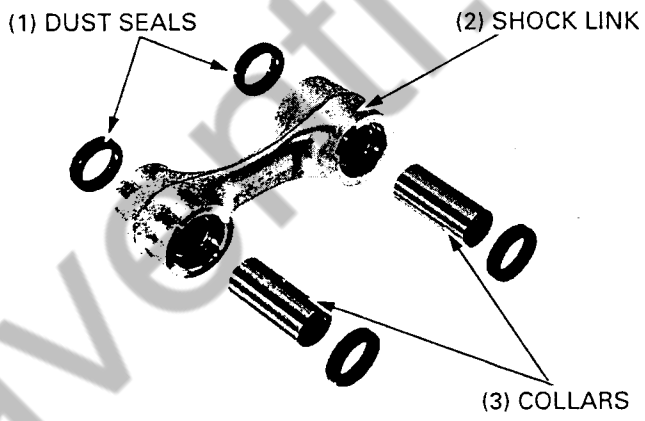


Shock arm
Raise the rear wheel off the ground with a box or work stand under the engine.
Remove the following:
— Swingarm (page 14-28)
— Shock absorber bolt/nut (lower)
— Shock arm

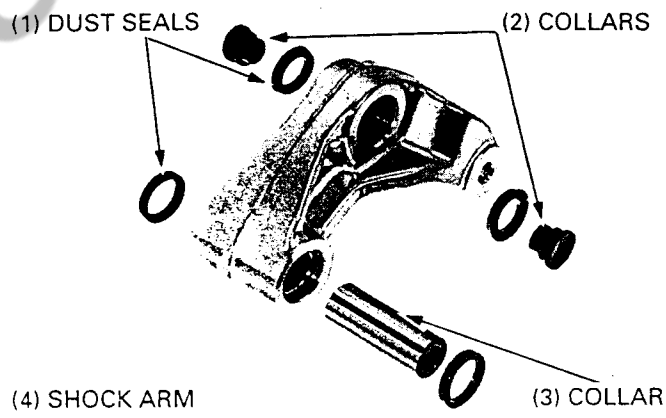


DISASSEMBLY

Shock link
Remove the following:
— Dust seals
— Collars
— Shock link

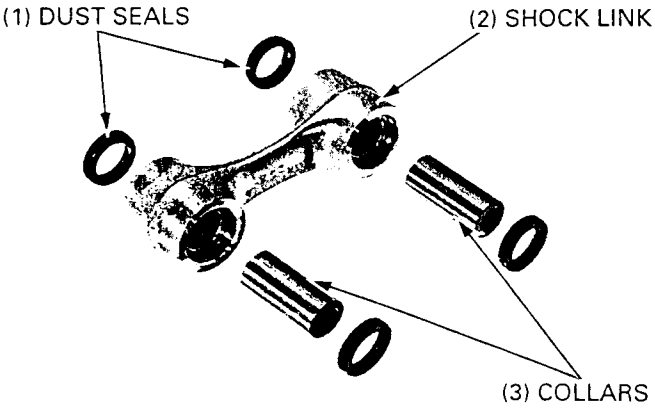


Shock arm
Remove the following:
— Dust seals
— Collar
— Spherical bearing collars
— Shock arm

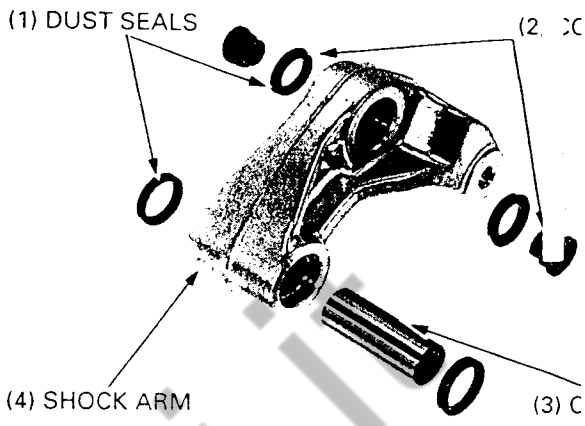


INSPECTION

Shock link
Shock link crack or damage → Replace
Dust seal wear or damage → Replace
Collar damage → Replace
Needle bearing damage → Replace



Shock arm
Shock arm crack or damage → Replace
Dust seal wear or damage → Replace
Collar damage → Replace
Needle bearing damage → Replace
Spherical bearing damage → Replace
Spherical bearing collar damage → Replace

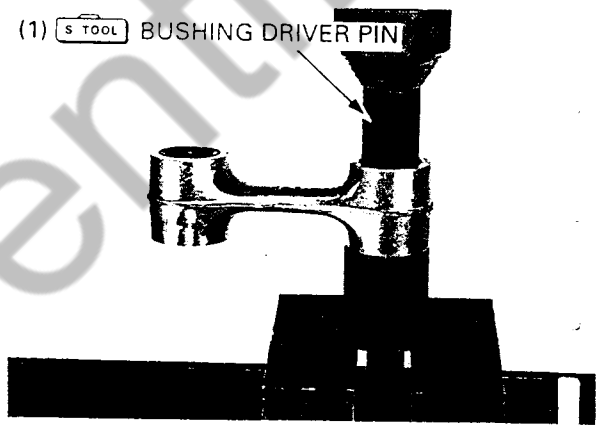


NEEDLE BEARING REPLACEMENT

Shock link
Remove the needle bearing using the special tool and a hydraulic press.

TOOL:

Bushing driver pin	**07GMD – KT80100**



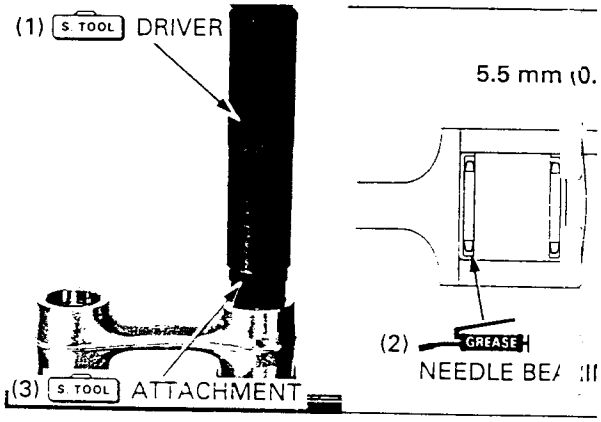
Apply grease to the new needle bearing.
Carefully press the needle bearings into the shock link side pivot to 5.5 mm (0.22 in) below the surface of the pivot on both sides using the special tools and a hydraulic press.

TOOL:

Driver	**07749 – 0010000**
Attachment, 24 x 26 mm	**07746 – 0010700**
Pilot, 17 mm	**07746 – 0040400**

NOTE

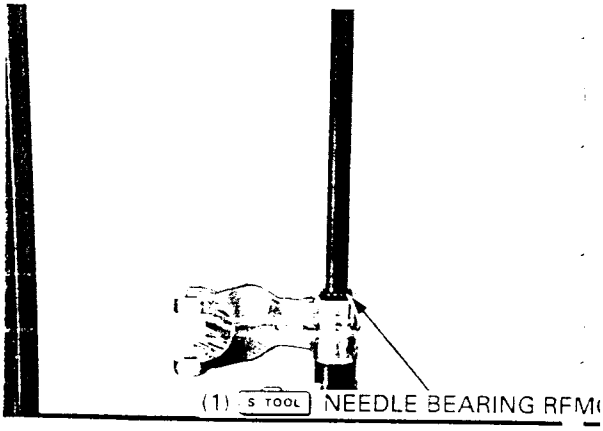
- Install the bearings with the marks facing out.



Shock arm
Remove the needle bearing using the special tool and a hydraulic press.

TOOL:

Needle bearing remover	**07946 – KA50000**

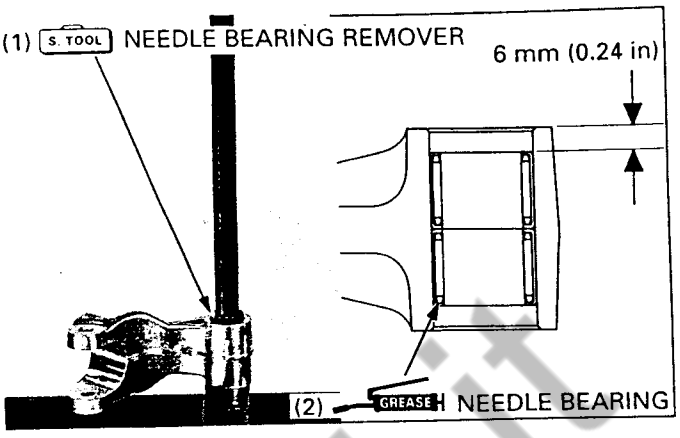


Apply grease to the new needle bearing.
Carefully press the needle bearings into the swingarm side pivot to 6.0 mm (0.24 in) below the surface of the pivot on both sides using the special tool.

TOOL:
Needle bearing remover **07946 – KA50000**

NOTE

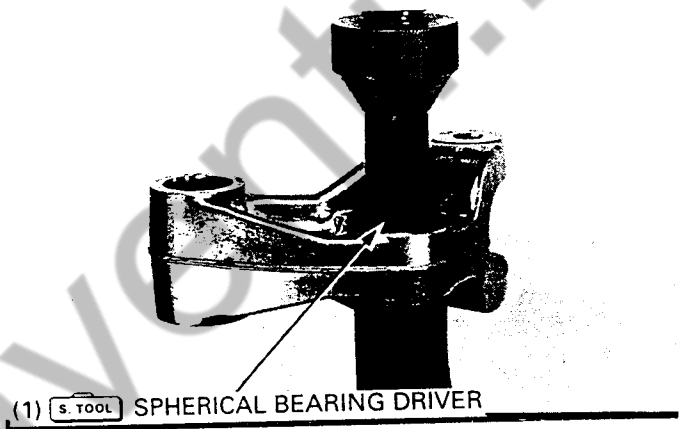
- Install the bearings with the marks facing out.



SPHERICAL BEARING REPLACEMENT

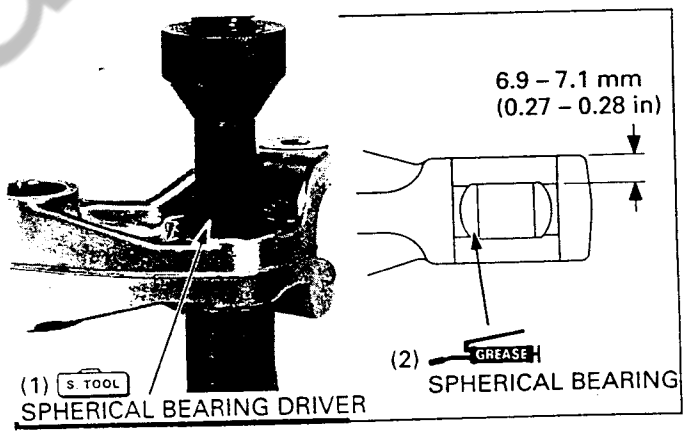
Remove the spherical bearing using the special tool and a hydraulic press.

TOOL:
Spherical bearing driver **07HMF – KS60100**



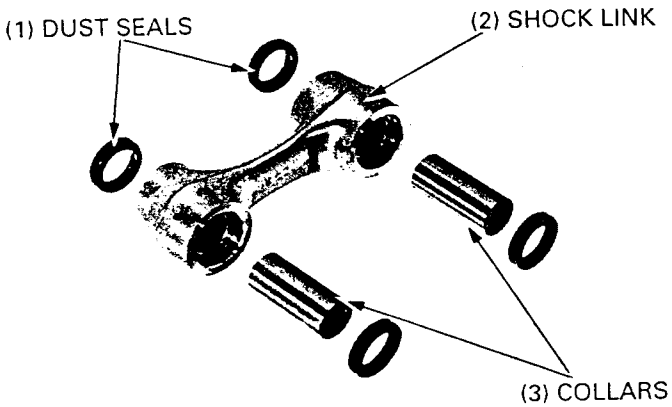
Apply grease to the new spherical bearing.
Carefully press the spherical bearing into the shock arm to 6.9 – 7.1 mm (0.27 – 0.28 in) below the surface using the same tools.

TOOL:
Spherical bearing driver **07HMF – KS60100**

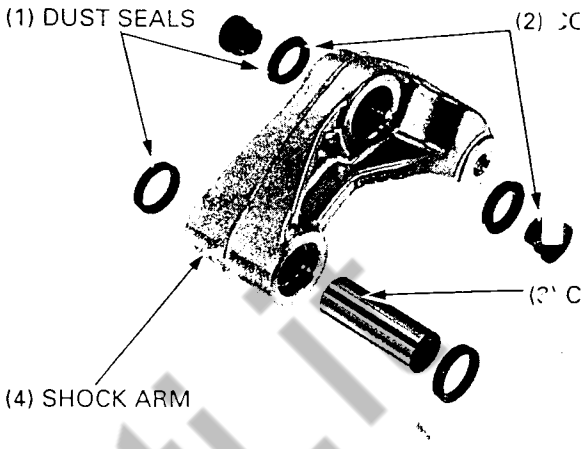


ASSEMBLY

Shock link
Assemble the following:
— Shock link
— Collars
— Dust seals



Shock arm
Assemble the following:
— Shock arm
— Spherical bearing collars
— Collar
— Dust seals

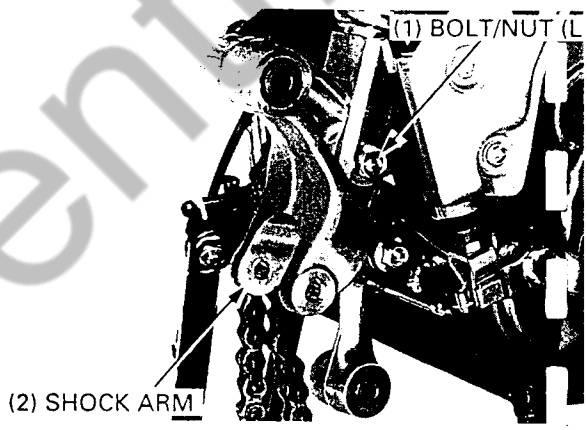


INSTALLATION

Shock arm
Install the following:
— Shock arm
— Shock absorber bolt/nut (lower)

TORQUE: 44 N·m (4.5 kgf·m, 33 lbf·ft)

— Swingarm (page 14-33)



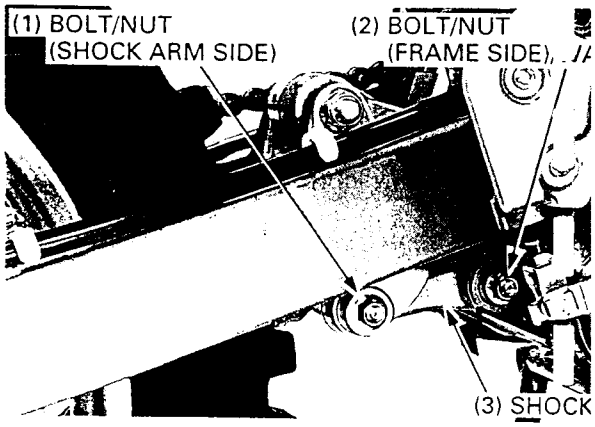
Shock link
Apply grease to the shock link nut (frame side) threads.

Install the following:
— Shock link
— Shock link bolt (frame side)
— Washer
— Nut

TORQUE: 49 N·m (5.0 kgf·m, 36 lbf·ft)

— Shock link bolt/nut (shock arm side)

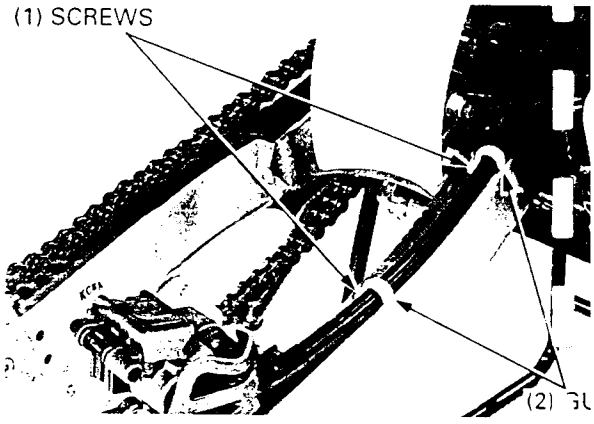
TORQUE: 44 N·m (4.5 kgf·m, 33 lbf·ft)



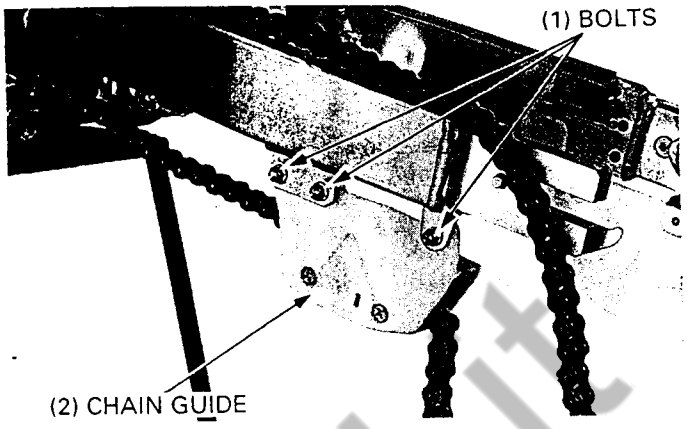
SWINGARM

REMOVAL

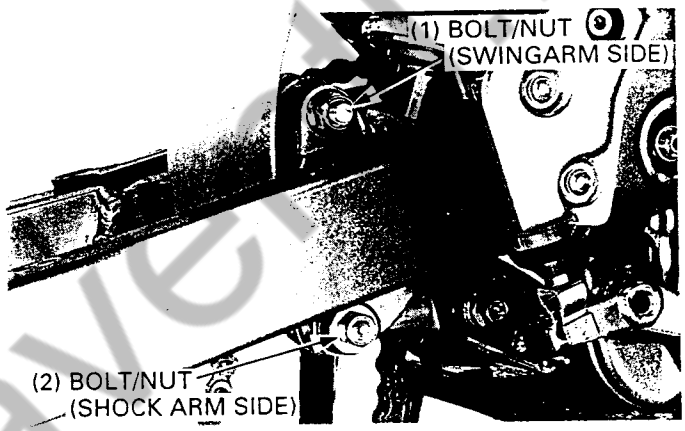
Remove the following:
— Rear wheel (page 14-3)
— Screws
— Brake hose guides



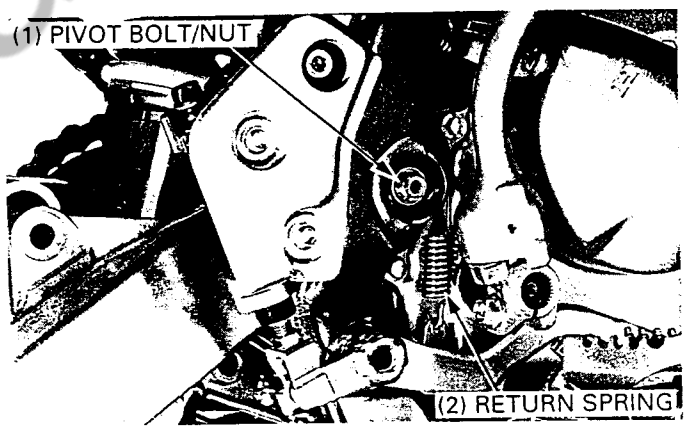
Remove the following:
— Chain guide bolts
— Chain guide



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

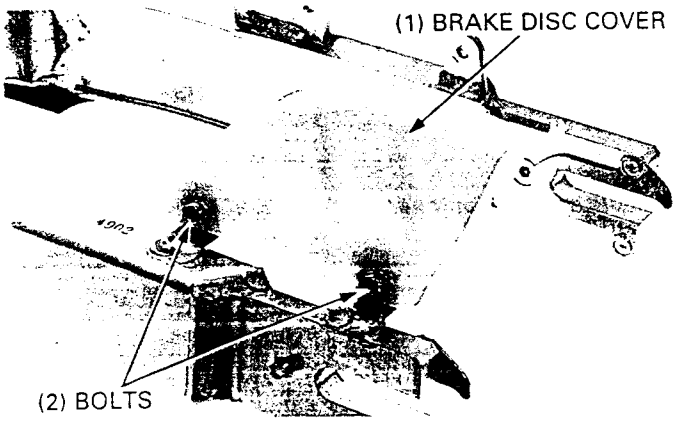


— Brake pedal return spring
— Swingarm pivot bolt/nut
— Swingarm



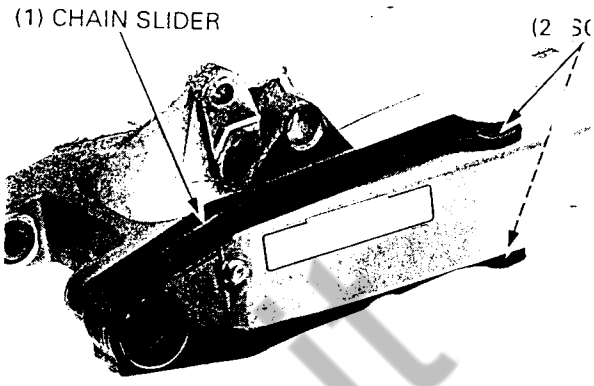
DISASSEMBLY

Remove the following:
— Bolts
— Brake disc cover

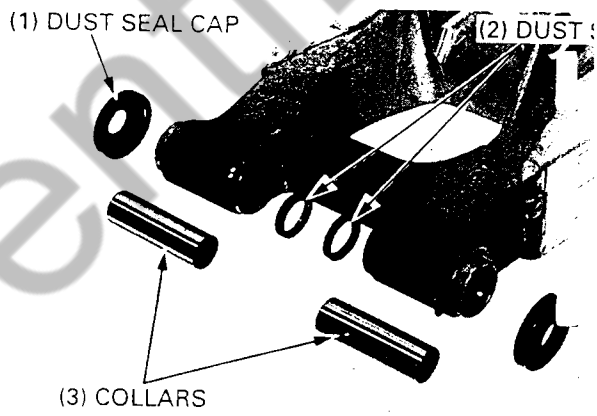


Remove the following:
— Chain slider screws
— Chain slider

Inspect the chain slider and replace if excessive worn or damage.

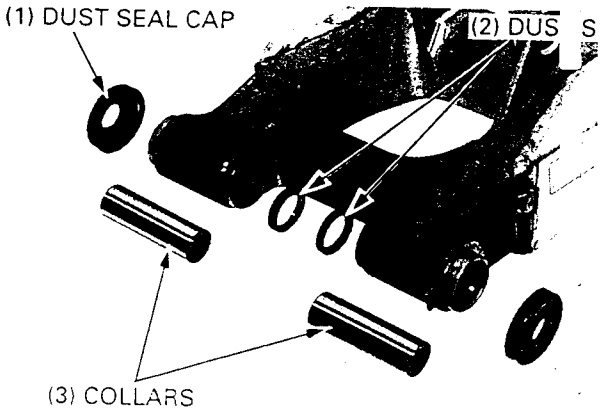


— Dust seal caps
— Dust seals
— Collars



INSPECTION

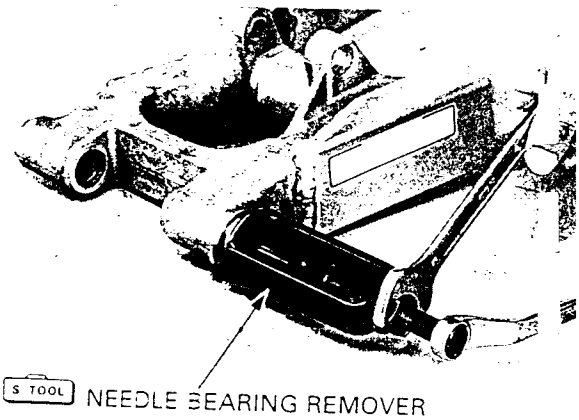
Dust seal cap damage → Replace
Dust seal damage → Replace
Collar damage → Replace
Needle bearing damage → Replace
Swingarm damage → Replace



NEEDLE BEARING REPLACEMENT

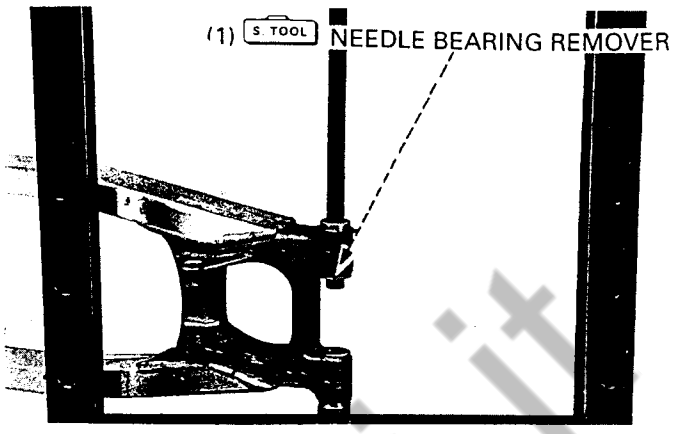
Remove the outer needle bearings from the swingarm using the special tool.

TOOL:
Needle bearing remover **07931 – MA70000**



Remove the inner needle bearings from the swingarm using the special tool and a hydraulic press.

TOOL:
Needle bearing remover **07946 – KA50000**

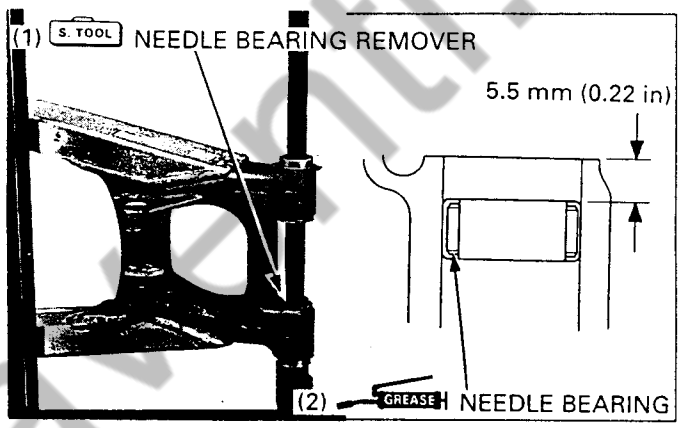


Apply grease to the new needle bearings.
Carefully press the inner needle bearings into the shock arm side pivot to 5.5 mm (0.22 in) below the surface of the pivot on both sides.

TOOL:
Needle bearing remover **07946 – KA50000**

NOTE

- Install the bearing with the marks facing out.

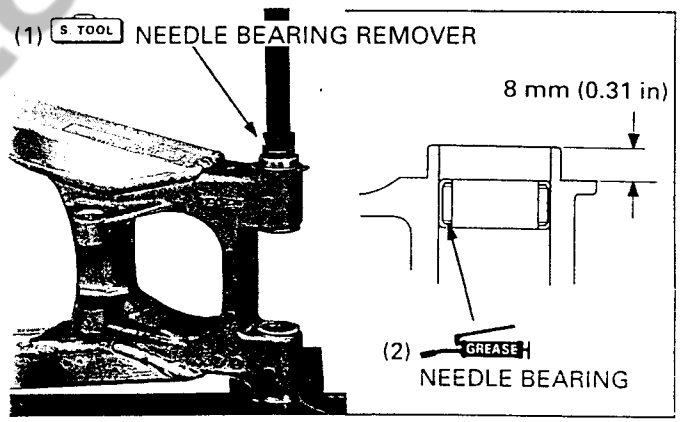


Apply grease to the new needle bearings.
Carefully press the outer needle bearings into the frame side of the pivot to 8.0 mm (0.31 in) below the surface of the pivot on both sides.

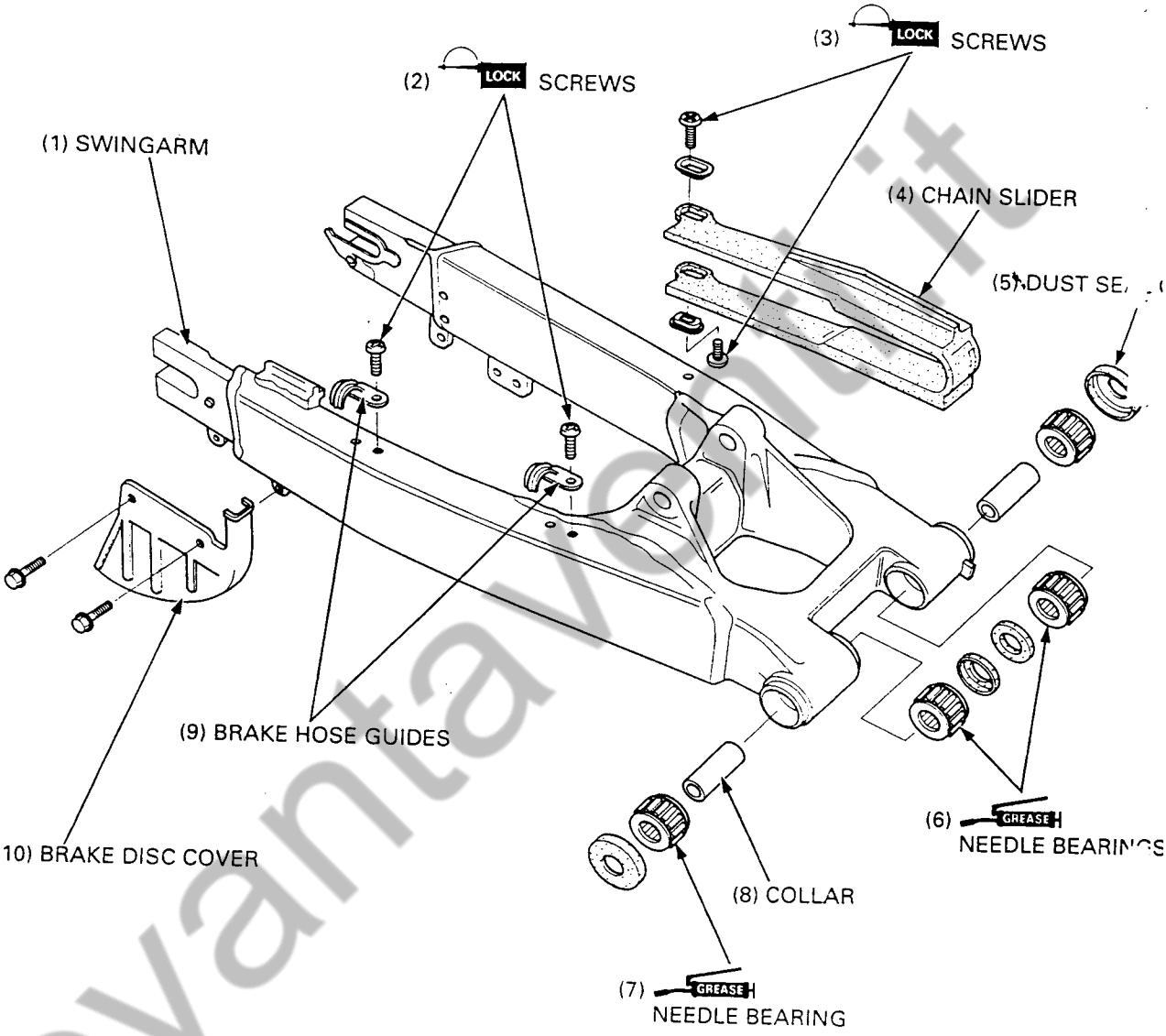
TOOL:
Needle bearing remover **07946 – KA50000**

NOTE

- Install the bearings with the marks facing out.

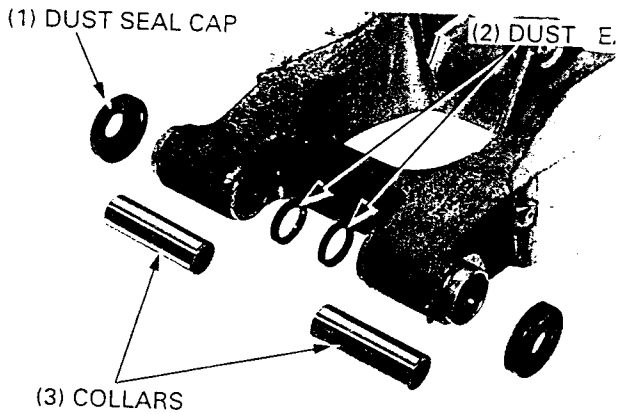


ASSEMBLY



Apply grease to the dust seal lip and dust seal cap lip.

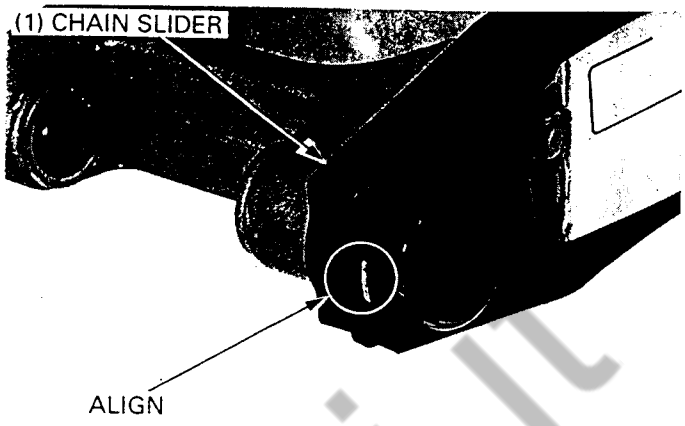
Install the following:
— Collars
— Dust seals
— Dust seal caps



Install the following:
— Drive chain slider

NOTE

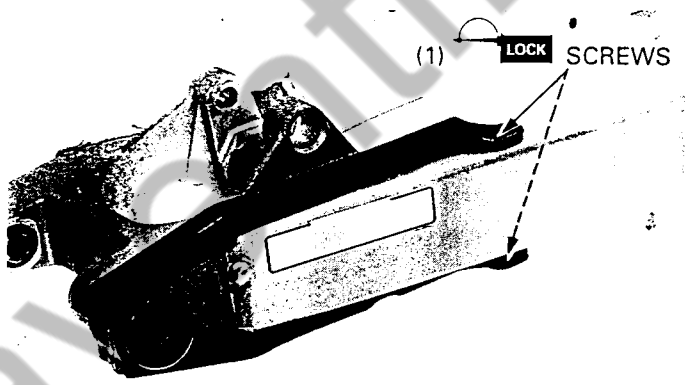
- Align the chain slider hole with the tang on the swingarm.



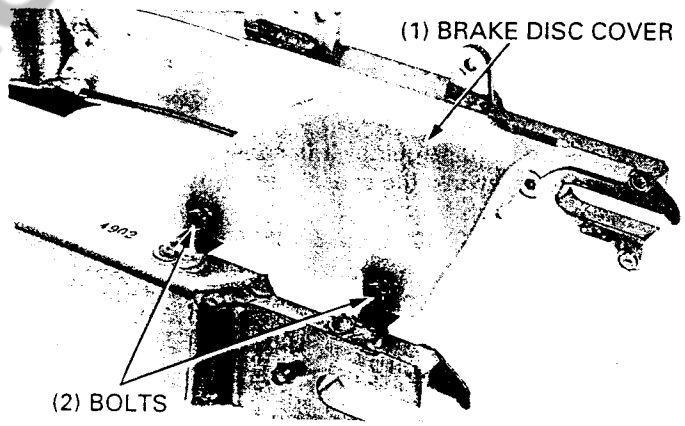
— Drive chain slider screws

NOTE

- Clean the screws and apply a locking agent to the them.



— Brake disc cover
— Bolts

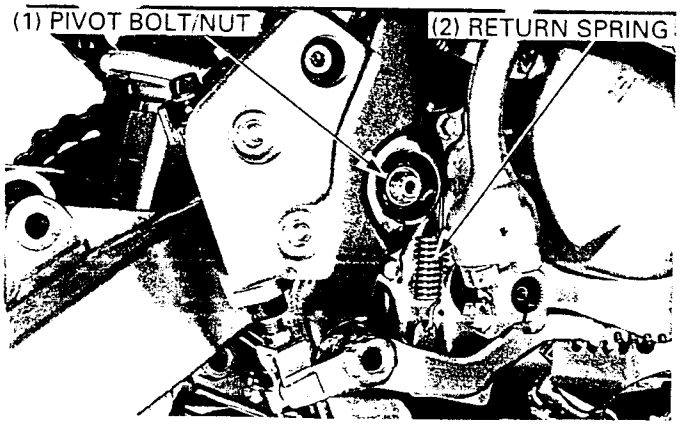


INSTALLATION

Apply thin coat of grease to the swingarm pivot bolt sliding surface.
Install the swingarm and pivot bolt.
Install and tighten the pivot nut.

TORQUE: 88 N·m (9.0 kgf·m, 65 lbf·ft)

Install the brake pedal return spring.

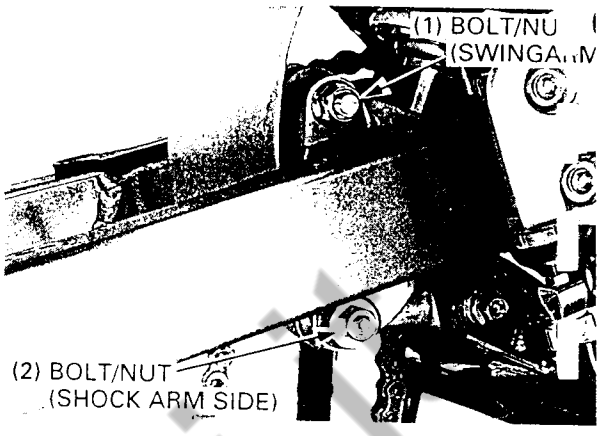


Install the shock arm bolt/nut (swingarm side).
Tighten the nut to the specified torque.

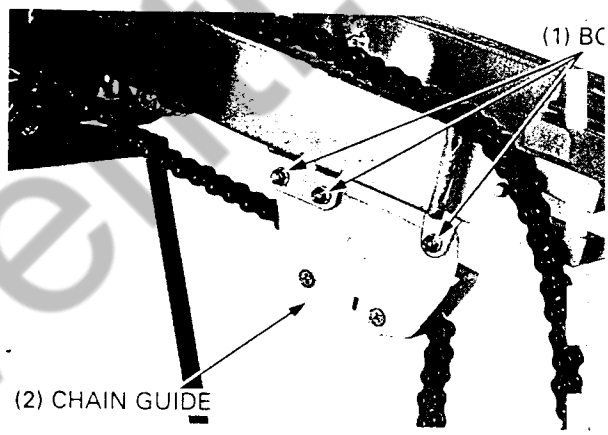
TORQUE: 69 N·m (7.0 kgf·m, 51 lbf·ft)

Install the shock link bolt/nut (shock arm side).
Tighten the nut to the specified torque.

TORQUE: 44 N·m (4.5 kgf·m, 33 lbf·ft)



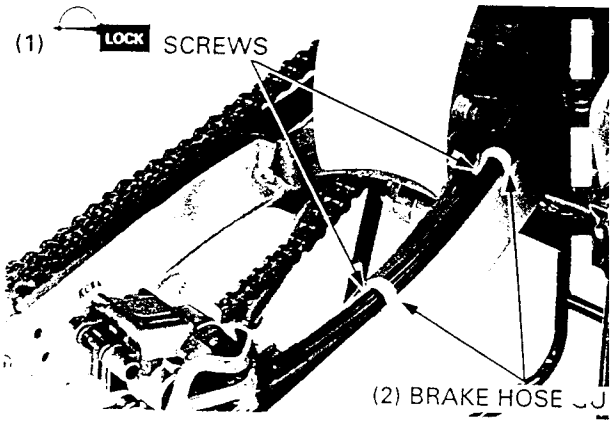
Install the drive chain guide.
Install and tighten the bolts.



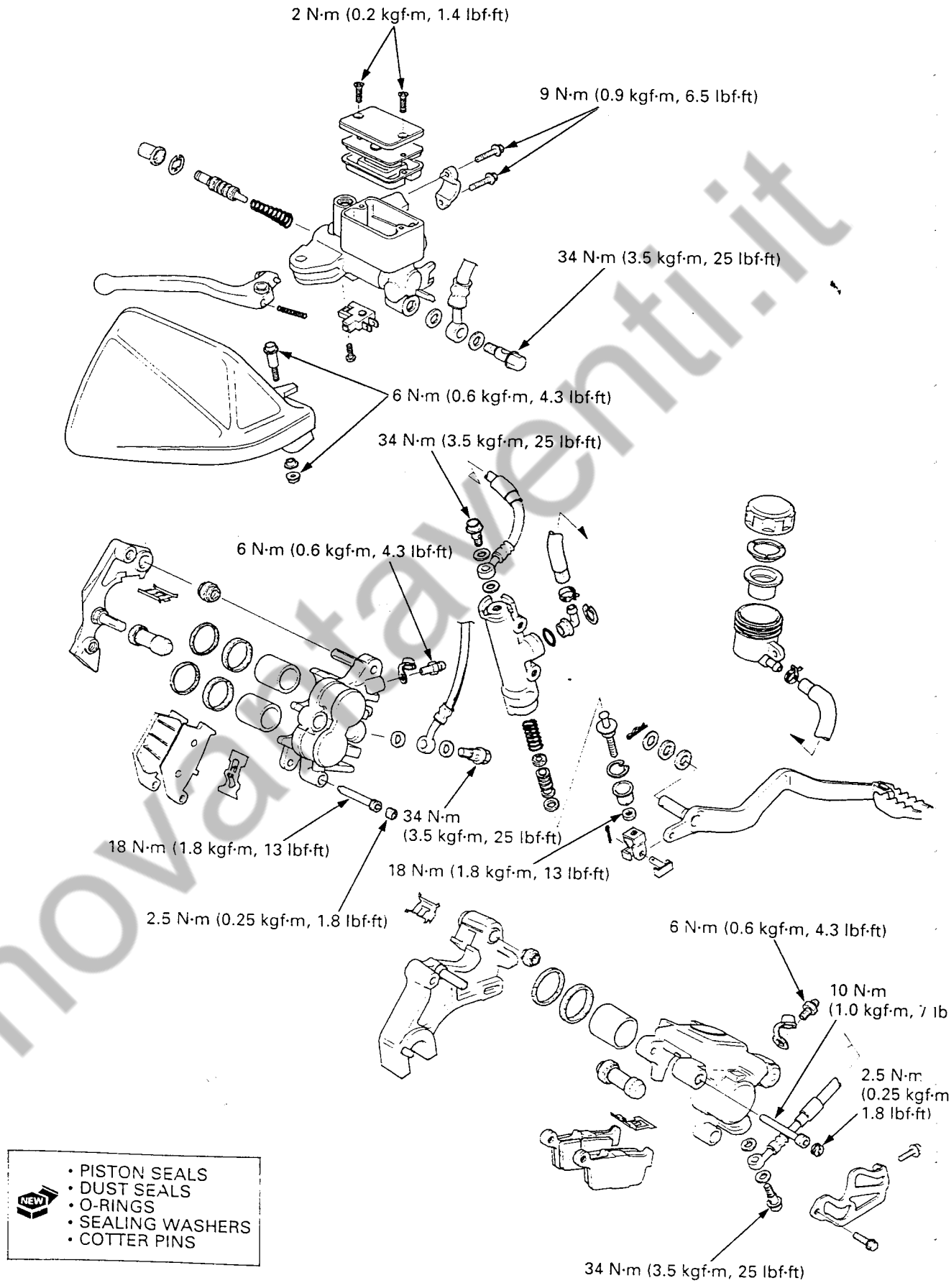
Inspect the brake hose guides damage and replace with new ones if necessary.
Clean the brake hose guides screws and apply a locking agent to them.
Install the brake hose guides and screws.
Tighten the screws to the specified torque.

TORQUE: 4.3 Nm (0.43 kgf·m, 3.1 lbf·ft)

Install the rear wheel (page 14-8).



MEMO



15. BRAKE SYSTEM

SERVICE INFORMATION

GENERAL

- Keep grease off of brake pads and disc.

⚠ WARNING

- ***A contaminated brake disc or pad reduce stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.***

- Bleed the hydraulic system if it has been disassembled or if the brake feels spongy.
- Do not allow foreign material to enter the system when filling the reservoir.
- Avoid spilling brake fluid on painted, plastic or rubber parts. Place a rag or shop towel over these parts whenever the system is serviced.
- Do not mix different types of fluid since they are not compatible.

CAUTION

- *Spilling fluid on painted, plastic or rubber parts will damage them. Place a clean shop towel over these parts whenever the system is serviced.*
- *KEEP BRAKE FLUID OUT OF REACH OR CHILDREN.*

- Always check brake operation before riding the motorcycle.

15

SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Specified brake fluid			DOT 4 brake fluid	———
Brake pad wear			———	To the groove
Brake disc thickness	FR	ED, DK types	3.0 (0.12)	2.5 (0.10)
		U type	3.5 (0.14)	3.0 (0.12)
	RR		4.5 (0.18)	4.0 (0.16)
Brake disc runout			———	0.25 (0.010)
Master cylinder I.D.	FR		12.700 – 12.743 (0.5000 – 0.5017)	12.76 (0.502)
	RR		14.000 – 14.043 (0.5512 – 0.5529)	14.06 (0.554)
Master piston O.D.	FR		12.657 – 12.684 (0.4983 – 0.4994)	12.63 (0.497)
	RR		13.957 – 13.984 (0.5495 – 0.5506)	13.95 (0.549)
Caliper cylinder I.D.	FR		27.000 – 27.050 (1.0630 – 1.0650)	27.06 (1.065)
	RR		27.000 – 27.050 (1.0630 – 1.0650)	27.06 (1.065)
Caliper piston O.D.	FR		26.900 – 26.950 (1.0591 – 1.0610)	26.89 (1.059)
	RR		26.935 – 26.968 (1.0604 – 1.0617)	26.89 (1.059)

TORQUE VALUES

Front master cylinder holder bolt	9 N·m (0.9 kgf·m, 6.5 lbf·ft)	
Front reservoir tank cover screw	2 N·m (0.2 kgf·m, 1.4 lbf·ft)	
Front brake lever pivot bolt	6 N·m (0.6 kgf·m, 4.3 lbf·ft)	
nut	6 N·m (0.6 kgf·m, 4.3 lbf·ft)	
Front brake caliper pad pin	18 N·m (1.8 kgf·m, 13 lbf·ft)	
Front brake caliper pin bolt A	23 N·m (2.3 kgf·m, 17 lbf·ft)	Apply a locking agent to the threads.
B	13 N·m (1.3 kgf·m, 9 lbf·ft)	Apply a locking agent to the threads.
Front brake caliper bracket bolt	30 N·m (3.1 kgf·m, 22 lbf·ft)	Apply a locking agent to the threads.
Rear brake master cylinder holder bolt	14 N·m (1.4 kgf·m, 10 lbf·ft)	Apply a locking agent to the threads.
Push rod lock nut	18 N·m (1.8 kgf·m, 13 lbf·ft)	
Rear brake caliper pad pin	10 N·m (1.0 kgf·m, 7 lbf·ft)	
Rear brake caliper pin bolt	27 N·m (2.8 kgf·m, 20 lbf·ft)	
Rear brake caliper bracket pin bolt	13 N·m (1.3 kgf·m, 9 lbf·ft)	Apply a locking agent to the threads.
Rear brake hose guide screw	4.3 N·m (0.43 kgf·m, 3.1 lbf·ft)	Apply a locking agent to the threads.
Pad pin plug	2.5 N·m (0.25 kgf·m, 1.8 lbf·ft)	
Bleed valve	6 N·m (0.6 kgf·m, 4.3 lbf·ft)	
Brake hose bolt	34 N·m (3.5 kgf·m, 25 lbf·ft)	

TOOLS

Special	
Snap ring pliers	07914 – 3230001

TROUBLESHOOTING

Brake lever (pedal) soft or spongy
- Air bubbles in the hydraulic system
- Leaking hydraulic system
- Contaminated brake pads/disc
- Worn caliper piston seal
- Worn master cylinder piston seal
- Worn brake pads/disc
- Contaminated caliper
- Caliper not sliding properly
- Contaminated brake pads/disc
- Low fluid level
- Clogged fluid passage
- Warped/deformed brake disc
- Sticking/worn caliper piston
- Sticking/worn master cylinder piston
- Contaminated master cylinder
- Bent brake lever

Brake lever (pedal) hard
- Clogged/restricted brake system
- Sticking/worn caliper piston
- Caliper not sliding properly
- Clogged/restricted fluid passage
- Worn caliper piston seal
- Sticking/worn master cylinder piston
- Bent brake lever

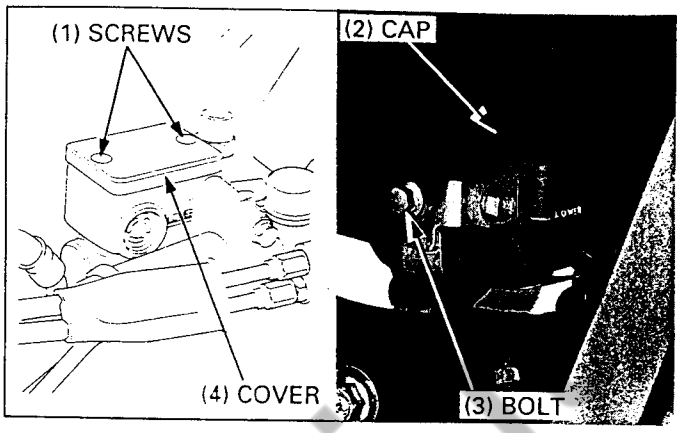
Brake drag
- Contaminated brake pads/disc
- Misaligned wheel
- Worn brake pads/disc
- Warped/deformed brake disc
- Caliper not sliding properly

BRAKE FLUID REPLACEMENT/ AIR BLEEDING

BRAKE FLUID REPLACEMENT

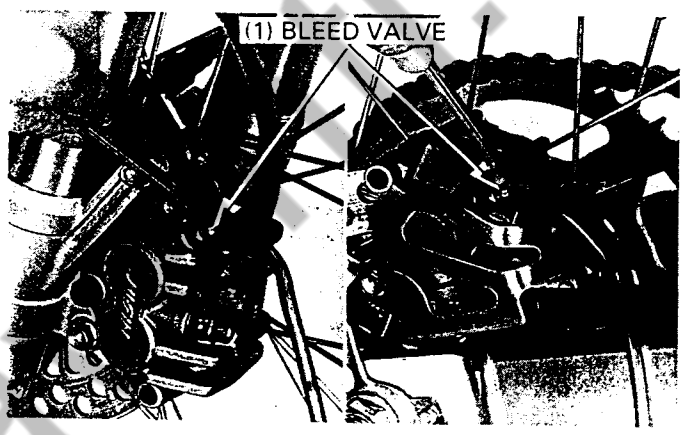
Front
Turn the handlebar until the master cylinder is level.
Remove the screws, reservoir cover, diaphragm plate and diaphragm.

Rear
Remove the reservoir tank bracket bolt.
Hold the reservoir level.
Remove the reservoir cap, diaphragm plate and diaphragm.



CAUTION

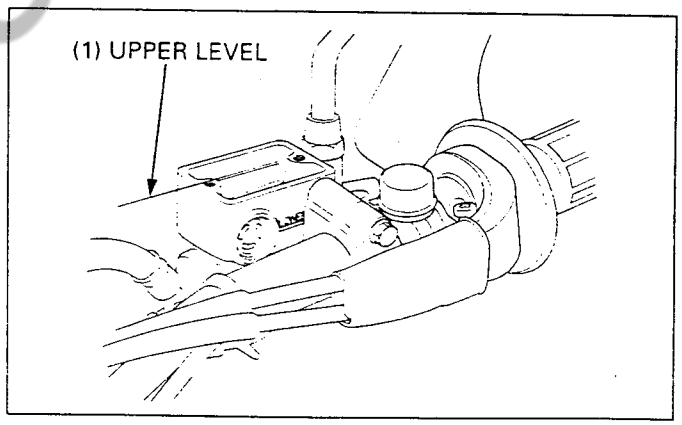
- *Avoid spilling fluid on painted, plastic or rubber parts. Place a shop towel over these parts whenever the system is serviced.*
- *Do not mix different types of fluid since they are not compatible.*
- *Do not mix brake fluid types and never reuse the contaminated fluid which has been pumped out during brake bleeding, because this will impair the efficiency of the brake system.*



Connect a bleed hose to the bleed valve.
Loosen the caliper bleed valve and pump the brake lever or pedal.
Stop operating the brake when fluid stops flowing out of the bleed valve.
Tighten the bleed valve.

⚠WARNING

- ***A contaminated brake disc or pad reduce stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.***



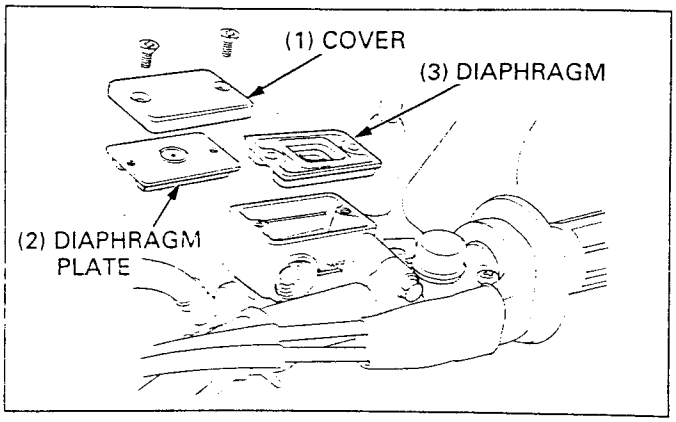
Front
Fill the master cylinder reservoir with DOT4 brake fluid from a sealed container to the top of the casting ledge.

Rear
Fill the reservoir to the upper level line with DOT4 brake fluid from a sealed container.

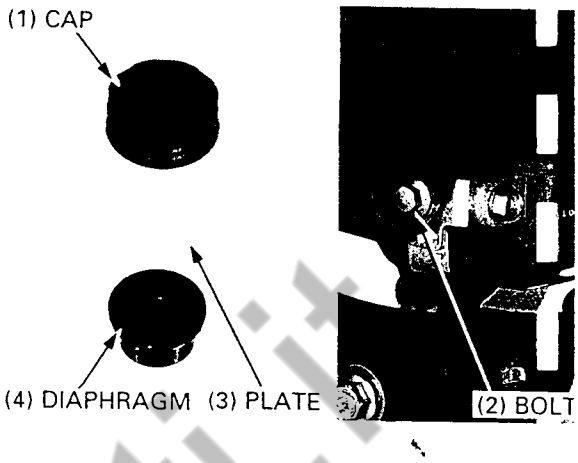
Bleed the brake system (page 15-4).

Front
Install the diaphragm, diaphragm cover and reservoir cover.
Install and tighten the screws.

TORQUE: 2 N·m (0.2 kgf·m, 1.4 lbf·ft)



Rear
Install the diaphragm, diaphragm plate and reservoir cap.
Install the reservoir tank and bolt.
Tighten the bolt securely.

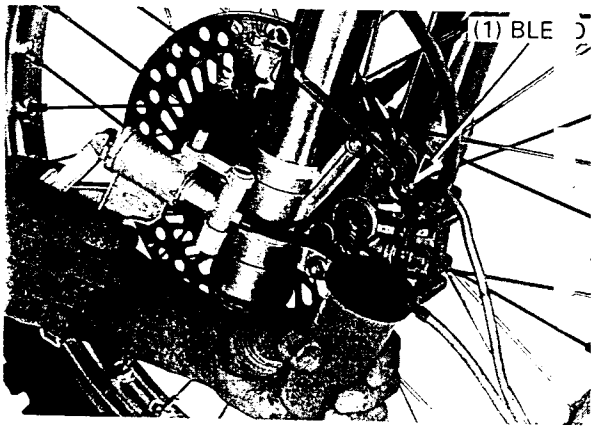


AIR BLEEDING

Front
Turn the handlebar until the master cylinder is level.
Remove the screws, reservoir cover, diaphragm cover and diaphragm.
Fill the master cylinder reservoir with DOT4 brake fluid from a sealed container to the top of the casting ledge.

Rear
Remove the reservoir tank mounting bolt.
Hold the reservoir level.
Remove the reservoir cap, diaphragm plate and diaphragm.
Fill the reservoir to the upper level line with DOT4 brake fluid from a sealed container.

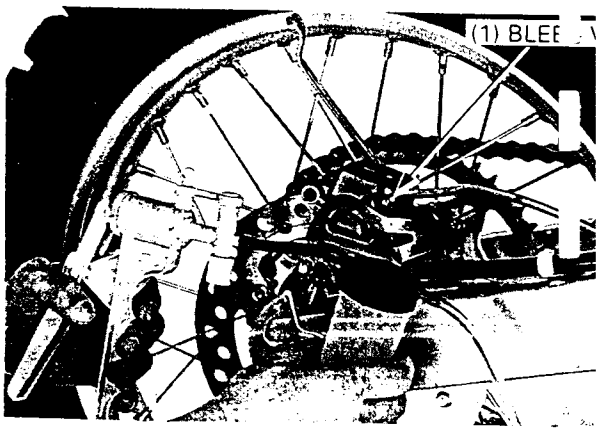
Connect a commercially available brake bleeder to the bleed valve.



NOTE

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

Pump the brake bleeder and loosen the bleed valve. Add fluid when the fluid level in the master cylinder or reservoir is low, to prevent drawing air into the system.
Repeat the above procedures until no air bubbles appear in the plastic hose.



NOTE

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

If a brake bleeder is not available, perform the following procedure.

1) Attach a clear plastic hose to the breed valve.

2) Operate the brake lever or pedal several times, then open the bleed valve 1/2 turn and close the valve.

NOTE

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

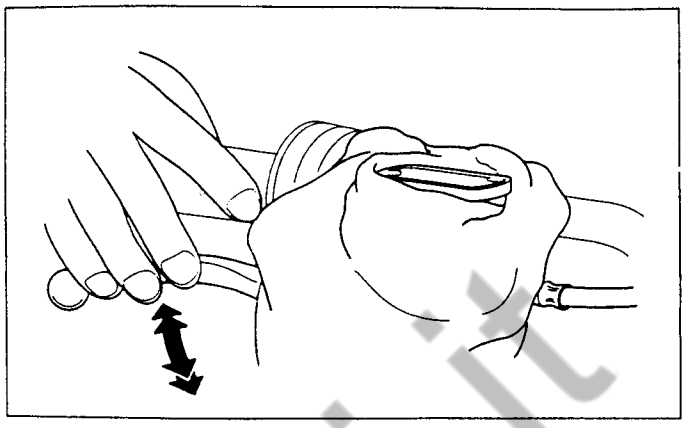
3) Release the brake lever or pedal slowly and wait several seconds after it reaches the end of its travel.

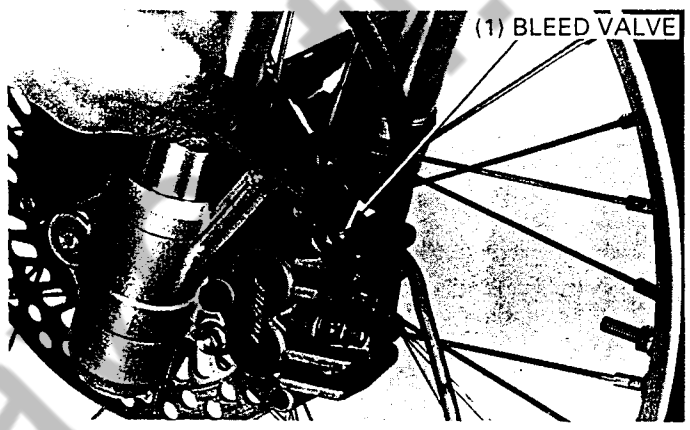
4) Add fluid when the fluid level in the master cylinder or reservoir is low, to prevent drawing air into the system.

Repeat step 2, 3 and 4 until bubbles cease to appear in the fluid entering the hose.

Tighten the bleed valve to the specified torque.

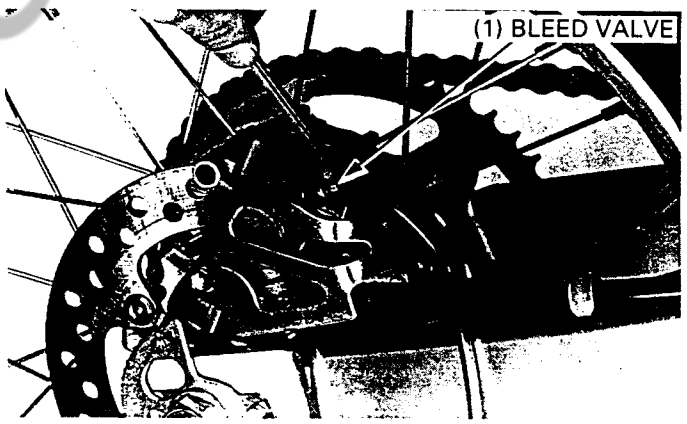
TORQUE: 6 N·m (0.6 kgf·m, 4.3 lbf·ft)





Front
Fill the master cylinder reservoir with DOT4 brake fluid from a sealed container to the top of the casting ledge.
Install the diaphragm, diaphragm plate and master cylinder cover. Tighten the screws securely.

Rear
Fill the reservoir to the upper level line with DOT4 brake fluid from a sealed container.
Install the diaphragm, diaphragm plate and reservoir cap.
Install the reservoir tank and bolt.
Tighten the bolt securely.



⚠WARNING

- ***A contaminated brake disc or pad reduce stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.***

BRAKE PAD REPLACEMENT

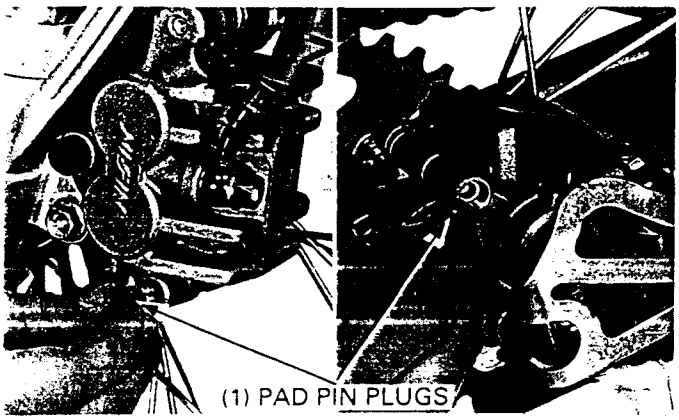
⚠WARNING

- ***A contaminated brake disc or pad reduce stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.***

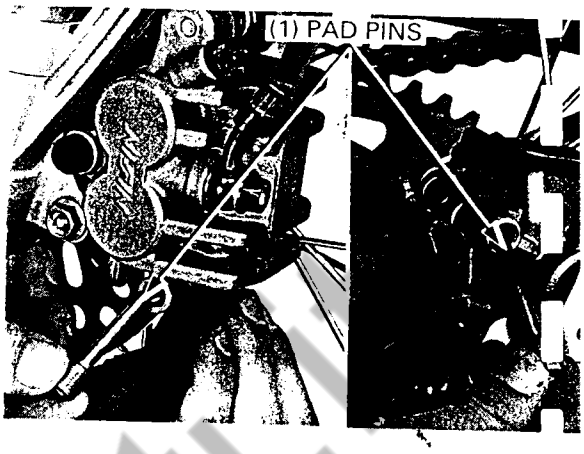
NOTE

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

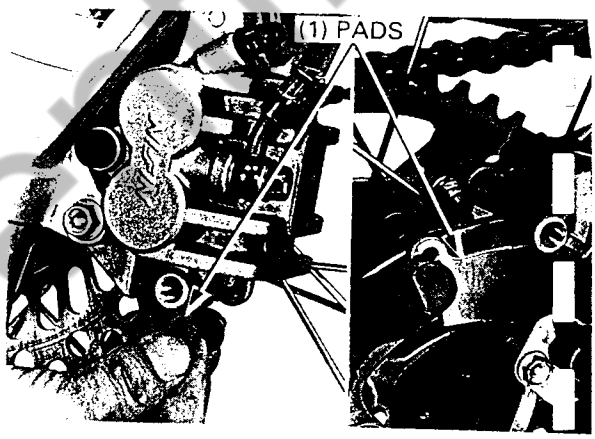
Remove the pad pin plug.



Remove the pad pin.

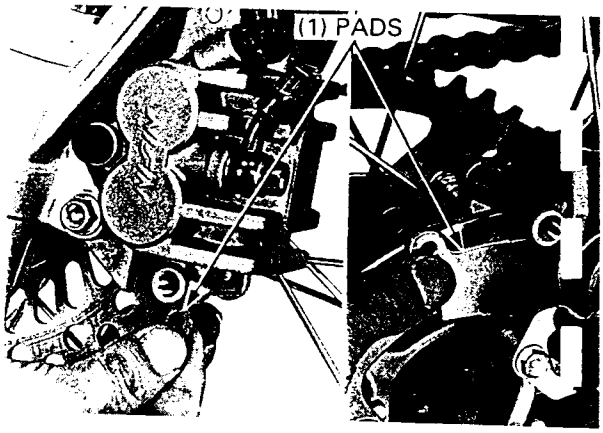


Remove the brake pads.



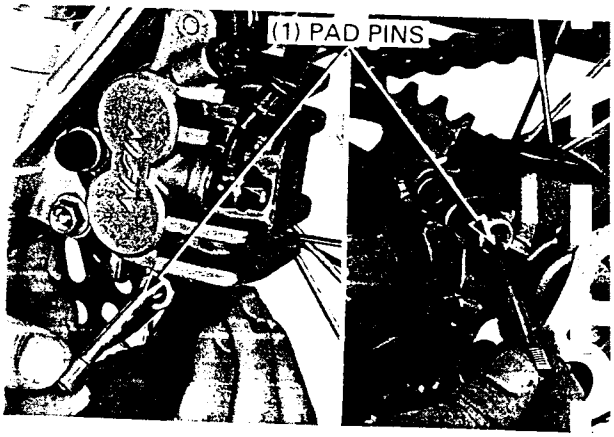
Insert new right side pad and push the caliper piston to allow clearance for that installation of the left side new pad.

Install the left side pad.



Install the pad pin by pushing the pads against the caliper to depress the pad spring.
Tighten the pad pin to the specified torque.

TORQUE: Front: 18 N·m (1.8 kgf·m, 13 lbf·ft)
Rear: 10 N·m (1.0 kgf·m, 7 lbf·ft)

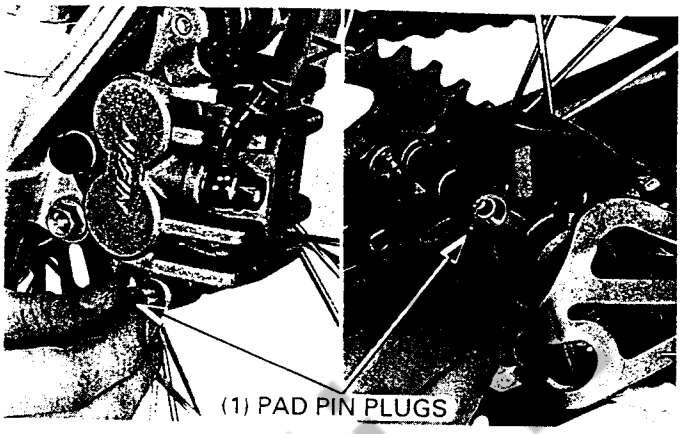


Install and tighten the pad pin plug to the specified torque.

TORQUE: 2.5 N·m (0.25 kgf·m, 1.8 lbf·ft)

⚠ WARNING

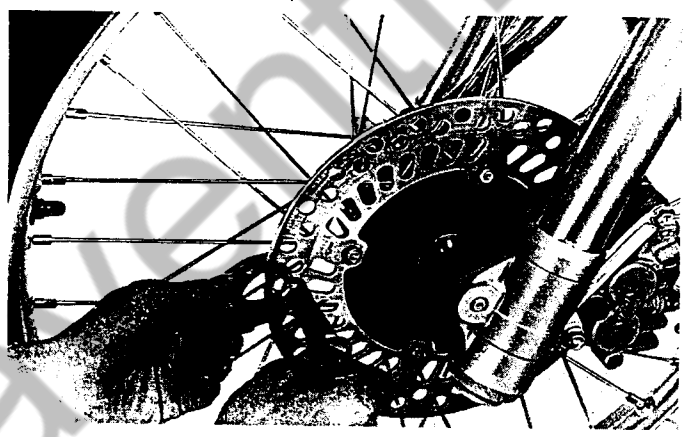
- *Check the brake system by applying the brake lever or pedal after pad replacement.*


(1) PAD PIN PLUGS

BRAKE DISC INSPECTION

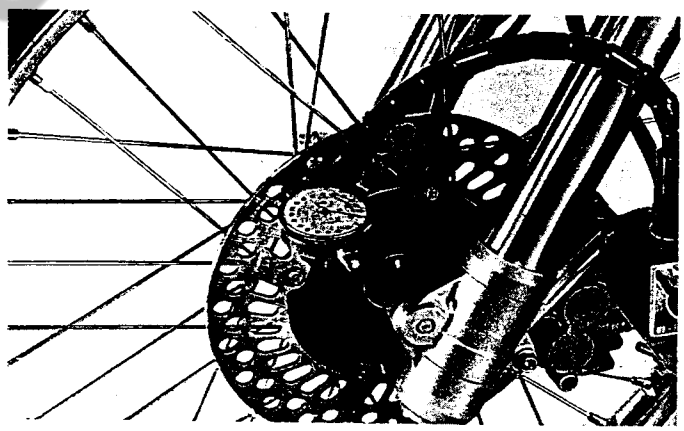
Measure the brake disc thickness.

SERVICE LIMITS: Front (ED, DK types): 2.5 mm (0.11 in)
(U type) : 3.0 mm (0.12 in)
Rear: 4.0 mm (0.16 in)



Measure the brake disc warpage.

SERVICE LIMIT: 0.25 mm (0.010 in)

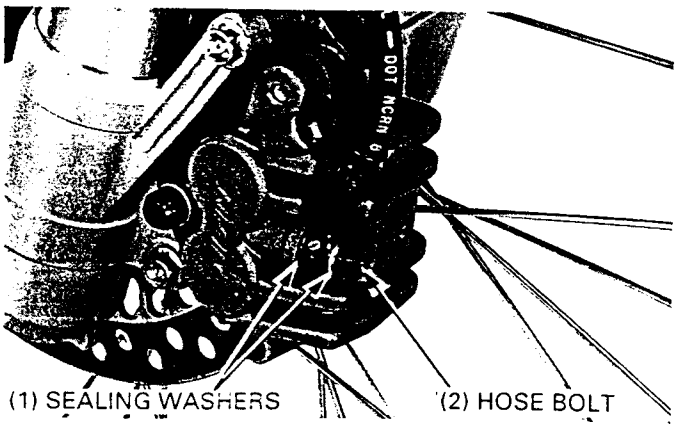


FRONT BRAKE CALIPER

REMOVAL

CAUTION

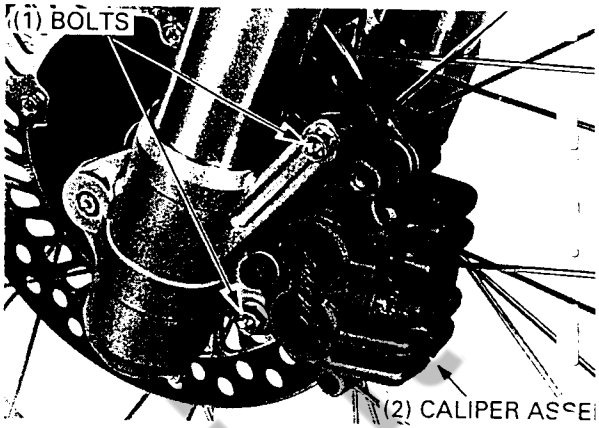
- *Avoid spilling fluid on painted, plastic or rubber parts. Place a shop towel over these parts whenever the system is serviced.*



(1) SEALING WASHERS (2) HOSE BOLT

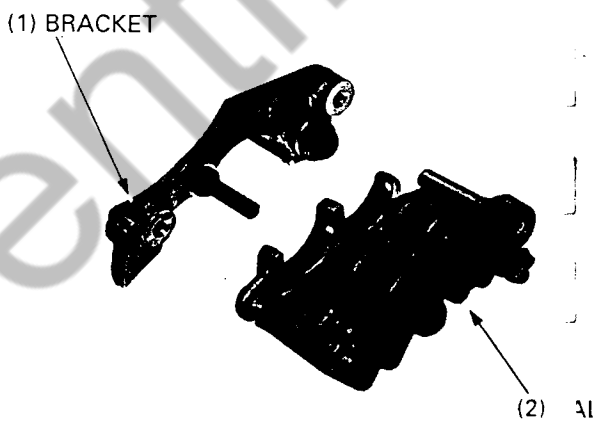
Drain the brake fluid (page 15-3).

Remove the following:
— Brake hose bolt
— Sealing washers
— Front brake caliper bracket bolts
— Front brake caliper assembly

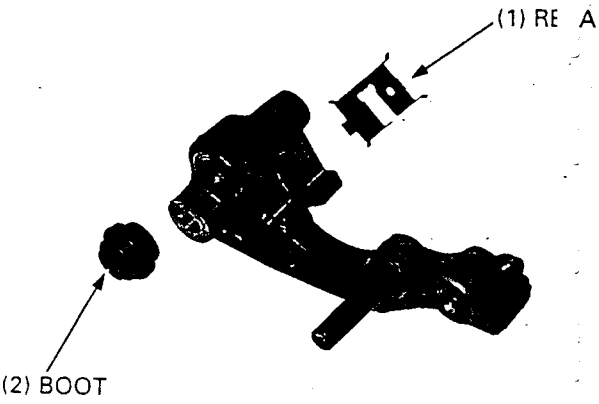


DISASSEMBLY

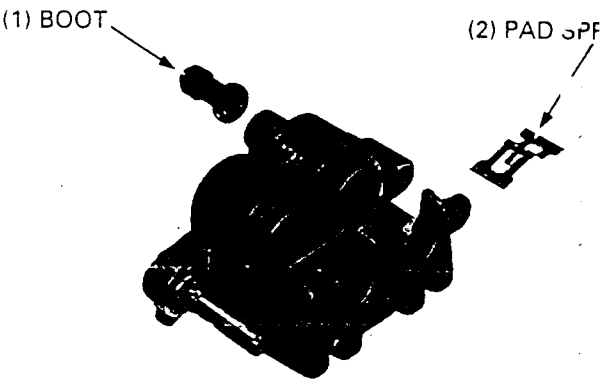
Remove the caliper bracket from the caliper.



Remove the following:
— Caliper pin boot
— Retainer



— Bracket boot
— Pad spring



If necessary, lightly apply compressed air to the caliper fluid inlet to get the piston out.

Place a shop rag under the caliper to cushion the piston when it is expelled.
Use the air in short spurts.

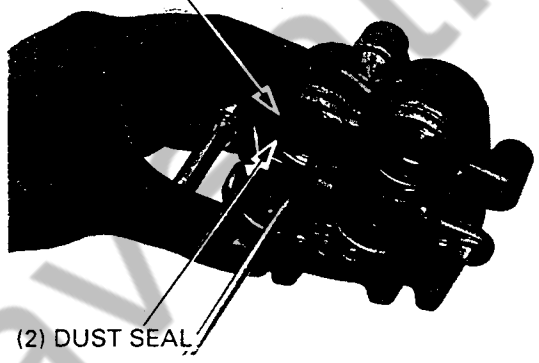
⚠ WARNING

- *Do not bring the air nozzle too close to the inlet or the pistons may be forced out with excessive force that could cause injury.*

Remove the piston seals and dust seals.

CAUTION

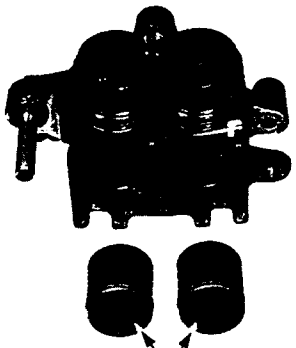
- *Be careful not to damage the piston sliding surfaces when removing the seals.*



Clean the piston and caliper cylinder with fresh brake fluid.

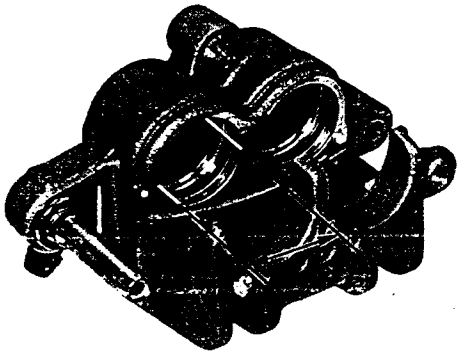
INSPECTION

Check the cylinder and pistons for scoring, scratches or other damage.
Replace if necessary.



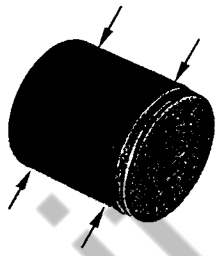
Measure the I.D. of the cylinder bores.

SERVICE LIMIT: 27.06 mm (1.065 in)

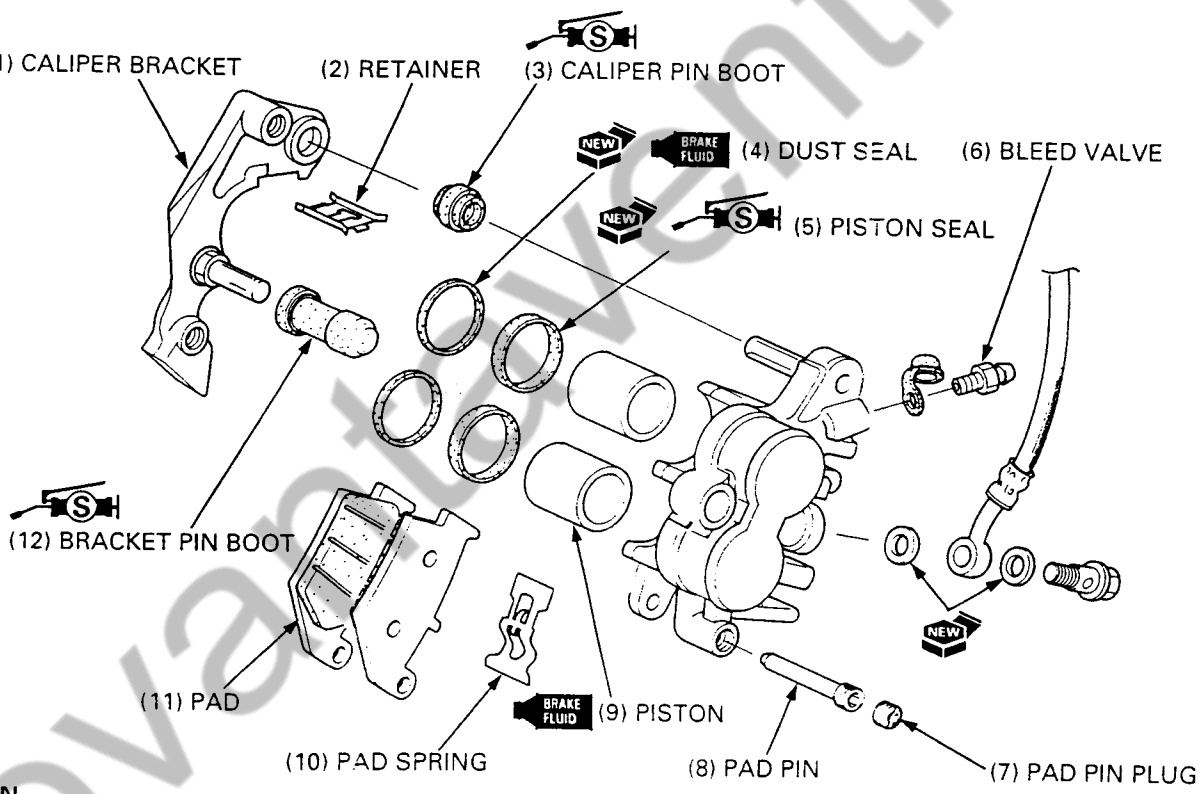


Measure the O.D. of the pistons.

SERVICE LIMIT: 26.89 mm (1.059 in)



ASSEMBLY



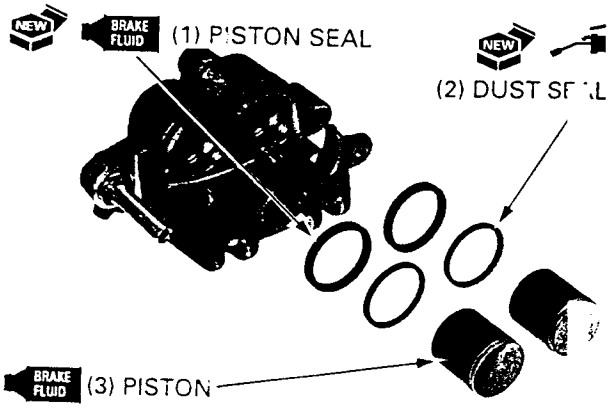
CAUTION

- *Reusing drained fluids can impair braking efficiency. Do not reuse fluid.*

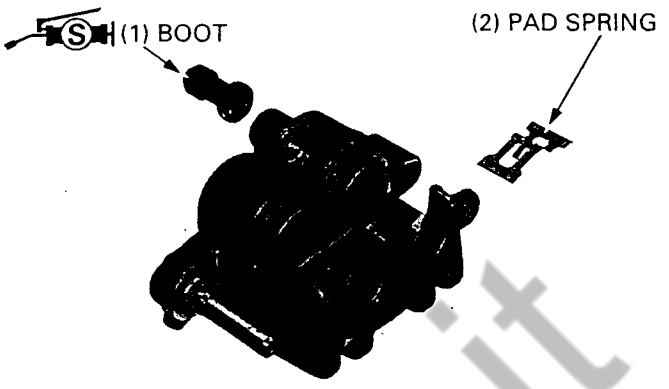
NOTE

- Replace the piston seals and dust seals as a set whenever they are removed.
- Replace the boots, if damaged.
- Apply silicone grease inside the boots.
- Make sure that each part is free from dust or dirt before reassembly.

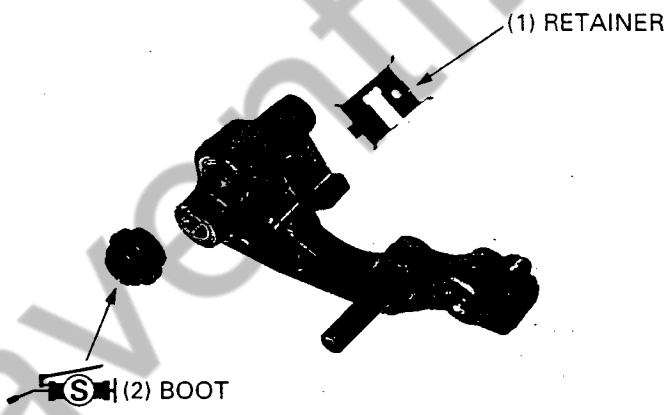
Coat the pistons, piston seals and dust seals with the recommended brake fluid.



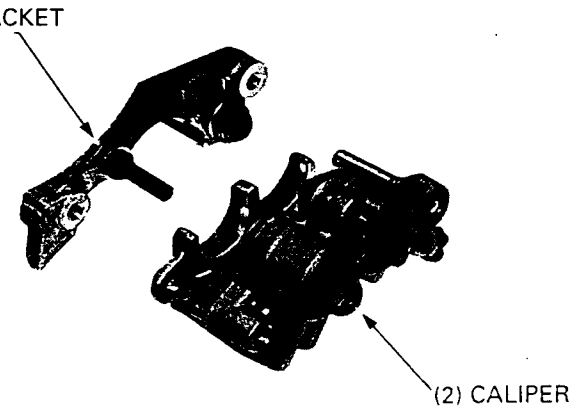
Install the following:
— Piston seals
— Dust seals
— Pistons
— Pad spring
— Bracket pin boot



— Retainer
— Caliper pin boot



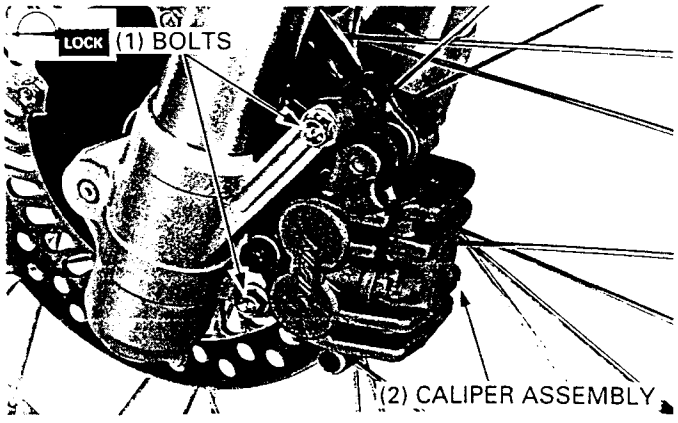
Install the caliper bracket to the brake caliper.



INSTALLATION

Install the front brake caliper assembly.
Clean the brake caliper bracket bolts and apply a locking agent.
Install and tighten the bracket bolts to the specified torque.

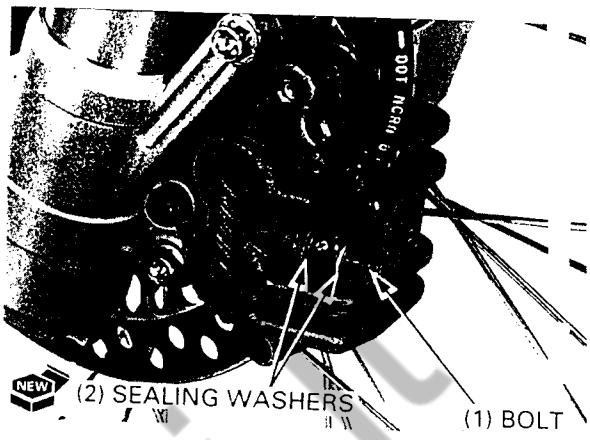
TORQUE: 30 N·m (3.1 kgf·m, 22 lbf·ft)



Connect the brake hose eyelet joint with two new sealing washers, then tighten the oil bolt.

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

Fill the master cylinder with DOT4 brake fluid from a sealed container and bleed any air from the front brake system (page 15-4).
Install the brake pads (page 15-6).



FRONT MASTER CYLINDER

REMOVAL

CAUTION

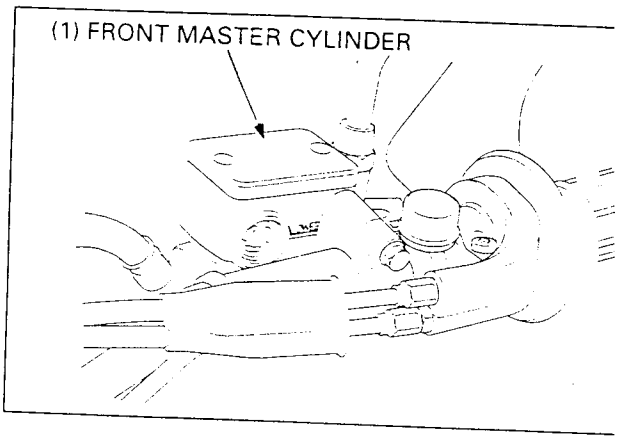
- *Avoid spilling fluid on painted, plastic or rubber parts.*
- *Place a shop towel over these parts whenever the system is serviced.*

NOTE

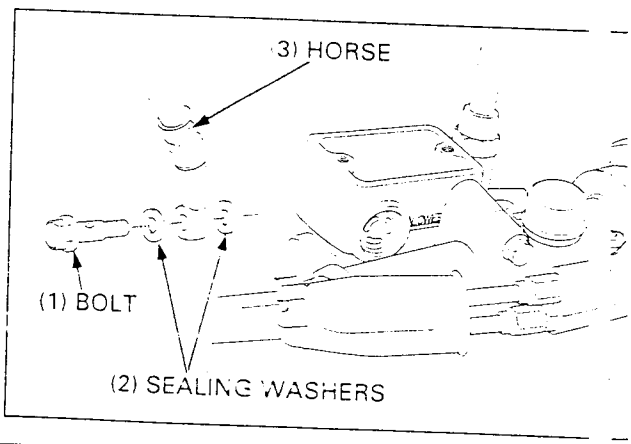
- When removing the brake hose bolt, cover the end of the hose to prevent contamination.
- Secure the hose to prevent fluid from leaking out.

Drain the brake fluid (page 15-3).

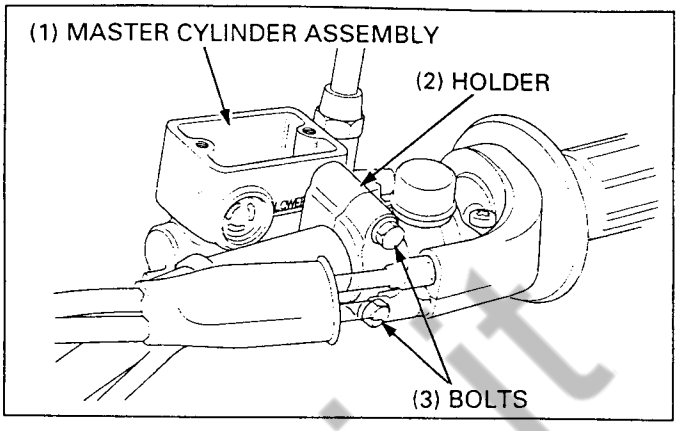
Remove the following:
— Brake lever/knuckle guard (page 15-25)



— Brake hose bolt
— Sealing washers
— Brake hose



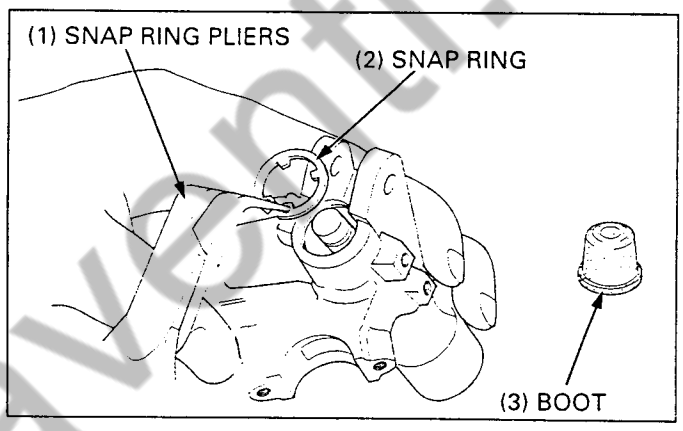
Remove the following:
— Front master cylinder holder bolts
— Front master cylinder holder
— Front master cylinder



DISASSEMBLY

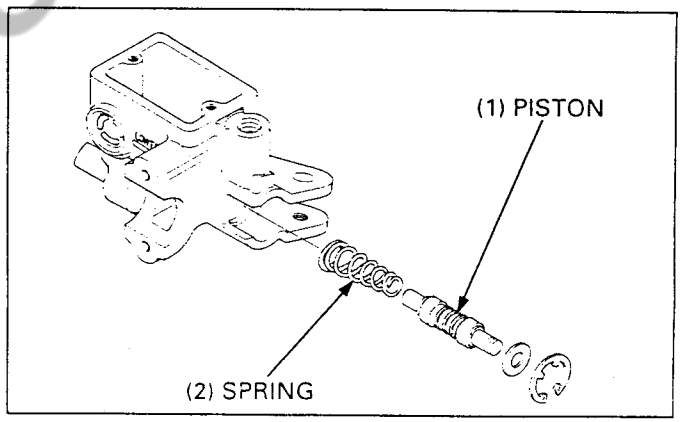
Remove the boot and snap ring using the special tool.

TOOL:
Snap ring pliers **07914 – 3230001**



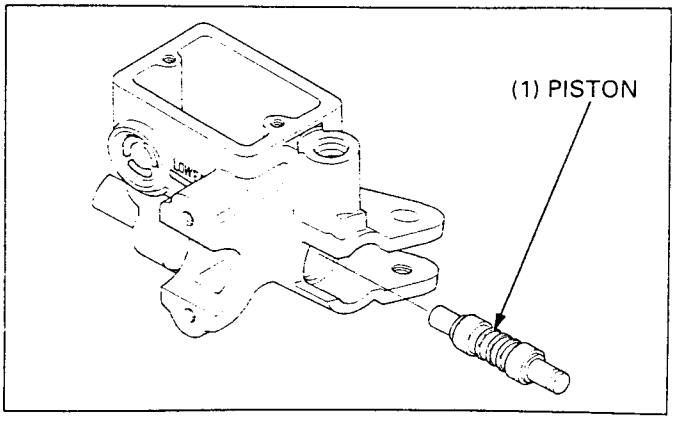
Remove the following:
— Piston assembly
— Spring

Check the spring and replace if necessary.



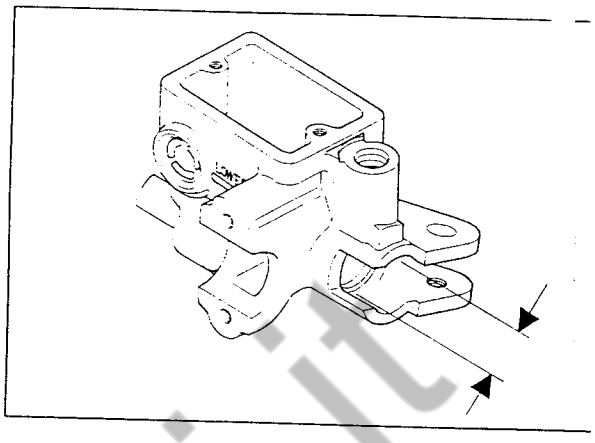
INSPECTION

Check the cylinder and piston for scoring, scratches or other damage.
Replace if necessary.



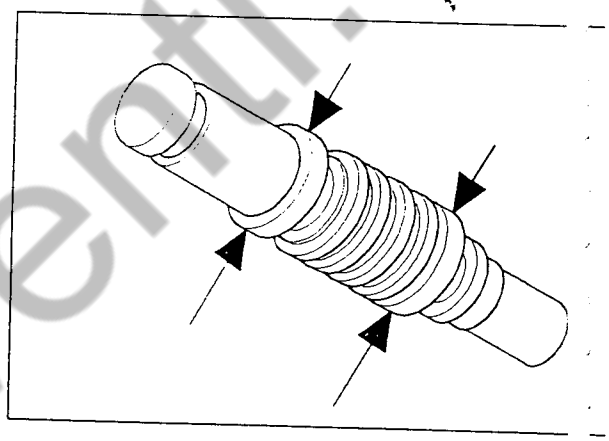
Measure the I.D. of the cylinder bore.

SERVICE LIMIT: 12.76 mm (0.502 in)

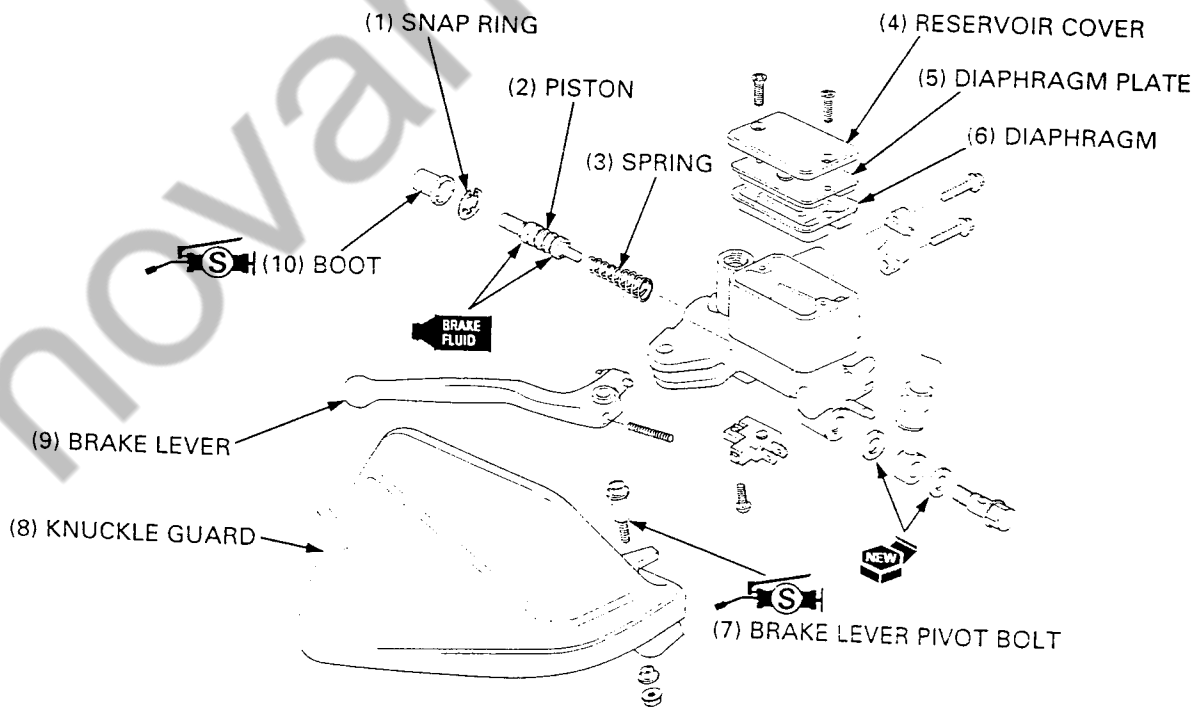


Measure the O.D. of the piston.

SERVICE LIMIT: 12.63 mm (0.497 in)



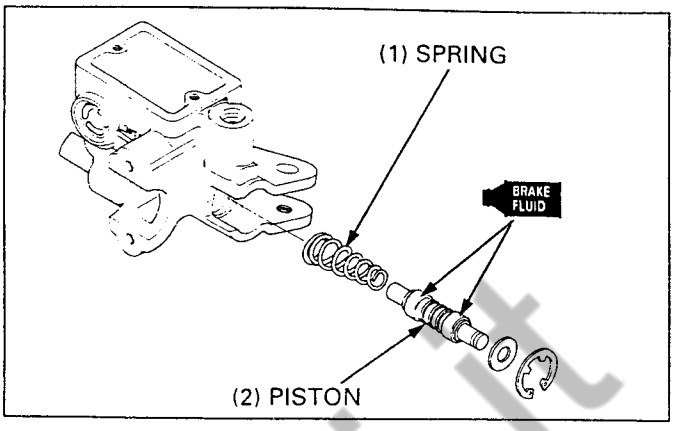
ASSEMBLY



NOTE

- Replace the piston assembly and spring as a set if damaged.
- Replace the boot, if damaged.
- Apply silicone grease to the inside of the boot.
- Make sure that each part is free from dust or dirt before reassembly.

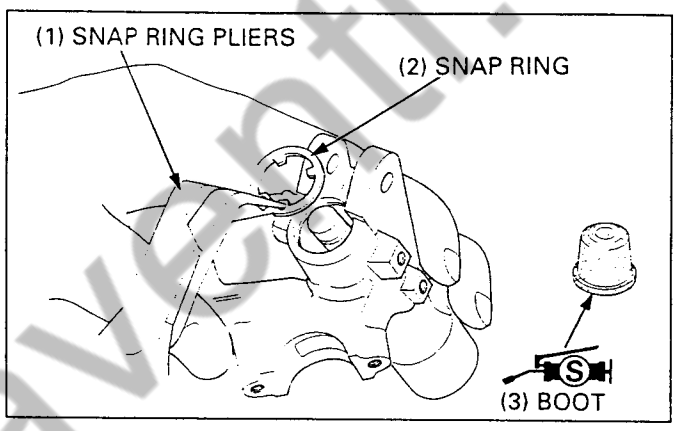
Coat the piston cups with the recommended brake fluid.
Install the following:
— Spring
— Piston assembly



Install the snap ring using the special tool.

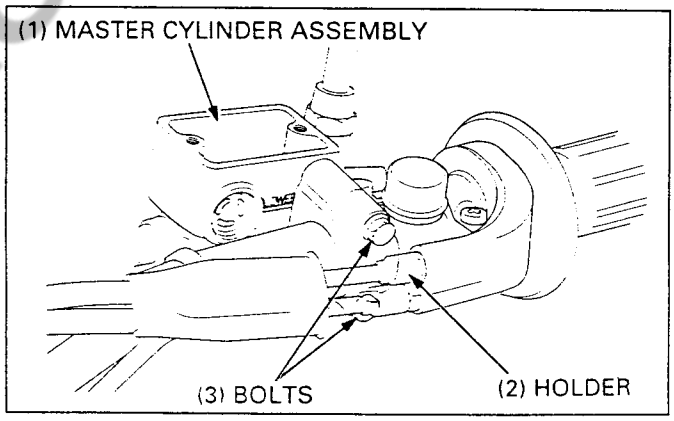
TOOL:
Snap ring pliers **07914 – 3230001**

Install the boot.



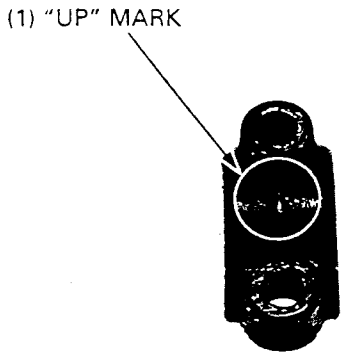
INSTALLATION

Place the master cylinder on the handlebar and install the holder and two mounting bolts with holder's "UP" mark facing up.



Align the end of the holder with the punch mark on the handlebar. Torque the upper bolt first, then the lower bolt.

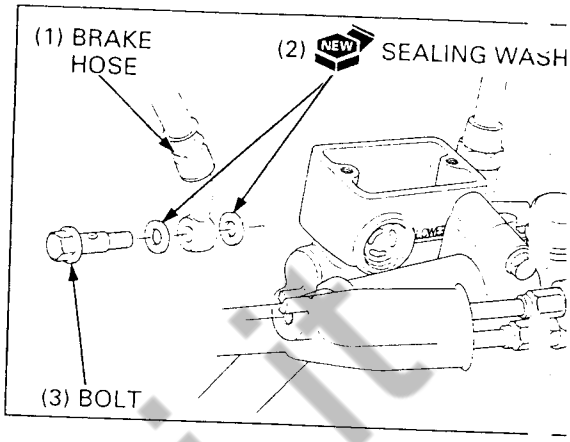
TORQUE: 9 N·m (0.9 kgf·m, 6.5 lbf·ft)



Connect the brake hose eyelet joint with new sealing washers.
Tighten the bolt.

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

Install the brake lever/knuckle guard (page 15-26).
Fill the master cylinder with DOT4 brake fluid from a sealed container and bleed any air from the front brake system (page 15-4).

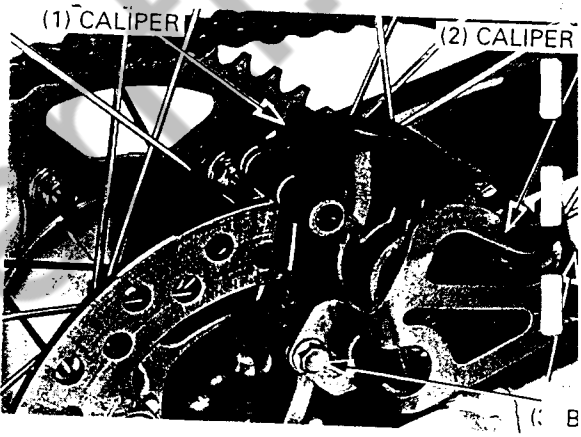


REAR BRAKE CALIPER

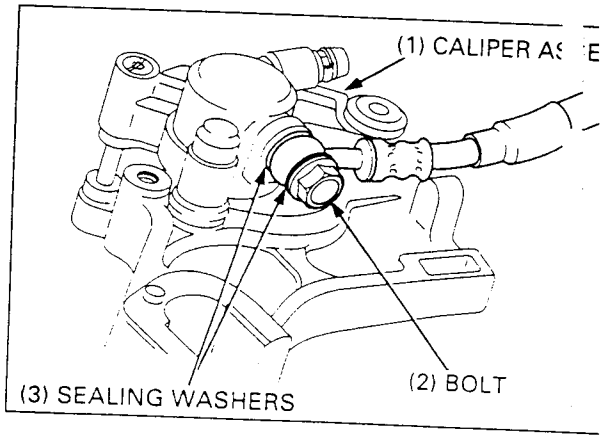
REMOVAL

Drain the brake fluid (page 15-3).
Remove the caliper guard mounting bolts and caliper guard.
Move the rear wheel back to free the tab from the swingarm (page 14-3).

Remove the rear brake caliper.

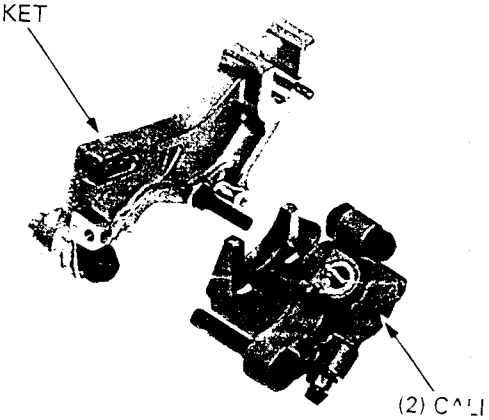


Remove the following:
— Brake hose bolt
— Sealing washers
— Rear brake caliper assembly

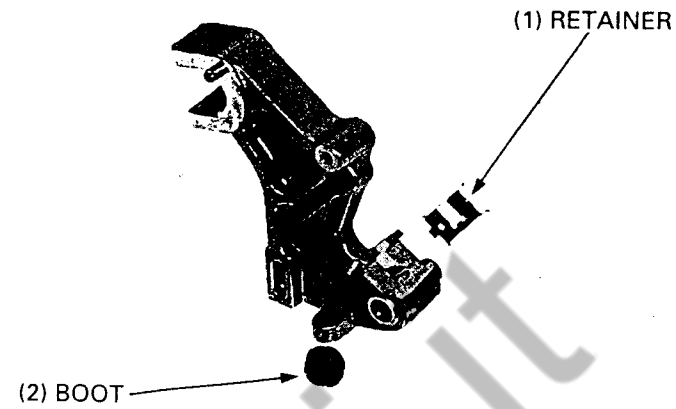


DISASSEMBLY

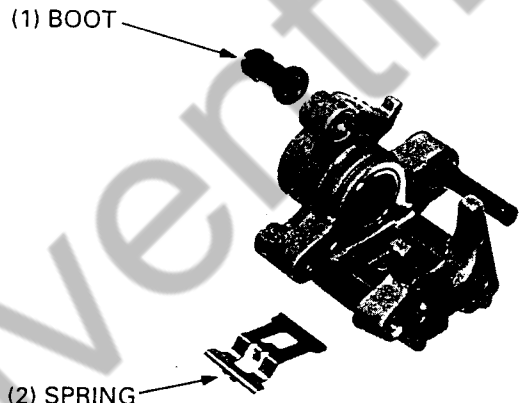
Remove the caliper bracket from the caliper.



Remove the following:
— Caliper pin boot
— Retainer



— Bracket boot
— Pad spring

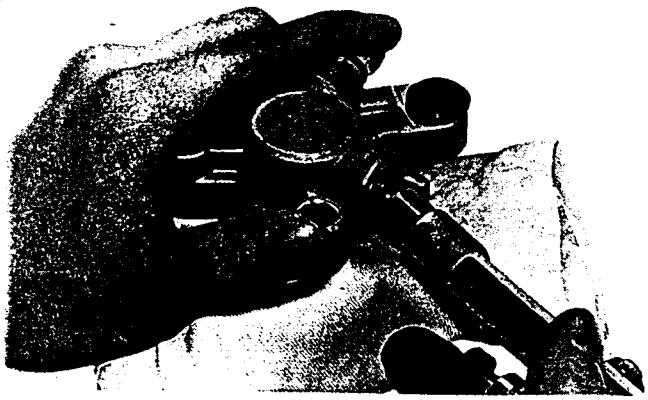


If necessary, lightly apply compressed air to the caliper fluid inlet to get the piston out.

Place a shop rag under the caliper to cushion the piston when it is expelled.
Use the air in short spurts.

⚠ WARNING

- *Do not bring the air nozzle too close to the inlet or the pistons may be forced out with excessive force that could cause injury.*

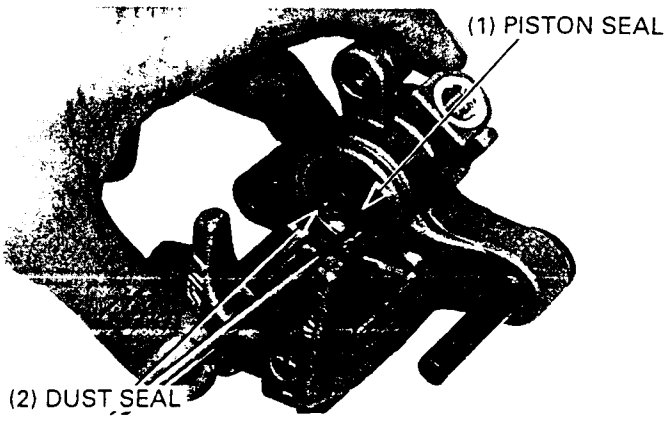


Remove the piston seal and dust seal.

CAUTION

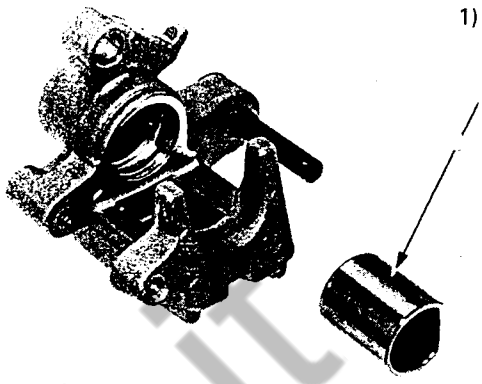
- *Be careful not to damage the piston sliding surfaces when removing the seals.*

Clean the piston and caliper cylinder with fresh brake fluid.



INSPECTION

Check the cylinder and piston for scoring, scratches or other damage.
Replace if necessary.

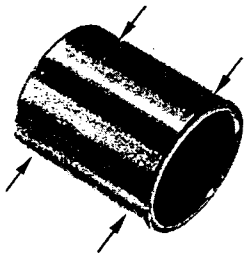


Measure the cylinder bore I.D..

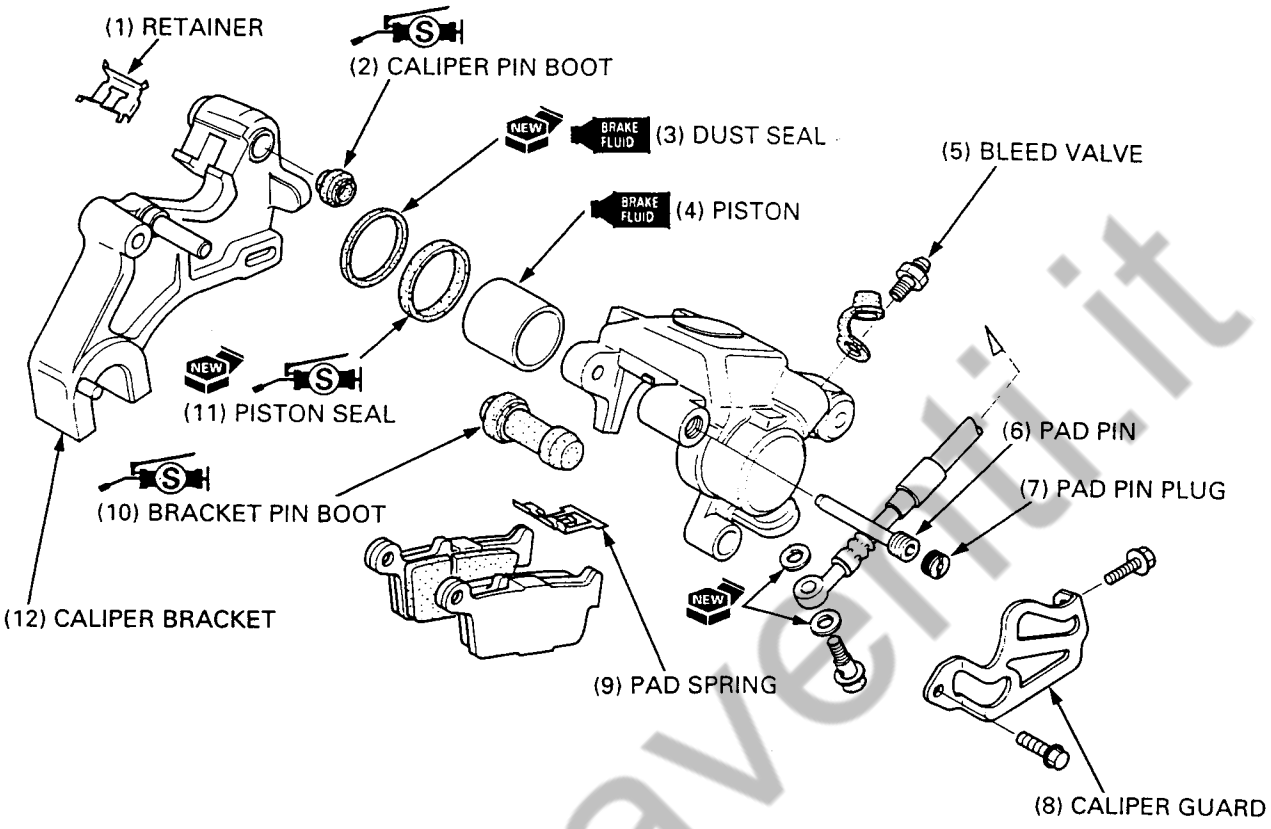
SERVICE LIMIT: 27.06 mm (1.065 in)

Measure the piston O.D..

SERVICE LIMIT: 26.89 mm (1.059 in)



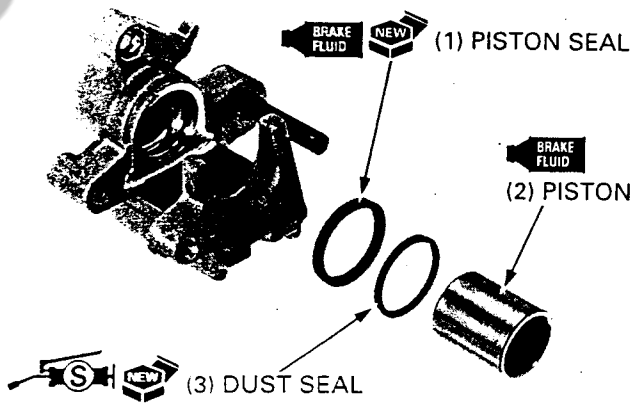
ASSEMBLY



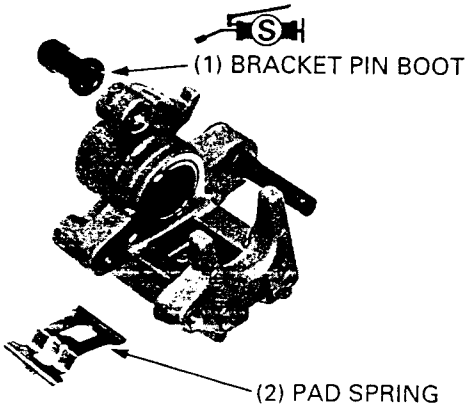
NOTE

- Replace the piston assembly and spring as a set if damaged.
- Replace the boot, if damaged.
- Apply silicone grease to the inside of the boot.
- Make sure that each part is free from dust or dirt before reassembly.

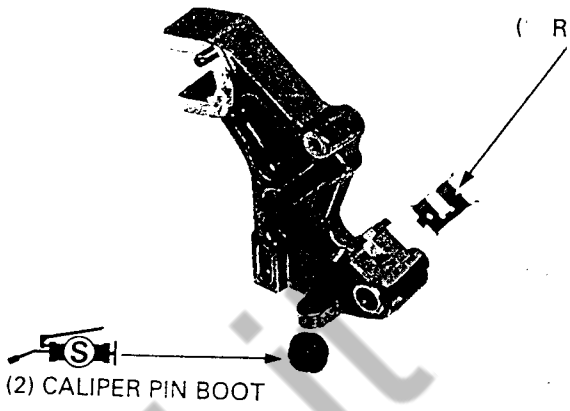
Coat the piston, piston seal and dust seal with the recommended brake fluid.



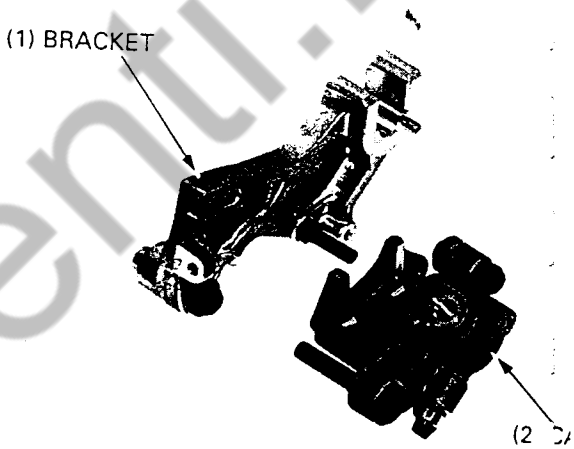
Install the following:
— Piston seal
— Dust seal
— Piston
— Pad spring
— Bracket pin boot



Install the following:
— Retainer
— Caliper pin boot



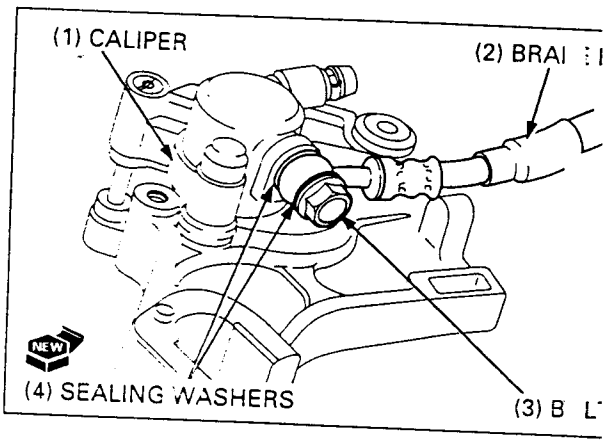
Install the caliper bracket to the brake caliper.



INSTALLATION

Connect the brake hose eyelet joint with two new sealing washers, then tighten the oil bolt.

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

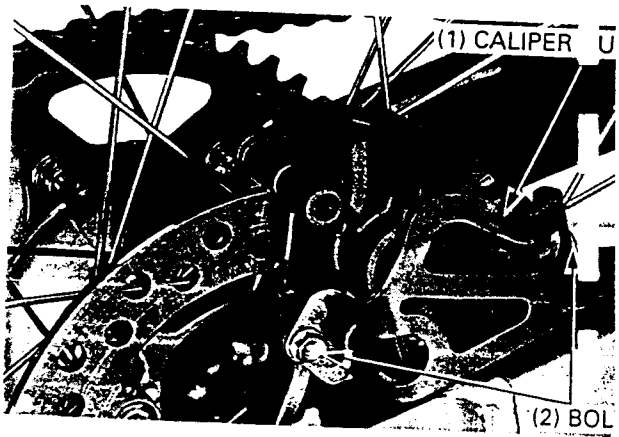


Install the rear brake caliper to the axle shaft.
Align the bracket with the slide rail on the swingarm.
Install the caliper guard and tighten the mounting bolts.

Adjust the drive chain slack (page 3-13).

Fill the master cylinder with DOT4 brake fluid from a sealed container and bleed any air from the front brake system (page 15-4).

Install the brake pads (page 15-6).



REAR MASTER CYLINDER

REMOVAL

CAUTION

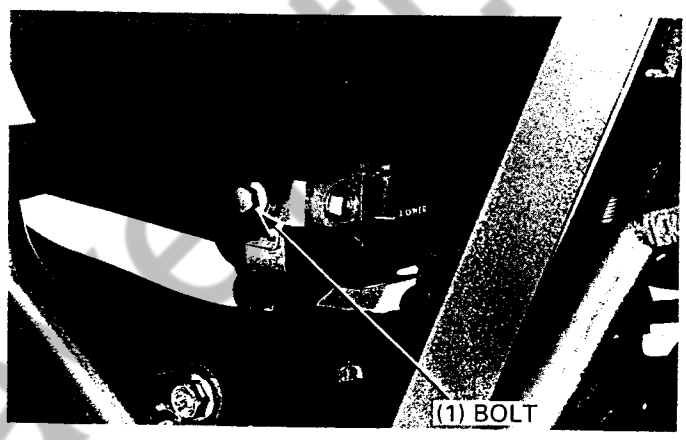
- *Avoid spilling fluid on painted, plastic or rubber parts.*
- *Place a shop towel over these parts whenever the system is serviced.*

NOTE

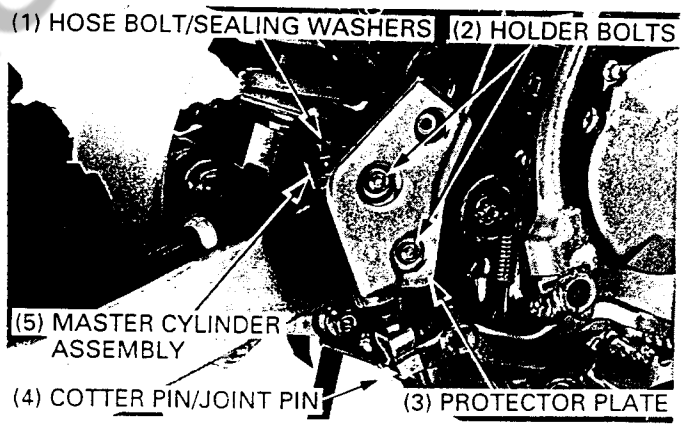
- When removing the brake hose bolt, cover the end of the hose to prevent contamination.
  Secure the hose to prevent fluid from leaking out.

Drain the brake fluid (page 15-3).

Remove the reservoir tank bracket bolt.

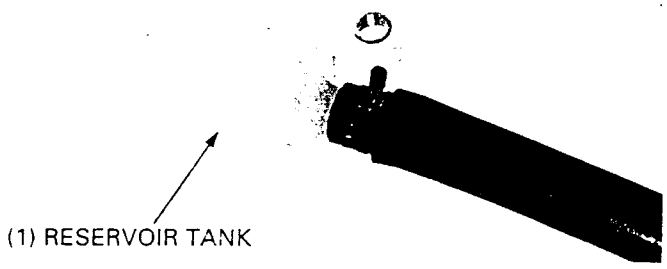


Remove the following:
— Cotter pin/joint pin
— Brake hose bolt
— Sealing washers
— Brake hose
— Rear master cylinder holder bolts
— Rear master cylinder protector plate
— Rear master cylinder



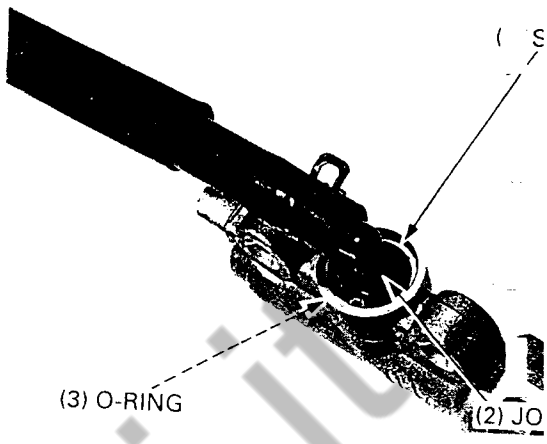
DISASSEMBLY

Remove the following:
— Reservoir tank



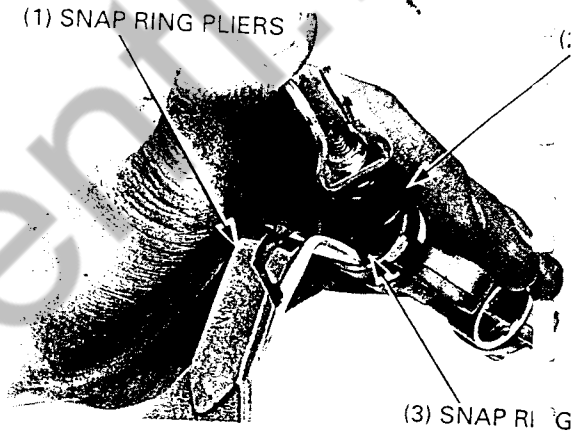
Remove the following:
— Snap ring (use special tool)
— Joint pipe
— O-ring

TOOL:
Snap ring pliers **07914 – 3230001**



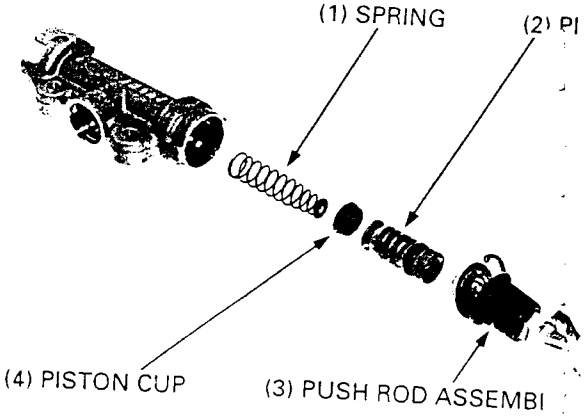
— Boot
— Snap ring

TOOL:
Snap ring pliers **07914 – 3230001**



— Push rod assembly
— Piston assembly
— Piston cup
— Spring

Check the spring and replace if necessary.

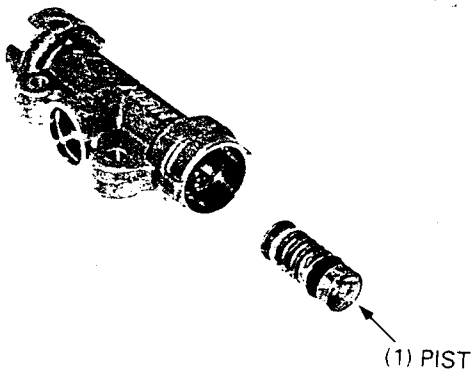


INSPECTION

Check the cylinder and pistons for scoring, scratches or other damage.
Replace if necessary.

NOTE

- Replace the piston assembly and spring as a set if damaged.

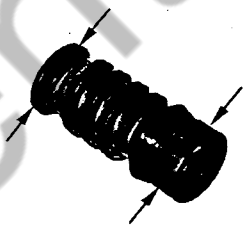


Measure the cylinder bore I.D..

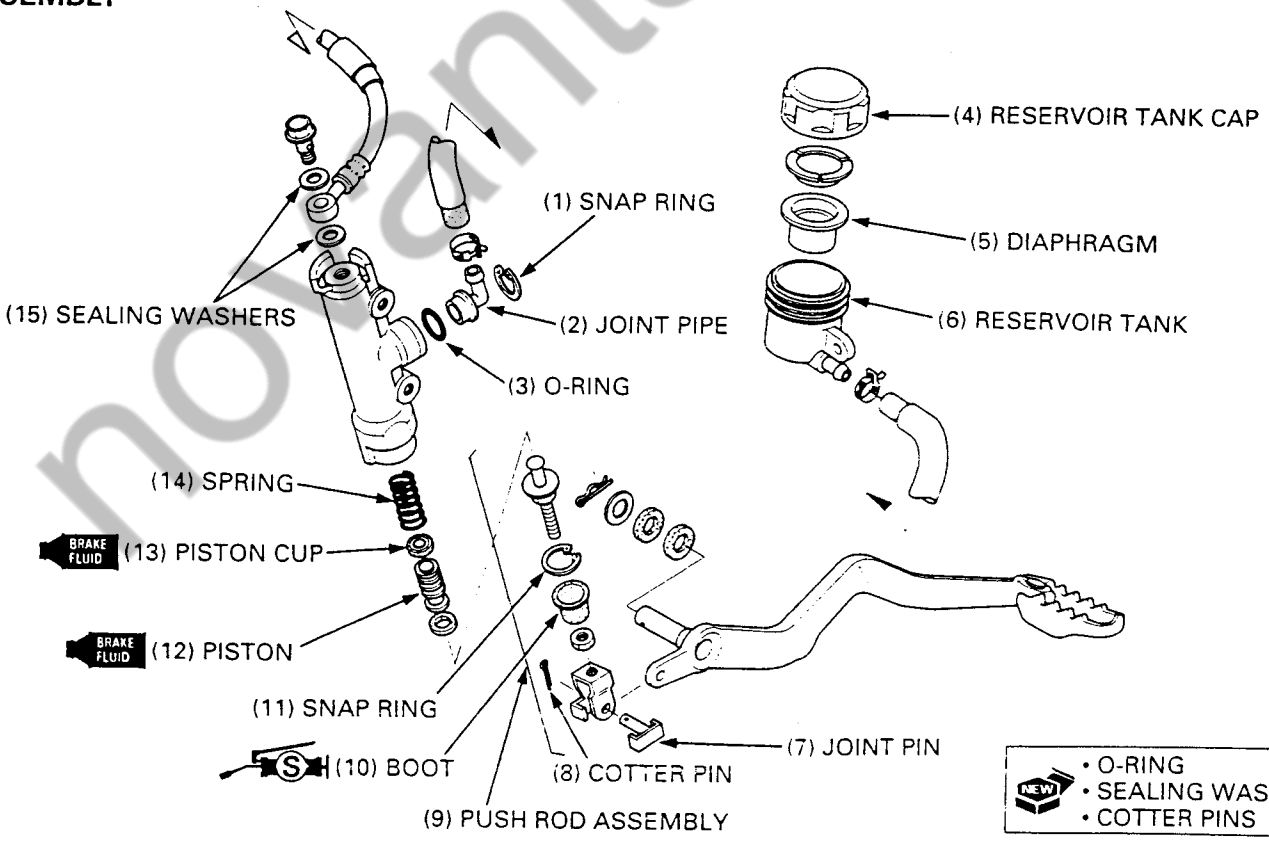
SERVICE LIMIT: 14.06 mm (0.554 in)

Measure the piston O.D..

SERVICE LIMIT: 13.95 mm (0.549 in)

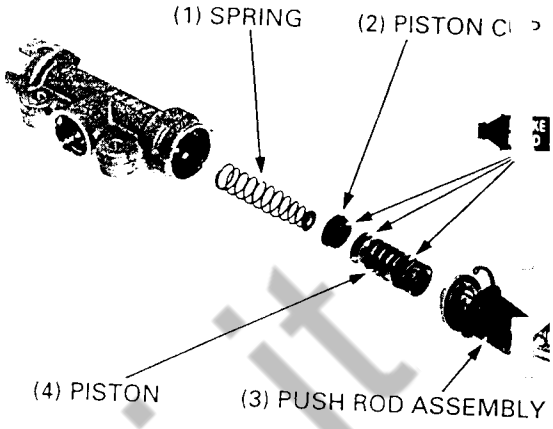


ASSEMBLY



NOTE

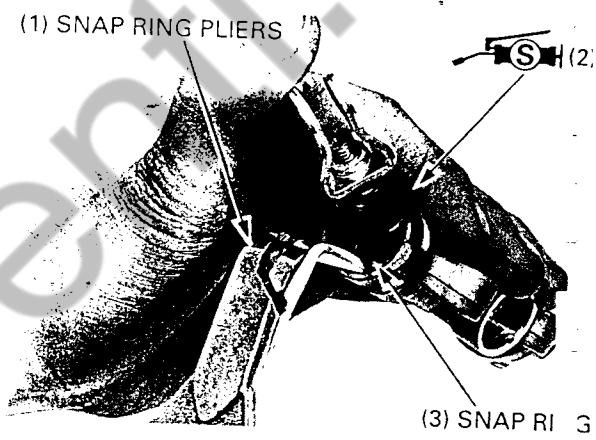
- Repair the piston assembly and spring as a set if damaged.
- Replace the boot, if damaged.
- Apply silicone grease to the inside of the boot.
- Make sure that each part is free from dust or dirt before reassembly.



Coat the piston cup with the recommended brake fluid.
Install the following:
— Spring
— Piston cup
— Piston assembly
— Push rod assembly

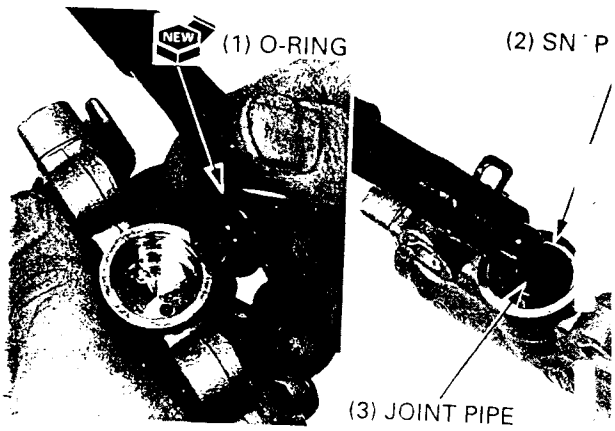
Install the snap ring.

TOOL:
Snap ring pliers **07914 – 3230001**

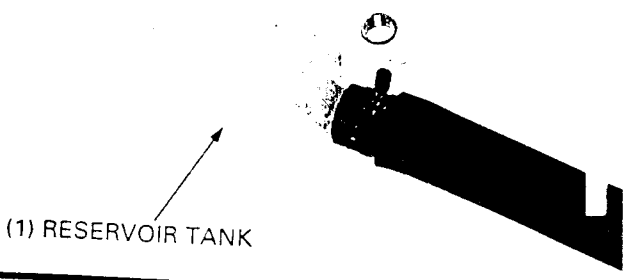


Install the boot.

Install the following:
— New O-ring
— Joint pipe
— Snap ring (use special tool)



— Reservoir tank



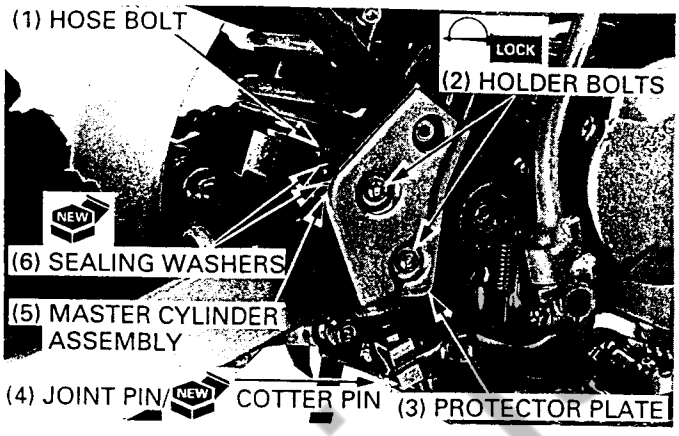
INSTALLATION

Apply a locking agent to the threads of the master cylinder holder bolts.

Install the following:
— Rear master cylinder assembly
— Master cylinder protector plate
— Master cylinder holder bolt

TORQUE: 14 N·m (1.4 kgf·m, 10 lbf·ft)

— Brake hose

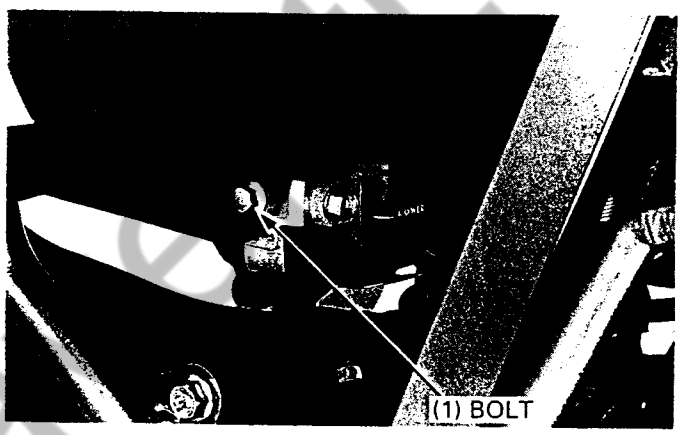


CAUTION

- *Align the eyelet joint with the notch in the master cylinder first, then tighten the bolt.*
- *After installing the brake hose to the master cylinder, make sure it does not interfere with the movement of the shock absorber.*

— New sealing washers
— Brake hose bolt

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)



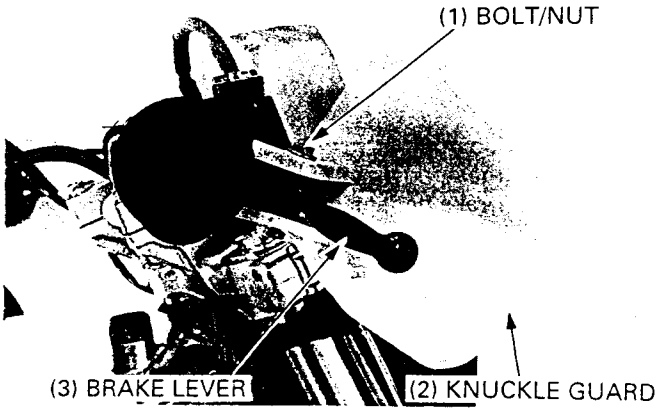
— Joint pin
— New cotter pin
— Reservoir tank bracket bolt

Fill the master cylinder with DOT4 brake fluid from a sealed container and bleed any air from the rear brake system (page 15-3).

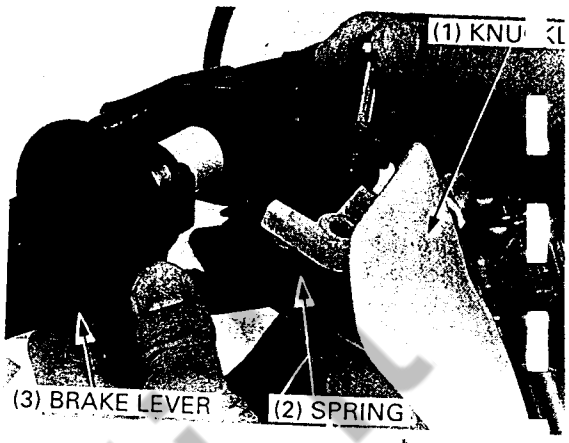
BRAKE LEVER

REMOVAL

Remove the brake lever pivot bolt/nut



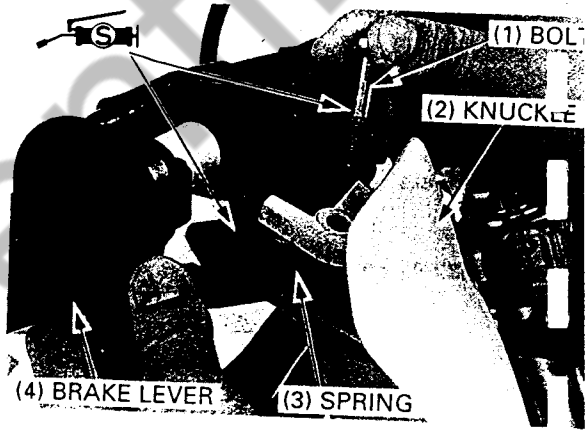
Remove the following:
— Knuckle guard
— Brake lever
— Return spring



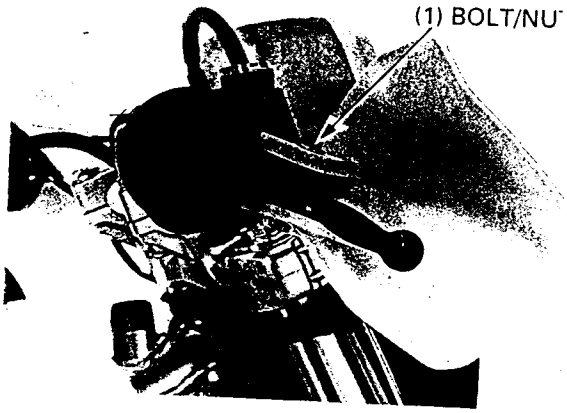
INSTALLATION

Apply silicone grease to the following parts:
— Brake lever adjuster bolt tip
— Brake lever pivot bolt sliding surface

Install the following:
— Return spring
— Brake lever
— Knuckle guard



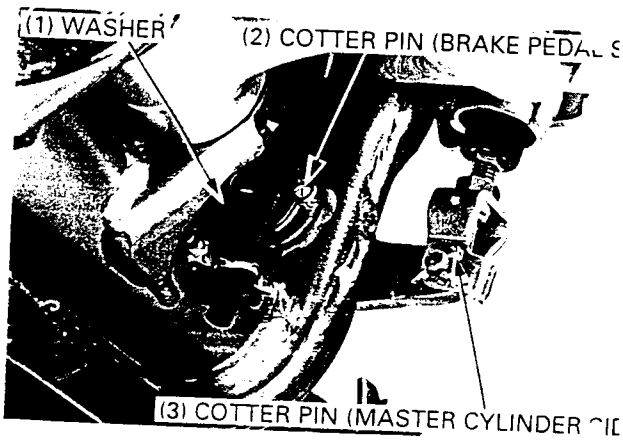
— Brake lever pivot bolt/nut



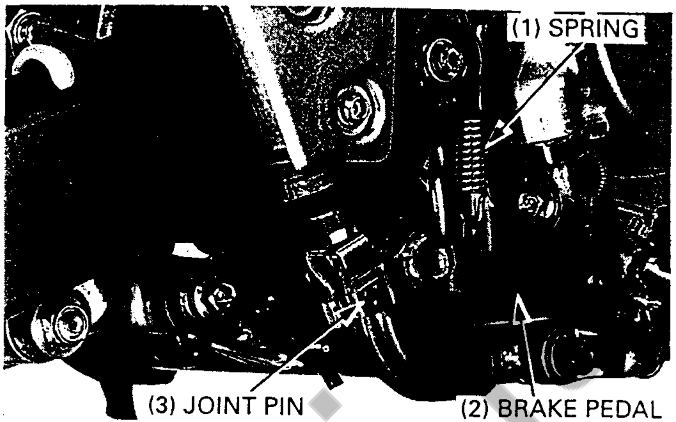
BRAKE PEDAL

REMOVAL

Remove the following:
— Cotter pin (master cylinder side)
— Cotter pin (brake pedal side)
— Washer



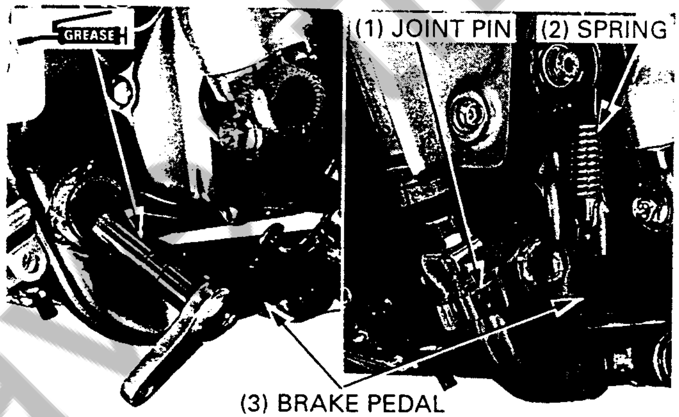
— Joint pin
— Brake pedal return spring
— Brake pedal



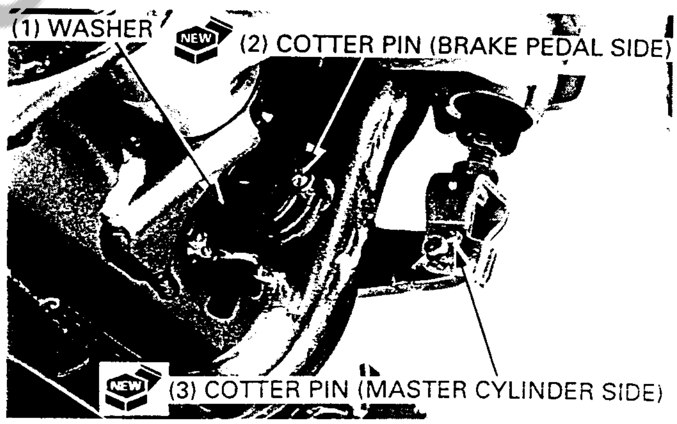
INSTALLATION

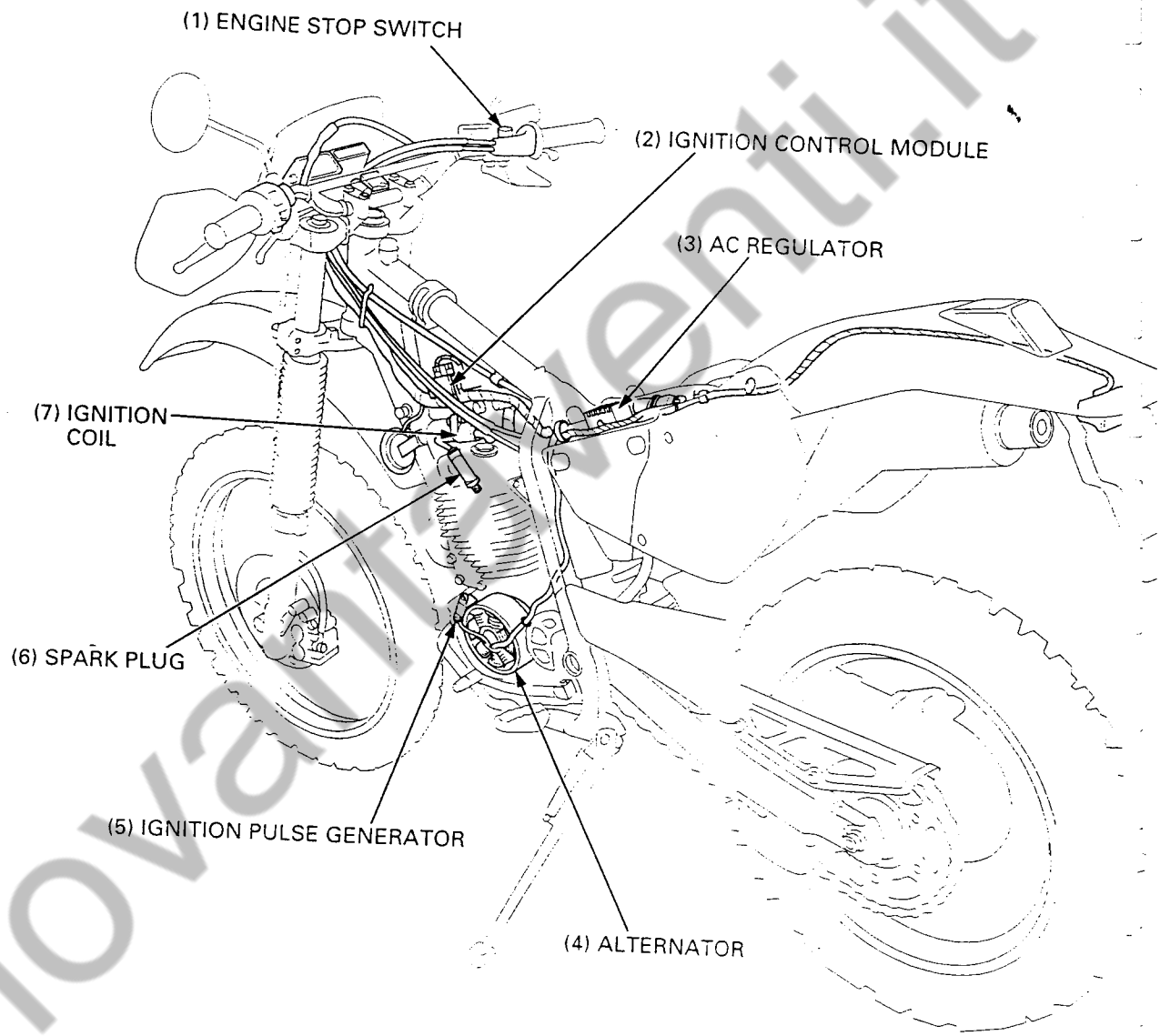
Apply grease to the brake pedal pivot.

Install the following:
— Brake pedal
— Brake pedal return spring
— Joint pin



— Washer
— New cotter pin (brake pedal side)
— New cotter pin (master cylinder side)





16. ELECTRICAL SYSTEM

SERVICE INFORMATION

GENERAL

⚠ WARNING

- *If the engine must be running to do some work, make sure the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and may lead to death.*

- When servicing the electrical system, always follow the steps in the troubleshooting sequence on page 16-3.
- The ignition control module (ICM) may be damaged if dropped. Also, if the connector is disconnected when current is present, the excessive voltage may damage the ignition control module (ICM).
- Ignition timing cannot be adjusted since the ignition control module (ICM) is non-adjustable. If ignition timing is incorrect, check the system components and replace any faulty parts.
- A faulty ignition system is often related to poorly connected or corroded connectors. Check those connections before proceeding.
- Use a spark plug of the correct heat range. Using a spark plug with an incorrect heat range can damage the engine.
- For alternator removal and installation, see section 10.

SPECIFICATIONS

ITEM		SPECIFICATIONS	
Spark plug		NGK	NIPPONDENSO
	Standard	CR9EH-9	U27FER9
	For cold climate (Below 5°C/41°F)	CR8EH-9	U24FER9
Ignition timing	Initial	8° BTDC at 1,900 ± 200 min⁻¹ (rpm)	
	Full advance	28° ± 2° BTDC at 4,300 min⁻¹ (rpm)	
Spark plug gap		0.8 – 0.9 mm (0.031 – 0.035 in)	
Ignition coil primary peak voltage		100 V minimum	
Ignition pulse generator peak voltage		0.7 V minimum	
Exciter coil peak voltage		100 V minimum	
Lighting coil resistance (At 20°C/68°F)	AC	0.2 – 1.2 Ω	
	DC	0.2 – 1.2 Ω	
Headlight		12 V 35/35 W	
Taillight		12 V 5 W	
Alternator/output		0.14 kW/5,000 min⁻¹ (rpm)	
AC regulator specific voltage		12.0 – 14.0 V/3,000 min⁻¹ (rpm)	

TORQUE VALUES

Timing hole cap	10 N·m (1.0 kgf·m, 7.2 lbf·ft) Apply grease to the threads and flange su
Crankshaft hole cap	8 N·m (0.8 kgf·m, 5.8 lbf·ft) Apply grease to the threads and flange surf
Spark plug	12 N·m (1.2 kgf·m, 9 lbf·ft)

TOOLS

Special

Imrie diagnostic tester (model 625) or Peak voltage adaptor	07HGJ – 0020100 with Commercially available digital multimeter (impedance 10 MΩ/DCV minimum)

TROUBLESHOOTING

- Inspect the following before diagnosing the system.
  — Faulty spark plug
  — Loose spark plug cap or spark plug wire connection
  — Water got into the spark plug cap (Leaking the ignition coil secondary voltage)
- Temporarily exchange the ignition coil with a known good one and perform the spark test. If there spark, the exchanged ignition coil is faulty.

IGNITION SYSTEM

No spark at plug

Unusual condition		Probable cause (Check in numerical order)
Ignition coil primary voltage	Low peak voltage.	1. The multimeter impedance is too low. 2. Cranking speed is too low. 3. The sampling timing of the tester and measured pulse were not synchronized (System is normal if measured voltage is over the standard voltage at least once). 4. Poorly connected connectors or an open circuit in ignition system. 5. Faulty exciter coil (Measure the peak voltage). 6. Faulty ICM (in case when above No.1 – 5 are normal).
	No peak voltage.	1. Incorrect peak voltage adapter connections. 2. Short circuit in engine stop switch wire. 3. Faulty engine stop switch. 4. Loose or poor connected ICM connectors. 5. Open circuit or poor condition in ground wire of the ICM. 6. Faulty peak voltage adaptor. 7. Faulty exciter coil (Measure the peak voltage). 8. Faulty ignition pulse generator. 9. Faulty ICM (in case when above No. 1 – 8 are normal).
	Peak voltage is normal, but no spark jumps at plug.	1. Faulty spark plug or leaking ignition coil secondary current. 2. Faulty ignition coil.
Exciter coil	Low peak voltage.	1. The multimeter impedance is too low. 2. Cranking speed is too low. 3. The sampling timing of the tester and measured pulse were not synchronized (System is normal if measured voltage is over the standard voltage at least once). 4. Faulty exciter coil (in case when above No.1 – 3 are normal).
	No peak voltage.	1. Faulty peak voltage adaptor. 2. Faulty exciter coil.
Ignition pulse generator	Low peak voltage.	1. The multimeter impedance is too low. 2. Cranking speed is too low. 3. The sampling timing of the tester and measured pulse were not synchronized (System is normal if measured voltage is over the standard voltage at least once). 4. Faulty ignition pulse generator (in case when above No. 1 – 3 are normal).
	Low peak voltage.	1. Faulty peak voltage adaptor. 2. Faulty ignition pulse generator.

Light does not come on when engine is running

- Bulb burned out
- Wiring to that component has an open circuit
- Faulty ignition coil

LIGHTING SYSTEM

Before inspecting, check the headlight and taillight for brown bulbs for improper rating.

Measure the regulated voltage (page 16-9).
- Too low → • Go to the next step "Voltage too low"
- Too high →

AC regulator ground line:
Disconnect the AC regulator connectors and check for continuity between the green wire terminal and body ground.
- Abnormal → • Open circuit in the wire harness.
- Normal →

AC regulator connectors:
Check for secure connection.
- Abnormal → • Poorly connected AC regulator connector
- Normal →

• AC regulator faulty.

Voltage too low

Voltage is too low.

Alternator:
Check the alternator lighting coil (page 16-9).
- Abnormal → • Open or short circuit in the alternator.
- Normal →

AC regulator connectors:
Check for secure connection.
- Abnormal → • Poorly connected AC regulator connector
- Normal →

• Open or short circuit in the alternator.

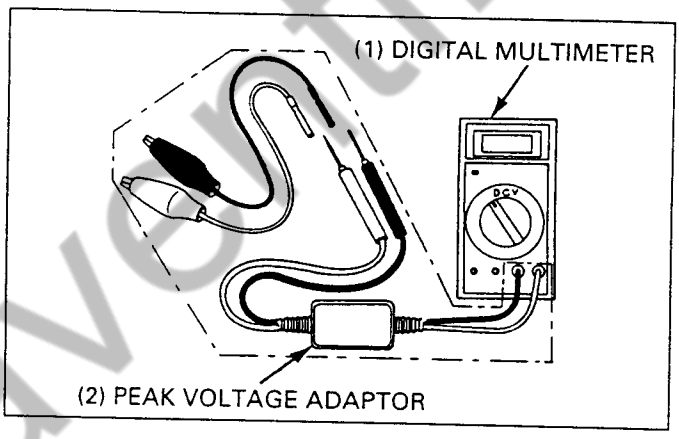
IGNITION SYSTEM INSPECTION

NOTE

- If there is no spark at plug, check all connections for loose or poor contact before measuring each peak voltage.
- Use recommended digital multimeter or commercially available digital multimeter with an impedance of 10 MΩ/DCV minimum if you are using the peak voltage adaptor. The display value differs depending upon the internal impedance of the multimeter.
- If using Imrie diagnostic tester (model 625), follow the manufacturer's instructions.

Connect the peak voltage adaptor to the digital multimeter, or use the Imrie diagnostic tester.

TOOL:
Imrie diagnostic testor (model 625) or
Peak voltage adaptor 07HGJ – 0020100 with
Commercially available digital multimeter
(impedance 10 MΩ/DCV minimum)



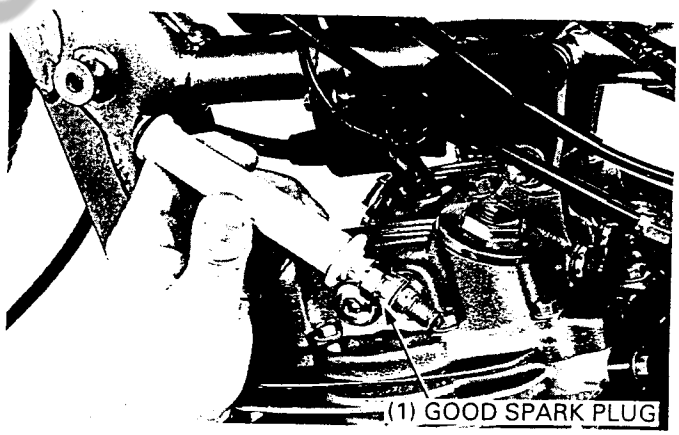
IGNITION PRIMARY PEAK VOLTAGE

NOTE

- Check all connections before inspection. If the system is disconnected, incorrect peak voltage might be measured.
- Check cylinder compression and check that the spark plug is installed correctly.

Remove the fuel tank (page 5-3).

Shift the transmission into neutral. Disconnect the spark plug cap from the spark plug.
Connect a good known spark plug to the spark plug cap and ground the spark plug to the cylinder as done in a spark test.



Connect the peak voltage adaptor or Imrie tester to the ignition coil.

NOTE

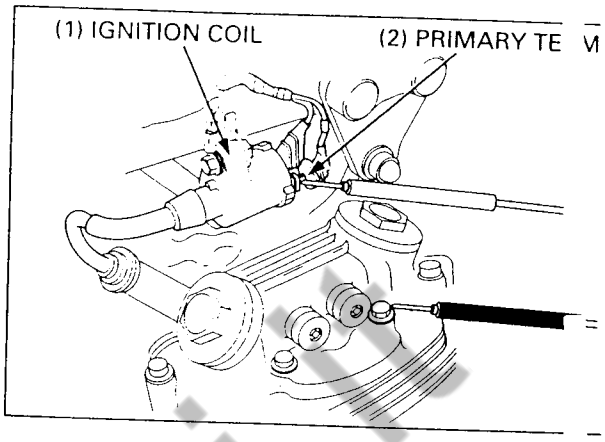
- Do not disconnect the ignition coil primary wires.

TOOL:
Imrie diagnostic tester (model 625) or
Peak voltage adaptor 07HGJ – 0020100 with
Commercially available digital multimeter
(impedance 10 MΩ/DCV minimum)

CONNECTION:
Black/Yellow terminal (+) – Body ground (–)

Crank the engine with the kickstarter and read ignition coil primary peak voltage.

PEAK VOLTAGE: 100 V minimum



⚠ WARNING

- *Avoid touching the spark plug and tester probes to prevent electric shock.*

If the peak voltage is lower than standard value, follow the checks described in the troubleshooting on page 16-3.

EXCITER COIL PEAK VOLTAGE

NOTE

- Check cylinder compression and check that the spark plug is installed correctly.

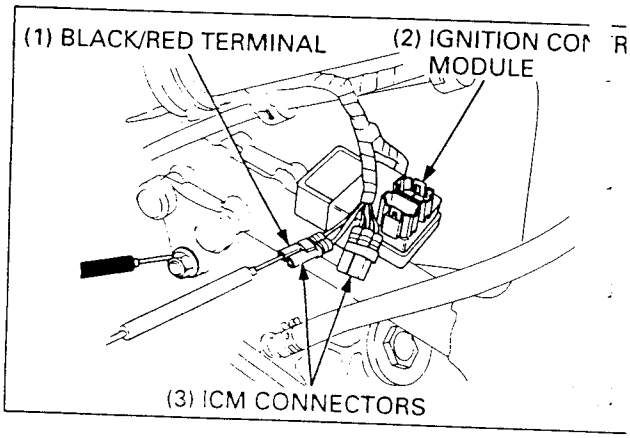
Disconnect the ICM 4P and 2P connectors.
Connect the peak voltage adaptor or Imrie tester probes to the 2P connector terminals of the exciter coil wire.

TOOL:
Imrie diagnostic tester (model 625) or
Peak voltage adaptor 07HGJ – 0020100 with
Commercially available digital multimeter
(impedance 10 MΩ/DCV minimum)

CONNECTION:
Black/Red terminal (+) – Body ground (–)

Crank the engine with the kickstarter and read exciter coil peak voltage.

PEAK VOLTAGE: 100 V minimum



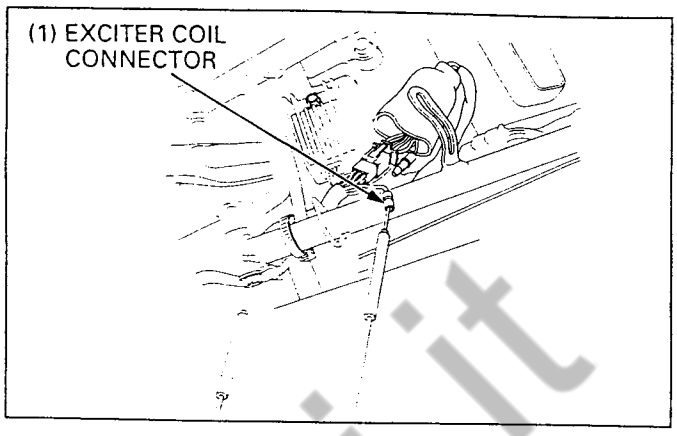
⚠ WARNING

- *Avoid touching the spark plug and tester probes to prevent electric shock.*

If the peak voltage is lower than standard value, recheck the following:

Remove the seat (page 2-2).
Disconnect the exciter coil black connector.
Connect the peak voltage adaptor or Imrie tester probes to the connector terminal of the exciter coil side and recheck the peak voltage.

If the peak voltage at the ICM connector is abnormal and peak voltage at the exciter coil connector is normal, check for poorly connected connectors or a broken wire harness.
If the peak voltage is abnormal at both connectors, follow the checks described in the troubleshooting on page 16-3.



IGNITION PULSE GENERATOR PEAK VOLTAGE

NOTE

- Check cylinder compression and check that the spark plug is installed correctly.

Disconnect the ICM 4P and 2P connectors.
Connect the peak voltage adaptor or Imrie tester probes to the 4P connector terminals of the ignition pulse generator wires.

TOOL:
Imrie diagnostic tester (model 625) or
Peak voltage adaptor 07HGJ – 0020100 with
Commercially available digital multimeter
(impedance 10 MΩ/DCV minimum)

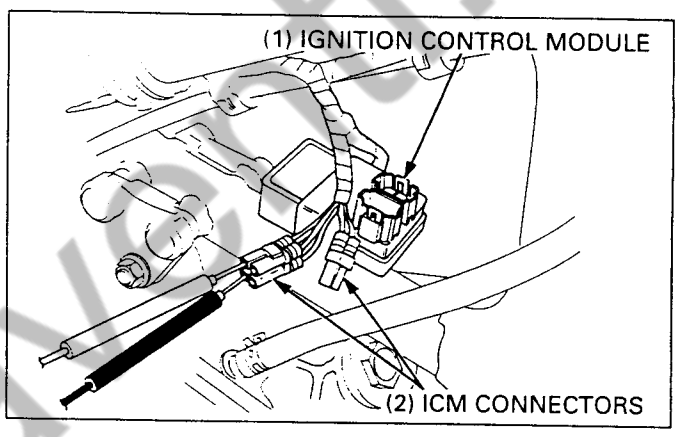
CONNECTION:
Blue/Yellow terminal (+) – Green/White terminal (–)

Crank the engine with the kickstarter and read ignition pulse generator peak voltage.

PEAK VOLTAGE: 0.7 V minimum

⚠ WARNING

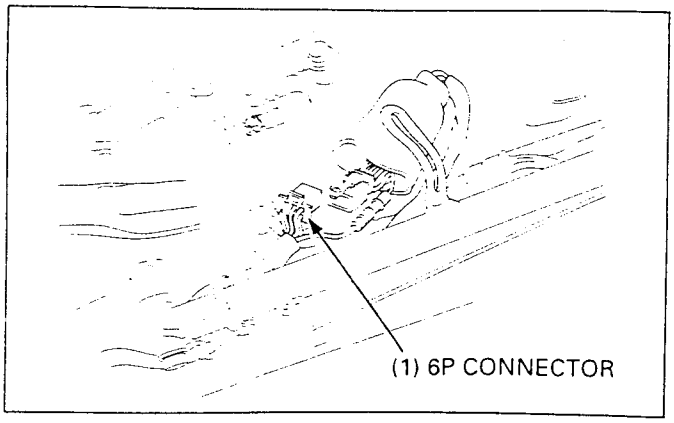
- *Avoid touching the spark plug and tester probes to prevent electric shock.*



If the peak voltage is lower than standard value, recheck the following:

Remove the seat (page 2-2).
Disconnect the AC generator 6P connector.
Connect the peak voltage adaptor or Imrie tester probes to the connector terminal of the ignition pulse generator side and recheck the peak voltage.

If the peak voltage at the ICM connector is abnormal and peak voltage at the ignition pulse generator connector is normal, check for poorly connected connectors or a broken wire harness.
If the peak voltage is abnormal, follow the checks described in the troubleshooting on page 16-3.



IGNITION COIL REMOVAL/INSTALLATION

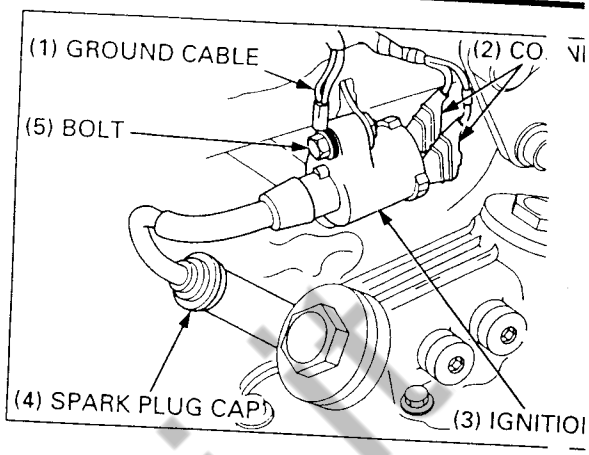
Remove the fuel tank (page 5-3).

Disconnect the ignition coil primary connectors.
Disconnect the spark plug cap.
Remove the bolt and ground cable.
Remove the ignition coil.

Installation is in the reverse order of removal.

NOTE

- Install the bolt with the ground cable and tighten it.



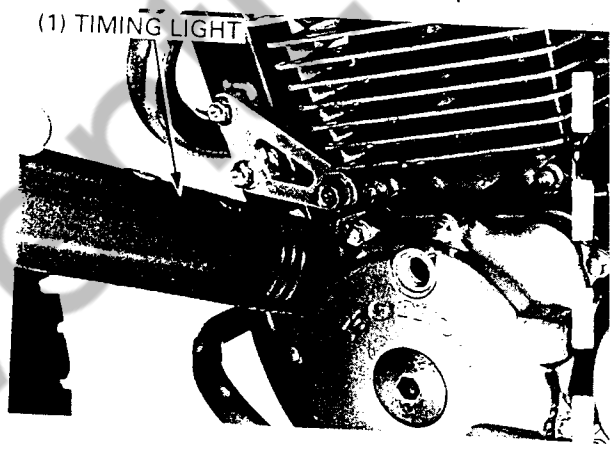
IGNITION TIMING

⚠ WARNING

- *If the engine must be running to do some work, make sure the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and may lead to death.*

NOTE

- The capacitor discharge ignition system is factory preset and need only be checked when an electrical system component is replaced.

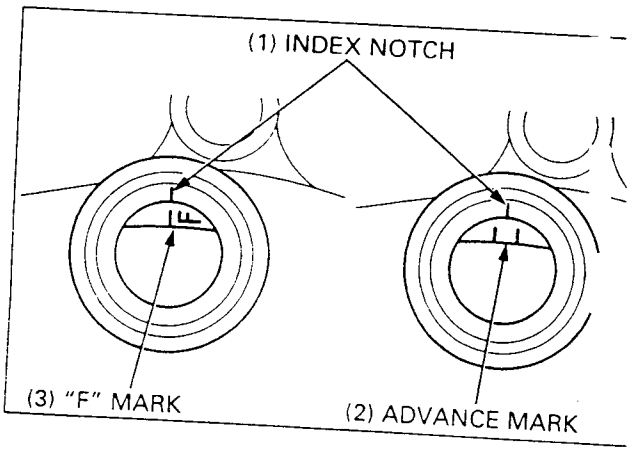


Warm up the engine and remove the timing hole cap.
Connect a timing light and tachometer.

The timing is correct if the "F" mark on the flywheel aligns with the index notch on the left crankcase cover at 1,300 ± 100 min^{-1} (rpm).

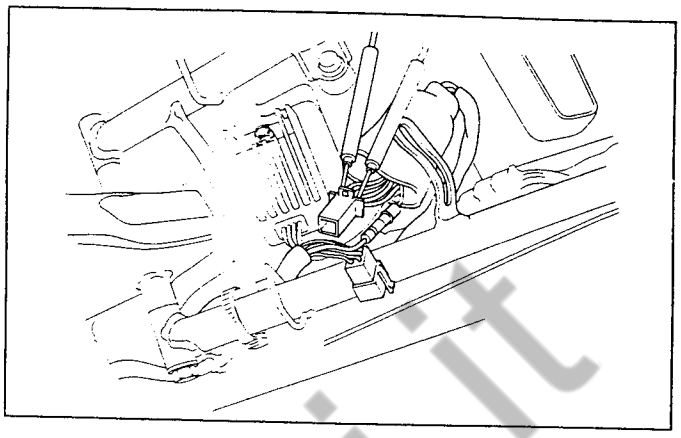
To check the advance, raise the engine speed to 4,300 min^{-1} (rpm); the index notch should be between the advance marks.

If the ignition timing is incorrect, inspect the ICM and ignition pulse generator.



ALTERNATOR

INSPECTION



Remove the seat (page 2-2).

NOTE

- It is not necessary to remove the stator coil make this test.

Disconnect the alternator 6P connector.
Measure the lighting coil (DC) resistance between the pink wire terminal and yellow wire terminal.

STANDARD: 0.2 – 1.2 Ω (20°C/68°F)

Disconnect the alternator 6P connector.
Measure the lighting coil (AC) resistance between the White/Yellow wire terminal and body ground.

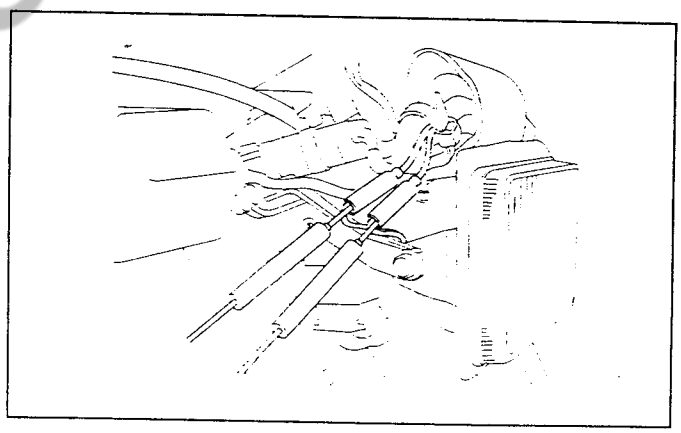
STANDARD: 0.2 – 1.2 Ω (20°C/68°F)

AC REGULATOR

VOLTAGE TEST

⚠WARNING

- *If the engine must be to do some work, make sure the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and may lead to death.*



Warm up the engine.
Stop the engine and remove the headlight case (page 16-12).
Connect a voltmeter between the Blue wire terminal and (+) probe, Green wire terminal and (–) probe.
Turn the headlight switch ON. (except U type)
Start the engine and turn the headlight dimmer switch Hi position.

Check the meter reading while increasing engine speed slowly.

Specific voltage: 12.5 – 13.5 V/3,000 min^{-1} (rpm)

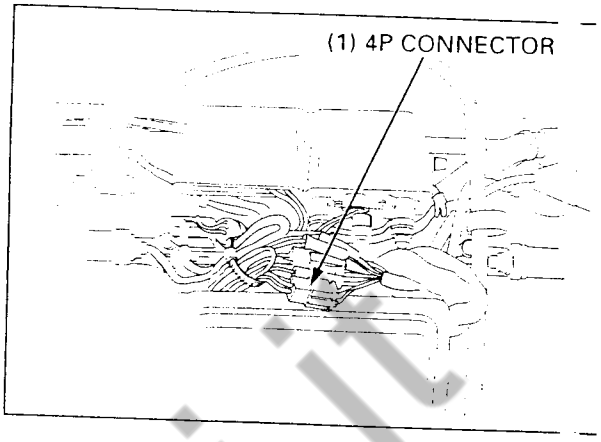
If the regulated voltage is out of the specifications, follow the checks described of the lighting system troubleshooting on page 16-4.

REGULATOR/RECTIFIER

REMOVAL

Remove the headlight case (page 16-11).

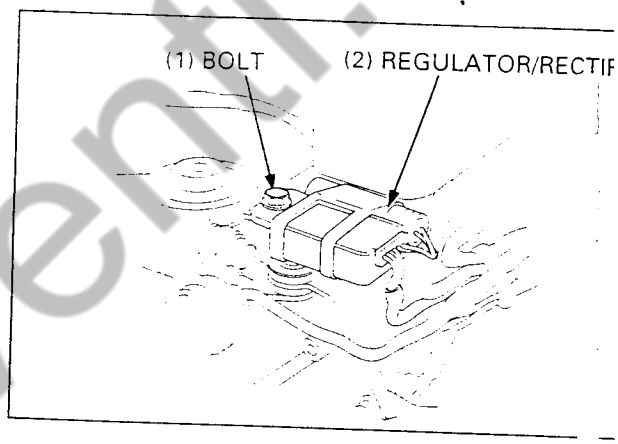
Release the clamp and disconnect the regulator/rectifier 4P connector.



Remove the bolt and regulator/rectifier.

INSTALLATION

Installation is in the reverse order of removal.



REGULATED VOLTAGE INSPECTION

NOTE

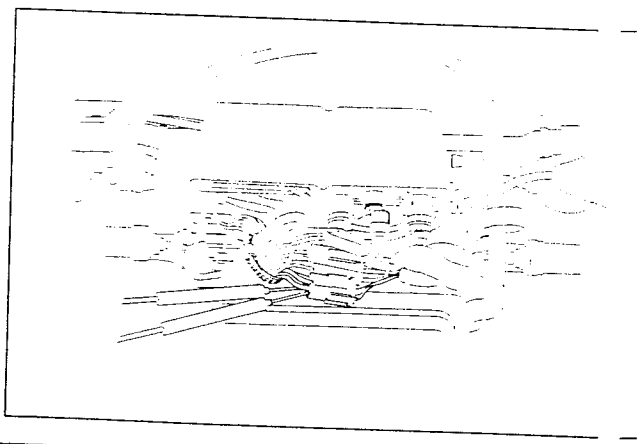
- Measuring circuits with a large capacity that exceeds the capacity of the tester may cause damage to the tester. Before stating each test, set the tester at the high capacity range first, then gradually down to low capacity range in order to ensure that you have the correct range and do not damage the tester.
- When measuring small capacity circuits, keep the ignition switch off. If the switch is suddenly turned on during a test, the tester fuse may be blow.

⚠ WARNING

- *If the engine must be to do some work, make sure the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and may lead to death.*

Start the engine and warm it up to the operating temperature, stop the engine.
Connect the voltmeter to the regulator/rectifier.

CONNECTION: BLACK (+) – GREEN (–)



Restart the engine.
Measure voltage on the multi tester when the engine runs at 5,000 min^{-1} (rpm).

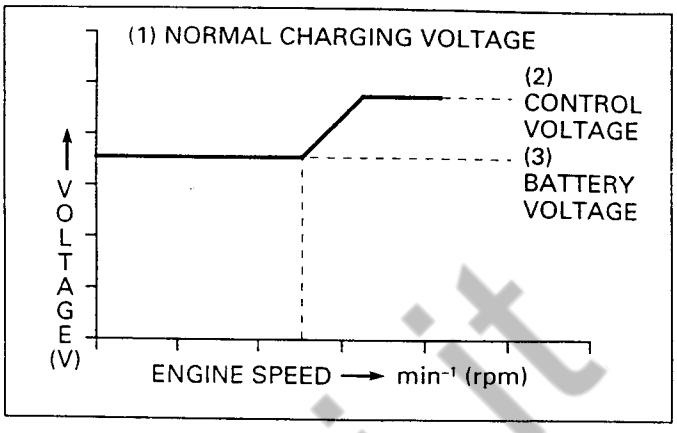
Regulated voltage: 14.0 – 15.0 V at 5,000 min^{-1} (rpm)

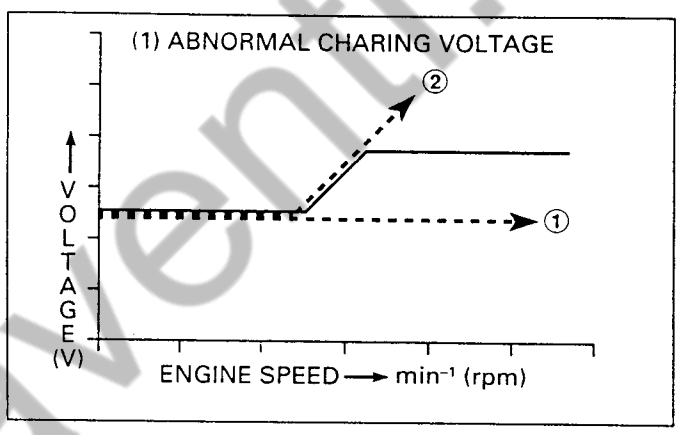
NOTE

- The speed at which voltage starts rise cannot be checked as it varies with the temperature and loads of the generator

1. VOLTAGE NOT RAISED TO REGULATED VOLTAGE
- Open or shorted circuit in the wire harness or poorly connected connector
- Open or shorted of the alternator
- Faulty regulator/rectifier

2. Regulated voltage too high
- Faulty regulator rectifier





WIRE HARNESS INSPECTION

Remove the headlight case (page 16-11).

Release the clamp and disconnect the regulator/rectifier 4P connector.

Measure the lighting coil (DC) resistance between the pink wire terminal and yellow wire terminal.

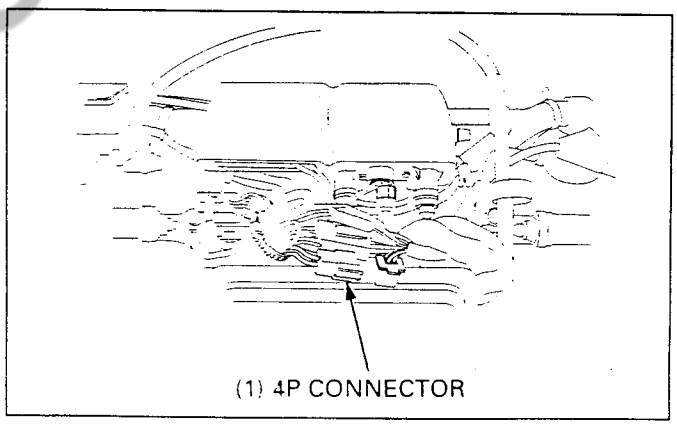
STANDARD: 0.2 – 1.2 Ω (20°C/68°F)

Check for continuity for the green wire terminal and body ground.

STANDARD: CONTINUITY

Check for continuity for the yellow wire terminal and body ground.

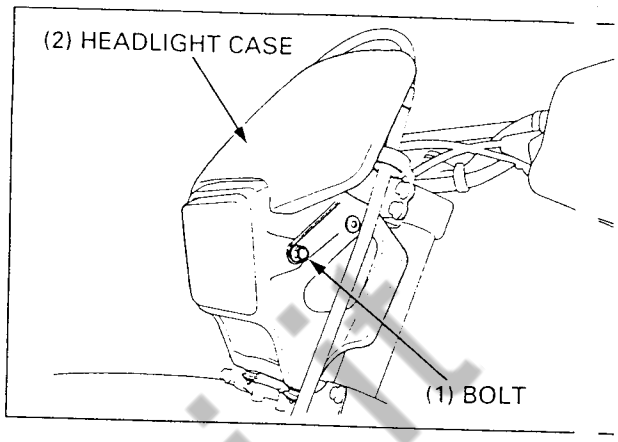
STANDARD: NO CONTINUITY



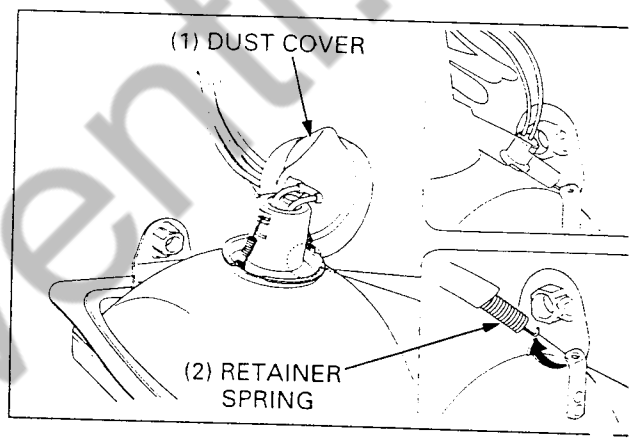
HEADLIGHT

REMOVAL (BULB REPLACEMENT)

Remove the two bolts.
Remove the headlight case.

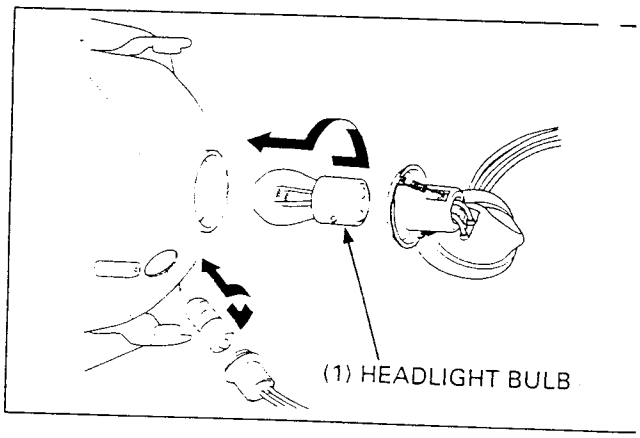


Remove the dust cover.
Remove the retainer spring.



Remove the headlight bulb/retainer assembly.
Remove the bulb by turning it counterclockwise.

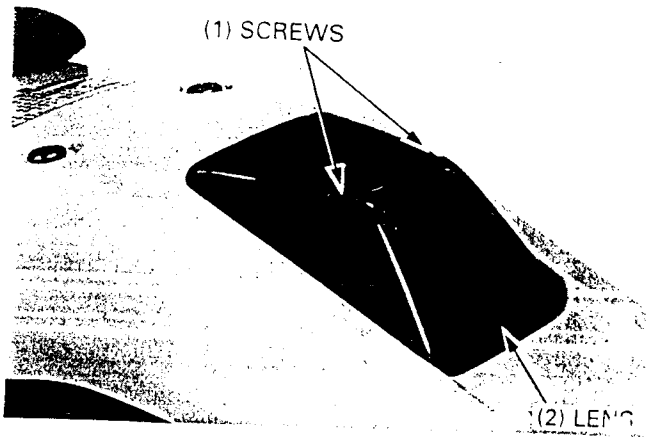
Installation is in the reverse order of removal.



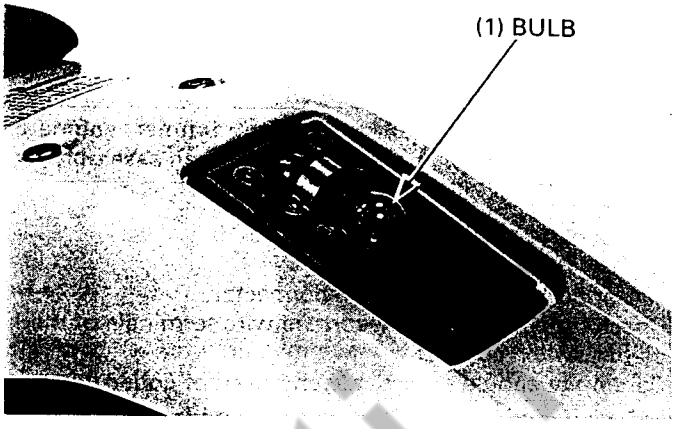
TAIL/BRAKE LIGHT

BULB REPLACEMENT

Remove the two screws and taillight lens.



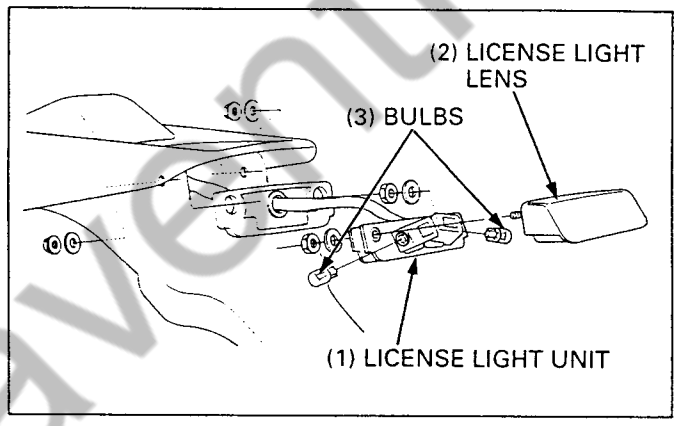
Replace the tail/brake light bulb.



LICENSE LIGHT

BULB REPLACEMENT

Remove the two nuts and license light unit.
Remove the two nuts and license light lens.
Replace the license light bulbs.

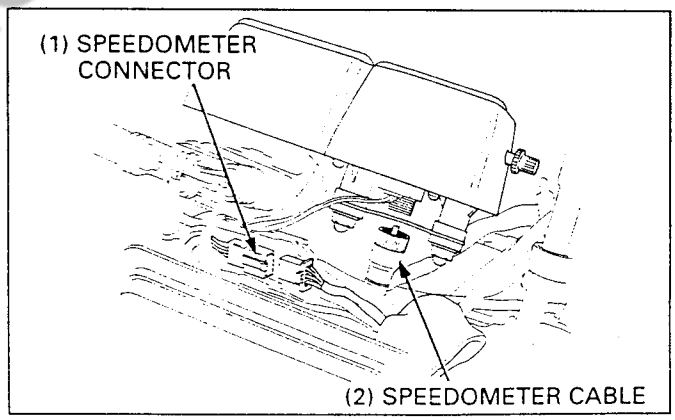


SPEEDOMETER

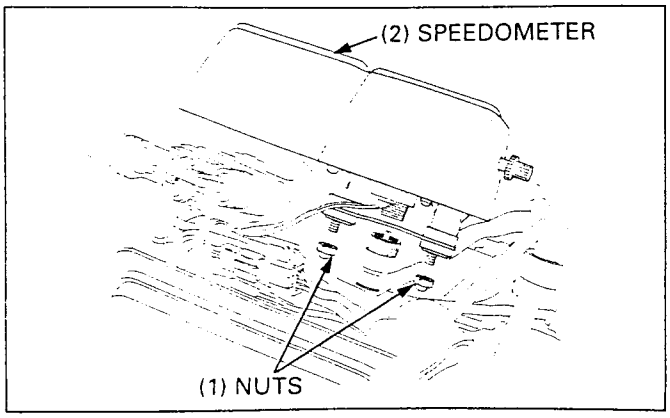
REMOVAL

Remove the headlight case (page 16-13).

Disconnect the speedometer connector and speedometer cable.



Remove the two nuts and speedometer.



HANDLEBAR SWITCHES

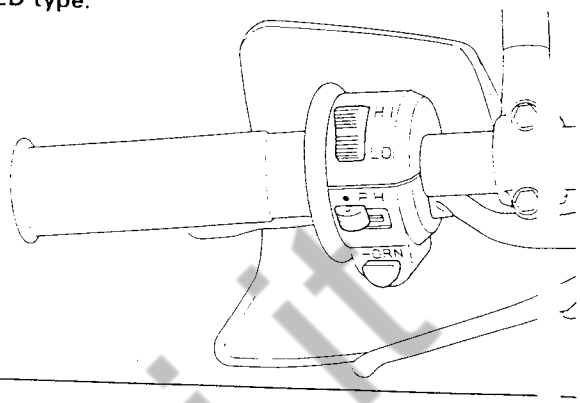
NOTE

- The handlebar switches (lighting, dimmer, engine stop, starter switches) must be replaced as an assembly.

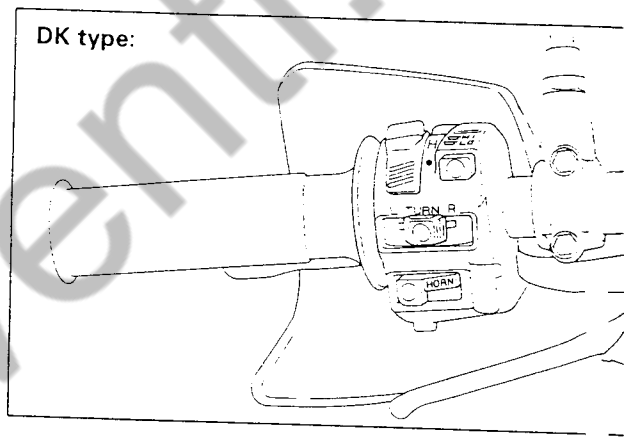
Remove the headlight case (page 16-10).

Disconnect handlebar switch connector.
Check for continuity between the wire terminals of the handlebar switch connector.
Continuity should exist between the color coded wire terminals as follows:

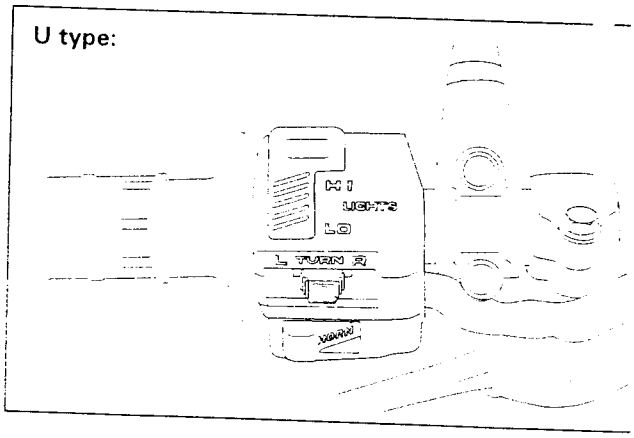
ED type:



DK type:



U type:



HORN SWITCH

	B	HO
FREE		
PUSH	○	○
COLOR	B	LG

ENGINE STOP SWITCH

	E	IG
OFF	○	○
RUN		
COLOR	G	B/W

LIGHTING/DIMMER SWITCH

ED type:

	B	TL	HL	C1
●				
P	○	○		
H	○	○	○	○
COLOR	B	BR		W/Y

	HI	HI	LO
LO	○		○
(N)	○	○	○
HI	○	○	
COLOR		L	W

DK type:

	C1	TL	HL
H	○	○	○
COLOR	W/Y	BR	●

	HL	HI	LO
LO	○		○
(N)	○	○	○
HI	○	○	
COLOR	●	L	W

U type:

	C1	HI	LO
LO	○		○
(N)	○	○	○
HI	○	○	
COLOR	BR	L	W

TURN SIGNAL SWITCH

DK, U types:

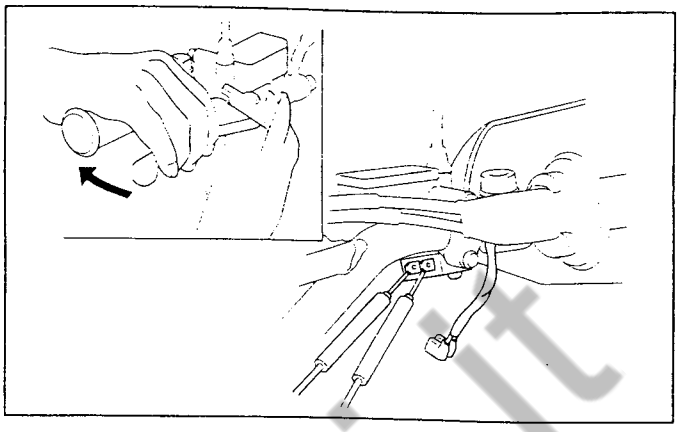
	R1	W1	L1		R2	W2	L2
R	○	○		R	○	○	
N				N			
L		○	○	L		○	○
COLOR	SB	GR	O	COLOR	SB/W	GR/W	O/W

FRONT BRAKE LIGHT SWITCH

INSPECTION

Disconnect the front brake light switch wires and check for continuity.

There should be continuity with the front brake applied and no continuity with it released.



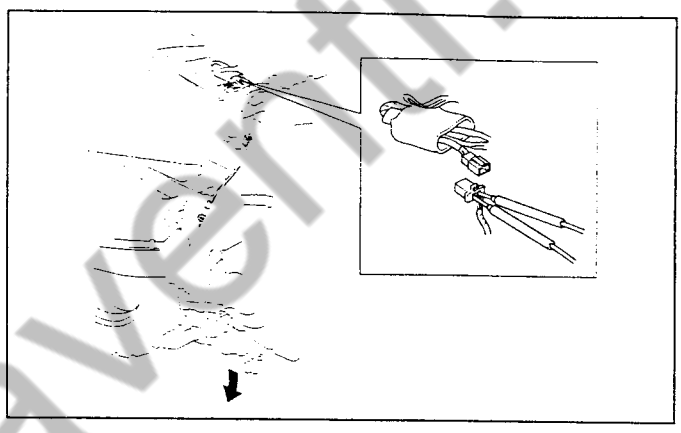
REAR BRAKE LIGHT SWITCH

INSPECTION

Remove the seat (page 2-2).

Disconnect the rear brake light switch wires and check for continuity.

There should be continuity with the front brake applied and no continuity with it released.

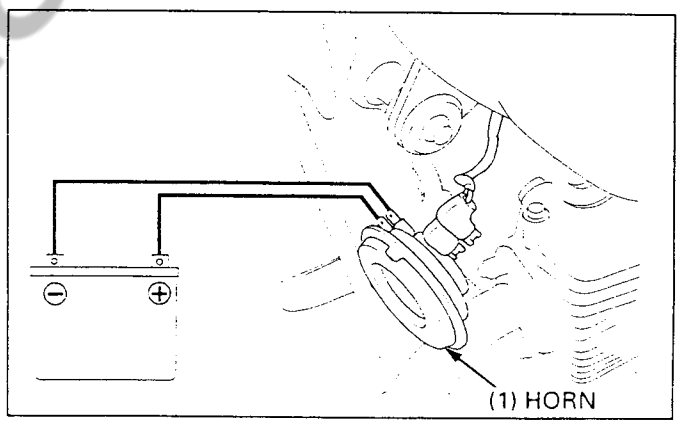


HORN

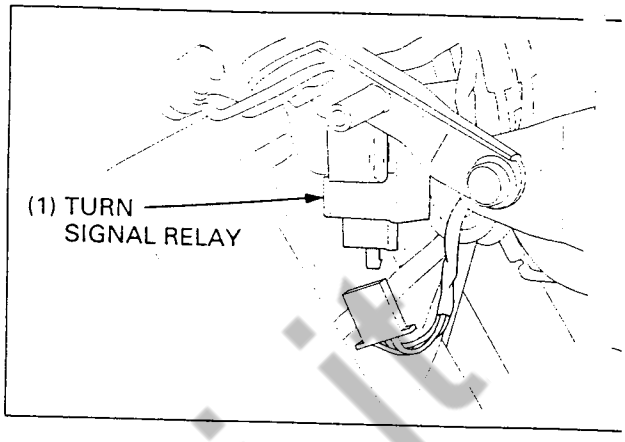
INSPECTION

Disconnect the horn wire connectors from the horn.
Connect a 12 V battery to the horn terminals.

The horn is normal if it sounds when the 12 V battery is connected across the horn terminals.



TURN SIGNAL RELAY



PERFORMANCE TEST

Remove the headlight case (page 16-11).

Disconnect the turn signal connector.

1. Short the black and gray terminals of the turn signal relay connector with a jumper wire. Start the engine and check the turn signal light by turning the switch ON.

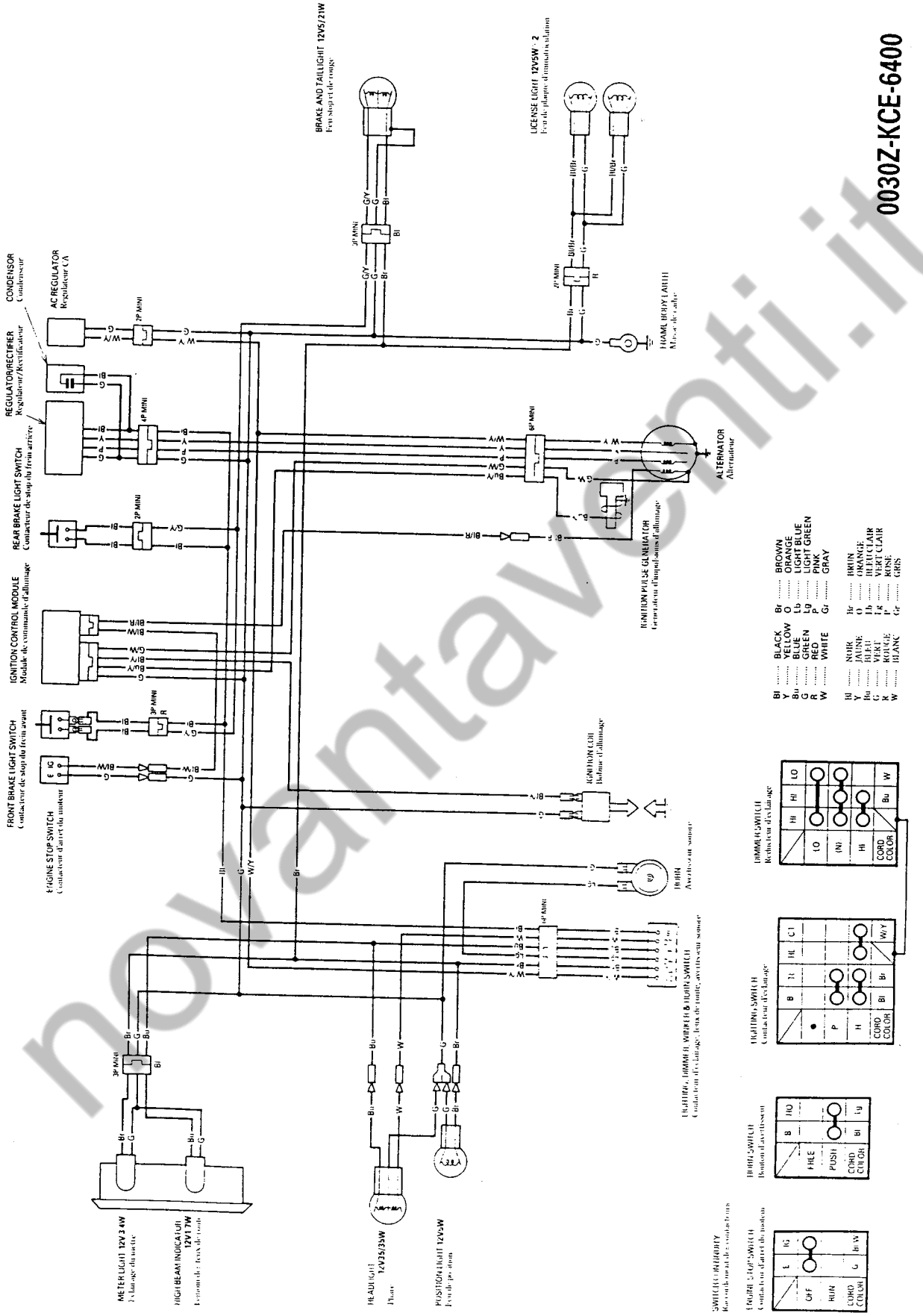
Light comes on → 2. Check for continuity between the green terminal of the relay connector and ground.

Light does not come on → • Broken wire harness

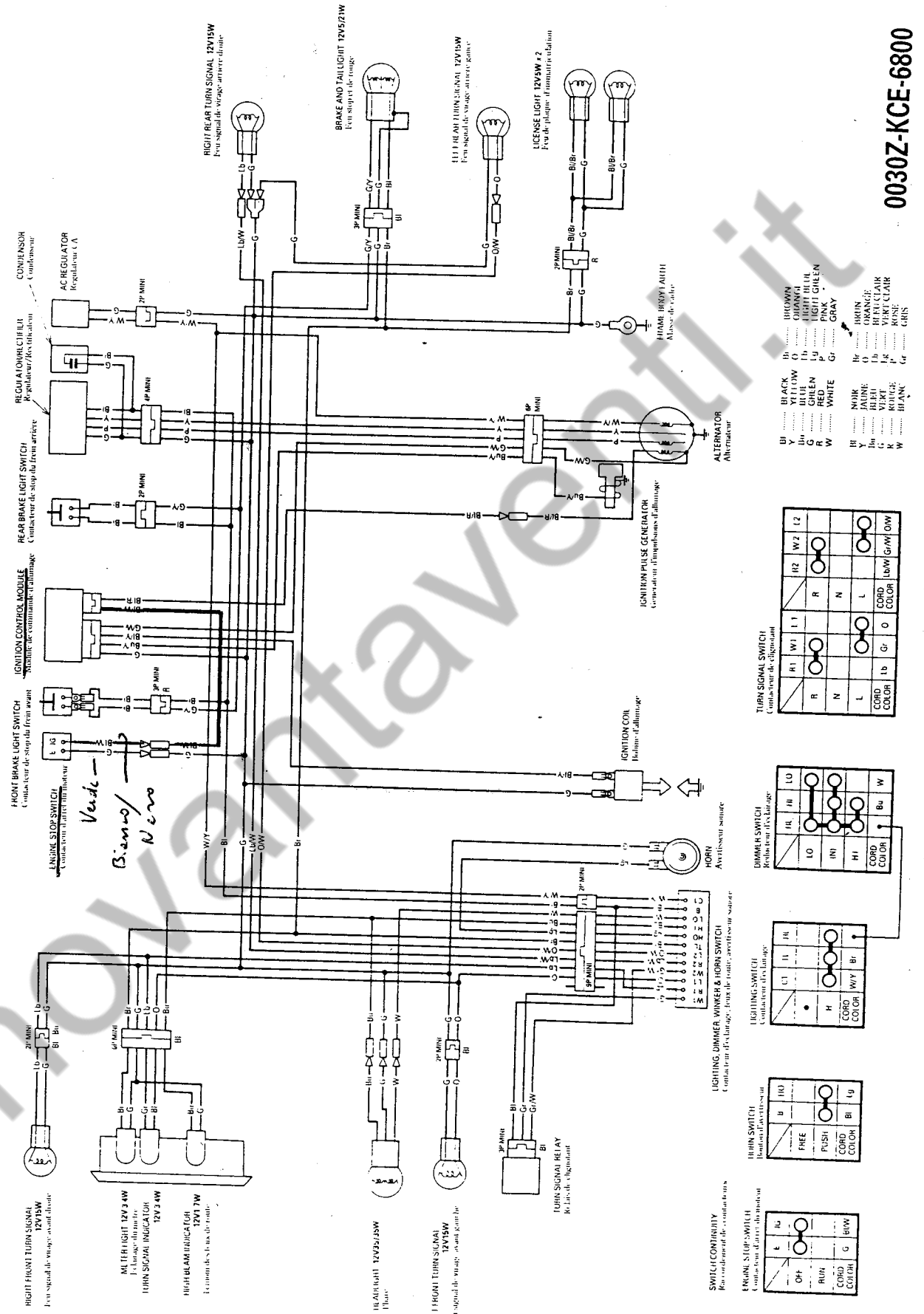
Continuity →
- Faulty turn signal relay.
- Poor connection of the connector.

No continuity → • Broken ground wire

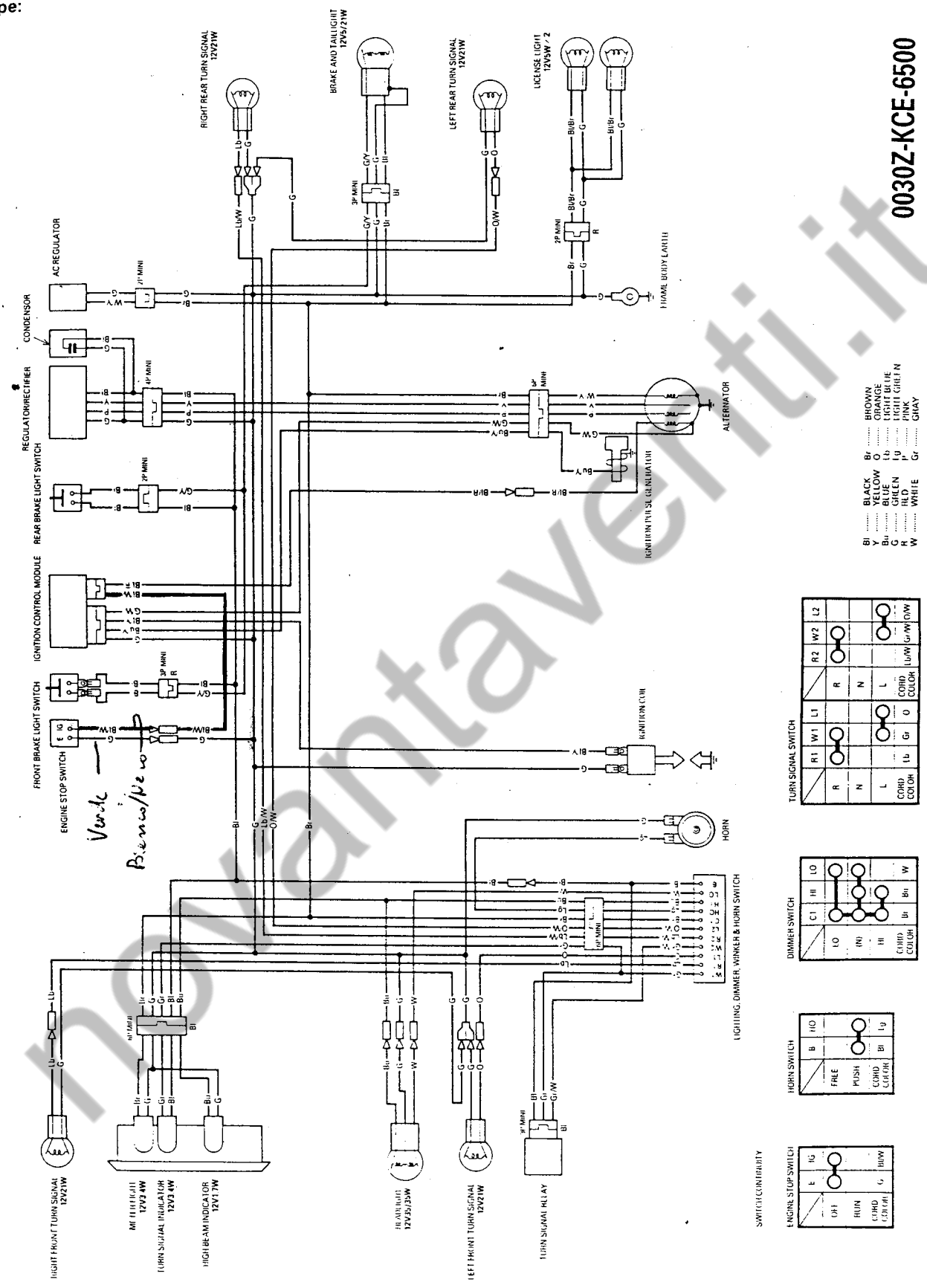
ED type:



DK type:



U type:



MEMO

18. TROUBLESHOOTING

ENGINE DOES NOT TO START OR IS HARD TO START

		Probable cause
1. Check to see if fuel is getting to the carburetor.	NOT GETTING TO CARBURETOR →	• No fuel in fuel tank • Clogged fuel tube or fuel strainer • Clogged float level • Clogged fuel tank cap breather tube
GETTING TO CARBURETOR ↓		
2. Try spark test.	WEAK OR NO SPARK →	• Faulty spark plug • Fouled spark plug • Faulty ignition control module • Broken or shorted spark plug wire • Faulty exciter coil • Broken or shorted ignition coil • Faulty engine stop switch • Faulty ignition pulse generator • Poorly connected, broken or shorted wires
SPARK JUMPS ↓		
3. Test cylinder compression.	LOW COMPRESSION →	• Insufficient valve clearance • Valve stuck open • Worn cylinder and piston • Damaged cylinder head gasket • Improper valve timing • Improperly adjusted decompression mechanism • Seized valve
COMPRESSION NORMAL ↓		
4. Start by following normal starting procedure.	ENGINE FIRES BUT SOON STOPS →	• Choke open excessively • Carburetor pilot screw excessively closed • Air leaking past intake pipe • Improper ignition timing (Ignition control module or ignition pulse generator faulty)
ENGINE DOES NOT FIRE ↓		
5. Remove spark plug.	WET PLUG →	• Carburetor flooded • Carburetor choke excessively closed • Throttle valve excessively open
DRY ↓		
6. Start with choke applied.		

ENGINE LACKS POWER

		Probable cause
1. Raise wheels off ground and spin by hand. WHEEL SPINS FREELY	WHEEL DOES NOT SPIN FREELY →	• Brake dragging • Worn or damaged wheel beari • Wheel bearing needs lubric ic • Drive chain too tight • Rear axle nut excessively tight
2. Check tire pressure with tire gauge. PRESSURE NORMAL	PRESSURE TOO LOW →	• Punctured tire • Faulty tire valve
3. Try rapid acceleration from low to second. ENGINE SPEED LOWERED WHEN CLUTCH IS RELEASED	ENGINE SPEED DOES NOT CHANGE WHEN CLUTCH IS RELEASED →	• Clutch slipping • Worn clutch disc/plate • Warped clutch disc/plate
4. Lightly accelerate engine. ENGINE SPEED INCREASES	ENGINE SPEED DOES NOT INCREASE SUFFICIENTLY →	• Carburetor choke closed • Clogged air cleaner • Restricted fuel flow • Clogged fuel tank breather t he • Clogged muffler
5. Check ignition timing. CORRECT	INCORRECT →	• Faulty ignition control module • Faulty ignition pulse generat
6. Check valve clearance. CORRECT	INCORRECT →	• Improper valve adjustment • Worn valve seat
7. Test cylinder compression using compression gauge. NORMAL	TOO LOW →	• Valve stuck open • Worn cylinder and piston rin • Leaking cylinder head gasket • Improper valve timing • Improperly adjusted decompression mechanism
8. Check carburetor for clogging. NOT CLOGGED	CLOGGED →	• Carbretor or air cleaner not servi frequently enough
9. Remove spark plug. NOT FOULED OR DISCOLORED	FOULED OR DISCOLORED →	• Plug not serviced frequently enough • Use of plug with improper heat range

10. Remove oil level gauge and check oil level. CORRECT ↓	OIL LEVEL INCORRECT →	• Oil level too high • Oil level too low
11. Remove valve hole cap and inspect lubrication. VALVE TRAIN LUBRICATED PROPERLY ↓	VALVE TRAIN NOT LUBRICATED PROPERLY →	• Clogged oil passage • Clogged oil control orifice • Contaminated oil • Faulty oil pump
12. Check if engine overheats. NORMAL ↓	OVERHEATED →	• Excessive carbon build-up in combustion chamber • Improper quality fuel • Clutch slipping • Fuel/air mixture too lean
13. Accelerate or run at high speed. ENGINE DOES NOT KNOCK	ENGINE KNOCKS →	• Worn piston and cylinder • Fuel/air mixture too lean • Use of improper grade of fuel • Excessive carbon build-up in combustion chamber • Ignition timing too advanced (Faulty ignition control module)

POOR PERFORMANCE AT LOW AND IDLE SPEED

		Probable cause
1. Check ignition timing and valve clearance. CORRECT ↓	INCORRECT →	• Improper valve clearance • Improper ignition timing (Faulty ignition control module or ignition pulse generator)
2. Check carburetor pilot screw adjustment. CORRECT ↓	INCORRECT →	• Fuel/air mixture too lean (To correct, screw out) • Fuel/air mixture too rich (To correct, screw in)
3. Check if air is leaking past manifold. NOT LEAKING ↓	LEAKING →	• Deteriorated insurator O-ring • Loose carburetor
4. Try spark test GOOD SPARK	WEAK OR INTERMITTENT SPARK →	• Faulty, carbon or wet fouled spark plug • Faulty ignition control module • Faulty alternator • Faulty ignition coil • Faulty ignition pulse generator • Loose or bare wires

POOR PERFORMANCE AT HIGH SPEED

		Probable cause
1. Check ignition timing and valve clearance.	INCORRECT →	• Improper valve clearance • Improper ignition timing (Faulty ignition control mod e ignition pulse generator)
CORRECT ↓		
2. Disconnect fuel line at carburetor.	FUEL FLOW RESTRICTED →	• Lack of fuel in fuel tank • Clogged fuel line • Clogged fuel tank breather t ɔe • Clogged fuel valve • Clogged fuel strainer
FUEL FLOWS FREELY ↓		
3. Remove carburetor and check for clogged jet(s).	CLOGGED →	• Clean
NOT CLOGGED ↓		
4. Check valve timing.	INCORRECT →	• Cam sprocket not installed prop
CORRECT ↓		
5. Check valve spring tension	WEAK →	• Faulty spring
NOT WEAKENED ↓		
6. Check muffler plate for clogging	CLOGGED →	• Remove and clean

POOR HANDLING → Check tire pressure.

	Probable cause
1. If steering is heavy. →	• Steering bearing adjustment ɔc tight • Damaged steering bearing(s)
2. If either wheel is wobbling →	• Excessive wheel bearing play • Bent rim • Improperly insyalled wheel hub • Swingarm pivot bearing exce ;iv play • Bent frame • Loose swingarm pivot bolt
3. If the motorcycle pulls to one side →	• Front and rear wheels not alig,,e • Bent front suspension or axle • Bent swingarm • Bent frame

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