Introduction

This service manual describes the service procedures for the CR500R.

Also available, but not necessary to service your model: The Honda Common Service Manual (Part Number: 61CM000) explains the theory of operation and provides basic service information for various systems common to all Honda motorcycles, scooters, ATVs and Pilots. It is an excellent source for those who want a greater knowledge of motorcycles and their component systems.

Follow the Competition Maintenance Schedule recommendations (page 3-4) to ensure that the vehicle is always in peak operating condition.

Sections 1 and 3 apply to the whole motorcycle. Section 2 illustrates procedures for removal/installation of components that may be required to perform service described in the following sections.
Sections 4 through 13 describe parts of the motorcycle, grouped according to location.

Find the section you want on this page, then turn to the table of contents on the first page of the section.

If you don't know the source of the trouble, go to section 15 Troubleshooting.

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Symbols

The symbols used throughout this manual show specific service procedures. If supplementary information is required pertaining to these symbols, it would be explained specifically in the text without the use of the symbols.

	Replace the part(s) with new one(s) before assembly.
	Use special tool
	Use optional tool. These tools are obtained as you order parts.
10 (1.0,7)	Torque specification. 10 N·m (1.0 kg-m, 7 ft-lb)
	Use recommended engine oil. Use Honda Engine Oil (U.S.A. only) or an equivalent of the type specified.
	Use molybdenum oil solution (mixture of the engine oil and molybdenum grease with the ratio 1:1).
	Use multi-purpose grease (Lithium based multi-purpose grease NLGI #2 or equivalent)
	Use molybdenum disulfide grease (containing more than 3% molybdenum disulfide, NLGI #2 or equivalent) Example: Molykote® BR-2 plus manufactured by Dow Corning, U.S.A. Multi-purpose M-2 manufactured by Mitsubishi Oil Japan
	Use molybdenum disulfide paste (containing more than 40% molybdenum disulfide, NLGI #2 or equivalent) Example: Molykote® G-n Paste manufactured by Dow Corning, U.S.A. Honda Moly 60 (U.S.A. only) Rocol ASP manufactured by Rocol Limited, U.K. Rocol Paste manufactured by Sumico Lubricant, Japan
	Use silicone grease
	Apply a locking agent. Use Hondalock 2 (U.S.A. only) or an equivalent, unless otherwise specified.
	Apply sealant. Use Hondabond 4 (U.S.A. only) or an equivalent, unless otherwise specified.
	Use brake fluid, DOT 3 or DOT 4. Use DOT 4 Brake Fluid (U.S.A. only) or an equivalent.
	Use Fork or Suspension Fluid. Use Honda Suspension Fluid (U.S.A. only) or an equivalent of the type specified.

1. General Information

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General Safety

Carbon Monoxide

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.

⚠ WARNING

- **The exhaust contains poisonous carbon monoxide gas that can cause loss of consciousness and may lead to death.**

Run the engine in an open area or with an exhaust evacuation system in an enclosed area.

Gasoline

Work in a well ventilated area. Keep cigarettes, flames or sparks away from the work area or where gasoline is stored.

⚠ WARNING

- **Gasoline is extremely flammable and is explosive under certain conditions. KEEP OUT OF REACH OF CHILDREN.**

Hot Components

⚠ WARNING

- **Engine and exhaust system parts become very hot and remain hot for some time after the engine is run. Wear insulated gloves or wait until the engine and exhaust system have cooled before handling these parts.**

Used Engine/Transmission Oil

⚠ WARNING

- **Used engine oil (or transmission oil in two-strokes) may cause skin cancer if repeatedly left in contact with the skin for prolonged periods. Although this is unlikely unless you handle used oil on a daily basis, it is still advisable to thoroughly wash your hands with soap and water as soon as possible after handling used oil. KEEP OUT OF REACH OF CHILDREN.**

Brake Dust

Never use an air hose or dry brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner or alternate method approved by OSHA, designed to minimize the hazard caused by airborne asbestos fibers.

⚠ WARNING

- **Inhaled asbestos fibers have been found to cause respiratory disease and cancer.**

Brake Fluid

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 OUT OF REACH OF CHILDREN.**

Coolant

Under some conditions, the ethylene glycol in engine coolant is combustible and its flame is not visible. If the ethylene glycol does ignite, you will not see any flame, but you can be burned.

⚠ WARNING

- **Avoid spilling engine coolant on the exhaust system or engine parts. They may be hot enough to cause the coolant to ignite and burn without a visible flame.**
- **Coolant (ethylene glycol) can cause some skin irritation and is poisonous if swallowed. KEEP OUT OF REACH OF CHILDREN.**
- **Keep out of reach of pets. Some pets are attracted to the smell and taste of coolant and can die if they drink it.**
- **Do not remove the radiator cap when the engine is hot. The coolant is under pressure and could scald you.**

If it contacts your skin, wash the affected areas immediately with soap and water. If it contacts your eyes, flush them thoroughly with fresh water and get immediate medical attention. If it is a swallowed, the victim must be forced to vomit then rinse mouth and throat with fresh water before obtaining medical attention. Because of these dangers, always store coolant in a safe place, away from the reach of children.

Recycle used coolant in an ecologically correct manner.

Nitrogen Pressure

For shock absorbers with a gas-filled reservoir:

⚠ WARNING

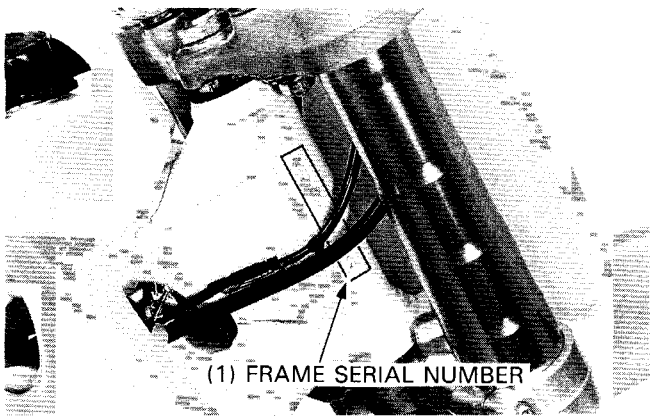
- **Use only nitrogen to pressurize the shock absorber. The use of an unstable gas can cause a fire or explosion resulting in serious injury.**
- **The shock absorber contains nitrogen under high pressure. Allowing fire or heat near the shock absorber could lead to an explosion that could result in serious injury.**
- **Failure to release the pressure from a shock absorber before disposing of it may lead to a possible explosion and serious injury if it is heated or pierced.**

To prevent the possibility of an explosion, release the nitrogen by pressing the valve core. Then remove the valve stem from the shock absorber reservoir. Dispose of the oil in a manner acceptable to the Environmental Protection Agency (EPA).

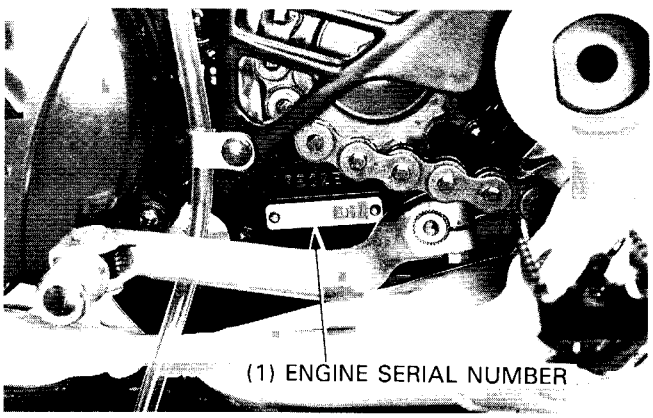
Before disposal of the shock absorber, release the nitrogen by pressing the valve core. Then remove the valve stem from the shock asborber.

Model Identification

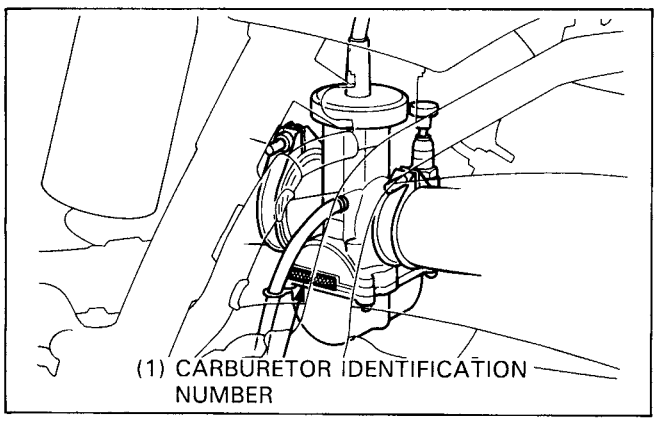
'96 Shown; '92 – '95 Similar:



The frame serial number is stamped on the right side of the steering head.



The engine serial number is stamped on the lower left side of the crankcase.



The carburetor identification number is on the right side of the carburetor.

Specifications

General

Item			Specifications
Dimensions	Overall length	('92 – '93)	2,183 mm (85.9 in)
		('94)	2,185 mm (86.0 in)
		(After '94)	2,179 mm (85.8 in)
	Overall width	('92 – '94)	825 mm (32.5 in)
		(After '94)	835 mm (32.9 in)
	Overall height	('92 – '94)	1,240 mm (48.8 in)
		(After '94)	1,237 mm (48.7 in)
	Wheel base	('92 – '93)	1,489 mm (58.6 in)
		('94)	1,491 mm (58.7 in)
		(After '94)	1,485 mm (58.5 in)
	Seat height	('92 – '93)	964 mm (38.0 in)
		('94)	961 mm (37.8 in)
		(After '94)	937 mm (36.9 in)
	Footpeg height	('92 – '93)	438 mm (17.2 in)
		('94)	439 mm (17.3 in)
		(After '94)	422 mm (16.6 in)
	Ground clearance	('92 – '93)	343 mm (13.5 in)
		('94)	341 mm (13.4 in)
		(After '94)	328 mm (12.9 in)
	Dry weight		101 kg (222.7 lb)
Frame	Type		Semi-double cradle
	Front suspension		Telescopic fork
	Front wheel travel	('92 – '94)	309 mm (12.2 in)
		(After '94)	310 mm (12.2 in)
	Rear suspension		Pro-link
	Rear wheel travel		320 mm (12.6 in)
	Rear damper		Decarbon type with nitrogen filled reservoir
	Front tire size		80/100 – 21 51M
	Rear tire size		110/100 – 18 64M
	Tire brand (Dunlop)	Front	K490G
		Rear	K695
	Front brake		Hydraulic single disc
	Front brake swept area	('92 – '94)	306 cm^2 (47.4 in^2)
		(After '94)	334.5 cm^2 (51.9 in^2)
	Rear brake		Hydraulic single disc
	Rear brake swept area	('92 – '95)	303 cm^2 (47.0 in^2)
		(After '95)	303.5 cm^2 (47.0 in^2)
	Caster angle	('92 – '93)	27°52′
		('94)	28°10′
		(After '94)	27°43′
	Trail length	('92 – '93)	119 mm (4.7 in)
		('94)	121 mm (4.8 in)
		(After '94)	114 mm (4.5 in)
	Fuel tank capacity		9.0 liters (2.38 US gal, 1.98 Imp gal)
Engine	Bore and stroke		89 x 79 mm (3.5 x 3.1 in)
	Displacement		491.4 cm (29.9 cu-in)
	Compression ratio		6.8 : 1
	Lubrication system		Fuel/oil premixed
	Cooling system		Liquid cooled
	Air filtration		Oiled polyurethane foam
	Crankshaft type		Assembly type
	Engine dry weight		27.1 kg (59.8 lb)
	Cylinder arrangement		Single cylinder, inclined 7° from vertical

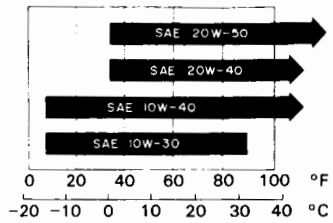
General (Cont'd)

Item			Specifications
Carburetor	Type		Piston valve
	Venturi diameter		38 mm (1.5 in)
Drive train	Clutch type		Wet, multi-plate
	Transmission		5-speed, constant mesh
	Primary reduction		2.520 : 1
	Gear ratios: I		1.750
	II		1.388
	III		1.150
	IV	'92	1.000
		After '92	0.955
	V	'92	0.870
		After '92	0.792
	Final reduction		3.500 : 1
	Gearshift pattern		Left foot operated return system, 1—N—2—3—4—5
Electrical	Ignition		CDI
	Starting system		Kickstarter

Unit: mm (in)

Lubrication System

Item	Standard	Service Limit
Recommended engine oil	Pro Honda HP2 2-Stroke Oil or equivalent	—
Mixing ratio (Fuel: Oil)	32 : 1	—
Transmission oil capacity at oil change	680 cc (23 US oz, 24 Imp oz)	—
at disassembly	750 cc (25 US oz, 26 Imp oz)	
Recommended transmission oil	Use Pro Honda HP Trans Oil, Pro Honda GN4 4-Stroke Oil or an equivalent. Viscosity: SAE 10W-40 or equivalent. API Service classification: SF or SG. Other viscosities shown in the chart may be used when the average temperature in your riding area is within the indicated range.	—



Fuel System

Carburetor identification number ('92)	PJ27J	—
('93)	PJ27L	—
('94)	PJ27M	—
('95)	PJ27N	—
(After '95)	PJ27P	—
Main jet (Standard)	#170	—
Slow jet (Standard)	#55	—
Jet needle clip position (Standard)	4th groove	—
Air screw initial opening	1-1/2 turns out	—
Float level	16.0 (0.63)	—
Throttle grip free play	3 – 5 (1/8 – 1/4)	—

Cooling System

Recommended coolant	Use only a high quality ethylene glycol based anti-freeze containing corrosion protection inhibitors specifically recommended for use in aluminum engines. A 50/50 mixture of anti-freeze and distilled water is recommended for most operating conditions. (See anti-freeze container label for other mixture ratios).	—
Coolant capacity at draining	1.08 liters (1.14 US qt, 0.95 Imp qt)	—
at disassembly	1.22 liters (1.29 US qt, 1.07 Imp qt)	—
Radiator cap relief pressure	110—140 kPa (1.1—1.4 kg/cm, 15.6—19.9 psi) [Radiator system pressure test: 200 kPa (2.0 kg/cm², 28.4 psi) max.]	—

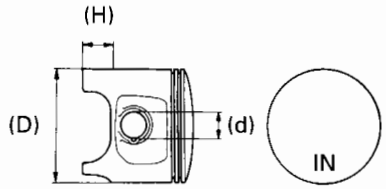
Clutch System

Clutch lever free play	10—20 (3/8—3/4)	—
Clutch spring free length	44.20 (1.740)	42.2 (1.66)
Clutch disc thickness	2.92—3.08 (0.115—0.121)	2.85 (0.112)
Clutch plate warpage	—	0.20 (0.008)
Clutch outer guide O.D.	27.987—28.000 (1.1019—1.1024)	27.93 (1.101)
Clutch outer I.D.	32.009—32.034 (1.2602—1.2612)	32.054 (1.2620)

Unit: mm (in)

Cylinder Head/Cylinder/Piston

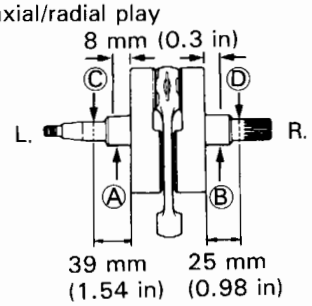
Item		Standard	Service Limit
Cylinder head warpage		—	0.05 (0.002)
Cylinder	I.D.	89.020–89.035 (3.5047–3.5053)	89.07 (3.507)
	out of round	—	0.05 (0.002)
	taper	—	0.05 (0.002)
	warpage	—	0.05 (0.002)
Piston mark direction		"IN" mark toward the intake side	—
Piston O.D. (D)		88.93–88.95 (3.501–3.502)	88.88 (3.499)
Piston O.D. measurement point (H)		25 (0.98) from the bottom	—
Piston pin bore (d)		20.002–20.008 (0.7875–0.7877)	20.02 (0.788)



Cylinder-to-piston clearance		0.070–0.105 (0.0027–0.0041)	0.12 (0.005)
Piston pin O.D.		19.994–20.000 (0.7872–0.7874)	19.992 (0.7871)
Piston-to-piston pin clearance		0.002–0.014 (0.0001–0.0006)	0.02 (0.001)
Piston ring end gap		0.3–0.5 (0.012–0.020)	0.6 (0.02)
Piston-to-ring groove clearance		0.045–0.080 (0.0018–0.0031)	0.09 (0.004)
Piston ring mark direction		Mark facing up	—

Crankshaft

Connecting rod small end I.D.		25.002–25.014 (0.9843–0.9848)	25.025 (0.9852)
Connecting rod big end	side clearance	0.4–0.8 (0.016–0.031)	0.9 (0.04)
	axial/radial play	0.008–0.020 (0.0003–0.0008)	0.03 (0.001)
Crankshaft runout		—	0.05 (0.002)
Supporting points: A, B			
Measurement points: C, D			



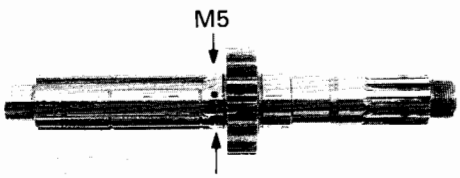
Kickstarter

Kickstarter pinion gear I.D.		20.020–20.041 (0.7882–0.7890)	20.06 (0.790)
Kickstarter spindle O.D.		21.959–21.980 (0.8645–0.8654)	21.95 (0.864)
Kickstarter idle gear	I.D.	20.020–20.041 (0.7882–0.7890)	20.07 (0.790)
	bushing O.D.	19.979–20.000 (0.7866–0.7874)	19.94 (0.785)
	bushing I.D.	17.000–17.018 (0.6693–0.6700)	17.04 (0.671)
	countershaft O.D.	16.966–16.984 (0.6680–0.6687)	16.95 (0.667)

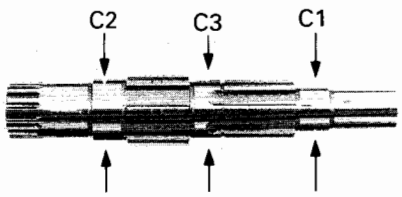
Unit: mm (in)

Transmission

Item		Standard	Service Limit
Transmission gear I.D.	M4 gear ('92, After '95)	28.007 – 28.028 (1.1026 – 1.1035)	28.05 (1.104)
	('93 – '95)	28.000 – 28.021 (1.1024 – 1.1032)	28.05 (1.104)
	M5 gear	25.020 – 25.041 (0.9850 – 0.9859)	25.07 (0.987)
	C1 gear	22.020 – 22.041 (0.8669 – 0.8678)	22.07 (0.869)
	C2 gear ('92 – '95)	27.020 – 27.041 (1.0638 – 1.0646)	27.07 (1.066)
	(After '95)	30.020 – 30.041 (1.1819 – 1.1827)	30.07 (1.1839)
	C3 gear	25.020 – 25.041 (0.9850 – 0.9859)	25.07 (0.987)
Transmission gear bushing O.D.	M4	27.959 – 27.980 (1.1007 – 1.1016)	27.94 (1.100)
	C1	21.979 – 22.000 (0.8653 – 0.8661)	21.95 (0.864)
	C2 ('92 – '95)	26.979 – 27.000 (1.0622 – 1.0630)	26.95 (1.061)
	(After '95)	29.979 – 30.000 (1.1803 – 1.1811)	29.95 (1.179)
Transmission gear bushing I.D.	C1	19.000 – 19.021 (0.7480 – 0.7489)	19.04 (0.750)
	C2	27.000 – 27.021 (1.0630 – 1.0638)	27.04 (1.065)
Mainshaft O.D. at M5 gear		24.959 – 24.980 (0.9826 – 0.9835)	24.94 (0.982)



Countershaft O.D.	at C1 bushing	18.959 – 18.980 (0.7464 – 0.7472)	18.94 (0.746)
	at C2 bushing	26.959 – 26.980 (1.0614 – 1.0622)	26.94 (1.061)
	at C3 gear	24.959 – 24.980 (0.9826 – 0.9835)	24.94 (0.982)



Shift fork pawl thickness		4.93 – 5.00 (0.194 – 0.197)	4.8 (0.19)
Shift fork I.D.	C	11.003 – 11.021 (0.4332 – 0.4339)	11.04 (0.435)
	R/L	12.041 – 12.056 (0.4741 – 0.4746)	12.07 (0.475)
Shift fork shaft O.D.	C	10.966 – 10.984 (0.4317 – 0.4324)	10.95 (0.431)
	R/L	11.983 – 11.994 (0.4718 – 0.4722)	11.98 (0.472)

Wheels/Tires

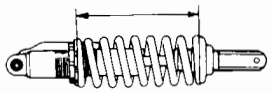
Cold tire pressure	Front	15 psi (1.0 kg/cm, 100 kPa)	——
	Rear	15 psi (1.0 kg/cm, 100 kPa)	——
Front and rear axle runout		——	0.20 (0.008)
Front and rear wheel rim runout	Radial	——	2.0 (0.08)
	Axial	——	2.0 (0.08)
Front wheel hub-to-rim distance		20.0 (0.79)	——
Rear wheel hub-to-rim distance		43.25 (1.703)	——
Drive chain slack ('92)		35—40 (1-3/8—1-9/16)	——
(After '92)		35—45 (1-3/8—1-49/64)	——
Drive chain size/link	(DID)	520DS5/114	——
	(RK)	520KZ3/114	——
Drive chain slider thickness		——	5.0 (0.19)
Chain roller O.D.		——	25 (0.98)

Front Suspension

Unit: mm (in)

Fork spring free length		('92 – '94)	512 (20.2)	504.4 (19.86)
		('95)	490 (19.3)	487 (19.2)
		(After '95)	470 (18.5)	467 (18.4)
Fork air pressure			0 kPa (0 kg/cm², 0 psi)	———
Fork spring direction			Tapered end facing up	———
Fork tube runout			———	0.20 (0.008)
Recommended fork oil			Pro Honda Suspension Fluid SS-7M or equivalent	———
Fork oil level	('92)	(Standard)	95 (3.74)	———
		(Maximum)	93 (3.66)	———
		(Minimum)	124 (4.88)	———
	('93)	(Standard)	105 (4.13)	———
		(Maximum)	93 (3.66)	———
		(Minimum)	136 (5.35)	———
	('94)	(Standard)	110 (4.33)	———
		(Maximum)	101 (3.98)	———
		(Minimum)	143 (5.63)	———
	('95)	(Standard)	98 (3.86)	———
		(Maximum)	84 (3.31)	———
		(Minimum)	124 (4.88)	———
	(After '95)	(Standard)	92 (3.62)	———
		(Maximum)	73 (2.87)	———
		(Minimum)	112 (4.41)	———
Fork oil capacity	('92)	(Standard)	582 cc (19.7 oz)	———
		(Maximum)	584 cc (19.8 oz)	———
		(Minimum)	552 cc (18.7 oz)	———
	('93)	(Standard)	572 cc (19.3 oz)	———
		(Maximum)	584 cc (19.8 oz)	———
		(Minimum)	541 cc (18.3 oz)	———
	('94)	(Standard)	567 cc (19.2 oz)	———
		(Maximum)	576 cc (19.5 oz)	———
		(Minimum)	534 cc (18.1 oz)	———
	('95)	(Standard)	525 cc (17.8 oz)	
		(Maximum)	539 cc (18.2 oz)	
		(Minimum)	499 cc (16.9 oz)	
	(After '95)	(Standard)	636 cc (21.5 oz)	———
		(Maximum)	658 cc (22.3 oz)	———
		(Minimum)	613 cc (20.7 oz)	———
Compression damping adjuster standard position		('92)	4 clicks from hardest position	———
		('93 – '94)	6 clicks from hardest position	———
		('95)	14 clicks from hardest position	———
		(After '95)	8 clicks from hardest position	———
Rebound damping adjuster standard position		('92)	12 clicks from hardest position	———
		('93)	10 clicks from hardest position	———
		('94)	12 clicks from hardest position	———
		(After '94)	16 clicks from hardest position	———

Unit: mm (in)

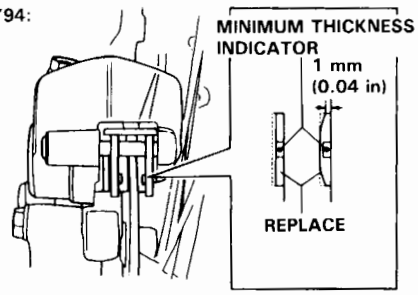
Rear Suspension				
Shock absorber spring free length	('92 – '93)		265 (10.4)	262 (10.3)
	('94)		280 (11.0)	277 (10.9)
	(After '94)		265 (10.4)	———
Damper gas pressure			981 kPa (10.0 kg/cm², 142 psi)	———
Damper compressed gas			Nitrogen gas	———
Damper rod compressed force at 10 mm (0.4 in) compressed			15.4 kg (34.0 lb)	———
Shock absorber spring installed length				
	('92 – '93)	(Standard)	250 (9.8)	———
		(Maximum)	260.5 (10.26)	———
		(Minimum)	244.5 (9.63)	———
	('94)	(Standard)	268 (10.55)	———
		(Minimum)	262 (10.31)	———
	(After '94)	(Standard)	253.5 (9.98)	———
		(Maximum)	255 (10.04)	———
		(Minimum)	246 (9.69)	———
Compression damping adjuster standard position		('92)	16 – 19 clicks out from full in	———
		('93)	5 – 9 clicks out from full in	———
		('94)	10 – 13 clicks out from full in	———
		('95)	6 – 9 clicks out from full in	———
		(After '95) Hi	1 turn out from full in	———
		Low	3 – 6 clicks out from full in	———
Rebound damping adjuster standard position		('92)	11 – 14 clicks out from full in	———
		('93)	8 – 12 clicks out from full in	———
		('94)	13 – 16 clicks out from full in	———
		(After '94)	9 – 12 clicks out from full in	———
Shock absorber spring direction			Narrow end facing down	———
Recommended shock absorber oil			Pro Honda Suspension Fluid SS-7 or equivalent	———
Shock absorber oil capacity	('92 – '93)		290 cc (9.8 oz)	———
	('94)		317 cc (10.7 oz)	———
	(After '94)		311 cc (10.5 oz)	———

Unit: mm (in)

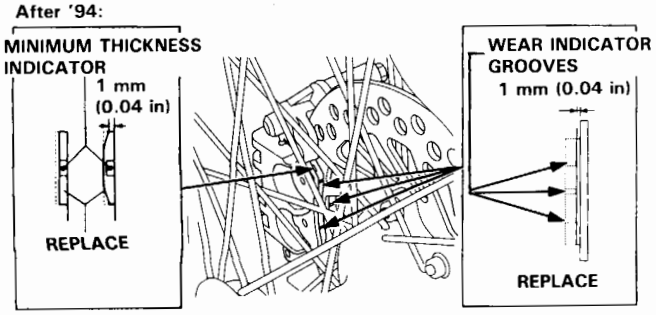
Brakes

Item		Standard	Service Limit
Front	brake fluid	DOT 3 or DOT 4	—
	brake pad wear indicator	—	1.0 (0.04)

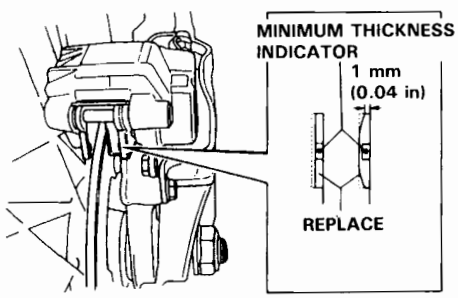
'92–'94:



After '94:



	brake disc thickness	3.0 (0.12)	2.5 (0.10)
	brake disc warpage	—	0.15 (0.006)
	master cylinder I.D.	11.000–11.043 (0.4331–0.4348)	11.05 (0.435)
	master piston O.D.	10.957–10.984 (0.4314–0.4324)	10.84 (0.427)
	caliper cylinder I.D.	27.000–27.050 (1.0630–1.0650)	27.06 (1.065)
	caliper piston O.D.	26.900–26.950 (1.0591–1.0610)	26.89 (1.059)
Rear	brake fluid	DOT4	—
	brake pad wear indicator	—	1.0 (0.04)



	brake disc thickness	4.5 (0.18)	4.0 (0.16)
	brake disc warpage	—	0.15 (0.006)
	master cylinder I.D.	12.700–12.743 (0.5000–0.5017)	12.76 (0.502)
	master piston O.D.	12.657–12.684 (0.4983–0.4994)	12.64 (0.498)
	caliper cylinder I.D.	27.000–27.050 (1.0630–1.0650)	27.06 (1.065)
	caliper piston O.D.	26.935–26.968 (1.0604–1.0617)	26.89 (1.059)

Ignition System

Spark plug	(Standard: CHAMPION)	QN-86
	(Standard: NGK)	BR8EG
	(Standard: NIPPONDENSO)	W24ESR-V
	(Optional: CHAMPION)	QN-2G
	(Optional: NGK)	BR8EV
	(Optional: NIPPONDENSO)	W24ESR-G
Spark plug gap		0.5–0.6 (0.020–0.024)
Ignition timing ("F" mark)		22° BTDC at 4,000 rpm
Ignition coil resistance (at 20°C/68°F)		
	Primary	0.4–0.6 Ω
	Secondary with plug cap	13–23 kΩ
	Secondary without plug cap	10–16 kΩ
Alternator exciter coil resistance (at 20°C/68°F)		1–40 Ω
Ignition pulse generator coil resistance (at 20°C/68°F)		180–280 Ω

Torque Values

Standard

Fastener Type	Torque N·m (kg-m, ft-lb)	Fastener Type	Torque N·m (kg-m, ft-lb)
5 mm hex bolt and nut	5 (0.5, 3.6)	5 mm screw	4 (0.4, 2.9)
6 mm hex bolt and nut	10 (1.0,7)	6 mm screw	9 (0.9, 6.5)
8 mm hex bolt and nut	22 (2.2, 16)	6 mm flange bolt (8 mm head)	9 (0.9, 6.5)
10 mm hex bolt and nut	35 (3.5, 25)	6 mm flange bolt (10 mm head) and nut	12 (1.2, 9)
12 mm hex bolt and nut	55 (5.5, 40)	8 mm flange bolt and nut	27 (2.7, 20)
		10 mm flange bolt and nut	40 (4.0, 29)

Torque specifications listed below are for important fasteners. Others should be tightened to standard torque values listed above.

Engine

Item	Q'ty	Thread dia. x Pitch (mm)	Torque N·m (kg-m, ft-lb)	Remarks
Maintenance:				
Oil check bolt	1	6 x 1.0	10 (1.0, 7)	
Oil drain bolt	1	12 x 1.5	30 (3.0, 22)	
Fuel System:				
Carburetor insulator bolt	6	6 x 1.0	9 (0.9, 6.5)	
Reed valve stopper screw	4	3 x 0.5	1 (0.1, 0.7)	
Cooling System:				
Coolant drain bolt	2	6 x 1.0	10 (1.0, 7)	
Water pump cover bolt	4	6 x 1.0	12 (1.2, 9)	
Water pump impeller	1	7 x 1.0	12 (1.2, 9)	
Cylinder Head/Cylinder:				
Spark plug	1	14 x 1.25	18 (1.8, 13)	
Cylinder head nut	6	8 x 1.25	27 (2.7, 20)	
Cylinder mounting nut	4	10 x 1.25	40 (4.0, 29)	
Cylinder stud bolt	6	10 x 1.25	12 (1.2, 9)	
Clutch/Kickstarter/Gearshift Linkage:				
Clutch spring bolt	6	6 x 1.0	10 (1.0, 7)	
Clutch center lock nut	1	18 x 1.0	82 (8.2, 59)	
Shift drum center pin	1	8 x 1.25	22 (2.2, 16)	
Right crankcase cover bolt	10	6 x 1.0	10 (1.0, 7)	
Shift drum stopper arm bolt	1	6 x 1.0	12 (1.2, 9)	
Gearshift pedal pinch bolt	1	6 x 1.0	12 (1.2, 9)	
Kickstarter pedal bolt	1	8 x 1.25	27 (2.7, 20)	
Crankcase/Crankshaft/Transmission:				
Drive sprocket bolt	1	8 x 1.25	27 (2.7, 20)	
Countershaft bearing set plate bolt	2	6 x 1.0	10 (1.0, 7)	Note 1
Shift drum bearing set plate bolt	2	6 x 1.0	10 (1.0, 7)	
Primary drive gear bolt	1	10 x 1.25	45 (4.5, 33)	
Alternator:				
Alternator cover screw	4	6 x 1.0	4 (0.4, 2.9)	
Flywheel nut	1	12 x 1.25	55 (5.5, 34)	

Notes:

1. Apply a locking agent to the threads.
2. Apply oil to the threads and flange surface.
3. Stake.
4. U-nut.
5. UBS nut.

Frame

Item	Q'ty	Thread dia. x Pitch (mm)	Torque N·m (kg-m, ft-lb)	Remarks
Frame Body Panels/Exhaust System:				
Seat mounting bolt ('92 – '95)	2	8 x 1.25	22 (2.2, 16)	
(After '95)	2	8 x 1.25	27 (2.7, 20)	
Sub-frame mounting bolt	2	8 x 1.25	27 (2.7, 20)	
Silencer mounting bolt (rear)	1	6 x 1.0	14 (1.4, 10)	
Engine Mounting:				
Lower/Front mounting bolt	2	10 x 1.25	65 (6.5, 47)	
Engine hanger plate bolt	2	8 x 1.25	27 (2.7, 20)	
Upper engine mounting bolt ('92)	1	10 x 1.25	43 (4.3, 31)	
(After '92)	1	10 x 1.25	40 (4.0, 29)	
Wheels/Tires:				
Front axle ('92 – '94)	1	14 x 1.5	87 (8.7, 63)	
(After '94)	1	16 x 1.5	88 (8.8, 64)	
Front axle holder bolt	4	8 x 1.25	20 (2.0, 14)	
Front rim lock nut	1	8 x 1.25	13 (1.3, 9)	
Front spoke nipple	36	BC3.5	3.8 (0.38, 2.7)	
Rear axle nut	1	18 x 1.5	95 (9.5, 69)	Note 4
Rear sprocket nut ('92 – '94)	6	8 x 1.25	33 (3.3, 24)	Note 5
(After '94)	6	8 x 1.25	33 (3.3, 24)	Note 4
Rear rim lock nut	2	8 x 1.25	13 (1.3, 9)	
Rear spoke nipple	32	BC4.0	3.8 (0.38, 2.7)	
Steering:				
Clutch lever bracket holder bolt	2	6 x 1.0	10 (1.0, 7)	
Clutch lever pivot bolt	1	6 x 1.0	2 (0.2, 1.5)	
Clutch lever pivot lock nut	1	6 x 1.0	10 (1.0, 7)	
Engine stop switch clamp screw	1	4 x 0.7	1.5 (0.15, 1.1)	
Front master cylinder holder bolt	2	6 x 1.0	10 (1.0, 7)	
Handlebar lower holder nut	2	10 x 1.25	35 (3.5, 25)	Note 4
Handlebar upper holder bolt	4	8 x 1.25	22 (2.2, 16)	
Throttle cable end cover screw	2	4 x 0.7	1.5 (0.15, 1.1)	
Throttle housing bolt	2	6 x 1.0	10 (1.0, 7)	
Steering stem adjusting nut ('92 – '94)	1	26 x 1.5	2.0 (0.2, 1.4)	
(After '94)	1	26 x 1.0	13 (1.3, 9)	
Steering stem nut ('92)	1	24 x 1.5	118 (11.8, 85)	
('93 – '94)	1	24 x 1.5	130 (13.0, 94)	
(After '94)	1	24 x 1.0	128 (12.8, 93)	
Swingarm pivot bolt	1	16 x 1.5	90 (9.0, 65)	
Front Suspension:				
Fork top bridge pinch bolt ('92 – '95)	4	8 x 1.25	22 (2.2, 16)	
(After '95)	4	8 x 1.25	21 (2.1, 15)	
Fork bottom bridge pinch bolt	4	8 x 1.25	22 (2.2, 16)	
Fork cap ('92 – '94)	2	48 x 1.5	35 (3.5, 25)	
(After '94)	2	46 x 1.0	30 (3.0, 22)	
Fork cap lock nut ('92 – '94)	2	12 x 1.0	22 (2.2, 16)	
(After '94)	2	12 x 1.25	28 (2.8, 20)	
Fork center bolt	2	27 x 1.0	80 (8.0, 58)	Note 1
Fork protector mounting bolt	6	6 x 1.0	13 (1.3, 9)	Note 1
Rear Suspension:				
Shock absorber compression damping adjuster ('92 – '94)	1	24 x 1.0	20 (2.0, 14)	
(After '94)	1	28 x 1.0	30 (3.0, 22)	
Shock absorber damper rod end nut ('92 – '94)	1	12 x 1.5	27 (2.7, 20)	
(After '94)	1	12 x 1.5	26 (2.6, 19)	
Shock absorber lower mounting bolt ('92)	1	10 x 1.25	43 (4.3, 31)	
('93)	1	10 x 1.25	45 (4.5, 33)	
(After '93)	1	10 x 1.25	43 (4.3, 31)	
Shock absorber spring lock nut ('92 – '94)	1	56 x 1.5	90 (9.0, 65)	
(After '94)	1	56 x 1.5	29 (2.9, 21)	
Shock absorber upper mounting bolt	1	10 x 1.25	45 (4.5, 33)	Note 4
Shock arm-to-shock link bolt	1	12 x 1.25	63 (6.3, 46)	Note 4
Shock arm-to-swingarm bolt ('92)	1	12 x 1.25	63 (6.3, 46)	Note 4
(After '92)	1	14 x 1.25	90 (9.5, 65)	Note 4
Shock link-to-frame bolt	1	12 x 1.25	63 (6.3, 46)	Note 4

Notes:
1. Apply a locking agent to the threads.
2. Apply oil to the threads and flange surface.
3. Stake.
4. U-nut.
5. UBS nut.

Frame

Item	Q'ty	Thread dia. x Pitch (mm)	Torque N·m (kg-m, ft-lb)	Remarks
Brake System:				
Brake caliper bleed valve	2	8 x 1.25	6 (0.6, 4.3)	
Brake caliper pad pin	2	10 x 1.0	18 (1.8, 13)	
Brake caliper pad pin plug	2	10 x 1.0	3 (0.3, 2.2)	
Brake hose bolt	4	10 x 1.25	35 (3.5, 25)	
Brake hose guide ('92—'94)	2	6 x 1.25	5.3 (0.53, 3.8)	
(After '94)	2	6 x 1.0	5.3 (0.53, 3.8)	
Brake lever adjuster lock nut	1	5 x 0.5	6 (0.6, 4.3)	
Brake lever pivot nut	1	6 x 1.0	6 (0.6, 4.3)	
Brake pedal pivot bolt	1	8 x 1.25	26 (2.6, 19)	
Front brake caliper mounting bolt	2	8 x 1.25	31 (3.1, 22)	Note 1
Front brake caliper pin bolt	1	8 x 1.25	23 (2.3, 17)	Note 1
bracket pin bolt ('92—'93)	1	8 x 1.25	13 (1.3, 9)	Note 1
(After '93)	1	8 x 1.25	23 (2.3, 17)	Note 1
Front brake disc mounting bolt ('92—'94)	4	6 x 1.0	20 (2.0, 14)	Note 1
(After '94)	4	6 x 1.0	16 (1.6, 12)	Note 4
Front brake disc cover mounting bolt	2	6 x 1.0	13 (1.3, 9)	Note 1
Front brake master cylinder holder bolt	2	6 x 1.0	10 (1.0, 7)	
Rear brake caliper pin bolt ('92—'94)	1	12 x 1.25	28 (2.8, 20)	Note 1
(After '94)	1	12 x 1.25	28 (2.8, 20)	
bracket pin bolt	1	8 x 1.25	13 (1.3, 9)	Note 1
Rear brake disc mounting bolt	4	8 x 1.25	43 (4.3, 31)	Note 1
Rear brake master cylinder mounting bolt ('92—'94)	2	6 x 1.0	15 (1.5, 11)	Note 1
(After '94)	2	6 x 1.0	15 (1.5, 11)	
Rear disc guard screw	2	6 x 1.0	7 (0.7, 5.1)	Note 1
Others:				
Chain guide bolt	3	6 x 1.0	12 (1.2, 9)	Note 4
Chain tensioner roller bolt ('92—'94)	1	8 x 1.25	22 (2.2, 16)	
(After '94)	1	8 x 1.25	22 (2.2, 16)	Note 4

Notes:
1. Apply a locking agent to the threads.
2. Apply oil to the threads and flange surface.
3. Stake.
4. U-nut.
5. UBS nut.

Tools

- The newly designed tools are indicated with * mark in the list.

Special

Description	Tool No.	Alternative	Tool No.	Ref. page
Fork slider spacer	07KMZ – KZ30101	or 07KMZ – KZ3010B or 07KMZ – KZ3010A (U.S.A. only)		
Seal case holder	07KMB – KZ30200			
Oil seal driver ('92 – '95)	07KMD – KZ30100			
Oil seal driver attachment ('92 – '95)	07NMD – KZ30101			
*Oil seal driver (After '95)	07TMD – MAC0100			
Universal bearing puller	07631 – 0010000	Equivalent commercially available in U.S.A.		
Snap ring pliers	07914 – 3230001			
Steering stem socket	07916 – KA50100			
Bearing remover	07936 – 3710300			
Bearing remover set, 20 mm	07936 – 3710001			
— Bearing remover	07936 – 3710600			
— Remover handle	07936 – 3710100			
— Remover weight	07741 – 0010201	Slider weight	07936 – 3710201	
Bearing remover set, 12 mm	07936 – 1660001			
— Remover weight	07741 – 0010201	Slider weight	07936 – 3710201	
— Remover head, 12 mm	07936 – 1660110			
— Remover shaft	07936 – 1660120			
Attachment, 28 x 30 mm	07946 – 1870100			
Crankcase puller	07937 – 4300001			
Water seal driver	07945 – KA30000			
Bearing race remover	07948 – 4630100			
Steering stem driver	07946 – MB00000			
Needle bearing driver	07946 – KA50000			
Assembly bolt	07965 – 1660200			
Assembly collar	07965 – 1660302			
Threaded adapter	07965 – KA30000			
Bearing remover, 7 mm	07931 – KA30000			
Bearing driver, 7 mm	07946 – KA30100			
Spherical bearing driver	07HMF – KS60100			
Slider guide, 14 mm	07974 – KA40001			
Slider guide attachment ('92 – '93)	07974 – KA50102			
Sleeve collar ('92 – '93)	07974 – KA30201			
Slider guide attachment (After '93)	07MAG – SP00102			
Driver head	07946 – KM40701			
Driver shaft	07946 – MJ00100			
Fork damper holder	07PMB – KZ40100	or 07PMB – KZ4010A (U.S.A. only)		

Common

Description	Tool No.	Alternative	Tool No.	Ref. page
Float level gauge	07401 – 0010000			
Spoke nipple wrench (Front)	07JMA – MR60100	Equivalent commercially available in U.S.A.		
(Rear)	07701 – 0020400			
Retainer wrench body	07710 – 0010401			
Bearing retainer wrench B	07710 – 0010200			
Gear holder	07724 – 0010100			
Clutch center holder	07724 – 0050001	Equivalent commercially available in U.S.A.		
Universal holder	07725 – 0030000			
Flywheel puller	07733 – 0010000	Flywheel puller	07933 – 0010000	
Lock nut wrench, 20 x 24 mm	07716 – 0020100			
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, 62 x 68 mm	07746 – 0010500			
Attachment, 24 x 26 mm	07746 – 0010700			
Pilot, 12 mm	07746 – 0040200			
Pilot, 17 mm	07746 – 0040400			
Pilot, 20 mm	07746 – 0040500			
Pilot, 22 mm	07746 – 0041000			
Pilot, 25 mm	07746 – 0040600			
Pilot, 28 mm	07746 – 0041100			
Bearing remover head, 17 mm	07746 – 0050500	Equivalent commercially available in U.S.A.		
Bearing remover shaft	07746 – 0050100			
Bearing remover head, 20 mm	07746 – 0050600			
Driver	07749 – 0010000			

Optional

Description	Tool No.	Remarks	Ref. page
Pin spanner A	89201 – KS – 810	x 2	

Lubrication & Seal Points

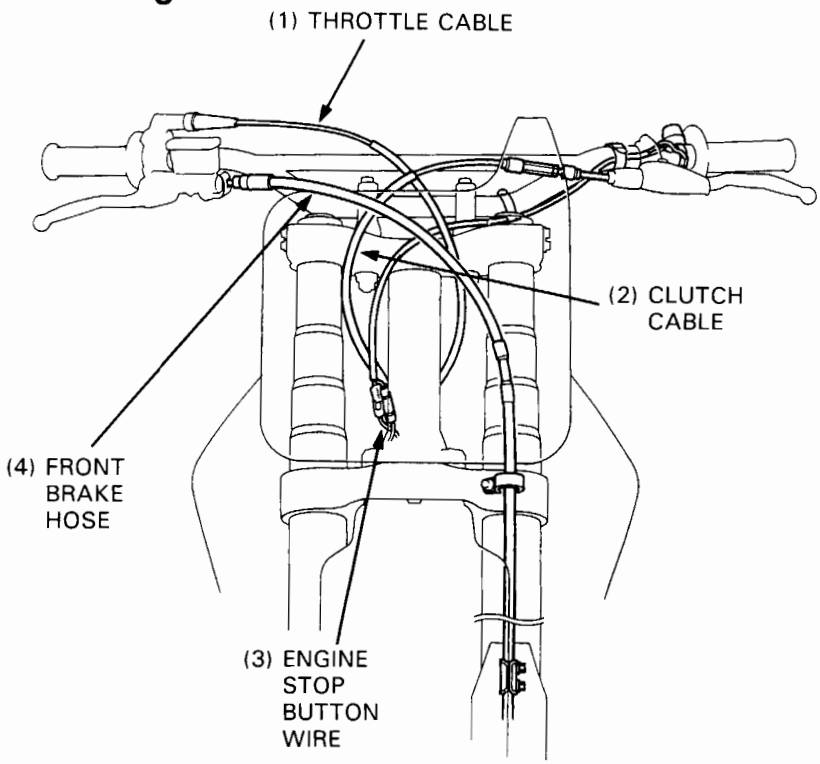
Engine

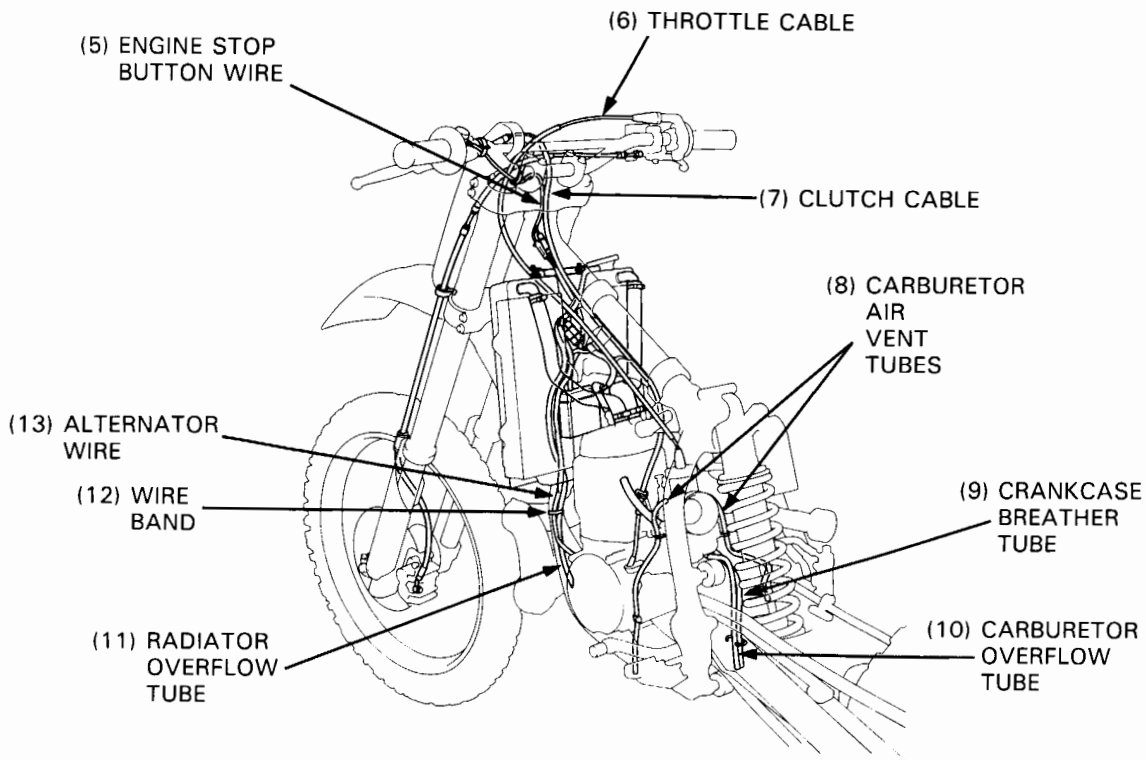
Location	Material	Remarks
Connecting rod big end Connecting rod small end needle bearing Crankshaft bearing Piston surface Piston pin outer surface Piston ring ends/outer surface	Honda HP2 2-Stroke Oil or equivalent	
Each bearing Transmission gear teeth/sliding surface	Pro Honda HP Trans Oil, Pro Honda GN4 4-Stroke Oil or an equivalent	
Mainshaft/countershaft spline Mainshaft/countershaft gear sliding surface Kickstarter spindle spline Kickstarter spindle gear sliding surface Water pump gear teeth	Molybdenum oil solution	
Oil seal lips Water seal lips	Multi-purpose grease	
Clutch lifter rod end	Molybdenum disulfide grease	
Clutch lifter	Molybdenum disulfide paste	
Cylinder stud bolt thread Kickstarter pedal bolt thread Countershaft bearing set plate screw	Hondalock 2 or equivalent	

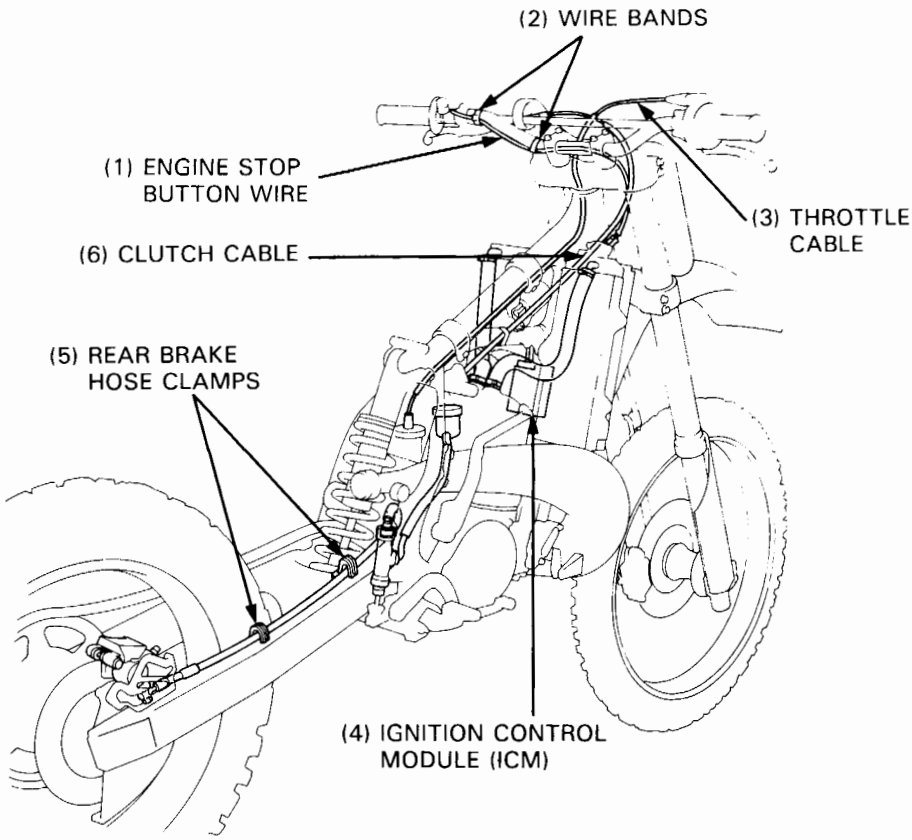
Frame

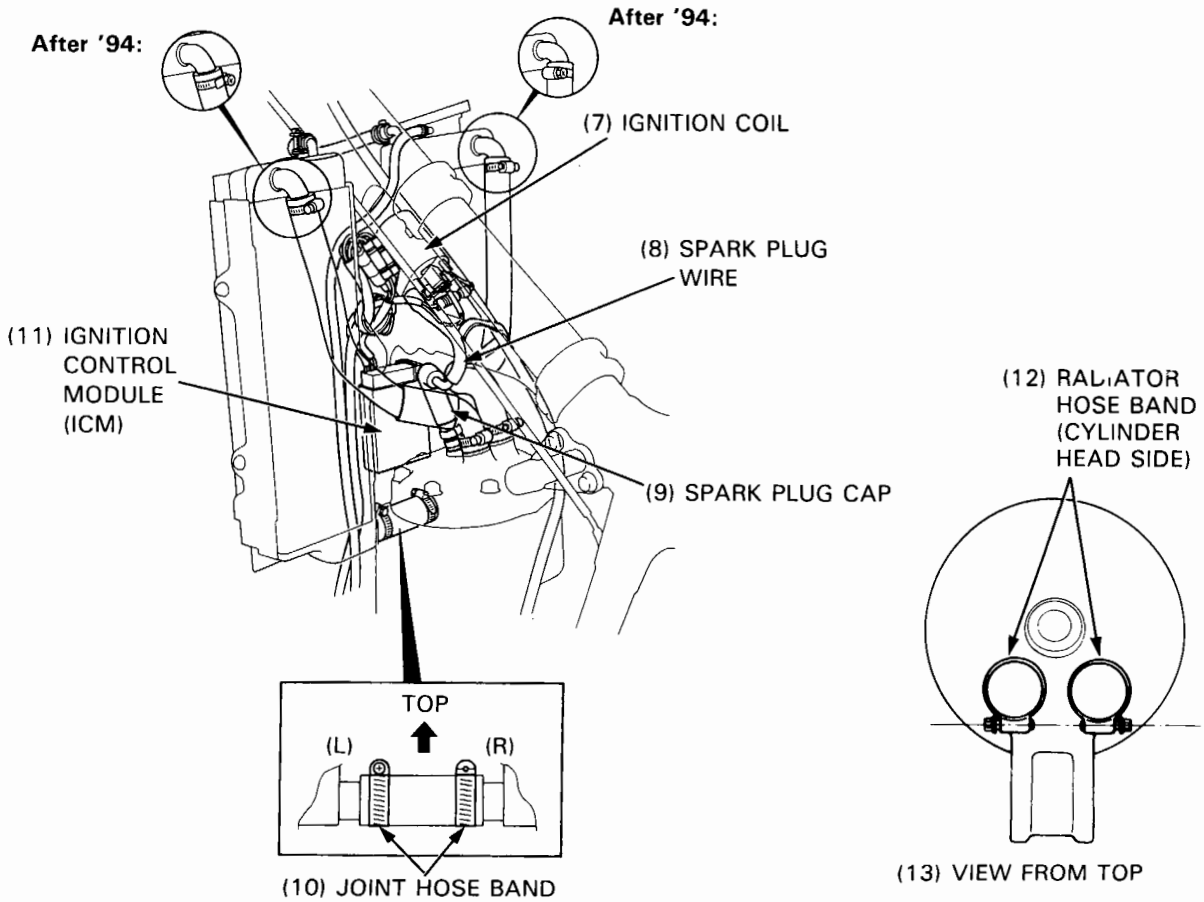
Location	Material	Remarks
Throttle cable end Throttle grip sliding surface	Honda 4-Stroke Engine Oil or equivalent	
Throttle cable roller and collar sliding surface Steering stem bearing Wheel axle and swingarm pivot outer surface Swingarm bearings Brake pedal pivot sliding surface Gearshift pedal pin sliding surface Kickarm joint sliding surface Dust seal lips	Multi-purpose grease	Apply thin coat of grease Apply thin coat of grease
Brake lever pivot bolt sliding surface Brake lever adjusting bolt end Brake caliper pin bolt/pin bolt A Rear brake master cylinder push rod spherical surface/boot	Silicone grease	
Suspension linkage bearings	Molybdenum disulfide grease	
Shock absorber spherical bearing	Molybdenum disulfide paste	
Fork cap O-ring Fork oil seal lips	Pro Honda Suspension Fluid SS-7M or equivalent	
Fork protector mounting bolt Fort center bolt ('92—'94) Front brake caliper mounting bolt Front brake disc cover bolt (After '94) Front brake disc mounting bolt ('92—'94) Rear brake disc mounting bolt Brake hose guide screw Rear brake disc guard mounting screw Brake caliper pin bolt/pin bolt A Rear brake master cylinder mounting bolt	Hondalock 2 or equivalent	
Handlebar grip	Honda Hand Grip Cement	

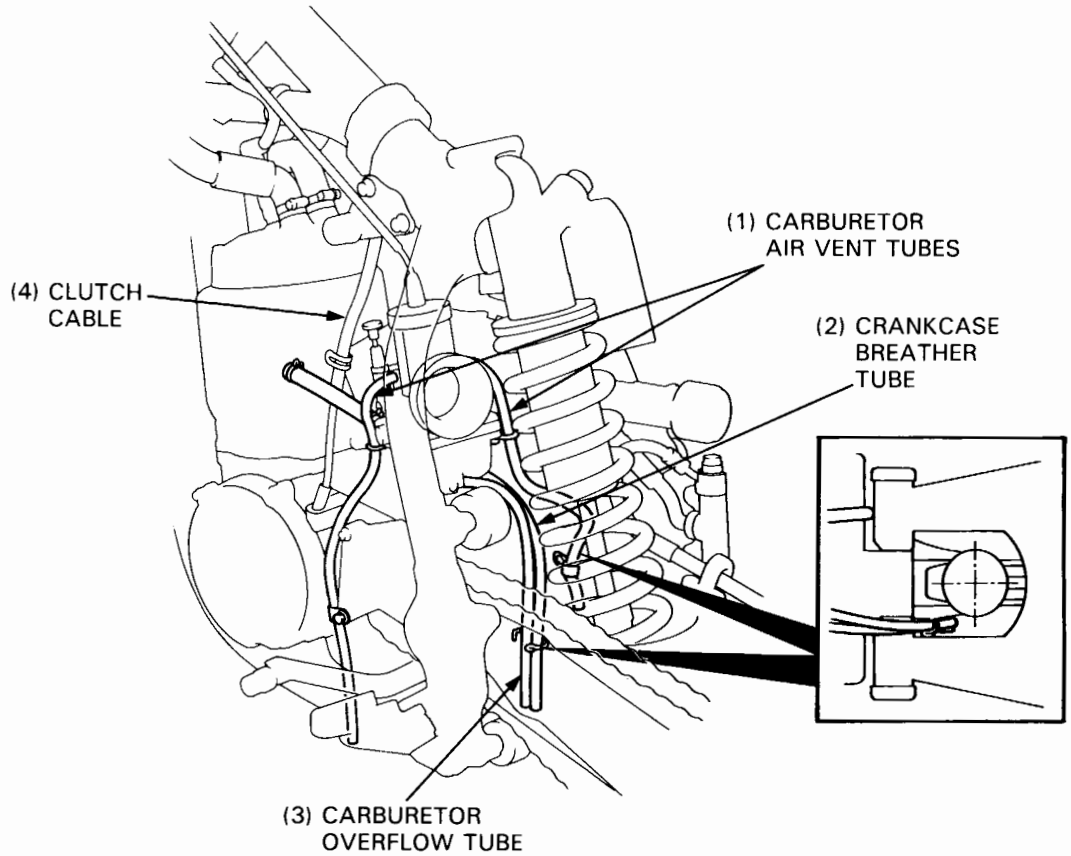
Cable & Harness Routing






(2) WIRE BANDS
(1) ENGINE STOP BUTTON WIRE
(3) THROTTLE CABLE
(6) CLUTCH CABLE
(5) REAR BRAKE HOSE CLAMPS
(4) IGNITION CONTROL MODULE (ICM)


After '94:
After '94:
(7) IGNITION COIL
(8) SPARK PLUG WIRE
(11) IGNITION CONTROL MODULE (ICM)
(9) SPARK PLUG CAP
TOP
(L)
(R)
(10) JOINT HOSE BAND
(12) RADIATOR HOSE BAND (CYLINDER HEAD SIDE)
(13) VIEW FROM TOP


(1) CARBURETOR
AIR VENT TUBES
(2) CRANKCASE
BREATHER
TUBE
(3) CARBURETOR
OVERFLOW TUBE
(4) CLUTCH
CABLE

Optional Parts

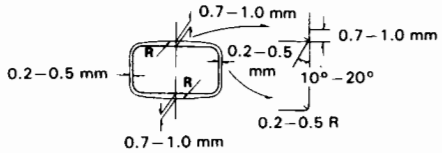
Engine

Item		Remarks
Piston rings:		
Oversize piston ring	Optional	0.25 mm, 0.50 mm (2 sizes)
Oversize pistons	Optional	0.25 mm, 0.50 mm (2 sizes) The cylinder must be rebored, and an oversize piston and piston rings fitted if worn or seized. Use the correct oversize piston rings with an oversize piston.

Oversize	Piston Manufacturing Tolerance
0.25 mm (0.01 in)	89.180–89.200 (3.5110–3.5118)
0.50 mm (0.02 in)	89.430–89.450 (3.5209–3.5217)

NOTE:

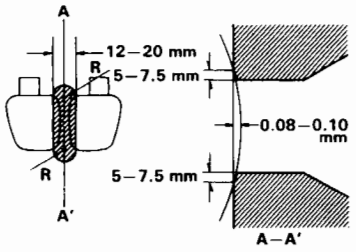
- After reboring, remove all burrs from each port edge and chamber as indicated below.

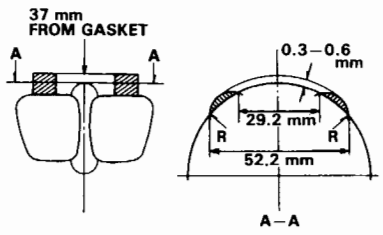


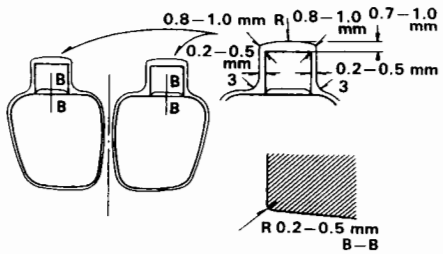
- Before reboring the cylinder, follow the contour of the exhaust port bridge with your fingers so that the original radius can be restored after boring. Radius the bridge carefully by hand with a cutting stone.

CAUTION

- **Failure to radius this bridge could cause a seized piston. Be careful not to damage the cylinder wall when radiusing the bridge.**

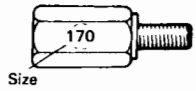






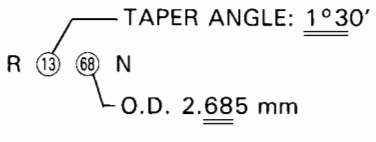
Engine

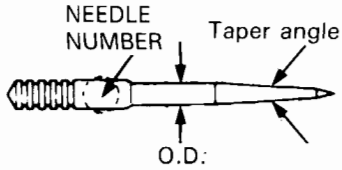
Item		Remarks
Carburetor:		
Main jet	Standard	#170
	Optional	#160–180 (in increments of 2 or 3)
Jet Needles	Standard	R1368NS (∅2.685 mm – 1°30′)



General flow characteristics	Jet needle number	O.D. (mm)	Taper angle	Specific flow characteristics
Leaner than the stock R1368NS needle	R1369N	2.695	1°30′	Leaner only at 1/8 to 1/4 throttle
Leaner than R1369N needle	R1370N	2.705	1°30′	Leaner only at 1/8 to 1/4 throttle
Richer than the stock R1368NS needle	R1367N	2.675	1°30′	Richer only at 1/8 to 1/4 throttle
Richer than R1367N needle	R1366N	2.665	1°30′	Richer only at 1/8 to 1/4 throttle

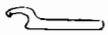
Meaning of the jet needle number
(Example)

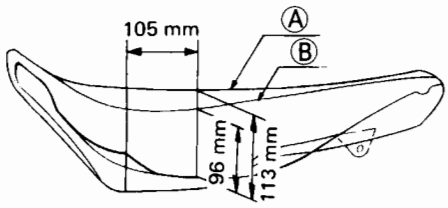




Jet needle clip standard position		4th groove from top
Slow jet	Standard	#55
	Optional	#50–60 (in increments of 2 or 3)

Frame

Item		Remarks
Maintenance:		
Workstand		For maintenance
Air pressure gauge		For checking tire air pressure
Pin spanner		Pin spanner A x 2 For rear shock absorber spring length (preload) adjustment (two required)
Seat	Standard	Seat Ⓐ: Seat thickness 113 mm (4.4 in)
	Optional	Seat Ⓑ: Seat thickness 96 mm (3.8 in)



Drive Chain & sprocket:		
Driven sprocket	Standard	49T (Aluminum)
	Optional	'92 – '95: 47T (Aluminum)
		After '95: 48T (Aluminum)
		'92 – '95: 51T (Aluminum)
		After '95: 50T (Aluminum)
		49T (Steel: for muddy or sandy track conditions)
Driven chain	Standard	DID520DS5/114 links
		RK520KZ3/114 links
	Optional	DID520DS5/116 links
		RK520KZ3/116 links

Frame

Item	Remarks
Fork: Spring	

'92–'94:

Type	Spring range	Identification mark
Light	0.38 kg/mm (21.28 lb/in)	1-coil
Standard	0.40 kg/mm (22.40 lb/in)	2-coils
Heavy	0.42 kg/mm (23.52 lb/in)	slit

After '94:

Type	Spring range	Identification mark
Light	0.39 kg/mm (21.84 lb/in)	2 scribe marks on opposite sides
Standard	0.41 kg/mm (22.96 lb/in)	1 scribe mark and 2 scribe marks on opposite sides or No mark
Heavy	0.43 kg/mm (24.08 lb/in)	3 single scribe marks

Rear shock absorber: Spring

'92–'94:

Type	Spring range	Identification mark
Light	5.2 kg/mm (291.2 lb/in)	No mark
Standard	5.6 kg/mm (313.6 lb/in)	Green Mark
Heavy	6.0 kg/mm (336.0 lb/in)	Red Mark

After '94:

Type	Spring range	Identification mark
Light	5.4 kg/mm (302.4 lb/in)	No mark
Standard	5.6 kg/mm (313.6 lb/in)	Blue Mark
Heavy	5.8 kg/mm (324.8 lb/in)	Green Mark

MEMO

2. Frame/Body Panels/Exhaust System

Service Information	2-1	Fuel Tank	2-2
Troubleshooting	2-1	Exhaust System	2-3
Seat	2-2	Sub-frame	2-4
Side Cover	2-2		

Service Information

General

⚠ WARNING

- **Gasoline is extremely flammable and is explosive under certain conditions.**
- **Serious burns may result if the exhaust system is not allowed to cool before components are removed or serviced.**

- Work in a well ventilated area. Smoking or allowing flames or sparks in the working area or where gasoline is stored can cause a fire or explosion.
- This section covers removal and installation of the frame body panels, fuel tank and exhaust system.
- Always replace the exhaust pipe gasket when removing the exhaust pipe from the engine.
- Always inspect the exhaust system for leaks after installation.

Torque Values

Seat mounting bolt	22 N·m (2.2 kg-m, 16 ft-lb)
Sub-frame mounting bolt	27 N·m (2.7 kg-m, 20 ft-lb)
Silencer mounting bolt (rear)	14 N·m (1.4 kg-m, 10 ft-lb)

Troubleshooting

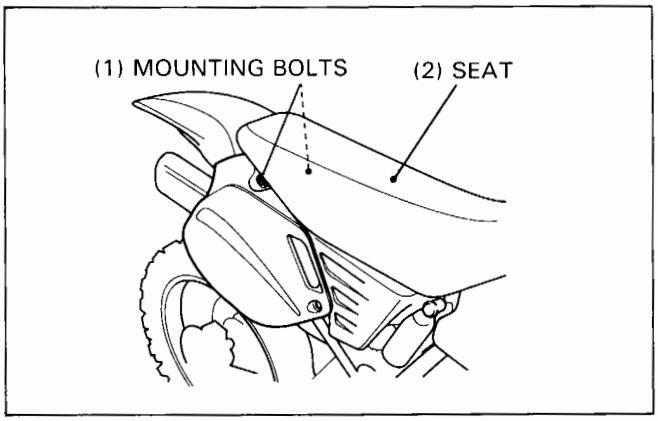
Excessive exhaust noise
- Broken exhaust system
- Exhaust gas system
- Worn silencer glass wool packing

Poor performance
- Deformed exhaust system
- Exhaust gas leak
- Clogged muffler/silencer

Seat

Removal

Remove the two mounting bolts and seat.

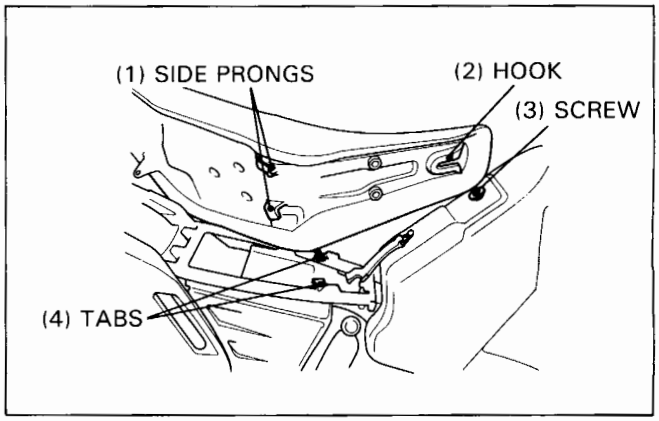


Installation

Align the hook of the seat with the mounting screw on the fuel tank.
Also align the seat side prongs with the sub-frame tabs.

Install and tighten the seat mounting bolts.

Torque: 22 N·m (2.2 kg-m, 16 ft-lb)

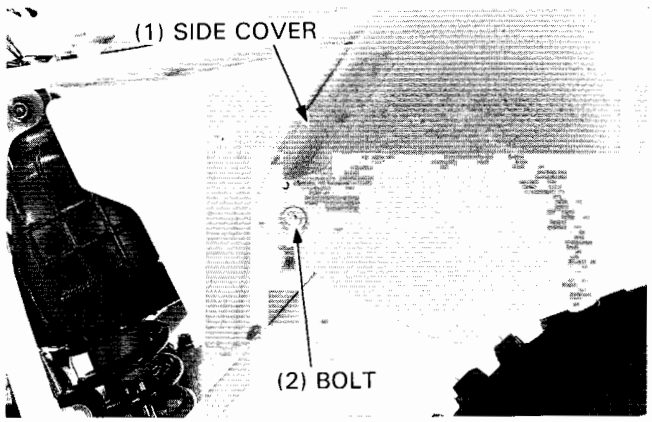


Side Covers

Removal/Installation

Remove the seat (See above).
Remove the flange bolt and side cover.

Installation is in the reverse order of removal.



Fuel Tank

Removal/Installation

⚠WARNING

- **Gasoline is extremely flammable and is explosive under certain conditions.**

Remove the seat (See above).
Turn the fuel valve OFF, and disconnect the fuel line.

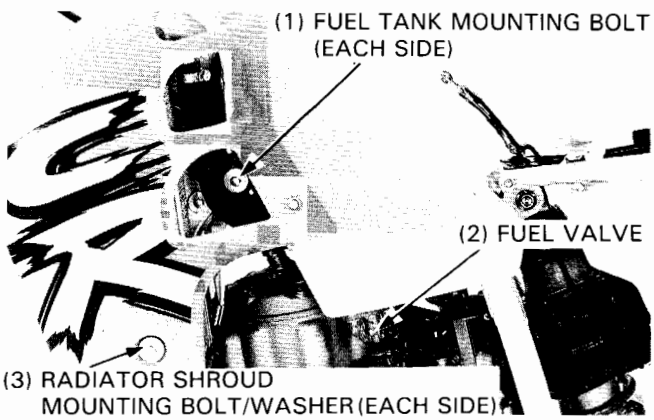
Remove the radiator shroud bolts and washers.
Remove the fuel tank mounting bolts, unhook the band and remove the fuel tank.

Remove the bolts and radiator shroud.

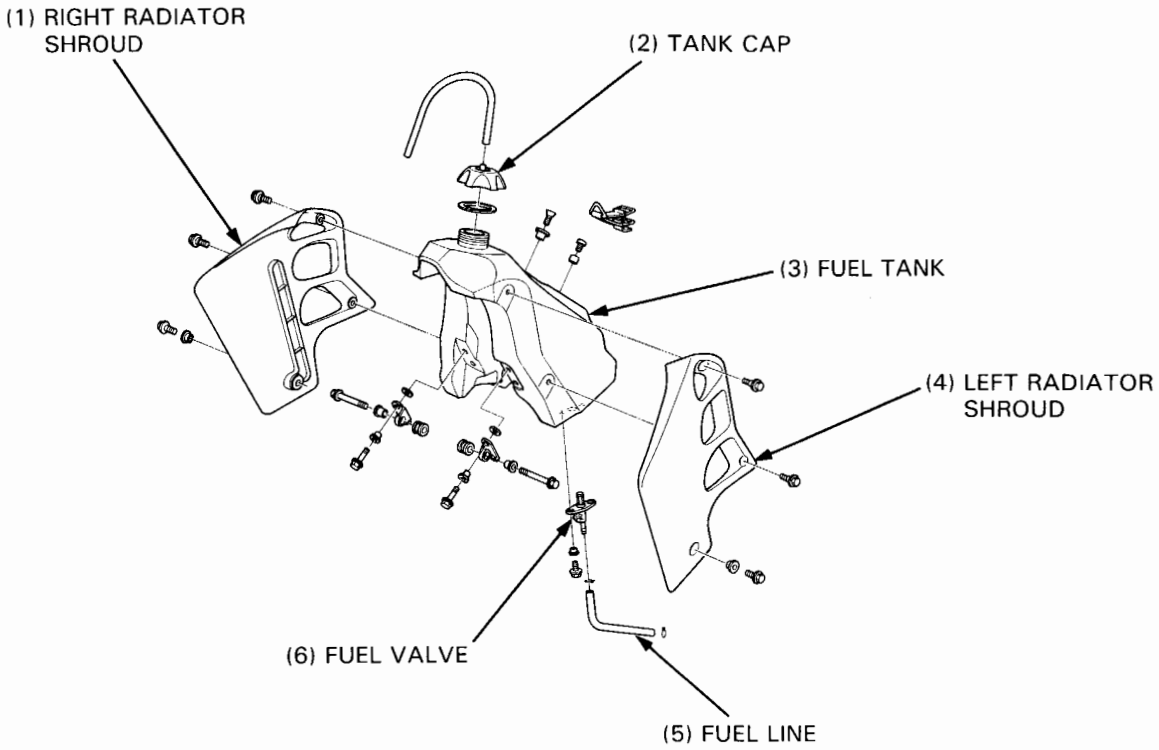
Installation is in the reverse order of removal.

NOTE

- Before installation, make sure there are no fuel leaks.
- Install the breather tube into the stem nut.
- Fuel filter maintenance (See Owner's Manual).



Disassembly/Assembly



Exhaust System

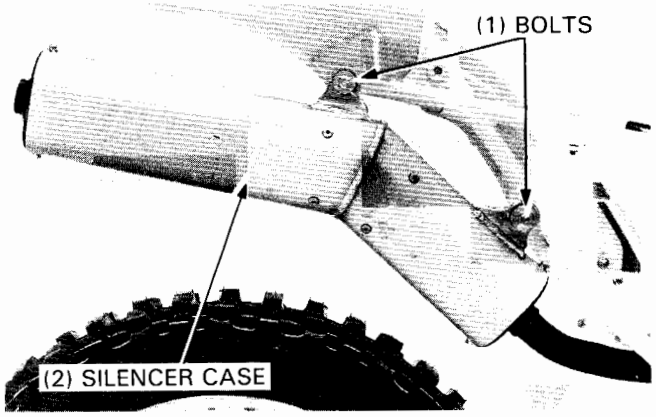
Silencer Removal/Installation

Remove the seat and right side cover (page 2-2).
Remove the silencer case mounting bolts, silencer case and sealing rubber.

Check the joint rubber for wear or damage.
Replace the joint rubber if necessary.
Glass wool packing maintenance (see page 3-15).

Installation is in the reverse order of removal.

Torque: Silencer mounting bolt (rear)
14 N·m (1.4 kg-m, 10 ft-lb)



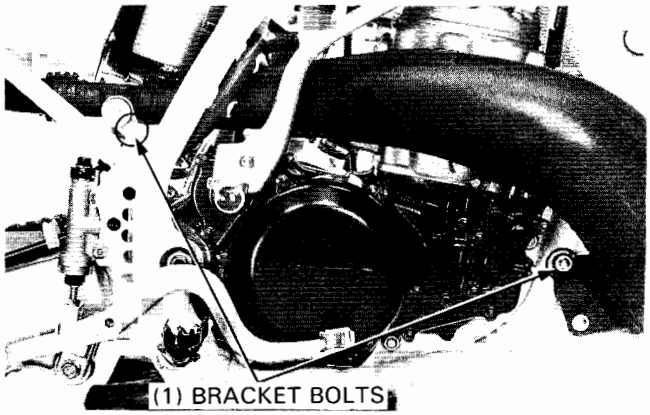
Expansion Chamber Removal/Installation

⚠ WARNING

- **Do not service the exhaust system while it is hot.**

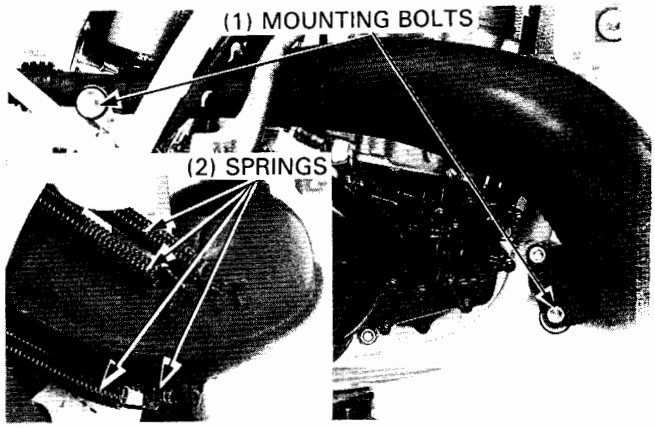
Remove the seat and right side cover (page 2-2).

Loosen the chamber bracket bolts.



Unhook and remove the chamber springs.
Remove the mounting bolts and expansion chamber.

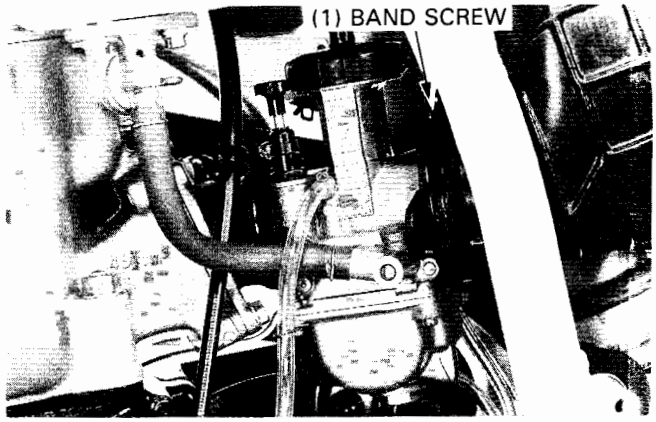
Installation is in the reverse order of removal.



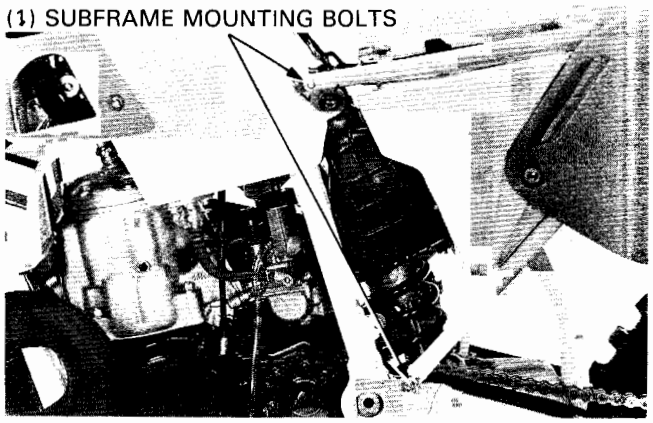
Sub-frame

Removal

Remove the seat (page 2-2).
Loosen the air cleaner connecting tube band screw.



Remove the three sub-frame mounting bolts.
Remove the sub-frame by pulling it straight backward.



Installation

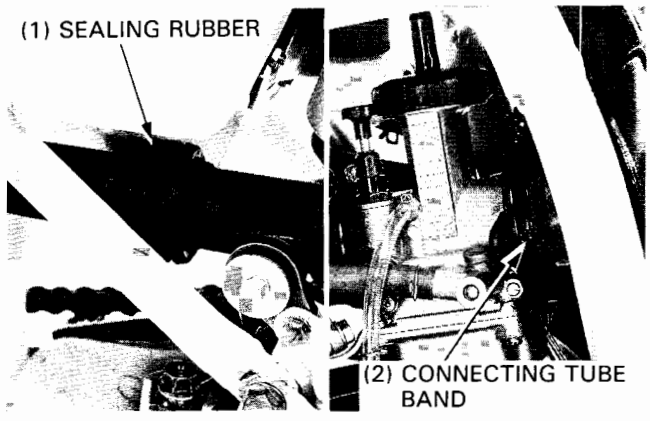
Loosely attach the upper and lower ends of the sub-frame to the main-frame while connecting the expansion chamber to the silencer pipe with the sealing rubber and air cleaner connecting tube to the carburetor.

Tighten the screw on the connecting tube band.

Align the sub-frame with the rear wheel and tighten the sub-frame mounting bolts and nut.

Torque: 27 N·m (2.7 kg-m, 20 ft-lb)

Install the seat.



3. Maintenance

Service Information	3-1	Drive/Driven Sprockets	3-11
Service Access Guide	3-2	Brake Fluid	3-12
Competition Maintenance Schedule	3-4	Brake Pad Wear	3-12
Throttle Operation	3-6	Brake System	3-13
Air Cleaner	3-6	Clutch System	3-13
Spark Plug	3-8	Control Cables	3-14
Radiator Coolant	3-8	Expansion Chamber/Silencer	3-15
Cooling System	3-8	Suspension	3-16
Transmission Oil	3-8	Swingarm/Shock Linkage	3-17
Drive Chain	3-10	Nuts, Bolts, Fasteners	3-18
Drive Chain Sliders	3-11	Wheels/Tires	3-18
Drive Chain Rollers	3-11	Steering Head Bearings	3-18

Service Information

General

Refer to Common Service Manual for items not included in this manual.
Refer to specifications (Section 1) for maintenance data.

Specifications

Engine

Item		Standard	Service Limit
Transmission oil capacity		750 cc (25 US oz, 26 Imp oz) at disassembly	—
		680 cc (23 US oz, 24 Imp oz) at oil change	—
Recommended transmission oil		Pro Honda HP Trans Oil, Pro Honda GN4 4-Stroke Oil, SAE 10W-40 or an equivalent. API Service classification: SF or SG	—
Clutch lever free play		10—20 mm (3/8—3/4 in)	—
Throttle grip free play		3—5 mm (1/8—1/4 in)	—
Recommended spark plug	Standard	CHAMPION QN-86 (QN-2G)	—
	(Optional)	NGK BR8EG (BR8EV)	
		NIPPONDENSO W24ESR-V (W24ESR-G)	
Spark plug gap		0.5—0.6 mm (0.020—0.024 in)	—

Frame

Item		Standard	Service Limit
Drive chain slack	'92	35—40 mm (1-3/8—1-9/16 in)	—
	After '92	35—45 mm (1-3/8—1-49/64)	—
Chain roller O.D.		—	25.0 mm (0.98 in)
Chain Slider (from upper surface)		—	5.0 mm (0.19 in)
Tire size	Front, Rear	80/100—21 51M, 110/100—18 64M	—
Tire pressure	Front/Rear	15 psi (1.0 kg/cm^2, 100 kPa)	—

Torque Values

Rear axle nut	95 N·m (9.5 kg-m, 69 ft-lb)
Front/Rear spoke nipple	3.8 N·m (0.38 kg-m, 2.7 ft-lb)
Front/Rear rim lock nut	13 N·m (1.3 kg-m, 9 ft-lb)
Chain tensioner roller bolt	22 N·m (2.2 kg-m, 16 ft-lb)

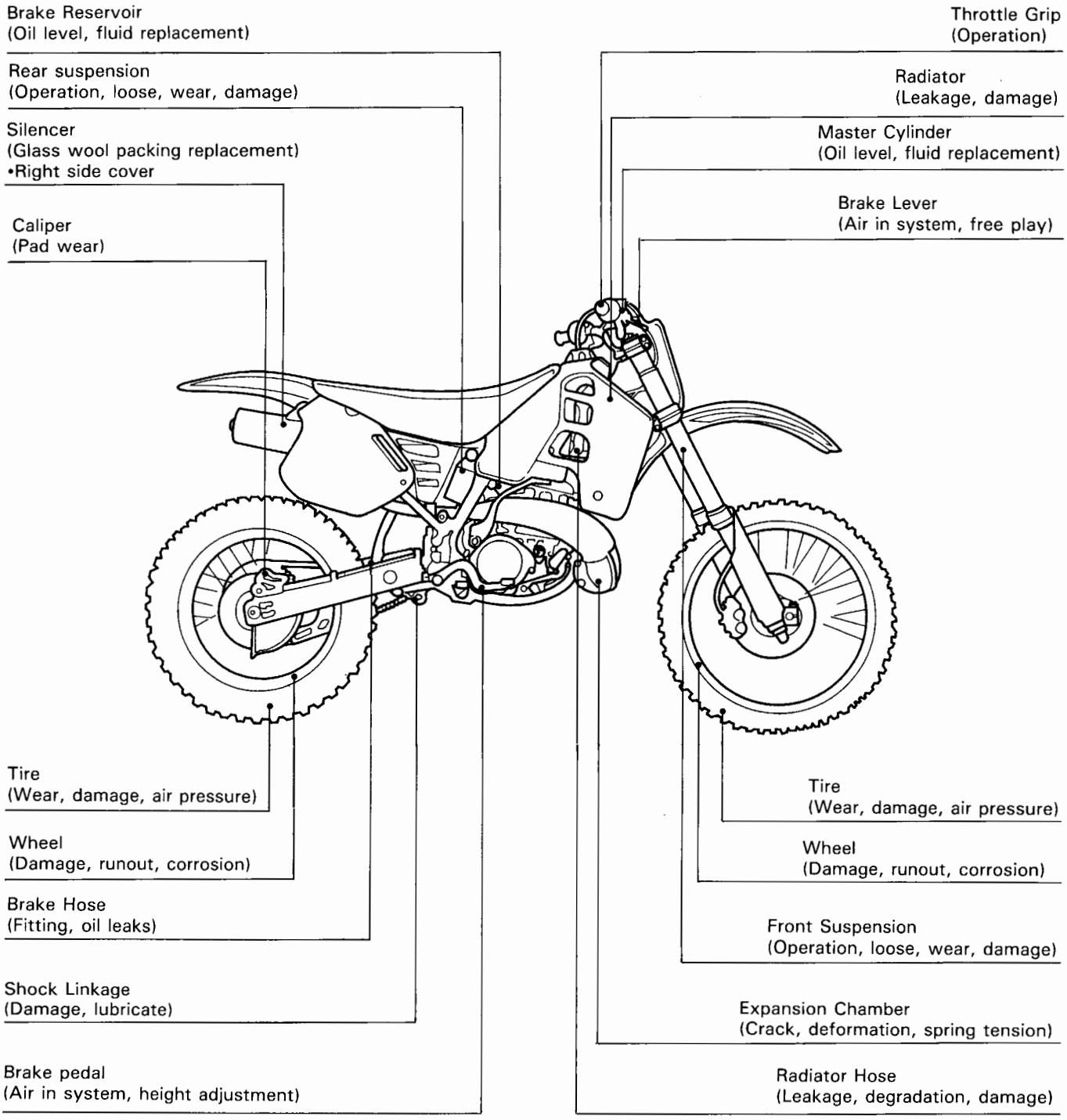
Special Tools

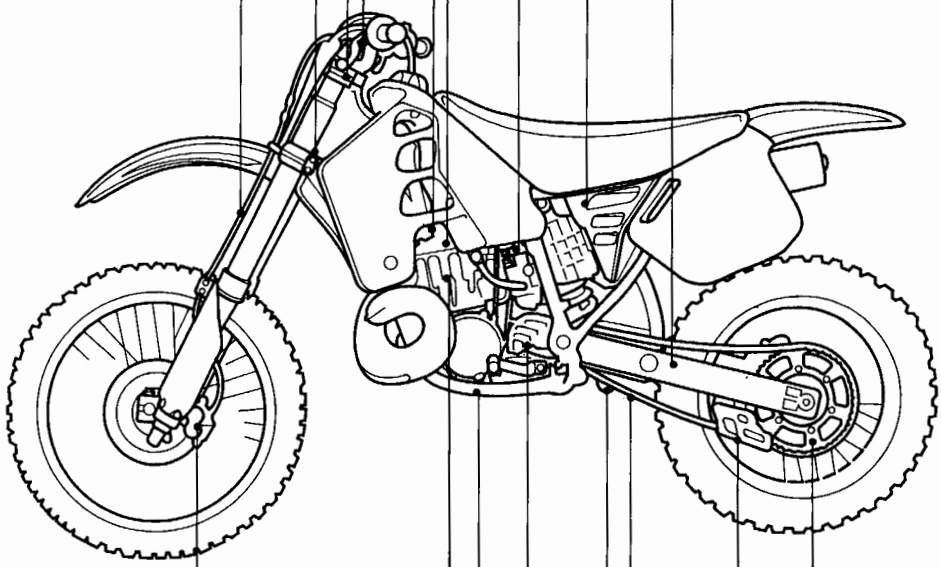
Common

Spoke nipple wrench	07JMA—MR60100 or equivalent commercially available in U.S.A.

Service Access Guide

- The following shows the locations of the parts that must be removed for the maintenance items listed below.
- Refer to section 2 (Frame/body panels/exhaust system), for the parts that must be removed for service.
  For example: Air Cleaner (Contamination, clogging): Parts
  • Seat—The parts that must be removed for service.





Spark Plug
(Wear, damage, color)

Clutch Lever
(Free play, operation)

Steering Head Bearings
(Damage)

Brake Hose
(Fitting, oil leaks)

Caliper
(Pad wear)

Piston pin/Connecting Rod Small Bearing
(Wear, damage)
•Seat, fuel tank

Piston/Piston Ring
(Wear, damage)
•Seat, fuel tank

Transmission Oil Drain bolt
(Oil Change)

Cylinder Head
(Decarbonizing)
•Seat, fuel tank

Throttle cable
(Lubricate)

Air cleaner
(Contamination, clogging)
•Seat

Swingarm
(Damage, lubricate)

Driven Sprocket
(Wear, damage)

Drive Chain Slider
(Wear, damage)

Drive Chain
(Wear, damage, lubricate)

Drive Chain Roller
(Wear, damage)

Drive sprocket
(Wear, damage)

Competition Maintenance Schedule

Perform the Pre-Ride Inspection in the Owner's Manual at each scheduled maintenance period.
I: Inspect and Clean, Adjust, Lubricate or Replace if necessary. C: Clean. R: Replace. L: Lubricate.

ITEM \ FREQUENCY	NOTE	Each race or about 2.5 hours	Every 3 races or about 7.5 hours	Every 9 races or about 22.5 hours	Ref. page
THROTTLE OPERATION		I			3-6
AIR CLEANER	(NOTE 1)	C			3-6
SPARK PLUG		I	R		3-8
RADIATOR COOLANT	(NOTE 2)	I			3-8
COOLING SYSTEM		I			3-8
CYLINDER HEAD DECARBONIZING			C		7-3
PISTON AND PISTON RINGS			R		7-5
PISTON PIN AND CONNECTING ROD SMALL END BEARING				R	7-5
TRANSMISSION OIL			R		3-8
DRIVE CHAIN		I, L	R		3-10
DRIVE CHAIN SLIDERS		I			3-11
DRIVE CHAIN ROLLERS		I			3-11
DRIVE SPROCKET		I			3-11
DRIVEN SPROCKET		I			3-11
BRAKE FLUID	(NOTE 2)	I			3-12
BRAKE PADS WEAR		I			3-12
BRAKE SYSTEM		I			3-13
CLUTCH SYSTEM		I			3-13
CONTROL CABLES		I, L			3-14
EXPANSION CHAMBER/SILENCER		I			3-15
SUSPENSION		I			3-16
SWINGARM/SHOCK LINKAGE			L		3-17, 11-29, 32
FORK OIL	(NOTE 3)		R		10-28
NUTS, BOLTS, FASTENERS		I			1-13, 3-17
WHEELS/TIRES		I			3-17
STEERING HEAD BEARINGS				I	3-18

This maintenance schedule is based upon average riding conditions. Machines subjected to severe use require more frequent servicing.

NOTE: 1. Clean after every moto for dusty riding conditions.
2. Replace every 2 years. Replacement requires mechanical skill.
3. Replace after the first break-in ride.

Additional Items Requiring Frequent Replacement

Engine

Item	Cause	Remark
Cylinder head gasket	Compression leak	Replace whenever disassembled
Reed valve	Damage or fatigue	
Clutch disc	Wear or discoloration	
Cylinder base gasket	Leakage	Replace whenever disassembled
Crankcase cover gaskets	Damage/Leakage	Replace whenever disassembled

Frame

Item	Cause	Remark
Front/rear tire	Wear	
Front/rear brake pads	Wear	Minimum thickness: 1 mm (0.04 in)
Sub frame mounting bolts	Fatigue or damage	
Chain guide sliders	Wear or damage	
Side cover	Damage	
Front number plate	Damage	
Front/rear fender	Damage	
Fork protectors	Damage	
Clutch lever/holder	Play or damage	
Brake lever	Play or damage	
Handlebar	Bent or cracked	
Throttle housing	Damage	
Grip rubber	Damage	
Gearshift pedal	Damage	
Brake pedal	Damage	
Chain adjuster/bolt	Damage	
Air cleaner	Damage	
Exhaust system spring/hook	Fatigue or damage	
Drive/driven sprocket	Wear or damage	
Drive chain	Wear	

NOTE: The parts replacement intervals shown in the above table are based upon average riding conditions. Machines subjected to severe use require more frequent servicing.

Throttle Operation

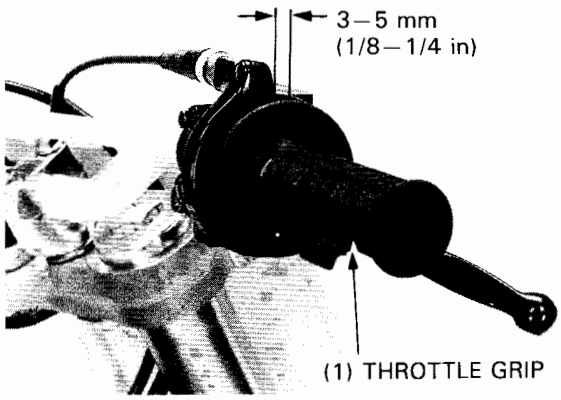
Check the throttle grip for smooth operation from full open to full closed. Be certain it closes automatically in all steering positions.

Inspect the throttle cable for deterioration, damage, or kinks.

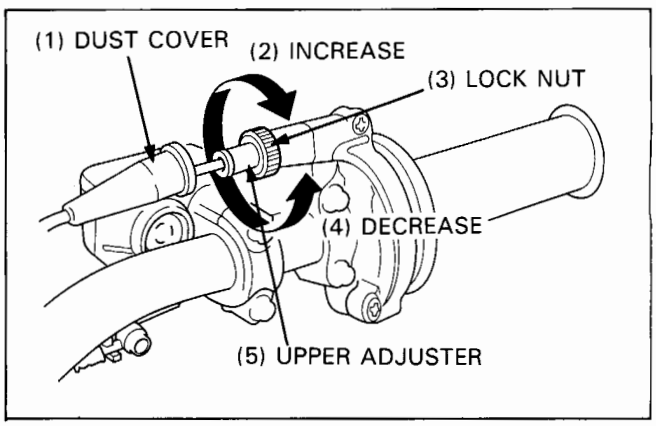
Replace the cable as required.

Measure throttle grip free play at the throttle grip flange.

Throttle Grip Free Play: 3—5 mm (1/8—1/4 in)



Minor adjustment is made with the adjuster at the housing. Slide the rubber protector down and loosen the lock nut, then turn the adjuster.
Tighten the lock nut.

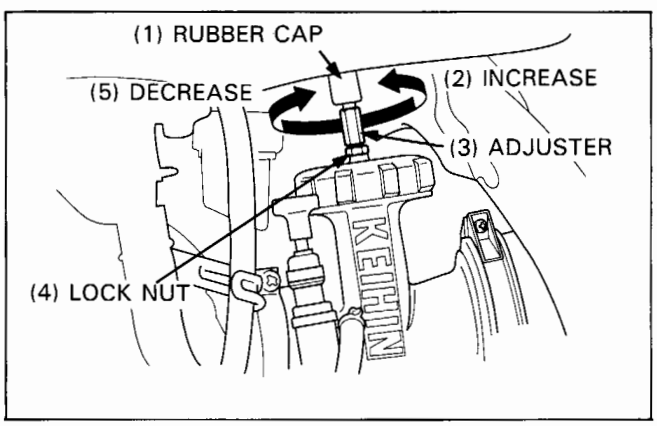


Major adjustments are made at the carburetor end of the cable.

Turn the adjuster at the throttle grip in all the way.

Pull the rubber cap up, loosen the lock nut, and turn the adjuster. Tighten the lock nut and reinstall the rubber cap.

Check that the throttle grip turns smoothly and returns completely in all steering positions.

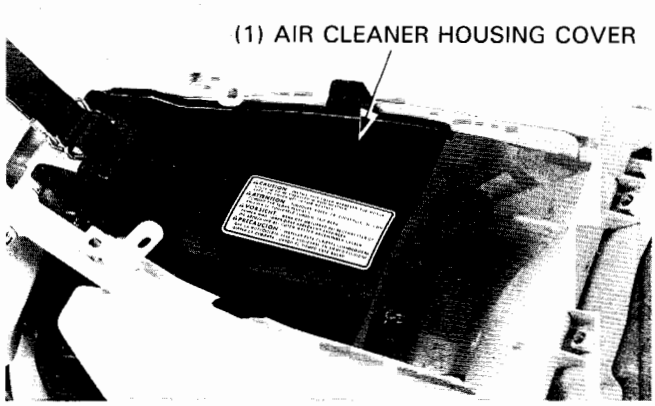


Air Cleaner

Remove the seat (page 2-2).
Remove the air cleaner housing cover.

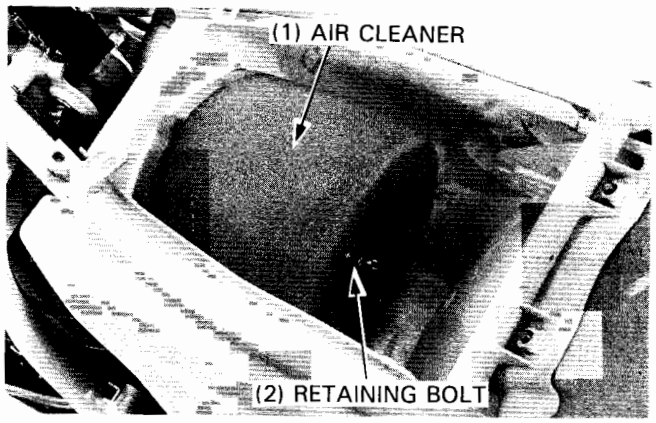
NOTE

- Use the air cleaner housing cover only when riding in wet conditions.



Loosen the air cleaner retaining bolt. Remove the air cleaner.

Remove the air cleaner from the holder.



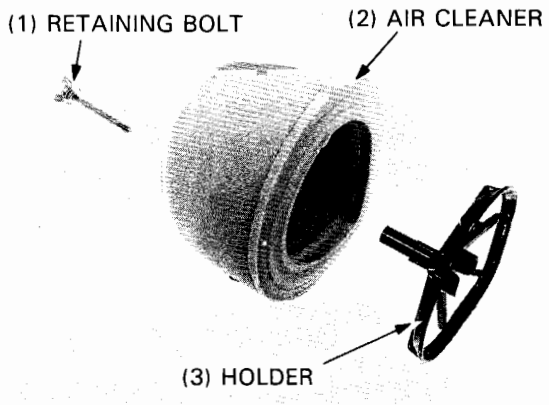
Thoroughly wash the air cleaner in non-flammable or high flash point solvent. Then wash the air cleaner again in hot, soapy water and allow to dry. Clean the inside of the air cleaner housing.

⚠ WARNING

- **Never use gasoline or low flash point solvents for cleaning the air cleaner. A fire or explosion could result.**

NOTE

- The air cleaner is made in two pieces: inner and outer, which can't be separated.



Allow the air cleaner to dry thoroughly.
After drying, soak the air cleaner in clean Honda Foam Filter Oil or an equivalent.
Apply air filter oil to the entire surface of the air cleaner and rub it with both hands to saturate the element with oil. Gently squeeze out excess oil.
Apply a thin coat of Honda white lithium grease or an equivalent to the sealing surface.

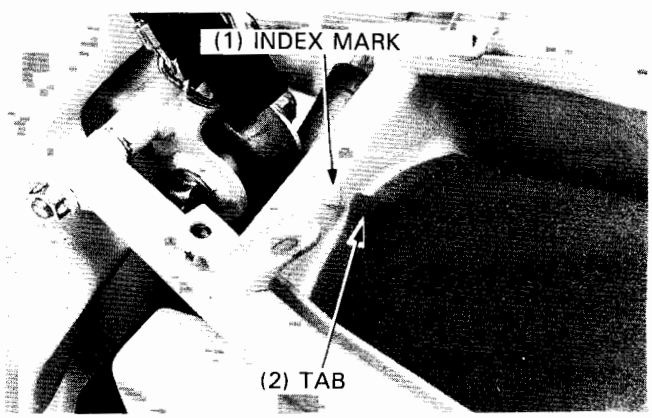
Assemble the air cleaner and holder and put the air cleaner retaining bolt through the assembly.
Install the assembly into the air cleaner housing while aligning the tab on the air cleaner and index mark in the air cleaner housing. Tighten the retaining bolt securely.
Install the air cleaner housing cover.
Install the seat (page 2-2).

NOTE

- The air cleaner housing cover should only be used when riding in wet conditions.

CAUTION

- **If the air cleaner assembly is not installed correctly, dirt and dust may enter the engine resulting in wear of the piston ring and cylinder.**



Spark Plug

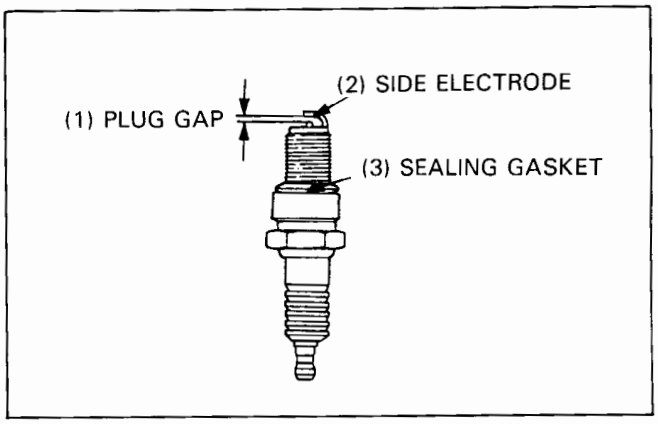
Remove the spark plug and inspect it for damage.
Discard the plug if the insulator is cracked or chipped.

Recommended Spark Plug (or equivalent):

CHAMPION	**QN-86 (QN-2G)**
NGK	**BR8EG (BR8EV)**
NIPPONDENSO	**W24SR-V (W24ESR-G)**

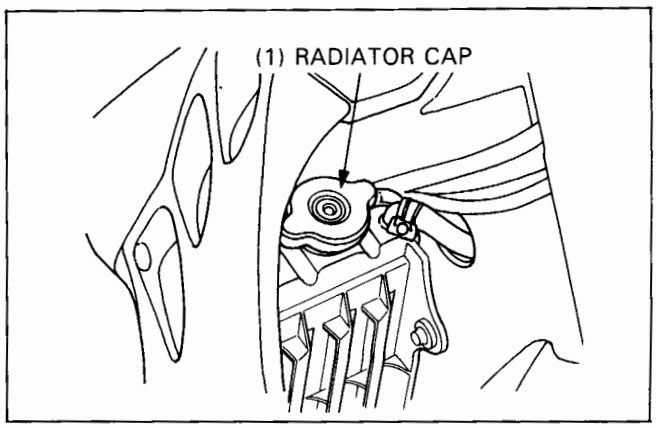
If necessary, adjust the gap by bending the side electrode carefully. Measure again, then reinstall the spark plug.

Spark Plug Gap: 0.5—0.6 mm (0.020—0.024 in)



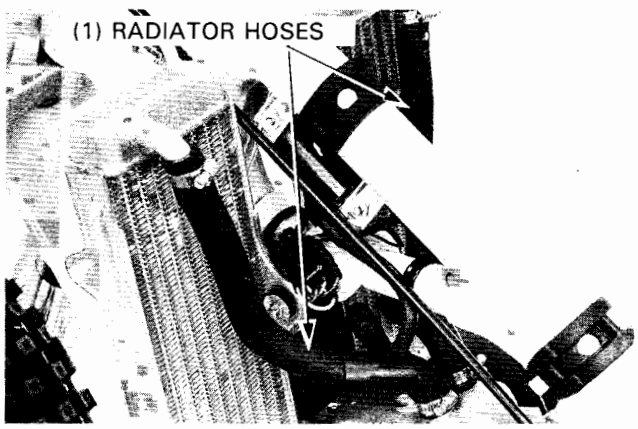
Radiator Coolant

Check the coolant level with the engine cold; it should be up to the filler neck. Add coolant as required (page 5-3).
Check that all cooling system components are in good condition, secure, and not leaking.



Cooling System

Remove the fuel tank (page 2-2).
Inspect the hoses for cracks and deterioration.
Replace, if necessary. Check the tightness of the hose clamps and radiator mounting bolts.
Use only water and a soft brush to rinse off any dirt that may be stuck in the radiator core.

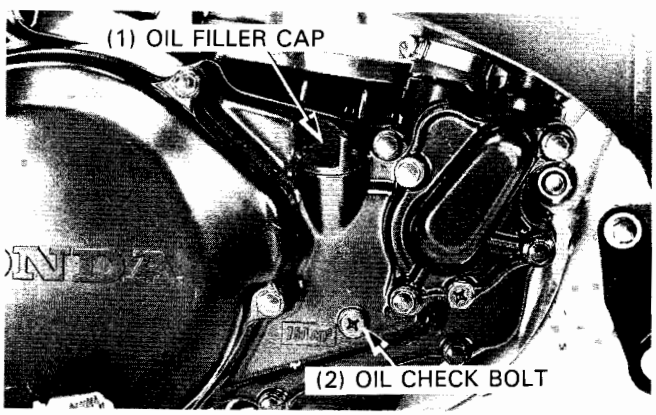


Transmission Oil

Inspecting & Adding Transmission Oil

1) Run the engine for three minutes, then shut it off.
2) Wait three minutes after shutting off the engine to allow the oil to properly distribute itself in the clutch and transmission.
3) Support the CR in an upright position on a level surface.
4) Remove the oil filler cap and check bolt from the right crankcase cover. A small amount of oil should flow out of the check bolt hole. Allow any excess oil to flow out of the check bolt hole.
5) If no oil flows out of the check bolt hole, add oil slowly through the oil filler hole until oil starts to flow out of the check bolt hole. Install the oil check bolt and filler cap.
6) Repeat steps 1-4.
7) After inspecting the oil level or adding oil, tighten the oil check bolt and filler cap securely.

Torque:
Oil Check Bolt: 10 N·m (1.0 kg-m, 7 ft-lb)



Replacing Transmission Oil

NOTE

- Transmission oil should be changed at least every 3 races or 7.5 hours of running to ensure consistent performance and maximum service life of both transmission and clutch components.
- Warm-up the engine before draining the oil. This ensures complete and rapid draining.

⚠ 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 can cause loss of consciousness and may lead to death.**

1) Run the engine for three minutes, then shut it off.
2) Support the CR in an upright position on a level surface.
3) Remove the oil filler cap from the right crankcase cover.
4) Place an oil drain pan under the engine to catch the oil. Then remove the drain bolt.

CAUTION

- **Used transmission oil may cause skin cancer if repeatedly left in contact with the skin for prolonged periods. Although this is unlikely unless you handle used oil on a daily basis, it is still advisable to thoroughly wash your hands with soap and water as soon as possible after handling used oil.**

5) After the oil has drained completely, install the drain bolt with a new sealing washer.

   Torque: 30 N·m (3.0 kg-m, 22 ft-lb)

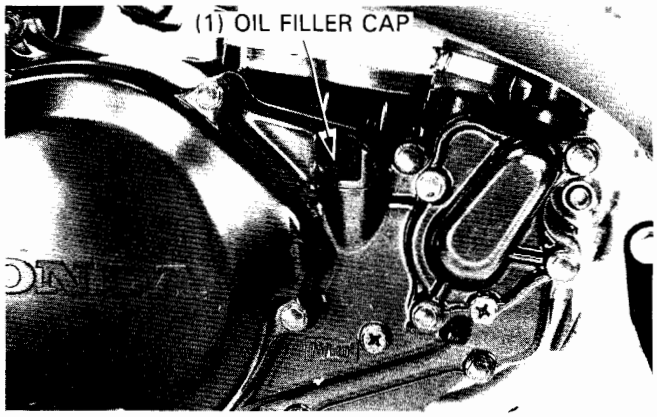
6) Add the recommended oil.

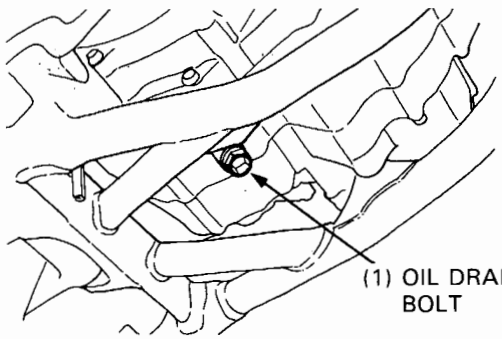
   Capacity: 680 cc (23 US oz, 24 Imp oz) at oil change
   Recommended oil: Pro Honda HP Trans Oil, Pro Honda GN4 4-Stroke Oil, SAE 10W-40 or an equivalent.
   API Service classification: SF or SG

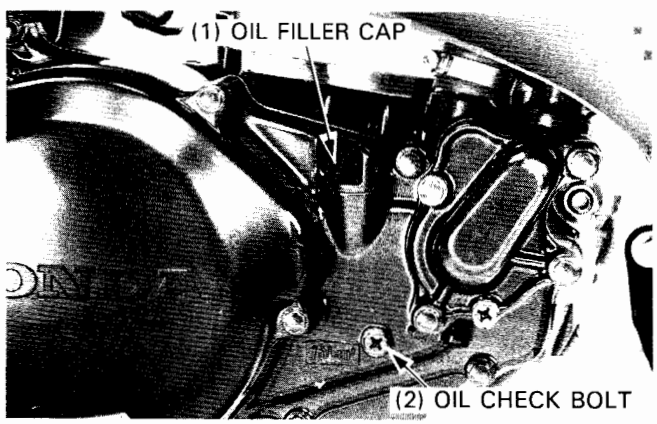
NOTE

- Use only high detergent, premium quality motor oil certified to meet or exceed USA automobile manufacturer's requirements for Service Classification SF or SG.

7) Check the oil level by following the steps in Inspecting & Adding Transmission oil (page 3-8).





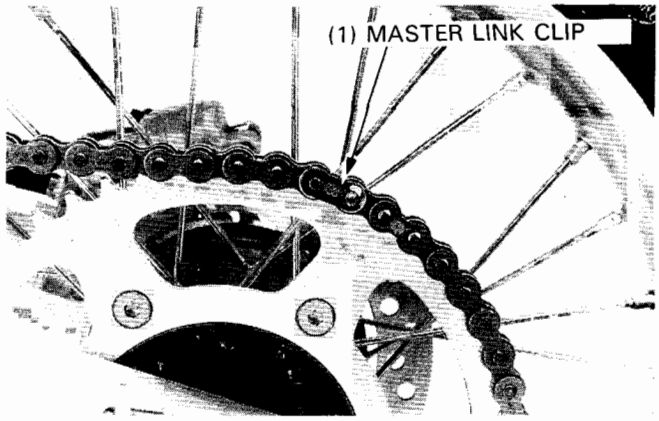


Drive Chain

NOTE

- For maximum service life, the drive chain should be cleaned and lubricated before each outing.

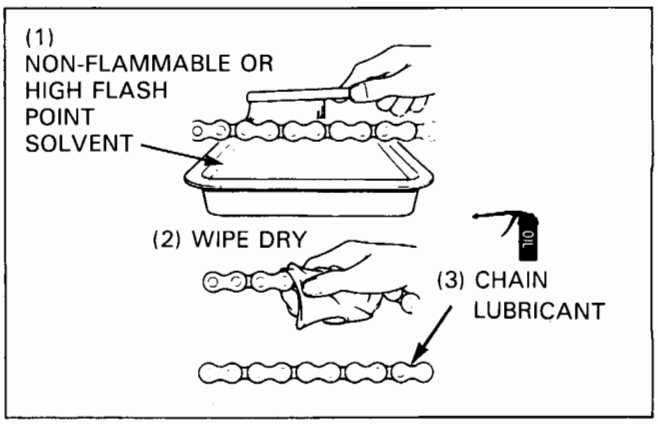
Stop the engine and shift to neutral.
Place the engine on a work stand or box.
Carefully remove the master link clip with pliers.
Remove the master link and the drive chain.



Clean the drive chain in non-flammable or high flash point solvent and wipe it dry.

Inspect the chain for possible wear or damage; replace any chain that has damaged rollers, loose fitting links, or otherwise appears unserviceable.

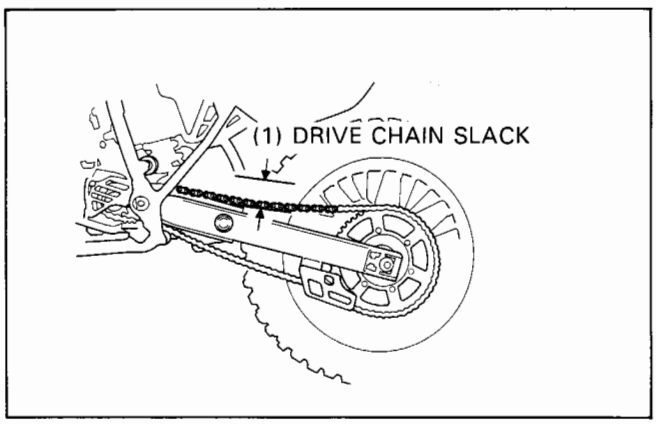
Reinstall the drive chain and lubricate with Honda chain lubricant, or its equivalent.
Note the direction of the master link clip. (Its open end should face in the opposite direction of wheel rotation.)



Adjustment

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

Chain slack: '92 : 35–40 mm (1-3/8–1-9/16 in)
After '92 : 35–45 mm (1-3/8–1-49/64)

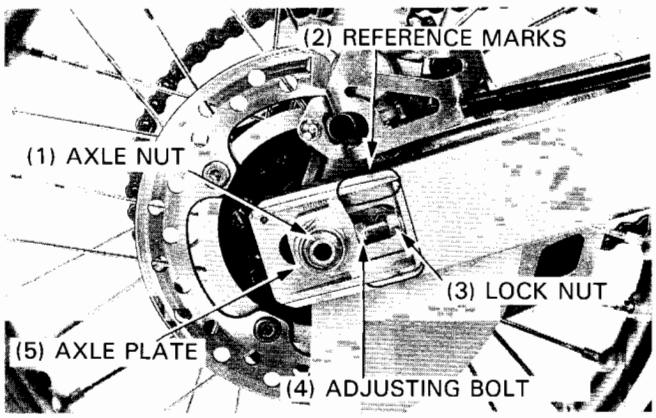


If the chain needs adjustment, loosen the axle nut and lock nuts, and turn the adjusting bolts to increase or decrease chain slack.

Align the front edges of the axle plates with the same reference marks on both sides of the swingarm.
Tighten the axle nut.

Torque: 95 N·m (9.5 kg-m, 69 ft-lb)

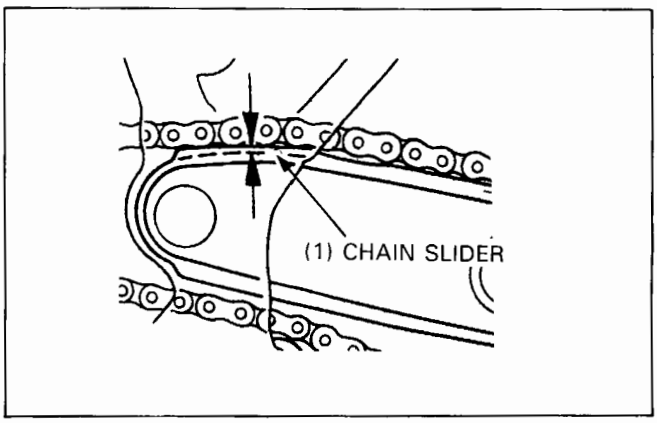
After tightening the axle nut, seat the adjusting bolts snugly against the adjusting plate and tighten the lock nuts.



Drive Chain Sliders

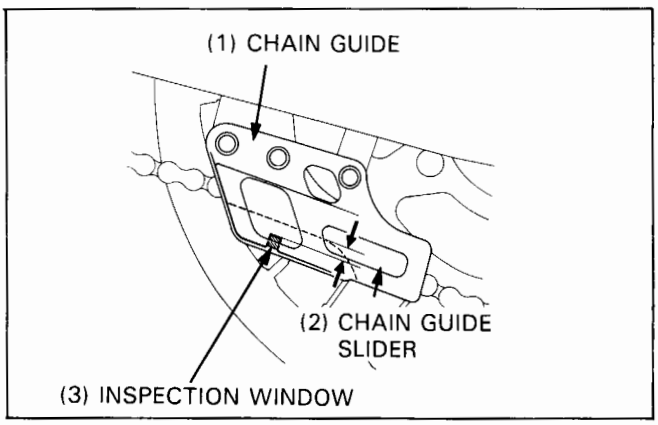
Inspect the drive chain slider for excessive wear.

Service Limit: 5.0 mm (0.19 in) from upper surface



Check the chain guide slider and chain guide for alignments, wear or damage.

Replace the chain guide slider if the chain is visible through the wear inspection window.
Replace the chain guide if it is damaged or worn.



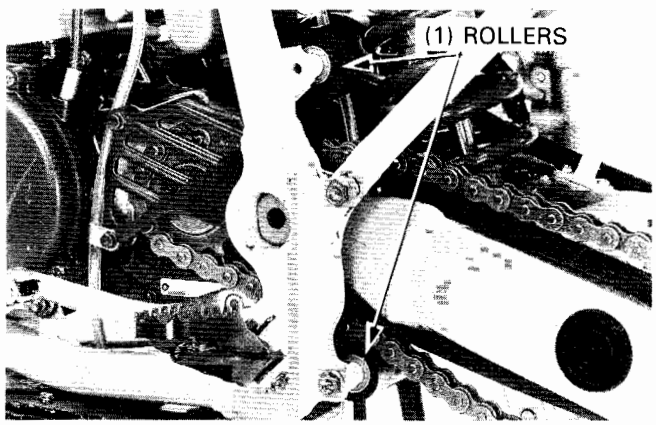
Drive Chain Rollers

Inspect the drive chain rollers for excessive wear and for smooth rolling condition.

Service Limit: Minimum roller O.D.: 25 mm (0.98 in)

Replace if necessary, then tighten the roller bolts.

Torque: 22 N·m (2.2 kg-m, 16 ft-lb)

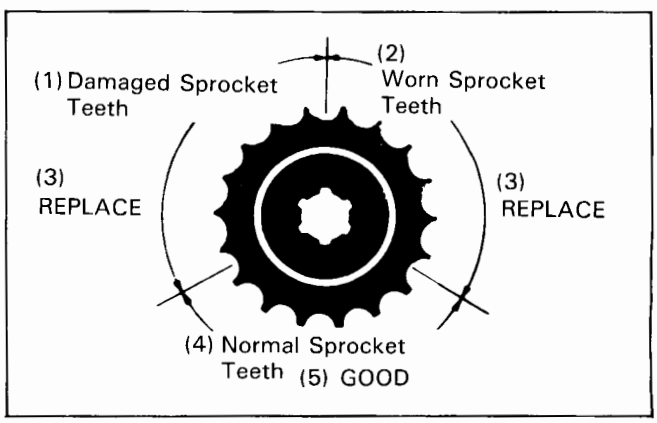


Drive/Driven Sprocket

Inspect the sprocket teeth for excessive wear or damage. Replace if necessary.

NOTE

- Never install a new drive chain on worn sprockets or a worn chain on new sprockets. Both chain and sprockets must be in good condition, or the new replacement chain or sprockets will wear rapidly.



Brake Fluid

Front Brake

Check the front brake fluid reservoir level. If the level is near the lower level mark, remove the cover and diaphragm.

CAUTION

- **Do not remove the cover unless the reservoir is level because fluid may spill out.**
- **Do not mix different types of fluid, as they are not compatible with each other.**
- **Avoid spilling fluid in painted, plastic or rubber parts. Place a rag over these parts whenever the system is serviced.**

Fill the reservoir with DOT 3 or DOT 4 brake fluid from a sealed container to the casting ledge.

If the level was low, check the entire system for leaks.

Rear Brake

Check the rear brake fluid reservoir level. If the level is near the lower level mark, remove the cap and fill the reservoir with DOT 4 brake fluid from a sealed container to the upper level mark.

CAUTION

- **Do not remove the cover unless the reservoir is level because fluid may spill out.**
- **Do not mix different types of fluid, as they are not compatible with each other.**
- **Avoid spilling fluid in painted, plastic or rubber parts. Place a rag over these parts whenever the system is serviced.**

If the level was low, check brake pad wear and the entire system for leaks.

Refer to section 12 for brake bleeding procedures.

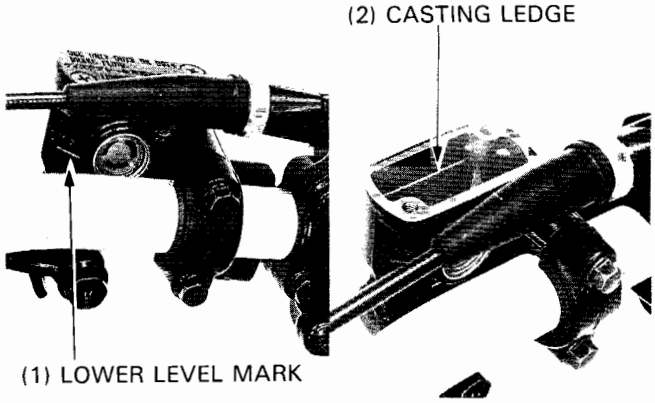
Inspect the brake hose and fittings for deterioration, cracks or signs of leakage. Tighten any loose fittings.

Replace hoses and fittings as required.

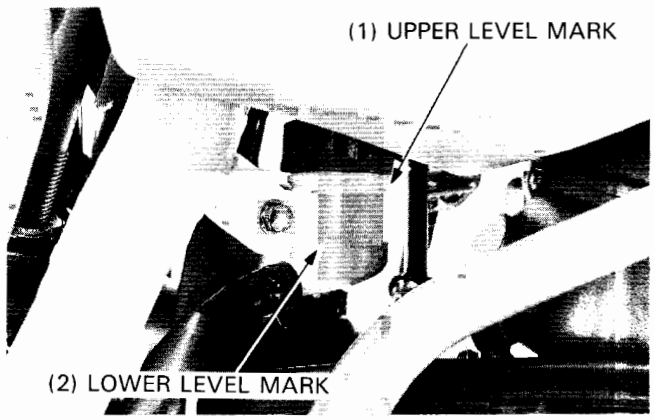
Brake Pads Wear

Check the brake pads for wear.
Replace the brake pads if either pad is worn to the bottom of the wear line (page 12-5).

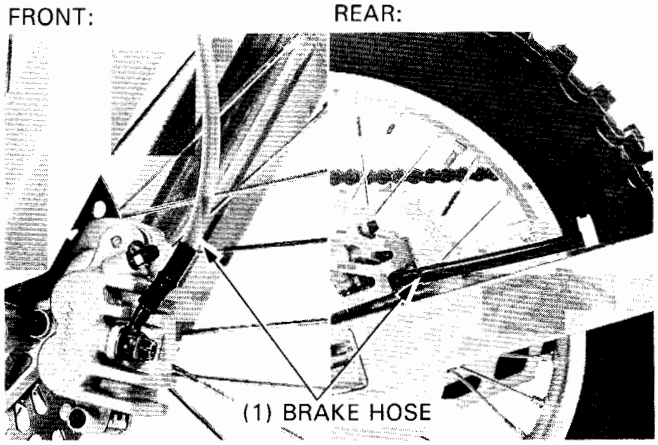
FRONT:



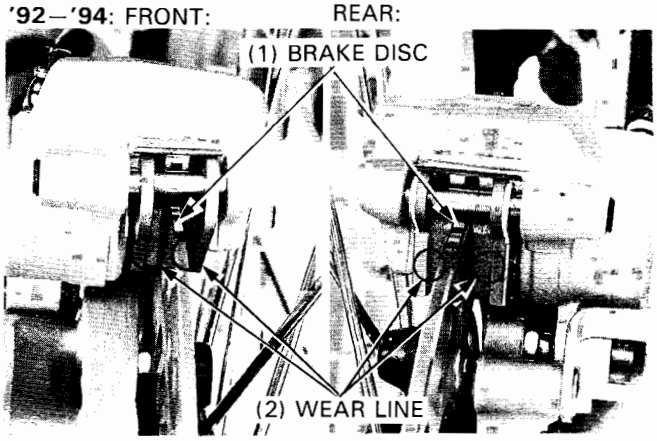
REAR:



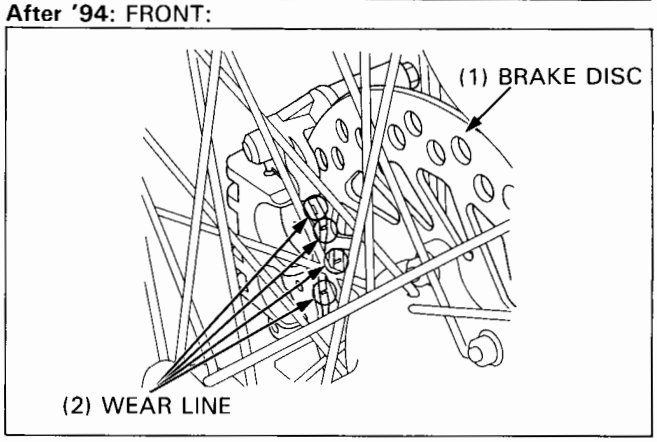
FRONT: REAR:



'92—'94: FRONT: REAR:



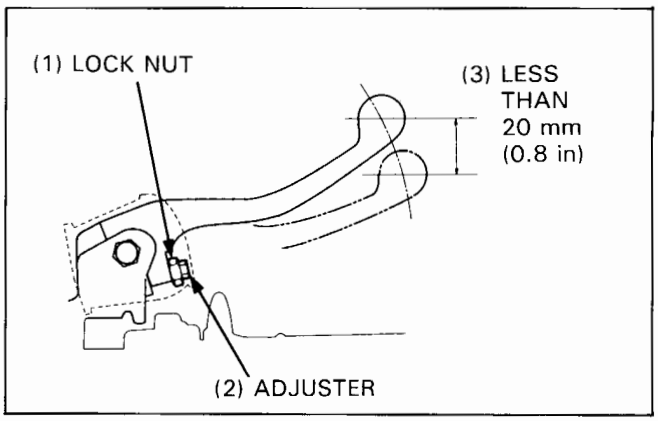
After '94: FRONT:



Brake System

Brake Lever Adjustment

The front brake lever position can be adjusted by loosening the lock nut and turning the adjuster. Turning the adjuster clockwise moves the brake lever farther away from the grip; turning the adjuster counter-clockwise moves the brake lever closer to the grip. Tighten the lock nut securely.
If the brake lever free play exceeds 20 mm (0.8 in), there is probably air in the brake system and it must be bled. Refer to the Common Service Manual.

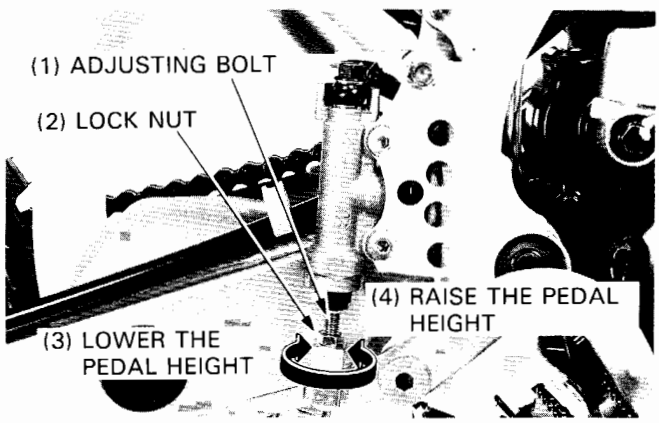


CAUTION

- **Apply silicone grease to the contact faces of the adjuster bolt and piston.**

Brake Pedal Adjustment

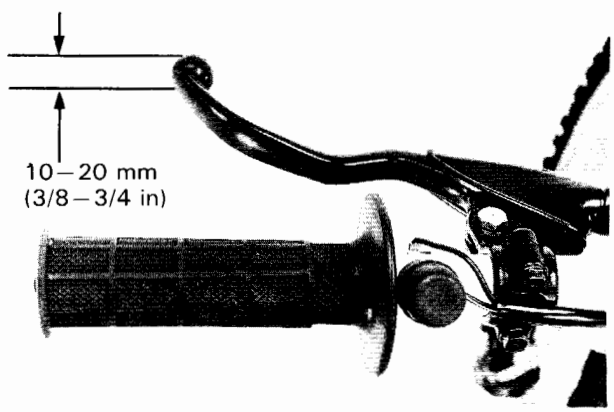
Adjust the brake pedal to the desired height by loosening the lock nut and turning the pedal height adjusting bolt.
Tighten the lock nut.
If the brake pedal free play exceeds 30 mm (1.2 in), there is probably air in the brake system and it must be bled. Refer to the Common Service Manual.



Clutch System

Measure the clutch free play at the lever end.

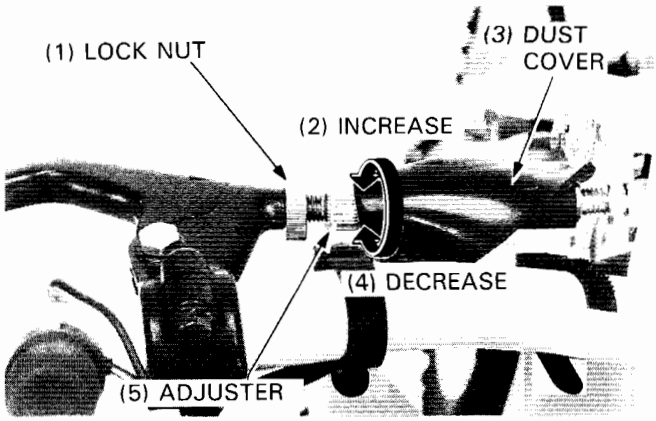
Free play: 10—20 mm (3/8—3/4 in)



Adjust as follows:
Minor adjustments are made at the adjuster near the lever.

Pull the cover back.
Loosen the lock nut and turn the adjuster. Tighten the lock nut.

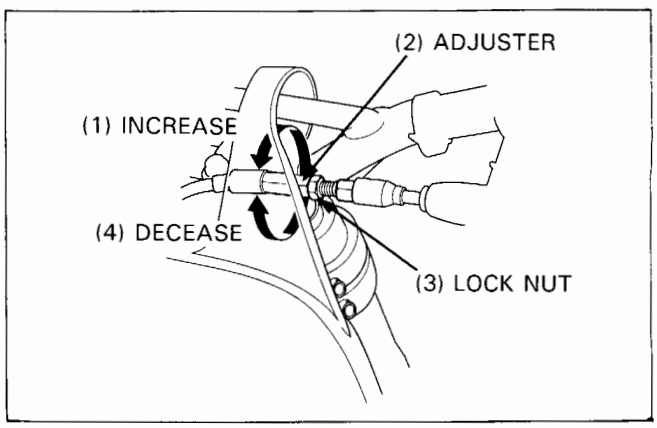
If the adjuster is threaded out near its limit and the correct free play cannot be obtained, turn the adjuster all the way in and back out one turn. Tighten the lock nut, install the dust cover and make a major adjustment as described on the following page:



Major adjustments are performed with the adjuster behind the front number plate.

Loosen the lock nut and turn the adjuster.
Tighten the lock nut.

If proper free play cannot be obtained, or the clutch slips during the test ride, disassemble and inspect the clutch. (See section 8).

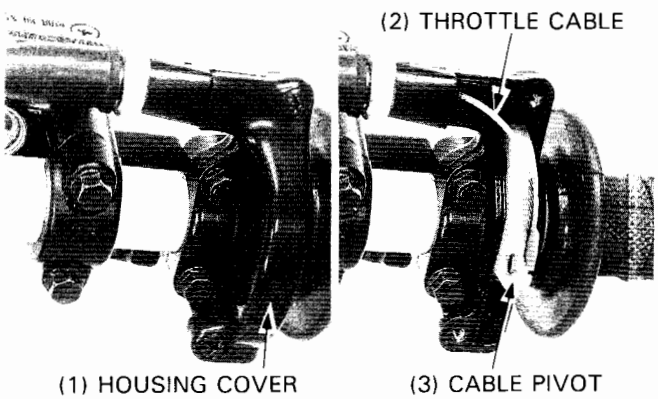


Control Cables

'92:
Remove the throttle cable end cover.

Disconnect the throttle cable upper end from the throttle grip.

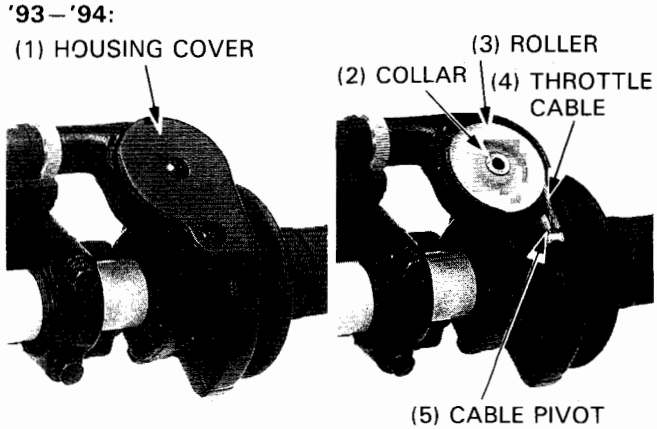
'92:



'93–'94:
Remove the throttle cable end cover.
Remove the throttle cable roller and collar.

Disconnect the throttle cable end from the throttle grip.

'93–'94:



After '94:
Remove the throttle housing dust cover.
Remove the throttle cable end cover.
Remove the throttle cable roller and collar.

Disconnect the throttle cable end from the throttle grip.

Disconnect the clutch cable upper end from the clutch lever.

Lubrication

Thoroughly lubricate the cable pivot points with a commercially available cable lubricant.

After '92:
Apply a thin coat of grease to the sliding surface of the roller and collar.

NOTE

- It is not necessary to lubricate the cables anywhere except the pivot points.
  If clutch lever or throttle operation is not smooth, replace the cable.

CAUTION

- **Be sure the throttle returns freely from fully open to fully closed automatically, in all steering positions.**

Throttle Assembly

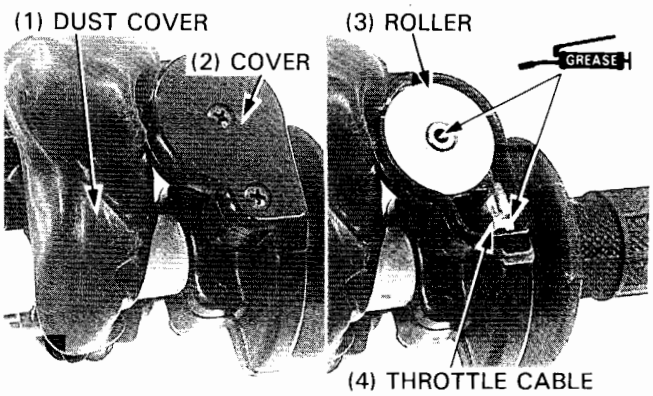
If there is any binding or gritty feeling to the throttle action, remove the throttle assembly and thoroughly clean the inside of the grip housing and the handlebar.

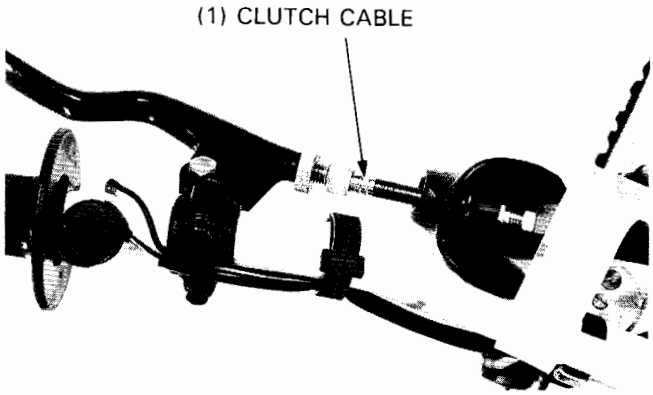
Apply a light coating of silicone spray to the handlebar and reinstall the assembly in the reverse order of removal.

CAUTION

- **Check that the throttle moves freely from full open to full close in all steering positions. Be sure the handlebar can move freely from stop to stop without cable interference.**

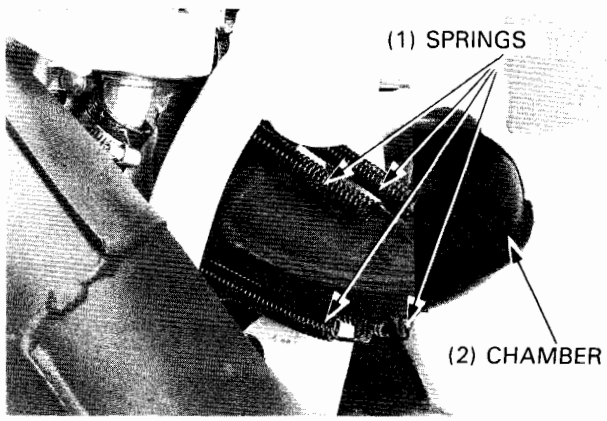
After '94:





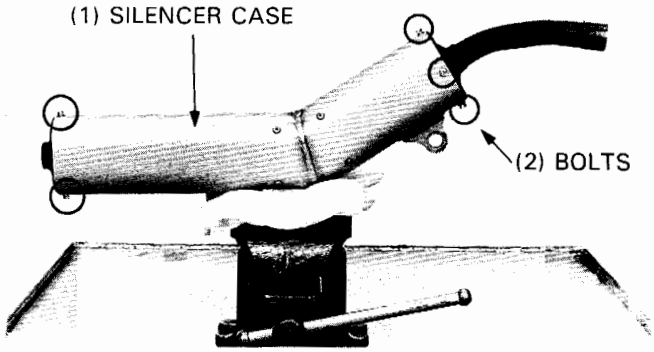
Expansion Chamber/Silencer

Check the expansion chamber for signs of cracks or deformation.
Check the expansion chamber springs for damage or loss of tension.



Silencer Glass Wool Replacement

Remove the silencer (page 2-3).
Remove the silencer case bolts.
Pull out the inner pipes.

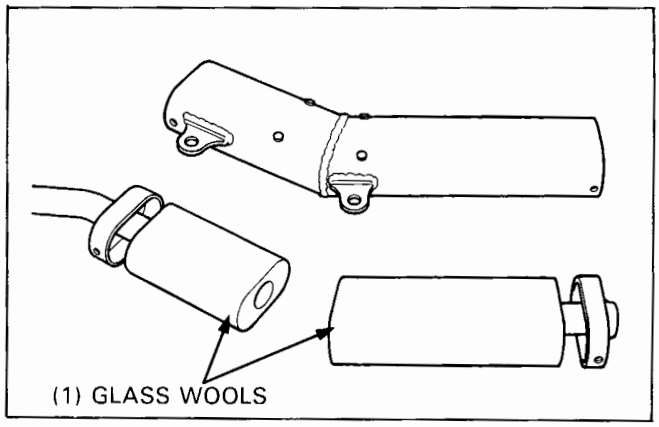


NOTE

- Hold the stay of the silencer case gently in a vise with a shop towel or soft jaws to avoid damage.

Remove the glass wool packing.

Remove the carbon deposits from the inner pipe using a wire brush.
Install the new glass wool packing material, opening the cut in the glass wool.

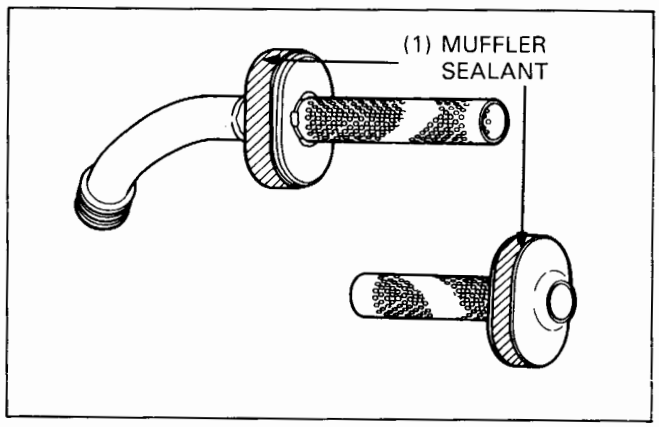


NOTE

- Be careful not to damage the glass wool packing.

Apply muffler sealant where shown.
Insert the inner pipe into the silencer case, aligning each of the bolt holes.
Install and tighten the silencer case bolts.

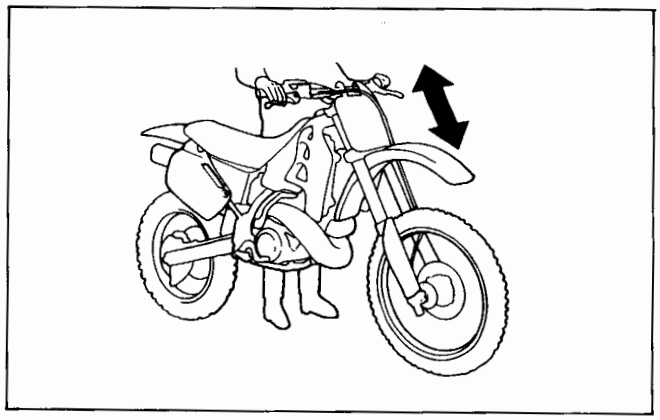
Wipe off the excess sealant.



Suspension

Front

Check the action of the fork by compressing the front suspension several times.
Check the entire fork assembly for signs of leaks, damage or loose fasteners.
Remove any dirt that has accumulated on the bottom of the fork seals.
Replace any components which are unserviceable.

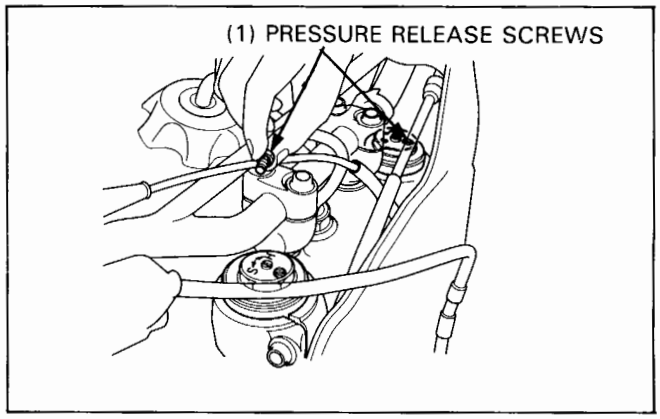


See Section 10 for fork oil change.

Air pressure acts as a progressive spring and affects the entire range of fork travel.

Air is an unstable gas; it increases in pressure as it is worked (such as in a fork), so the fork action on your CR will get stiffer as the race progresses.

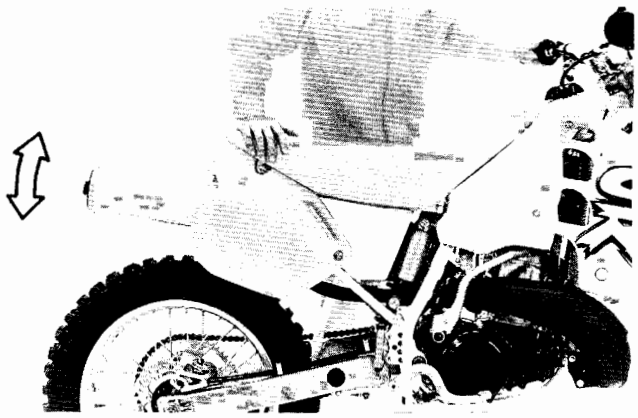
Release build-up air pressure from the fork legs after practice and between heats.
Be sure the fork is fully extended with the front tire off the ground.
Loosen the pressure release screws fully, then tighten them securely.



Rear

Bounce the rear of the motorcycle up and down to check for proper suspension operation.

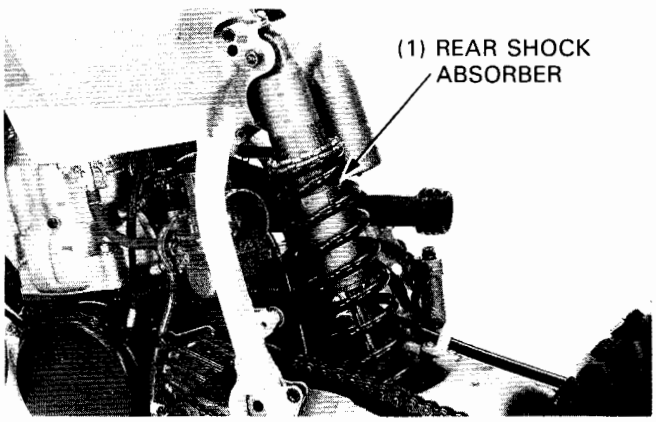
Push and pull the rear wheel sideways to check for play in the swingarm bearing.



Remove the sub frame (page 2-4).

Check that the damper rod is not bent and oil is not leaking from the seal.
Check that the shock link and damper rod are not damaged.

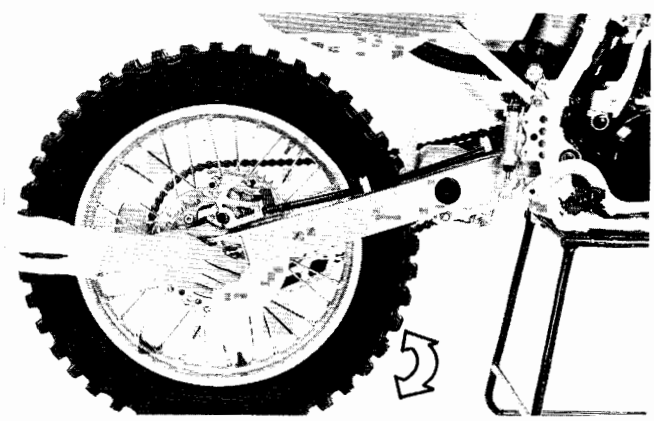
Disassemble, clean, inspect and lubricate the swingarm and shock linkage pivot bearings each 3 races or about 7.5 hours of running (Section 10).



Swingarm/Shock Linkage

Place the motorcycle on a work stand or box to raise the rear wheel off the ground.
Move the rear wheel sideways with force to see if the swingarm bearings are worn.
Replace the bearings if excessively worn (page 11-33).

Check that the shock linkage, spherical bearing and needle bearings are not damaged.
After every 3 races or about 7.5 hours of operation: disassemble, clean, inspect for wear, and lubricate the swingarm and shock linkage pivot bearings and related seals (page 11-29 through 11-31).



Nuts, Bolts, Fasteners

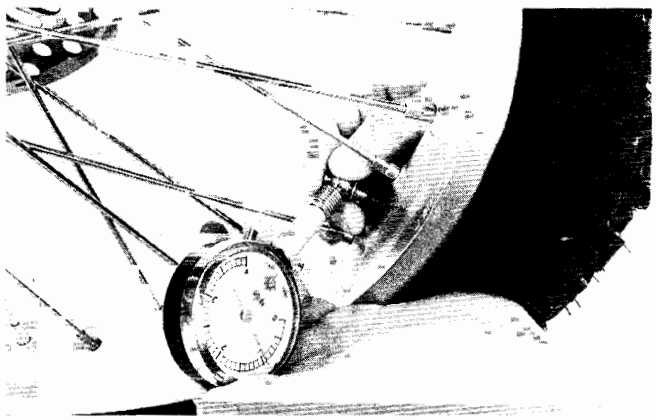
Check that all chassis nuts and bolts are tightened to their correct torque values.

Check that all cotter pins and clips are in place and properly secured.

Wheels/Tires

Check the tires for cuts, embedded objects or excessive wear.

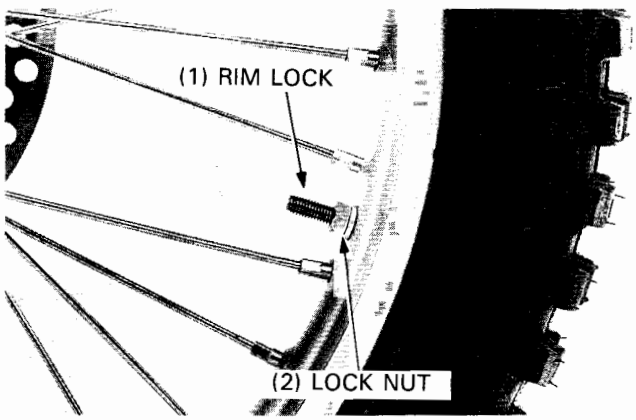
Tire pressure
(front and rear): 15 psi (10 kg/cm², 100 kPa)



Inspect the wheel rims and spokes for damage. Tighten any loose spokes or rim lock.

Torque: Rim Lock: 13 N·m (1.3 kg-m, 9 ft-lb)

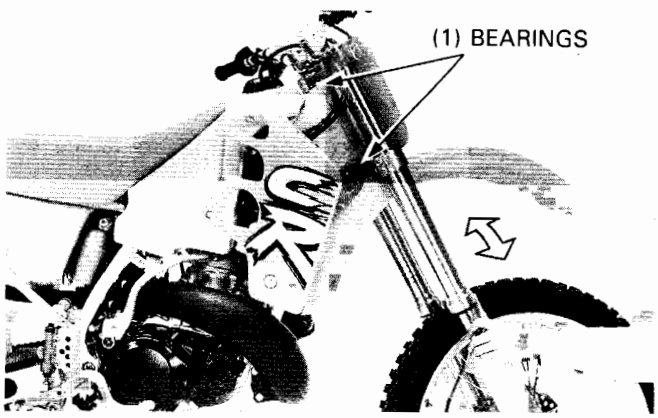
Check wheel runout (page 10-7 and 11-6).



Steering Head Bearings

Raise the front wheel off the ground and check that the fork rotates freely from stop to stop. Check that the control cables do not interfere with fork rotation. If the fork moves unevenly, binds or has vertical movement, adjust the steering head bearings by turning the steering head adjusting nut (page 10-35).

Clean, inspect and if necessary replace the steering head bearings if there is a gritty or grinding feeling to the rotation of the fork. See page 10-33. If excessive play has developed, check the steering stem for cracks.



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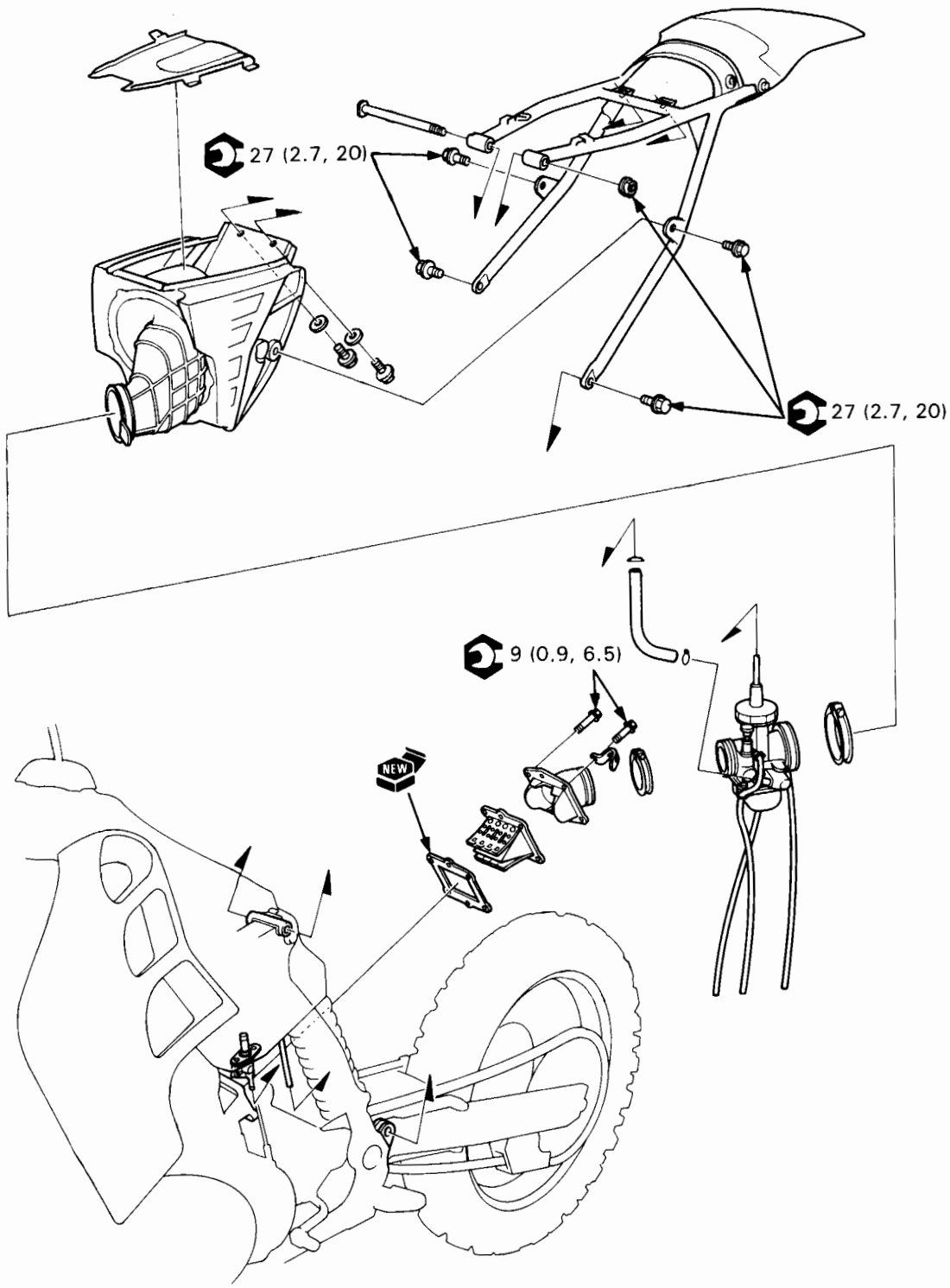
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4. Fuel System

Service Information	4-1	Carburetor Removal/Disassembly	4-6
Troubleshooting	4-2	Carburetor Assembly/Installation	4-7
Minor Carburetor Adjustment	4-3	Reed Valve	4-9
Major Carburetor Adjustment	4-3	Air Cleaner Housing	4-10
Tuning For Special Conditions	4-5		

Service Information

General

⚠ WARNING

- **Gasoline is extremely flammable and is explosive under certain conditions.**
- **Bending or twisting the control cables will impair smooth operation and could cause the cables to stick or bind, resulting in loss of vehicle control.**

- Work in a well ventilated area. Smoking or allowing flames or sparks in the work area or where gasoline is stored can cause a fire or explosion.
- Refer to section 2 for fuel tank removal/installation.
- When disassembling fuel system parts, note the locations of the O-rings. Replace them with new ones on reassembly.
- Before disassembling the carburetor, place a suitable container under the carburetor drain plug, remove the plug and drain the carburetor.
- After removing the carburetor, wrap the intake port of the engine with a shop towel or cover it with tape to prevent any foreign material from dropping into the engine.

NOTE

- If the vehicle is to be stored for more than one month, drain the float bowl. Fuel left in the flat bowl may cause clogged jets, resulting in hard starting or poor driveability.

Specifications

Item		Specification
Fuel tank capacity		9.0 lit. (2.38 US gal, 1.98 Imp gal)
Recommended fuel		Automobile gasoline with a pump octane number of 90 or higher
Recommended engine oil		Pro Honda HP2 2-Stroke Oil or equivalent
Fuel/Oil mixing ratio		32 : 1
Carburetor identification mark	'92	PJ27J
	'93	PJ27L
	'94	PJ27M
	'95	PJ27N
	After '95	PJ27P
Carburetor type		Piston valve
Venturi diameter		38 mm (1.5 in)
Float level		16.0 mm (0.63 in)
Air screw initial opening		1-1/2 turns out
Jet needle		R1368NS
Main jet		#170
Slow jet		#55
Jet needle clip position		4th groove from top

Torque Values

Carburetor insulator bolt	9 N·m (0.9 kg-m, 6.5 ft-lb)
Reed valve stopper bolt	1 N·m (0.1 kg-m, 0.7 ft-lb)

Tool

Common

Float level gauge	07401—0010000

Troubleshooting

Engine won't start

- No fuel to carburetor
  - — Fuel filter clogged
  - — Fuel tube clogged
  - — Float valve stuck
  - — Float level misadjusted
  - — Fuel tank breather tube clogged
- Too much fuel getting to the engine
  - — Air cleaner clogged
  - — Flooded carburetor
- Intake air leak
- Fuel contaminated/deteriorated
- Slow circuit clogged
- No spark at plug (faulty spark plug or ignition malfunction)

Lean mixture

- Fuel jets clogged
- Fuel tank breather tube clogged
- Fuel filter clogged
- Fuel line restricted
- Float valve faulty
- Float level too low
- Air vent tube clogged
- Intake air leak
- Worn crankshaft seal (alternator side)
- Jetting incorrect for altitude/temperature conditions

Rich mixture

- Choke knob (starting enrichment valve) in ON position
- Float valve faulty
- Float level too high
- Air jets clogged
- Air cleaner element contaminated
- Flooded carburetor
- Worn crankshaft seal (clutch side)
- Jetting incorrect for altitude/temperature conditions

Engine stalls or runs poorly

- Faulty spark plug or ignition malfunction
- Low compression
- Rich mixture
- Lean mixture
- Air cleaner clogged
- Intake air leak
- Fuel contaminated/deteriorated

Minor Carburetor Adjustment

(Idle Mixture and Idle Speed)

NOTE

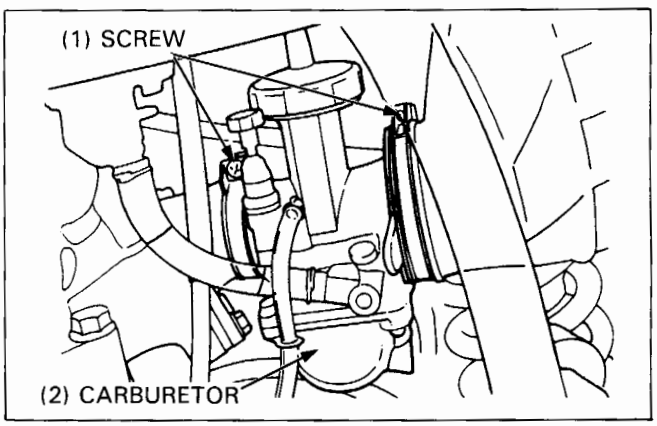
- The standard carburetor settings are ideal for the following conditions: 32-to-1 premix ratio using Honda HP2 2-stroke oil or its equivalent, sea level altitude, and 20°C (68°F) air temperature. If your conditions are different, you may need to adjust the carburetor settings using the turning information cart (page 4-3).

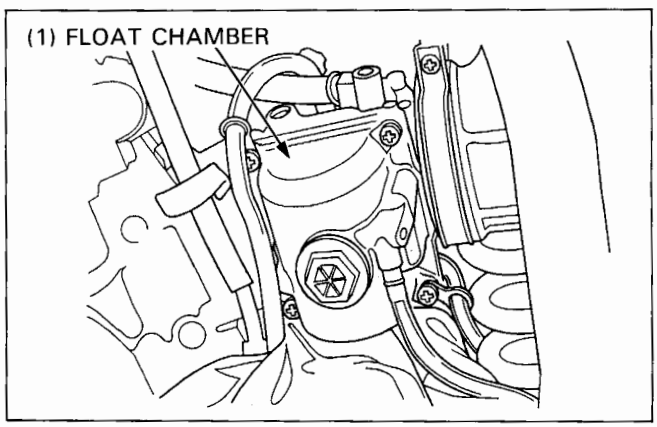
1. Adjust the carburetor setting using the turning information cart (page 4-3).

Standard settings:

Float level:	**16.0 mm (0.63 in)**
Air screw initial opening:	**1-1/2 turns out**
Slow jet:	**#55**
Main jet:	**#170**
Jet needle:	**R1368NS**
Jet needle clip position:	**4th position**

2. When the engine is warm enough to run without the choke, push the choke knob down to its off position.
3. Turn the air screw to obtain the smoothest idle:
   - To decrease idle speed, turn the screw counterclockwise.
   - To increase idle speed, turn the screw clockwise.
4. Adjust the air screw to obtain the best off-idle performance.
   - If the engine rich exiting a corner, turn the air screw counterclockwise to lean the mixture.
   - If the engine lean exiting a corner, turn the air screw clockwise to richen the mixture.

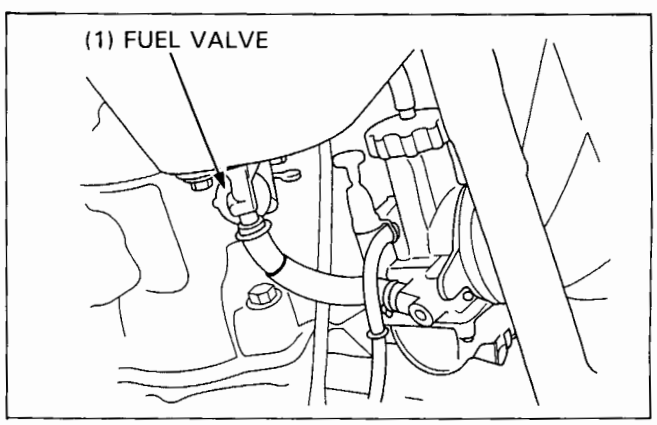




Major Carburetor Adjustment

(For Temperature and Altitude)

1. Warm up the engine.
2. Make two or three laps of a course with the standard setting. Note engine acceleration and other engine conditions in relation to throttle opening. Verify the carburetor by removing the spark plug and reading it firing end.
3. Change the carburetor settings or select suitable carburetor jets, taking into consideration the engine conditions and tuning information chart for temperature and altitude (page 4-3).
4. Turn the fuel valve off, loosen the carburetor insulator clamp screw and connecting tube clamp screw.

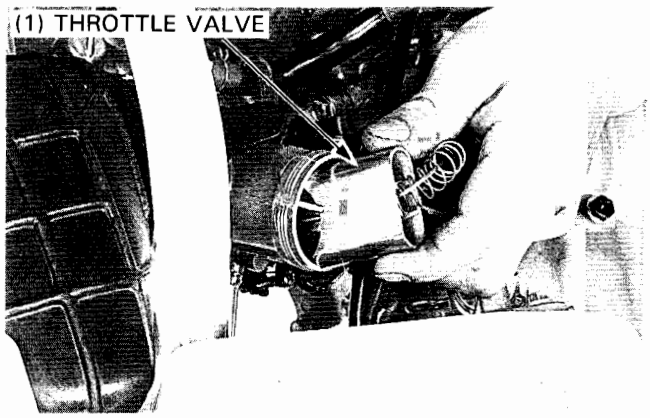


5. Drain the gasoline from the carburetor. Remove the screws and float chamber and baffle plate.

⚠ WARNING

- **Gasoline is extremely flammable and is explosive under certain conditions.**

6. Change the jets as required and reinstall the float chamber.
7. Remove the jet needle from the throttle valve (page 4-6) and change the jet needle clip position as required.
8. Reinstall the jet needle and carburetor top (page 4-7).
9. Tighten the carburetor insulator clamp screw and connecting tube clamp screw.
10. Adjust the air screw opening as required.



Turning information chart

Temperature / Altitude	Cent. / Fahr.	−35° ~ −18° / −21° ~ 0°	−17° ~ −7° / −1° ~ 20°	−6° ~ 4° / 19° ~ 40°	3° ~ 15° / 39° ~ 60°	14° ~ 26° / 59° ~ 80°	25° ~ 38° / 79° ~ 100°	37° ~ 49° / 99° ~ 120°
3000 m (10000 ft) to 2300 m (7500 ft)	AS:	1 3/4	2.0	2 1/4	2 1/2	2 3/4	3.0	3 1/4
	SJ:	55	55	52	52	50	50	50
	NC:	4th	4th	4th	4th	3rd	3rd	3rd
	MJ:	172	168	165	162	155	152	150
2299 m (7499 ft) to 1500 m (5000 ft)	AS:	1 1/2	1 3/4	2.0	2 1/4	2 1/2	2 3/4	3.0
	SJ:	58	55	55	52	52	50	50
	NC:	5th	5th	4th	4th	3rd	3rd	3rd
	MJ:	175	172	168	165	160	158	155
1499 m (4999 ft) to 750 m (2500 ft)	AS:	1.0	1 1/2	1 3/4	2.0	2.0	2 1/2	2 3/4
	SJ:	58	58	55	55	52	52	50
	NC:	5th	5th	4th	4th	4th	4th	3rd
	MJ:	180	178	175	170	165	162	160
749 m (2499 ft) to 300 m (1000 ft)	AS:	1/2	1.0	1.0	1 1/2	1 3/4	2.0	1/4
	SJ:	60	58	58	55	55	52	52
	NC:	5th	5th	5th	4th	4th	4th	4th
	MJ:	182	178	175	172	168	165	162
299 m (999 ft) to **Sea Level**	AS:	1/2	1/2	1.0	1	Standard 1 1/2 adjusting	2.0	1/4
	SJ:	60	58	58	55	55	55	52
	NC:	5th	5th	5th	4th	4th	4th	4th
	MJ:	185	180	178	175	170	165	162

Legends
AS: Screw Opening from fully seated
SJ: Slow Jet
NC: Needle Clip position
MJ: Main Jet

NOTE

- If you use the chart correctly, it shouldn't be necessary to adjust more than on jet size richer or leaner to fine tune your CR. If a very large adjustment is required, there may be something wrong elsewhere. Check for worn crankshaft seals, air leaks, blocked exhaust or fuel system, or dirty air cleaner element.
- The tuning information chart will get you very close to the ideal setting. However, because of differences in pressure and humidity, you may need to fine tune the carburetor for race day condition.

- Just off idle:
  Engine blubbers (rich): turn out the air screw 1/4 turn.
  Engine surges (lean): turn in the air screw 1/4 turn.

NOTE

- The minimum to maximum range of air screw adjustment is 1 to 3 turns out from the lightly seated position.
  If you exceed 3 turns out, the next smaller slow jet is needed.
  If you are under 1 turn out, the next larger slow jet is needed.

- On the top end:
  Engine blubbers (rich): go to next smaller main jet.
  Engine surges (lean): go to next large main jet.

CAUTION

- **To prevent engine damage, always adjust the main jet (top end) before adjusting the jet needle (mid-range).**

- In the mid-range:
  Engine blubbers (rich): lower the jet needle by raising the needle clip one position.
  Engine surges (lean): raise the jet needle by lowering the needle clip one position.

Turning For Special Conditions

Once you've adjust the carburetor for temperature and altitude, it shouldn't need major readjustment unless the race condition change drastically. Exclusive of the tuning information chart, there are some unique atmospheric conditions that may require additional adjustments. They are as follows:

Main Jet:
- Go richer on the main jet, by one number, when the track has a very long straightaway, steep climbs, a high percentage of sand, or the track is muddy.
- Go leaner on the main jet, by one number, when it is very humid or raining, or it is very hot above 45°C (113°F).

Jet Needles:
- Under normal circumstances, the standard jet needle can be adjusted to fit most situations. However, a peculiar condition may require replacement of the standard jet needle. But before replacing the standard needle, complete all the carburetor adjustments (page 4-3 through 5). If mid-range performance is still not satisfactory, try one of the optional jet needles. See page 1-22.

Carburetor Removal/Disassembly

Removal

⚠ WARNING

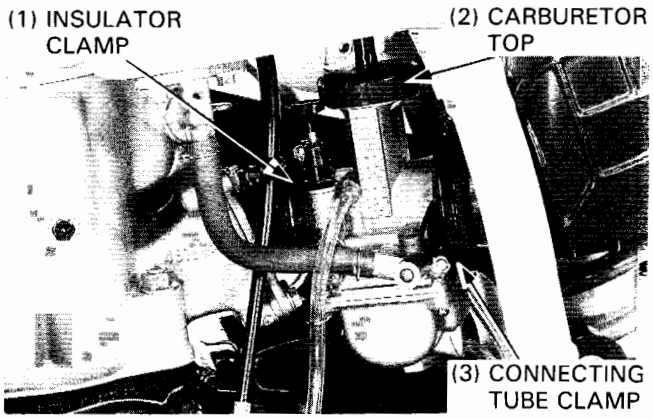
- **Gasoline is extremely flammable and is explosive under certain condition.**

Turn the handlebar to the left fully.

Turn the fuel valve OFF and disconnect the fuel line.

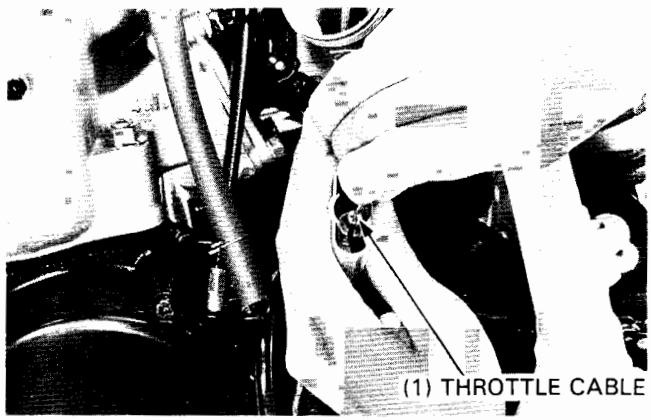
Unscrew the carburetor top.
Loosen the carburetor insulator and connecting tube band screws, and lean the carburetor to the left.
Remove the carburetor top and pull the throttle valve out.

Remove the carubretor.

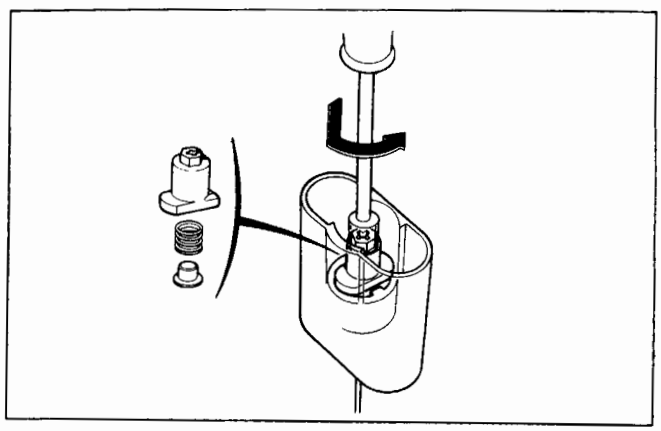


Disassembly

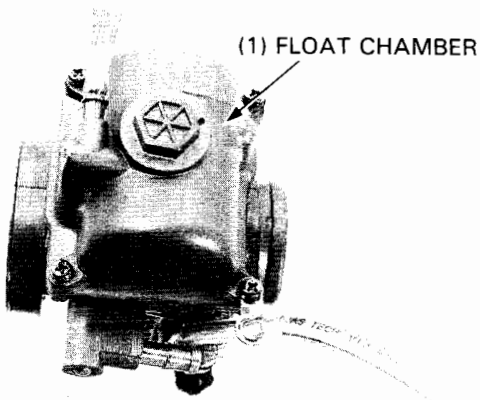
Remove the throttle cable from the cable holder.
Remove the throttle valve spring from the carburetor top.



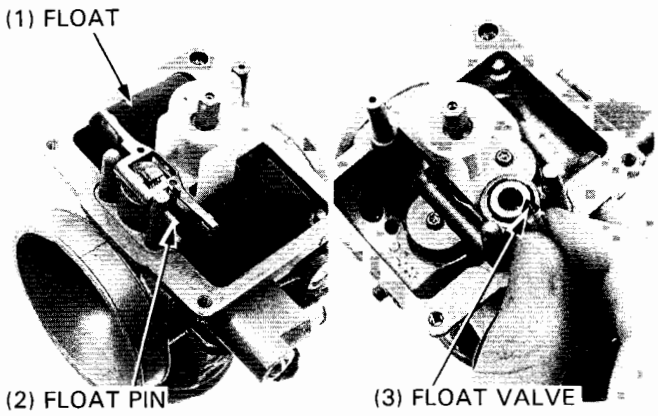
Remove the cable holder by pushing it in and turning it counterclockwise 90 degrees. Remove the set collar, spring and jet needle.



Remove the following:
- carburetor overflow tube
- carburetor air vent tubes
- float chamber attaching screws
- air vent tube clamps
- float chamber.



Remove the float pin, float and float valve.



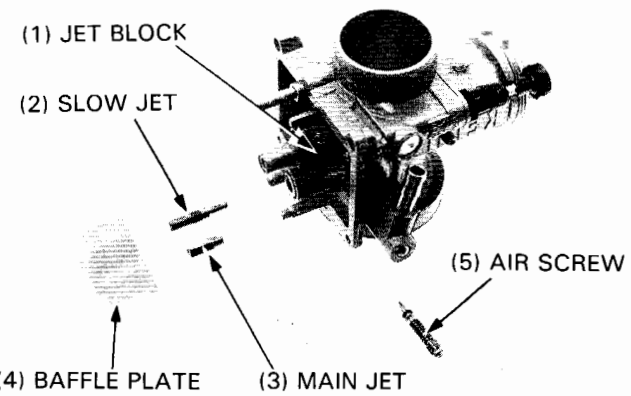
Remove the main jet, baffle plate and slow jet.

CAUTION

- **Do not try to remove the jet block from the carburetor body.**

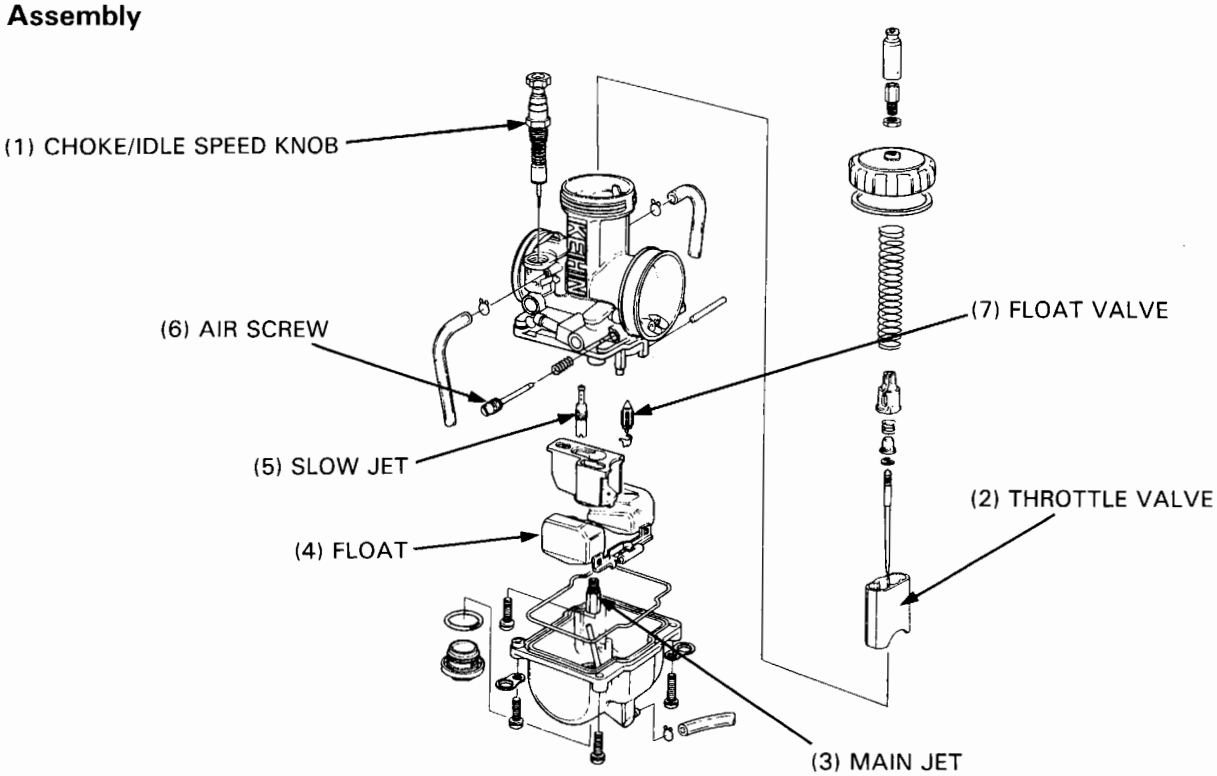
Remove the air screw and spring.

Unscrew the lock nut and remove the choke/idle speed knob.



Carburetor Assembly/Installation

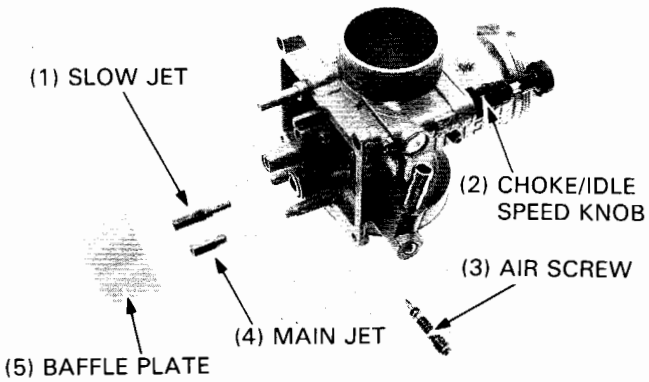
Assembly



Install the choke/idle speed knob.
Install the air screw and spring.

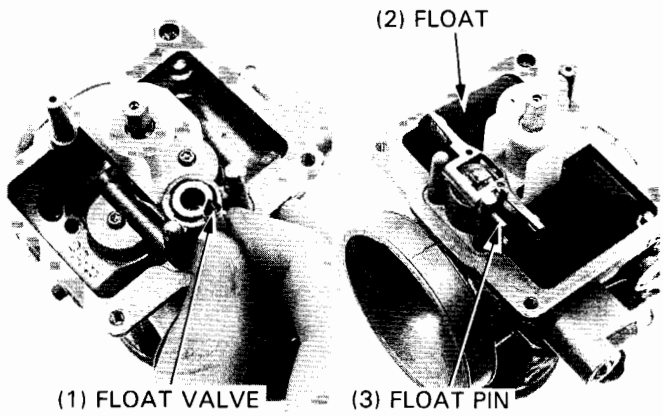
Standard air screw opening: 1-1/2 turns out

Install the slow jet, baffle plate and main jet.



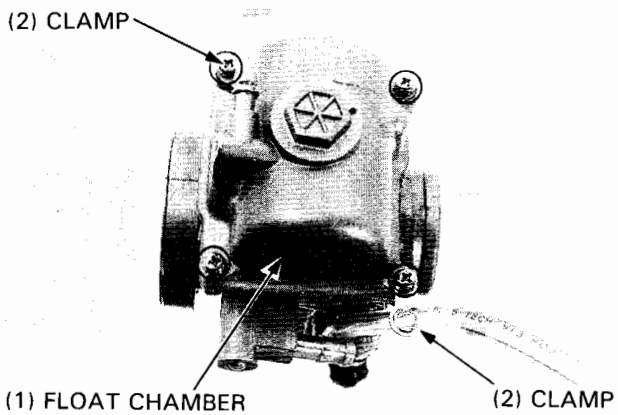
Install the float valve, float and float pin.

Measure the float level (Specification; page 4-1).



Install a new O-ring into the groove in the float chamber.
Install the float chamber, air vent tube clamps and attaching screws.

Connect the air vent and overflow tubes to the carburetor.

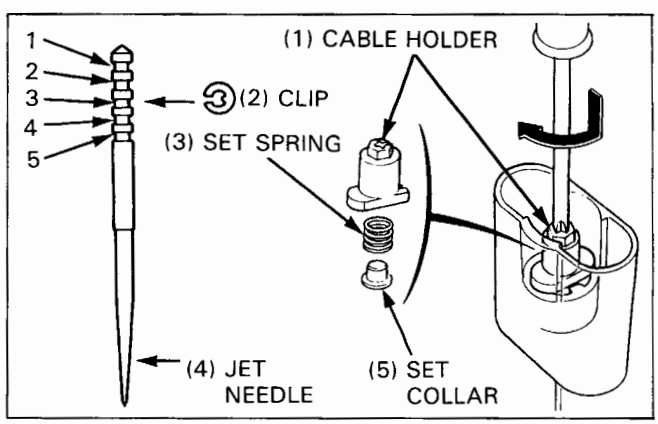


Install the needle clip on the jet needle.

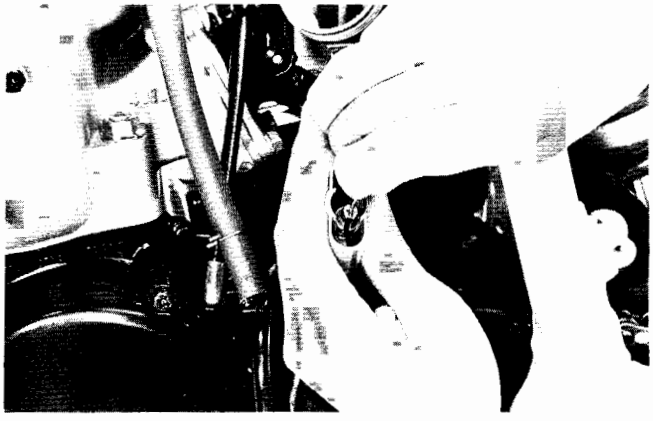
Standard clip position: 4th groove

Install the set collar over the jet needle and clip, then install the set spring and cable holder.

Push the cable holder in and turn it clockwise 90 degrees.

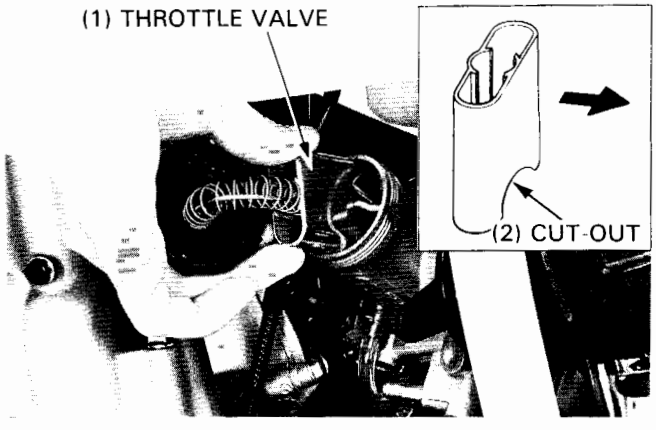


Compress the throttle valve spring and insert the throttle cable into the *cable holder*.



Installation

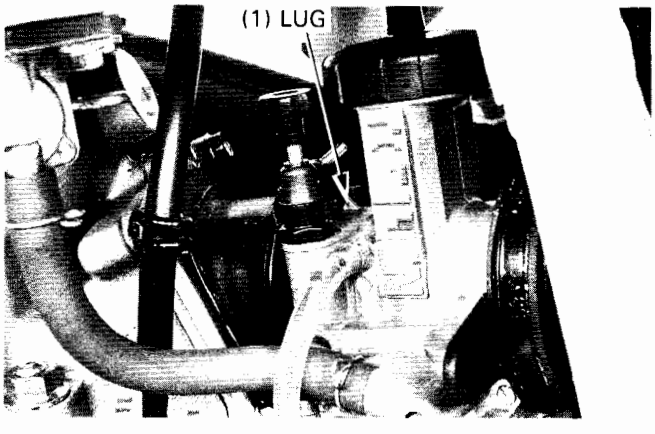
Loosely install the carburetor.
Twist the carburetor to the left and install the throttle valve assembly into the carburetor with the cut-out side facing the air filter.



Align the lug on the carburetor with the groove of the carburetor insulator.
Tighten the carburetor insulator and connecting tube band screws securely.
Tighten the carburetor top securely.

Connect the fuel line.
Turn the fuel valve ON and check that there are no fuel leaks.

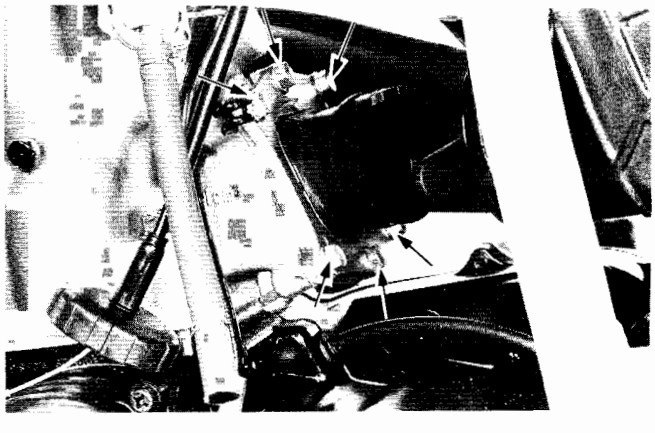
After installation, check the following:
—throttle grip free play (page 3-6)
—air screw adjustment (page 4-3).



Reed Valve

Removal

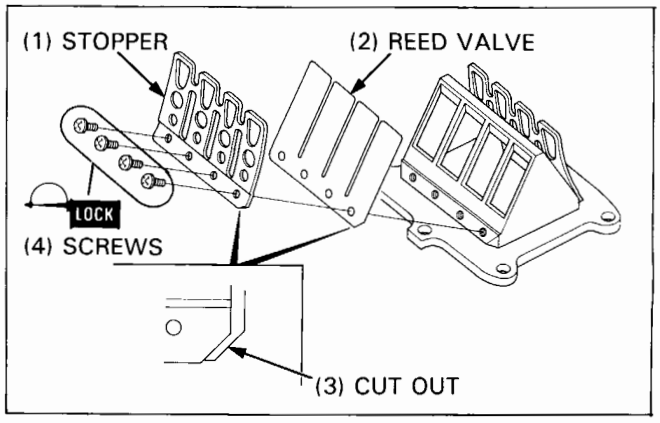
Remove the carburetor (page 4-6).
Remove the following:
—insulator mounting bolts and clutch cable clamp
—insulator
—reed valve
—gasket.



CAUTION

- **Be sure to replace the reed valve as an assembly. Disassembling or bending the reed stopper cause engine trouble.**

Disassembly/Assembly (After '94)



Disassembly
Remove the screws and reed valve stopper.
Remove the reed valve.

Assembly
Install the reed valve and reed valve stopper.

NOTE

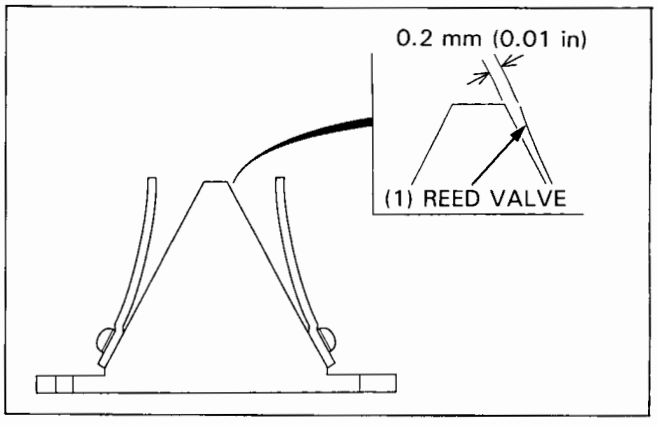
- At installation, align the cut out of the reed valve with the cut out of the reed valve stopper.

Clean the screw threads.
Apply a little of locking agent to the tip of screw threads.
Tighten the screws to the specified torque.

Torque: 1 N·m (0.1 kg-m, 0.7 ft-lb)

NOTE

- Do not apply a locking agent to the reed valve.



After installation, check for reed valve clearance.

Clearance: 0.2 mm (0.01 in)

Installation

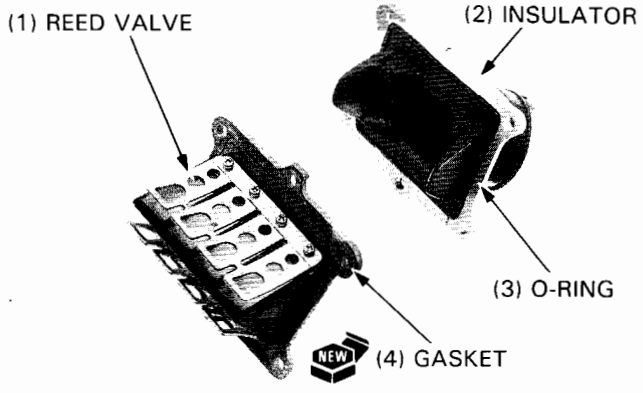
Check the insulator O-ring for damage and replace the insulator if necessary.

Reed valve installation is in the reverse order of removal.

Torque: Insulator bolts 9 N·m (0.9 kg-m, 6.5 ft-lb)

NOTE

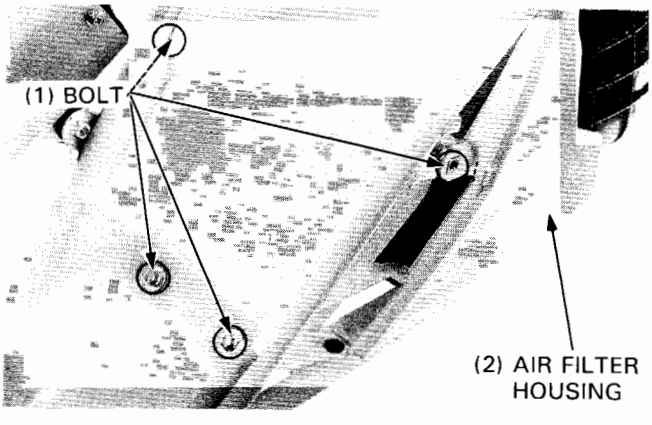
- After installation, check for secondary air leaks around the reed cage and insulator.



Air Cleaner Housing

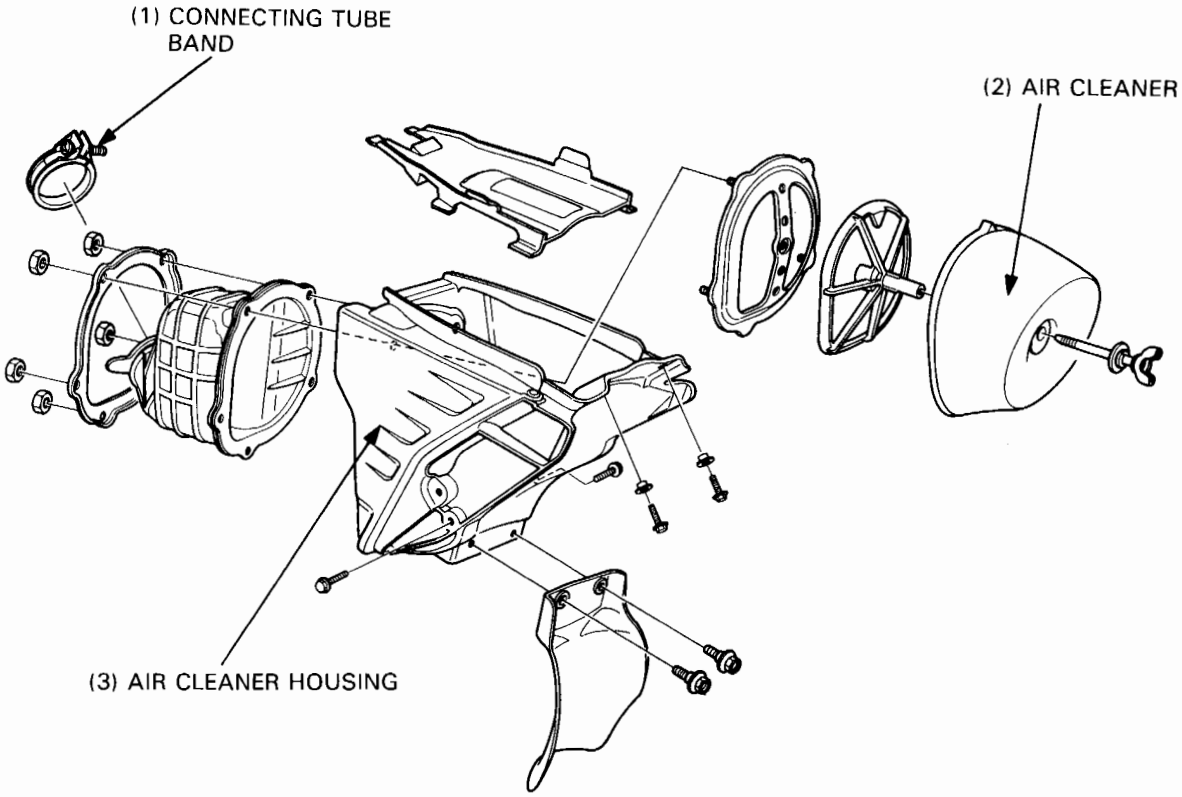
Remove the air cleaner housing mounting bolts and the air cleaner housing.
For air cleaner service, see page 3-6.

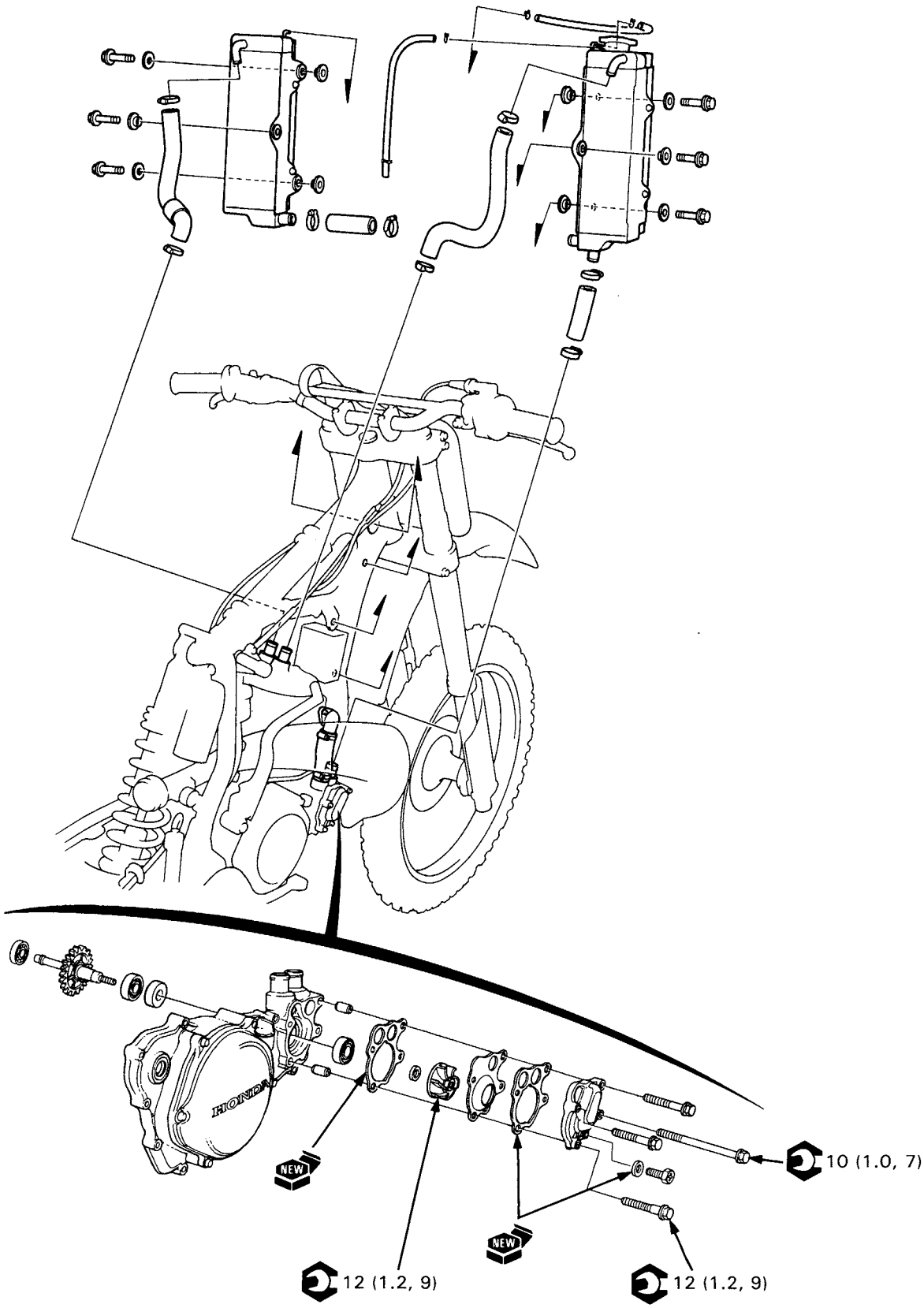
Check the carburetor connecting tube to see if it is sealing properly at the air cleaner.



Installation

Install the air cleaner in the reverse order of removal.




NEW
10 (1.0, 7)
NEW
12 (1.2, 9)
12 (1.2, 9)

5. Cooling System

Service Information	5-1	Radiator	5-4
Troubleshooting	5-1	Water Pump	5-4
Coolant Replacement	5-3		

Service Information

General

5

⚠ WARNING

- **Wait until the engine is cool before slowly removing the radiator cap. Removing the cap while the engine is hot and the coolant is under pressure may cause serious scalding.**
- **Radiator coolant is toxic. Keep it away from eyes, mouth, skin and clothes.**
  - **If any coolant gets in your eyes, rinse them with water and consult a doctor immediately.**
  - **If any coolant is swallowed, induce vomiting, gargle and consult a physician immediately.**
  - **If any coolant gets on your skin or clothes, rinse thoroughly with plenty of water.**
- **KEEP OUT OF REACH OF CHILDREN.**
- **Keep out of reach of pets. Some pets are attracted to the smell and taste and can die if they drink it.**

- All cooling system service can be done with the engine in the frame.
- After servicing the system, check for leaks with a cooling system tester.
- Recycle used coolant in an ecologically correct manner.

Specifications

Item	Specification
Recommended coolant	Use only a high quality ethylene glycol based anti-freeze containing corrosion protection inhibitors specifically recommended for use in aluminum engines. A 50/50 mixture of anti-freeze and distilled water is recommended for most operating conditions. (See anti-freeze container label for other mixture ratios).
Coolant capacity	1.22 lit. (1.29 U.S. qt., 1.07 Imp qt.) at disassembly 1.08 lit. (1.14 U.S. qt., 0.95 Imp qt.) at coolant change
Radiator cap relief pressure	110–140 kPa (1.1–1.4 kg/cm², 15.6–19.9 psi) [Radiator system pressure test: 200 kPa (2.0 kg/cm², 28.4 psi) max.]

Torque Values

Water pump impeller	12 N·m (1.2 kg-m, 9 ft-lb)
Coolant drain bolt	10 N·m (1.0 kg-m, 7 ft-lb)
Water pump cover bolt	12 N·m (1.2 kg-m, 9 ft-lb)

Tools

Special

Water seal driver	07945–KA30000
Bearing remover set, 12 mm	07936–1660001
– Bearing remover head, 12 mm	07936–1660110
– Remover weight	07741–0010201 or 07936–3710200
– Remover shaft	07936–1660120
Bearing remover, 7 mm	07931–KA30000
Bearing driver, 7 mm	07946–KA30100
Attachment, 28 x 30 mm	07946–1870100

Common

Driver	07749–0010000
Pilot, 12 mm	07746–0040200

Troubleshooting

Engine temperature too high
- Faulty radiator cap
- Insufficient coolant
- Passages blocked in radiator, hoses, or water jacket
- Radiator air passages clogged with dirt
- Air in system
- Faulty water pump

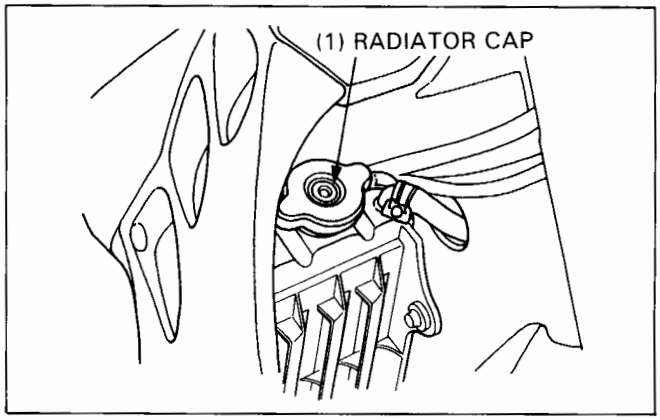
Coolant leaks
- Faulty water pump mechanical seal
- Deteriorated O-rings
- Faulty radiator cap
- Damaged or deteriorated gaskets
- Loose hose connection or clamp
- Damaged or deteriorated hoses

Coolant Replacement

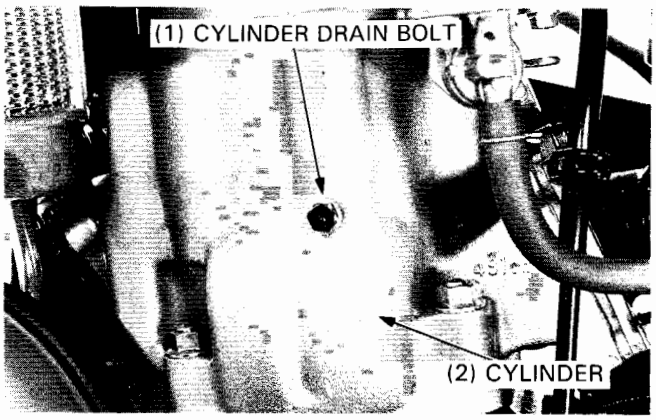
⚠WARNING

- **Wait until the engine is cool before slowly removing the radiator cap. Removing the cap while the engine is hot and the coolant is under pressure may cause serious scalding.**

Remove the radiator cap with the machine upright.

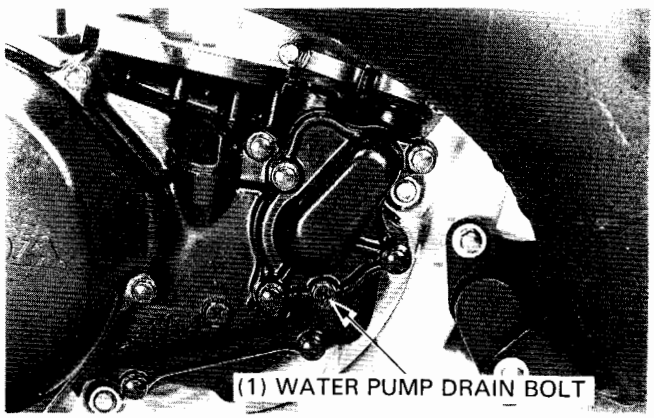


Remove the coolant drain bolts from the cylinder head and water pump, and drain the coolant.



Check that the drain bolt sealing washers are in good condition, then install the drain bolts.

Torque: 10 N·m (1.0 kg-m, 7 ft-lb)

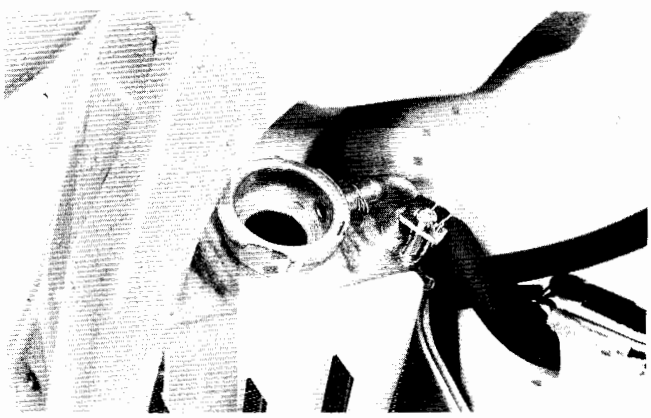


Pour the recommended 50/50 coolant mixture (page 5-1) slowly through the radiator filler hole up to the filler neck.

Capacity: 1.08 liters (1.14 US qt, 0.95 Imp qt)

Lean the machine approximately 20° right and left several times to bleed air trapped in the cooling system. If the coolant level drops, add more coolant and repeat air bleeding procedure.

Install the radiator cap securely.

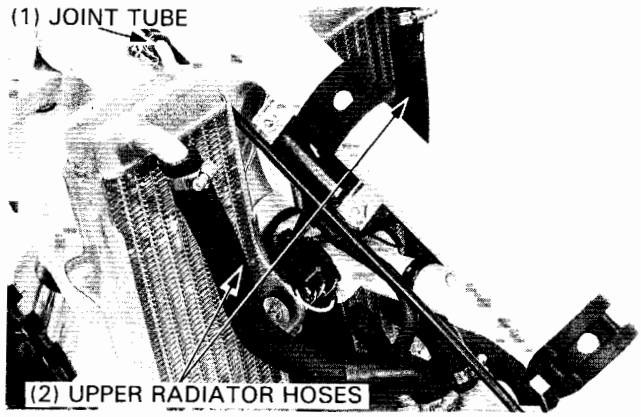


Radiator

Removal

Drain the radiator coolant (page 5-3).
Remove the fuel tank (page 2-2).
Remove the radiator joint hose.
Loosen the upper radiator hose bands and disconnect the upper radiator hoses from the radiators.
Loosen the joint tube clamp and disconnect the joint tube.

Remove the radiator mounting bolts.
Loosen the lower radiator hose bands and disconnect the lower radiator hose from the right radiator.
Remove the radiators from the frame.



Installation

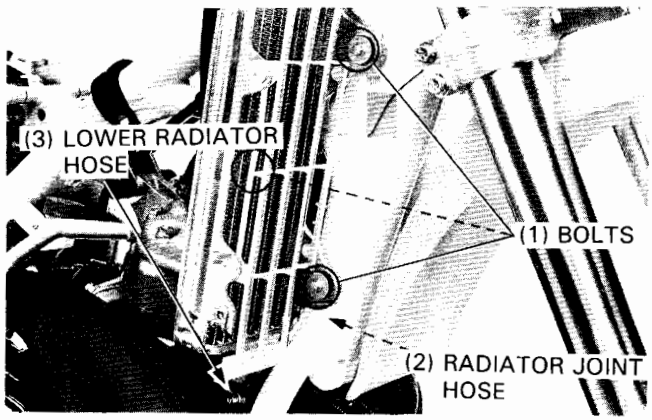
Install the radiators in the reverse order of removal.

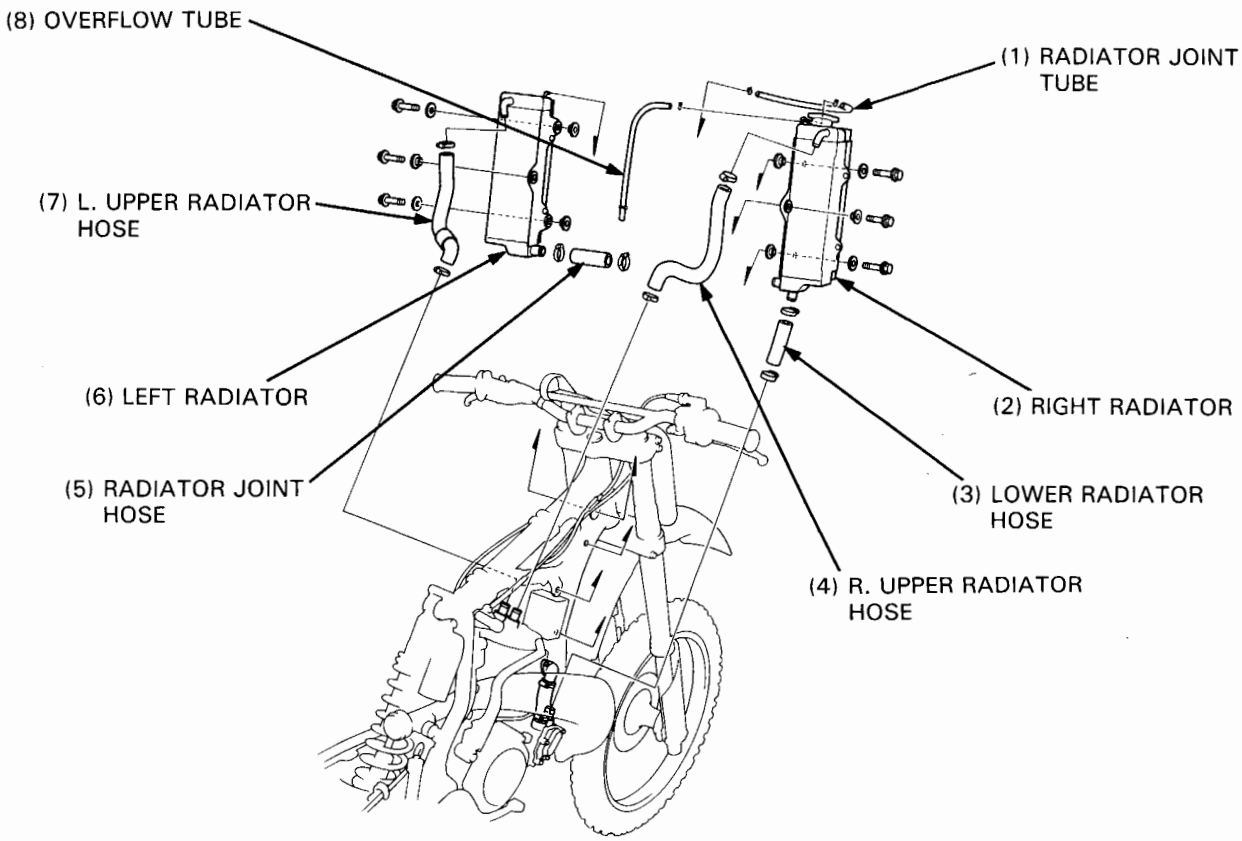
Pour the recommended 50/50 coolant mixture up to the filler neck (page 5-3).

After installation, check the radiator and radiator hoses for leaks.

NOTE

- Note the direction of the hose bands (page 1-20).

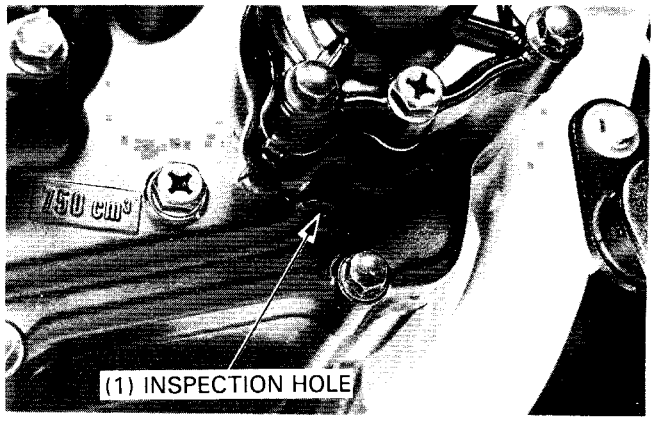




Water Pump

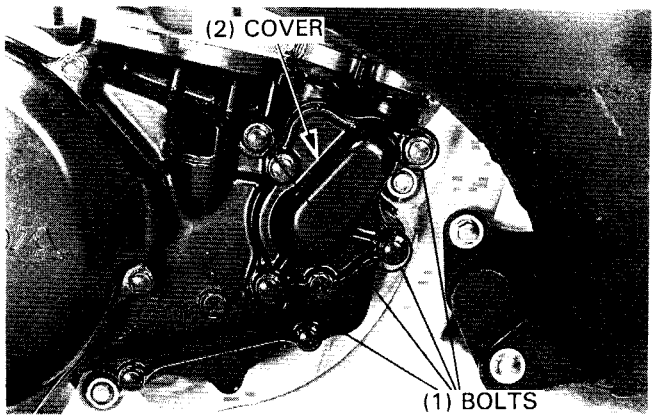
Water Seal Inspection

Inspect the inspection hole for signs of coolant leakage.
Replace the water seal if coolant is leaking (page 5-6).
Replace the oil seal if transmission oil is leaking (page 5-6).



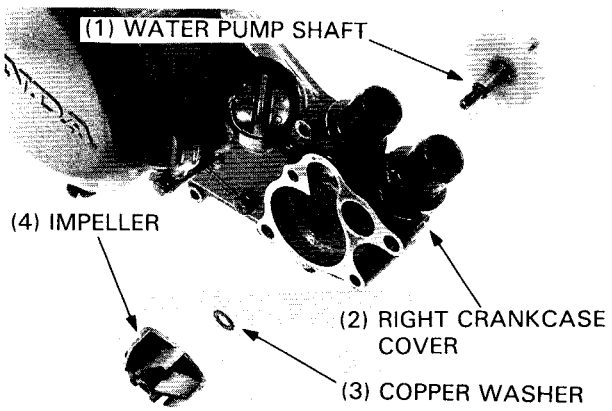
Disassembly

Drain the radiator coolant (page 5-3).
Remove the following:
—water pump cover bolts.
—water pump cover.
—outer gasket.
—plate.
—dowel pins.



Remove the following:
—inner gasket.
—impeller by turning it counterclockwise.
—copper washer.
—right crankcase cover (page 8-3).
—water pump shaft from the right crankcase cover.

Check the water pump shaft/gear to be sure they are not bent or damaged.

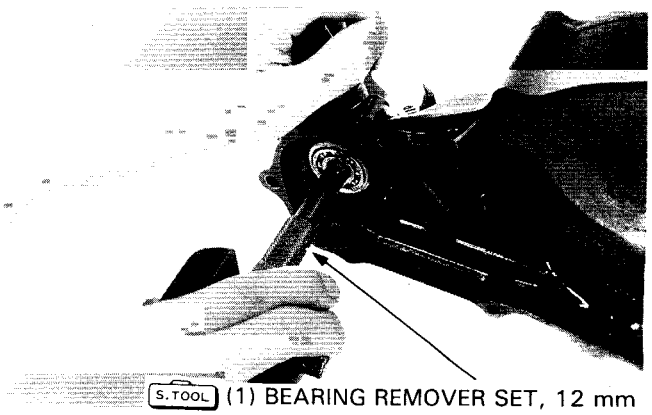


Bearing Replacement

Right Crankcase Cover Side:
Remove the bearing using the special tools.

S. TOOL

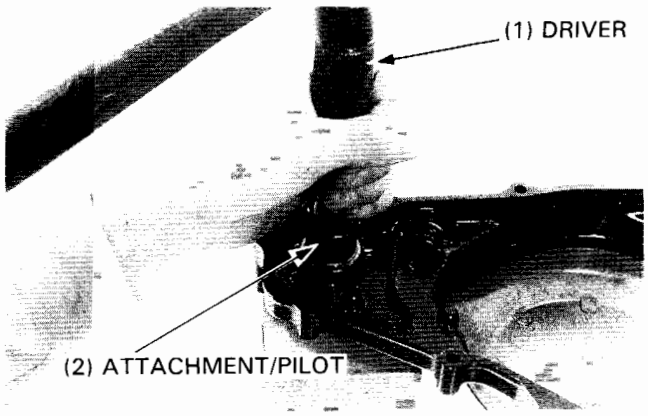
Bearing remover set, 12 mm	**07963—1660001**
—Bearing remover handle	**07936—1660101**
—Bearing remover weight	**07741—0010201 or 07936—3710200**



Drive new bearing into the right crankcase cover.

S. TOOL

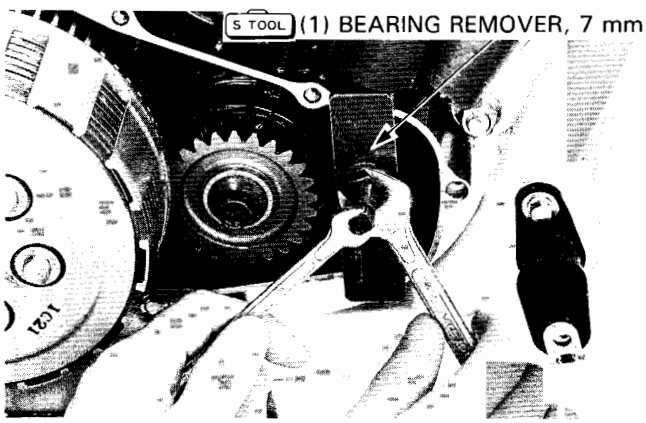
Driver	**07746–0010000**
Attachment, 28 x 30 mm	**07946–1870100**
Pilot, 12 mm	**07764–0040200**



Right Crankcase Side:
Remove the bearing using the special tool as shown.

S. TOOL

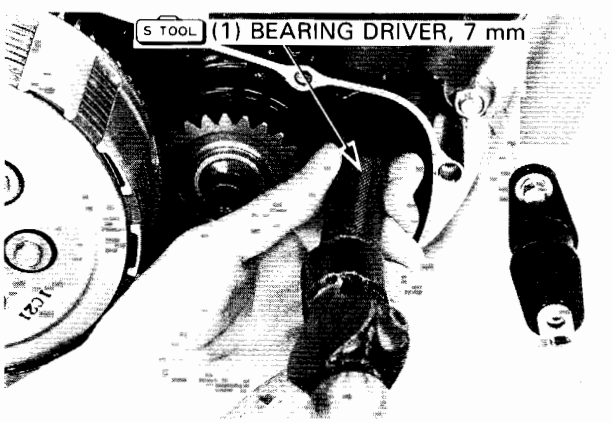
Bearing remover, 7 mm	**07931–KA30000**



Drive a new bearing into the right crankcase.

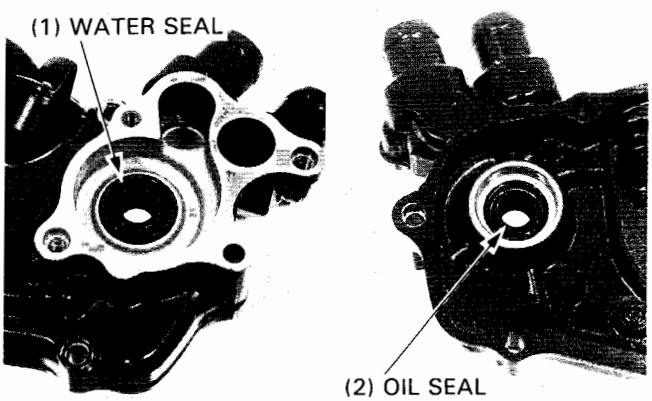
S. TOOL

Bearing driver, 7 mm	**07946–KA30100**



Water Seal/Oil Seal Replacement

Remove the water pump bearing from the right crankcase cover (page 5-5).
Remove the oil seal.
Drive out the water seal out of the right crankcase cover.



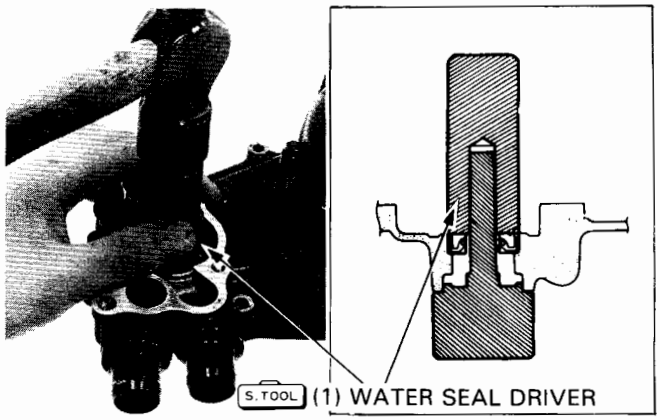
Drive in a new water seal using the special tools.

NOTE

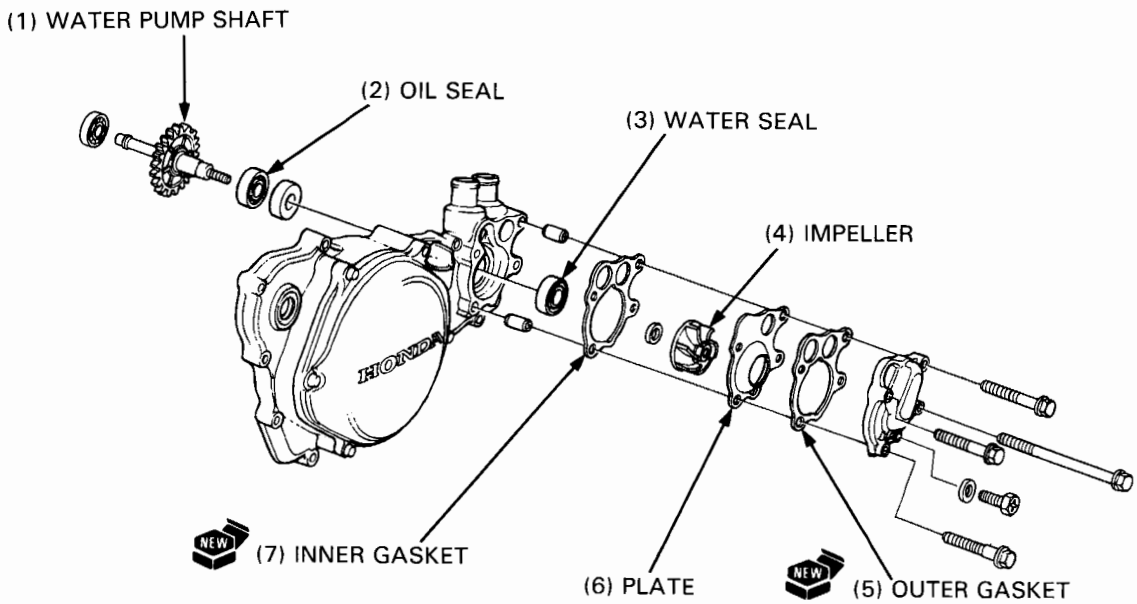
- Do not damage the water seal lips.

S. TOOL
Water seal driver **07945–KA30000**

Apply grease to the lip of a new oil seal and install it.
Install a new water pump bearing (page 5-6).

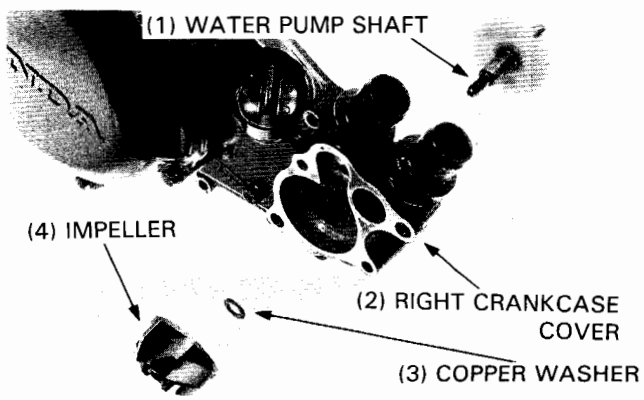


Assembly

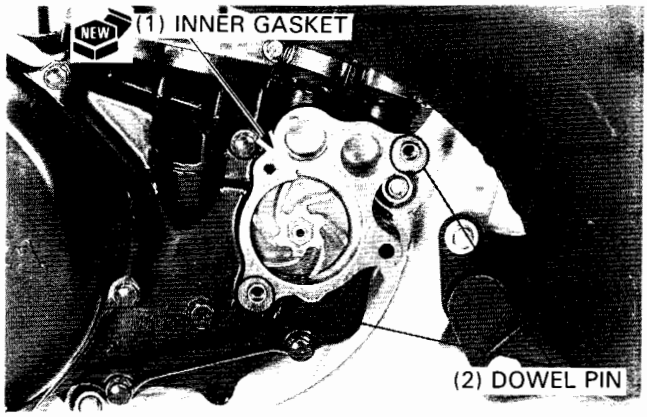


Install the following:
– water pump shaft/gear into the right crankcase cover.
– right crankcase cover (page 8-3).
– copper washer.
– impeller by turning it clockwise and tighten it.

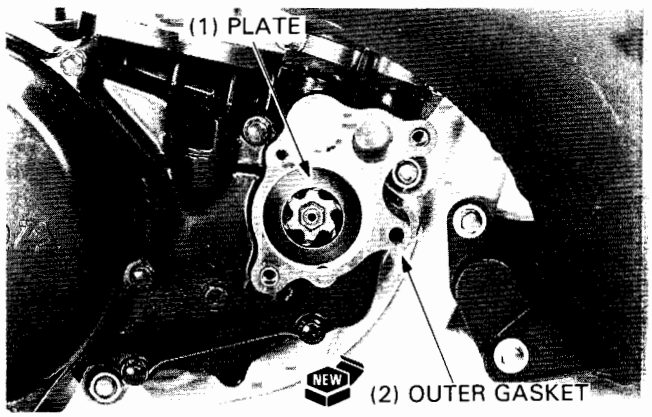
Torque: 12 N·m (1.2 kg-m, 9 ft-lb)



Install the following:
—new inner gasket.
—two dowel pins.



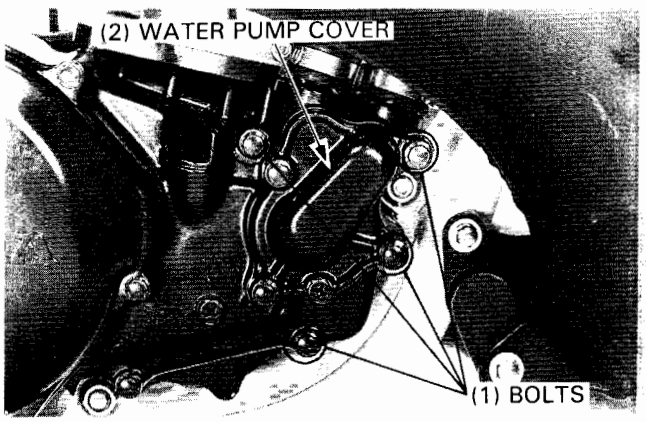
Install the following:
—plate.
—new outer gasket.



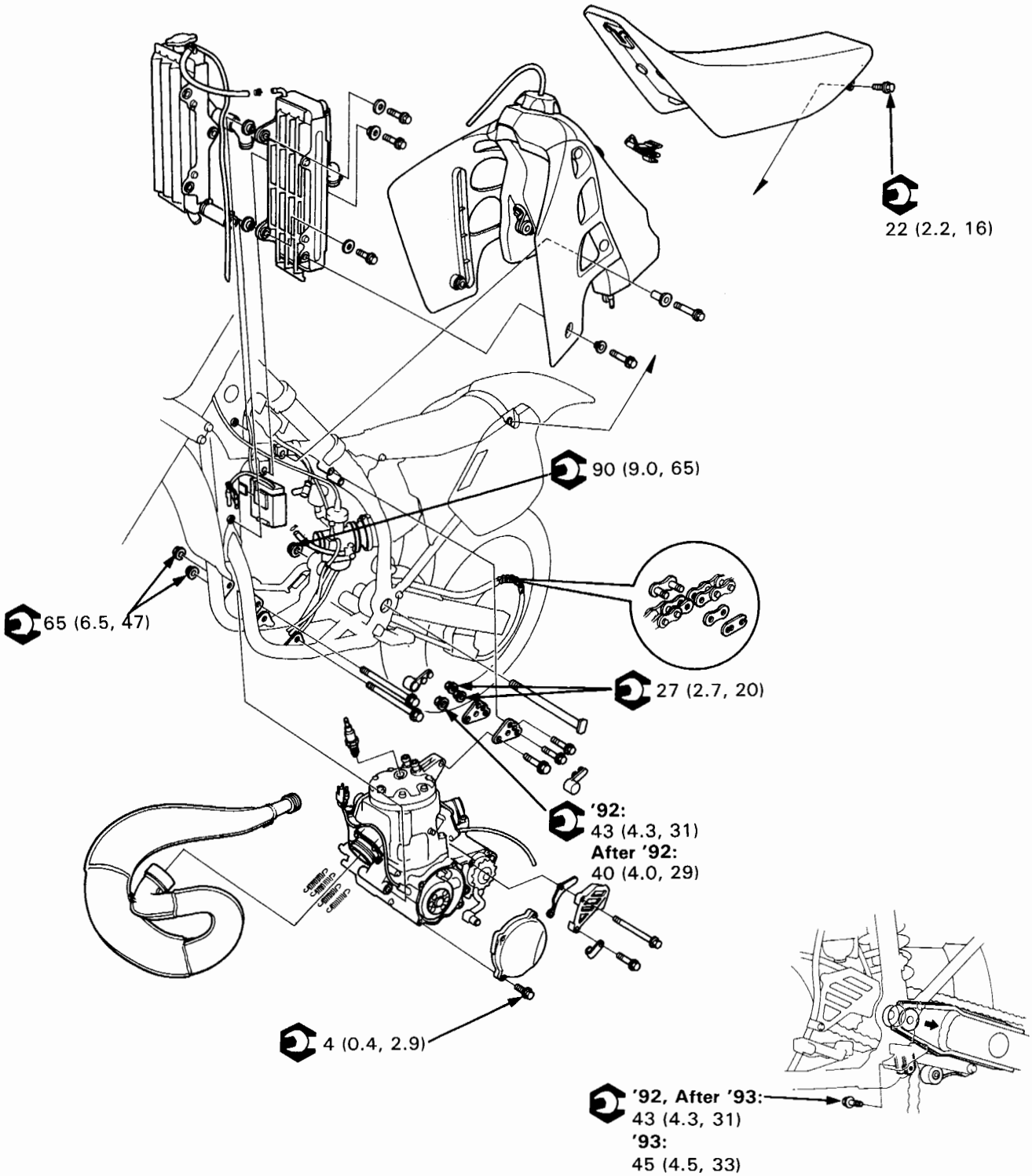
Install the water pump cover and tighten the bolts.

Torque: 12 N·m (1.2 kg-m, 9 ft-lb)

Pour the recommended 50/50 coolant mixture up to the filler neck and bleed the air (page 5-3).



MEMO


22 (2.2, 16)
90 (9.0, 65)
65 (6.5, 47)
27 (2.7, 20)
'92:
43 (4.3, 31)
After '92:
40 (4.0, 29)
4 (0.4, 2.9)
'92, After '93:
43 (4.3, 31)
'93:
45 (4.5, 33)

6. Engine Removal/Installation

Service Information	6-1	**Engine Installation**	6-3
Engine Removal	6-2		

Service Information

General

- During removal and installation, support the motorcycle securely on a work stand.
- The following components can be serviced with the engine installed in the frame:
  - Alternator (Section 13)
  - Clutch/gearshift linkage (Section 8)
  - Cylinder head/cylinder/piston (Section 7)
- The following components require engine removal for service:
  - Crankshaft/transmission (Section 9)
  - Shift forks/shift drum (Section 9)

Specifications

Item	Specification
Engine dry weight	27.1 (59.8 lb)
Recommended transmission oil	Honda GN4 4-Stroke Oil SAE 10 W–40 or equivalent API Service classification: SF or SG
Transmission oil capacity	750 cc (25 US oz, 26 Imp oz) at disassembly 680 cc (23 US oz, 24 Imp oz) at oil change
Coolant capacity	1.22 lit. (1.29 US qt, 1.07 Imp qt) at disassembly 1.08 lit. (1.14 US qt, 0.95 Imp qt) at coolant change

Torque Values

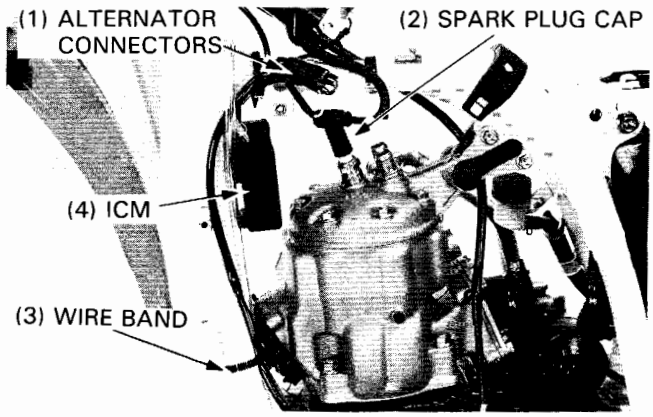
Lower/front engine mounting bolts		65 N·m (6.5 kg-m, 47 ft-lb)
Engine hanger plate bolts		27 N·m (2.7 kg-m, 20 ft-lb)
Upper engine mounting bolt	('92)	43 N·m (4.3 kg-m, 33 ft-lb)
	(After '92)	40 N·m (4.0 kg-m, 29 ft-lb)
Swingarm pivot bolt		90 N·m (9.0 kg-m, 65 ft-lb)
Shock absorber lower mounting bolt	('92, After '93)	43 N·m (4.3 kg-m, 31 ft-lb)
	('93)	45 N·m (4.5 kg-m, 33 ft-lb)
Alternator cover screws		4 N·m (0.4 kg-m, 2.9 ft-lb)
Seat mounting bolts		22 N·m (2.2 kg-m, 16 ft-lb)

Engine Removal

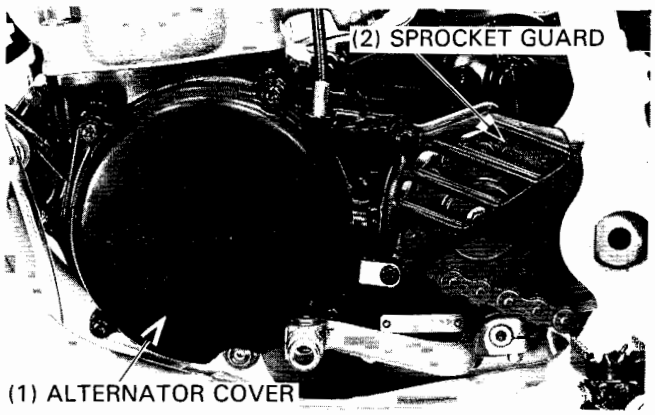
Drain the transmission oil.
Drain the coolant (page 5-3).

Place a work stand or box under the engine.

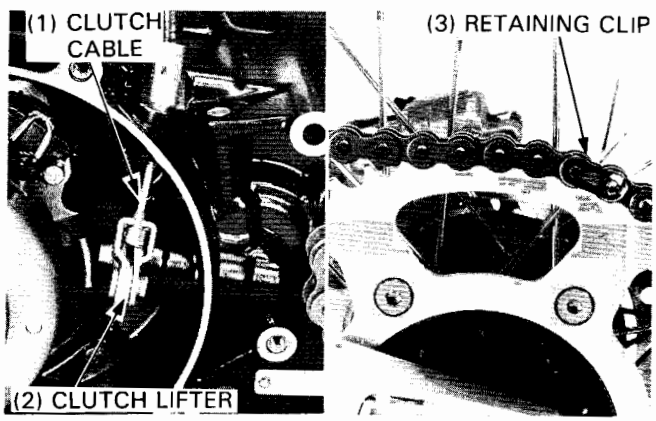
Remove the following:
- seat and fuel tank (page 2-2)
- expansion chamber (page 2-3)
- radiator (page 5-4)
- carburetor (page 4-6)
- spark plug cap
- wire band
- alternator connectors
- ignition control module (ICM).



Remove the alternator cover and sprocket guard.

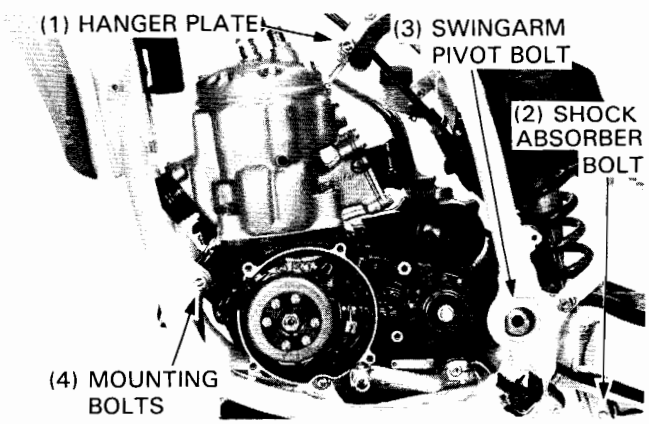


Disconnect the clutch cable from the clutch lift lever by loosening the clutch cable adjusters.
Remove the retaining clip and disconnect the drive chain.

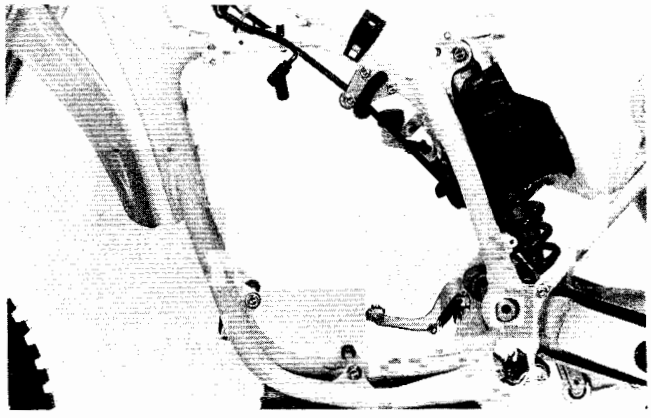


Remove the following:
- upper engine mounting bolts and hanger plate
- front and lower mounting bolts
- lower shock absorber mounting bolt
- swingarm pivot bolt.

Remove the engine.



Engine Installation



Installation is in the reverse order of removal.
Always install a new seal between the expansion chamber and the cylinder.

Torque:

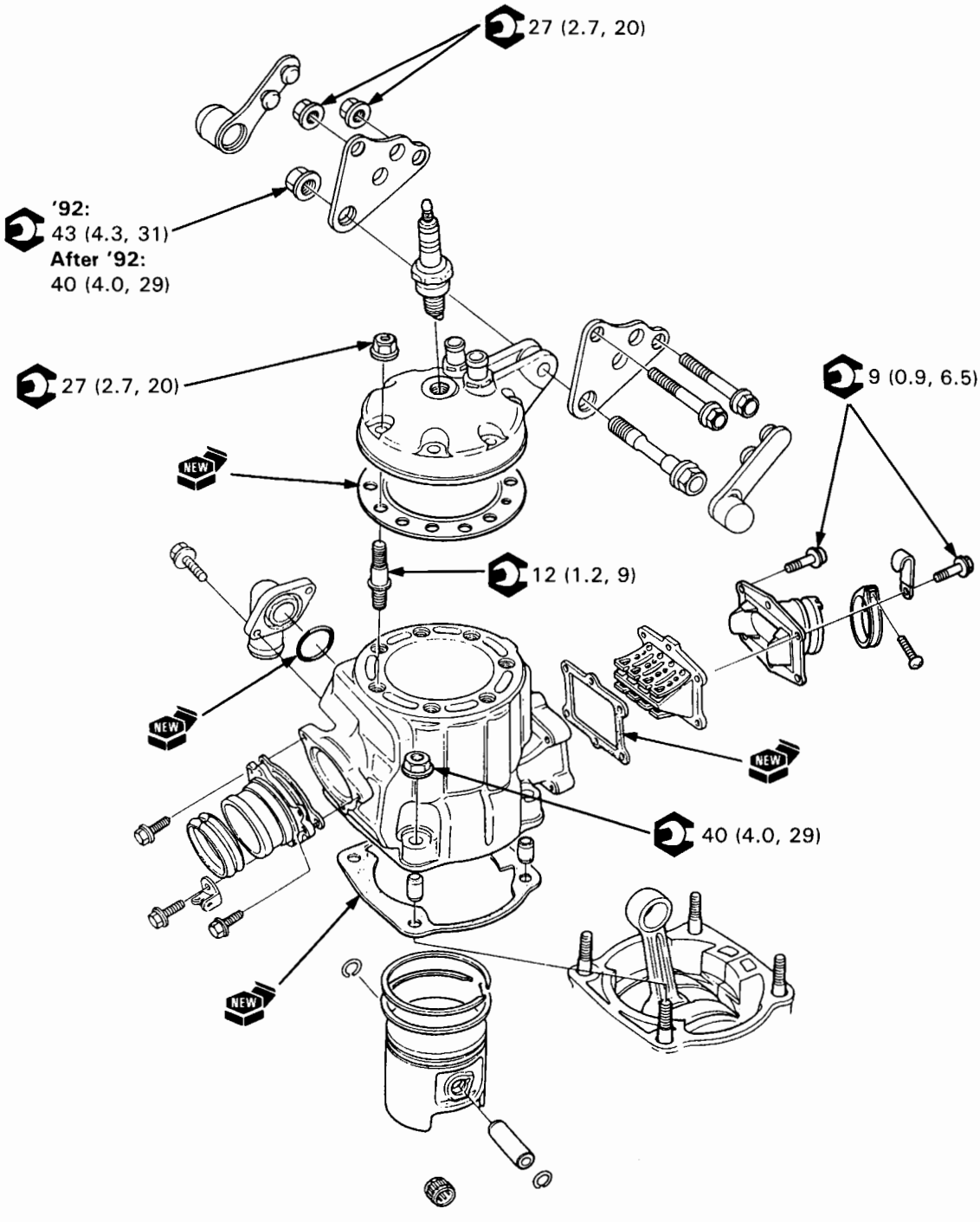
Swingarm pivot bolt: 90 N·m (9.0 kg-m, 65 ft-lb)
Shock absorber lower mounting bolt:
'92, After '93: 43 N·m (4.3 kg-m, 31 ft-lb)
'93: 45 N·m (4.5 kg-m, 33 ft-lb)
Lower/front engine mounting bolt:
65 N·m (6.5 kg-m, 47 ft-lb)
Upper engine mounting bolt:
'92: 43 N·m (4.3 kg-m, 31 ft-lb)
After '92: 40 N·m (4.0 kg-m, 29 ft-lb)
Hanger plate bolt: 27 N·m (2.7 kg-m, 20 ft-lb)
Alternator cover screw: 4 N·m (0.4 kg-m, 2.9 ft-lb)

NOTE

- Route the wires and cables properly (page 1-20).
- Note the direction of the engine mounting bolts and swingarm pivot bolt.

After installing the engine, perform the following inspections and adjustments:
— transmission oil level
— radiator coolant
— throttle grip free play adjustment
— drive chain slack
— clutch lever free play.

Check that exhaust gas is not leaking past the expansion chamber connection.


27 (2.7, 20)
'92:
43 (4.3, 31)
After '92:
40 (4.0, 29)
27 (2.7, 20)
9 (0.9, 6.5)
NEW
12 (1.2, 9)
NEW
NEW
40 (4.0, 29)
NEW

7. Cylinder Head/Cylinder/Piston

Service Information	**7-1**	**Cylinder Head**	**7-3**
Troubleshooting	**7-2**	**Cylinder/Piston**	**7-5**

Service Information

General

- This section covers maintenance of the cylinder head, cylinder and piston. These procedure can be done with the engine in the frame.
- Before disassembling, clean the engine thoroughly to keep dirt from entering the engine.
- Do not use a screwdriver to remove the cylinder head.
- Clean all parts before inspecting.
- Before assembling, apply clean recommended 2-stroke engine oil to all sliding surfaces.
- Under racing conditions, the piston and piston ring should be replaced after 7.5 hours of running. The piston pin and connecting rod small end bearing should be replaced after 22.5 hours of running.
- Refer to section 4 for reed valve servicing.

Specifications

mm (in)

Item		Standard	Service Limit
Cylinder head	Warpage	—	0.05 (0.002)
Cylinder	I.D.	89.020—89.035 (3.5047—3.5053)	89.07 (3.507)
	Taper	—	0.05 (0.002)
	Out of round	—	0.05 (0.002)
	Warpage across top	—	0.05 (0.002)
Piston, piston pin, piston ring	Piston O.D.	88.93—88.95 (3.501—3.502)	88.88 (3.499)
	Piston pin bore	20.002—20.008 (0.7875—0.7877)	20.02 (0.788)
	Piston pin O.D.	19.994—20.000 (0.7872—0.7874)	19.992 (0.7871)
	Piston-to-pin clearance	0.002—0.014 (0.0001—0.0006)	0.02 (0.0008)
	Piston ring end gap	0.3—0.5 (0.012—0.020)	0.02 (0.02)
	Piston-to-ring groove clearance	0.045—0.080 (0.0018—0.0031)	0.09 (0.004)
Cylinder-to-piston clearance		0.070—0.105 (0.0027—0.0041)	0.12 (0.005)
Connecting rod small end I.D.		25.002—25.014 (0.9843—0.9848)	25.025 (0.9852)

Torque Values

Cylinder head nuts		27 N·m (2.7 kg-m, 20 ft-lb)
Cylinder mounting nuts		40 N·m (4.0 kg-m, 29 ft-lb)
Cylinder stud bolts		12 N·m (1.2 kg-m, 9 ft-lb)
Spark plug		18 N·m (1.8 kg-m, 13 ft-lb)
Upper engine mounting bolt	('92)	43 N·m (4.3 kg-m, 31 ft-lb)
	(After '92)	40 N·m (4.0 kg-m, 29 ft-lb)
Engine hanger plate bolts		27 N·m (2.7 kg-m, 20 ft-lb)
Carburetor insulator bolt		9 N·m (0.9 kg-m, 6.5 ft-lb)

Troubleshooting

Compression too low, hard starting or poor performance at low speed

- Blown cylinder head gasket
- Warped or cracked cylinder head
- Loose spark plug
- Worn, stuck or broken piston rings
- Worn or damaged cylinder and piston
- Faulty reed valve
- Blown crankcase gasket
- Damaged crankshaft oil seals

Compression too high, overheating or knocking

- Excessive carbon build-up in combustion chamber or on top of piston

Abnormal noise-piston

- Worn or cracked piston
- Worn cylinder and piston
- Worn piston pin or piston pin hole
- Worn connecting rod small end bearing

Abnormal noise-piston ring

- Worn, stuck or broken piston rings
- Worn or damaged cylinder

Contaminated coolant

- Leaking cylinder head gasket

Cylinder Head

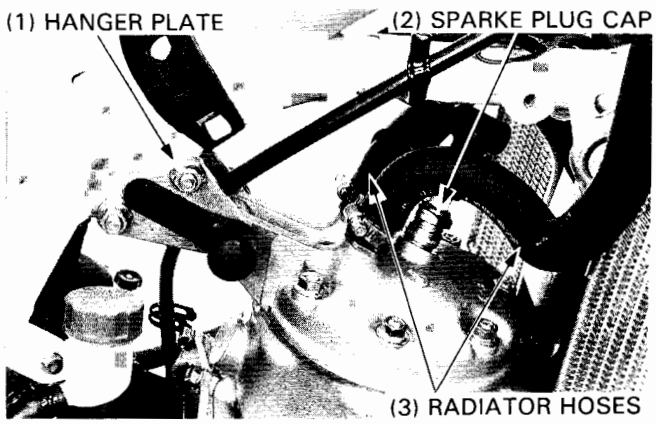
Removal

Drain the radiator coolant (page 5-3).
Remove the fuel tank (page 2-2).
Remove the expansion chamber (page 2-3).

Loosen the radiator hose bands and remove the radiator hoses from the cylinder head.
Remove the spark plug cap and spark plug.

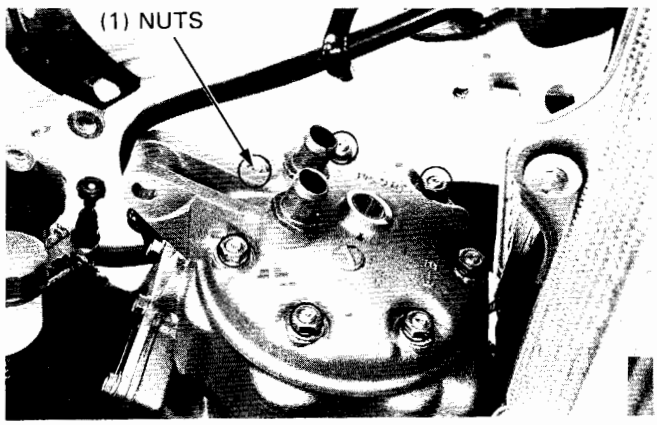
Remove the rubber cap from the right engine hanger plate.
Remove the upper engine mounting bolt, hanger plate bolts and hanger plates.

Remove the seven cylinder head nuts and the cylinder head.



CAUTION

- **To avoid warping the cylinder head, use a crisscross pattern to loosen each nut about 1/4 turn at a time, then remove the nuts.**

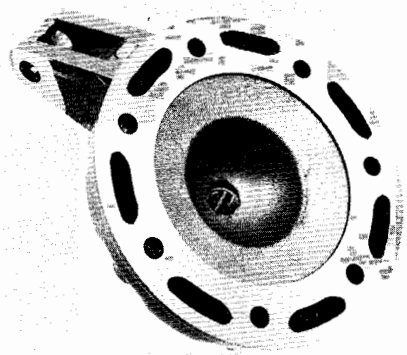


Remove the cylinder head gasket.

Combustion Chamber Decarbonizing

Remove the carbon deposits from the combustion chamber.

Clean the head gasket surface of any gasket material.



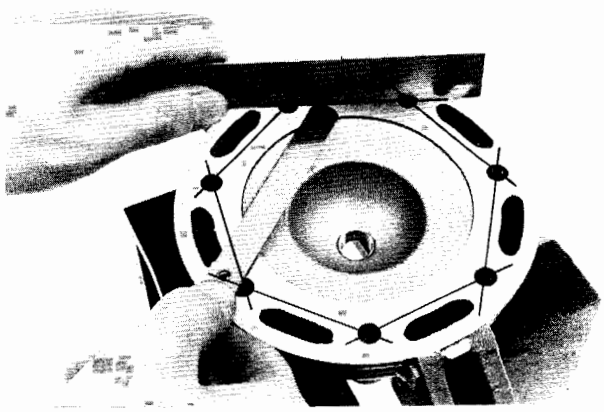
CAUTION

- **Use care not to scratch the combustion chamber or the head gasket surface.**

Inspection

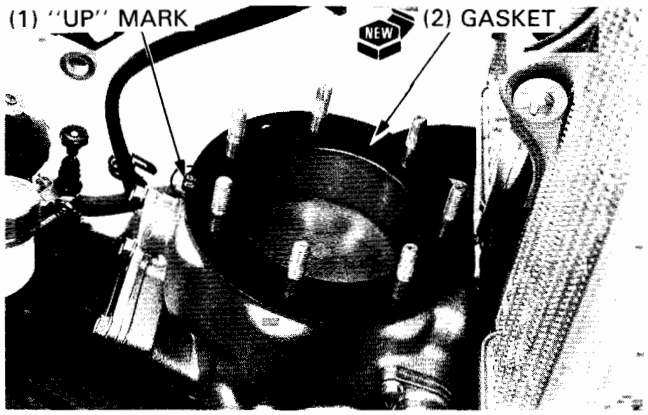
Check the cylinder head for warpage in diagonal directions with a straight edge and a feeler gauge.

Service Limit: 0.05 mm (0.0002 in)



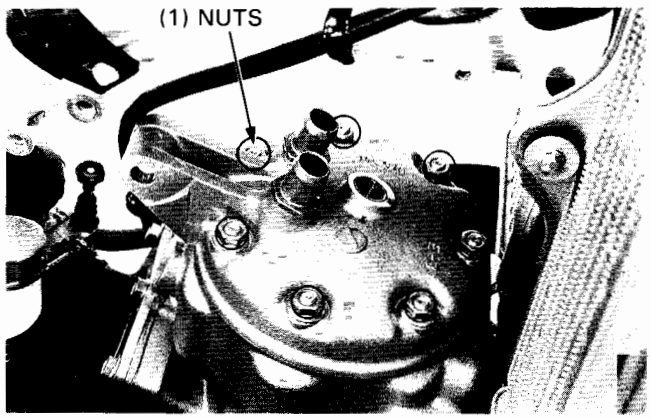
Installation

Install a new cylinder head gasket with the "UP" mark facing up and its locating tab facing rearward.



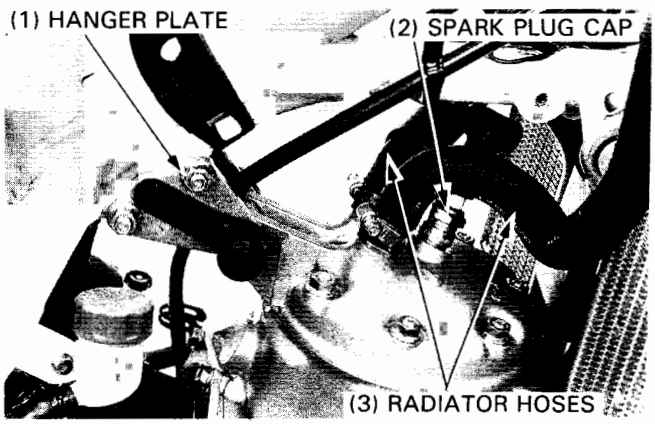
Place the cylinder head on the cylinder.
Install the seven cylinder head nuts and tighten them to the specified torque in a crisscross pattern in 2 or 3 steps.

Torque: 27 N·m (2.7 kg-m, 20 ft-lb)



Install the engine hanger plates, hanger plate bolts/nuts and upper engine mounting bolt/nuts, and tighten the nuts.

Torque:
Engine hanger plate nut: 27 N·m (2.7 kg-m, 20 ft-lb)
Upper engine mounting nut:
'92: 43 N·m (4.3 kg-m, 31 ft-lb)
After '92: 40 N·m (4.0 kg-m, 29 ft-lb)



NOTE

- Route the clutch cable between the hanger plates.

Install and tighten the spark plug.

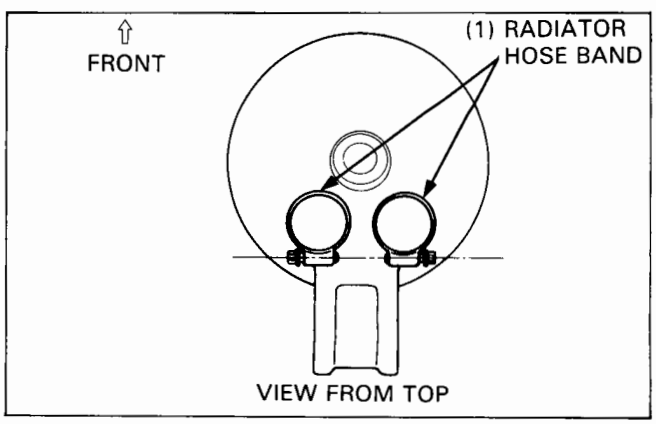
Torque: 18 N·m (1.8 kg-m, 13 ft-lb)

Install the spark plug cap.

Connect the radiator hoses to the cylinder head and tighten the hose clamps.

NOTE

- Note the position and alignment of the hose bands shown at right.



Torque: 0.8 N·m (0.08 kg-m, 0.6 ft-lb)

CAUTION

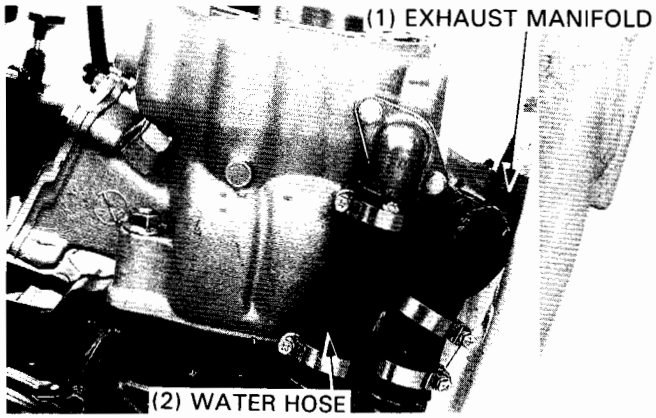
- **The clamp screws must be in line with one another and toward the rear of the cylinder head as shown.**

Install the following:
— expansion chamber (page 2-3).
— fuel tank and seat (page 2-2).
Pour the recommended coolant mixture up to the correct level (page 5-3).

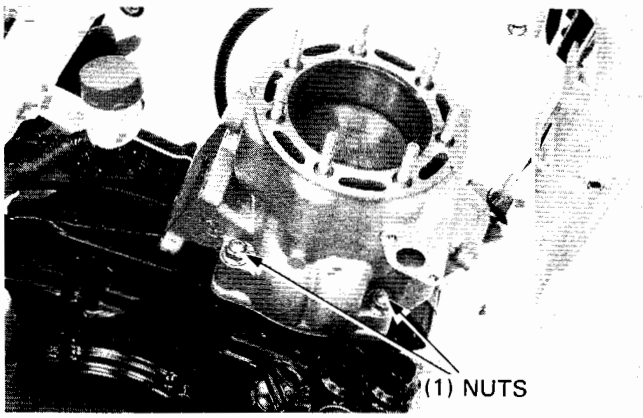
Cylinder/Piston

Cylinder Removal

Remove the following:
- cylinder head (page 7-3)
- reed valve (page 4-9)
- radiators (page 5-4)
- ignition control module (ICM)
- exhaust manifold
- water hose from the cylinder and right crankcase cover.



Remove the four cylinder mounting nuts and the cylinder. Remove the cylinder gasket and dowel pins.

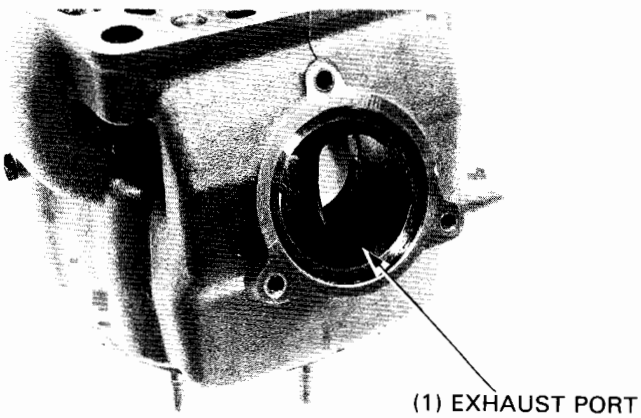


Cylinder Inspection

Clean carbon deposits from the exhaust port area.

CAUTION

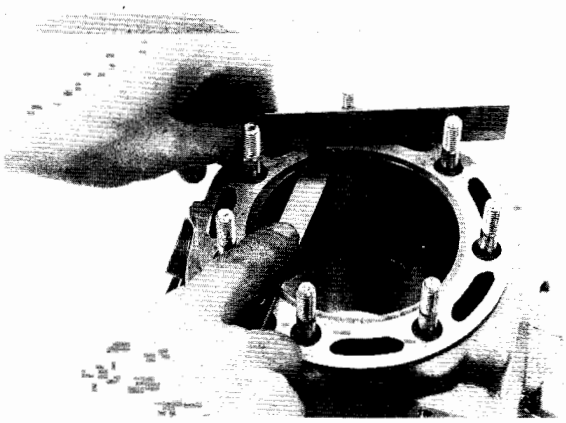
- **Do not damage the cylinder bore.**



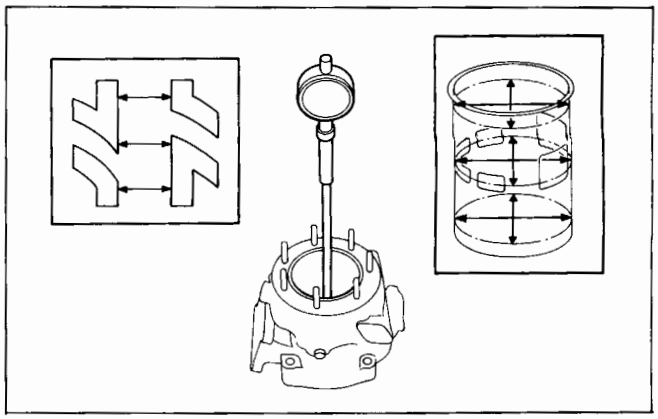
Inspect the top of the cylinder for warpage.

Use a straight edge and feeler gauge to check the head gasket surface on the cylinder for warpage. If warpage is beyond the service limit, correct or replace as necessary.

Service Limit: 0.05 mm (0.0002 in)



Check that the cylinder studs are tight. If any are loose, remove them, clean their threads with contact cleaner, then reinstall them using Honda Anaerobic Thread Lock, or an equivalent.



Use a micrometer and dial bore gauge to check for cylinder wear.

Service Limit: 89.07 mm (3.507 in)

Calculate the cylinder to piston clearance.

Service Limit: 0.07–0.105 mm (0.0027–0.0041 in)

Inspect for out of round.

Service Limit: 0.05 mm (0.0002 in)

Rebore the cylinder if it is worn or seized.
There are two oversize pistons and piston rings;

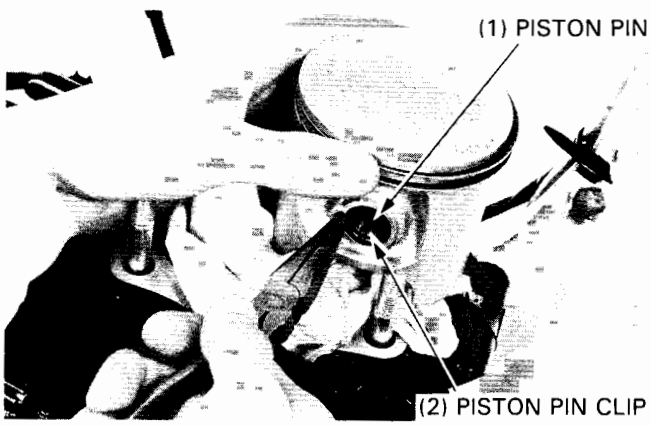
Piston Oversize	Piston Manufacturing Tolerance	Cylinder-to-Piston Clearance
0.25 mm (0.01 in)	89.270–89.285 mm (3.5146–3.5152 in)	0.070–0.105 mm (0.0027–0.0041 in)
0.50 mm (0.02 in)	89.520–89.535 mm (3.5244–3.5250 in)	

Piston Removal

NOTE

- Place a clean shop towel over the crankcase to prevent the possibility of a clip falling into the crankcase.

Remove the piston pin clip using a pair of pliers.
Press the piston pin out of the piston.

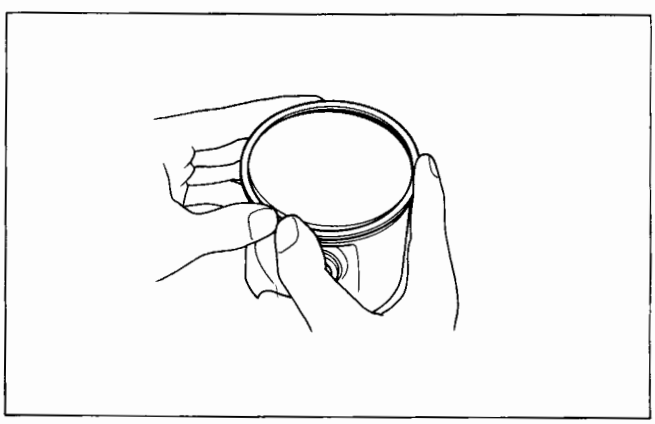


NOTE

- Do not damage or scratch the piston.
- Do not apply side force to the connecting rod.
- Do not let the clips fall into the crankcase.

Remove the needle bearing from the small end of the connecting rod.

Spread each piston ring and remove by lifting it up at a point just opposite the gap.



CAUTION

- **Do not damage the piston rings by spreading the ends too far.**

Piston/Piston Pin Inspection

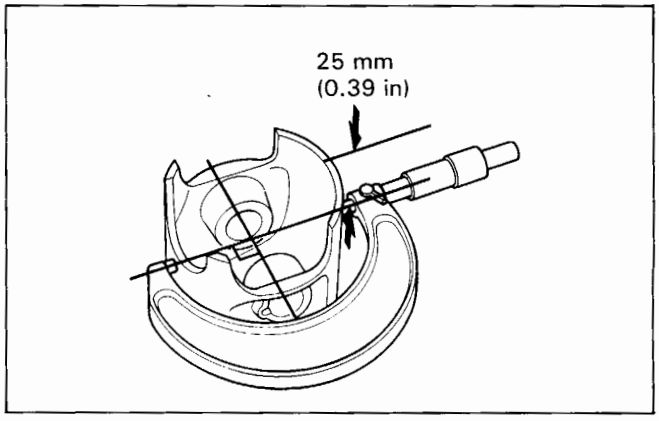
Measure the piston O.D. 25 mm (0.39 in) from the bottom of the skirt and at a right angle to the piston pin hole.

Service Limit: 88.88 mm (3.499 in) [Standard bore]

If the O.D. is under the service limit, replace the piston with a new one.

Calculate the piston-to-cylinder clearance.

Service Limit: 0.12 mm (0.0047 in)



Measure the piston pin bore I.D.

Service Limit: 20.02 mm (0.788 in)

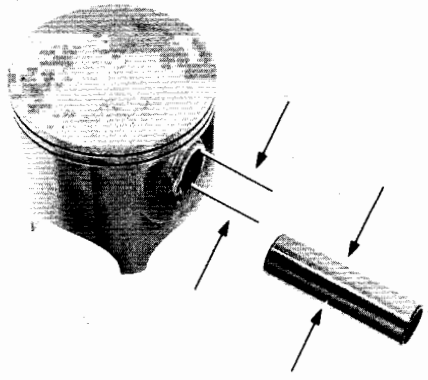
Check the piston pin for wear and excessive discoloration.

Measure the piston pin O.D.

Service Limit: 19.992 mm (0.7871 in)

Calculate the piston pin-to-piston clearance.

Service Limit: 0.02 mm (0.0008 in)



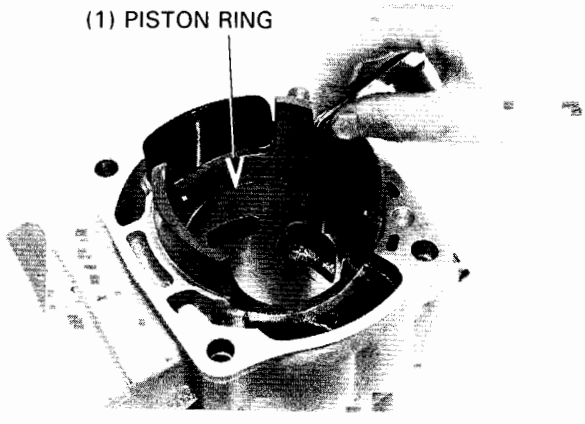
Piston Ring Inspection

Insert the piston rings into the cylinder. Use the piston to square the ring in the cylinder.

Measure each piston ring's end gap with a feeler gauge.

Service Limit: 0.6 mm (0.02 in)

If the end gap is still over the service limit with a new ring, the cylinder must be rebored and fitted with a new oversize piston and ring.
If the end gap is below the standard (0.3—0.5 mm), you have the incorrect rings for your bore size.

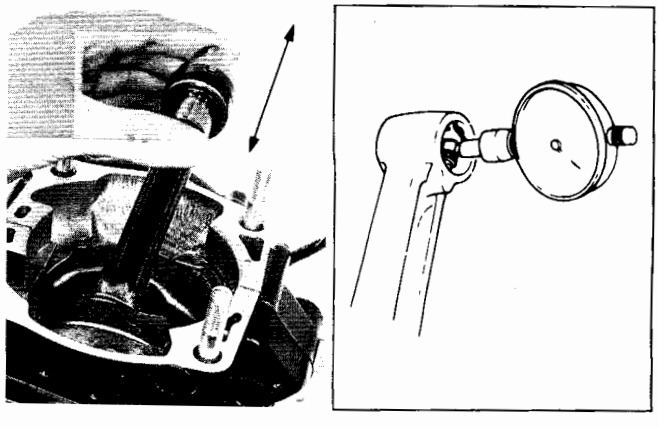


Connecting Rod Inspection

Install the bearing and piston pin in the connecting rod small end and check for excessive play. If it feels loose, measure the small end I.D.

Service Limit: 25.025 mm (0.9852 in)

If not over the service limit, replace the piston pin and small end bearing.
If over the service limit, the crankshaft assembly must be replaced.



Piston Installation

Clean the piston ring grooves.
Lubricate the piston rings and piston ring grooves with clean recommended 2-stroke oil.
Install the piston rings on the piston with the marks facing up.

NOTE

- Locate the piston ring end gaps on the pins in the ring grooves.

Coat the needle bearing and piston pin with clean recommended 2-stroke oil.
Install the needle bearing in the small end of the connecting rod.
Install the piston with the "IN" mark facing the intake side and the piston pin.

NOTE

- Place a clean shop towel over the crankcase to prevent the clips from falling into the crankcase.

Install new piston pin clips.

NOTE

- Do not let the clips fall into the crankcase.
- Set the piston pin clip in the groove properly.
- Do not align the clip's end gap with the piston cutout.

Cylinder Installation

Clean off any gasket material from the cylinder surface.

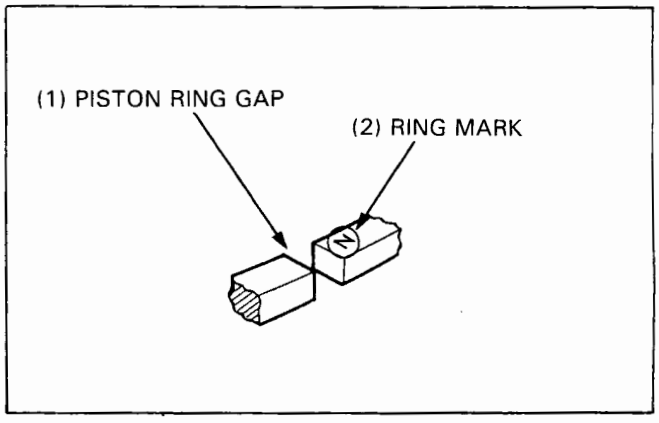
NOTE

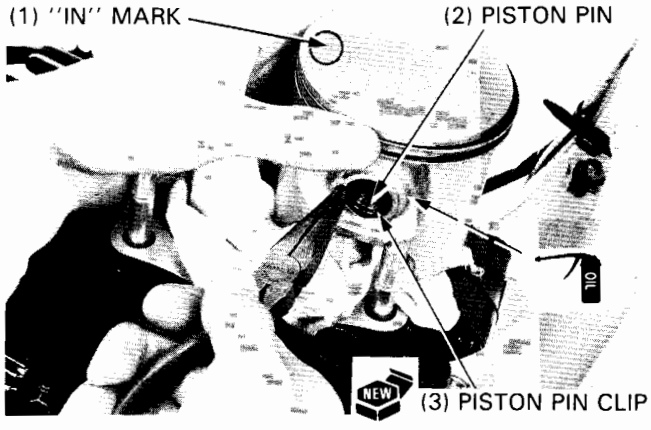
- Be careful not to remove any metal from the gasket surface or let gasket material fall into the crankcase.

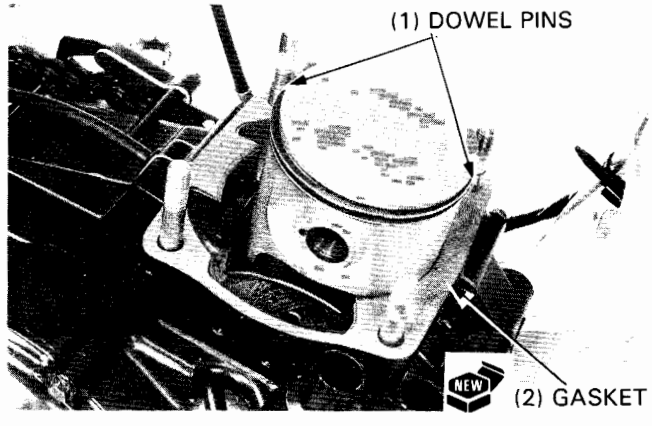
Check that the cylinder base (hold down) studs are tight. If any are loose, remove them, clean their threads with contact cleaner, then reinstall using Honda Aerobic Thread Lock, or its equivalent.

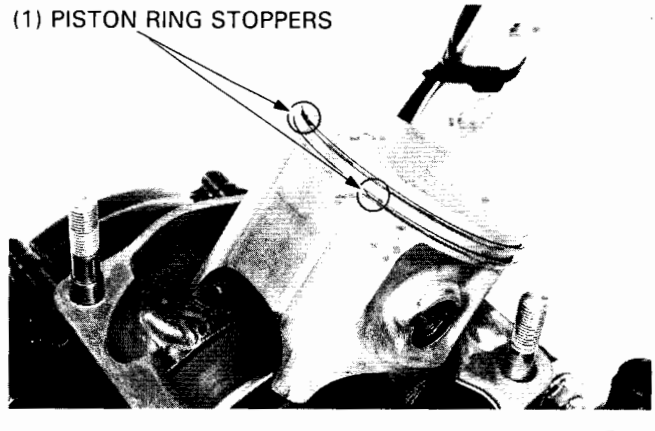
Place the cylinder base gasket and dowel pins on the crankcase.

Align each ring end gap with the piston ring stoppers in the ring grooves.





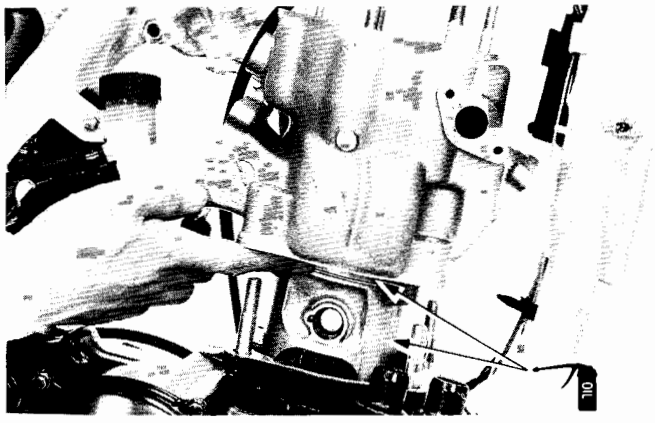




Lubricate the piston and rings with clean recommended 2-stroke oil and slip the cylinder over the piston while compressing the piston rings.

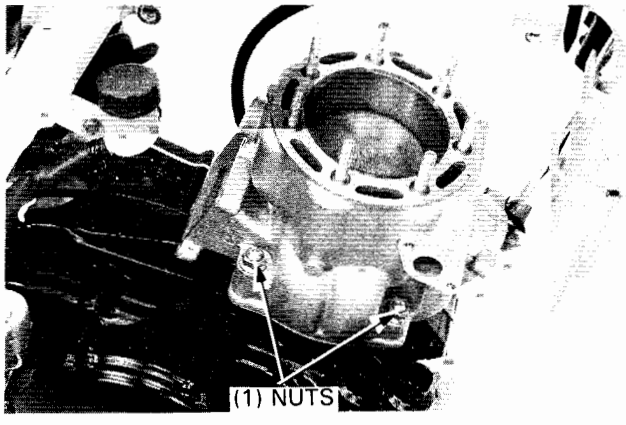
CAUTION

- **Do not rotate the cylinder, since this may cause the piston rings to snag a cylinder port and break.**



Install the four cylinder mounting nuts and tighten them in a crisscross pattern in 2 to 3 steps to the specified torque.

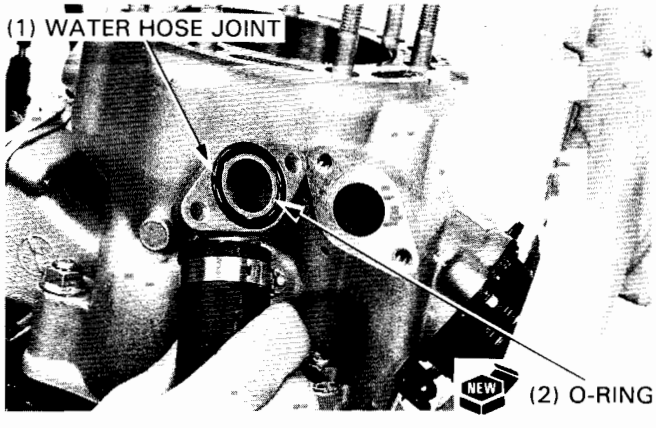
Torque: 40 N·m (4.0 kg-m, 29 ft-lb)

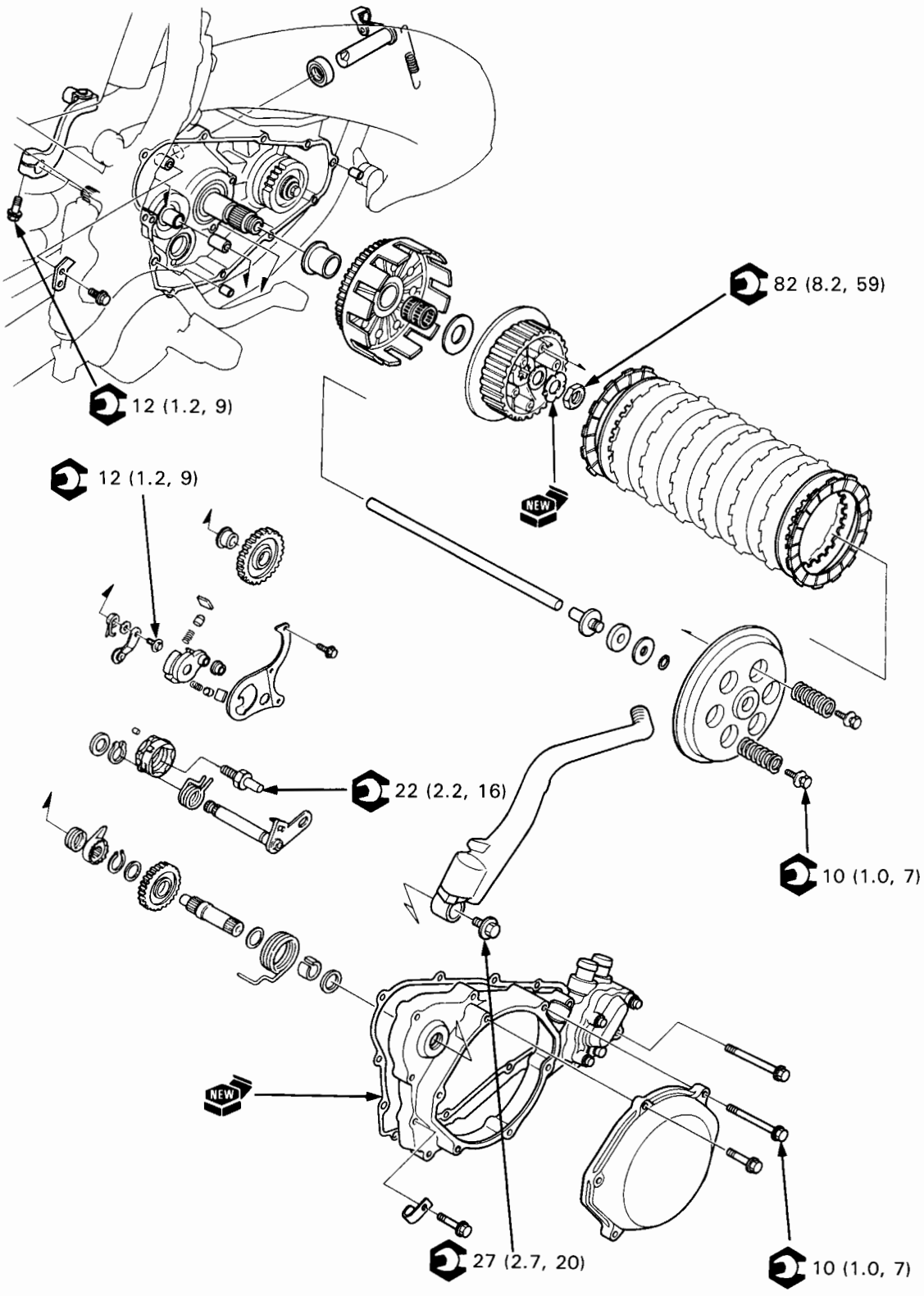


Install a new O-ring to the water hose joint and connect the water hose to the cylinder and right crankcase cover.

Install the following:
- CDI unit
- radiators (page 5-4)
- reed valve and carburetor (page 4-7)
- exhaust manifold and expansion chamber (page 2-3)
- cylinder head (page 7-4).

Check for the following:
- compression leaks
- abnormal engine noise
- secondary air leak
- coolant leaks.




82 (8.2, 59)
12 (1.2, 9)
12 (1.2, 9)
NEW
22 (2.2, 16)
10 (1.0, 7)
NEW
27 (2.7, 20)
10 (1.0, 7)

8. Clutch/Kickstarter/Gearshift Linkage

Service Information	8-1	Clutch	8-4
Troubleshooting	8-2	Kickstarter	8-7
Right Crankcase Cover	8-3	Gearshift Linkage	8-8

Service Information

General

- The clutch, kickstarter and gearshift linkage can be serviced with the engine in the frame.
- Transmission oil viscosity and level have an effect on clutch disengagement. When the clutch does not disengage or the vehicle creeps with clutch pulled in, inspect the transmission oil level before servicing the clutch system.

Specifications

mm (in)

Item		Standard	Service Limit
Clutch lever free play		10–20 (3/8–3/4)	—
Clutch spring	Free length	44.20 (1.740)	42.2 (1.66)
Clutch plate warpage		—	0.20 (0.008)
Clutch disc thickness		2.92–3.08 (0.115–0.121)	2.85 (0.112)
Kickstarter spindle O.D.		21.959–21.980 (0.8645–0.8654)	21.95 (0.864)
Kickstarter pinion rear I.D.		20.020–20.041 (0.7882–0.7890)	20.06 (0.790)
Kickstarter idler gear	Countershaft O.D.	16.966–16.984 (0.6680–0.6687)	16.95 (0.667)
	Gear I.D.	20.020–20.041 (0.7882–0.7890)	20.07 (0.790)
	Bushing O.D.	19.979–20.000 (0.7866–0.7874)	19.94 (0.785)
	Bushing I.D.	17.000–17.018 (0.6693–0.6700)	17.04 (0.671)
Clutch outer guide O.D.		27.987–28.000 (1.1019–1.1024)	27.97 (1.101)
Clutch outer I.D.		32.009–32.034 (1.2602–1.2612)	32.054 (1.2620)

Torque Values

Clutch spring bolt	10 N·m (1.0 kg-m, 7 ft-lb)
Clutch center lock nut	82 N·m (8.2 kg-m, 59 ft-lb)
Shift drum center pin	22 N·m (2.2 kg-m, 16 ft-lb)
Right crankcase cover bolt	10 N·m (1.0 kg-m, 7 ft-lb)
Shift drum stopper arm bolt	12 N·m (1.2 kg-m, 9 ft-lb)
Gearshift pedal pinch bolt	12 N·m (1.2 kg-m, 9 ft-lb)
Kickstarter pedal bolt	27 N·m (2.7 kg-m, 20 ft-lb)
Brake pedal pivot bolt	26 N·m (2.6 kg-m, 19 ft-lb)

Tool

Common

Clutch center holder	07724–0050001 or Equivalent commercially available in U.S.A.

Troubleshooting

Clutch lever too hard
- Damaged, kinked or dirty clutch cable
- Damaged clutch lifter mechanism
- Faulty clutch lifter plate bearing

Clutch will not disengage or motorcycle creeps with clutch disengaged
- Too much clutch lever free play
- Warped plate
- Loose clutch lock nut
- Transmission oil level too high, improper oil viscosity or oil additive used

Clutch slips
- Clutch lifter sticking
- Worn clutch discs
- Weak clutch springs
- No clutch lever free play
- Transmission oil level too low or oil additive used.

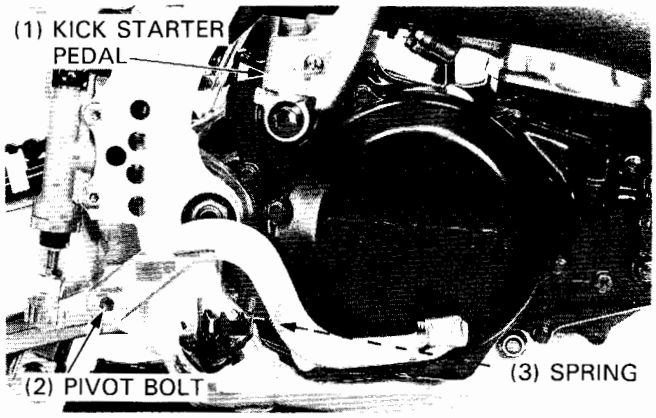
Hard to shift
- Improper clutch operation
- Incorrect transmission oil viscosity
- Incorrect clutch adjustment
- Bent shift forks
- Bend shift fork shaft
- Bent fork claw
- Damaged shift drum cam grooves
- Bent or damaged gearshift spindle

Transmission jumps out of gear
- Worn gear dogs or slots
- Bent shift fork shaft
- Broken shift drum stopper arm
- Worn or bent shift forks
- Broken shift linkage return spring

Right Crankcase Cover

Removal

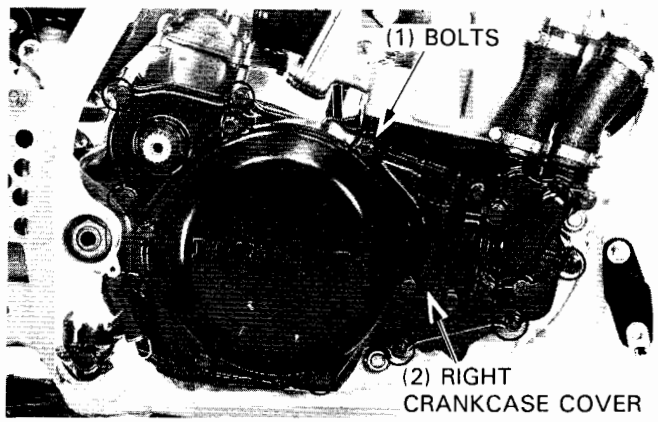
Drain the coolant (page 5-3).
Drain the transmission oil.
Remove the expansion chamber (page 2-3).
Remove the kickstarter pedal.
Remove the rear brake pedal pivot bolt, pedal and return spring.



Remove the right crankcase cover bolts and the cover.

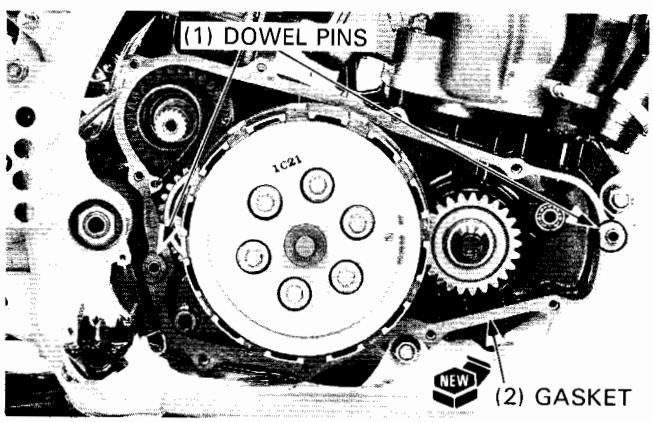
Disconnect the radiator hoses from the right crankcase cover.

Remove the gasket and dowel pins.



Installation

Install the dowel pins and a new gasket.



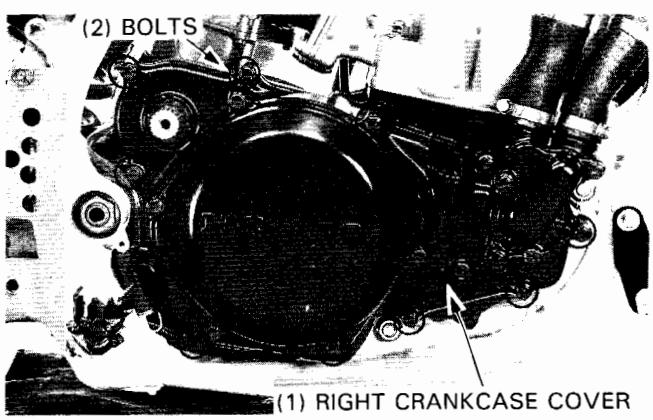
Install the right crankcase cover and tighten the bolts.

Torque: 10 N·m (1.0 kg-m, 7 ft-lb)

NOTE

- Install the right crankcase cover while engaging the water pump gear with the primary drive gear.
- Clamp the air vent tube with the right crankcase cover bolt.

Connect the radiator hoses to the right crankcase cover and tighten the hose clamps securely.



Apply grease to the sliding surface of the rear brake pedal pivot bolt.
Install the rear brake pedal, return spring and pivot bolt, and tighten the pivot bolt.

Torque: 26 N·m (2.6 kg-m, 19 ft-lb)

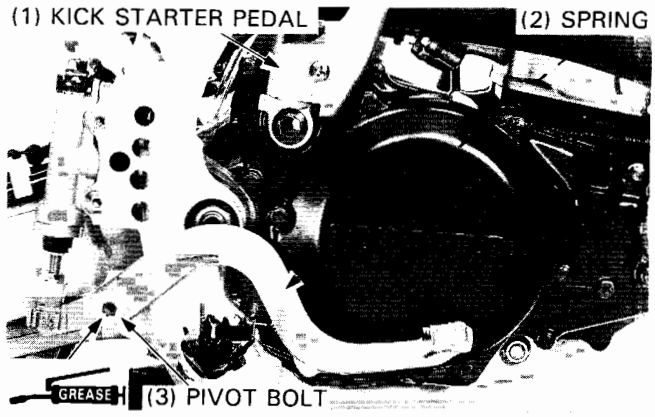
Clean the kickstarter pedal bolt thread and apply Honda Aerobic Thread Lock or equivalent and tighten the bolt.

Torque: 27 N·m (2.7 kg-m, 20 ft-lb)

Install the expansion chamber (page 2-3).

Fill the transmission with the recommended transmission oil to the correct level.
Pour the recommended coolant mixture into the radiator up to the correct level (page 5-3).

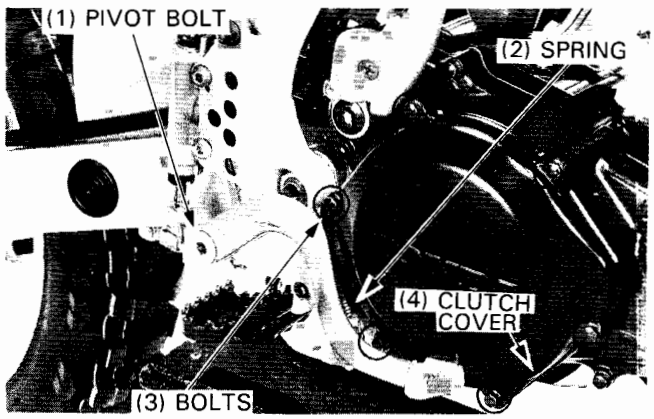
Check and adjust the rear brake pedal height (page 3-13).
Start the engine and check for leaks.



Clutch

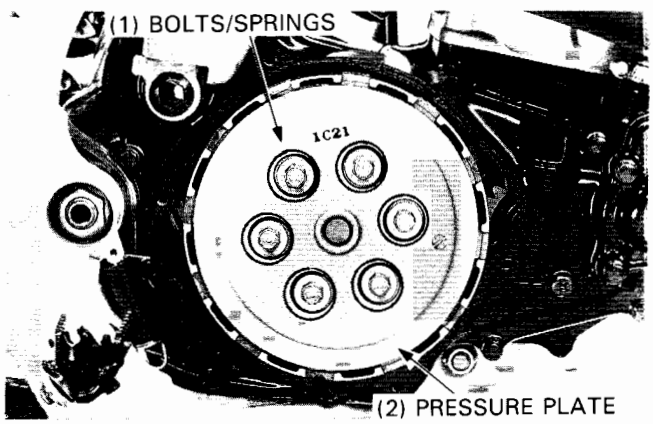
Clutch Removal

Remove the rear brake pedal pivot bolt, pedal and return spring.
Remove the clutch cover bolts and the cover.



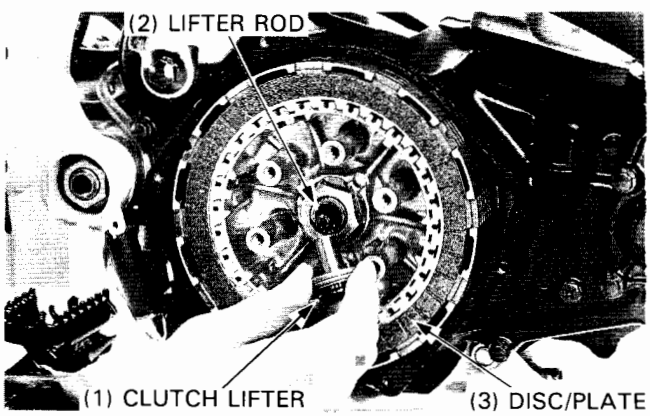
Loosen the clutch spring bolts in a crisscross pattern in 2 or 3 steps, and remove the bolts and clutch springs.

Remove the clutch pressure plate.

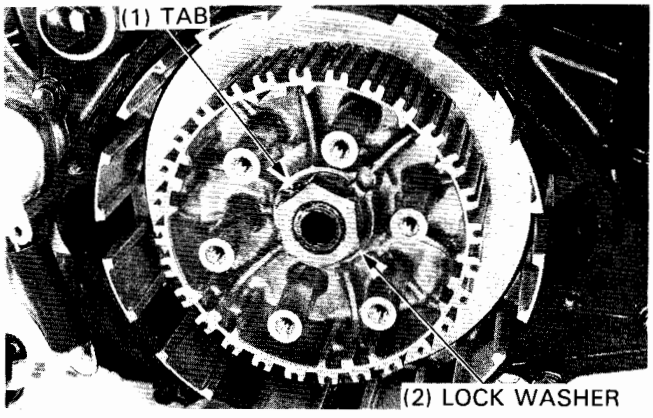


Remove the clutch lifter and lifter rod.

Remove the eight clutch discs and seven plates.



Straighten the tabs of the lock washer.

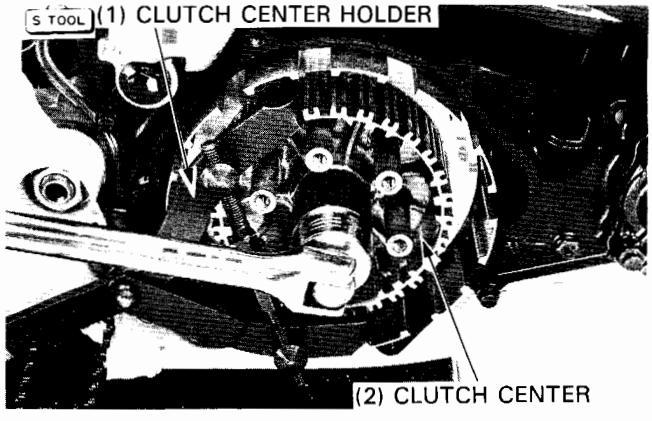


Hold the clutch center with the clutch center holder. Remove the clutch center lock nut, lock washer and thrust washer.

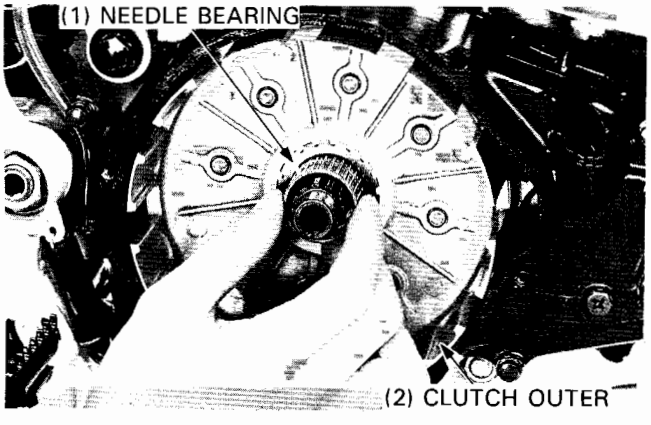
S. TOOL

Clutch center holder — **07724—0050001 or equivalent commercially available in U.S.A.**

Remove the clutch center and thrust washer.



Pull out the needle bearing and remove the clutch outer and outer guide.

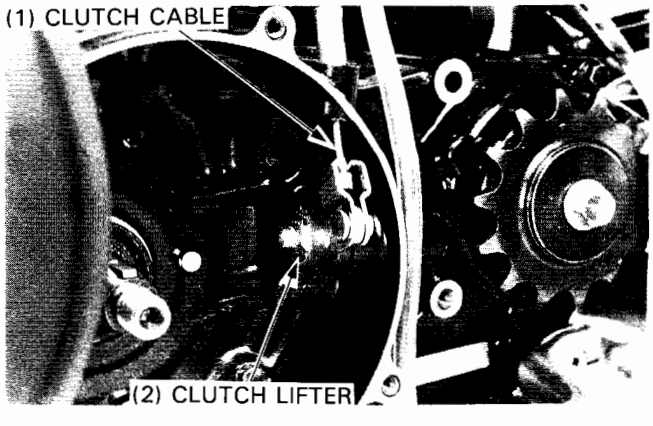


Clutch Lifter Lever Removal

Remove the flywheel and stator (page 13-5).

Loosen the clutch cable adjusters and disconnect the clutch cable from the clutch lifter lever.

Remove the clutch lifter lever from the left crankcase.



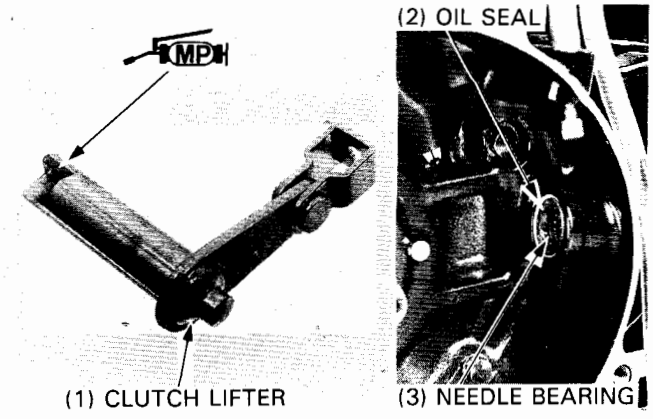
Clutch Lifter Lever Installation

Check the oil seal and needle bearings for wear or damage.
Coat the clutch lifter lever with grease, then install the clutch lifter lever.

Connect the clutch cable and adjust the clutch lever free play.

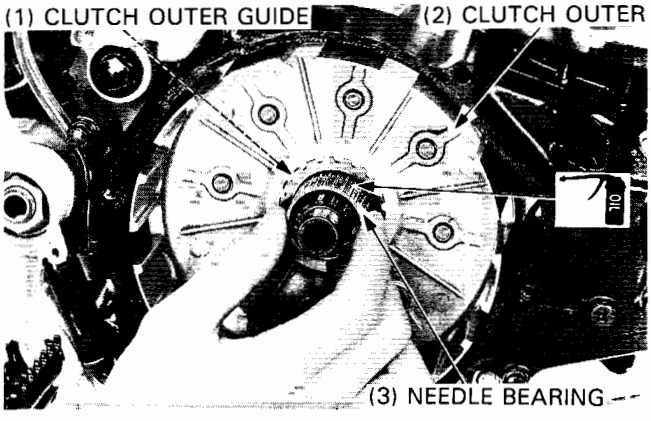
Install the stator and flywheel (page 13-6).

After installation, check the following:
– ignition timing (page 13-7)
– clutch operation.

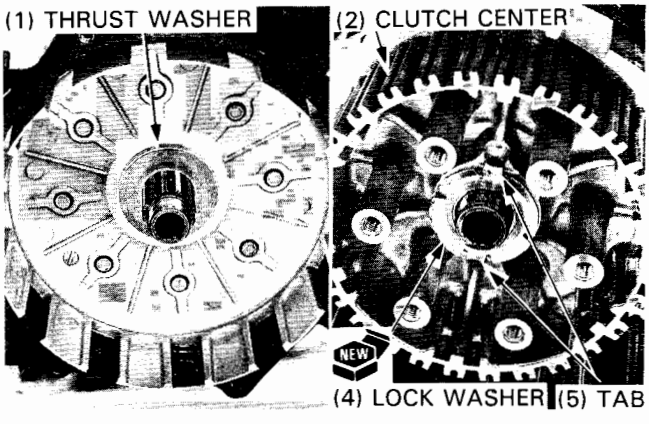


Clutch Installation

Install the clutch outer guide onto the mainshaft.
Coat the needle bearing with clean transmission oil and install it and the clutch outer.



Install the thrust washer.
Install clutch center and thrust washer onto the mainshaft.
Install a new lock washer, aligning the tab of the washer with the groove in the clutch center.

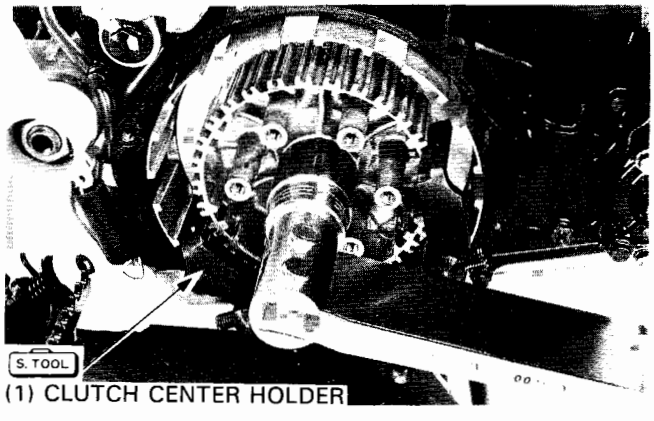


Install the clutch center lock nut and tighten it to the specified torque by holding the clutch center with the clutch center holder.

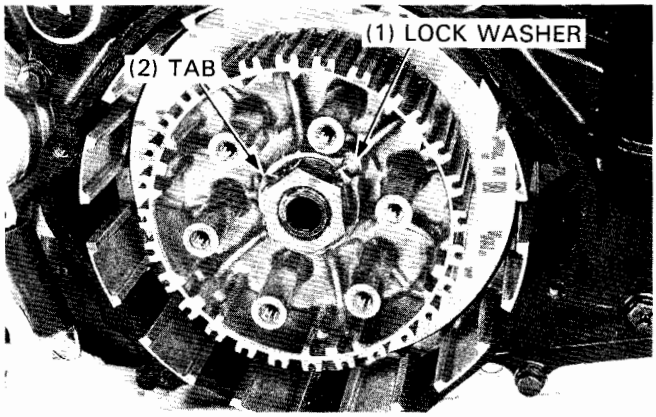
S. TOOL

Clutch center holder — **07724–0050001 or equivalent commercially available in U.S.A.**

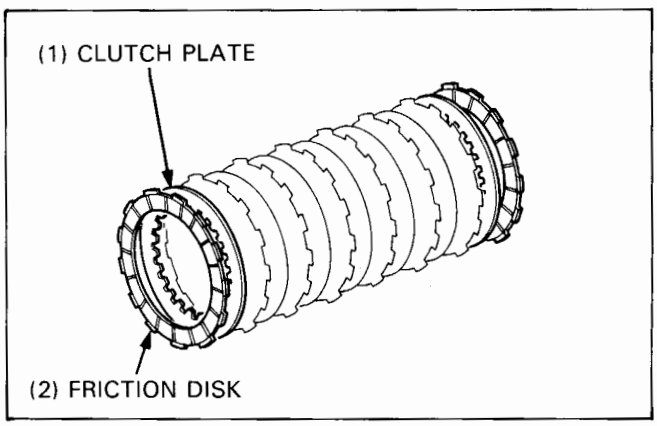
Torque: 82 N·m (8.2 kg-m, 59 ft-lb)



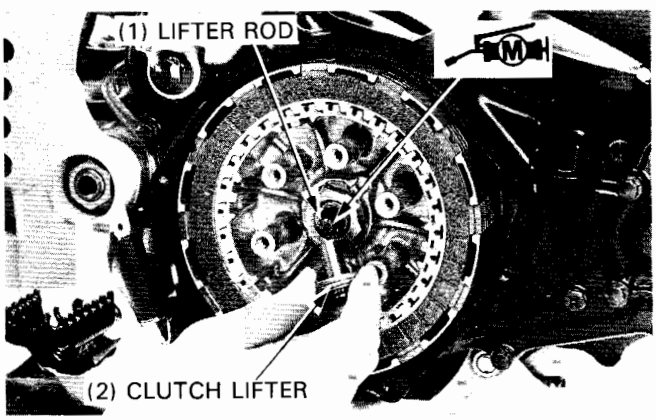
Bend the lock washer tabs up against the clutch center lock nut.



Coat the clutch plates with clean with clean transmission oil.
Install the eight clutch discs and seven plates alternately, starting with a disc.

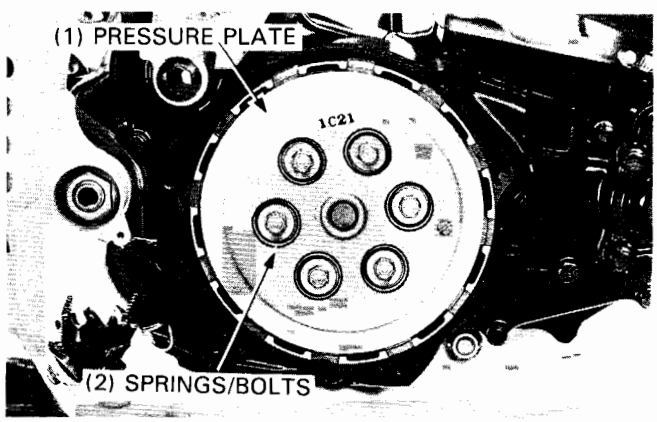


Apply molybdenum disulfide grease to the clutch lifter rod and insert it into the mainshaft.
Install the clutch lifter.



Install the clutch pressure plate.
Install the six clutch spring and bolts.
Tighten the bolts in a crisscross pattern in 2 or 3 steps.

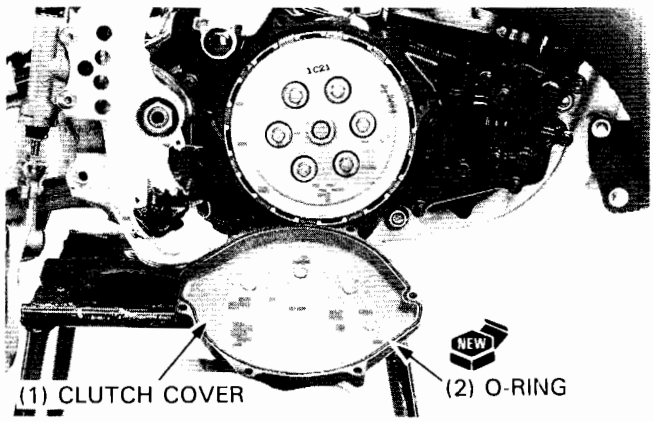
Torque: 10 N·m (1.0 kg-m, 7 ft-lb)



Install a new O-ring into the groove in the clutch cover.
Install the clutch cover and tighten the cover bolts securely.

Apply grease to the sliding surface of the rear brake pedal pivot bolt.
Install the rear brake pedal, return spring and pivot bolt, and tighten the pivot bolt to the specified torque.

Torque: 26 N·m (2.6 kg-m, 19 ft-lb)



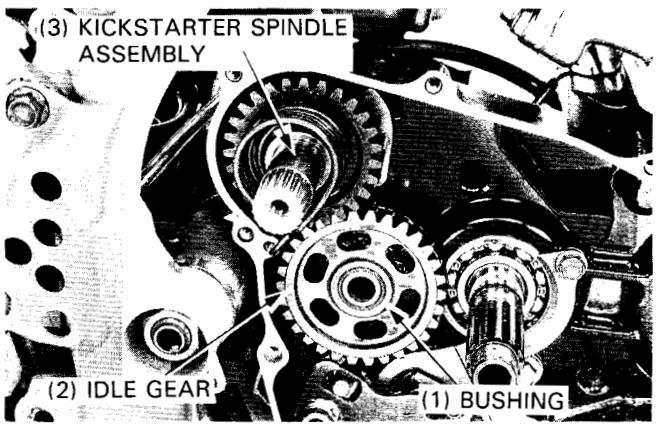
Kickstarter

Disassembly

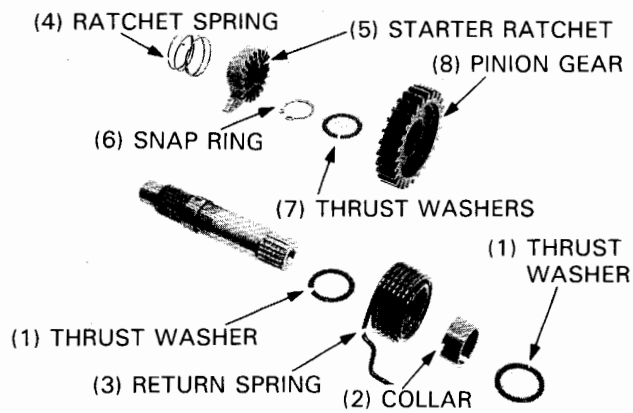
Remove the right crankcase cover (page 8-3).
Remove the clutch (page 8-4).

Remove the kickstarter idle gear and bushing.

Unhook the kickstarter return spring from the crankcase and pull the kickstarter spindle assembly out.



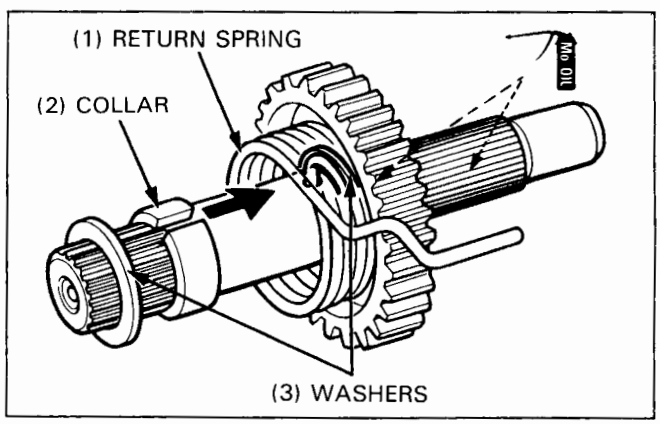
Disassemble the kickstarter spindle by removing the following:
– thrust washer and collar
– return spring
– ratchet spring and starter ratchet
– snap ring, thrust washers and pinion gear.



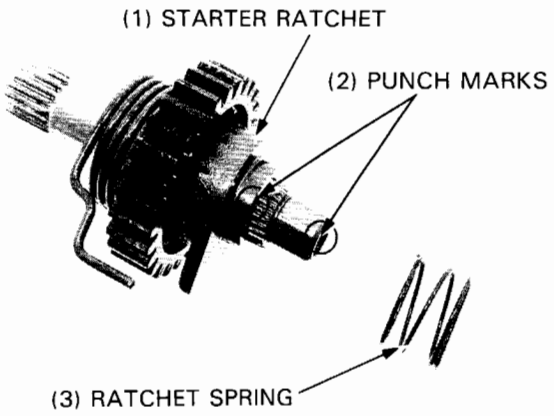
Assembly

Apply oil to the sliding surface of the pinion gear and starter ratchet.
Install the pinion gear, thrust washer and snap ring.

Install the thrust washer.
Insert the return spring end into the spring hook hole in the kickstarter spindle.
Install the collar, aligning the groove of the collar with the spring hook.
Install the thrust washer.



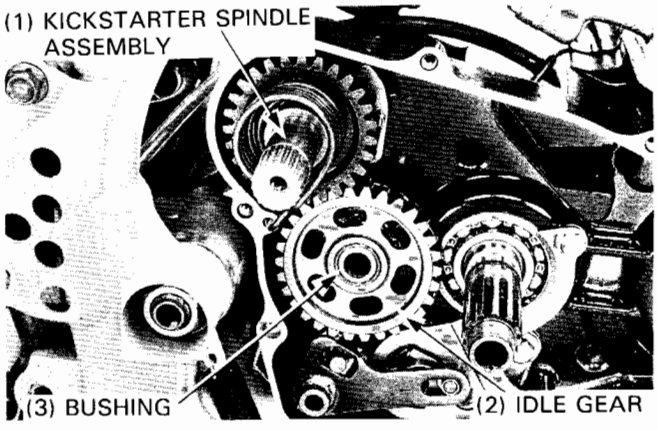
Install the starter ratchet, aligning the punch marks on the ratchet and spindle.
Install the ratchet spring.



Install the kickstarter idle gear bushing with the flanged section facing inward.

Install the kickstarter spindle assembly into the crankcase and hook the return spring end to the crankcase as shown.

Install the clutch (page 8-6).
Install the right crankcase cover (page 8-3).

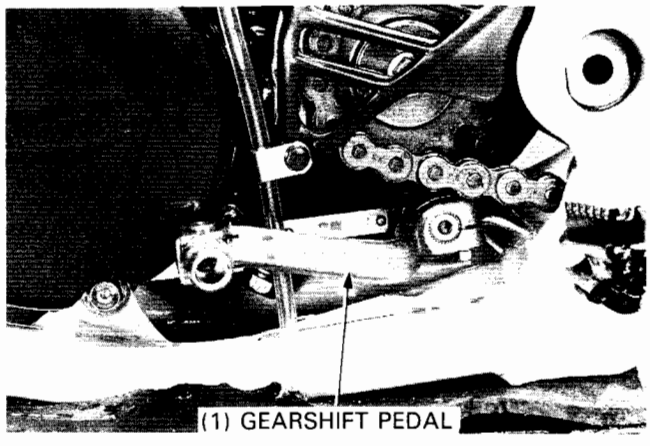


Gearshift Linkage

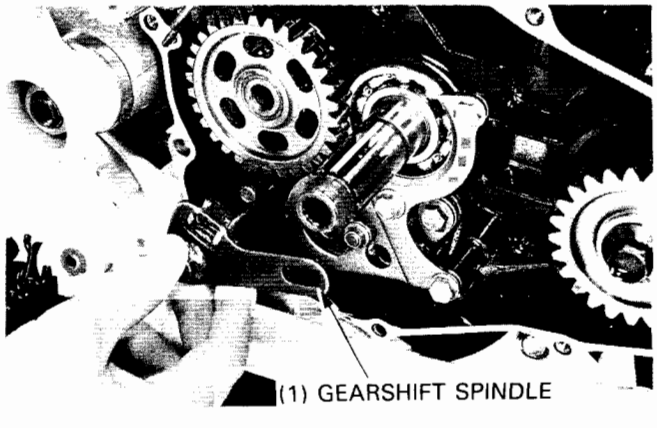
Removal

Remove the right crankcase cover (page 8-3).
Remove the clutch (page 8-4).

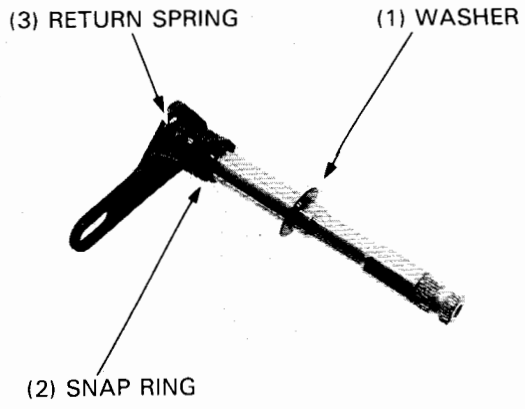
Remove the gearshift pedal.



Pull the gearshift spindle out of the crankcase.



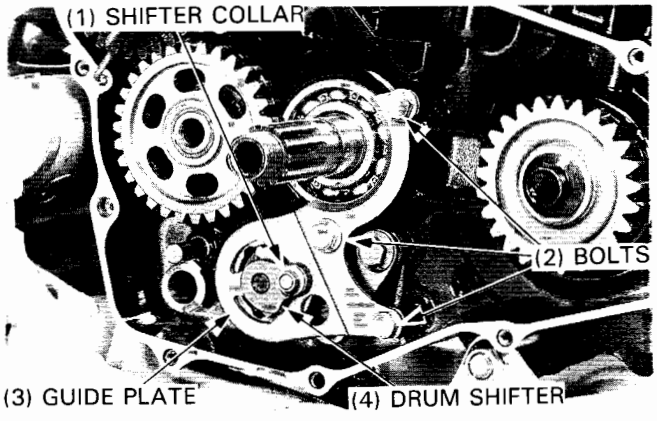
Remove the washer, snap ring and return spring from the gearshift spindle.



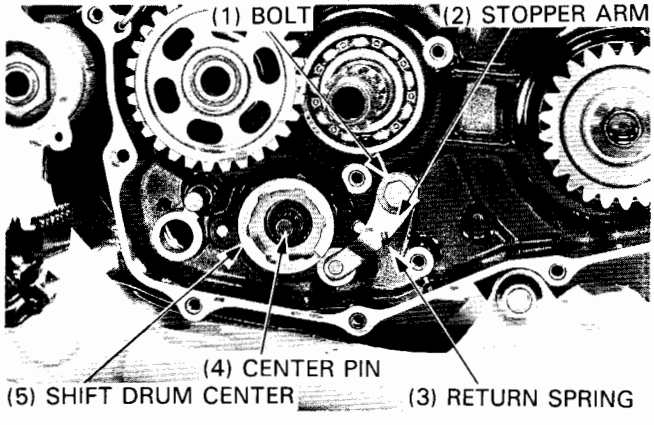
Remove the shifter collar.
Remove the guide plate and drum shifter as an assembly by removing the three bolts.

NOTE

- Do not let the ratchet pawl fall when removing the guide plate and drum shifter.

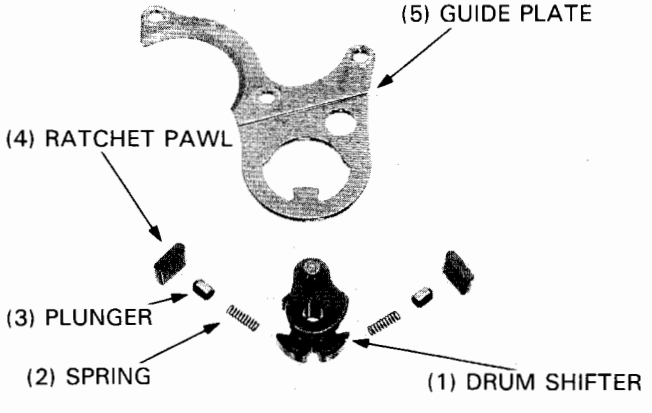


Remove the bolt, stopper arm and return spring.
Remove the shift drum center pin and shift drum center.



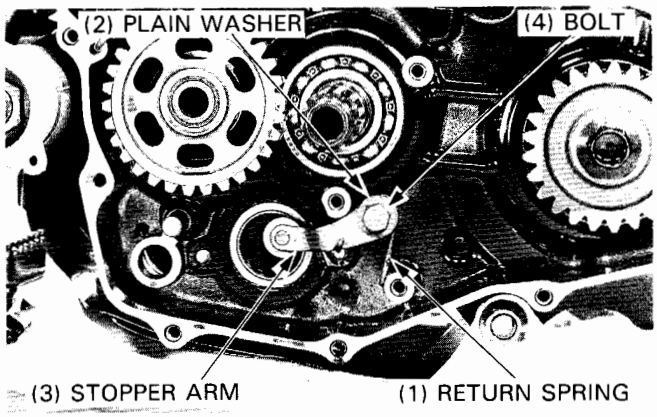
Installation

Apply clean transmission oil to the ratchet pawls, springs and plungers.
Assemble the drum shifter, springs, plungers and ratchet pawls in the guide plate.



Install the return spring, plain washer and stopper arm and tighten the stopper arm bolt.

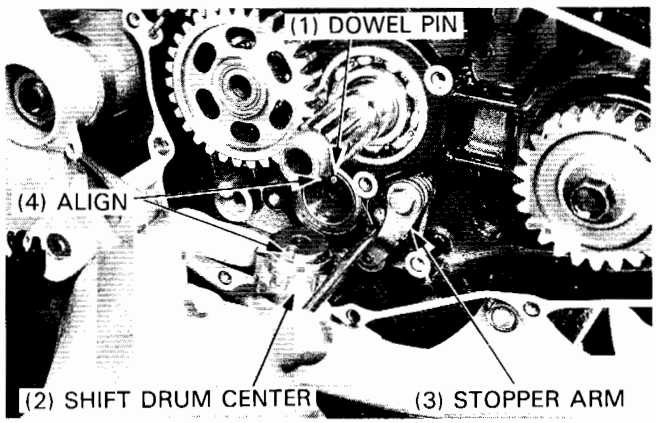
Torque: 12 N·m (1.2 kg-m, 9 ft-lb)



Install the dowel pin into the shift drum.

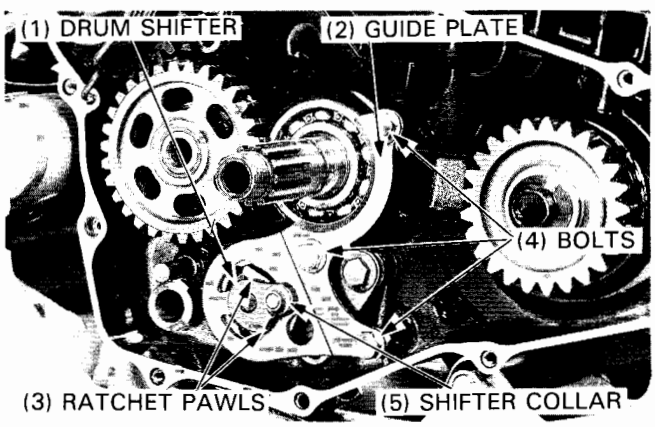
Install the drum center aligning the hole with the dowel on the shift drum while holding the stopper arm down with the screwdriver.
Install and tighten the shift drum center pin.

Torque: 22 N·m (2.2 kg-m, 16 ft-lb)



Set the drum center in a position other than neutral.
Install the drum shifter with the guide plate while holding onto the ratchet pawls.
Install and tighten the guide plate bolts.

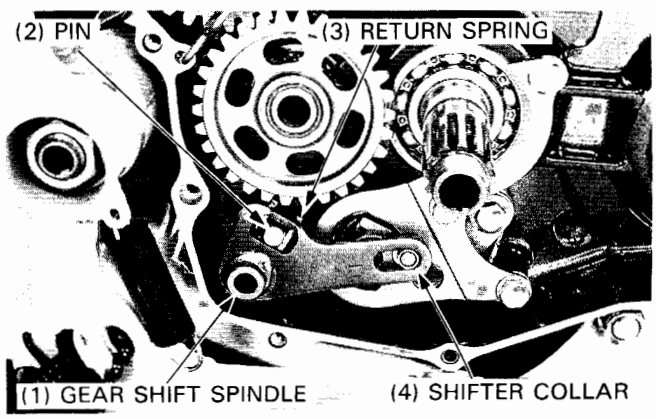
Install the shifter collar onto the drum shifter.



Assemble and install the gearshift spindle, aligning the return spring ends with the pin and the hole in the spindle with the shifter collar.

NOTE

- Do not forget to install the thrust washer onto the gearshift spindle.

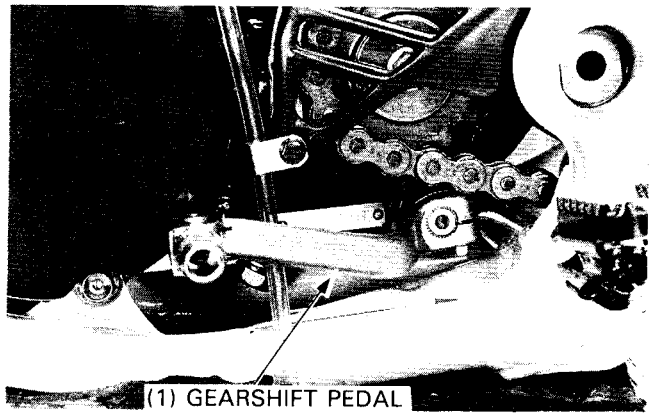


Install the gearshift pedal and tighten the pinch bolt.

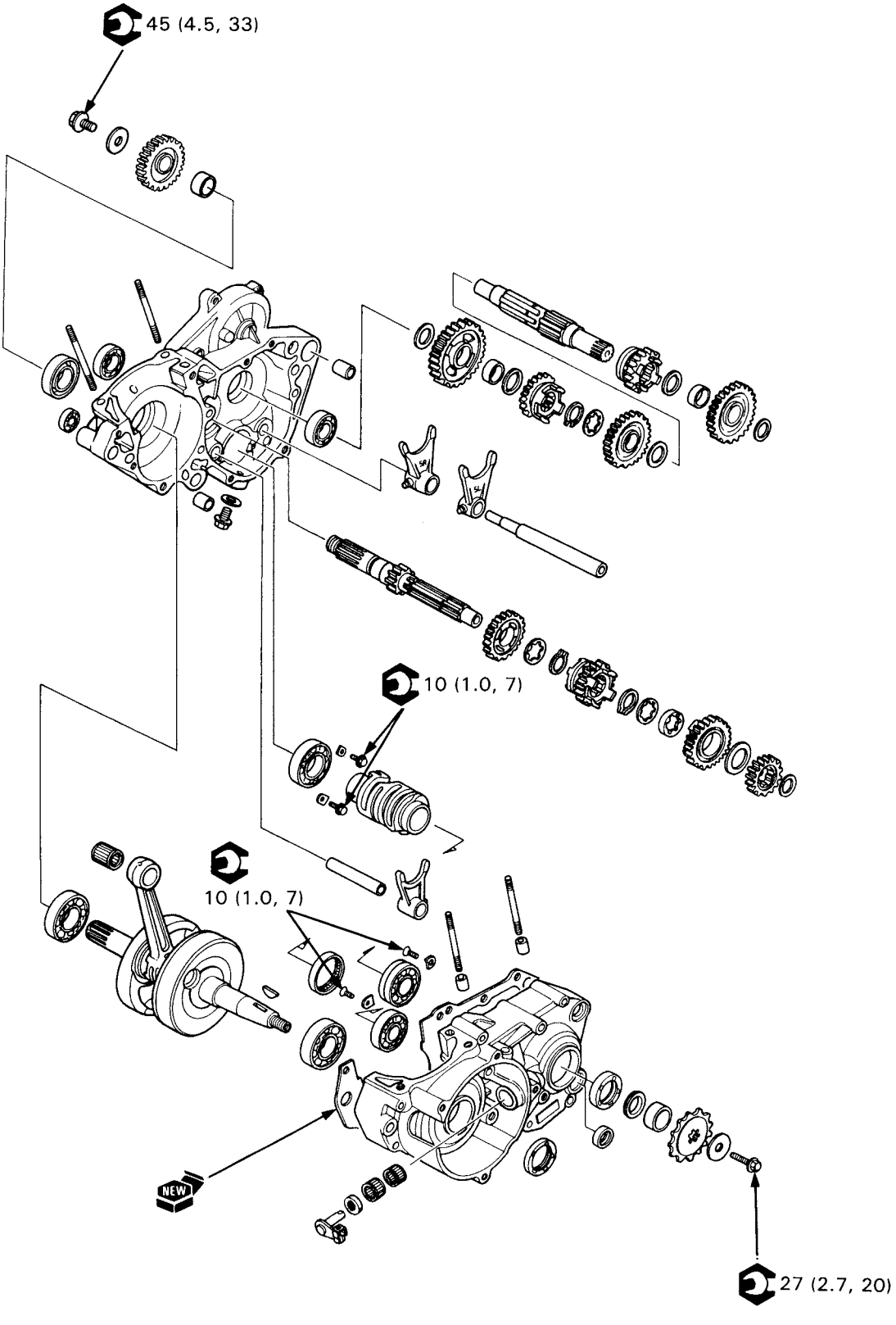
Torque: 12 N·m (1.2 kg-m, 9 ft-lb)

Check the gearshift linkage operation.

Install the clutch (page 8-6).
Install the right crankcase cover (page 8-3).



MEMO


45 (4.5, 33)
10 (1.0, 7)
10 (1.0, 7)
NEW
27 (2.7, 20)

9. Crankcase/Crankshaft/Transmission

Service Information	**9-1**	**Crankshaft Removal**	**9-6**
Troubleshooting	**9-2**	**Crankcase Bearings/Replacement**	**9-7**
Crankcase Separation	**9-3**	**Crankshaft Installation**	**9-9**
Transmission	**9-4**	**Crankcase Assembly**	**9-10**

Service Information

General

- The crankcase halves must be separated to service the transmission and crankshaft.
- The following parts must be removed before separating the crankcase:
  - —Cylinder head/cylinder/piston (Section 7)
  - —Clutch/kickstarter/gearshift linkage (Section 8)
  - —Alternator (Section 13)

Specifications

mm (in)

Item			Standard	Service Limit
Shift fork I.D.	C		11.003—11.021 (0.4332—0.4339)	11.04 (0.435)
	R/L		12.041—12.056 (0.4741—0.4746)	12.07 (0.475)
Shift fork pawl thickness			4.93—5.00 (0.194—0.197)	4.8 (0.19)
Shift fork shaft O.D.	C		10.966—10.984 (0.4317—0.4324)	10.95 (0.431)
	R/L		11.983—11.994 (0.4718—0.4722)	11.98 (0.472)
Gear I.D.	M4 gear	'92	28.007—28.028 (1.1026—1.1035)	28.05 (1.104)
		After '92	28.000—28.021 (1.1024—1.1032)	28.05 (1.104)
	M5 gear		25.020—25.041 (0.9850—0.9859)	25.07 (0.987)
	C1 gear		22.020—22.041 (0.8669—0.8678)	22.07 (0.869)
	C2 gear		27.020—27.041 (1.0638—1.0646)	27.07 (1.066)
	C3 gear		25.020—25.041 (0.9850—0.9859)	25.07 (0.987)
Mainshaft O.D. at M5 gear			24.959—24.980 (0.9826—0.9835)	24.94 (0.982)
Gear-to-shaft clearance at M5 gear			0.040—0.082 (0.0016—0.0032)	0.130 (0.0051)
Countershaft O.D.	At C3 gear		24.959—24.980 (0.9826—0.9835)	24.94 (0.982)
	At C2 gear		26.959—26.980 (1.0614—1.0622)	26.94 (1.061)
	At C1 bushing		18.959—18.980 (0.7464—0.7472)	18.94 (0.746)
Bushing I.D.	C1		19.000—19.021 (0.7480—0.7489)	19.04 (0.750)
	C2		27.000—27.021 (1.0630—1.0638)	27.04 (1.065)
Bushing O.D.	C1		21.979—22.000 (0.8653—0.8661)	21.95 (0.864)
	C2		26.979—27.000 (1.0622—1.0630)	26.95 (1.061)
	M4		27.959—27.980 (1.1007—1.1016)	27.94 (1.100)
Gear-to-bushing clearance	C1/C2		0.020—0.062 (0.0008—0.0024)	0.120 (0.0047)
	M4		0.270—0.069 (0.0106—0.0027)	0.110 (0.0043)
Gear bushing-to-shaft clearance	C1/C2		0.020—0.062 (0.0008—0.0024)	0.100 (0.0039)
Connecting rod big end side clearance			0.4—0.8 (0.016—0.031)	0.9 (0.04)
Connecting rod big end axial/radial play			0.008—0.020 (0.0003—0.0008)	0.03 (0.001)
Crankshaft journal runout			—	0.05 (0.002)

Torque Values

Primary drive gear bolt	45 N·m (4.5 kg-m, 33 ft-lb)
Drive sprocket bolt	27 N·m (2.7 kg-m, 20 ft-lb)
Countershaft bearing set plate screw	10 N·m (1.0 kg-m, 7 ft-lb) Apply locking agent to the threads.

Tools

Special

Assembly collar	07965—1660301
Assembly bolt	07965—1660200
Threaded adapter	07965—KA30000
Crankcase puller	07937—4300000
Universal bearing puller	07631—0010000 or Equivalent commercially available in U.S.A.
Bearing remover	07936—3710300
Remover handle	07936—3710100
Remover weight	07741—0010201 or 07936—3710200

Common

Attachment, 37 x 40 mm	07746—0010200
Attachment, 52 x 55 mm	07746—0010400
Attachment, 62 x 68 mm	07746—0010500
Pilot, 17 mm	07746—0040400
Pilot, 25 mm	07746—0040600
Pilot, 28 mm	07746—0041100
Driver	07749—0010000
Universal holder	07725—0030000 or Equivalent commercially available in U.S.A.
Gear holder	07724—0010100 or Equivalent commercially available in U.S.A.

Troubleshooting

Engine noise
- Worn connecting rod big end bearing
- Worn crankshaft bearing(s)
- Worn transmission bearing(s)

Transmission jumps out of gear
- Worn gear dogs or slots
- Bent shift fork shaft
- Broken shift drum stopper
- Worn or bent shift forks
- Broken gearshift linkage return spring

Hard to shift
- Improper clutch operation
- Incorrect transmission oil viscosity
- Incorrect clutch adjustment
- Bent shift fork
- Bent shift fork shaft
- Damaged shift drum cam grooves
- Bent gearshift spindle

Engine vibration
- Excessive crankshaft runout

Crankcase Separation

Remove the engine from the frame (Section 6).

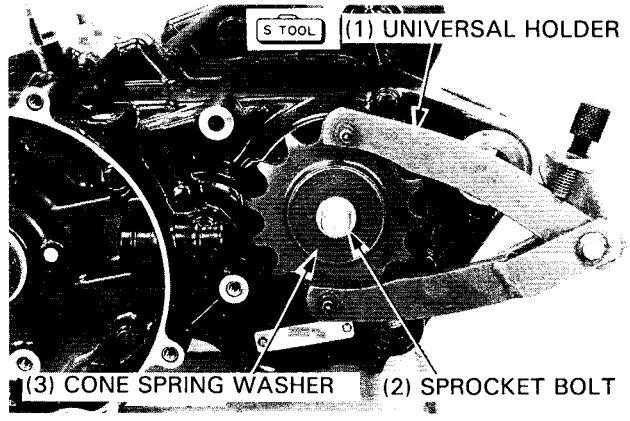
NOTE

- Refer to Service Information (page 9-1) for removal of necessary parts before separating the crankcase.

Hold the drive sprocket with the universal holder and loosen the drive sprocket bolt.

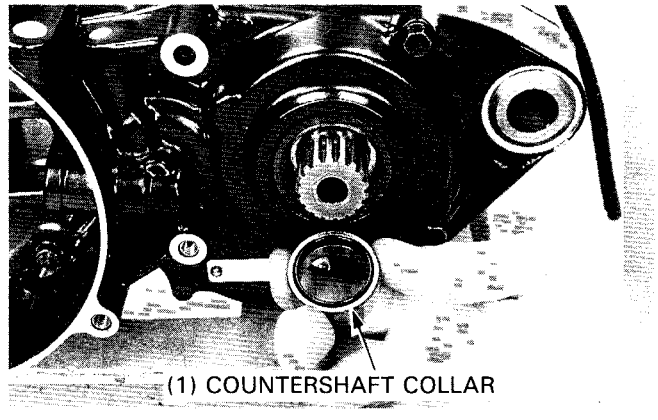
S. TOOL

Universal holder — **07725—0030000 or Equivalent commercially available in U.S.A.**



Remove the cone spring washer and drive sprocket.

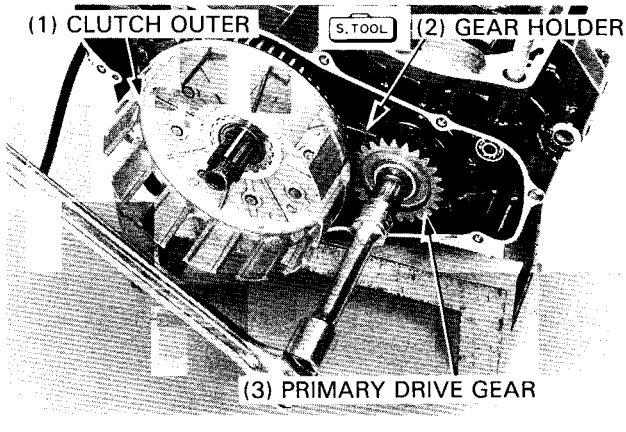
Remove the collar on the coutershaft.



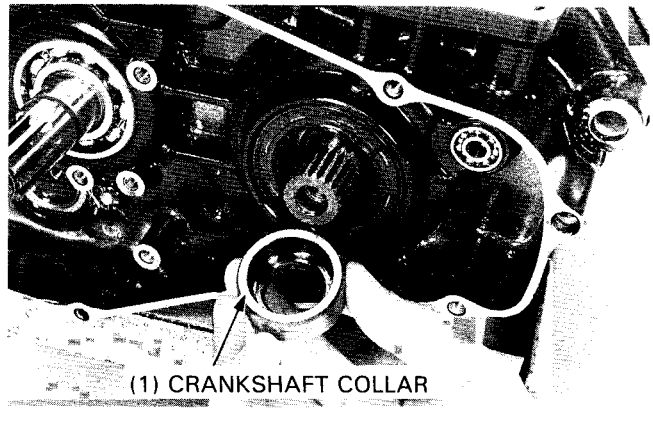
Temporarily install the clutch outer guide, needle bearing and clutch outer onto the mainshaft.
Attach the gear holder between the primary drive and driven gears.
Remove the primary drive gear bolt, then remove the lock washer and drive gear.

S. TOOL

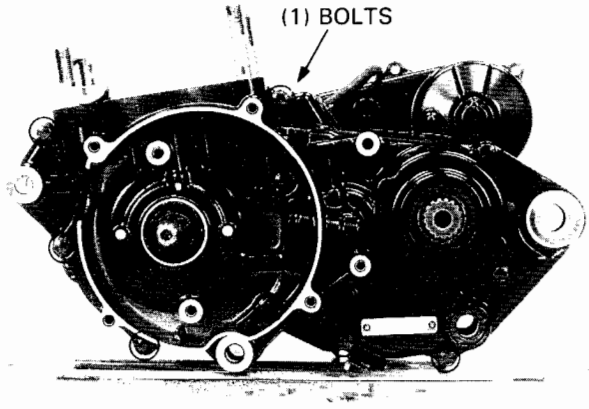
Gear holder — **07724—0010100 or Equivalent commercially available in U.S.A.**



Remove the collar on the crankshaft.



Remove the crankcase bolts.



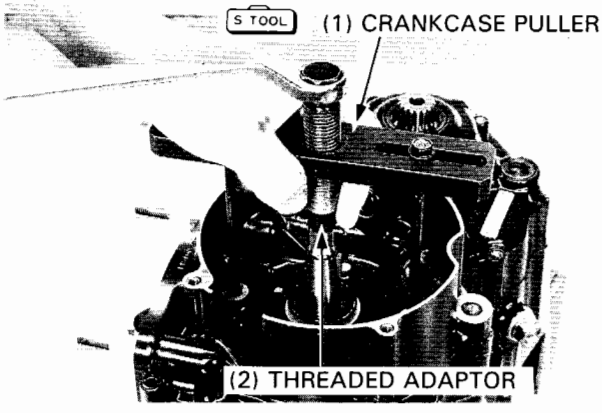
Attach the crankcase puller to the left crankcase and separate the left crankcase from the right crankcase.

NOTE

- Separate the right and left crankcases from each other while tapping them at several locations with a soft hammer.

CAUTION

- **Do not pry the crankcase halves apart with the end of a screwdriver.**



S. TOOL

Crankcase puller **07937–4300000**

Remove the gasket and dowel pins.

Transmission

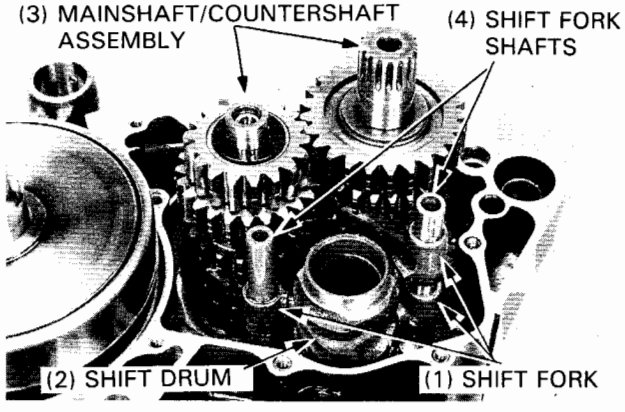
Disassembly

Separate the crankcase (page 9-3).

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

Remove the mainshaft and countershaft assemblies as a set from the right crankcase.

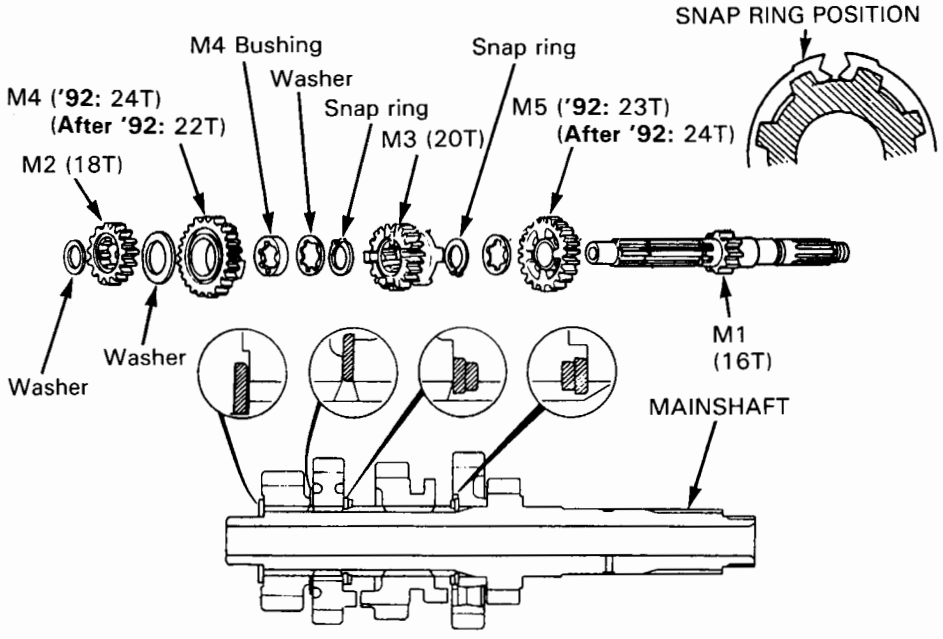
Disassemble the mainshaft and countershaft assemblies.



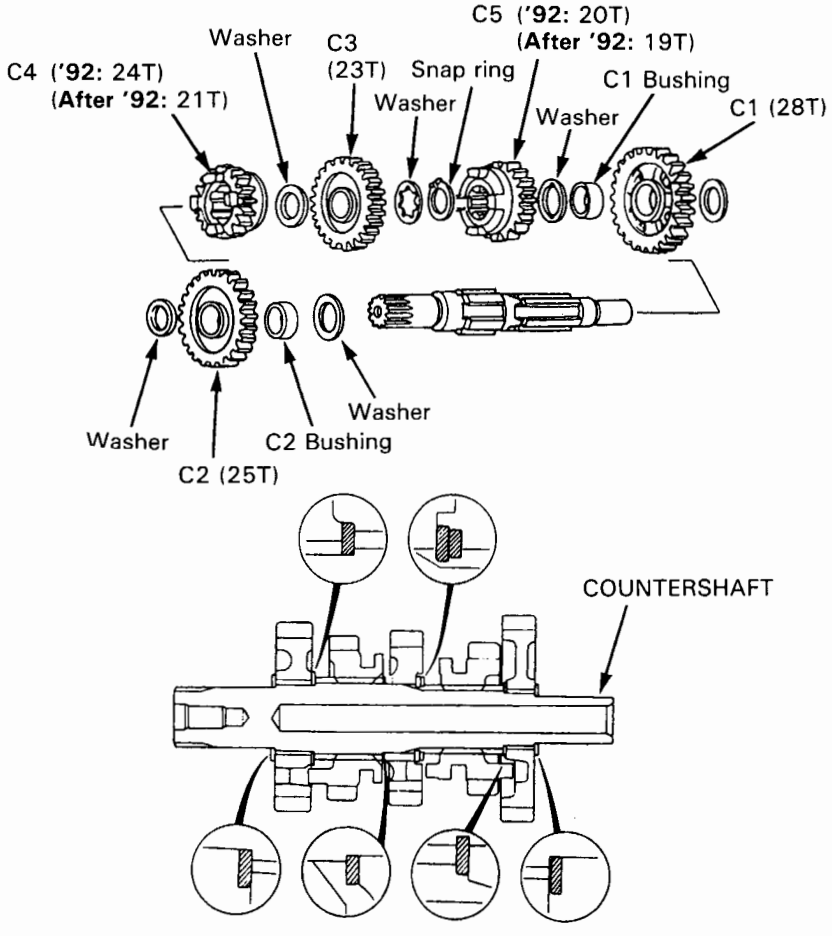
Assembly

Apply molybdenum oil solution for the mainshaft and countershaft.
Assemble the mainshaft and countershaft gears.

Mainshaft



Countershaft



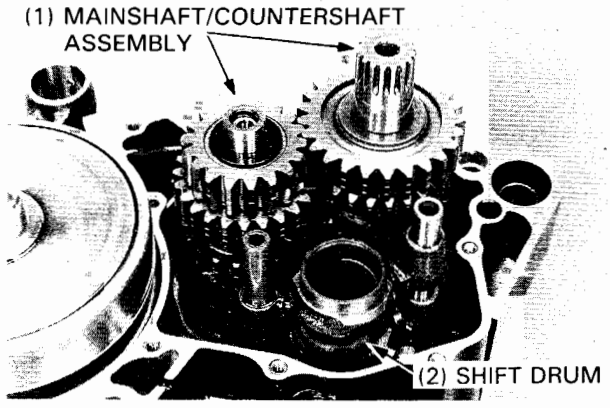
Coat each gear with transmission oil and check for smooth movement.

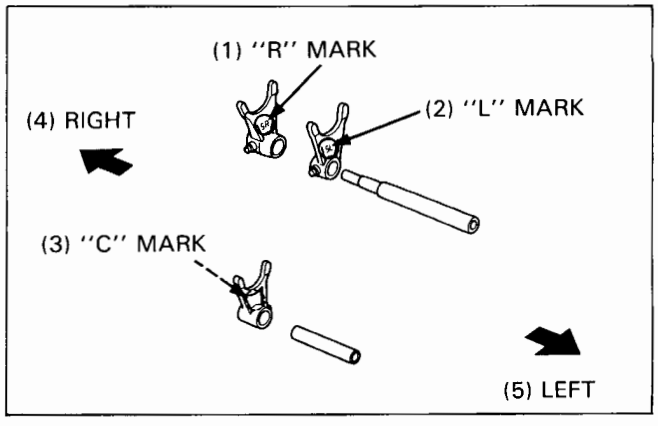
Lubricate the transmission bearings in the right crankcase with clean transmission oil.
Engage the mainshaft and countershaft gears and place into the right crankcase.

Install the shift drum.
Install the shift forks into the shifter gear grooves with the "R"/"L" marks facing up and the "C" mark facing down.
Slide the shift fork shafts through the shift forks, and into the crankcase.

After installing, check for smooth transmission operation.

Assemble the left crankcase onto the right crankcase (page 9-8).





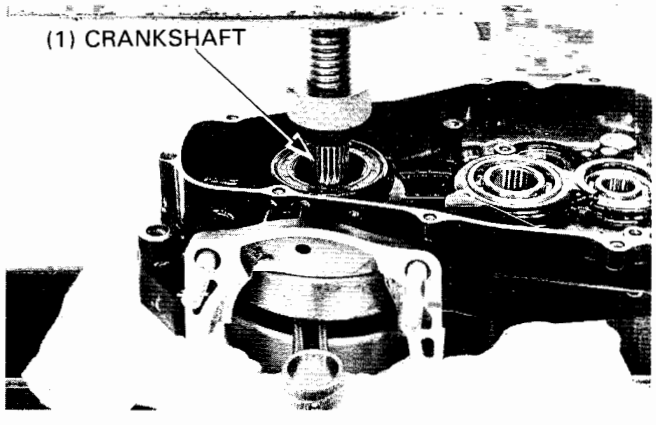
Crankshaft Removal

NOTE

- When removing, installing and inspecting the crankshaft, be careful not to dent or nick the crank weights.

Separate the crankcase (page 9-3).
Remove the transmission (page 9-4).

Remove the crankshaft from the right crankcase using a hydraulic press as shown.

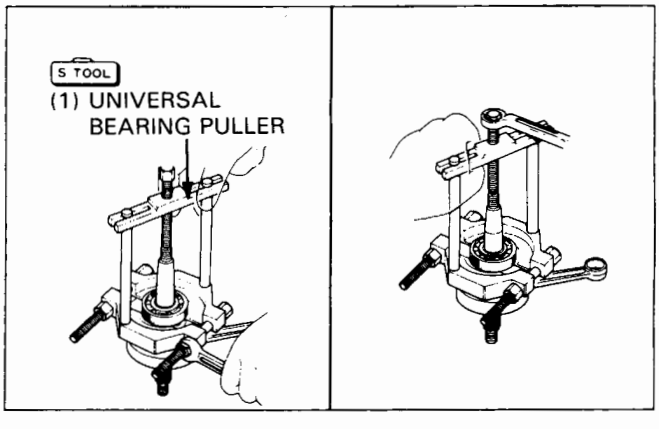


Remove the crankshaft oil seals and bearings from both crankcases.

If the crankshaft bearings are left on the crankshaft, remove them using the bearing puller.

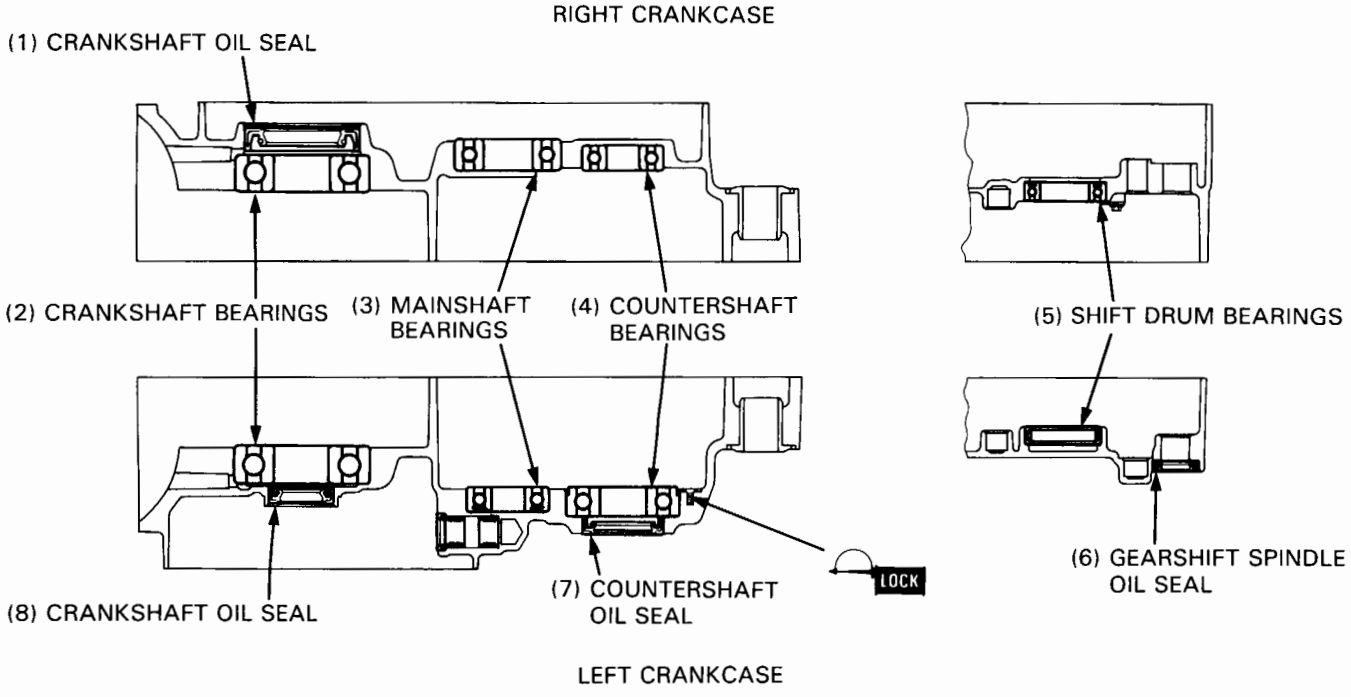
S. TOOL

Universal bearing puller — **07931—0010000 or Equivalent commercially available in U.S.A.**



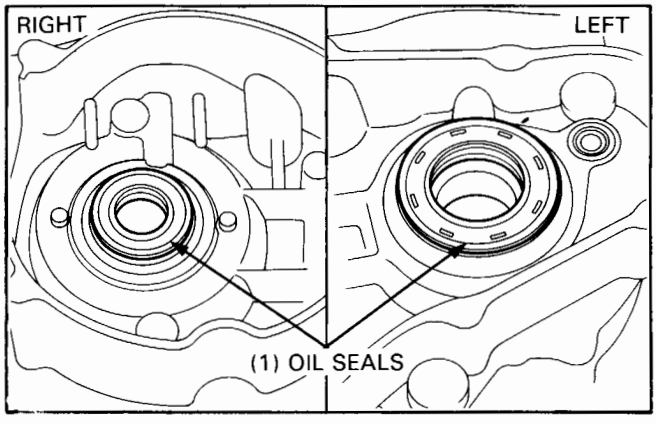
Crankcase Bearings/Replacement

Crankcase Bearing/Oil Seal Locations



Crankshaft Bearings

Remove the crankshaft oil seals and bearings from the both crankcase halves.



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

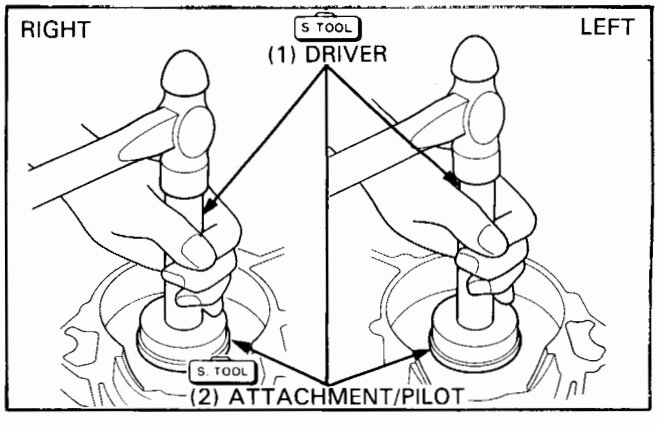
NOTE

- Drive the bearings into the cases sequarely; do not allow the bearings to tilt.

S. TOOL

Driver	**07746–0010000**
Attachment, 62 x 68 mm	**07746–0010500**
Pilot, 28 mm	**07746–0041100**

Pack grease into the seal lip cavity of a new right crankshaft oil seal.
Install the crankshaft oil seal into the right crankcase.



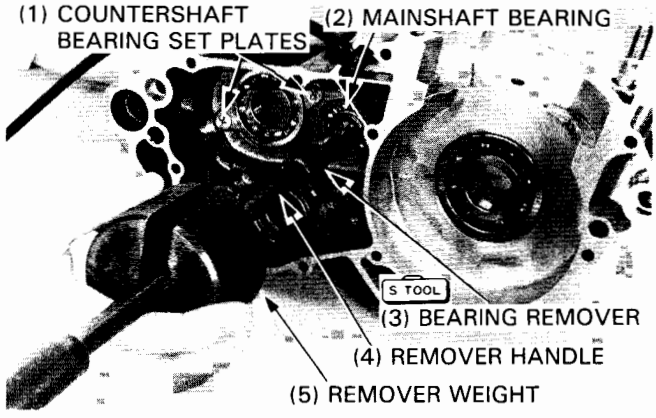
Transmission Bearings

Left Crankcase Bearings

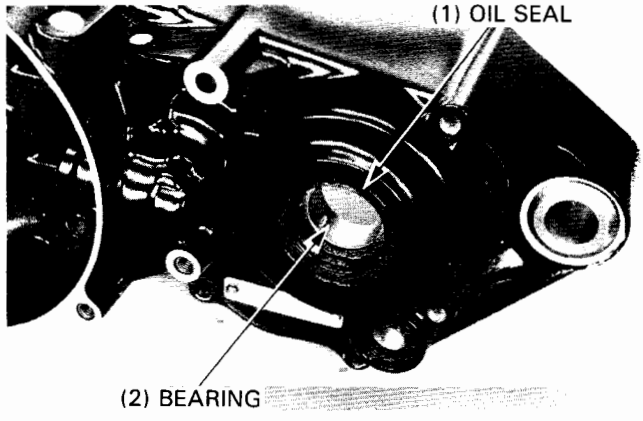
Remove the mainshaft bearing using the special tools.

S. TOOL	
Bearing remover	**07936—3710300**
Remover handle	**07936—3710100**
Remover weight	**07741—0010201 or 07936—3710200**

Remove the countershaft bearing set plates by removing the screws.

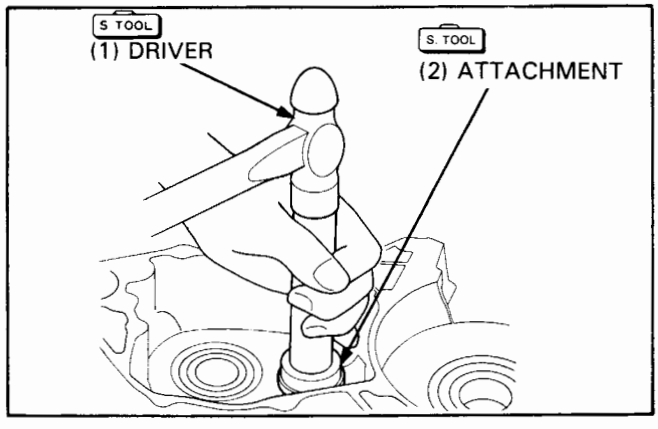


Remove the countershaft bearing.
Remove the gearshift drum bearing.
Remove the countershaft oil seal and bearing.



Drive in a new countershaft bearing.

S. TOOL	
Driver	**07749—0010000**
Attachment, 52 x 55 mm	**07746—0010400**



Apply a locking agent to the countershaft bearing set plate screws. Then torque the screws against the set plates.

Torque: 10 N·m (1.0 kg-m, 7 ft-lb)

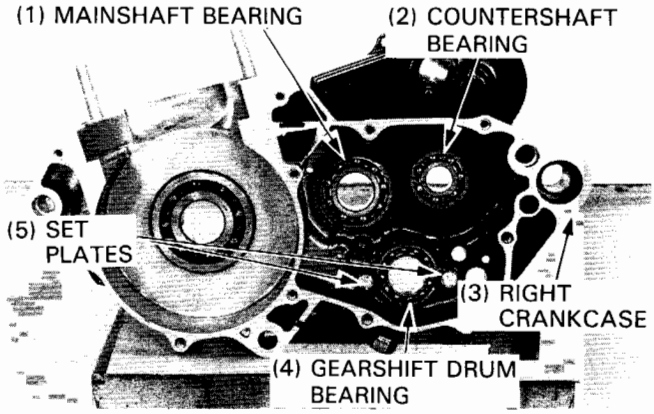
Drive in a new mainshaft bearing.

S. TOOL	
Driver	**07749—0010000**
Attachment, 37 x 40 mm	**07746—0010200**

Apply grease to the lip of the countershaft oil seal and install it.

Right Crankcase Bearings

Remove the mainshaft and countershaft bearngs.
Remove the shift drum bearing set plates and drive out the shift drum bearing toward the inside of the case.



Drive in a new mainshaft bearing.

S. TOOL

Driver	**07749—0010000**
Attachment, 52 x 55 mm	**07746—0010600**
Pilot, 25 mm	**07746—0040600**

Drive in a new gearshift drum bearing.

S. TOOL

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

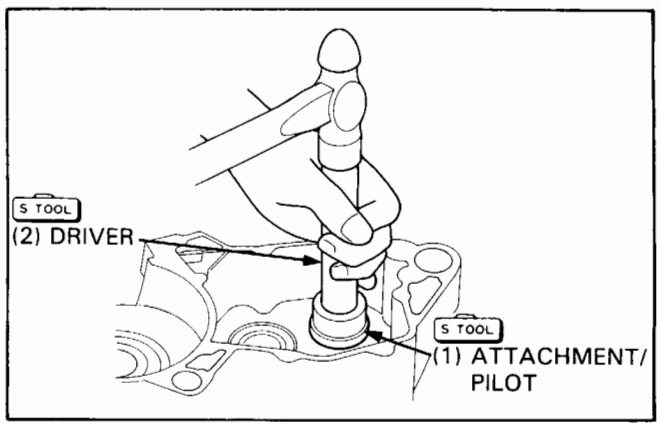
Install the gearshift drum set plates and tighten the bolts securely.

Torque: 10 N·m (1.0 kg-m, 7 ft-lb)

Drive in a new countershaft bearing.

S. TOOL

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

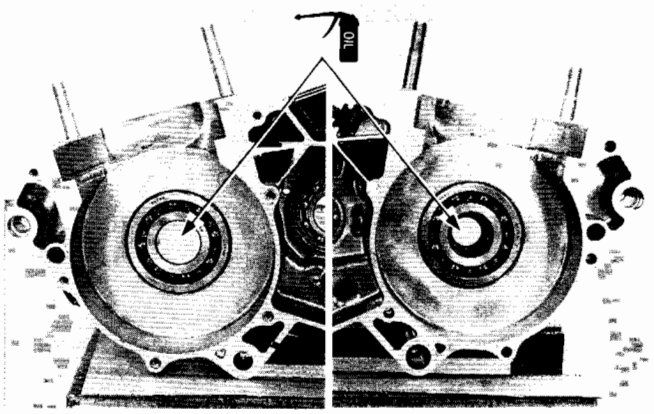


Crankshaft Installation

Pack grease into the seal lip cavity of a new right crankshaft oil seal, and install the seal into the right crankcase.
Clean the both crankcase mating surfaces and check for wear or damage before assembling.

NOTE

- If there is minor roughness or irregularities on the crankcase mating surfaces, dress them with an oil stone.

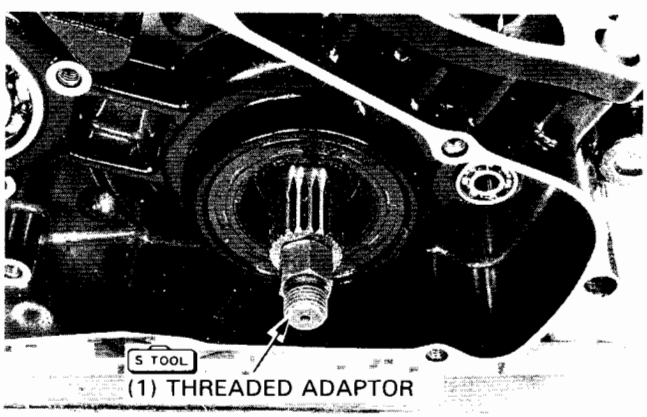


After cleaning, lubricate the crankshaft bearings with clean 2-stroke oil of the recommended type.

Install the threaded adaptor onto the crankshaft.

S. TOOL

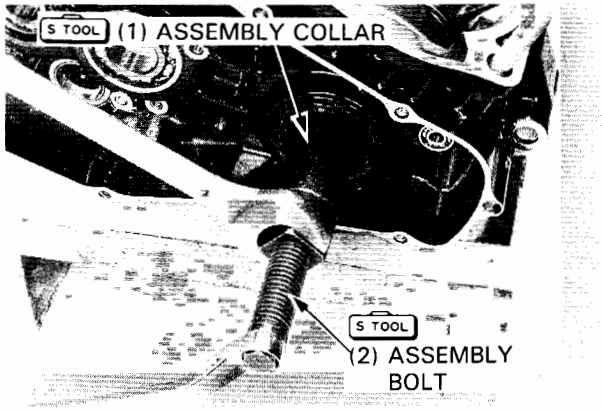
Threaded adaptor	**07965—KA30000**



Install the crankshaft into the right crankcase using the special tool.

S. TOOL

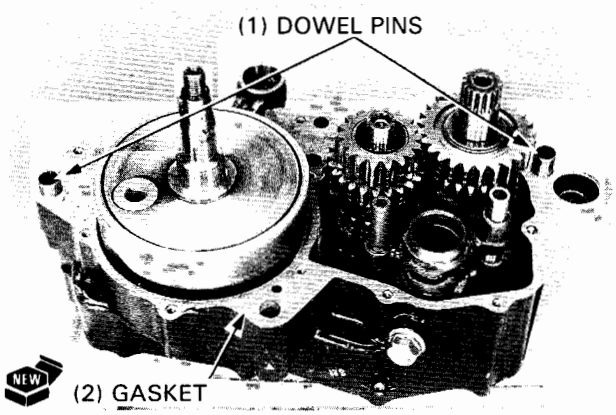
Assembly bolt	**07965–1660200**
Assembly collar	**07965–1660301**



Crankcase Assembly

Install the crankshaft (page 9-9).
Install the transmission (page 9-5).

Install the dowel pins and a new gasket.

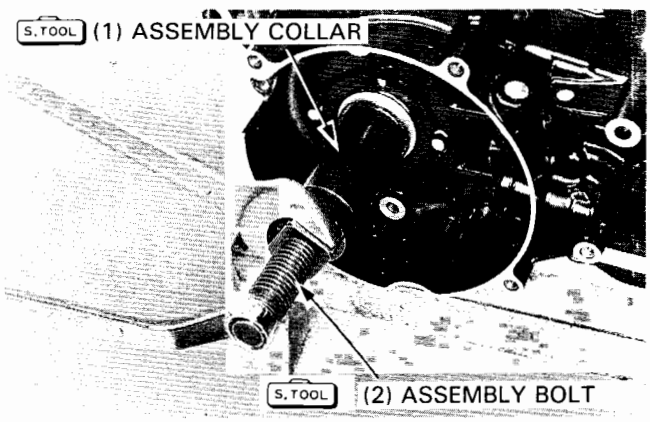


Install the crankcase breather tube onto the left crankcase.
Lubricate the transmission bearings in the left crankcase.

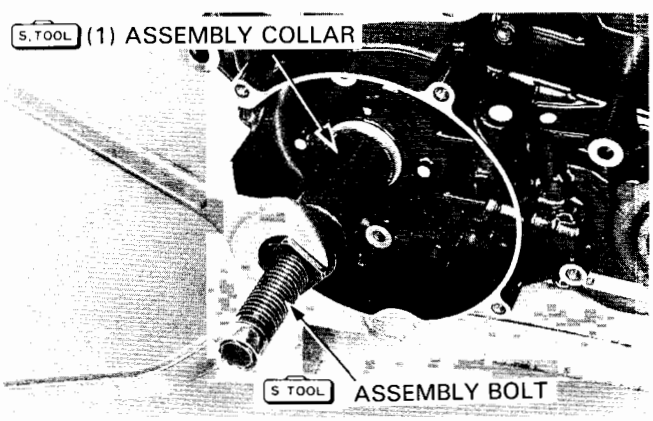
Place the left crankcase onto the right crankcase and assemble the crankcase halves using the special tool.

S. TOOL

Assembly bolt	**07965–1660200**
Assembly collar	**07965–1660301**



Pack grease into the seal lip cavity of a new left crankcase oil seal, and press the seal into the crankcase with the special tool until the seal is flush with the case.

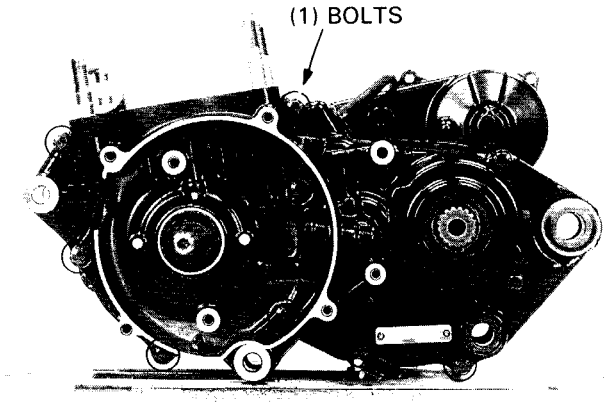


Install and tighten the crankcase bolts in a crisscross pattern in 2 or 3 steps.

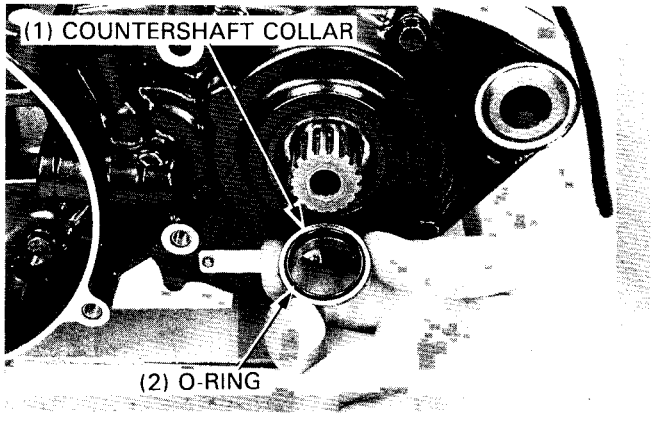
Carefully trim the protruding gasket material from the cylinder base gasket surface.

CAUTION

- **Do not let gasket material fall into the crankcase.**
- **Do not damage the base gasket surface.**



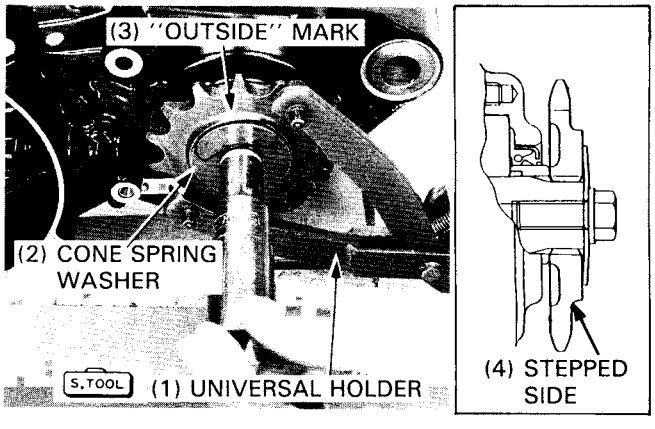
Coat the O-ring and the inside of the collar with grease.
Install the O-ring and collar onto the countershaft.



Install the drive sprocket onto the countershaft with its stepped side facing out.
Install the cone spring washer with the "OUTSIDE" mark facing out.
Hold the drive sprocket with the universal holder and tighten the sprocket bolt.

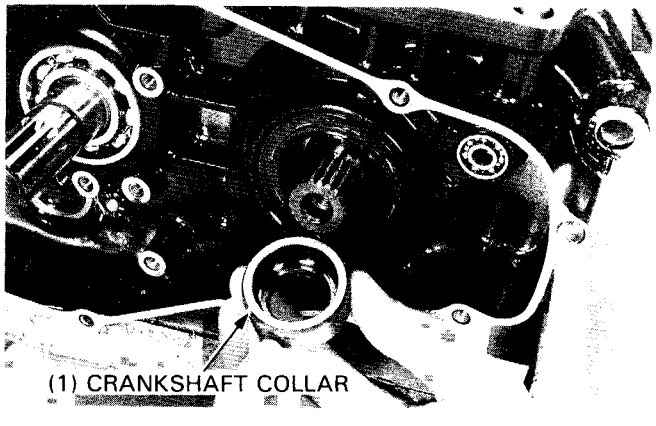
S. TOOL

Universal holder — **07725—0030000 or Equivalent commercially available in U.S.A.**



Install the collar onto the crankshaft.

Install the primary drive gear and lock washer.



Install the clutch outer guide, needle bearing and clutch outer onto the mainshaft.
Attach the gear holder between the primary drive and driven gears.

S. TOOL

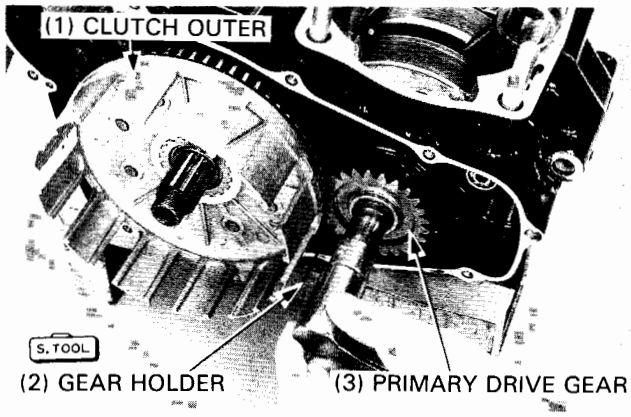
Gear holder	**07724–0010100 or Equivalent commercially available in U.S.A.**

Install and tighten the primary drive gear bolt to the specified torque.

Torque: 45 N·m (4.5 kg-m, 33 ft-lb)

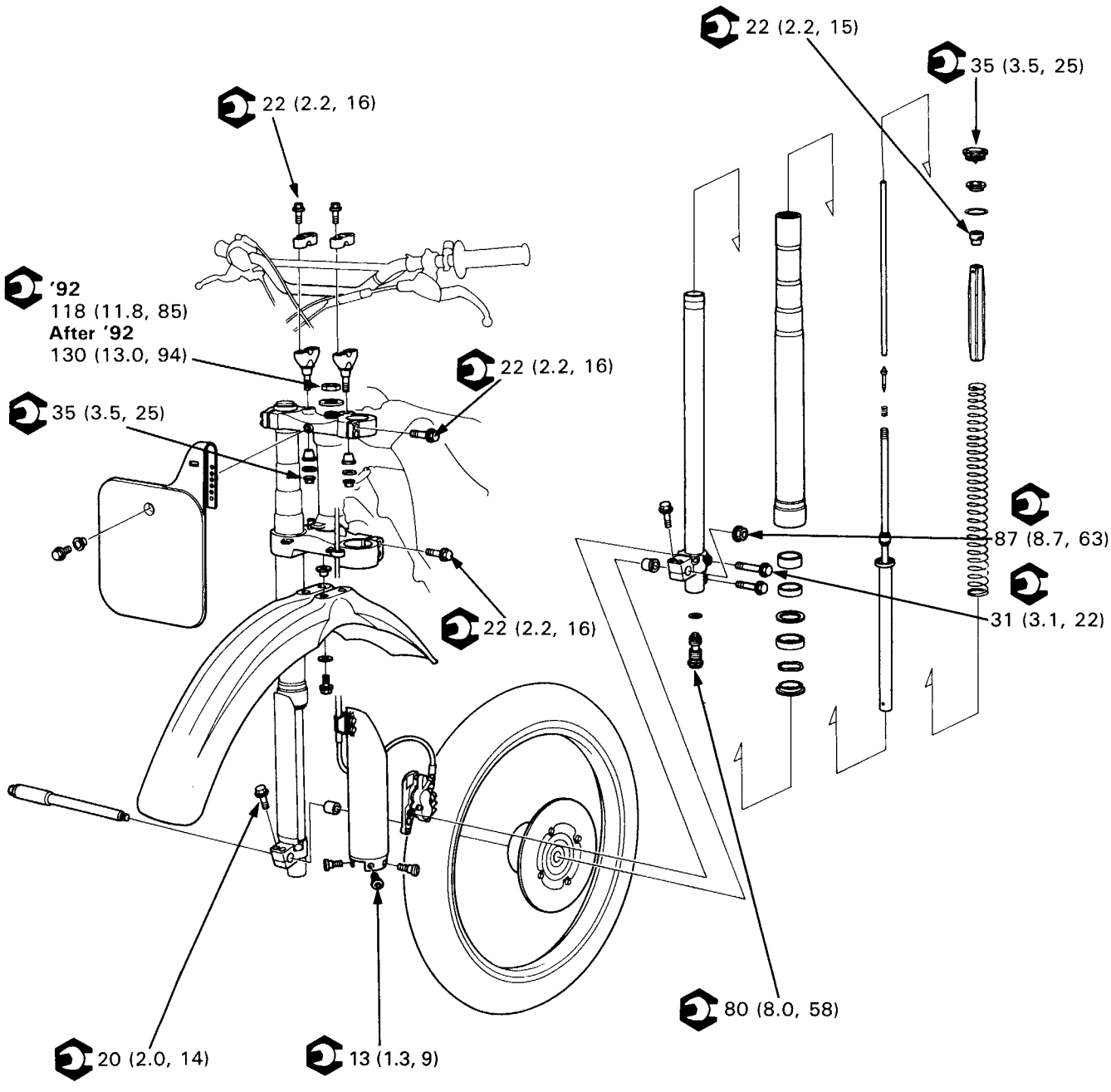
Install the remaining parts in the reverse order of removal.

Install the engine in the frame (Section 6).



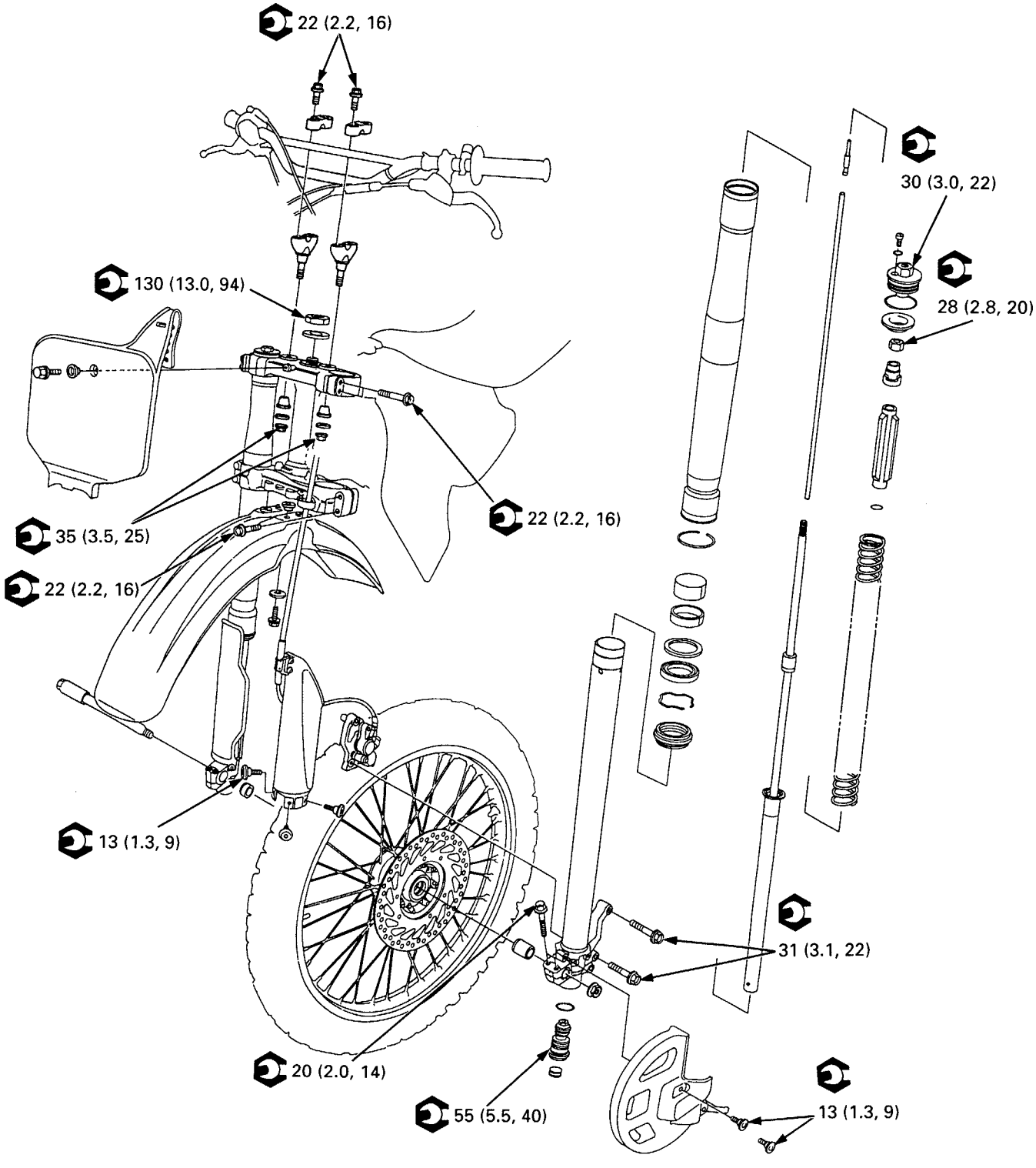
MEMO

'92–'94:

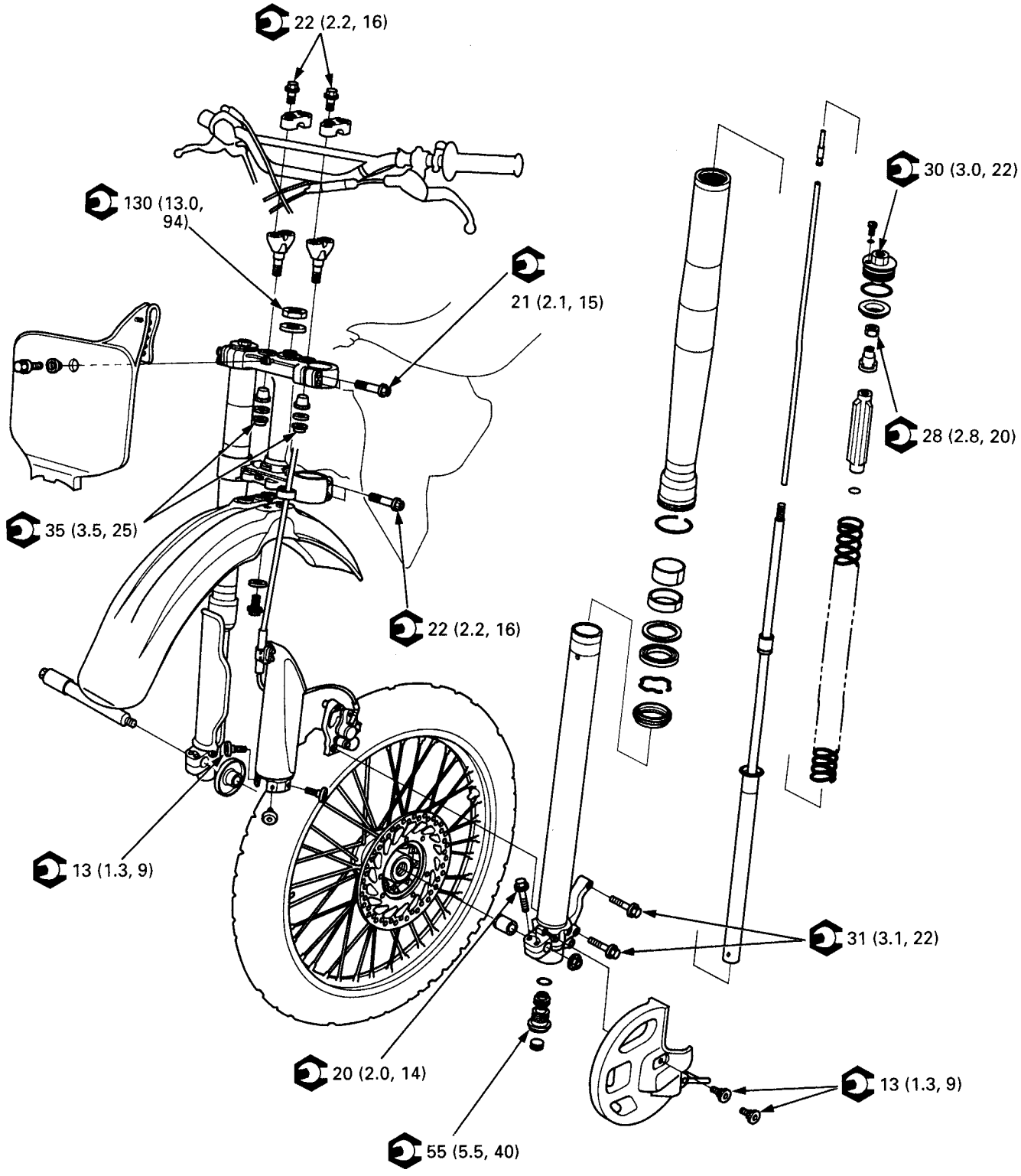

22 (2.2, 15)
35 (3.5, 25)
22 (2.2, 16)
'92
118 (11.8, 85)
After '92
130 (13.0, 94)
22 (2.2, 16)
35 (3.5, 25)
87 (8.7, 63)
31 (3.1, 22)
22 (2.2, 16)
80 (8.0, 58)
20 (2.0, 14)
13 (1.3, 9)

10. Front Wheel/Suspension/Steering

'95:



After '95:


22 (2.2, 16)
130 (13.0, 94)
21 (2.1, 15)
30 (3.0, 22)
28 (2.8, 20)
35 (3.5, 25)
22 (2.2, 16)
13 (1.3, 9)
31 (3.1, 22)
20 (2.0, 14)
13 (1.3, 9)
55 (5.5, 40)

Service Information	10-3	Fork (After '94)	10-21
Troubleshooting	10-5	Handlebar	10-31
Front Wheel	10-6	Steering Stem	10-33
Fork ('92–'94)	10-13		

Service information

General

Brake dust may contain asbestos fibers.
Never use an air hose or dry brush to clean brake assemblies.

⚠ WARNING

- **Inhaled asbestos fibers have been found to cause respiratory disease and cancer.**

Keep grease off of brake pads and disc.

⚠ WARNING

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

- This section covers maintenance of the front wheel, fork and steering stem.
- Optional lighter and heavier than standard springs are available. Refer to General Information, Section 1 for details.
- A box or work stand is required to support the motorcycle.
- For optimum performance, the fork should be completely disassembled and cleaned after the first three hours of riding. Thereafter it should be disassembled and cleaned on a regular basis to ensure maximum performance and service life.
- Refer to Section 12 for brake system information.

Specifications

Unit: mm (in)

Item		Standard	Service Limit
Axle runout		———	0.20 (0.008)
Front wheel rim runout	Radial	———	2.0 (0.08)
	Axial	———	2.0 (0.08)
Fork spring free length	'92 – '94	512 (20.2)	504.4 (19.86)
	'95	490 (19.3)	487 (19.2)
	After '95	470 (18.5)	467 (18.4)
Fork tube runout		———	0.20 (0.008)
Fork oil capacity (Std.)	'92	582 cc (19.7 oz)	———
	'93	572 cc (19.3 oz)	———
	'94	567 cc (19.2 oz)	———
	'95	525 cc (17.8 oz)	———
	After '95	636 cc (21.5 oz)	———
Fork oil level (Std.)	'92	95 (3.74)	———
	'93	105 (4.13)	———
	'94	110 (4.33)	———
	'95	98 (3.86)	———
	After '95	92 (3.62)	———
Recommended fork oil		Pro Honda Suspension Fluid SS-7M or equivalent	

Torque Values

Steering stem nut ('92)	118 N·m (11.8 kg-m, 85 ft-lb)
(After '92)	130 N·m (13.0 kg-m, 94 ft-lb)
Steering stem adjusting nut ('92 – '94)	2.0 N·m (0.2 kg-m, 1.4 ft-lb)
(After '94)	13 N·m (1.3 kg-m, 9 ft-lb)
Fork top bridge pinch bolts ('92 – '94)	22 N·m (2.2 kg-m, 16 ft-lb)
(After '95)	21 N·m (2.1 kg-m, 15 ft-lb)
Fork bottom bridge pinch bolts	22 N·m (2.2 kg-m, 16 ft-lb)
Handlebar upper holder bolts	22 N·m (2.2 kg-m, 16 ft-lb)
Handlebar lower holder nuts	35 N·m (3.5 kg-m, 25 ft-lb)
Front axle ('92 – '94)	87 N·m (8.7 kg-m, 63 ft-lb)
(After '94)	88 N·m (8.8 kg-m, 64 ft-lb)
Front axle holder bolts	20 N·m (2.0 kg-m, 14 ft-lb)
Spoke nipple	3.8 N·m (0.38 kg-m, 2.7 ft-lb)
Fork protector mounting bolts	13 N·m (1.3 kg-m, 9.4 ft-lb)
Fork cap ('92 – '94)	35 N·m (3.5 kg-m, 25 ft-lb)
(After '94)	30 N·m (3.0 kg-m, 22 ft-lb)
Fork center bolt	80 N·m (8.0 kg-m, 58 ft-lb) Apply locking agent to the threads
Rim lock nut	13 N·m (1.3 kg-m, 9 ft-lb)
Front brake disc mounting bolts ('92 – '94)	20 N·m (2.0 kg-m, 14 ft-lb) Apply locking agent to the threads
(After '94)	16 N·m (1.6 kg-m, 12 ft-lb)
Front disc cover mounting bolt	13 N·m (1.3 kg-m, 9 ft-lb)
Front brake caliper mounting bolts	31 N·m (3.1 kg-m, 22 ft-lb)
Fork cap lock nut ('92 – '94)	22 N·m (2.2 kg-m, 16 ft-lb)
(After '94)	28 N·m (2.8 kg-m, 20 ft-lb)
Clutch lever bracket holder bolts	10 N·m (1.0 kg-m, 7 ft-lb)
Engine stop switch clamp screw	1.5 N·m (0.15 kg-m, 1.1 ft-lb)
Front master cylinder holder bolts	10 N·m (1.0 kg-m, 7 ft-lb)
Throttle cable end cover screw	1.5 N·m (0.15 kg-m, 1.1 ft-lb)
Throttle housing bolts	10 N·m (1.0 kg-m, 7 ft-lb)

Tools

Special

Bearing race remover	07948 – 4630100
Steering stem driver	07946 – MB00000
Steering stem socket	07916 – KA50100
Fork damper holder	07PMB – KZ40100
Fork slider spacer	07KMZ – KZ30101
Oil seal driver ('92 – '95)	07KMD – KZ30100
Oil seal driver attachment ('92 – '95)	07NMD – KZ30100
Oil seal driver (After '95)	07TMD – MAC0100

Common

Attachment, 32 x 35 mm	07746 – 0010100	
Attachment, 42 x 47 mm	07746 – 0010300	
Attachment, 52 x 55 mm	07746 – 0010400	
Driver	07749 – 0010000	
Pilot, 17 mm ('92 – '94)	07746 – 0040400	
Pilot, 20 mm (After '94)	07746 – 0040500	
Bearing remover head, 17 mm ('92 – '94)	07746 – 0050500	or Equivalent commercially available in U.S.A.
Bearing remover head, 20 mm (After '94)	07746 – 0050600	
Bearing remover shaft	07746 – 0050100	
Spoke nipple wrench	07JMA – MR60100	

Troubleshooting

Hard steering
- Steering adjusting nut too tight
- Faulty steering head bearings
- Insufficient tire pressure

Steers to one side or does not track straight
- Bent fork tube
- Bent front axle
- Wheel installed incorrectly
- Unequal oil quantity in each fork tube
- Faulty steering head bearing
- Bent frame
- Worn wheel bearing
- Worn swingarm pivot components

Front wheel wobbling
- Bent rim
- Worn front wheel bearings
- Bent spokes
- Faulty tire
- Axle not tightened properly

Soft suspension
- Insufficient fluid in fork
- Fork oil viscosity too thin
- Weak fork springs - if free length is OK, go to optional stiffer spring

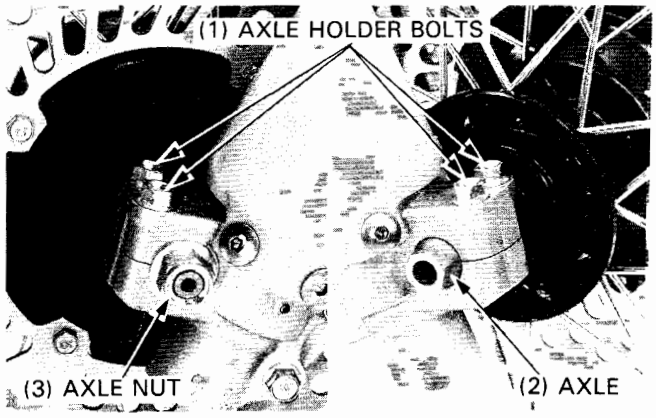
Hard suspension
- Fork oil level too high (too much oil)
- Fork oil viscosity too thick
- Fork tube(s) bent and/or fork sliders are damaged

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

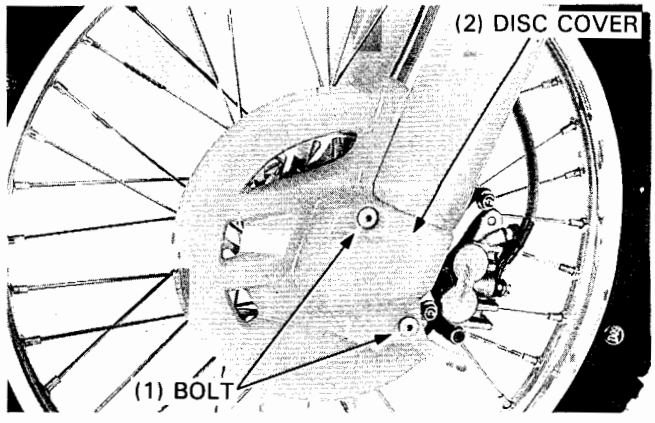
Front Wheel

Removal

'92–'94:
Remove the axle nut and loosen the axle holder bolts.
Remove the axle, then remove the front wheel.



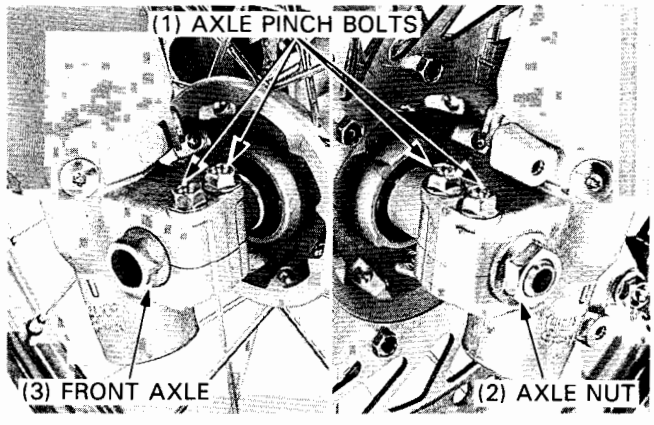
After '94:
Remove the front brake disc cover mounting bolts.



Remove the axle nut.
Remove the axle pinch bolts and pull out the axle.
Remove the front wheel assembly.

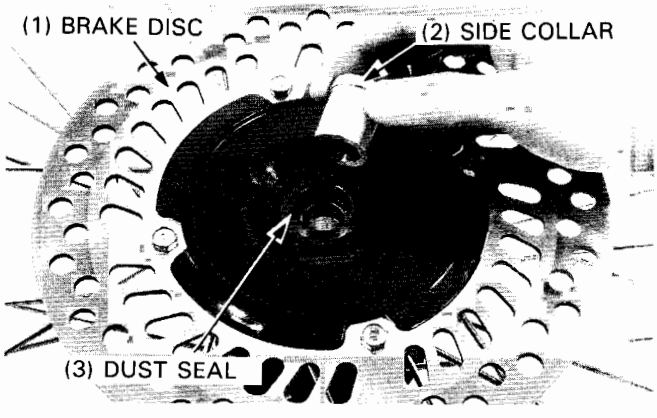
NOTE

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



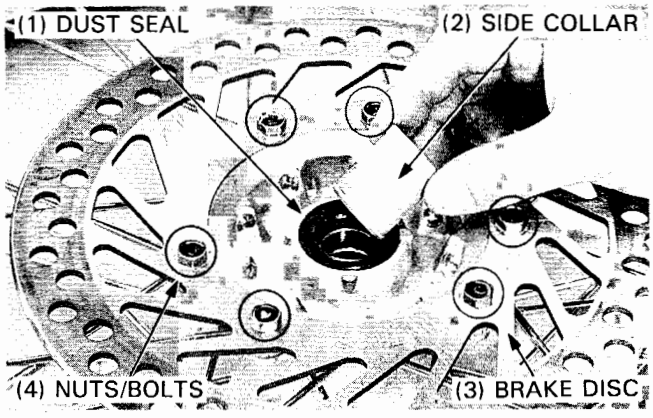
Disassembly

'92–'94:
Remove the following:
– Side collars
– Dust seals
– Brake disc bolts and disc/wheel hub cover.



After '94:
Remove the following:
– Side collars
– Dust seals
– Brake disc nuts, bolts and disc

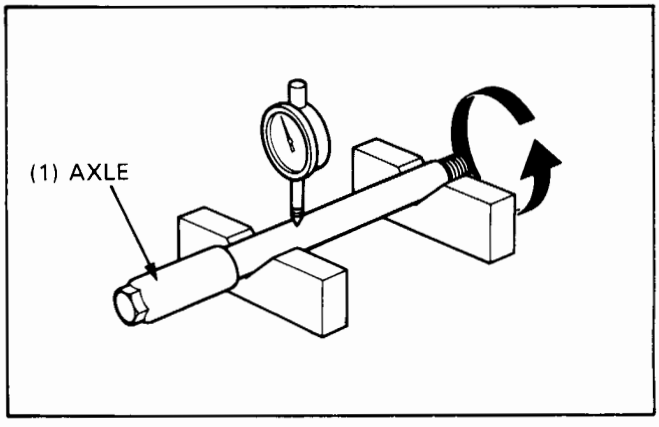
If necessary, remove the tire, tube, rim band and the rim lock.



Inspection

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

Service Limit: 0.2 mm (0.008 in)

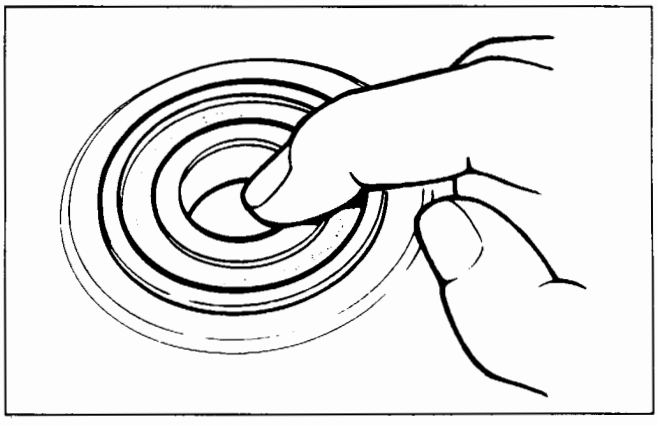


Wheel Bearings
Turn the inner race of each bearing with your finger.
The bearings should turn smoothly and quietly.
Also check that the bearing outer races fit tightly in the hub.

Remove and discard the bearings if the races do not turn smoothly, quietly, or if they fit loosely in the hub (page 10-6).

NOTE

- Replace wheel bearings in pairs.



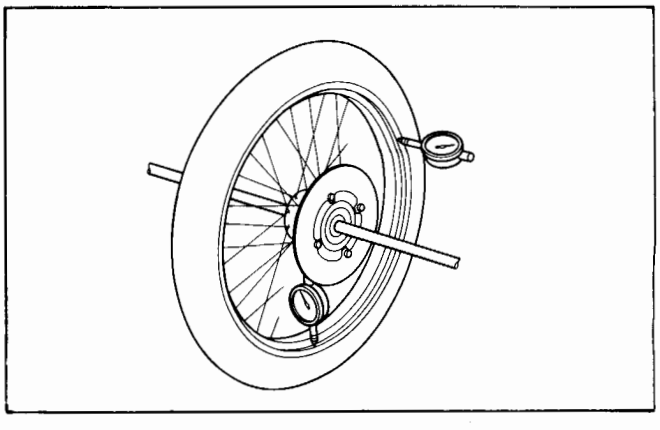
Wheel Rim
Check the rim runout by placing the wheel on a truing stand. Then rotate the wheel by hand, and read the runout using a dial indicator.
Actual runout is 1/2 the total indicator reading.

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.

S. TOOL

Spoke nipple wrench — **07JMA–MR60100 or Equivalent commercially available in U.S.A.**

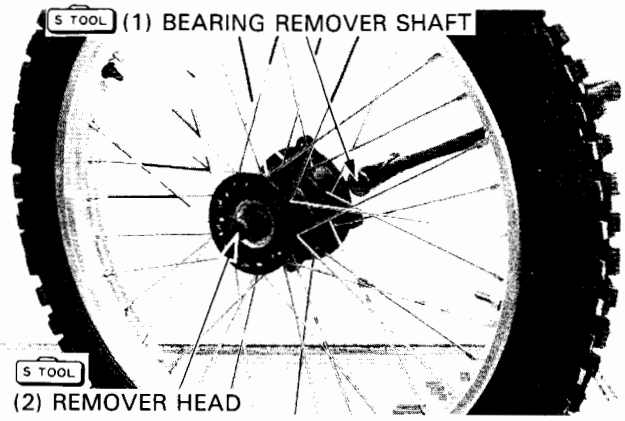


Torque: 3.8 N·m (0.38 kg-m, 2.7 ft-lb)

Remove the wheel bearings and distance collar from the wheel hub.

S TOOL

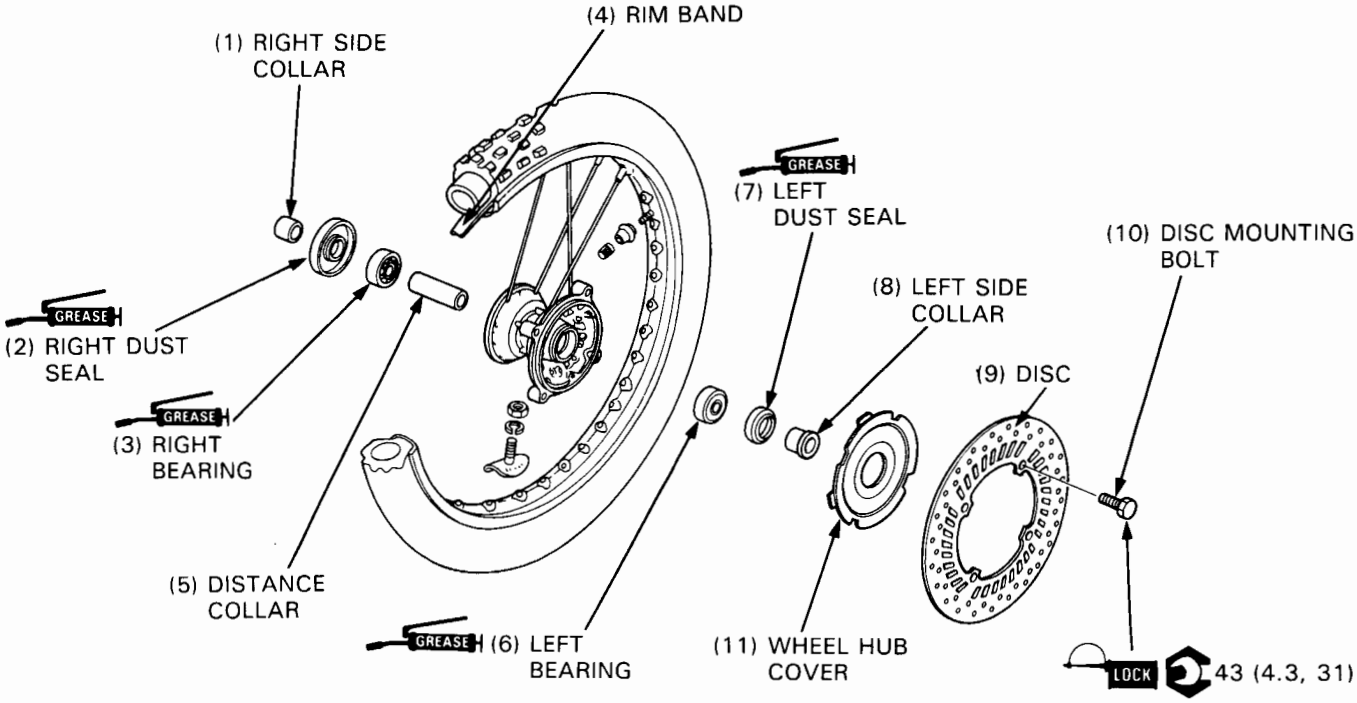
Bearing remover head, 17 mm ('92–'94)	**07746–0050500 or Equivalent commercially available in U.S.A.**
Bearing remover head, 20 mm (After '94)	**07746–0050600 or Equivalent commercially available in U.S.A.**
Bearing remover shaft	**07746–0050100 or Equivalent commercially available in U.S.A.**



NOTE

- Never install old bearings; once the bearings have been removed, they must be replaced with new ones.
- Replace wheel bearings in pairs.

Assembly ('92–'94)

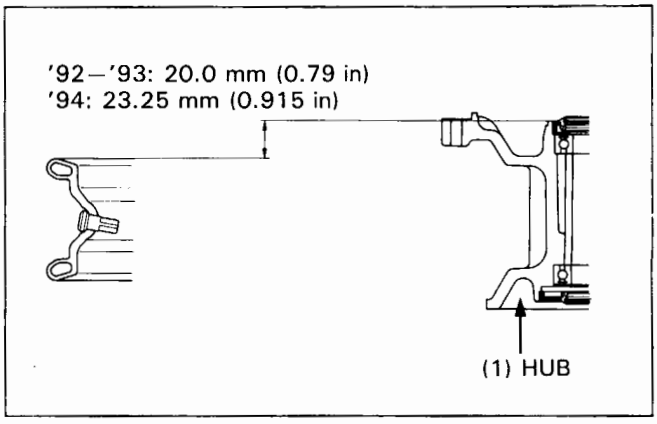


Place the *rim on* the work bench.
Place the hub with the right side down and begin lacing with new spokes.
Adjust the hub position so that the distance from the hub left end surface to the side of rim is 20.0 mm (0.79 in)/23.25 mm (0.915 in) as shown.
Tighten the spokes in 2 or 3 progressive steps.

S. TOOL

Spoke nipple wrench	**07JMA—MR60100 or Equivalent commercially available in U. S. A.**

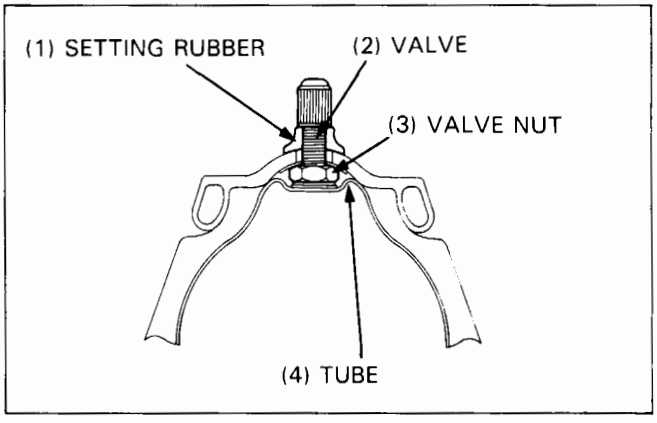
Torque: 3.8 N·m (0.38 kg-m, 2.7 ft-lb)



Check the rim runout (page 10-7).

Install the rim band, tube and tire.
Tighten the rim lock to the specified torque.

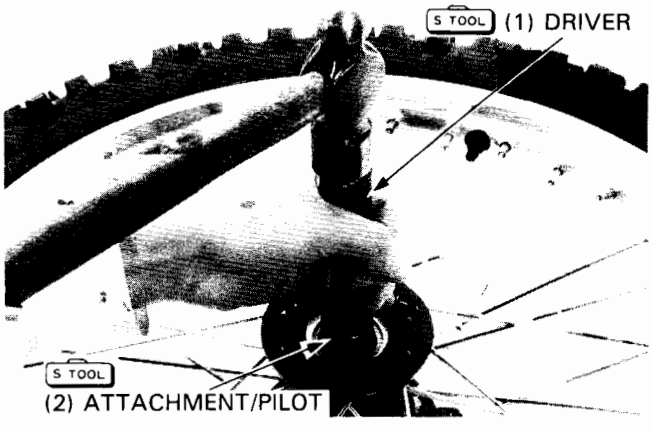
Torque: 13 N·m (1.3 kg-m, 9 ft-lb)



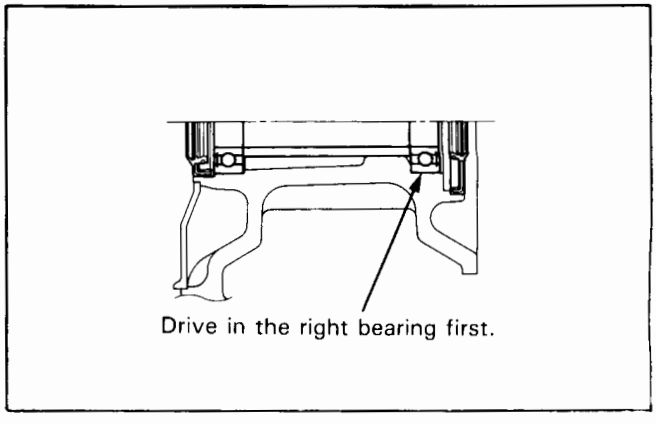
Pack new bearing cavities with grease.
Drive the right wheel bearing into the hub.

S. TOOL

Driver	**07749—0010000**
Attachment, 32 x 35 mm	**07746—0010100**
Pilot, 17 mm	**07746—0040400**



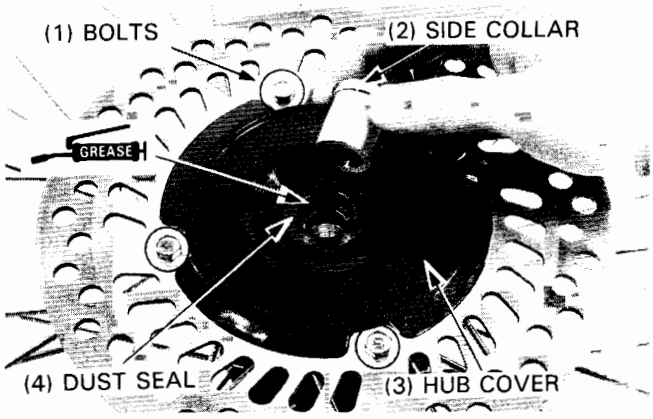
Install the distance collar. Then drive the right wheel bearing into the hub using the same tools.



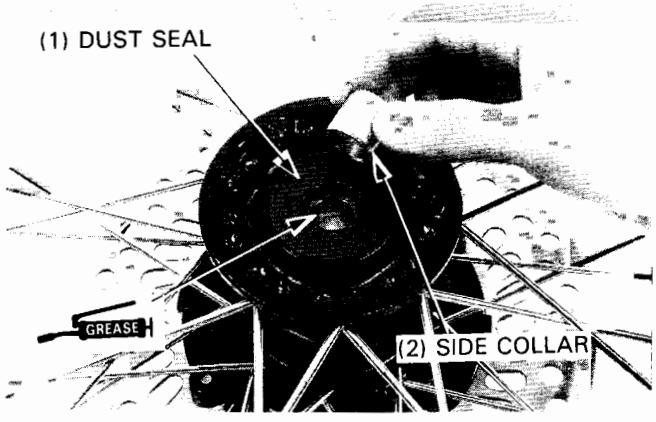
Install the brake disc and wheel hub cover onto the wheel hub with the minimum thickness marking (MIN TH 2.5 mm) facing out.
Clean and apply a Honda Aerobic Thread Lock or equivalent to the brake disc mounting bolts.
Tighten the brake disc mounting bolts to the specified torque.

Torque: 20 N·m (2.0 kg-m, 14 ft-lb)

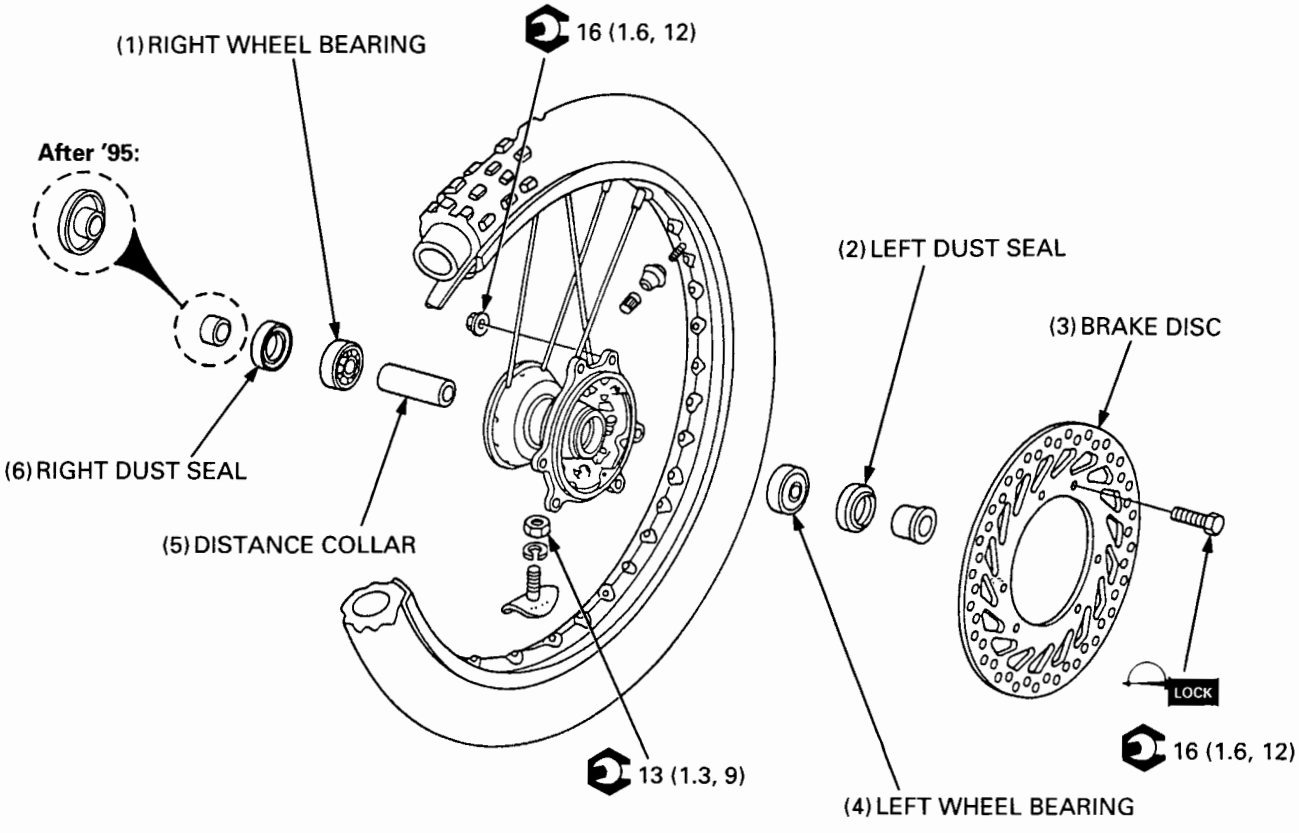
Pack the left dust seal lip with grease and install the left dust seals to the front wheel hub.
Install the side collar.



Pack the right dust seal lip with grease and install the right dust seals to the front wheel hub.
Install the side collar.



Assembly (After '94)

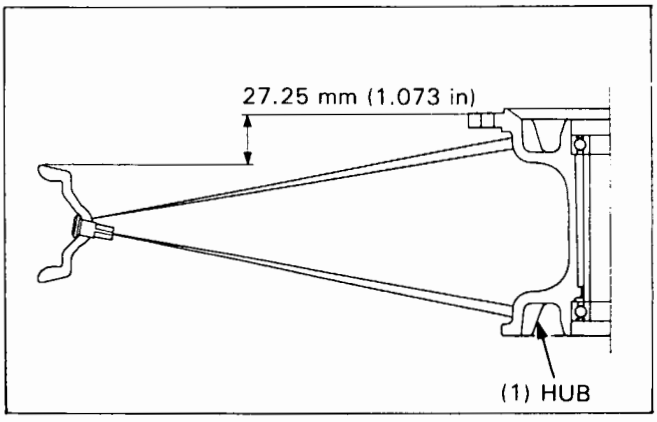


Place the rim on the work bench.
Place the hub with the right side down and begin lacing with new spokes.
Adjust the hub position so that the distance from the hub disc mounting surface to the side of rim is 27.25 mm (1.07 in) as shown.
Tighten the spokes in 2 or 3 progressive steps.

S. TOOL

Spoke nipple wrench	**07JMA—MR60100 or Equivalent commercially available in U. S. A.**

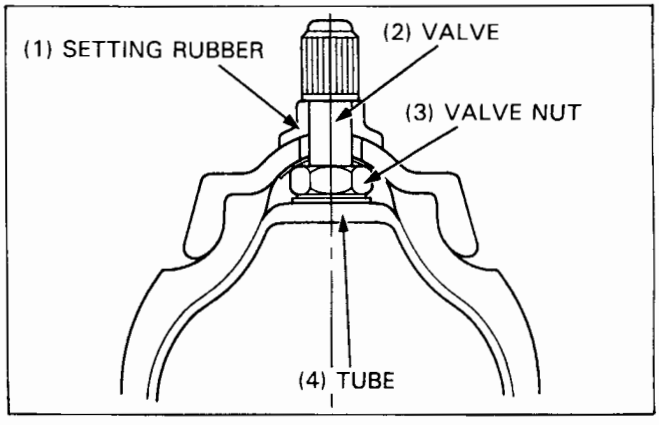
Torque: 3.8 N·m (0.38 kg-m, 2.7 ft-lb)



Check the rim runout (page 10-7).

Install the rim band, tube and tire.
Tighten the rim lock to the specified torque.

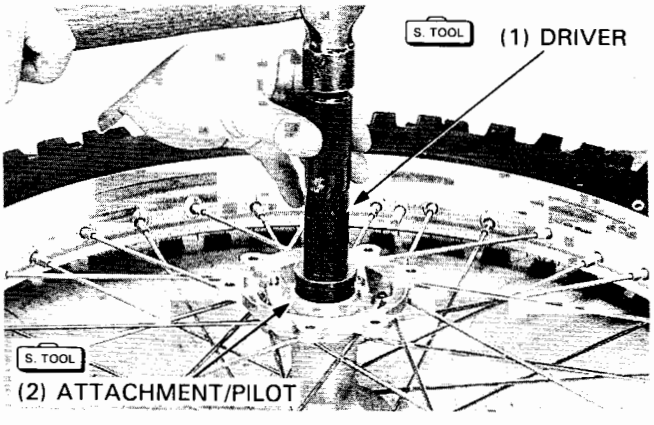
Torque: 13 N·m (1.3 kg-m, 9 ft-lb)



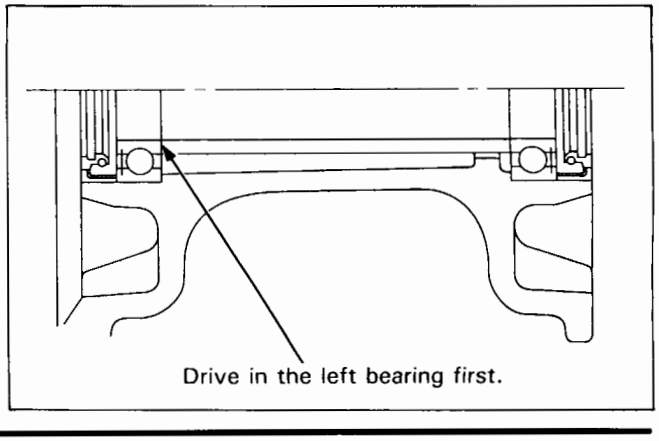
Pack new bearing cavities with grease.
Drive the left wheel bearing into the hub.

S. TOOL

Driver	**07749—0010000**
Attachment, 32 x 35 mm	**07746—0010100**
Pilot, 20 mm	**07746—0040500**



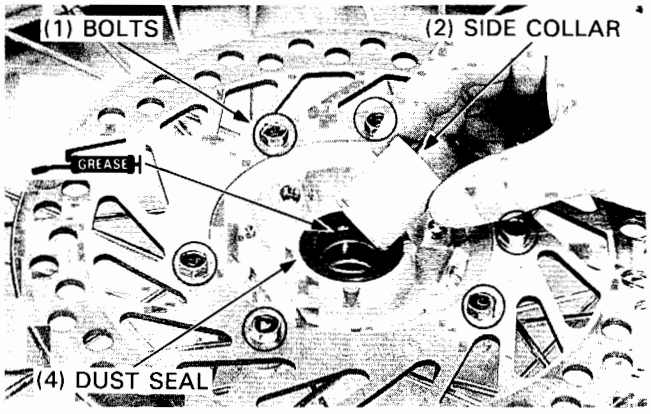
Install the distance collar. Then drive the right wheel bearing into the hub using the same tools.



Install the brake disc onto the wheel hub with the minimum thickness marking (MIN TH 2.5 mm) facing out.
Tighten the brake disc mounting bolts to the specified torque.

Torque: 16 N·m (1.6 kg-m, 12 ft-lb)

Pack the left dust seal lip with grease and install the left dust seals to the front wheel hub.
Install the side collar.



Pack the right dust seal lip with grease and install the right dust seals to the front wheel hub.
Install the side collar.

'95 Shown:

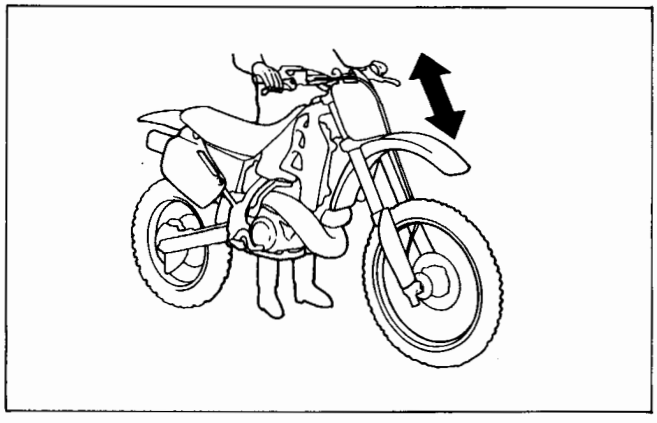
Installation

Clean the surfaces where the axle and axle clamps contact each other.
Place the front wheel between the fork legs.

CAUTION

- **Fit the brake caliper over the disc, taking care not to damage the brake pads.**

Apply thin layer of grease to the axle and insert the axle from the right side.
Make sure the axle is seated firmly onto the left fork leg clamp inner surface.



Install the tighten the axle nut to the specified torque.

Torque: '92—'94: 87 N·m (8.7 kg-m, 63 ft-lb)
After '94: 88 N·m (8.8 kg-m, 64 ft-lb)

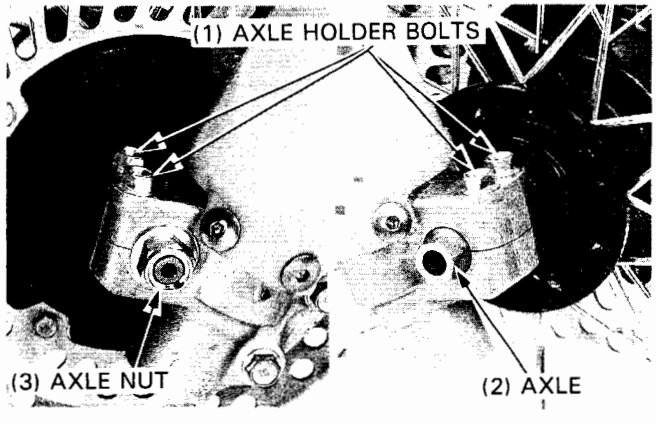
Tighten the left axle holder bolts alternately first.

Torque: 20 N·m (2.0 kg-m, 14 ft-lb)

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

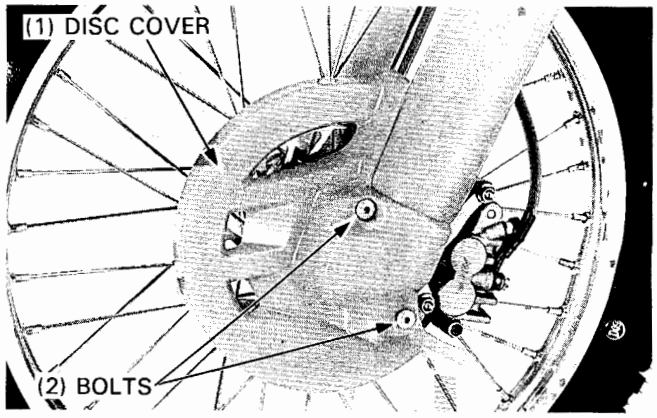
While keeping the fork parallel, alternately tighten the right axle holder bolts.

Torque: 20 N·m (2.0 kg-m, 14 ft-lb)



After '94:
Clean and apply a locking agent to the brake disc cover bolt threads.
Install and tighten the front brake disc cover mounting bolts.

Torque: 13 N·m (1.3 kg-m, 9 ft-lb)



Fork ('92–'94)

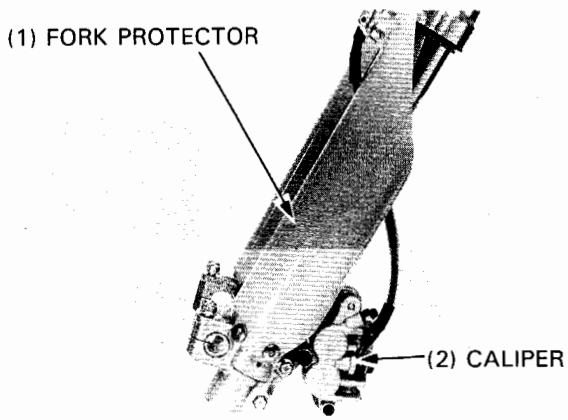
Removal

Unwrap the front number plate strap from the handlebar.
Remove the handlebar upper holders and temporarily move the handlebar.
Loosen the upper pinch bolts.
Loosen the brake caliper mounting bolts, but do not remove them yet.
Loosen the fork caps, but do not remove them yet.

CAUTION

- **Do not use an or adjustable wrench to loosen the fork caps: it may damage the caps.**
- **Loosen the pinch bolts before loosening the fork caps to avoid damage the fork caps.**
- **Do not support the brake caliper by the brake hose.**

Remove the front wheel (page 10-6).
Remove the fork protector and caliper.



Loosen the lower pinch bolts, and pull the fork tube down and out.

Disassembly

Clean the fork–especially the sliding surface of the fork slider and the bottom of the fork slider around the center bolt–before disassembling the fork.

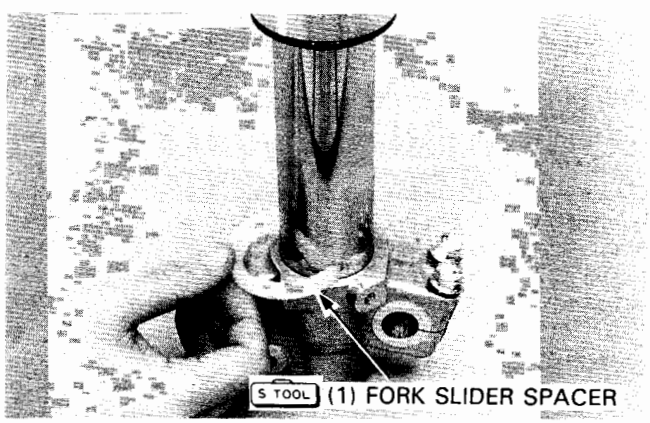
CAUTION

- **Be careful not to scratch the slider or damage the dust seal.**

Install the fork slider spacer on the axle holder of the fork slider. Hold the fork tube, remove the fork cap and slide the fork tube down onto the slider spacer.

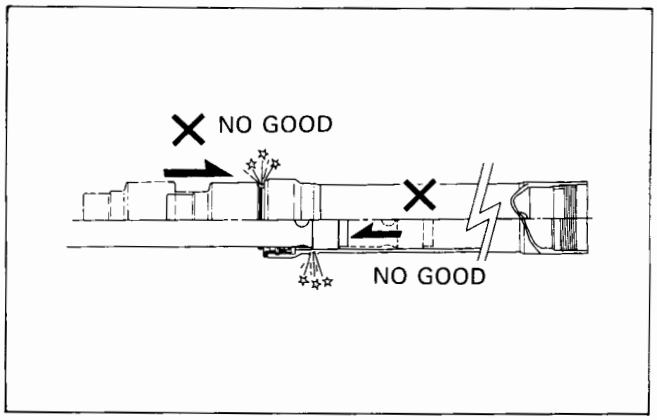
S. TOOL

Fork slider spacer — **07KMZ–KZ30101 or 07KMZ–KZ3010B or 07KMZ–KZ3010A (U.S.A. only)**

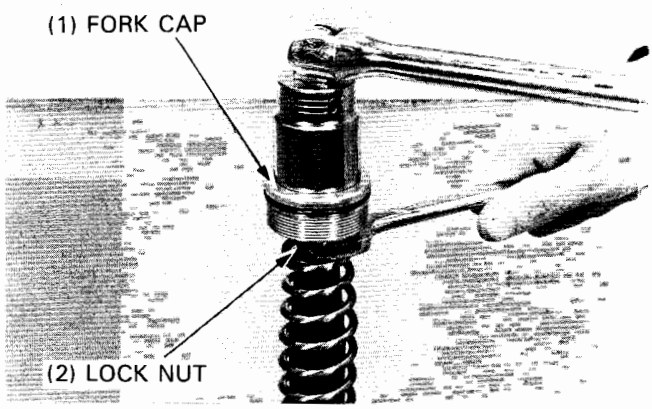


CAUTION

- **When the fork cap is removed from the piston rod, the fork slider can move up and down freely in the fork tube. Always hold both the fork tube and fork slider with your hands after removing the fork cap, or the guide and slide bushings might be damaged and fork oil will leak from the fork slider.**



Pull the fork spring down to access the lock nut with a wrench. Hold the lock nut and remove the fork cap from the piston rod.



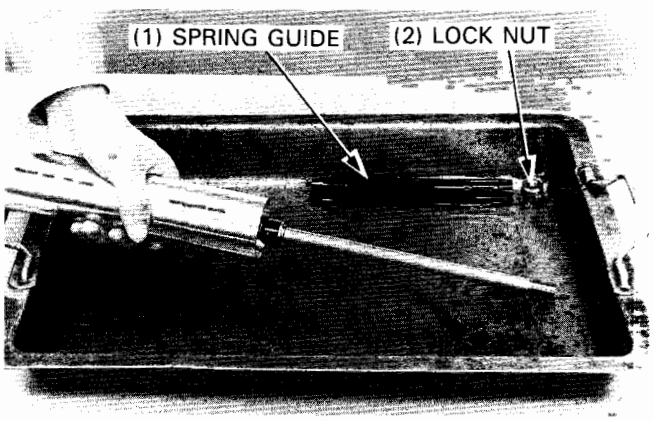
CAUTION

- **When removing the fork cap, turn the rebound damping adjuster counterclockwise to the softest position to prevent the needle of the adjuster from being damaged (Record the number of clicks to the softest position).**

Remove the spring seat from the fork cap.
Remove the fork spring.

Remove the lock nut and spring guide from the piston rod. Check the spring guide and replace it with a new one if it is deformed or damaged.

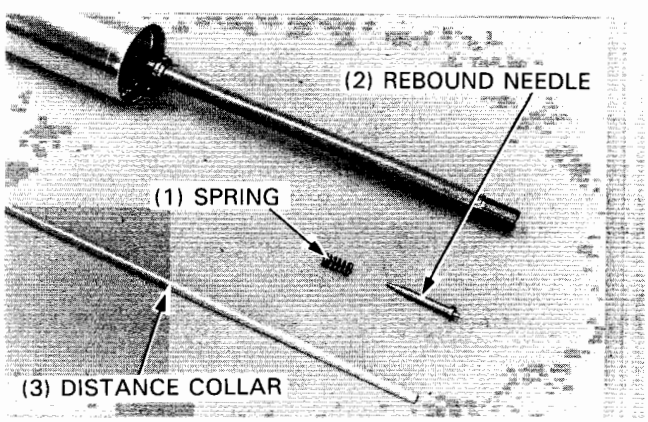
Pour out the fork oil.



Remove the distance collar, needle and spring.

CAUTION

- **Handle the needle carefully to prevent it from being damaged or bent.**
  If the needle is damaged or bent, the rebound damping force will be impaired.

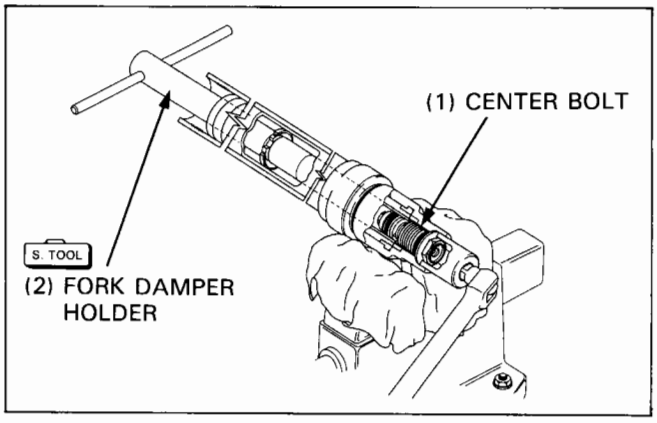


Clamp the lower end (axle holder) of the fork slider in a vise with the shop towel or soft jaws to prevent damage.

Insert the fork damper holder into the fork tube and hold the fork damper by aligning the projections of the holder with the holes of the damper.

S. TOOL

Fork damper holder — **07PMB–KZ40100 or 07PMB–KZ4010A (U.S.A. only)**



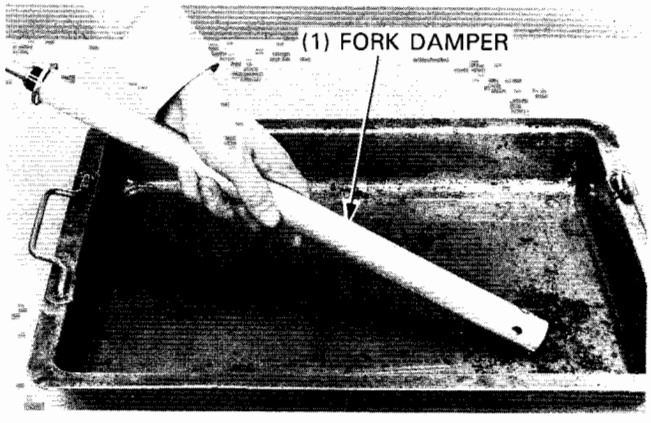
CAUTION

- **Do not damage the axle holder by overtightening the vise.**

Slowly loosen and remove the center bolt and sealing washer.

CAUTION

- **When removing the center bolt, turn the compression damping adjuster counterclockwise to the softest position to avoid damaging the adjuster needle (Record the number of clicks to the softest position).**

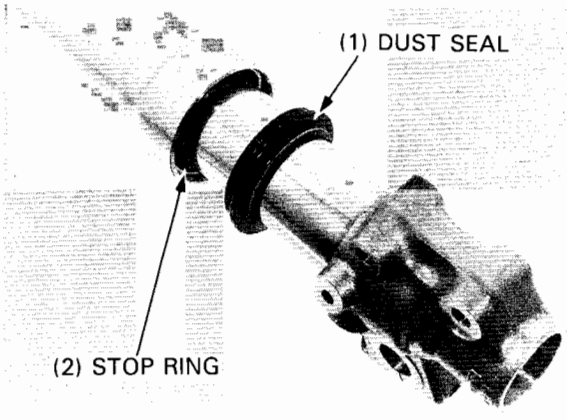


Remove the fork from the vise.
Remove the fork damper from the fork slider.
Empty the fork oil out of the fork damper by pumping the piston rod 8-10 times.

Remove the fork slider spacer from the fork end.
Remove the dust seal and stop ring.

CAUTION

- **Be careful not to scratch the fork slider.**

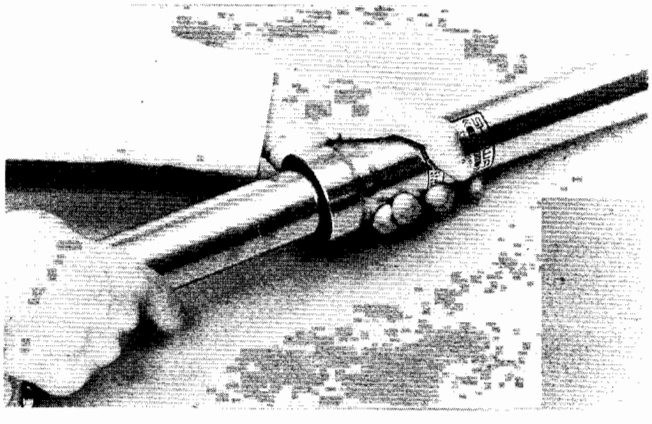


Check that the fork slider moves smoothly in the fork tube. If it does not, check the fork slider for bending or damage, and the bushings for wear or damage.
If the fork slider and bushings are normal, check the outer tube.

In quick successive motions, pull the fork slider out of the fork tube.

NOTE

- The guide bushing is pressed into the fork tube and must be forced out.

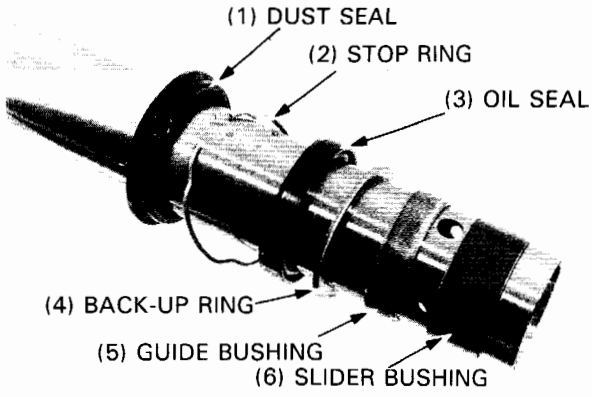


Slide the slider bushing off the fork slider by carefully prying the bushing ends open with a screwdriver.

CAUTION

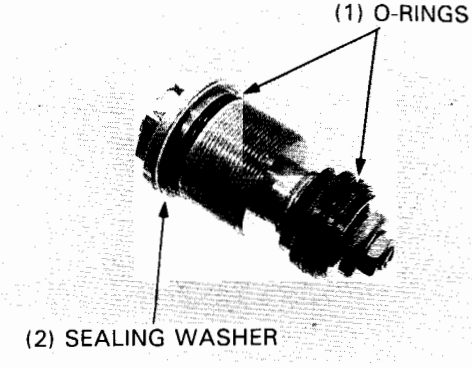
- **Be careful not to scratch the teflon coating of the bushing.**
- **Do not pry open the bushing more than necessary.**

Remove the following from the fork slider:
– guide bushing
– back-up ring
– oil seal
– stop ring
– dust seal.



Inspection

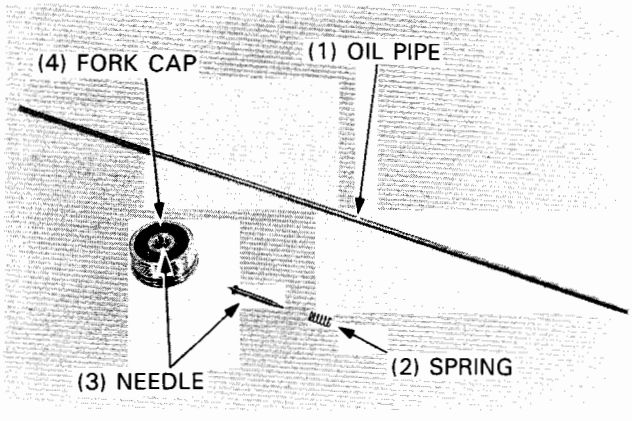
Center bolt
Check the center bolt assembly for damage.
Check that the sealing washer is in good condition, replace if necessary.
Replace the O-ring with new one.



Distance Collar/Rebound Needle
Check the distance collar for damage.
Check the needles for bend or damage.

CAUTION

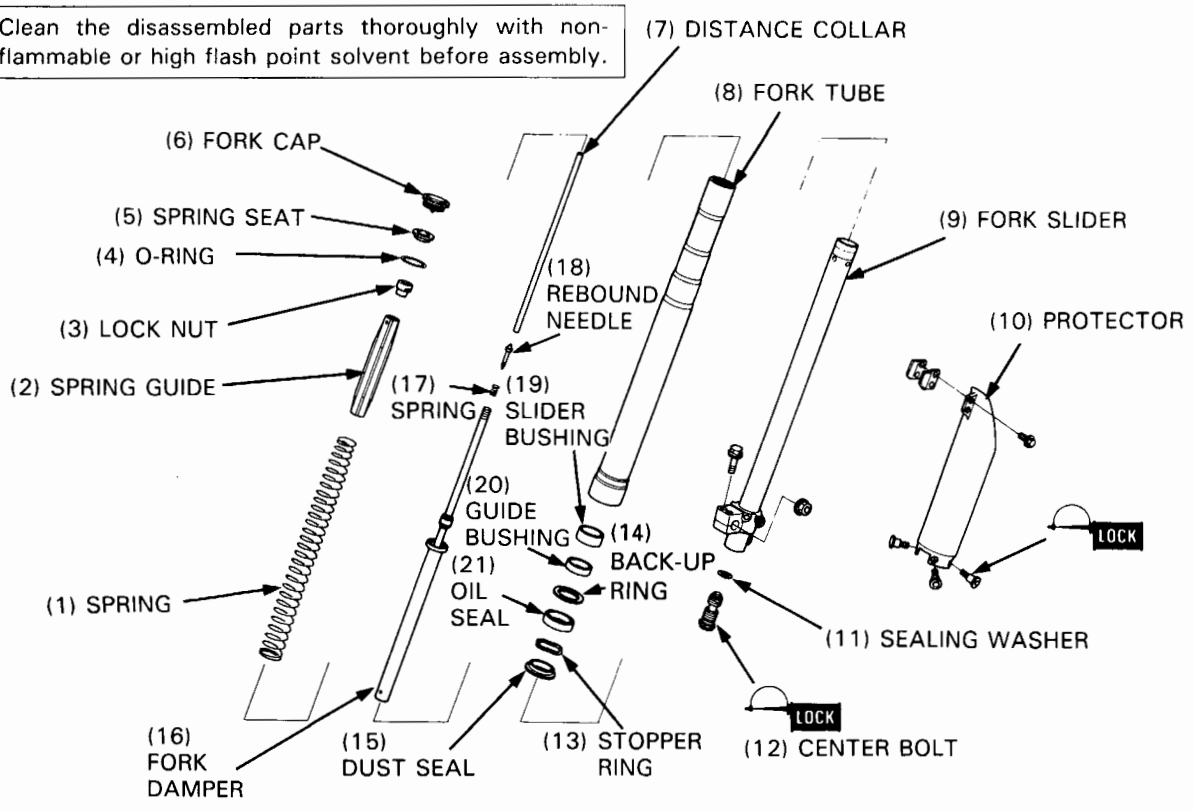
- **If the needle is bent or damaged, the rebound damping force will be impaired.**



Assembly

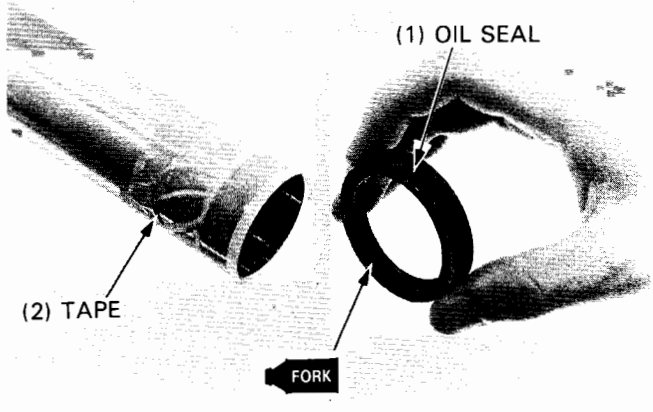
NOTE

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



Wrap the end of the slider with tape.
Coat the new oil seal lips with recommended fork oil.

Install the following onto the slider:
- dust seal
- stop ring
- oil seal
- back-up ring
- guide bushing.



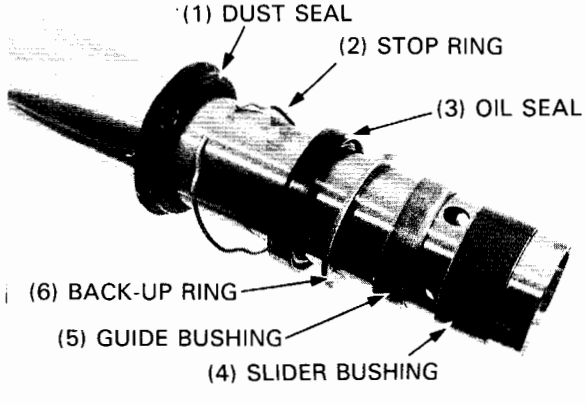
Remove the tape and install the slider bushing.

NOTE

- Remove the any burrs from the slider bushing mating surface, being careful not to peel off its teflon coating.

Tape or tie the dust seal and stop ring, so they won't get in the way.

Coat the slider and guide bushing with the recommended fork oil and install the fork slider into the fork tube.



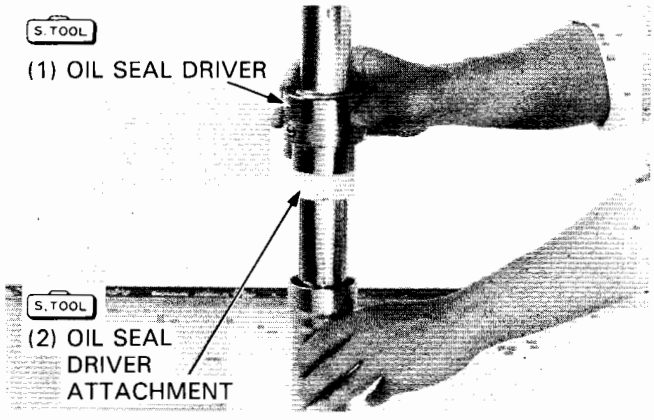
Drive the guide bushing and back-up ring into the fork tube, using the oil seal driver.
Drive in a new oil seal until the stop ring groove is visible, using the special tool.

S. TOOL

Oil seal driver	**07KMB—KZ30100**
Oil seal driver attachment	**07NMD—KZ30100**

Install the stop ring into the fork tube groove.
Install a new dust seal.

To avoid damaging the fork dust seal, slider bushing and guide bushing, install the fork slider spacer (page 10-13).



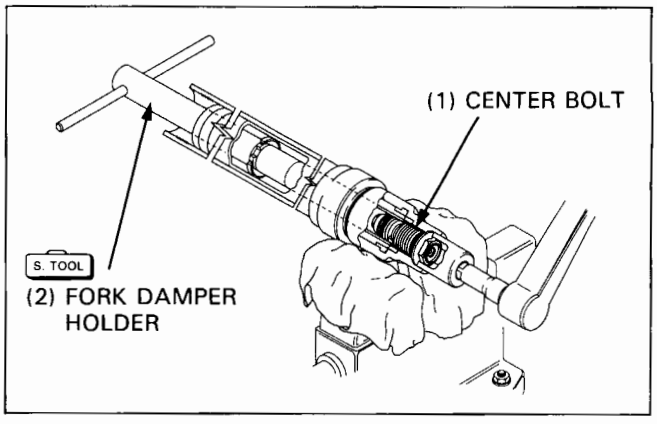
Install the fork damper into the fork slider.
Hold the axle holder of the fork slider in a vise with a shop towel or soft jaws.

CAUTION

- **Do not damage the axle holder by overtightening the vise.**

Apply locking agent to the center bolt threads.

Install the center bolt with a new sealing washer and tighten it to the specified torque using the fork damper holder (page 10-10).



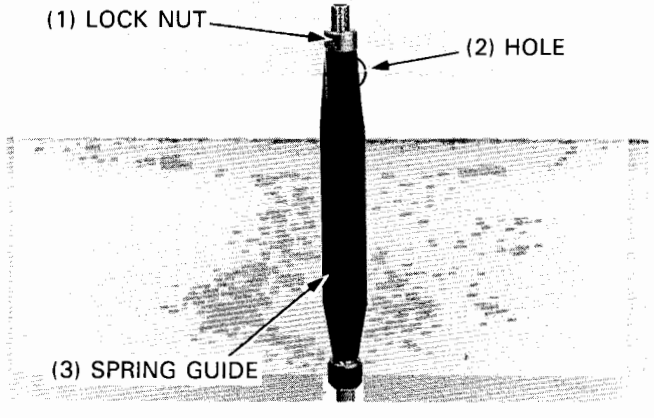
S. TOOL

Fork damper holder	**07PMB—KZ40100**

Torque: 80 N·m (8.0 kg-m, 58 ft-lb)

Insert the distance collar, spring and rebound needle onto the piston rod of the fork damper.

Wipe off any oil from the spring guide.
Install the spring guide with the oil hole facing up.
Temporarily install the lock nut with the flange side facing up.



CAUTION

- **The fork slider spacer must be used to maintain the correct oil level and to prevent dust seal damage.**

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

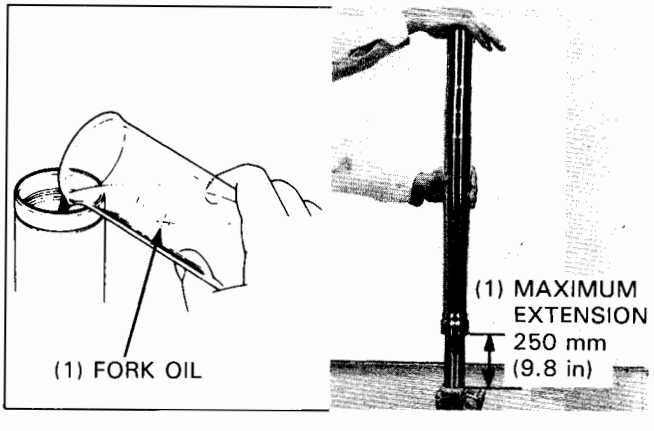
Bleed the air from the fork leg as follows:

1. Extend the fork, cover the top of the outer tube with your hand and compress the leg slowly.
   Repeat the above procedure 2-3 times.

CAUTION

- **Do not pull up the fork tube more than 250 mm (9.8 in) from the axle holder. The fork oil will spill out from the oil hole in the fork slider.**

2. With the piston rod fully pushed in, pour the recommended fork oil (Pro Honda Suspension Fluid SS-7M U.S.A. only or equivalent) into the piston rod until a little oil flows out from the piston rod end.



3. Pump the fork tube and piston rod slowly 8-10 times.
4. Fill with the recommended fork oil to the specified capacity and repeat step 3.
   Compress the outer tube fully and leave it for 5 minutes to remove air bubbles from the oil.

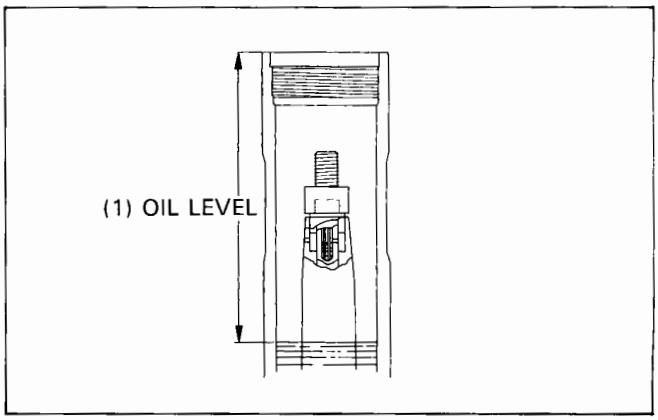
Measure the oil level from the top of the fork tube.

Recommended oil: Pro Honda Suspension Fluid SS-7M or equivalent
Standard oil capacity: (Per fork leg)
'92: 582 cc (19.7 oz)
'93: 572 cc (19.3 oz)
'94: 567 cc (19.2 oz)
Standard oil level:
'92: 95 mm (3.74 in)
'93: 105 mm (4.13 in)
'94: 110 mm (4.33 in)

NOTE

- Be sure the amount of oil is the same in both fork legs.
- Support the fork leg vertically whenever measuring the oil level.

For more details on the effects of oil level adjustment, refer to Owner's Manual.



'92:

Maximum oil level capacity	93 mm (3.66 in) 584 cc (19.8 oz)	Slightly stiffer as it nears full compression.
Minimum oil level capacity	124 mm (4.88 in) 552 cc (18.7 oz)	Slightly softer as it nears full compression.

'93:

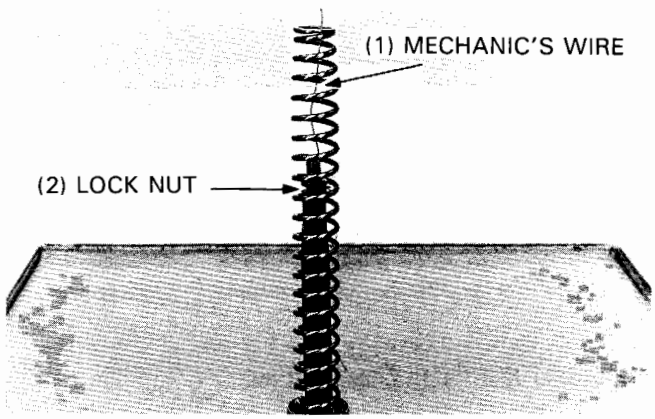
Maximum oil level capacity	93 mm (3.66 in) 584 cc (19.8 oz)	Slightly stiffer as it nears full compression.
Minimum oil level capacity	136 mm (5.35 in) 541 cc (18.3 oz)	Slightly softer as it nears full compression.

'94:

Maximum oil level capacity	101 mm (3.98 in) 576 cc (19.5 oz)	Slightly stiffer as it nears full compression.
Minimum oil level capacity	143 mm (5.63 in) 534 cc (18.1 oz)	Slightly softer as it nears full compression.

Attach a 60 cm (24 in) length of mechanic's wire to the lock nut on the piston rod.

Clean the fork spring with non-flammable or high flash point, dry it using compressed air, and then install it into the fork tube with the tapered end facing up.
Feed the mechanic's wire up through the fork spring while holding the oil lock valve.
Remove the mechanic's wire from the piston rod.
Thread the lock nut onto the piston rod by hand until it seats.



Install the spring seat onto the fork spring.
Apply the recommended fork oil to a new O-ring and install it onto the fork cap.
Align the piston rod end hole with the fork cap needle and screw the cap on the piston rod.

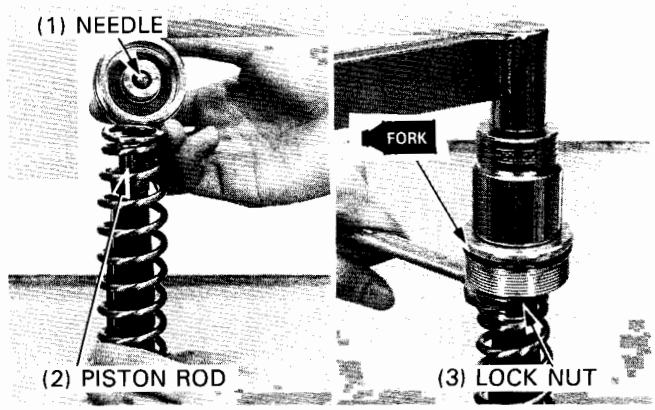
CAUTION

- **Handle the fork cap carefully to prevent the needle of the cap from being damaged or bent.**
  If the needle is damaged or bent, the rebound damping force will be impaired.

Hold the lock nut and tighten the fork cap.

Torque: 22 N·m (2.2 kg-m, 16 ft-lb)

Temporarily install the fork cap into the fork tube.



Installation

Insert both fork legs into the fork clamps.
Temporarily tighten the lower pinch bolts and tighten the fork caps.

Torque: 35 N·m (3.5 kg-m, 25 ft-lb)

For ease of releasing air pressure after the forks are installed, position the fork outer tubes so that the pressure release screws are in front of the rebound adjusters.

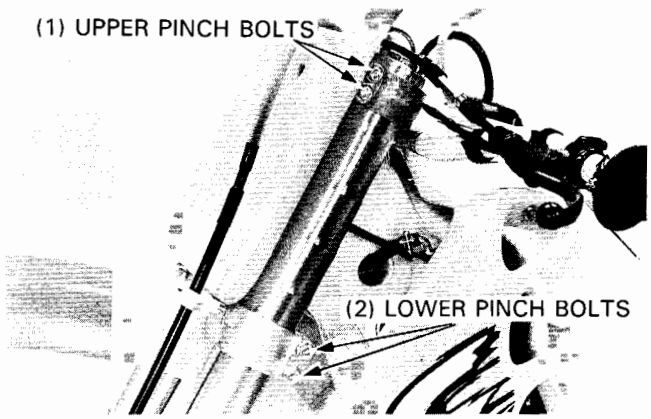
Loosen the lower pinch bolts and align the top surface of the upper fork clamp with the index groove 9 mm (0.4 in) below the top of the outer tube. For alternate chassis geometry adjustments, refer to the *Owner's* Manual.

Tighten the upper and lower pinch bolts.

Torque: 22 N·m (2.2 kg-m, 16 ft-lb)

CAUTION

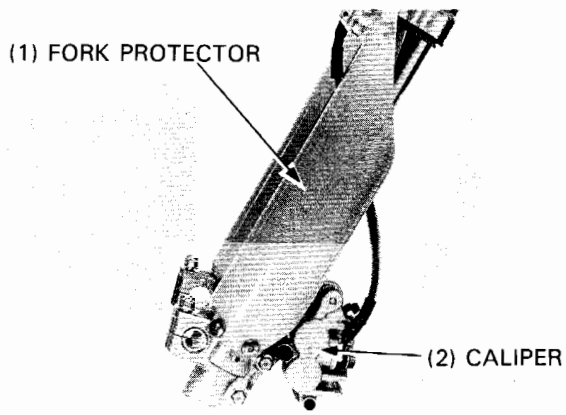
- **Overtightening the pinch bolts can deform the fork tube. Deformed fork tubes must be replaced.**



Return the rebound/compression adjusters to their original positions as noted during removal.

Clean the threads of the fork protector bolts.
Apply locking agent to the bolt threads.
Install the fork protectors and tighten the bolts.

Torque: 13 N·m (1.3 kg-m, 9 ft-lb)



Clean the threads of the caliper mounting bolts and caliper bracket thoroughly.
Apply locking agent to the bolt threads.
Install the caliper and tighten the mounting bolts to the specified torque.

Torque: 31 N·m (3.1 kg-m, 22 ft-lb)

CAUTION

- **Do not twist the brake hose when installing the brake caliper, or the brake hose may be damaged.**

Install the front wheel (page 10-12).
Install the handlebar assembly (page 10-31).

Fork (After '94)

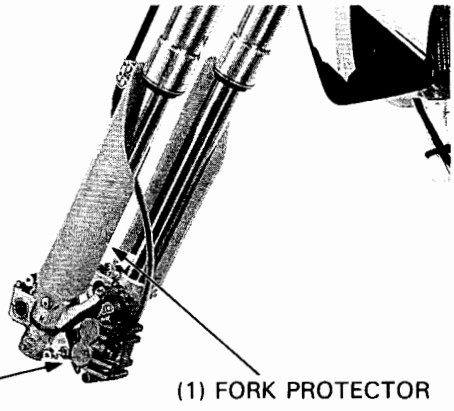
Removal

Remove the front wheel (page 10-6).

Remove the fork protector and brake caliper.

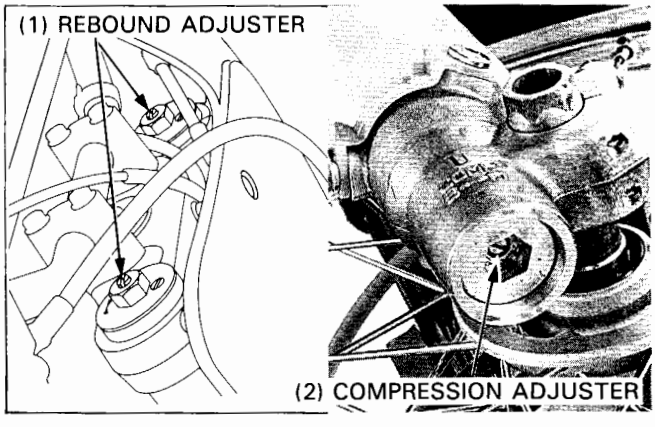
When the fork leg is to be disassembled, loosen the fork cap as follow.

Loosen the fork upper pinch bolts and loosen the fork cap.

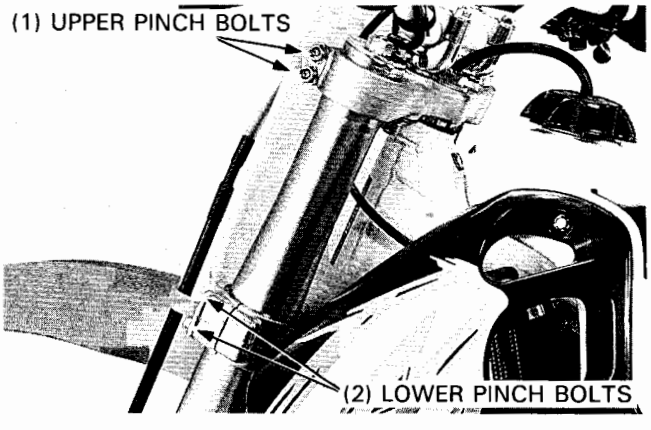


CAUTION

- **Do not use a Crescent or adjustable wrench to loosen the fork cap; they could be damaged.**
- **When disassembling the fork leg, turn the rebound adjuster and compression adjuster counterclockwise to the softest position to prevent damage to the needle (Record the number of clicks to the softest position).**



Loosen the lower pinch bolts and pull the fork leg down and out.



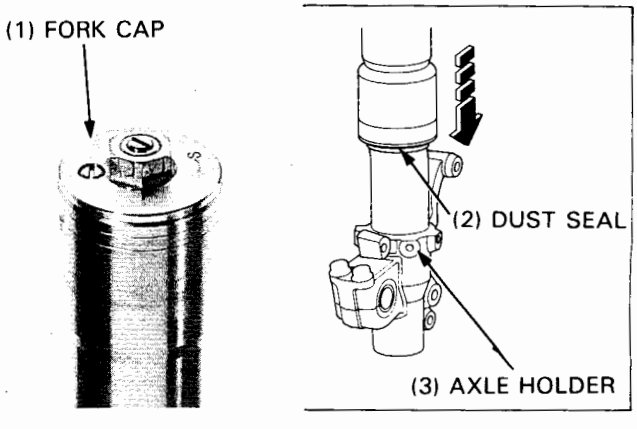
Disassembly

Clean the fork assembly, especially the sliding surface of the fork slider and bottom of the slider around the center bolt before disassembly the fork.

CAUTION

- **Be careful not to scratch the slider and not to damage the dust seal.**

Hold the outer tube, remove the fork cap from the outer tube and slide the outer tube down to the dust seal on to the axle holder.

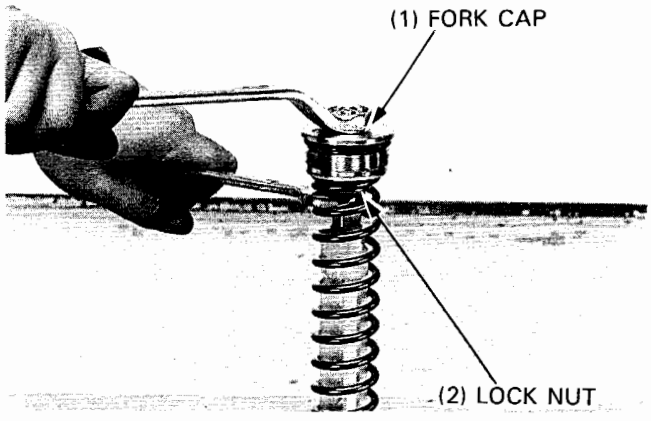


Hold the lock nut and remove the fork cap from the damper rod.

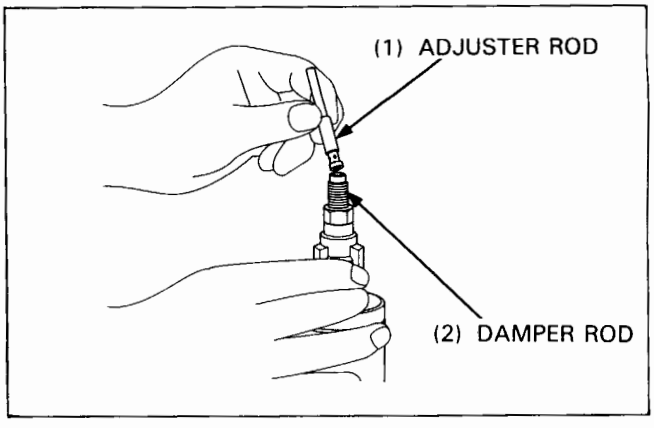
Remove the spring seat and fork spring.

CAUTION

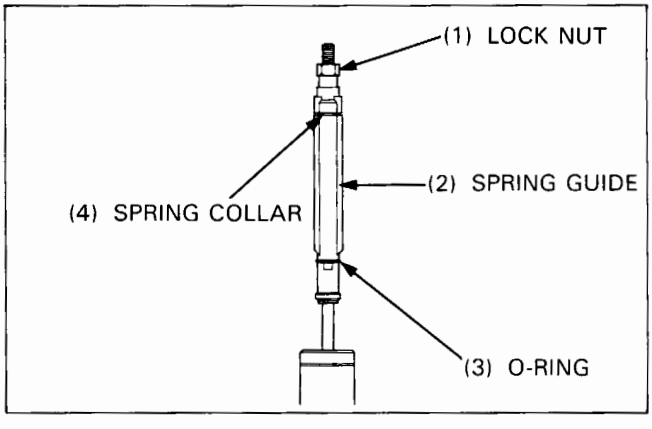
- **When the fork cap is removed from the damper rod, the slider can move up and down freely on the outer tube. Always hold both the outer tube and slider with your hands after removing the fork cap, or the guide, slider bushing and oil seal might be damaged.**



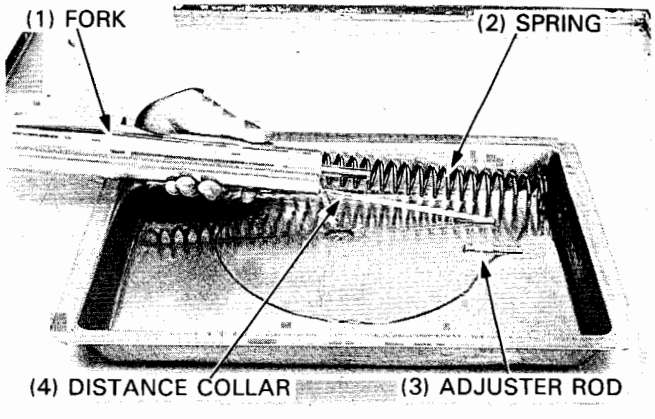
Remove the adjuster rod from the fork damper rod.



Remove the following:
- Lock nut
- Spring collar
- Spring guide
- O-ring



Remove the adjuster rod.
Pour out the fork oil from the fork leg by pumping the fork 8 – 10 times.
Remove the distance collar.



Set the lower end (axle holder) of the slider in a vise with a piece of wood or soft jaws to avoid to damage.

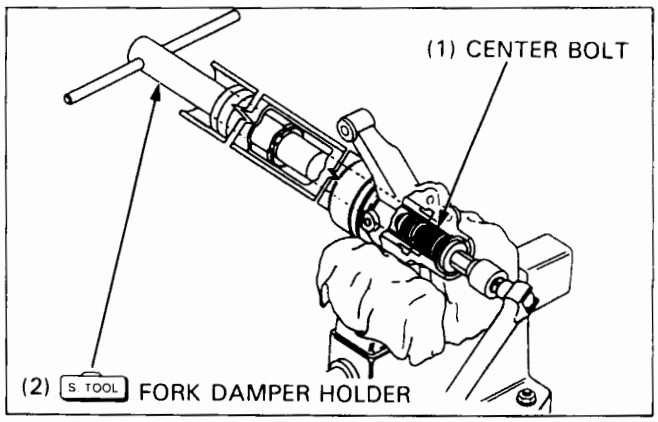
CAUTION

- **Do not overtighten the axle holder.**

Loosen the center bolt using the special tool as shown.

S TOOL

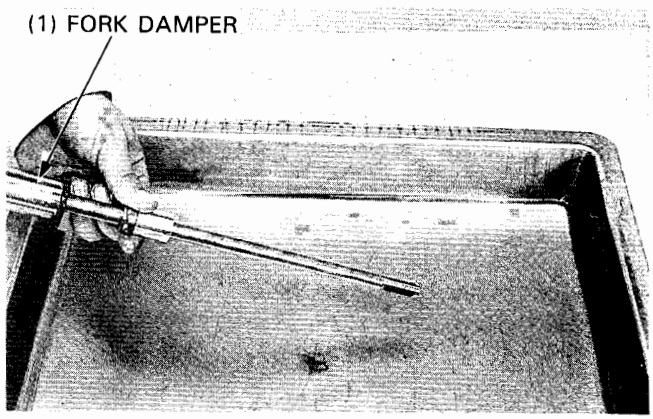
Fork damper holder 07PMB—KZ40100



Remove the center bolt and sealing washer.

Remove the fork damper from the slider.

Empty the fork oil from the damper by pumping the damper rod 8—10 times.



Remove the dust seal and stop ring.

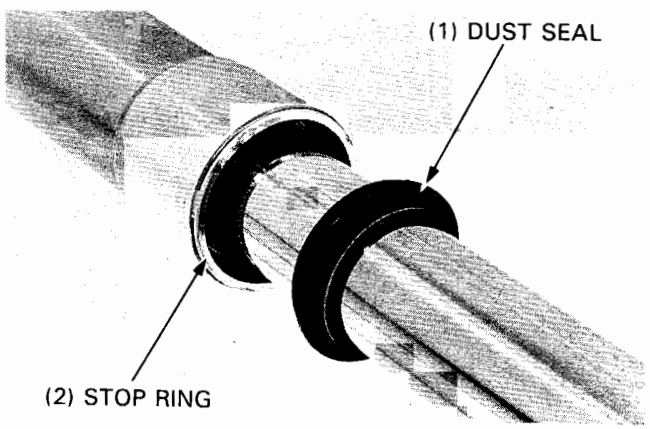
CAUTION

- **Be careful not to scratch the slider.**

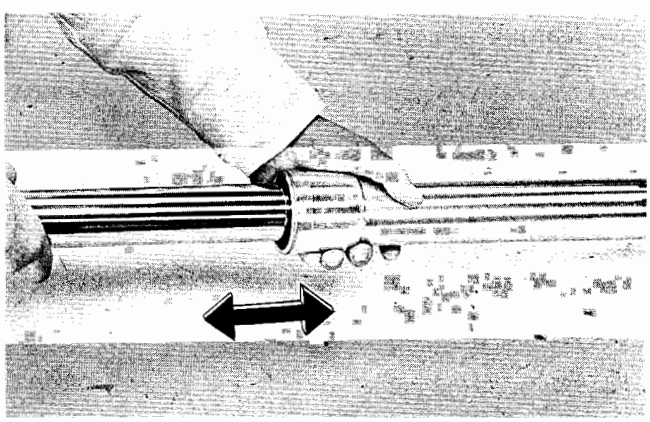
Check that the slider moves smoothly in the outer tube.

If it does not, check the slider for bend or damage, and the bushings for wear or damage.

If the slider and bushings are normal, check the outer tube.



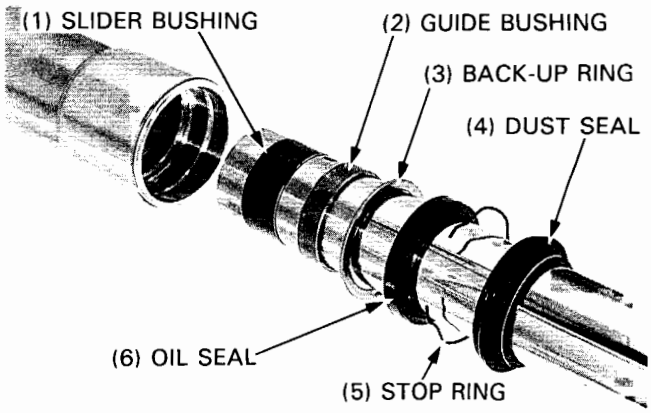
In quick successive motions, pull the slider out of the outer tube.



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.**



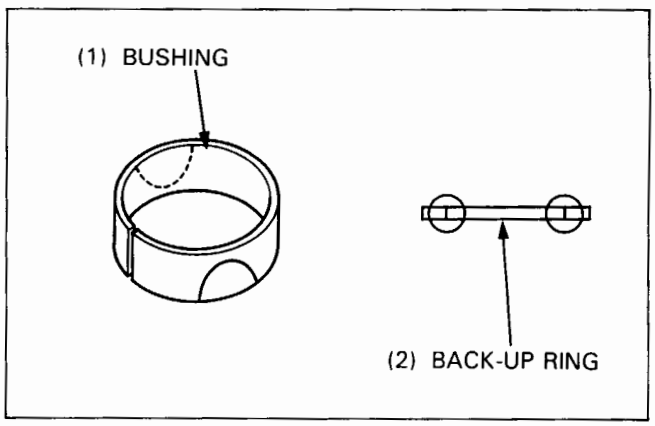
Remove the following from the slider:
- Guide bushing
- Back-up ring
- Oil seal
- Stop ring
- Dust seal

Inspection

Bushing

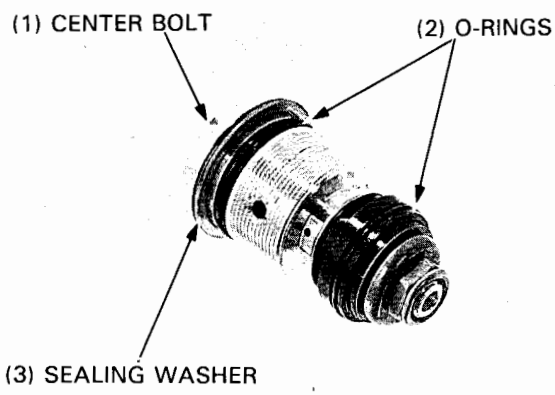
Check the bushings for excessive wear or scratches. If copper appears on the entire surface, replace the bushings.
Replace the back-up ring if there is distortion at the points shown.

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



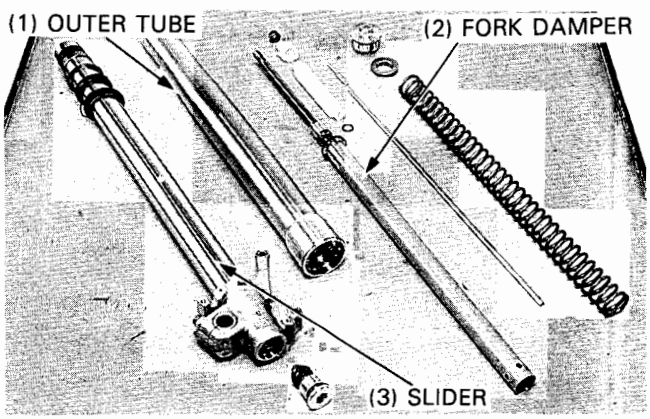
Center Bolt

Check the center bolt for damage.
Replace the O-rings and sealing washer with a new one.



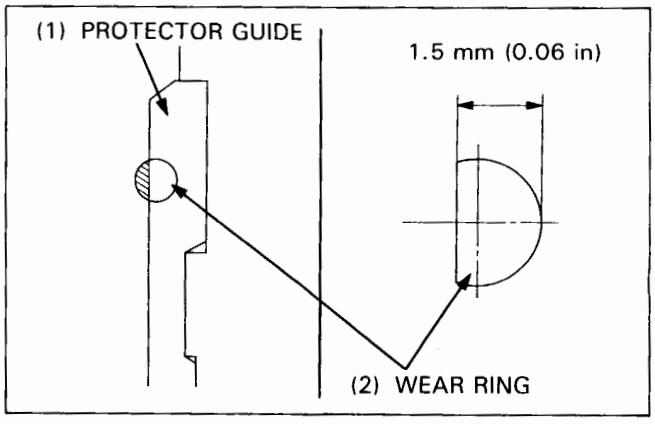
Fork Damper/Slider/Outer Tube

Check the slider for score marks, scratches and excessive or abnormal wear.
Check the outer tube for damage or deformation.
Check the spring guide for damage or wear.



Inspect the wear ring for wear or damage.

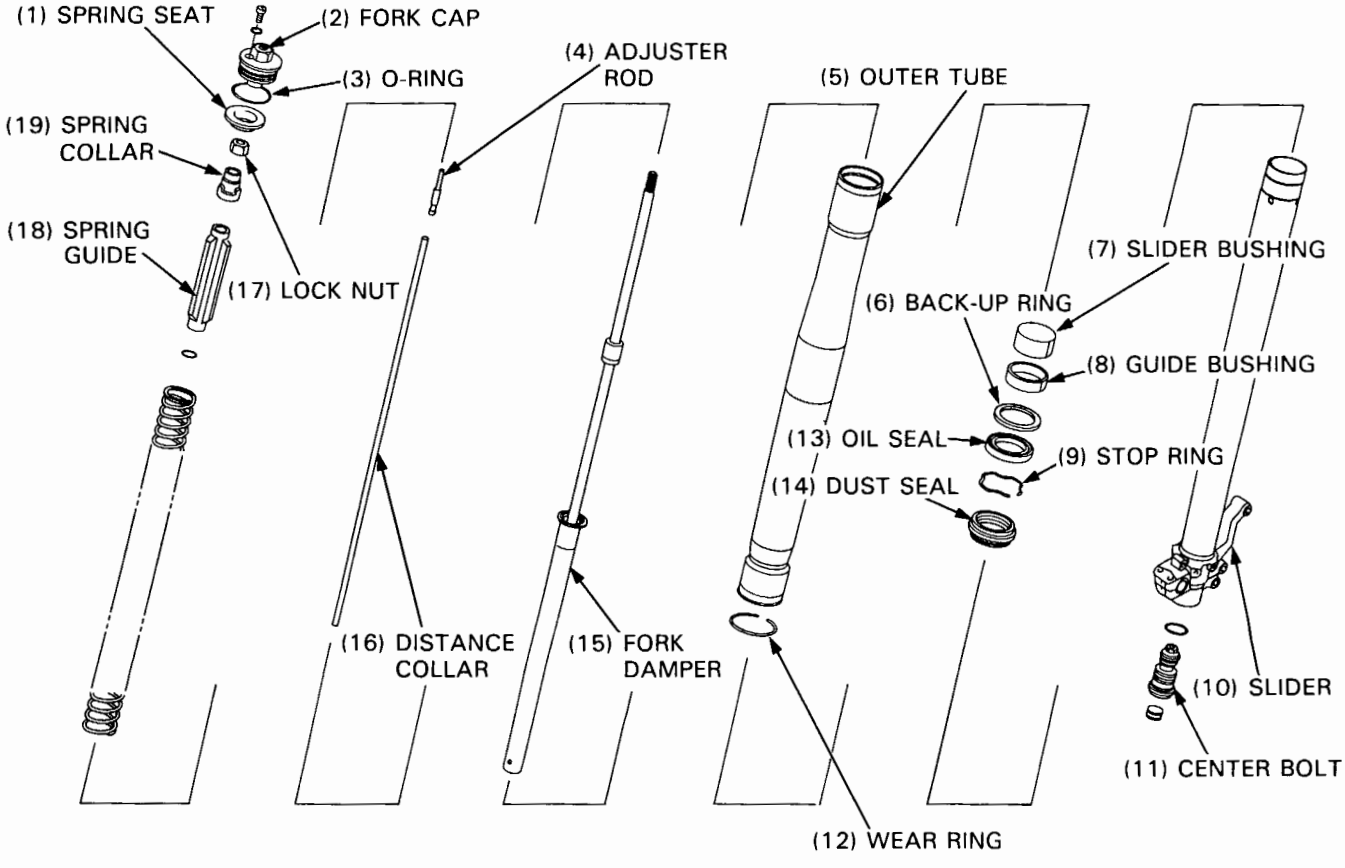
Replace the wear ring, if it is within 1.5 mm (0.06 in) of the protector guide.



Assembly

NOTE

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

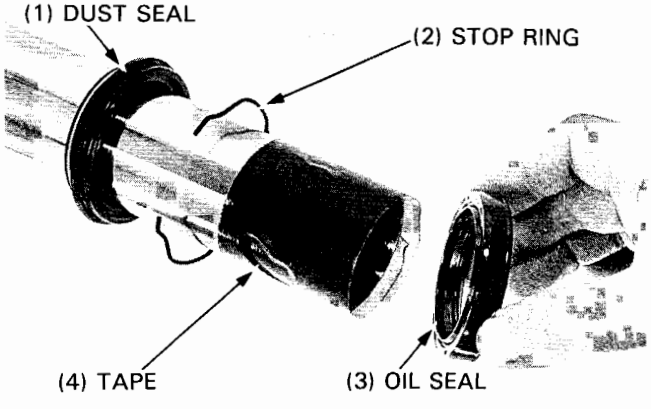


Wrap the end of the slider with a tape.
Coat the new oil seal lips with fork oil.

Install the following on to the slider:
- Dust seal
- Stop ring
- Oil seal

NOTE

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

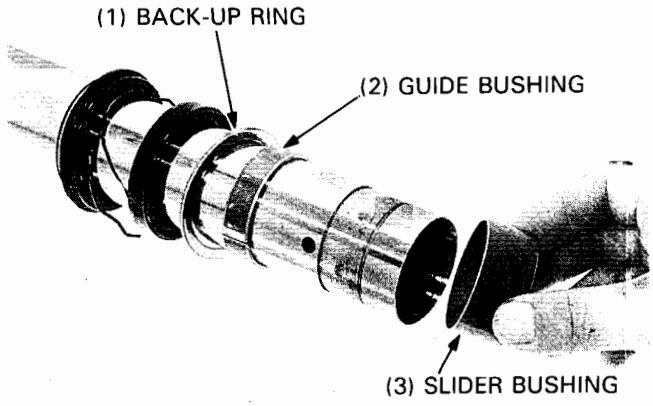


Remove the tape from the end of the slider.

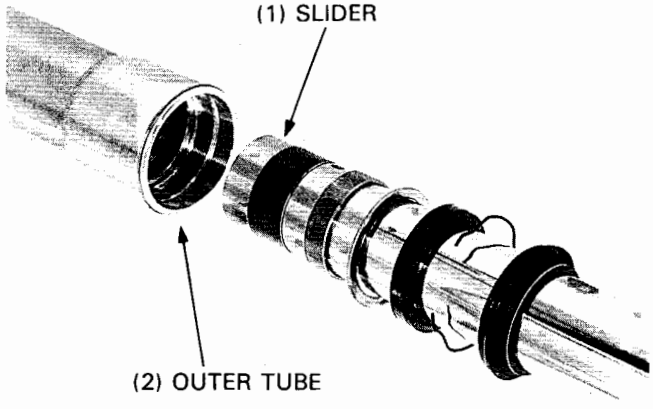
Install the following onto the slider.
- Back-up ring
- Guide bushing
- Slider bushing

NOTE

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



Coat the slider and guide bushings with the recommended fork oil and install the slider into the outer tube.

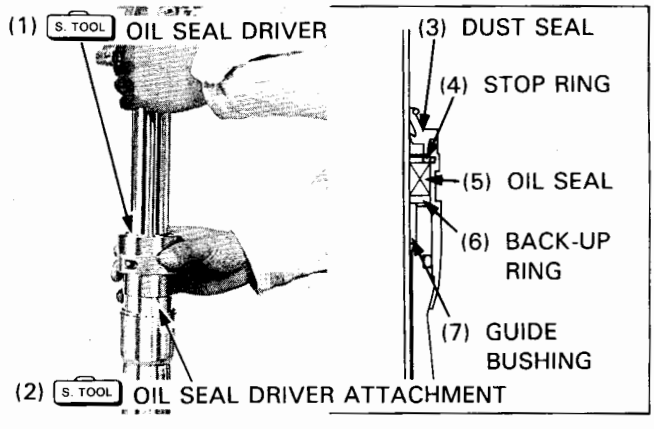


Drive the guide bushing and the back-up ring into the outer tube, using the special tool.

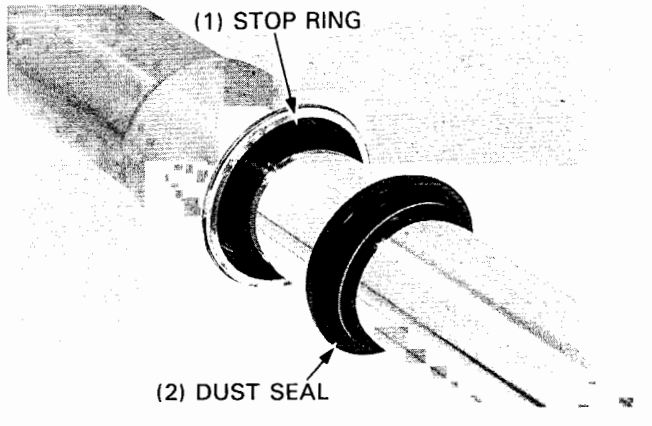
S. TOOL

'95:

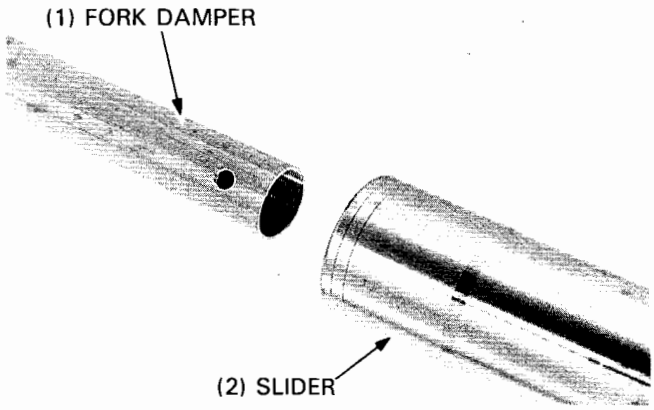
Oil seal driver	**07KMD – KZ30100**
Oil seal driver attachment	**07NMD – KZ30100 or 07NMD – KZ3010A (U.S.A. only)**
After '95:	
Oil seal driver	**07TMD – MAC0100**



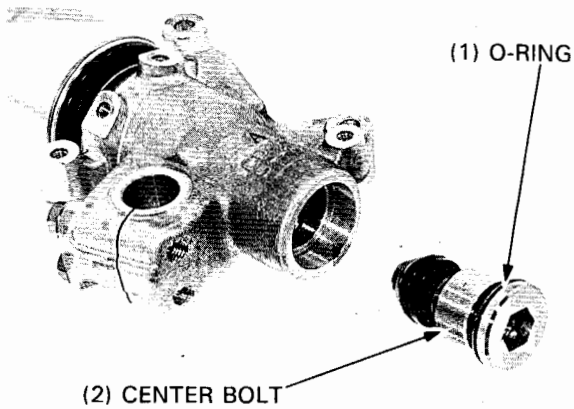
Install the stop ring to the groove of the slider.
Install the dust seal.



Install the fork damper into the slider.



Coat the O-ring of the center bolt with the recommended fork oil.



Hold the axle holder in a vise with a piece of wood or soft jaws.

CAUTION

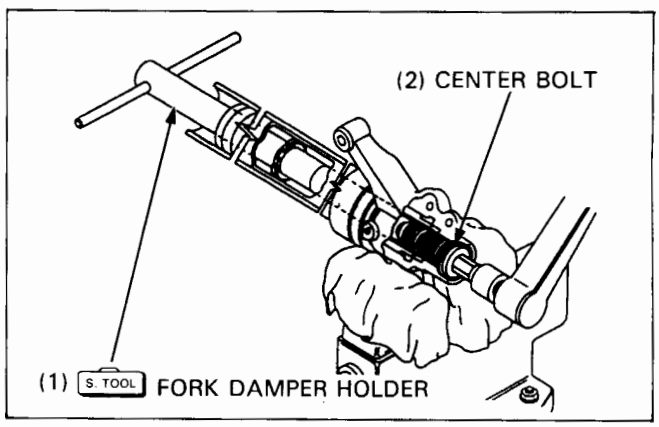
- **Do not overtighten the axle holder.**

Install the center bolt with a new sealing washer.
Tighten the bolt using the special tool as shown.

S. TOOL

Fork damper holder 07PMB–KZ40100

Torque: 78 N·m (7.8 kg-m, 56 ft-lb)

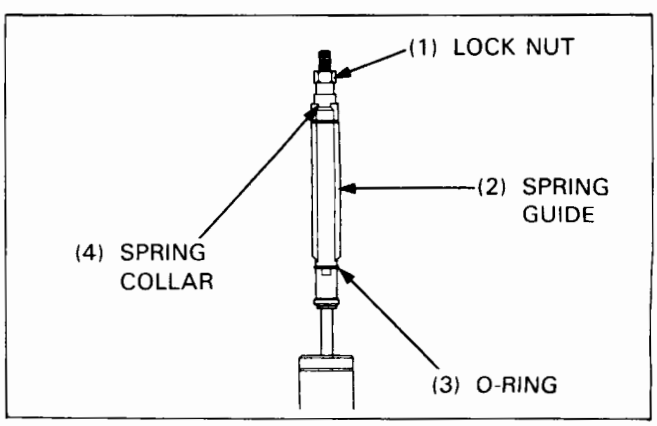


Coat the new O-ring with the recommended fork oil.

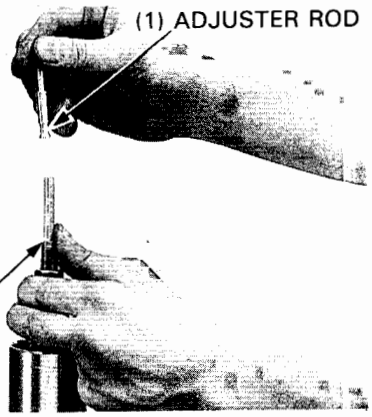
Install the following to the fork damper:
– O-ring
– Spring guide
– Spring collar
– Lock nut

NOTE

- Install the lock nut with the cut-out side facing down.



Install the distance collar into the fork damper.
Install the adjuster rod into the fork damper with the oil hole side facing down.



CAUTION

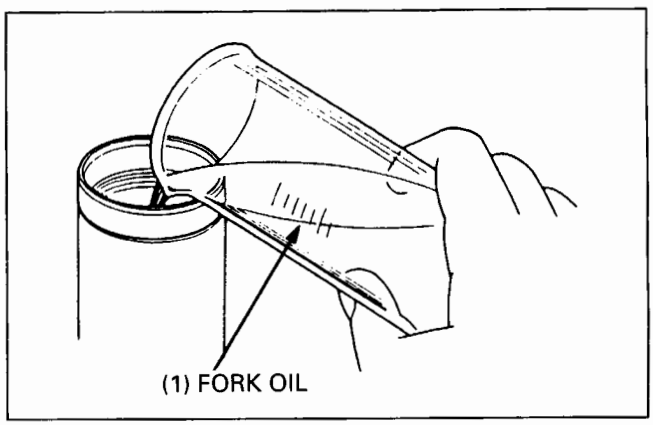
- **Slide the outer tube down to the protector guide to obtain the correct oil level adjustment.**

Pour the recommended fork oil into the damper rod until the oil flows out the damper rod end.

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

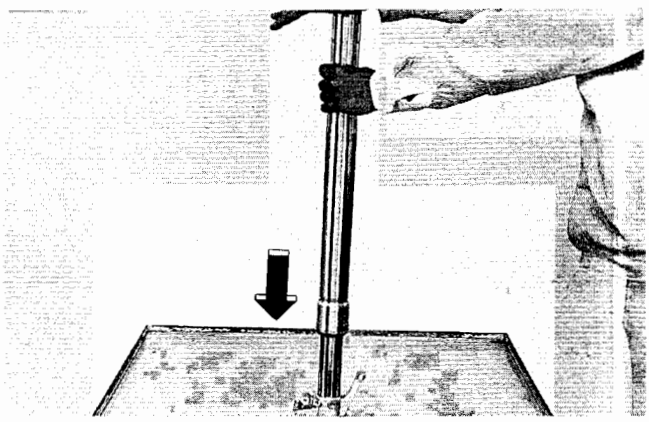
Recommended Oil: Pro Honda Suspension Fluid SS-7M or equivalent

Standard oil level: '95: 98 mm (3.86 in)
After '95: 92 mm (3.62 in)
Standard capacity: '95: 525 cc (17.8 oz)
After '95: 636 cc (21.5 oz)



Bleed the air as follows:

1. Extend the fork. Cover the top of the outer tube with your hand and compress the fork slowly.
2. With the damper rod pushed fully in, pour the recommended fork oil into the rod until a little flows out of the end rod.
3. Pump the outer tube and rod slowly 8 – 10 times.
4. Add additional oil up to the specified capacity and repeat step 3.



NOTE

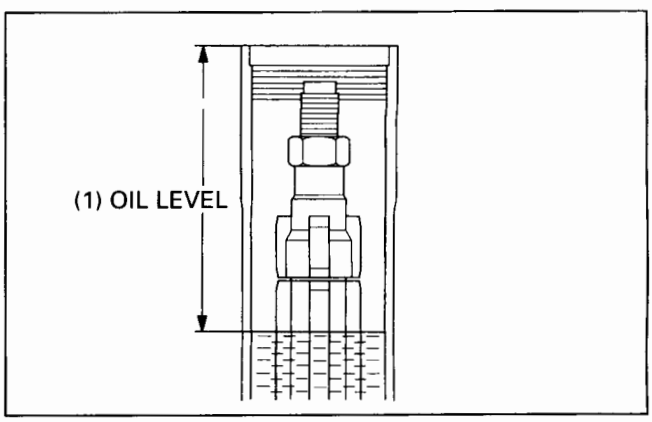
- Be sure the oil level is the same in both fork legs.
- Support the fork leg vertically and the fork compressed fully whenever measuring the oil level.

'95:

Maximum oil level capacity	84 mm (3.3 in) 539 cc (18.2 oz)	Slightly stiffer as the fork nears full compression.
Minimum oil level capacity	124 mm (4.9 in) 499 cc (16.9 oz)	Slightly softer as the fork nears full compression.

After '95:

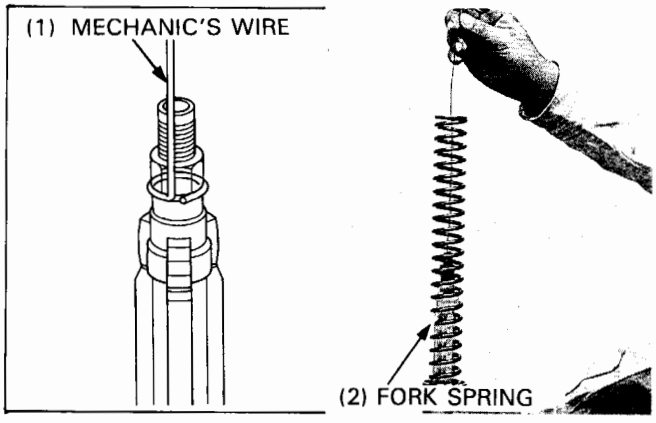
Maximum oil level capacity	73 mm (2.87 in) 658 cc (22.3 oz)	Slightly stiffer as the fork nears full compression.
Minimum oil level capacity	112 mm (4.41 in) 613 cc (20.7 oz)	Slightly softer as the fork nears full compression.



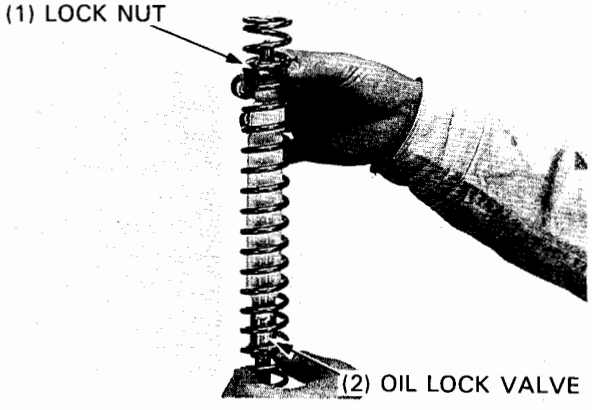
For details regarding the oil level adjustment, refer to the Owner's Manual.

Attach a 600 mm (2 feet) length of mechanic's wire to the lock nut on the damper rod.

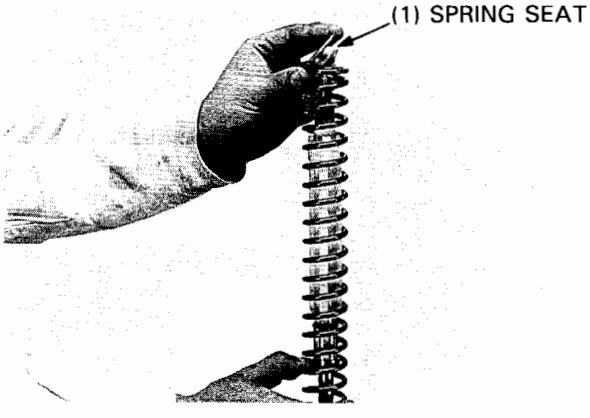
Wipe off any excessive oil from fork spring, then install it over the wire and into the slider with tapered side facing up.



Pull the mechanic's wire up and hold the damper rod at the oil lock valve.
Remove the mechanic's wire from the rod.
Turn the lock nut by hand until it bottoms on the damper rod.



Install the spring seat onto the fork spring.



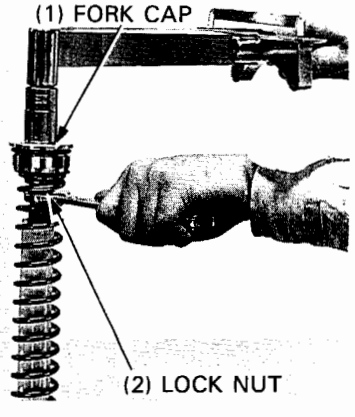
Check that the fork cap O-ring is in good condition.

Screw the fork cap on the damper rod.

Hold the lock nut and tighten the fork cap to the specified torque.

Torque: 28 N·m (2.8 kg-m, 20 ft-lb)

Temporarily install the fork cap in the outer tube.



Installation

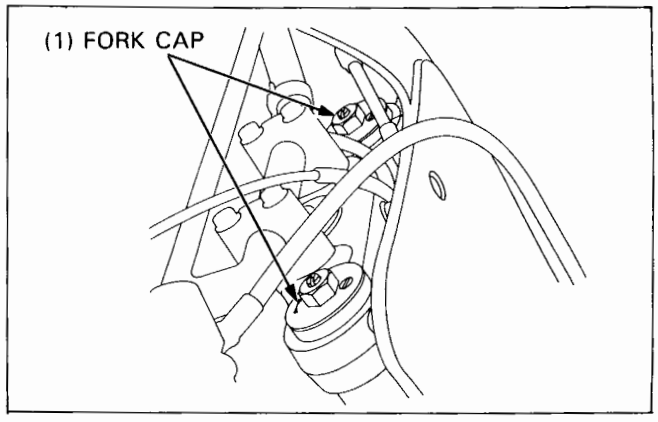
Install the fork leg.

Tighten the lower pinch bolts to specified torque.

Torque: 22 N·m (2.2 kg-m, 16 ft-lb)

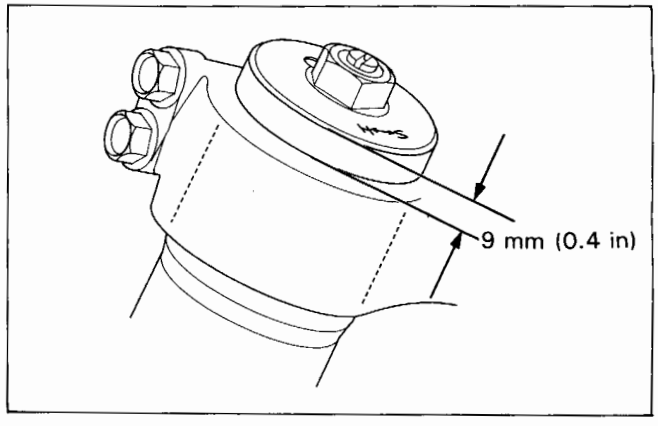
Tighten the fork cap to specified torque.

Torque: 30 N·m (3.0 kg-m, 22 ft-lb)



Standard position:
Loosen the lower pinch bolts.
For ease of releasing air pressure after the forks are installed, position the fork outer tubes so that the pressure release screws are in front of the rebound adjusters.
Align the top surface of the top bridge with the groove 9 mm (0.4 in) below the top of the outer tube.

For alternate positions, see the Owner's Manual.



Tighten the lower pinch bolts to the specified torque.

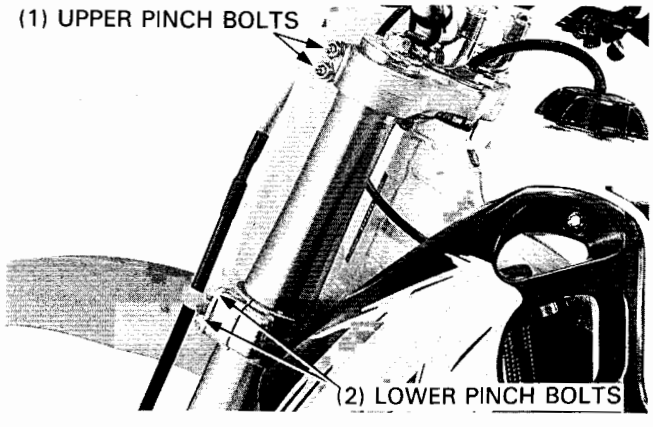
Torque: 22 N·m (2.2 kg-m, 16 ft-lb)

Tighten the upper pinch bolts to the specified torque.

Torque: '95: 22 N·m (2.2 kg-m, 16 ft-lb)
After '95: 21 N·m (2.1 kg-m, 15 ft-lb)

CAUTION

- **Overtightening the pinch bolts can deform the fork tubes. Deformed fork tubes must be replaced.**



Install the wear ring with the end gap facing rearward.

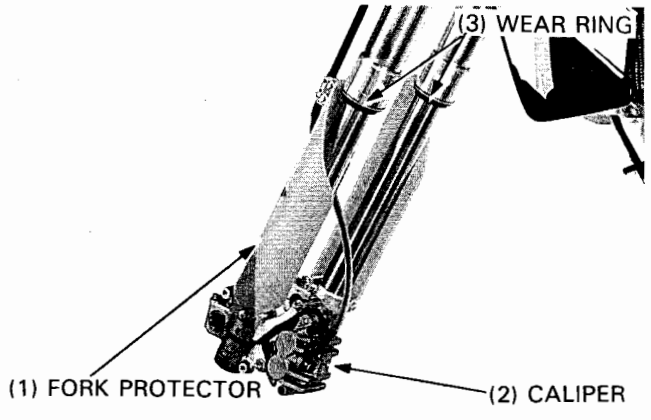
Clean and apply Honda Anaerobic Thread Lock or equivalent to the fork protector bolts.

Install the fork protector and tighten the bolts to specified torque.

Torque: 13 N·m (1.3 kg-m, 9 ft-lb)

Clean and apply Honda Anaerobic Thread Lock or equivalent to the caliper bracket bolts.
Install the caliper and tighten the bolts to specified torque.

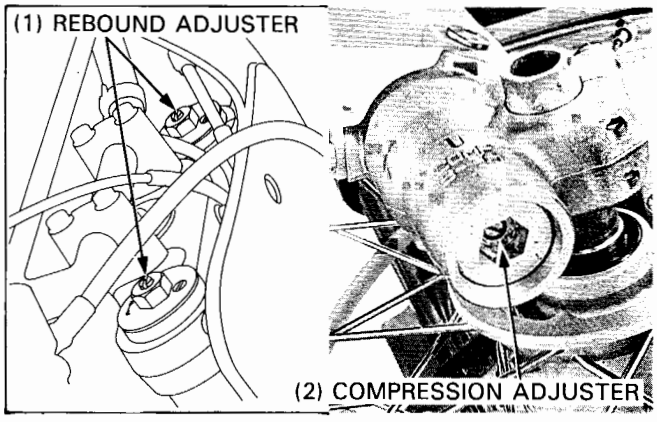
Torque: 31 N·m (3.1 kg-m, 22 ft-lb)



Return the rebound adjuster and compression adjuster to its original position as noted during removal.

Install the rubber cap.

Install the front wheel (page 10-12).

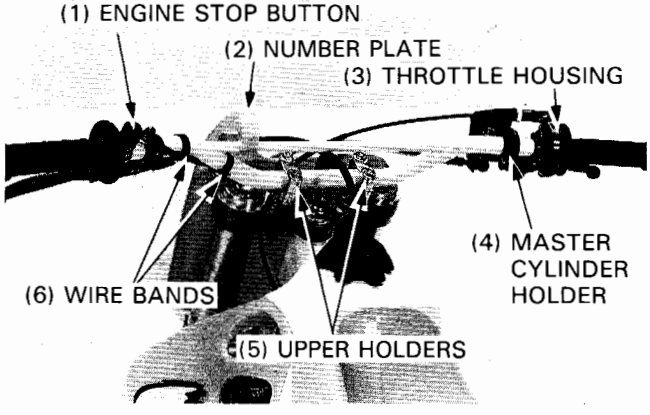


Handlebar

Removal

Remove the following:
- number plate
- engine stop button and wire bands
- clutch cable, clutch lever bracket
- throttle cable, housing and grip
- master cylinder holder and master cylinder
- handlebar upper holders and handlebar.

For handlebar grip removal/installation, refer to the Common Service Manual and the Owner's Manual.

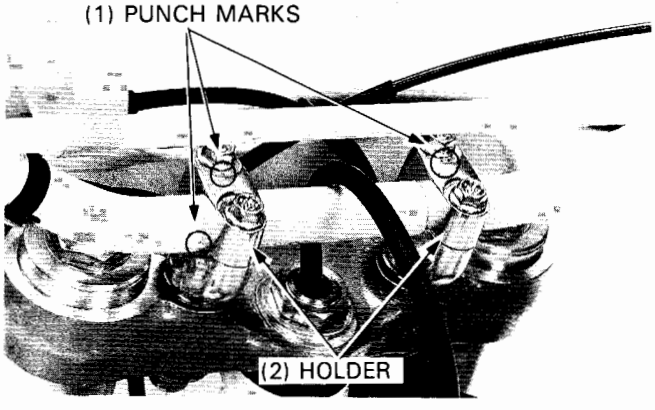


CAUTION

- **Using a suitable length of wire, suspend the master cylinder at least as high as originally installed to prevent air from getting into the brake fluid.**

Installation

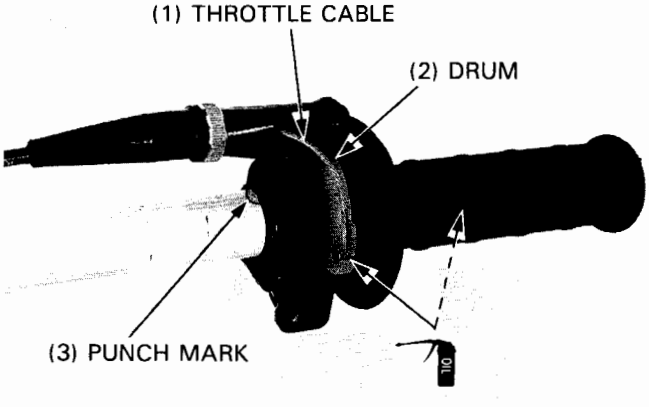
Install the handlebar.
Align the punch mark in the handlebar with the top of the lower holders.
Place the upper holders on the handlebar with the punch marks facing forward.
Tighten the front handlebar holder bolts first, then tighten the rear bolts to the specified torque.



Torque: 22 N·m (2.2 kg-m, 16 ft-lb)

Apply thin coat of oil to the sliding surfaces of the throttle grip and throttle drum.
Apply oil to the throttle cable end and connect the throttle cable to the throttle drum.

'92:



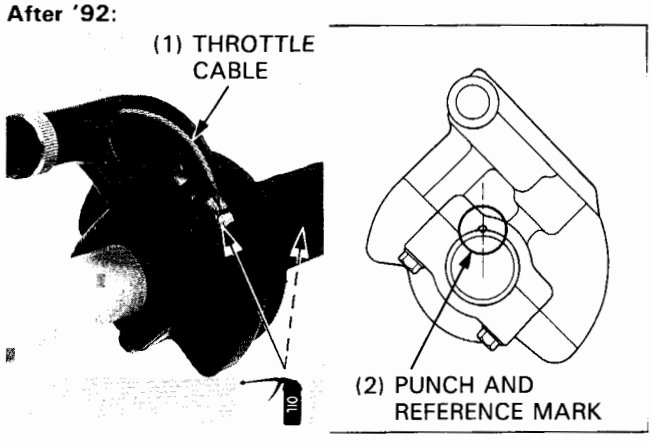
'92:
Install the throttle housing by aligning the joint in the housing with the punch mark on the handlebar.

After '92:
Install the throttle housing by aligning the reference mark on the housing with the punch mark on the handlebar.

Tighten the upper bolt first then tighten the lower bolt securely.

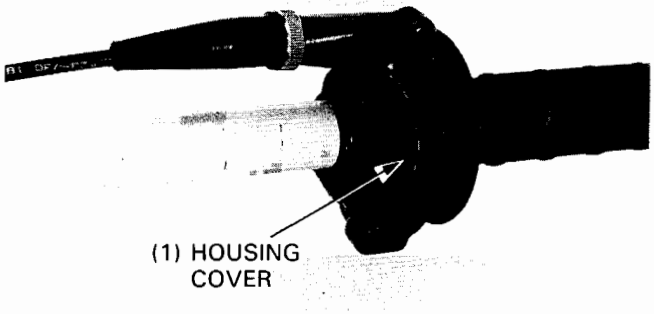
Torque: 10 N·m (1.0 kg-m, 7 ft-lb)

After '92:



'92:
Install the throttle housing cover.

Torque: 1.5 N·m (0.15 kg-m, 1.1 ft-lb)



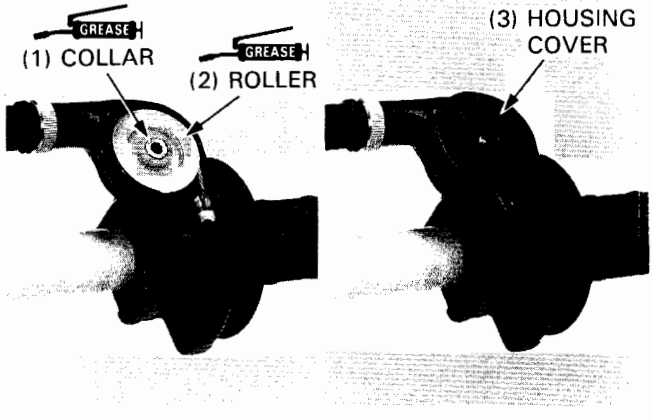
After '92:
Apply thin coat of grease to the sliding surfaces of the throttle cable roller and collar, and install them in the throttle housing.

Install the throttle housing cover.

Torque: 1.5 N·m (0.15 kg-m, 1.1 ft-lb)

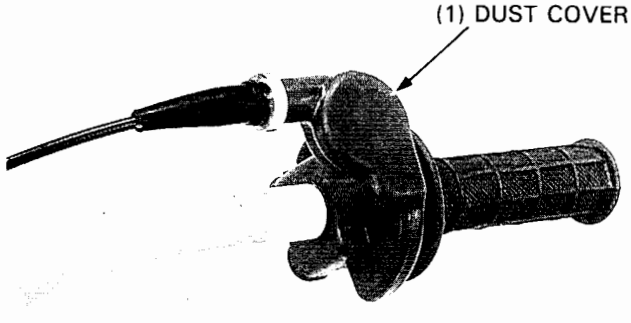
Adjust the throttle cable free play and test throttle operation (page 3-6).

After '92:



After '94:
Install the dust cover over the throttle housing.

After '94:



Set the front brake master cylinder on the handlebar.
Install the master cylinder holder with the "UP" mark facing up and align the end of the holder with the punch mark on the handlebar.
Tighten the upper bolt first then tighten the lower bolt to the specified torque.

Torque: 10 N·m (1.0 kg-m, 7 ft-lb)

Install the clutch lever bracket and holder with the punch mark on the holder facing up and aligning the end of the holder with the punch mark on the handlebar.
Tighten the upper bolt first, then tighten the lower bolt and connect the clutch cable.

Torque: 10 N·m (1.0 kg-m, 7 ft-lb)

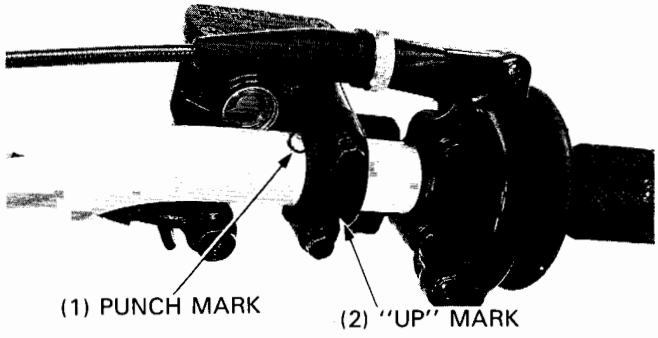
Adjust the clutch cable free play (page 3-13).
Secure the engine stop button wire and install the engine stop button.

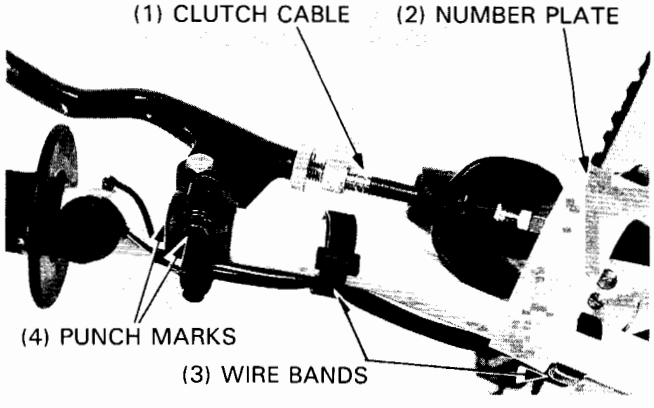
Torque: 1.5 N·m (0.15 kg-m, 1.1 ft-lb)

Hold the engine stop button wires against the handlebar using the wire bands.

Hook the number plate attaching tab onto the handlebar.

'92 Shown:

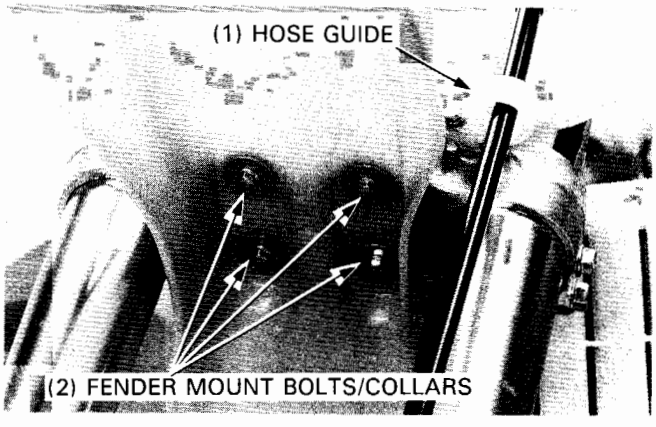




Steering Stem

Removal

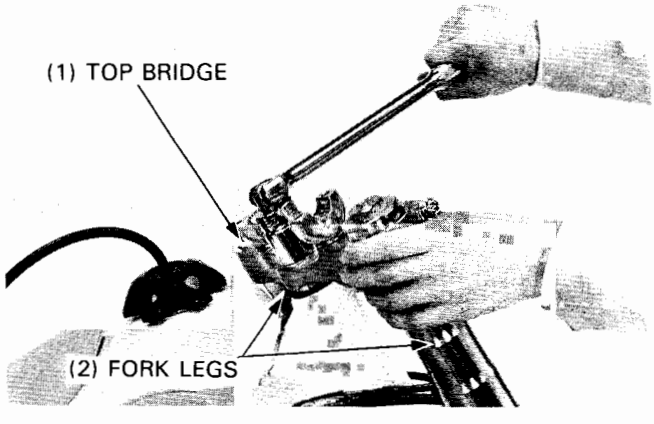
Remove the following:
— handlebar (page 10-31)
— front wheel (page 10-6)
— front fender and brake hose guide



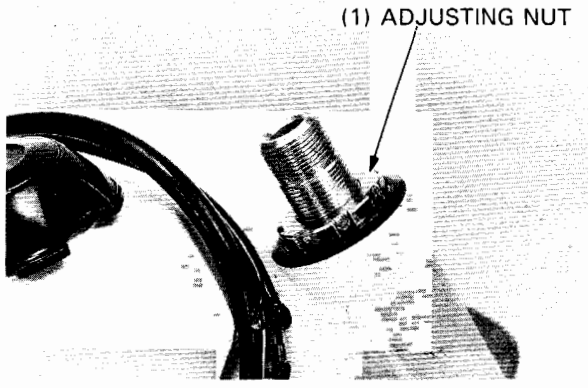
Remove the steering stem nut and washer.

Remove the fork legs (page 10-13, 21).

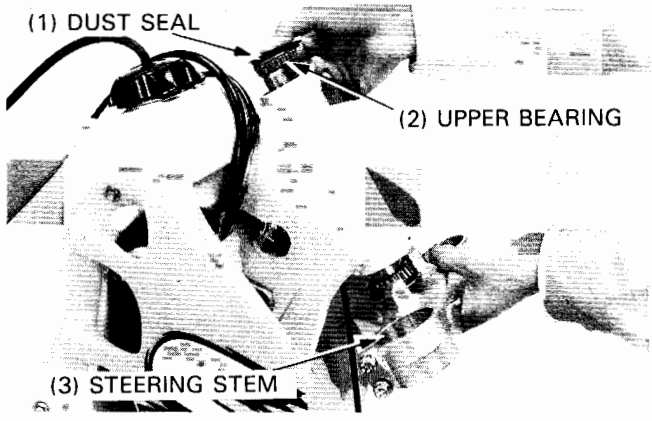
Remove the fork top bridge.



Remove the steering head adjusting nut.



Remove the seal, upper bearing and steering stem from the steering head.

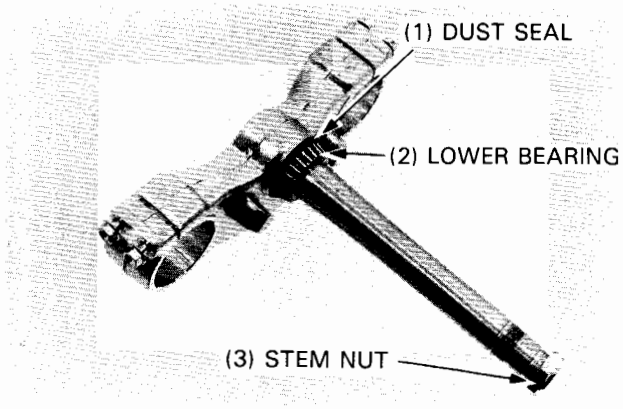


Bearing Replacement

NOTE

- Always replace the bearings and bearing races as a set.
- If the motorcycle has been involved in an accident, examine the steering stem and the area around the steering head for cracks.

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



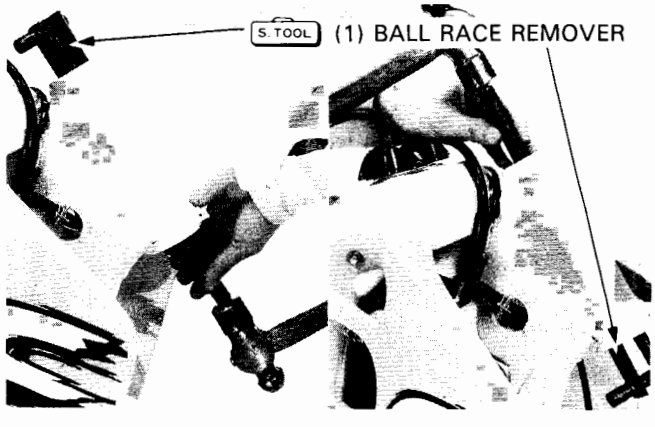
NOTE

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

Remove the upper and lower bearing races from the steering head using the special tools.

S. TOOL

Ball race remover **07948–4630100**



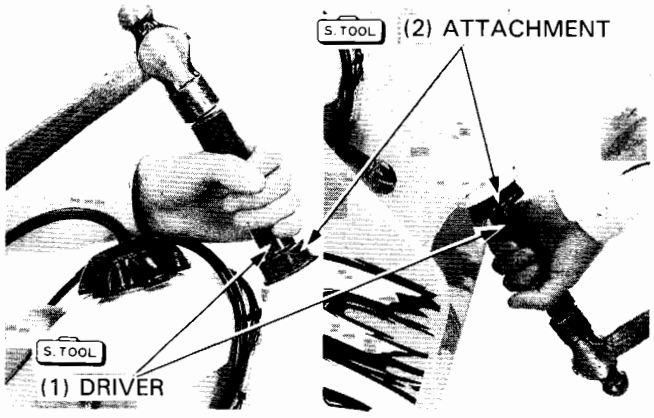
Install the new bearing races.

NOTE

- Drive the races in squarely, making sure that they are fully seated.

S. TOOL

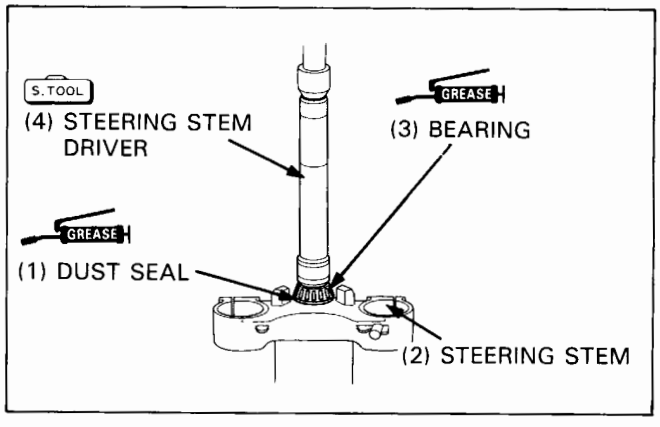
Driver	**07749–0010000**
Attachment, 42 x 47 mm	**07746–0010300**
Attachment, 52 x 55 mm	**07746–0010400**



Install the new dust seal. Install the lower bearing using a hydraulic press.

S. TOOL

Steering stem driver **07946–MB00000**

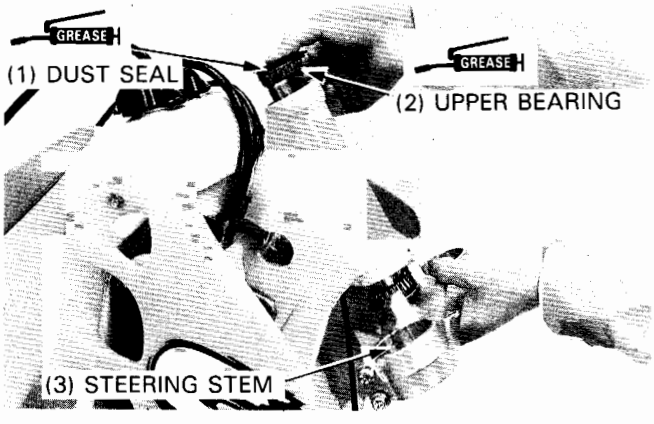


Installation

Pack the upper and lower tapered roller bearing with grease and apply grease to the dust seal.

Install the upper tapered roller bearing in the steering head. Slide the steering stem through the steering head from the bottom.

Install the washer and seal.



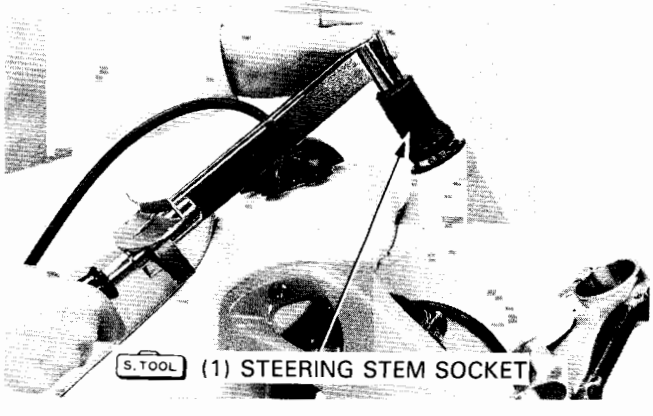
Install the steering head adjusting nut and tighten it with the special tool to the specified torque.

S. TOOL

Steering stem socket **07916–KA50100**

Torque: '92–'94: 2.0 N·m (0.2 kg-m, 1.4 ft-lb)
After '94: 13 N·m (1.3 kg-m, 9 ft-lb)

Turn the steering stem lock-to-lock 5 times to seat the bearings and recheck the torque of the adjusting nut.

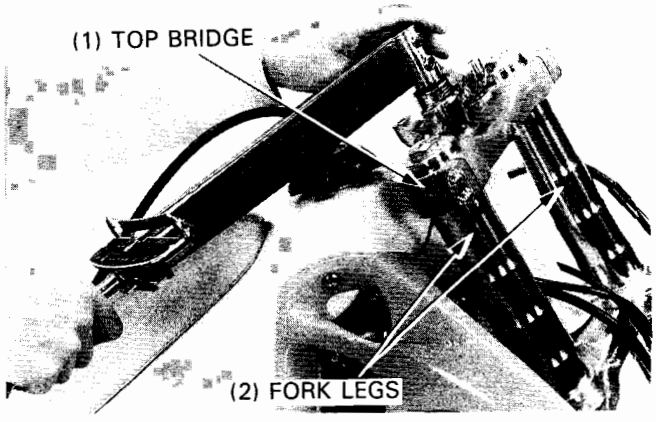


Install the fork top bridge, washer and stem nut.
Temporarily install both fork legs.
Tighten the steering stem nut to the specified torque.

Torque '92 : 118 N·m (11.8 kg-m, 85 ft-lb)
After '92 : 130 N·m (13.0 kg-m, 94 ft-lb)

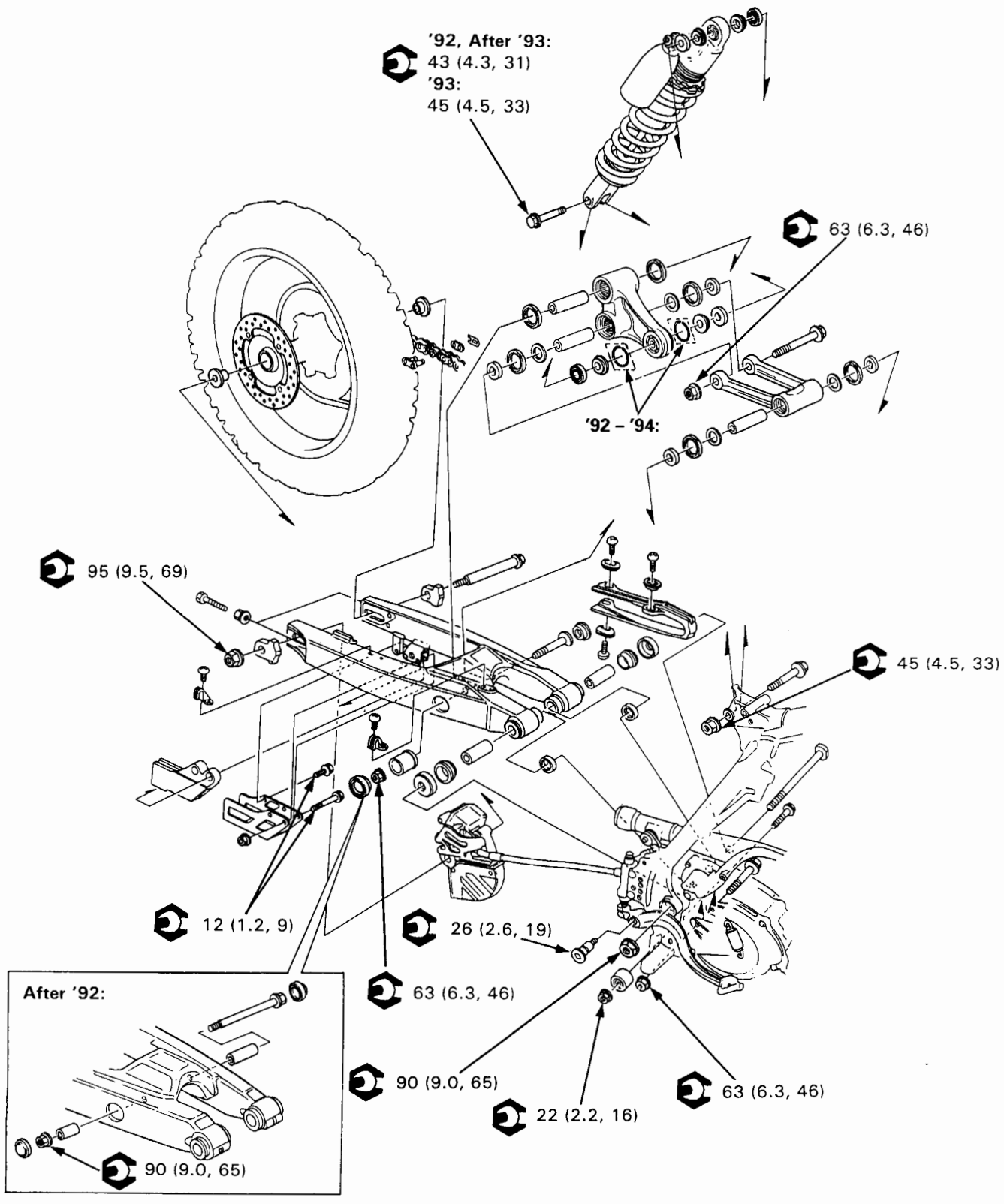
Recheck the steering stem adjustment before installing the removed parts.

Install both the fork legs in their proper positions.
Install the remaining removed parts in the reverse order of removal.



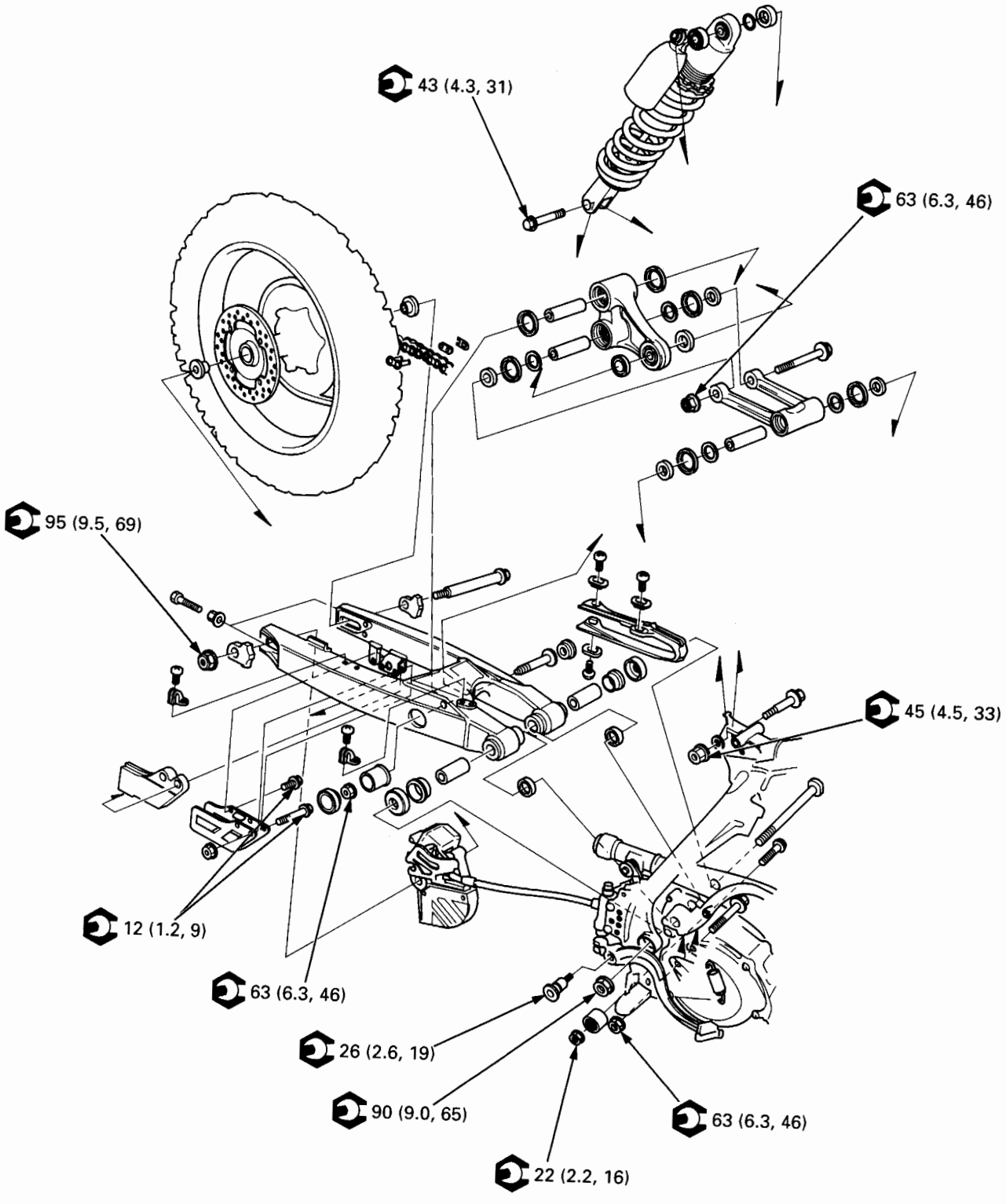
MEMO

'92 – '95:


'92, After '93:
43 (4.3, 31)
'93:
45 (4.5, 33)
63 (6.3, 46)
'92 – '94:
95 (9.5, 69)
45 (4.5, 33)
12 (1.2, 9)
26 (2.6, 19)
63 (6.3, 46)
After '92:
90 (9.0, 65)
90 (9.0, 65)
22 (2.2, 16)
63 (6.3, 46)

After '95:

11. Rear Wheel/Suspension



Service Information	11-2	Shock Absorber	11-11
Troubleshooting	11-4	Shock Linkage	11-29
Rear Wheel	11-5	Swingarm	11-32

Service Information

General

⚠ WARNING

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

- Use genuine Honda bolts for the rear suspension linkage and shock absorber pivot and mounting; ordinary bolts lack adequite strength for these applications. Also take note of the installation direction of these bolts since they must be installed correctly.
- For optimum suspension performance and linkage component service life, the swingarm and shock linkage pivot bearings (along with related seals and bushings) should be disassembled, cleaned, inspected for wear and lubricated with molybdenum disulfide grease after every 3 races or 7.5 hours of operation.
- Optional rear wheel sprockets, drive chain, shock springs and spring preload pin spanners are available. Refer to General Information, section 1.
- A box or work stand is required to support the motorcycle. An optional work stand is described in section 1, General Information.
- Refer to the section 12 for brake system information.

Specifications

Unit: mm (in)

Item		Standard	Service Limit
Shock absorber spring free length	'92–'93	265 (10.4)	262 (10.3)
	'94	280 (11.0)	277 (10.9)
	After '94	265 (10.4)	—
Shock absorber standard installed spring length (Std.)	'92–'93	250 (9.8)	—
	'94	268 (10.55)	—
	After '94	253.5 (9.98)	—
Rear wheel rim runout	Radial	—	2.0 (0.08)
	Axial	—	2.0 (0.08)
Rear axle runout		—	0.20 (0.008)
Damper gas pressure		981 kPa (10 kg/cm², 142 psi)	—
Damper compressed gas		Nitrogen gas	
Shock absorber oil capacity	'92–'93	290 cc (9.8 oz)	—
	'94	317 cc (10.7 oz)	—
	After '94	311 cc (10.5 oz)	—
Recommended shock absorber oil		Pro Honda Suspension Fluid SS-7 or equivalent	
Damper rod compressed force at 10 mm (0.4 in)		15.4 kg (34.0 lb)	—

Torque Values

Shock absorber (upper)	45 N·m (4.5 kg-m, 33 ft-lb)
(lower) ('92, After '93)	43 N·m (4.3 kg-m, 31 ft-lb)
('93)	45 N·m (4.5 kg-m, 33 ft-lb)
Rear suspension linkage	
Shock arm (Swingarm side) ('92)	63 N·m (6.3 kg-m, 46 ft-lb)
(After '92)	90 N·m (9.0 kg-m, 65 ft-lb)
(Shock link side)	63 N·m (6.3 kg-m, 46 ft-lb)
Shock link (Frame side)	63 N·m (6.3 kg-m, 46 ft-lb)
Spoke nipple	3.8 N·m (0.38 kg-m, 2.7 ft-lb)
Final driven sprocket nuts	33 N·m (3.3 kg-m, 24 ft-lb)
Rear axle nut	95 N·m (9.5 kg-m, 69 ft-lb)
Swingarm pivot	90 N·m (9.0 kg-m, 65 ft-lb)
Rim lock nut	13 N·m (1.3 kg-m, 9 ft-lb)
Shock absorber spring lock nut ('92–'94)	90 N·m (9.0 kg-m, 65 ft-lb)
(After '94)	29 N·m (2.9 kg-m, 21 ft-lb)
Shock absorber compression damping adjuster	
('92–'94)	20 N·m (2.0 kg-m, 14 ft-lb)
(After '94)	30 N·m (3.0 kg-m, 22 ft-lb)
Rear brake disc mounting bolts	43 N·m (4.3 kg-m, 31 ft-lb)
Chain roller bolt	22 N·m (2.2 kg-m, 16 ft-lb)
Chain guide bolts	12 N·m (1.2 kg-m, 9 ft-lb)
Brake pedal pivot bolt	26 N·m (2.6 kg-m, 19 ft-lb)
Shock absorber damper rod end nut ('92–'94)	27 N·m (2.7 kg-m, 20 ft-lb)
(After '94)	26 N·m (2.6 kg-m, 19 ft-lb)

Tools

Special

Needle bearing driver	07946–KA50000
Slider guide attachment	07974–KA50101 or 07974–KA30100
Sleeve collar	07974–KA30201
Spherical bearing driver	07HMF–KS60100
Slider guide, 14 mm	07974–KA40001
Bearing remover set, 20 mm	07936–3710001
– Bearing remover	07936–3710600
– Remover handle	07936–3710100
– Remover weight	07741–0010201 or 07936–3710200
Driver shaft	07946–MJ00100
Driver head	07946–KM40701
Attachment, 28 x 30 mm	07946–1870100

Common

Spoke nipple wrench	07JMA–MR60100 Equivalent commercially available in U.S.A.
Attachment 42 x 47 mm	07746–0010300
Driver	07749–0010000
Remover head, 20 mm	07746–0050600 ┐ Equivalent commercially available in U.S.A.
Bearing remover shaft	07746–0050100 ┘
Pilot, 20 mm	07746–0040500
Retainer wrench B	07710–0010200
Retainer wrench body	07710–0010401
Lock nut wrench, 20 x 24 mm	07716 – 0020100
Attachment, 24 x 26 mm	07746 – 0010700
Pilot, 22 mm	07746 – 0041000
Attachment, 32 x 35 mm	07746 – 0010100

Optional

Pin spanner A	89201 – KS6 – 810 (2 Required)

Troubleshooting

Soft suspension
- Weak spring
- Oil leakage from damper unit

Hard suspension
- Incorrectly mounted suspension components
- Bent swingarm pivot
- Damaged swingarm pivot bushings

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

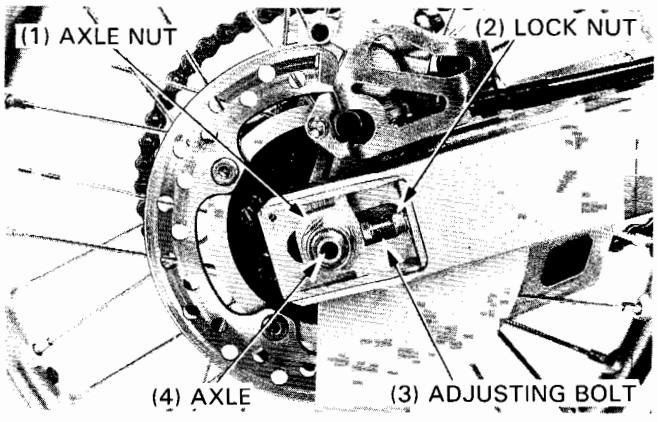
Rear wheel wobbling
- Bent rim
- Worn rear wheel bearings
- Faulty tire

Rear Wheel

Removal

Raise the rear wheel off the ground with a box or workstand under the engine.
Loosen the lock nuts and the drive chain adjusting bolts.
Remove the axle nut and axle.

Push the wheel forward to allow removal of the drive chain from the driven sprocket and remove the rear wheel.



CAUTION

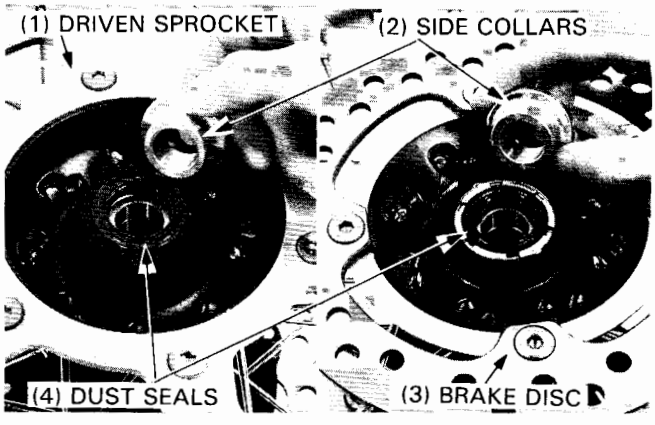
- **When removing the rear wheel, be careful not to damage the brake pads with the disc.**

NOTE

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

Disassembly

Remove the following:
- side collars
- driven sprocket
- brake disc
- dust seals.

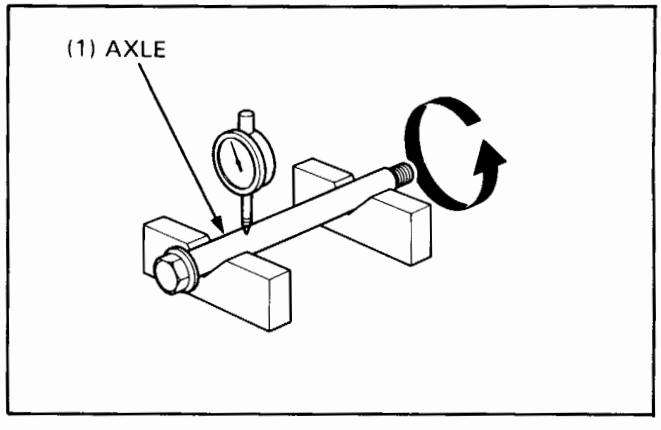


If necessary, remove the tire, tube, rim band and the rim lock.

Inspection

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

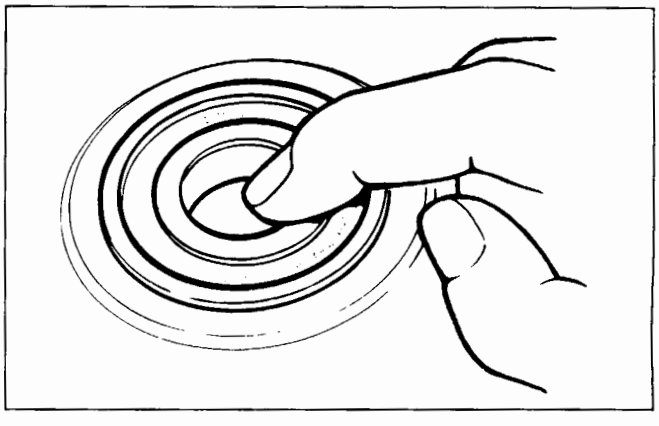
Service Limit: 0.2 mm (0.008 in)



Wheel Bearings

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

Remove and discard the bearings if the races do not turn smoothly, quietly, or if the outer races fit loosely in the hub (page 11-6).



NOTE

- Replace wheel bearings in pairs.

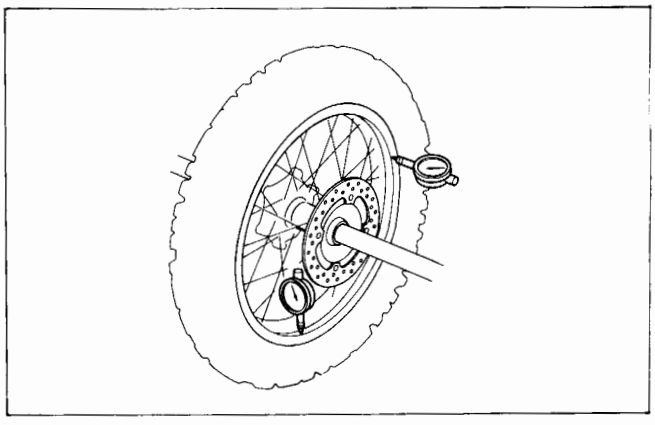
Wheel Rim

Check the rim runout by placing the wheel on a turning stand. Then rotate the wheel by hand, and read the runout using a dial indicator.
Actual runout is 1/2 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.

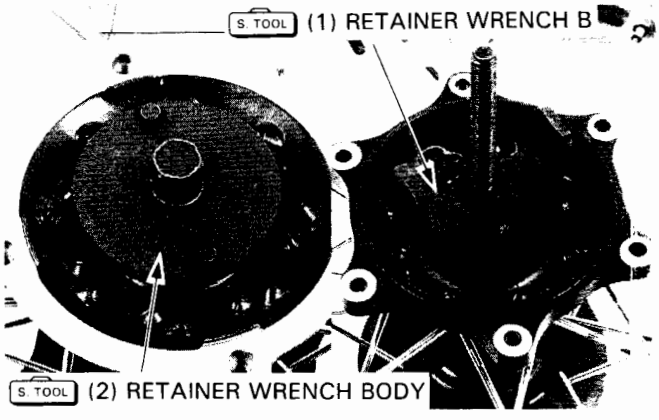
S. TOOL
Spoke nipple wrench — **07JMA–MR60100 or Equivalent commercially available in U.S.A.**



Torque: 3.8 N·m (0.38 kg-m, 2.7 ft-lb)

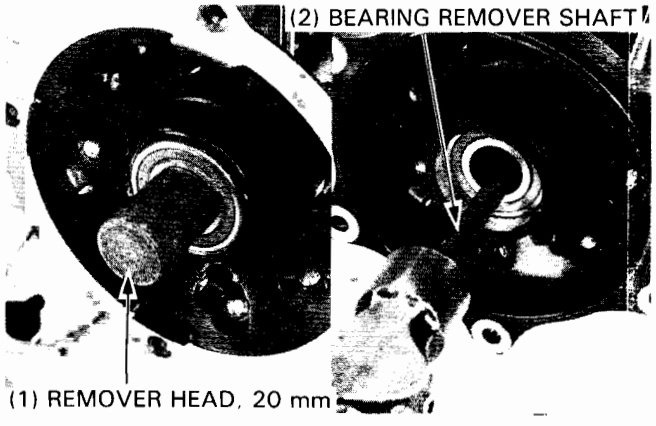
Remove the bearing retainer using the special tools.

S. TOOL
Retainer wrench B — **07710–0010200**
Retainer wrench body — **07710–0010401**



Remove the wheel bearings and distance collar using the special tools.

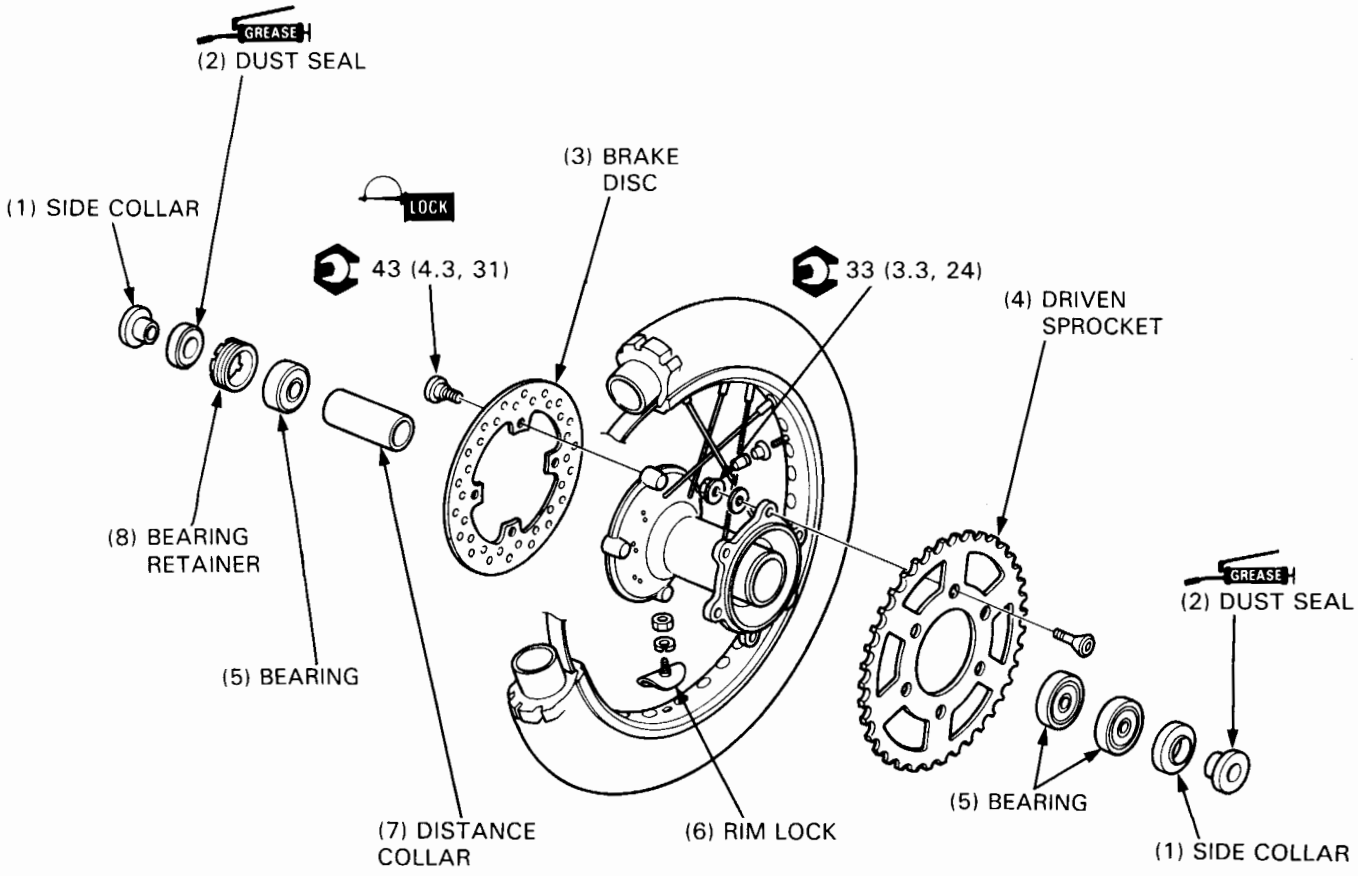
S. TOOL
Bearing remover head, 20 mm — **07746–0050600 or Equivalent commercially available in U.S.A.**
Bearing remover shaft — **07746–0050100 or Equivalent commercially available in U.S.A.**



NOTE

- Never install old bearings; once the bearings have been removed, they must be replaced with new one.
- Replace wheel bearings in pairs.

Assembly

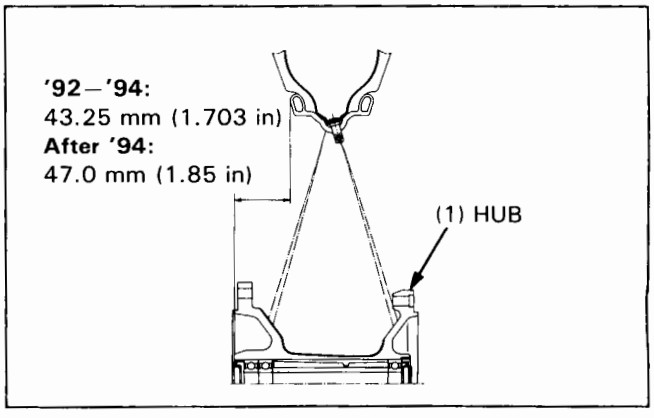


Place the rim on the work bench.
Place the hub in the center, and begin lacing with new spokes.
Adjust the hub position so that the distance from the left end surface of the hub to the side of rim is as shown.
Tighten the spokes in 2 or 3 progressive steps to the specified torque.

S TOOL

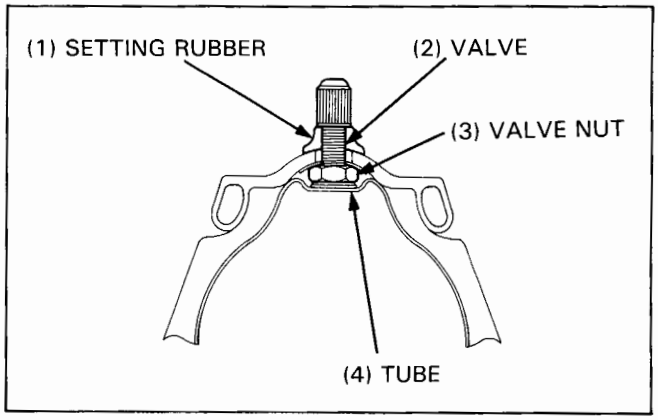
Spoke nipple wrench — **07JMA–MR60100 or Equivalent commercially available in U.S.A.**

Torque: 3.8 N·m (0.38 kg-m, 2.7 ft-lb)



Check the rim runout (page 11-6).
Install the rim band, tube and tire.
Tighten the rim lock to the specified torque.

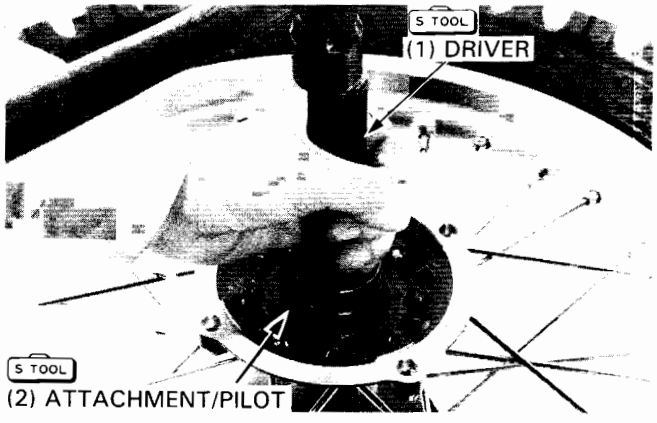
Torque: 13 N·m (1.3 kg-m, 9.4 ft-lb)



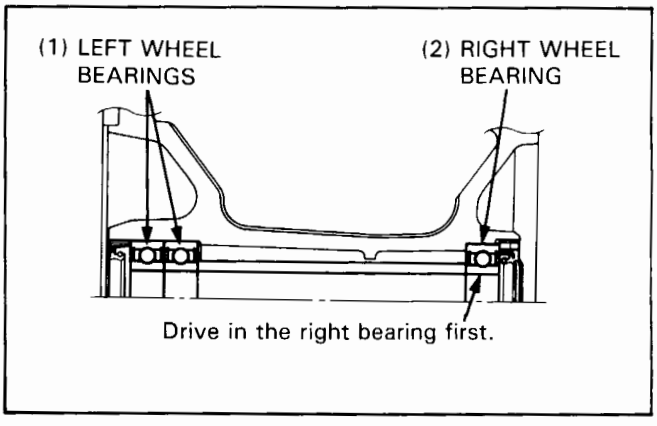
Drive in the right wheel bearing into the hub using the special tools.

S. TOOL

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



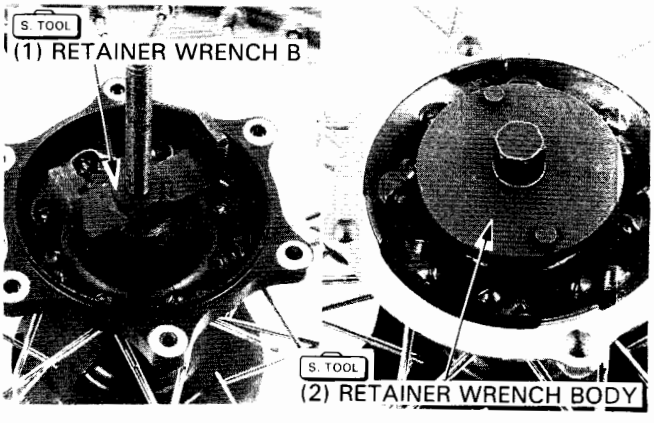
Install the distance collar. Then drive the left wheel bearings into the hub using the same tools.



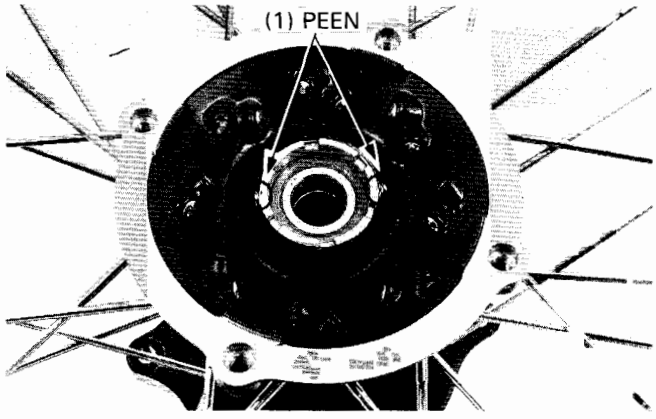
Apply grease to the bearing retainer and install it into the hub using the special tools.

S. TOOL

Retainer wrench B	**07710–0010200**
Retainer wrench body	**07710–0010401**



Peen the edge of the retainer as shown.



Pack the dust seal lip with grease and install the dust seals to both sides of the rear wheel hub.

Install the brake disc with minimum thickness marking (MIN TH 4.0 mm) facing out.
Clean and apply Honda Aerobic Thread Lock or equivalent to the four brake disc retaining bolts and tighten them to the specified torque.

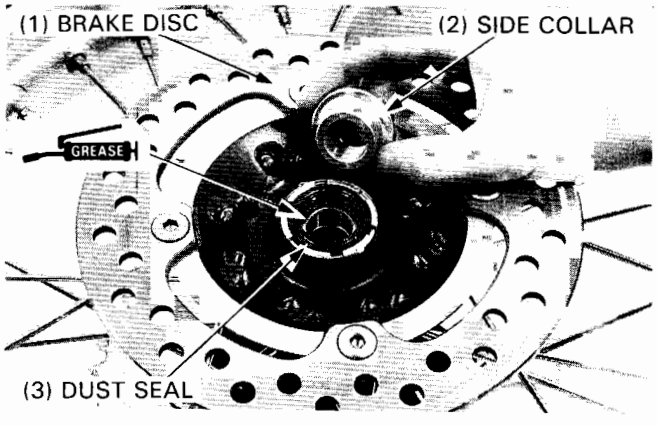
Torque: 43 N·m (4.3 kg-m, 31 ft-lb)

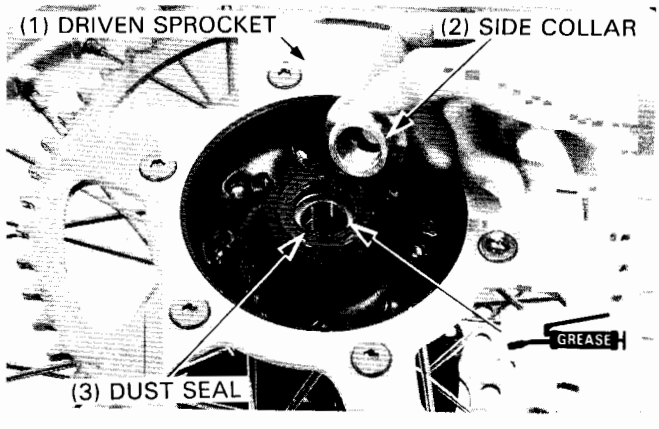
Install the driven sprocket onto the rear wheel hub.
Install the six nuts with a washers and tighten them to the specified torque.

It is important to hold the bolts while tightening the nuts to achieve the proper torque.

Torque: 33 N·m (3.3 kg-m, 24 ft-lb)

Install the side collars.



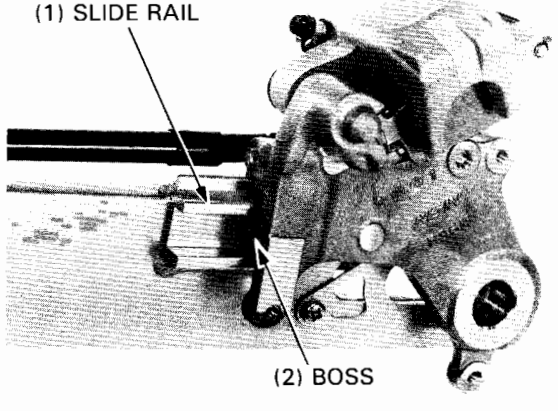


Installation

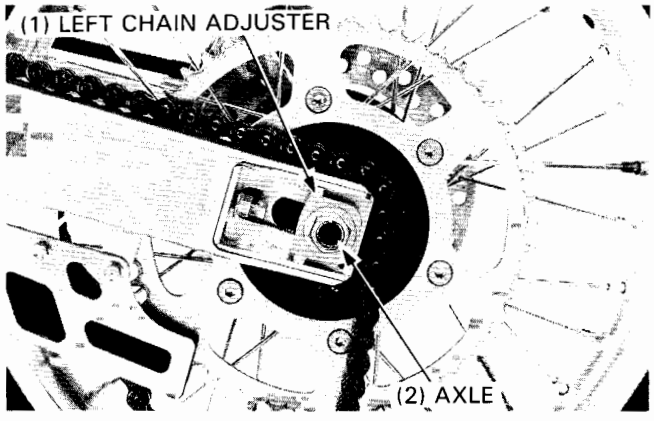
Install the caliper and caliper bracket to the swingarm, aligning the boss on the bracket with the slide rail on the swingarm. Position the rear wheel in the swingarm, inserting the brake disc between the brake pads.

NOTE

- Be careful not to damage the brake pads with the brake disc.



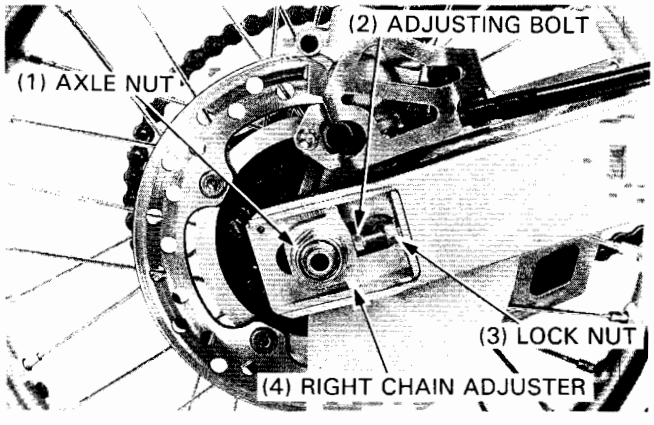
Insert the rear axle into the left chain adjuster, through the swingarm, the rear wheel, and the rear brake caliper to the right side.



Install the drive chain.
Install the right chain adjuster and rear axle nut. Check the drive chain slack and adjust as required (page 3-9).
Tighten the rear axle nut to the specified torque.

Torque: 95 N·m (9.5 kg-m, 69 ft-lb)

Snug the adjusting bolts against the chain adjusters and tighten the lock nuts.



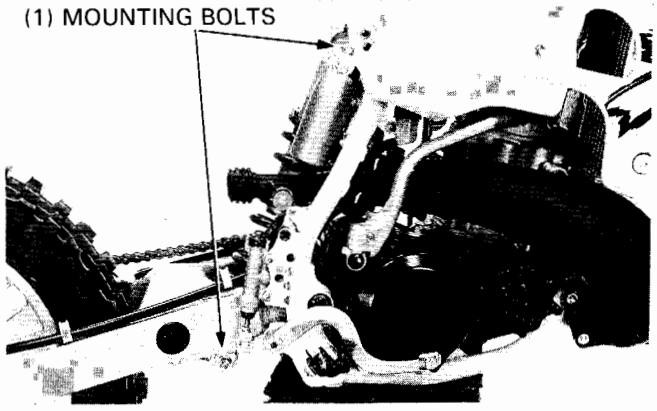
Shock Absorber

Removal

Remove the seat and sub frame (page 2-2 and 2-4).
Remove the upper and lower mounting bolts.

NOTE

- If you will be disassembling the shock absorber, loosen the spring lock nut and adjusting nut while the shock absorber is still in the frame.



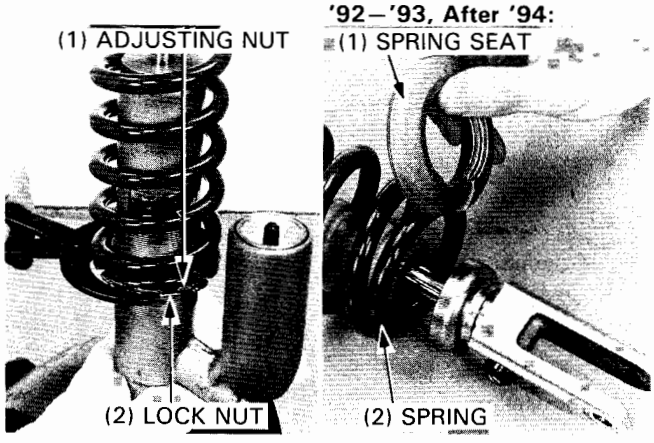
Spring Removal

Hold the upper shock mount in a vise with a suitable cushion or shop towel.
Loosen the lock nut and adjusting nut.

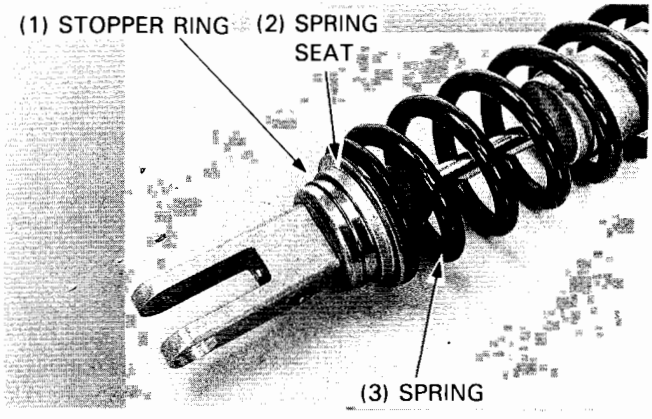
O P TOOL

Pin spanner A — **89201–KA6–810 (2 Required)**

'92–'93, After '94:
Remove the spring seat and spring.
'94:
Remove the stopper ring from the rubber seat.
Remove the spring seat and spring.



'94:



Bladder Replacement

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

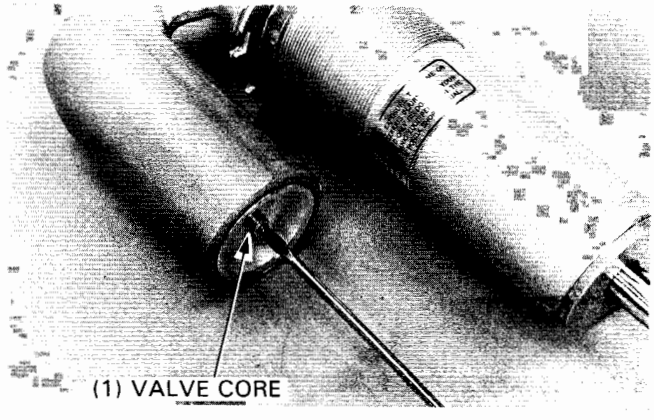
NOTE

- Replace the bladder if oil is present around the chamber cap or if oil spills out when the nitrogen is released from the reservoir.
- Release the nitrogen pressure before draining the oil from the damper.

⚠ WARNING

- **Release all nitrogen pressure before disassembly: otherwise the chamber cap will be under significant pressure and could cause serious injury.**
- **Wear protective clothing and adequate eye protection to protect against injury and prevent debris from getting in your eyes.**

Remove the valve core.



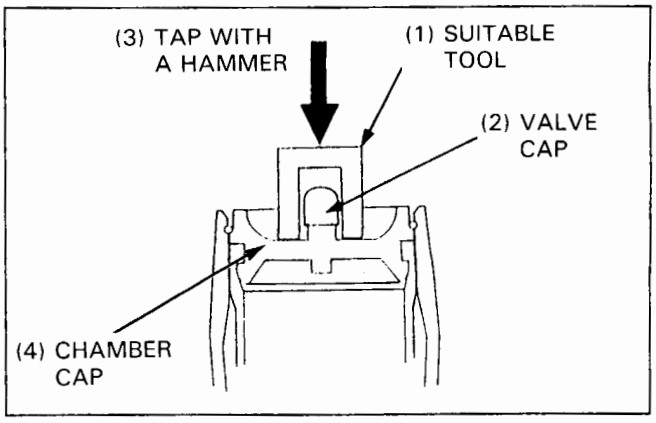
Put a suitable tool on the chamber cap and push it in by lightly tapping on the tool with a plastic hammer until you have good access to the stopper ring.

NOTE

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

CAUTION

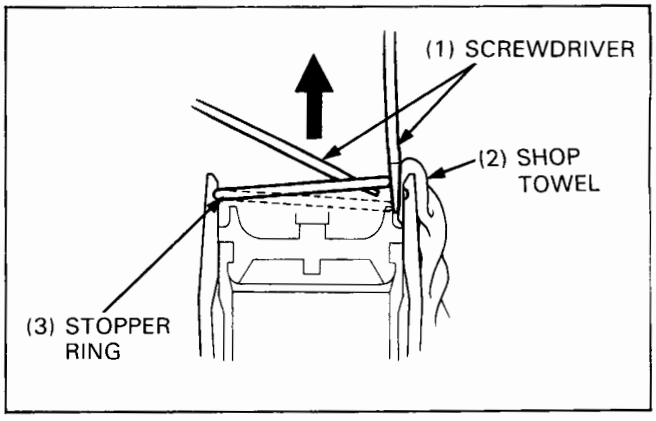
- **To avoid damaging the threads of the valve, install the valve cap.**



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

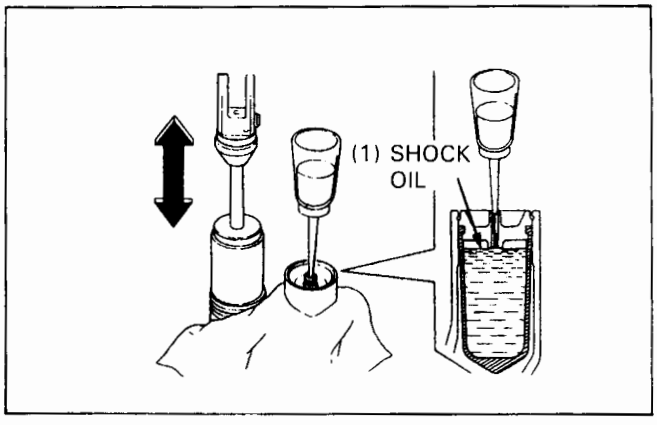
- **To avoid damage to the inside surface of the reservoir, cover the screwdriver and with a shop towel.**



To remove the stopper ring, first push one end of the stopper ring out of its groove, then slip the second screw driver between the stopper ring and the reservoir to act as a ramp. Now, use the other screw driver to pull the stopper ring completely out.
Check if there are burrs in the groove of the reservoir case. Remove any burrs and refinish the groove surface with fine emery cloth.

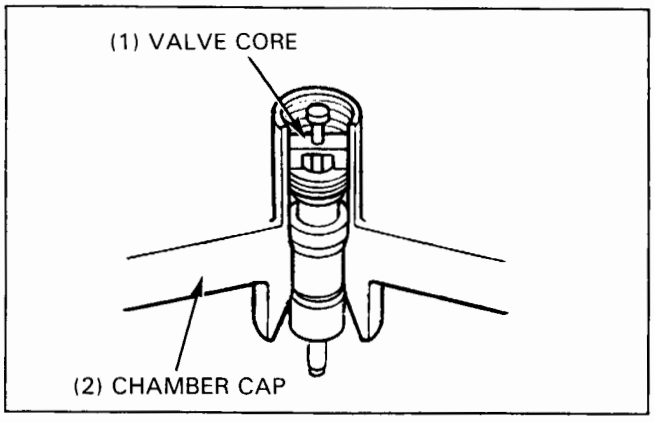
Hold the shock absorber in a vise with soft jaws or a shop towel.
Using a suitable squeeze bottle, fill the reservoir with the recommended shock oil while slowly pumping the damper rod.

Recommended oil: Pro Honda Suspension Fluid SS-7M or equivalent



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

Install the valve core securely.

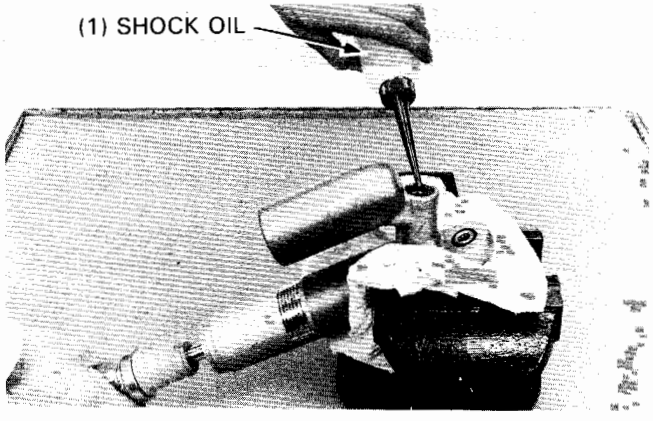


Remove the chamber cap and bladder following the procedure below:

① Wrap a shop towel around the chamber cap. Compress the damper rod slowly to force the chamber cap out.
② Position the damper with the damping adjuster facing up. Remove the damping adjuster.
③ Fill the damper with the recommended shock oil through the damping adjuster hole, while pulling the damper rod all the way out.
④ Reinstall the damping adjuster after filling the damper.

NOTE

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

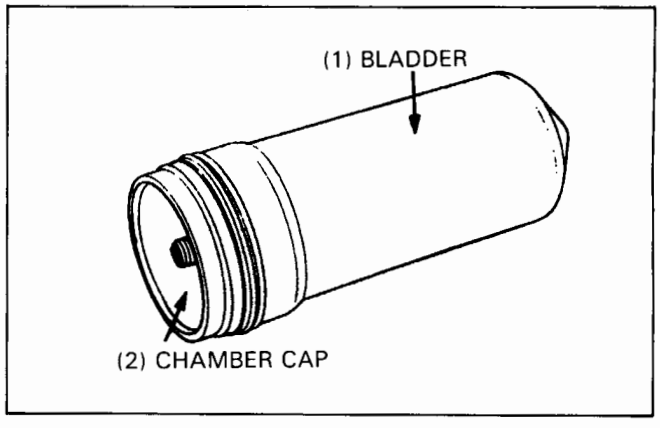


⑤ Position the damper with the chamber cap facing up.
⑥ Repeat steps 1 through 5 until the chamber cap is removed from the reservoir.

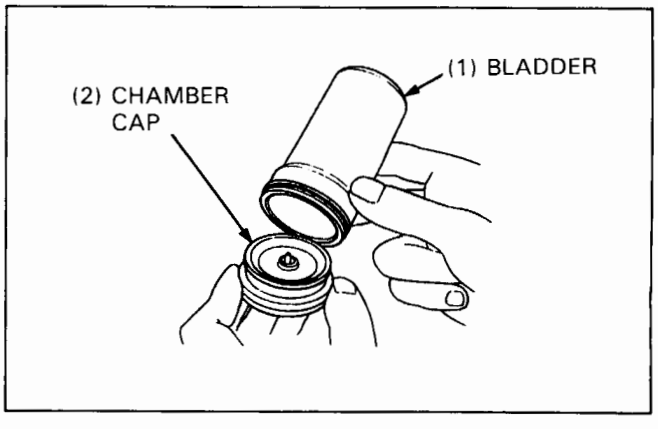
Remove the bladder from the chamber cap and drain the shock oil.

CAUTION

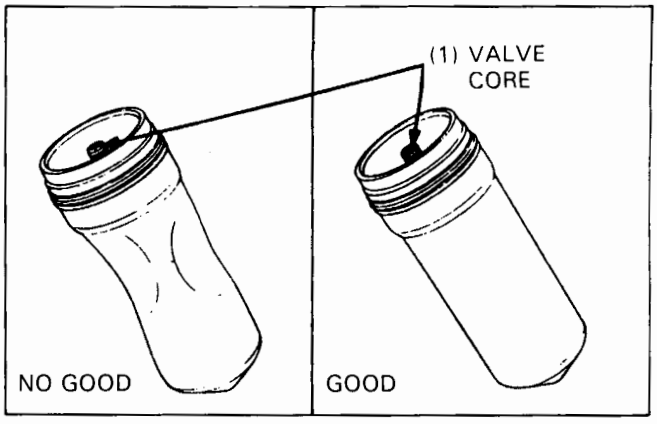
- **Do not use any sort of tool to remove the bladder, because it may damage the chamber cap.**
- **Replace the bladder with a new one. Do not reuse the removed bladder.**



Attach a new bladder to the chamber cap.



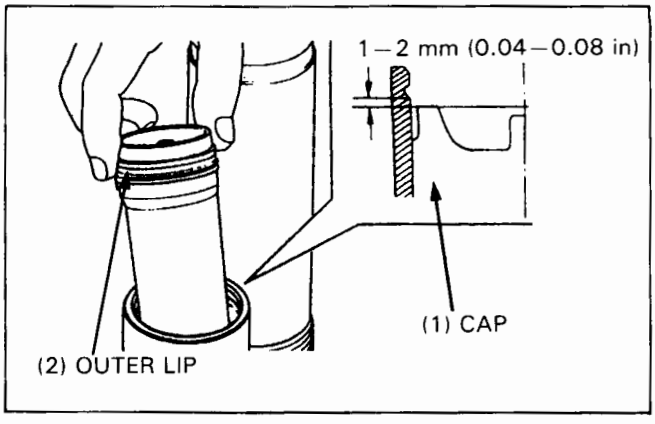
If you distort the bladder when attaching it, depress the valve core to reform it.



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

Recommended oil: Pro Honda Suspension Fluid SS-7M or equivalent

Apply a light coating of shock oil to the outer lip of the bladder, and carefully push the chamber cap into the reservoir to about 1–2 mm (0.04–0.08 in) below the stopper ring groove.

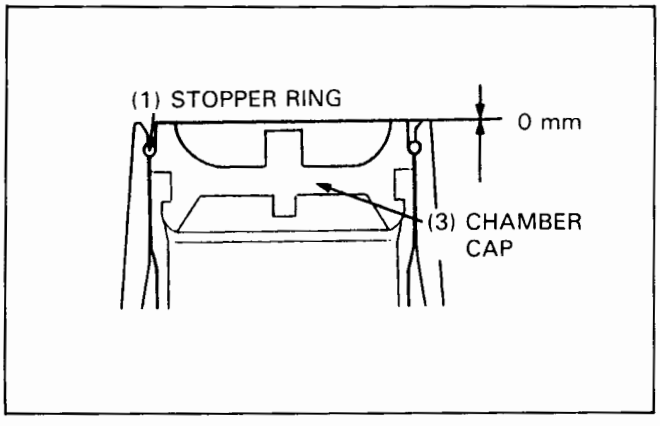


Install the stopper ring securely in the groove of the reservoir. Fill the reservoir with low-pressure compressed air until the stopper ring seats fully all the way around.

⚠WARNING

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

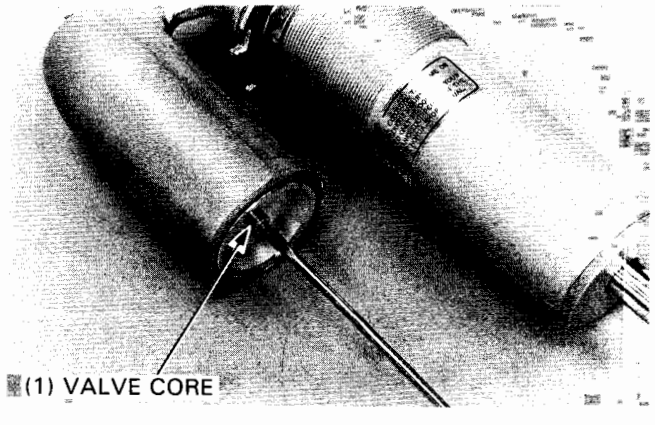
Make sure that the distance between the top edge of the chamber cap and reservoir case is 0 mm as shown.



CAUTION

- **If the chamber cap is not evenly seated, it may come out when filling the reservoir with nitrogen.**

Position the damper with damper adjuster facing up and remove the damper adjuster.
Release the air from the reservoir by compressing the valve core.
Bleed the air from the shock absorber (page 11-25).
Fill the reservoir with the specified pressure nitrogen (page 11-26).



Damper Disassembly

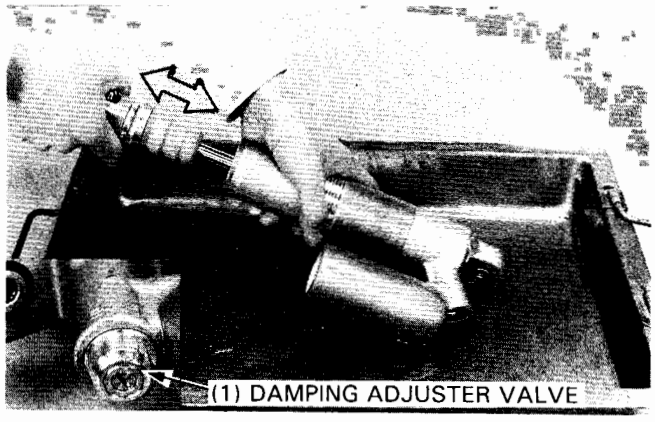
Depress the valve core to release the nitrogen from the reservoir.

⚠ WARNING

- **Point the valve away from you to prevent debris getting in you eyes.**

CAUTION

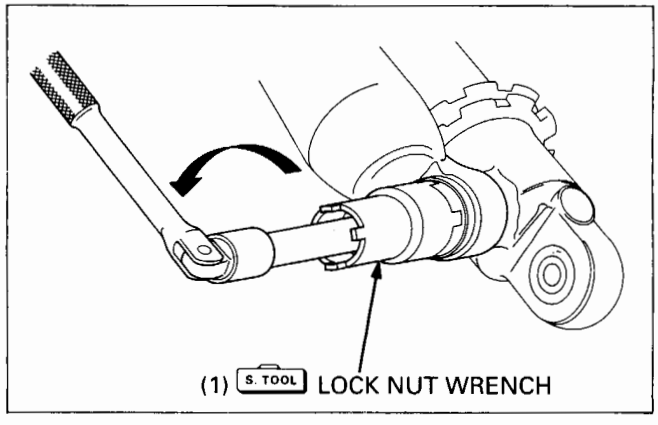
- **Do not remove the valve core before discharging the nitrogen.**



'92 – '95:
Remove the damping adjuster valve.
After '95:
Remove the damping adjuster valve using the special tool.

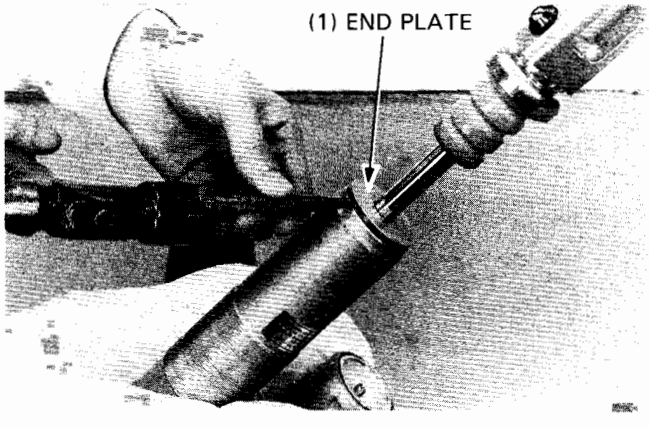
S. TOOL

Lock nut wrench, 20 x 24 mm 07716 – 0020100



Drain most of the shock oil from damper and reservoir by pumping the damper back-and-forth several times.

Hold the shock absorber in a vise at the upper joint protected on both sides by pieces of wood.
Remove the end plate and tape or tie it to the rubber stopper, so it won't get in the way.

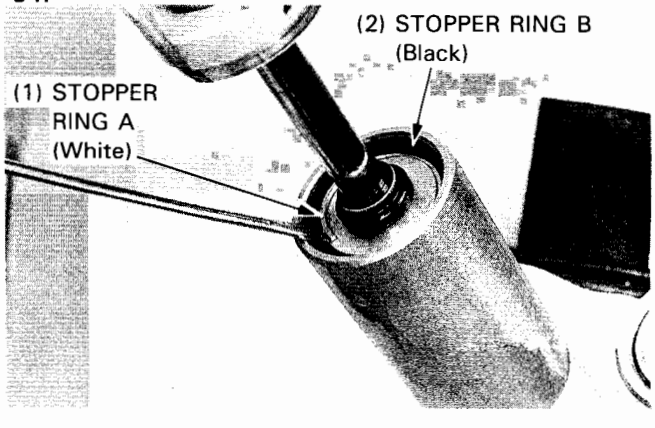


'94:
Remove the stopper ring A (White) from the rod guide case groove.
Remove the stopper ring B (Black).

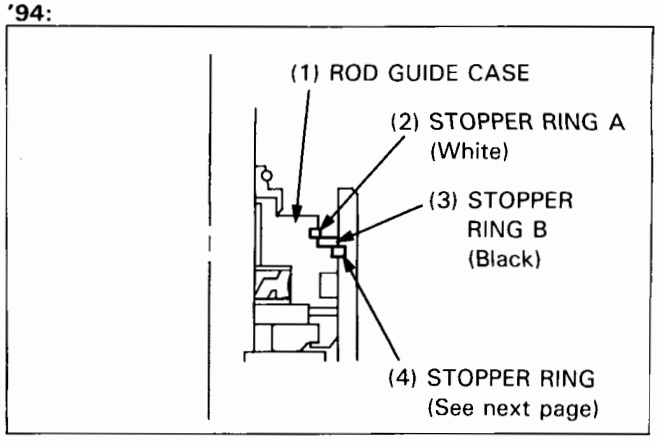
CAUTION

- **Be careful not to scratch the damper case and the rod guide case.**

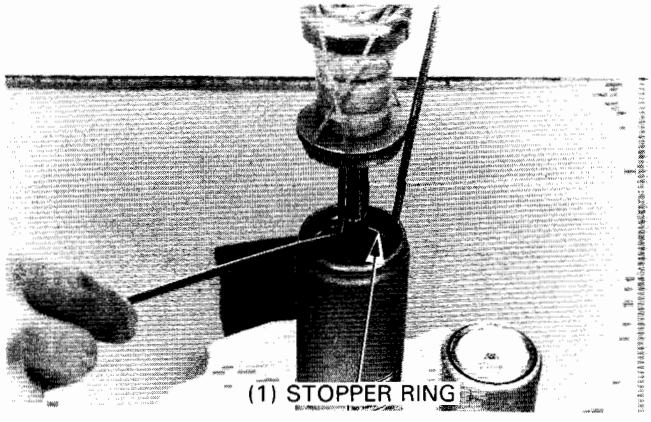
'94:



'94:



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.



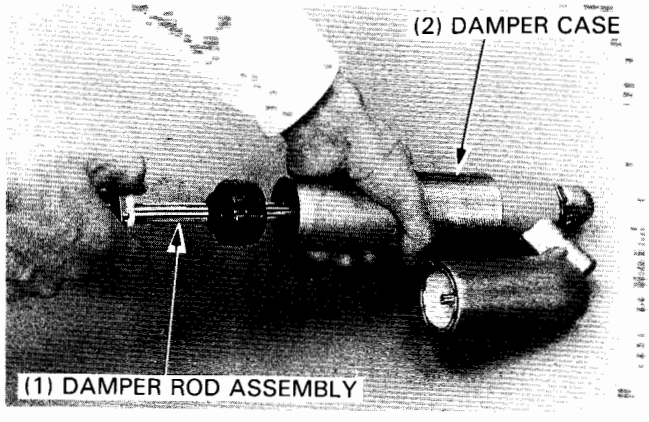
CAUTION

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

NOTE

- Check the stop ring groove for burrs. If any burrs are found, remove them with fine emery cloth before pulling the damper rod assembly out of the case.

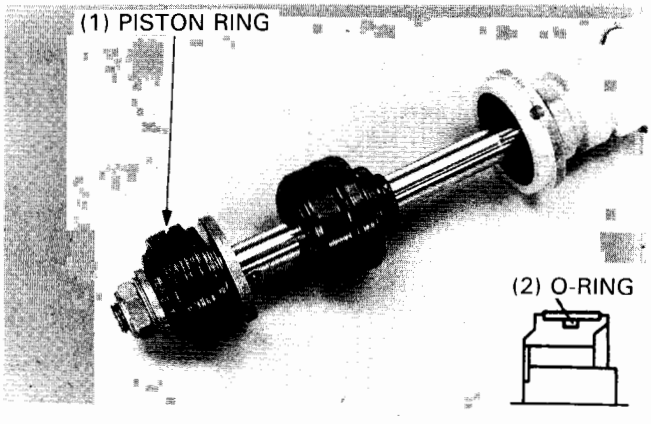
Carefully pull the damper rod assembly out of the damper case.



Piston Ring Replacement

If the piston ring is damaged, cut the piston ring and remove it from the piston.

Replace the O-ring under the piston ring with a new one.



If the piston ring was damage and removed, follow this installation procedure:

'92–'93:

Place the slider guide attachment over the piston and drive a new piston ring onto the ring groove.

S. TOOL

Sleeve collar	**07974–KA30201**
Slider guide attachment	**07974–KA50101 or 07974–KA30100**

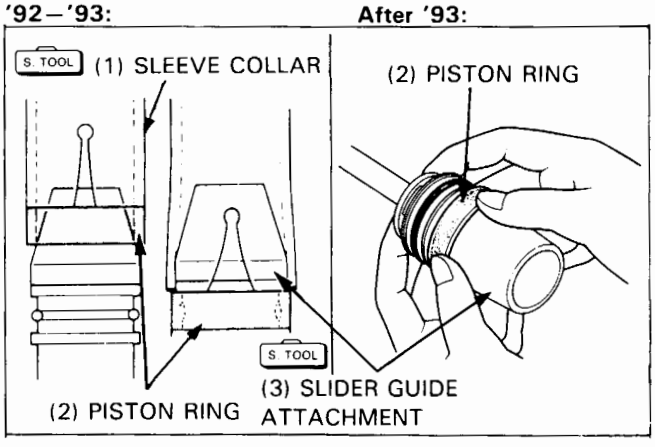
After '93:

Place the slider guide attachment over the piston and compress the piston ring against the ring groove, and seat the piston ring into the ring groove.

S. TOOL

Slider guide attachment	**07MAG–SP00102**

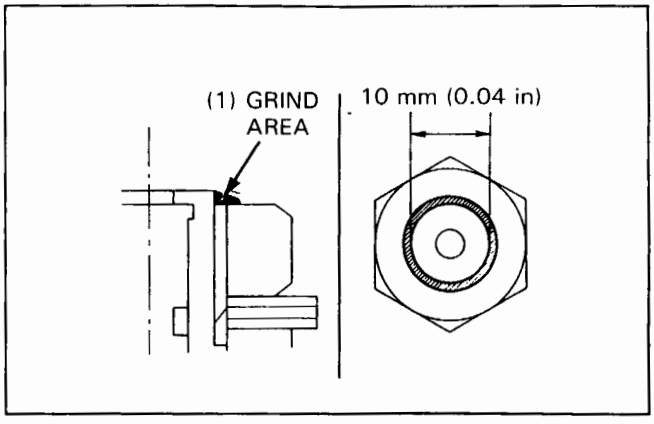
'92–'93: After '93:



Damper Rod Disassembly

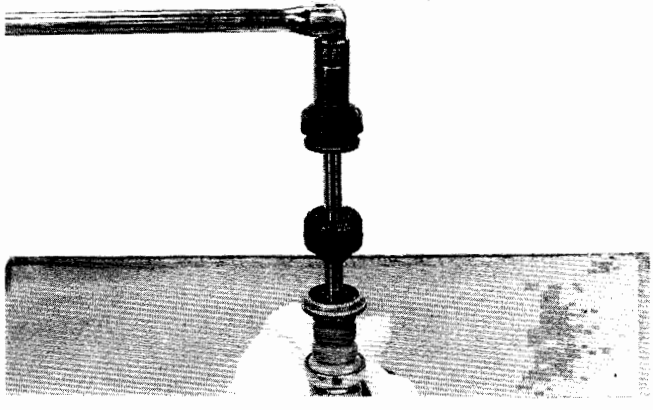
CAUTION

- **To keep lint or dirt from getting onto damper rod parts, do not wear gloves while working on the damper rod.**
- **Be careful to grind so that the O.D. of the rod end is about 10 mm (0.04 in) and not to over grind.**



Unstake the damper rod end nut with a grinder as shown.

Place the damper rod lower mount in a vise with soft jaws or use a shop towel as shown, being careful not to distort the lower mount.



Remove the end nut and discard it.

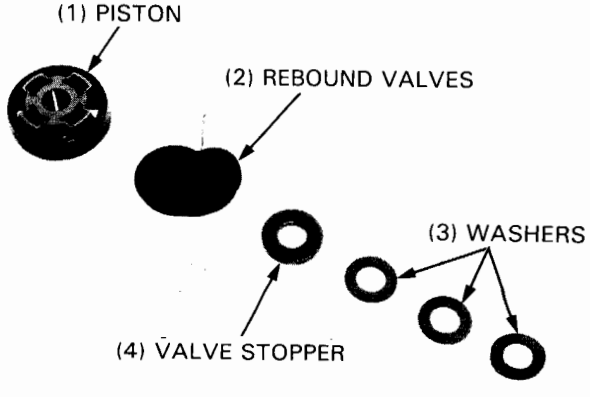
NOTE

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

Remove all the burrs from the end of the damper rod.

Remove the washers ('92–'93, After '94), valve stopper, rebound valves and piston from the damper rod.

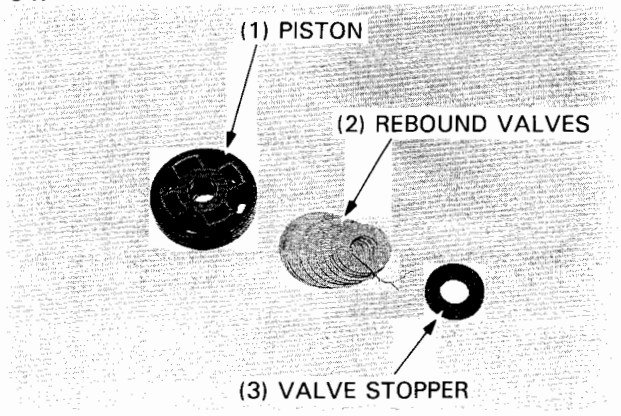
'92–'93, After '94:



NOTE

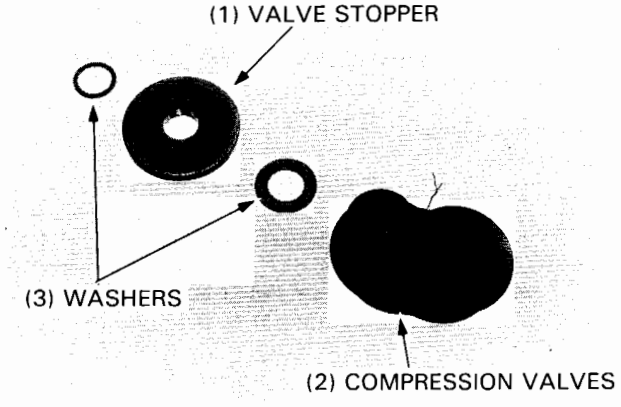
- Pass a piece of thin wire through the removed valves to ensure correct reassembly order.
- Keep dust and abrasives away from all damper rod parts.
- Thoroughly clean the valves in solvent if they have been disassembled and separated or contaminated with dust or dirt.
- Be careful not to get solvent on the O-ring and piston ring.
- The valve arrangement and number of valves shown is typical, but may not be exact for this model.

'94:

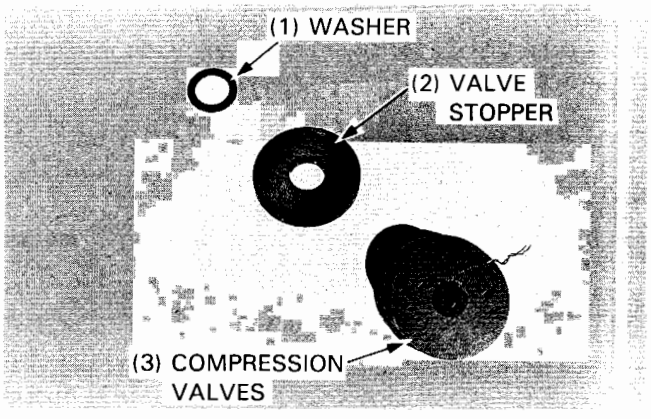


'92–'93:

Remove the compression valves, washer(s) and valve stopper.

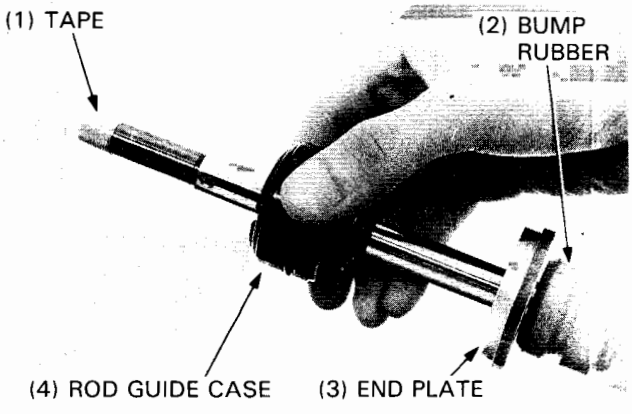


After '93:



Wrap the top threads of the damper rod with tape.
Remove the rod guide case.

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

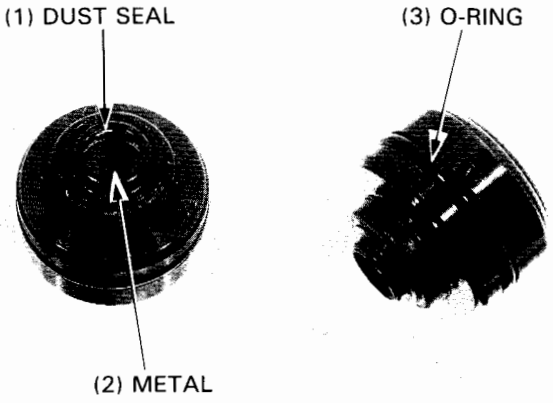


Rod Guide Inspection

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

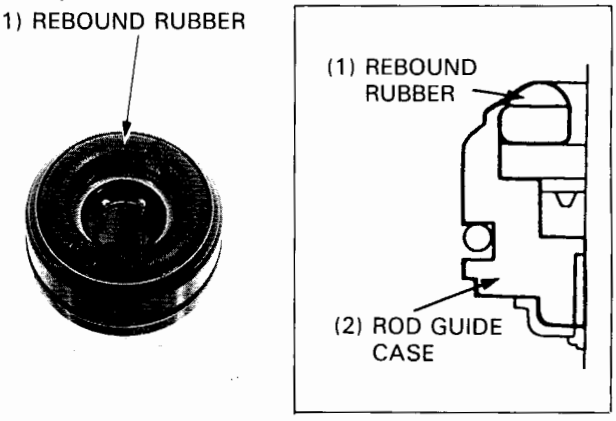
Visually inspect the rod guide case metal. If the metal is worn so that the copper surface appears, replace the rod guide case with a new one.

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

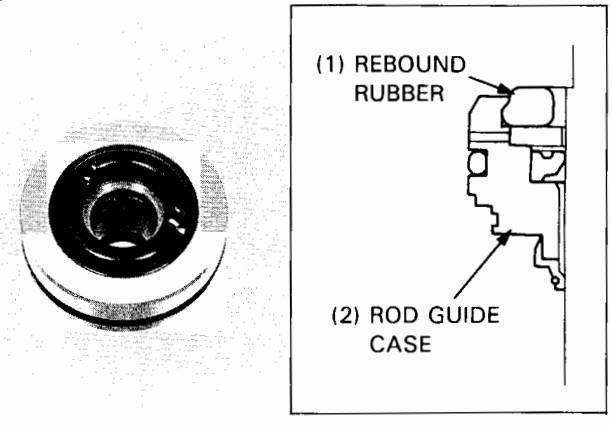


Inspect the rebound rubber. If the rubber is worn or damaged, replace the rod guide case with a new one.

'92 – '93, After '94:



'94:

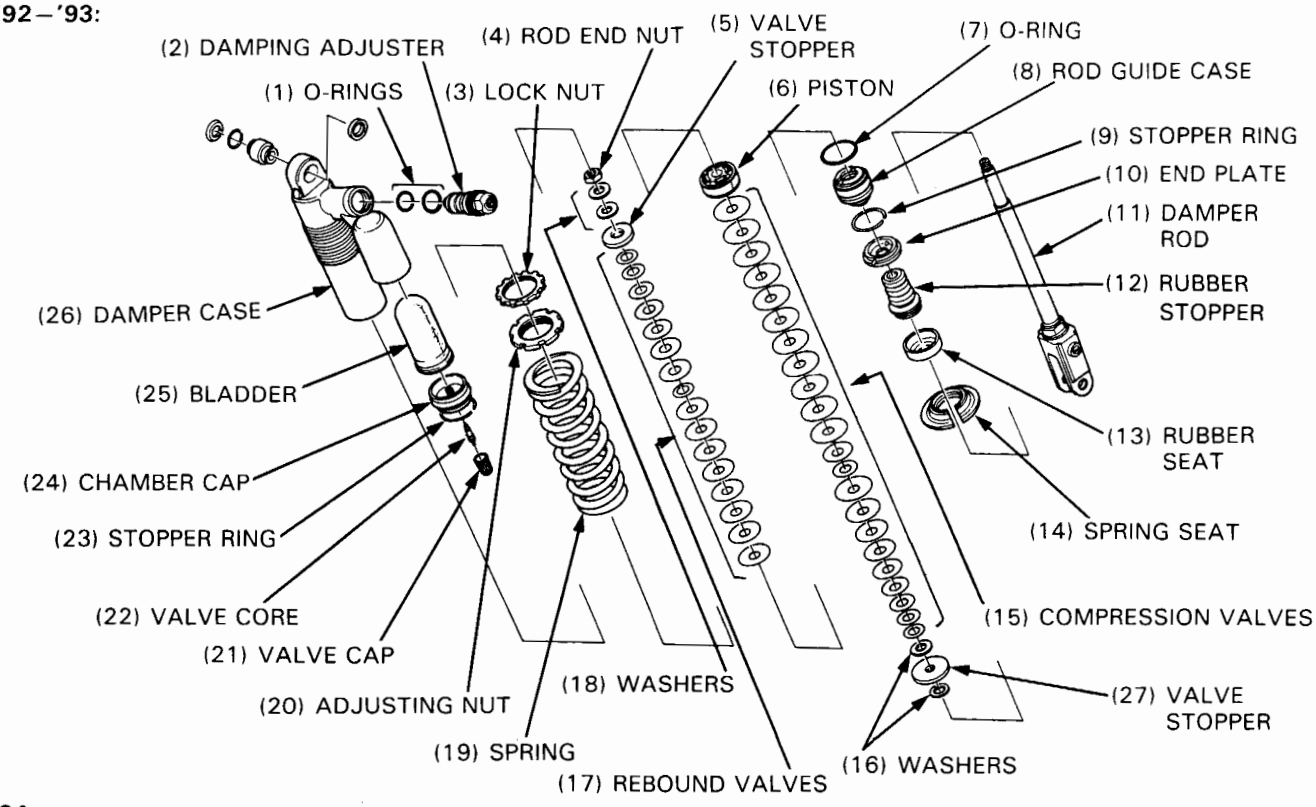


Assembly

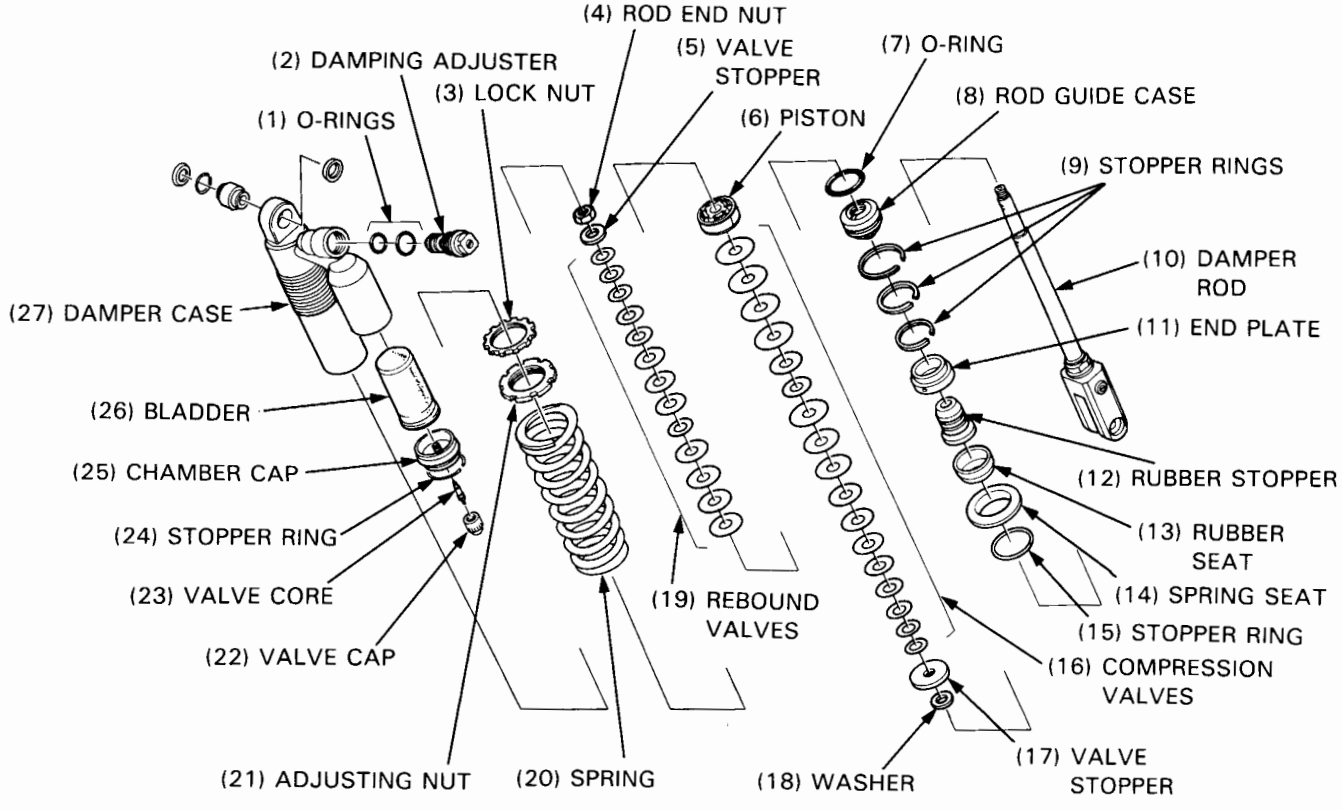
NOTE

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

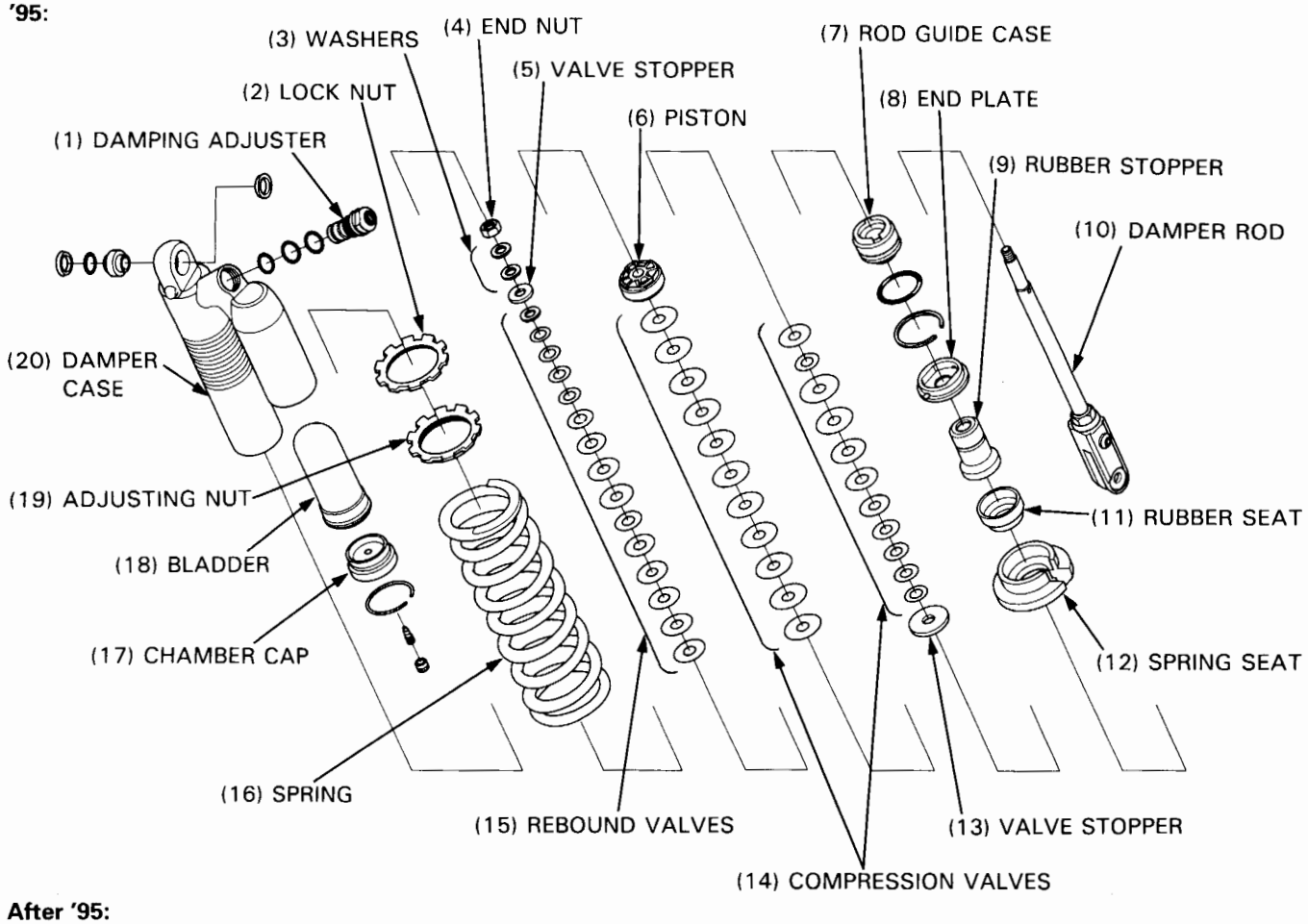
'92–'93:



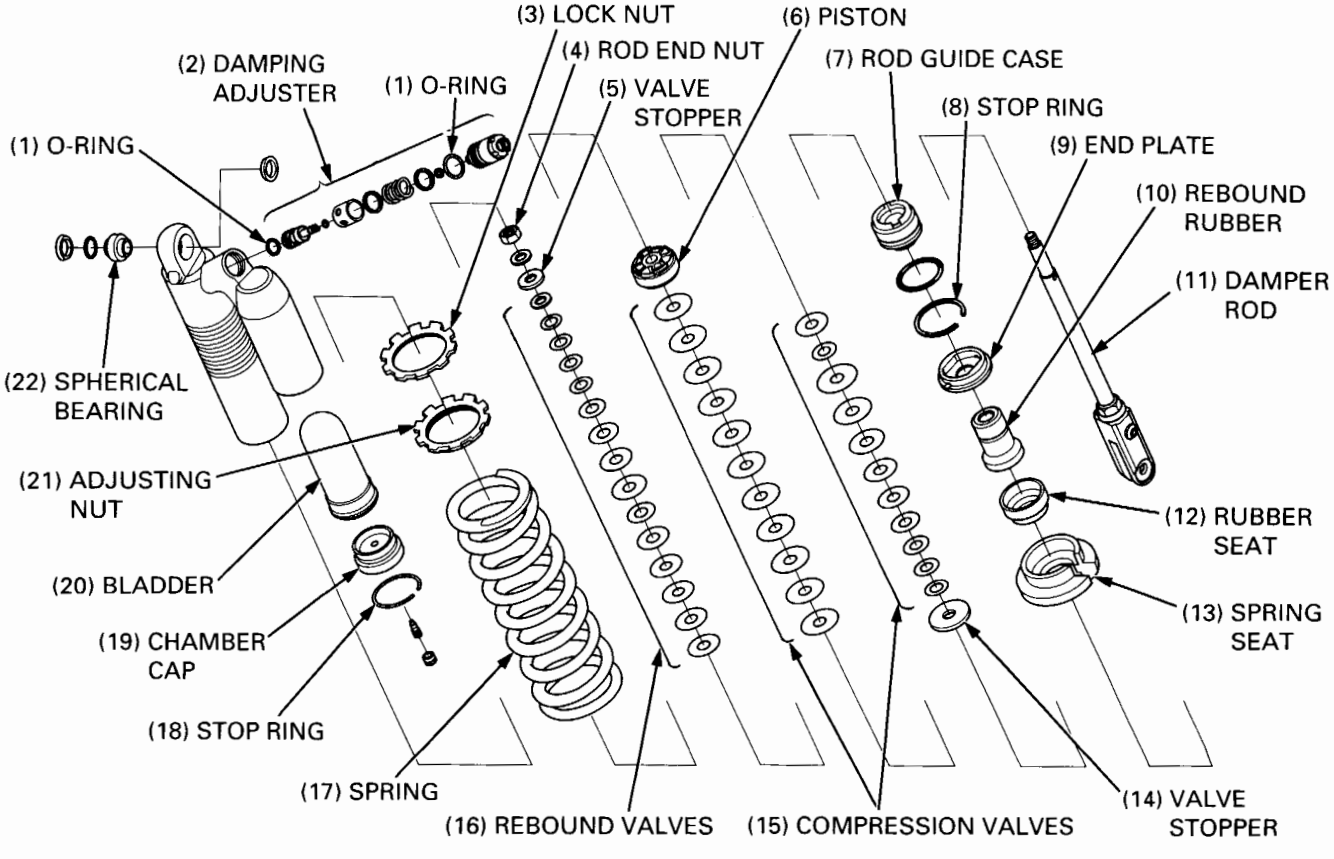
'94:



'95:


(3) WASHERS
(4) END NUT
(7) ROD GUIDE CASE
(5) VALVE STOPPER
(2) LOCK NUT
(8) END PLATE
(6) PISTON
(1) DAMPING ADJUSTER
(9) RUBBER STOPPER
(10) DAMPER ROD
(20) DAMPER CASE
(19) ADJUSTING NUT
(11) RUBBER SEAT
(18) BLADDER
(17) CHAMBER CAP
(12) SPRING SEAT
(16) SPRING
(15) REBOUND VALVES
(13) VALVE STOPPER
(14) COMPRESSION VALVES

After '95:


(3) LOCK NUT
(6) PISTON
(4) ROD END NUT
(7) ROD GUIDE CASE
(2) DAMPING ADJUSTER
(1) O-RING
(5) VALVE STOPPER
(8) STOP RING
(1) O-RING
(9) END PLATE
(10) REBOUND RUBBER
(11) DAMPER ROD
(22) SPHERICAL BEARING
(21) ADJUSTING NUT
(12) RUBBER SEAT
(20) BLADDER
(13) SPRING SEAT
(19) CHAMBER CAP
(18) STOP RING
(17) SPRING
(16) REBOUND VALVES
(15) COMPRESSION VALVES
(14) VALVE STOPPER

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.

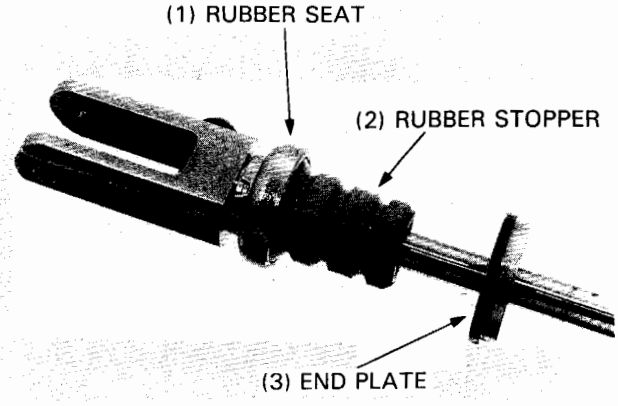
CAUTION

- **Use added care to avoid getting solvent on the O-rings and seals.**
- **Do not disassemble the rebound damping adjuster on the lower mount.**

NOTE

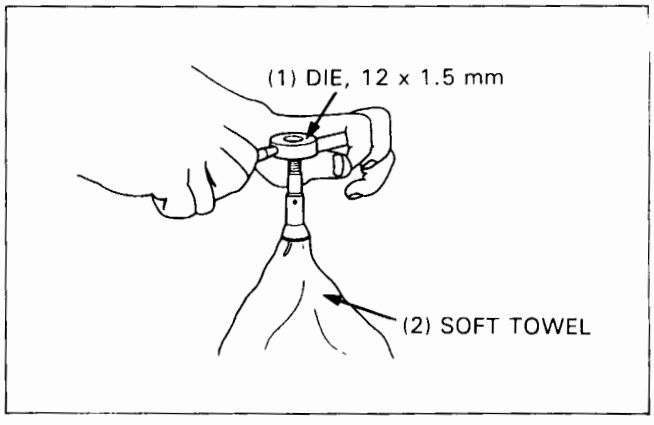
- Never assemble valves which might have gotten dusty or contaminated during the disassembly process. Thoroughly clean them with solvent before assembly.

Install the rubber seat, stopper rubber and end plate.



Hold the lower shock mount in a vise with soft jaws or a soft towel.
Clamp in a vise with soft jaws or use a soft towel around the lower mount with tape.

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



Clean the damper rod with solvent after correcting the threads.

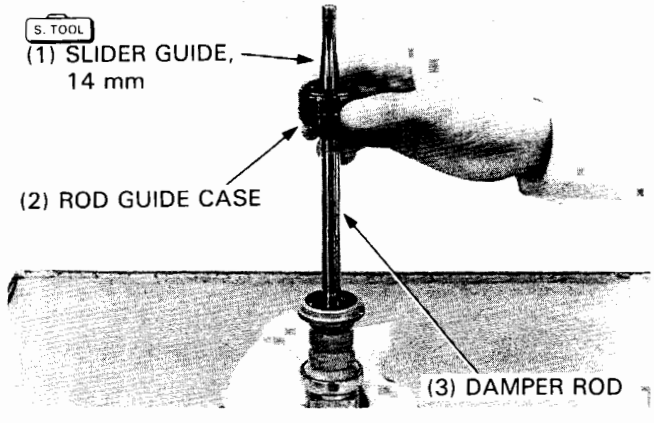
NOTE

- Make sure there are no burrs in the damper rod I.D.

Install the special tool onto the damper rod.
Install the rod guide case with rebound rubber facing up, carefully over the damper rod.

CAUTION

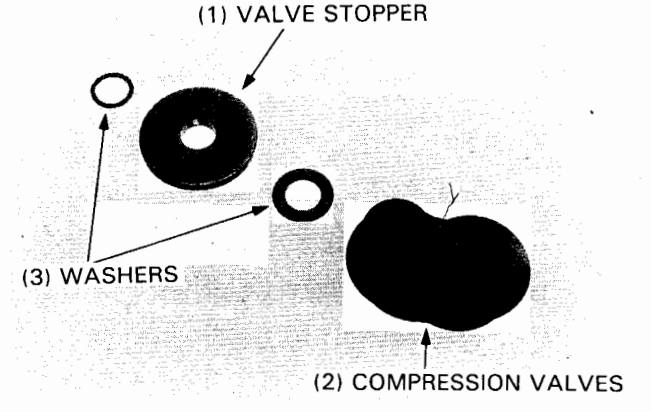
- **The rod guide case seal is filled with grease. Be careful not to damage the dust seal lip or turn it inside out.**



S. TOOL
Slider guide, 14 mm **07974–KA40001**

Remove the special tool.
'92–'93:
Install the washers, valve stopper and compression valves onto the damper rod.

'92–'93:

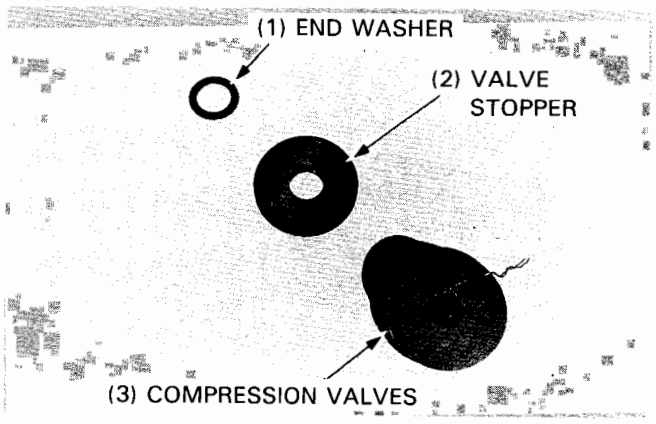


After '93:
Install the valve stopper and compression valves onto the damper rod.

NOTE

- Only install the end washer when using a new damper rod.

After '93:

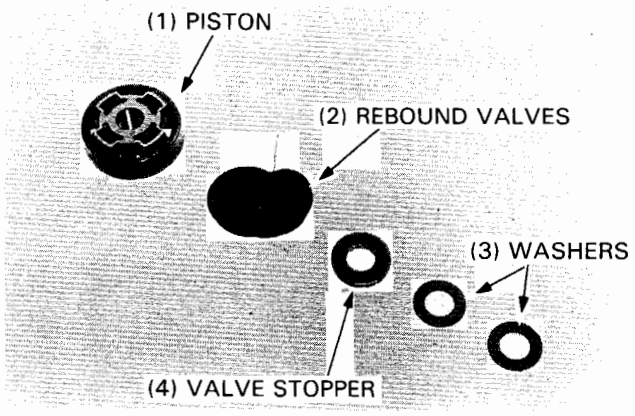


NOTE

- 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 the piston.
Install the rebound valves with their polished sides facing down.
Install the valve stopper.

'92–'93, After '94:

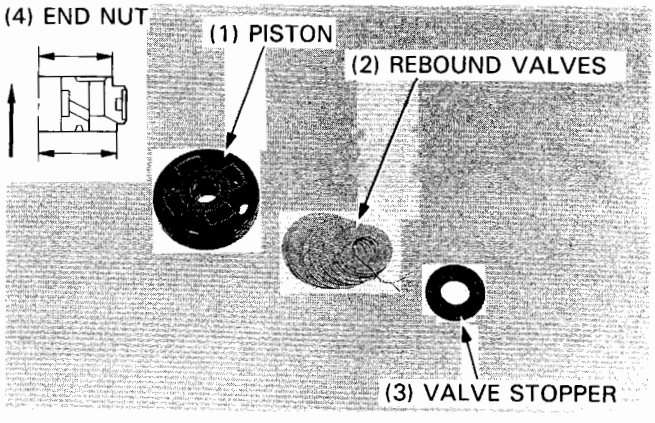


'92–'93, After '94:
Install the two end washers.

NOTE

- Do not install the third end washer, except when using a new damper rod.

'94:



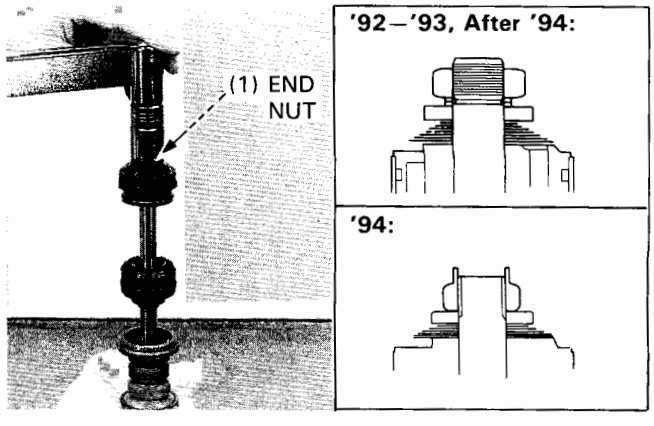
Place the damper rod in a vise, and tighten a new end nut to the specified torque.

Torque: '92–'94: 27 N·m (2.7 kg-m, 20 ft-lb)
After '94: 26 N·m (2.6 kg-m, 19 ft-lb)

CAUTION

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

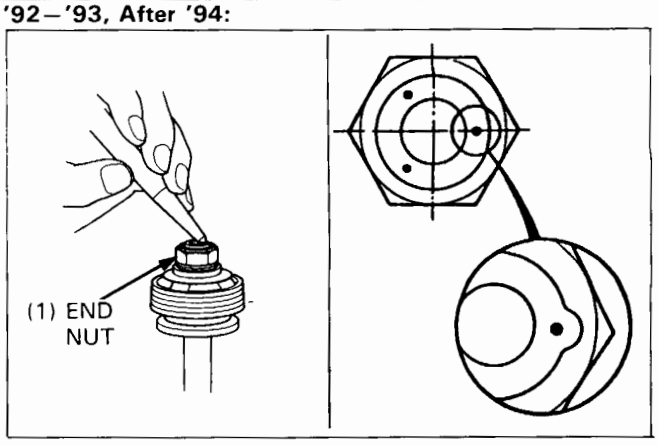
Check the rod guide case by sliding it up and down fully.



'92–'93, After '94:

Stake the end of the damper rod in three places as shown to secure the end nut.

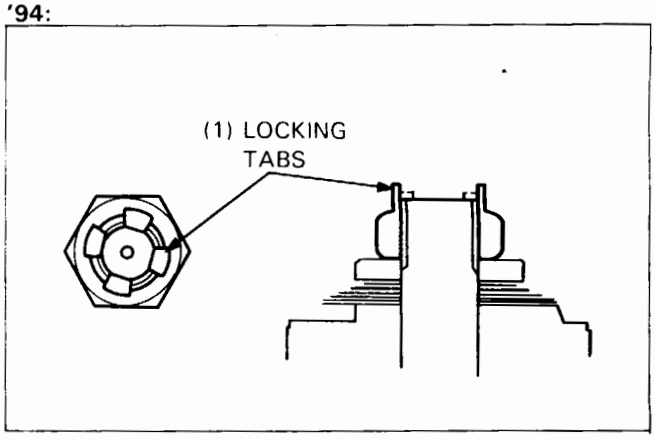
'92–'93, After '94:



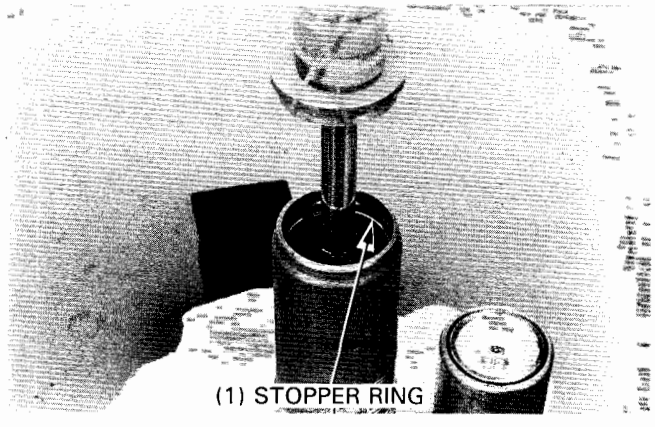
'94:

Bend the locking tabs of the nut against the damper rod as shown.

'94:



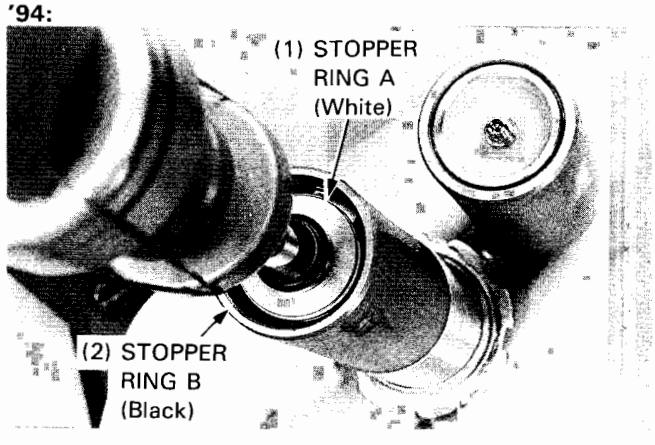
Coat the inside of the damper case with clean shock oil and insert the damper rod assembly carefully.
Install the stopper ring into the groove of the damper case.



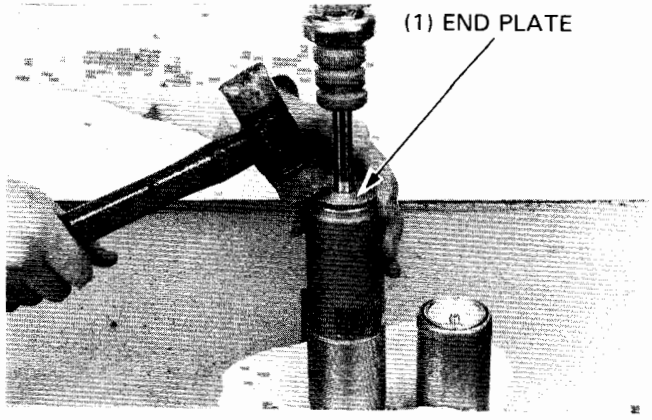
'94:

Install the stopper ring B (Black) onto stopper ring.
Install the stopper ring A (White) into the groove in the rod guide case.

'94:

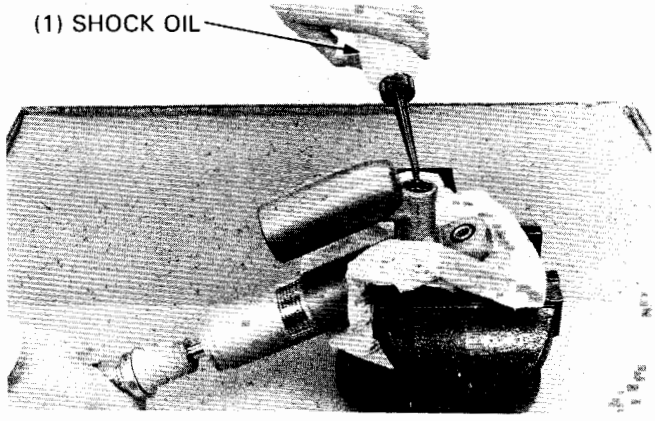


Drive the end plate squarely and evenly into the damper case with a plastic hammer.
After installing the end plate, pull the damper rod out all the way to seat the rod guide case against the stopper ring.



Hold the upper shock mount in a vise.
Fill the damper case and reservoir with the recommended oil through the damping valve hole.

Recommended shock oil: Pro Honda Suspension Fluid SS-7
Approximate capacity:
'92–'93: 290 cc (9.8 oz)
'94: 317 cc (10.7 oz)
After '94: 311 cc (10.5 oz)



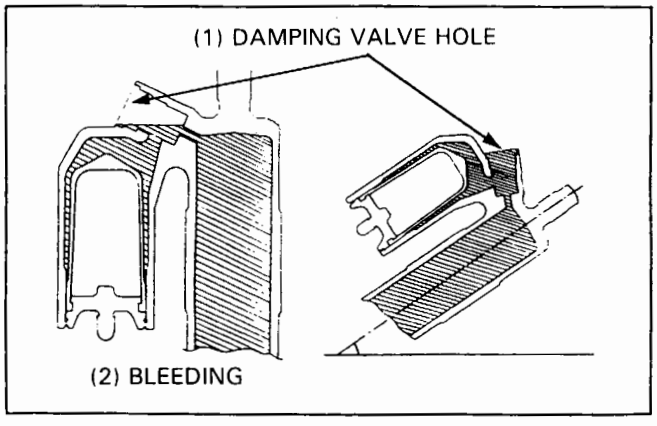
Slowly pump the damper rod until there are no bubbles in the oil that overflows from the damper case.

NOTE '92–'93

- Make sure the rod guide case is seated against the stopper ring by pulling the damper rod out all the way.

Remove the damper unit from the vise.

Continue to add the recommended oil up to the damping valve hole.
While holding the damper with the damping valve hole facing up, turn the damper unit as shown to bleed the air from the reservoir completely.



NOTE

- When bleeding air from the reservoir, be careful to hold the damper at the angles shown so the filler hole points up.

NOTE

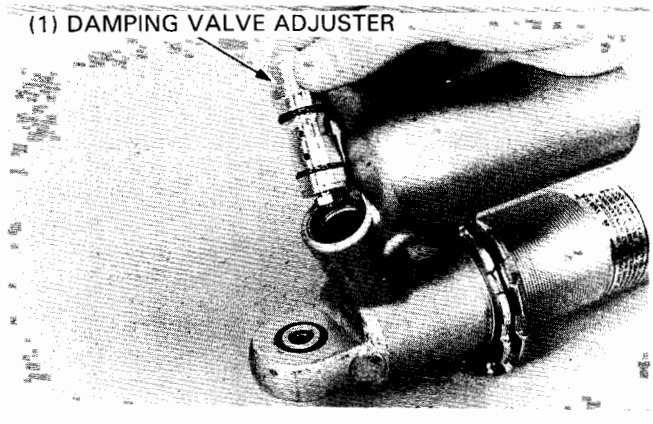
- Do not let oil flow ot of the reservoir.

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

CAUTION

- **Be careful not to charge the reservoir with excessive pressure at this time.**

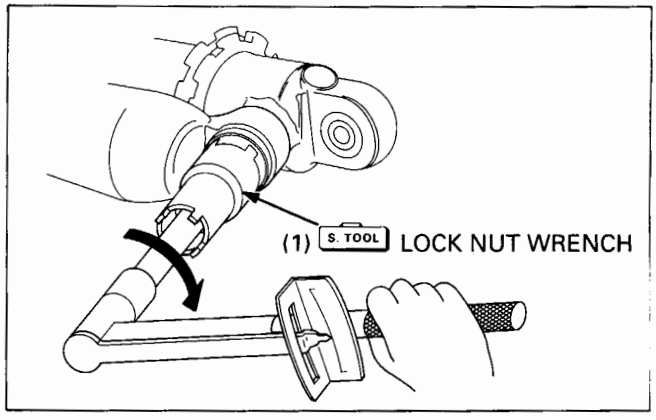
Fill the damper with the recommended shock oil up to the neck.
'92 – '95:
Carefully install the damping valve adjuster.



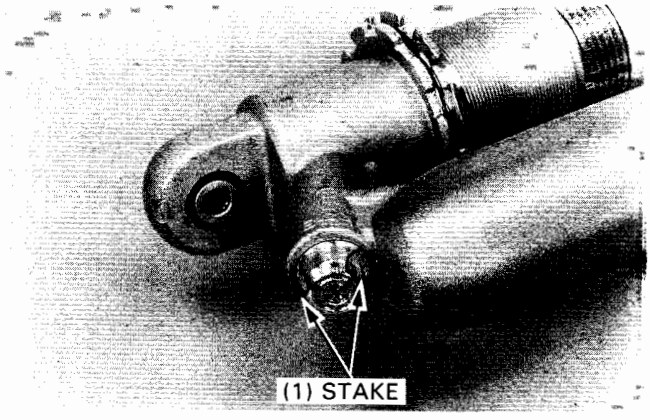
After '95:
Tighten the damping adjuster valve using the special tool.

S. TOOL

Lock nut wrench, 20 x 24 mm 07716 – 0020100



Stake the damping adjuster in two places.



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 leaking.

Release the 49 kPa of air that was in the reservoir at precompression.
Fill the reservoir with 981 kPa (10.0 kg/cm², 142 psi) of nitrogen gas.

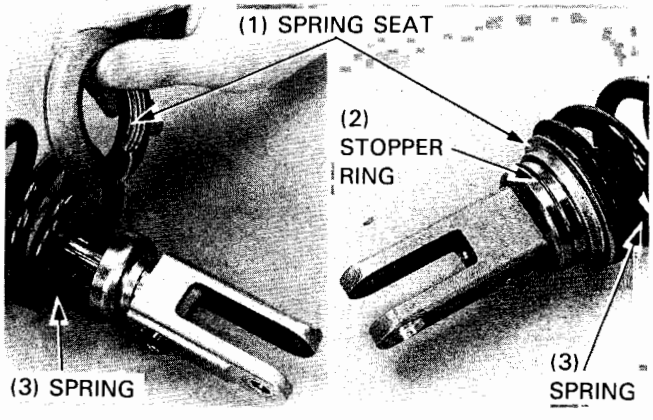
⚠ WARNING

- **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 spring with the narrow wound coil facing down.
'92–'93, After '94:
Install the spring seat.
'94:
Install the spring seat and stopper ring onto the rubber seat.

'92–'93, After '94: **'94:**

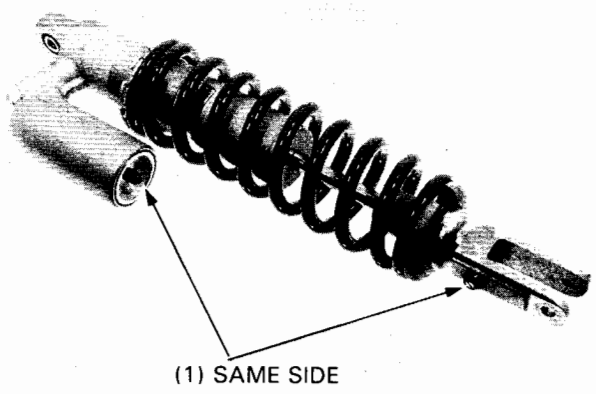


Temporarily tighten the lock nut and adjusting nut.

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

Turn the spring adjusting nut until the spring length is the specified standard length.
Install the shock absorber (page 11-29).

Standard spring length: '92–'93: 250 mm (9.8 in)
'94: 268 mm (10.55 in)
After '94: 253.5 mm (9.98 in)



NOTE

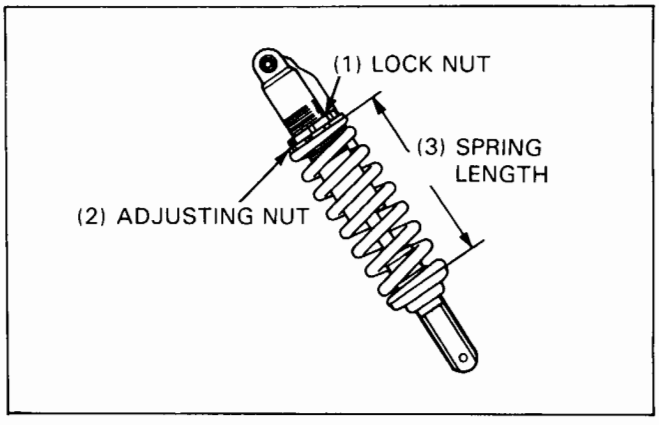
- One complete turn of the adjusting nut changes the spring length by 1.5 mm (0.06 in).

Hold the adjusting nut and tighten the lock nut to the specified torque.

Torque: '92–'94: 90 N·m (9.0 kg-m, 65 ft-lb)
After '94: 29 N·m (2.9 kg-m, 21 ft-lb)

O P TOOL

Pin spanner A — **89201–KS6–810 (2 Required)**

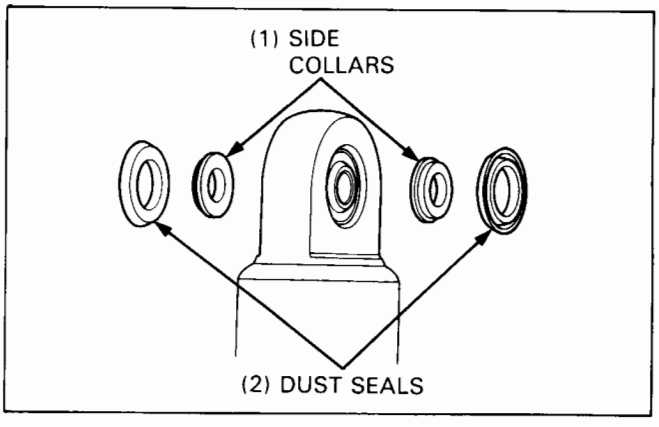


Use this standard spring pre-load length just as a baseline. See the Owner's Manual for detailed instructions on adjusting pre-load and damping setting for rider weight and specific riding conditions.

Spherical Bearing Replacement

Check the spherical bearing for wear or damage.
If it is worn or damaged, it must be replaced.

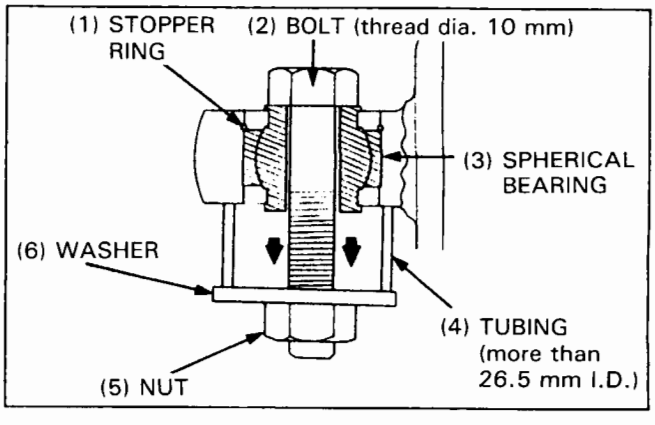
'92 – '95:
Remove the dust seals and side collars.
After '95:
Remove the dust seals.



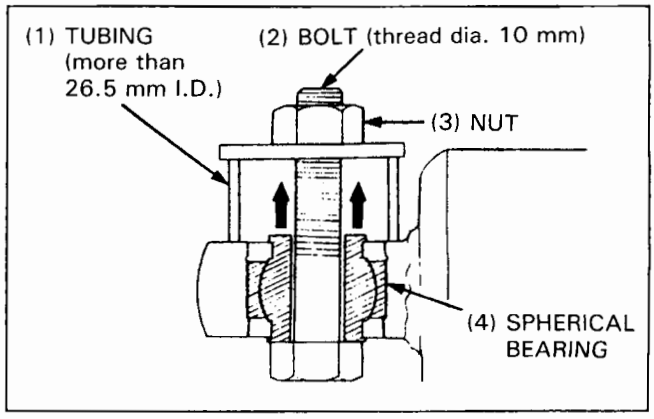
Assemble a piece of tubing (more than 26.5 mm I.D.), bolt thread dia. 10 mm), washer and nut against the spherical bearing as shown.
Tightening the nut, pull the bearing away from the stopper side.

Remove the stopper ring.

Disassemble the tubing, bolt, washer and nut.



Install the same piece of tubing (more than 26.5 mm I.D.), bolt, washer and nut to the shock absorber upper mount as shown.
Draw the spherical bearing out of the stopper ring end by tightening the nut.



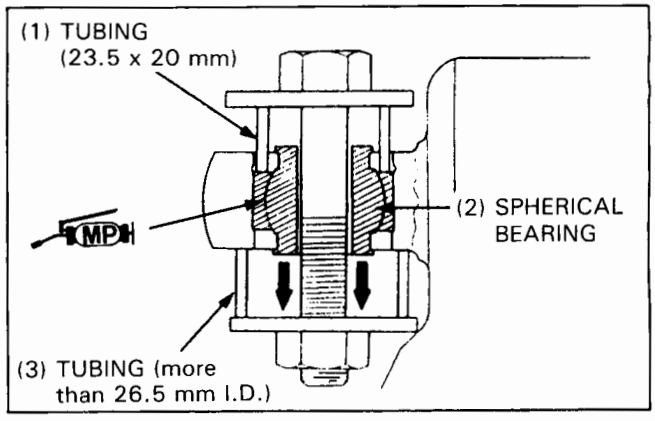
Fill the new spherical bearing with Honda Moly 60 (U.S.A. only) or equivalent grease.

Position the new spherical bearing into the shock absorber upper mount with the marked side up.
Assemble the tools used for removal with a second piece of tubing (23.5 x 20 mm O.D.), as shown.
By tightening the nut, pull the bearing into the upper mount until the bearing outer contacts the stopper side.

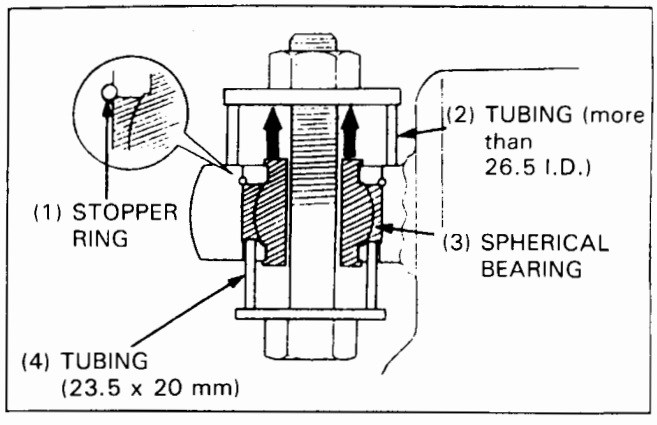
NOTE

- Be careful not to tilt the bearing when tightening the nut.

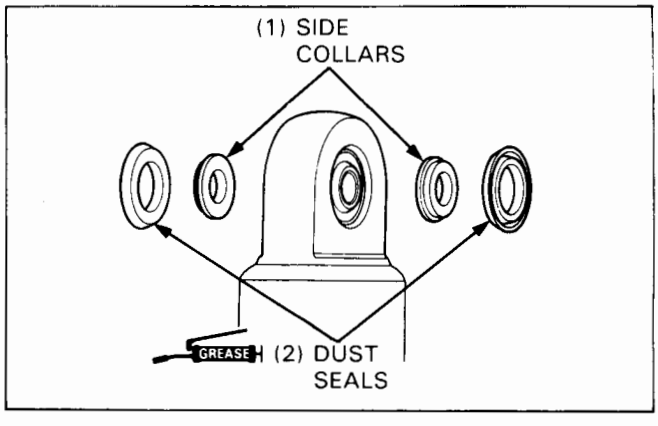
Disassemble the tubing, bolt, washer and nut.



Install the new stopper ring into the groove in the upper mount.
Assemble the tools as shown.
By tightening the nut, pull the spherical bearing in until the bearing outer contacts the stopper ring all the way around.



Apply grease to new dust seal lips.
'92 – '95:
Install the dust seals and side collars.
After '95:
Install the dust seals.



Installation

Install the shock absorber with the rebound adjuster facing the right.
Install the lower mounting bolt from the right to the left.
Tighten the lower mounting bolt to the specified torque.

Torque: '92, After '93: 43 N·m (4.3 kg-m, 31 ft-lb)
'93: 45 N·m (4.5 kg-m, 33 ft-lb)

Install the upper mounting bolt from the left to the right.
Tighten the shock absorber upper mounting nut to the specified torque.

Torque: 45 N·m (4.5 kg-m, 33 ft-lb)

Install the sub frame (page 2-4).

Shock Linkage

Removal

Remove the following:
- lower chain roller
- shock absorber lower mounting bolt
- swingarm caps, shock arm bolt (swingarm side) and shock arm collars (After '92)
- shock link bolt (frame side)

Remove the shock arm and shock link, then separate the arm and link.
Remove the dust seals, side collars and thrust washers and collars.

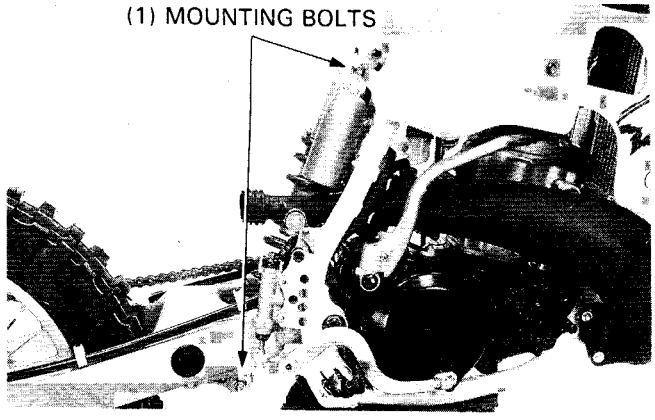
Inspection

Inspect the collars, dust seals and needle bearings.
Replace any of these components if they have score marks, scratches, or excessive or abnormal wear.

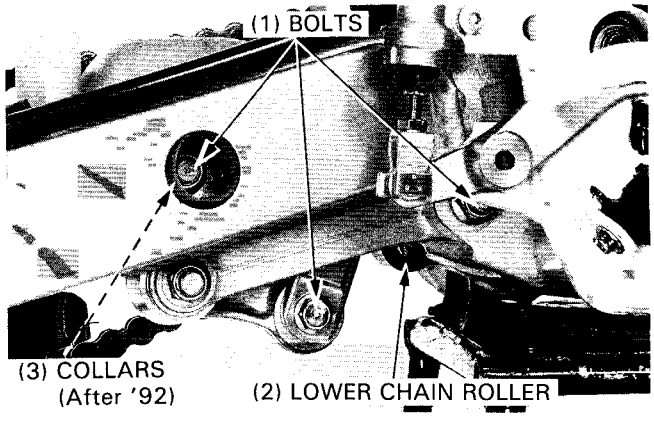
NOTE

- Be careful not to lose the needle rollers of the shock arm and link pivot needle bearings.
- If the needle rollers are out of place, inspect them for wear or damage and install them using molybdenum disulfide grease.

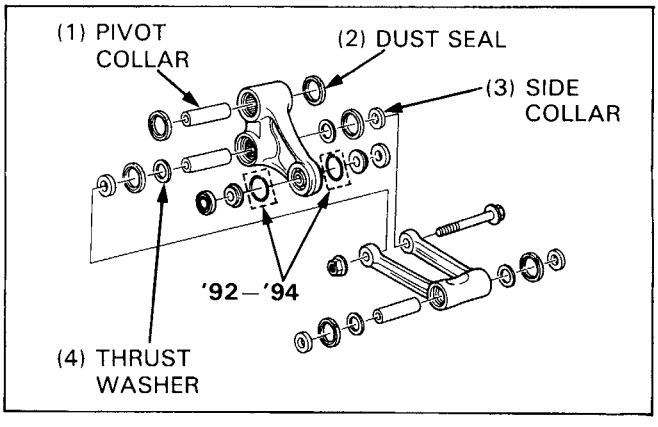
Inspect the spherical bearing for wear or damage.
If it is worn or damaged, it must be replaced (page 11-31).



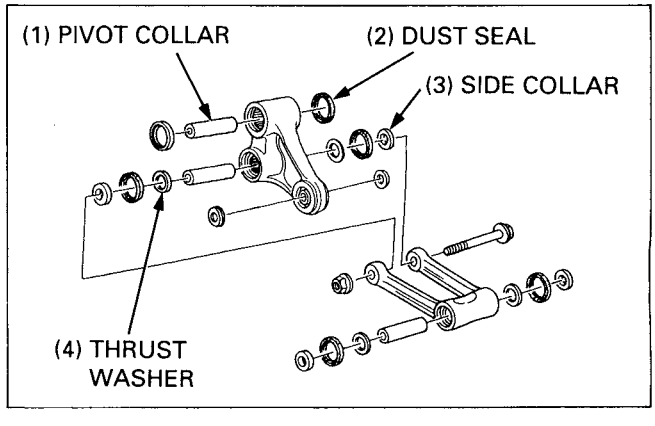
'92: Shown:



'92 – '95:



After '95:

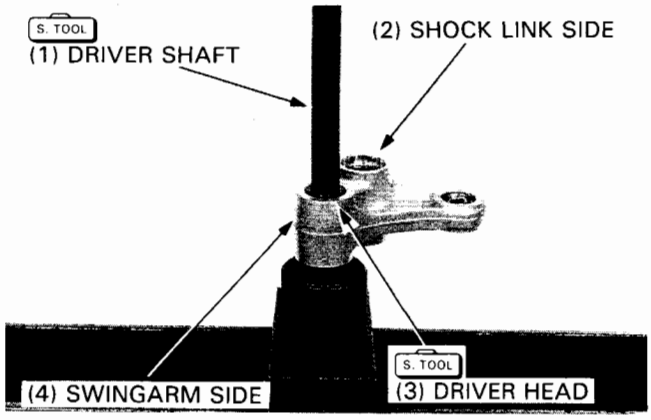


Needle Bearing Replacement

Press out the needle bearing from the shock arm using the special tools.

S. TOOL

Swingarm side:	
Driver shaft	**07946—MJ00100**
Driver head	**07946—KM40701**
Shock link side:	
Needle bearing driver	**07946—KA50000**



Press a new needle bearing into the shock arm using the *special tools.*

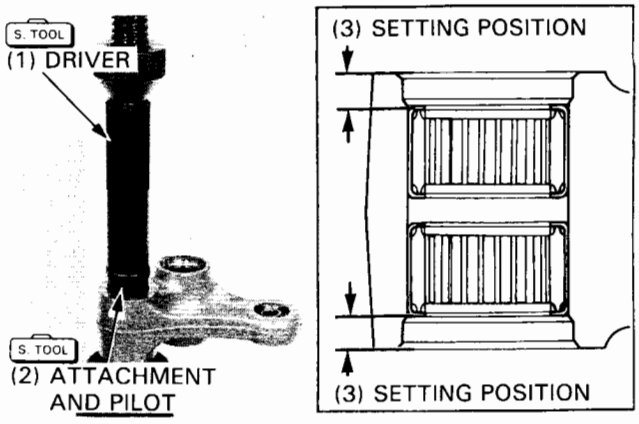
NOTE

- Install the needle bearings with the marks facing out.

Setting position:
Swingarm side 5.0—5.5 mm (0.20—0.22 in)
Shock link side 7.0—7.5 mm (0.28—0.30 in)

S. TOOL

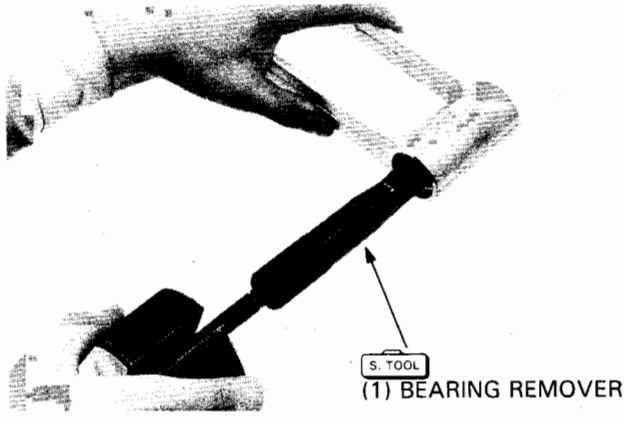
Swingarm side:	
Driver	**07749—0010000**
Attachment, 28 x 30 mm	**07946—1870100**
Pilot, 22 mm	**07746—0041000**
Shock link side:	
Driver	**07749—0010000**
Attachment, 24 x 26 mm	**07946—0010700**
Pilot, 20 mm	**07746—0040500**



Drive out the needle bearing from the shock link.

S. TOOL

Bearing remover set, 20 mm	**07936—3710001**
— bearing remover	**07936—3710600**
— remover handle	**07936—3710100**
— remover weight	**07741—0010201**



Drive in a new needle bearing.

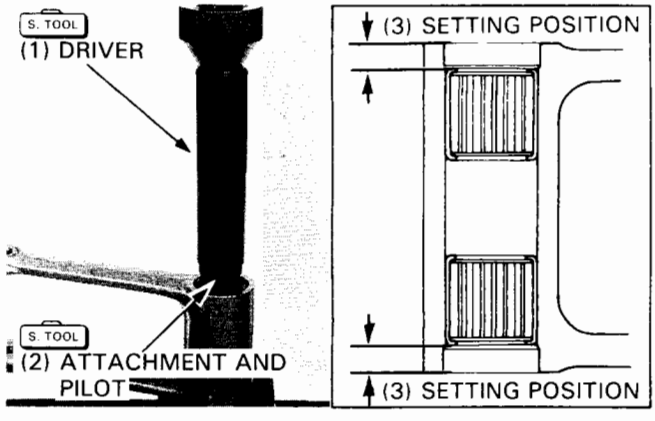
NOTE

- Install the needle bearings with the marks facing out.

Setting position:
7.0—7.5 mm(0.28—0.30 in)

S. TOOL

Driver	**07749—0010000**
Attachment, 24 x 26 mm	**07746—0010700**
Pilot, 20 mm	**07746—0040500**



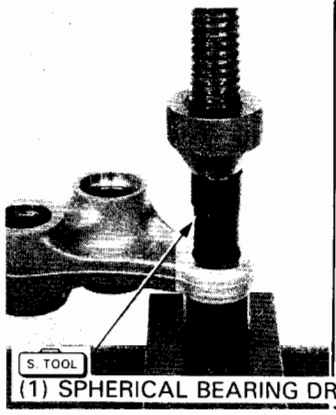
Spherical Bearing Replacement

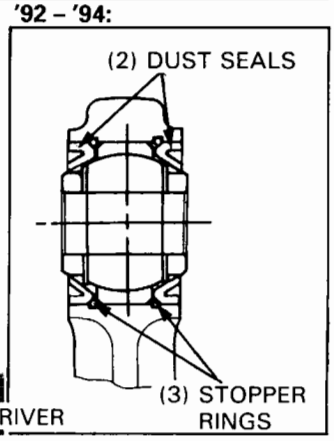
'92 – '94:
Remove the stopper rings.
Press out the spherical bearing from the shock arm.

Install the stopper ring on one side.
Press a new spherical bearing into the shock arm.
Install the stopper ring on the opposite side.

S. TOOL
Spherical bearing driver **07HMF–KS60100**

'92 – '94:

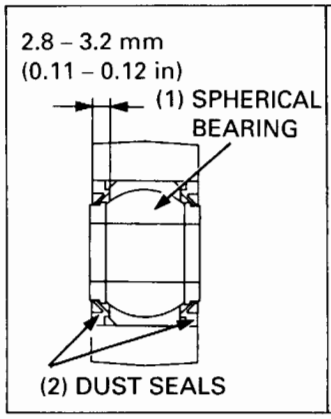




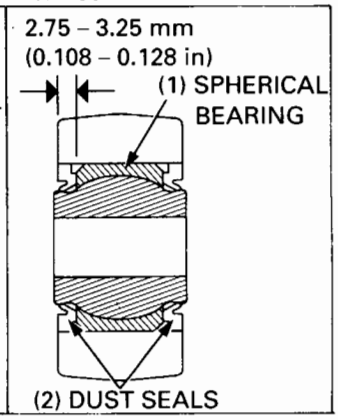
After '94:
Press out the spherical bearing from the shock arm.
Press a new spherical bearing to the specified depth below the surface of the arm.

Specified depth: '95: 2.8 – 3.2 mm (0.11 – 0.12 in)
After '95: 2.75 – 3.25 mm (0.008 – 0.128 in)

'95:



After '95:



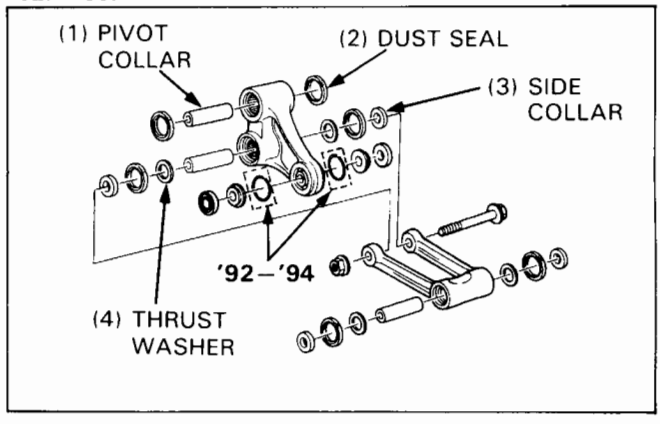
Installation

Apply mutipurpose grease NLGI NO.2 (molybdenum disulfide additive) to the shock linkage bushings, collars, bearings and dust seal lips.

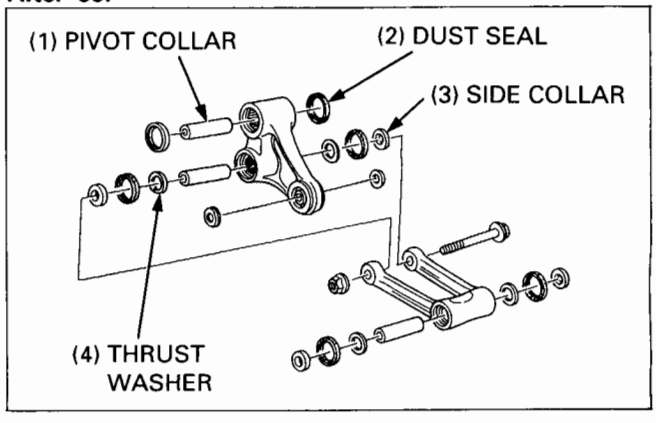
NOTE

- Make sure that the rollers of the needle bearings are in position before installing the pivot collars.
  Number of needle rollers:
  Shock link bearing: 33
  Shock arm bearing: Shock link side 33
  Swingarm side 36

'92: – '95:

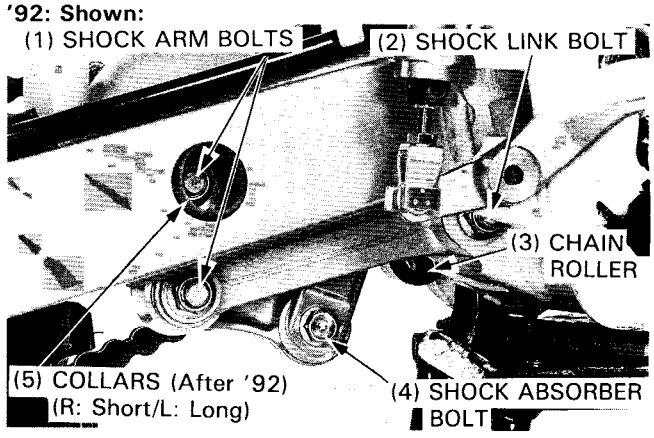


After '95:



Install the shock link to the frame and tighten the bolt.
Torque: 63 N·m (6.3 kg-m, 46 ft-lb)
'92:
Temporarily install the shock arm to the shock link then connect it to the swingarm.
After '92:
Temporarily install the shock arm to the shock link then connect it to the swingarm with the shock arm collars:
long collar on the right, short collar on the left.
Tighten the shock arm bolts.
Torque: (Shock link side): 63 N·m (6.3 kg-m, 46 ft-lb)
(Swingarm side): '92: 63 N·m (6.3 kg-m, 46 ft-lb)
After '92:
90 N·m (9.0 kg-m, 65 ft-lb)
Connect the shock absorber lower mount to the shock arm and tighten the bolt.
Torque: '92, After '93: 43 N·m (4.3 kg-m, 31 ft-lb)
'93: 45 N·m (4.5 kg-m, 33 ft-lb)
Install the lower chain roller and tighten the bolt.
Torque: 22 N·m (2.2 kg-m, 16 ft-lb)

'92: Shown:



Swingarm

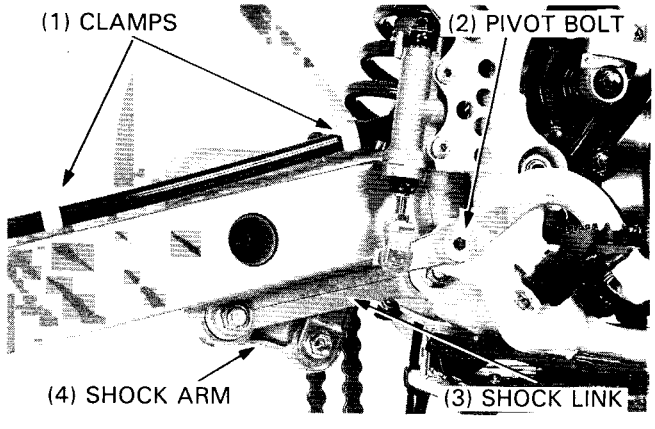
Removal

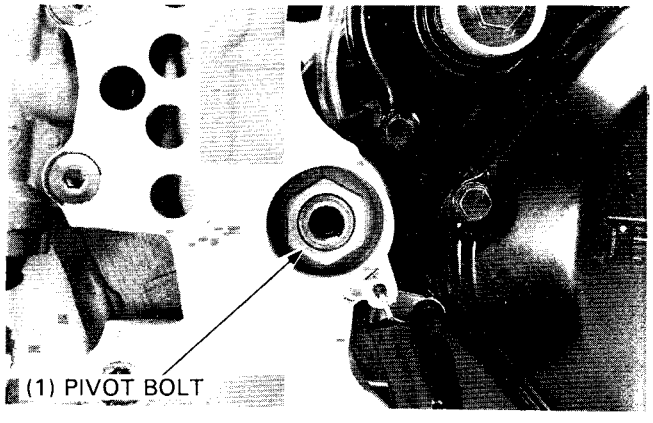
Remove the following:
- chain retaining clip and chain
- rear wheel (page 11-5)
- shock linkage (page 11-29)
- brake pedal pivot bolt
- brake hose clamps.

CAUTION

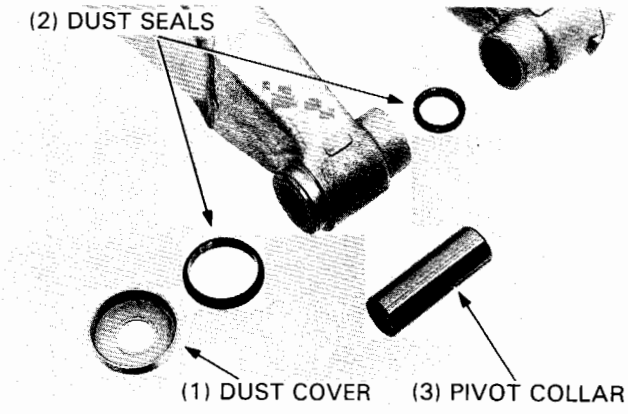
- **Support the rear brake caliper from the sub frame so that the brake hose is not twisted and the caliper does not hinder swingarm removal.**

Remove the swingarm pivot bolt and swingarm.





Remove the chain guide and chain slider.
Remove the dust covers, dust seals and collars.

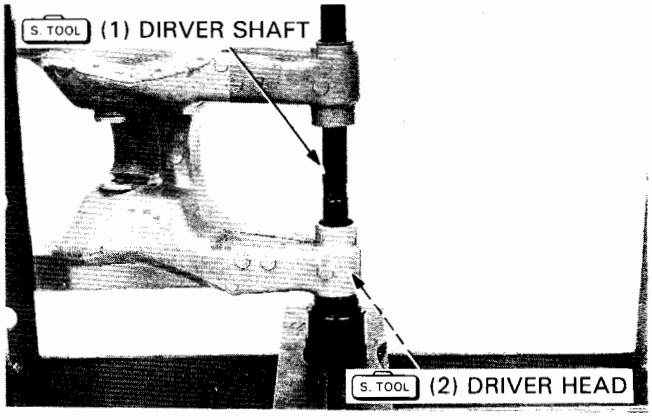


Replacement

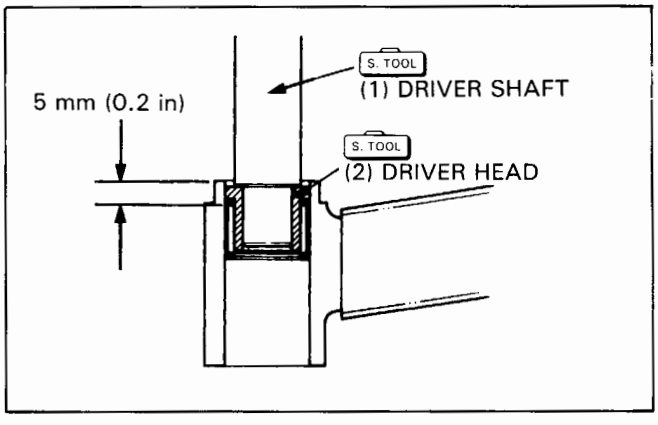
Remove the bushings.
Drive out the needle bearings using a hydraulic press.

S. TOOL

Diver shaft	**07946–MJ00100**
Driver head	**07946–KM40701**



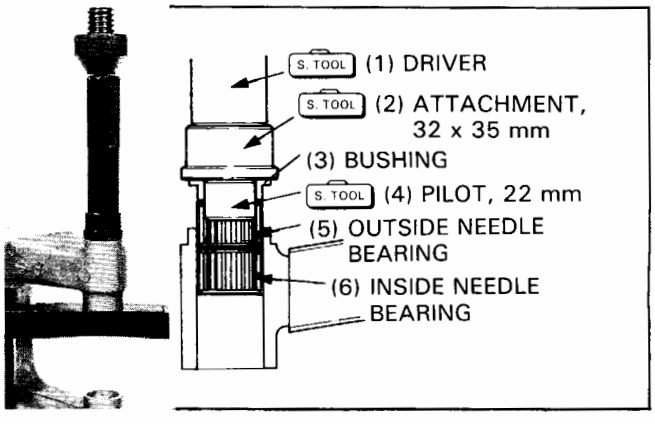
Pack new needle bearings with grease.
Press a new inside bearing into the swingarm pivot using the special tools used for removal as shown.



Press in the outside needle bearing and bushing with the special tools as shown.

S. TOOL

Attachment, 32 x 35 mm	**07746–0010100**
Pilot, 22 mm	**07746–0041000**
Driver	**07749–0010000**

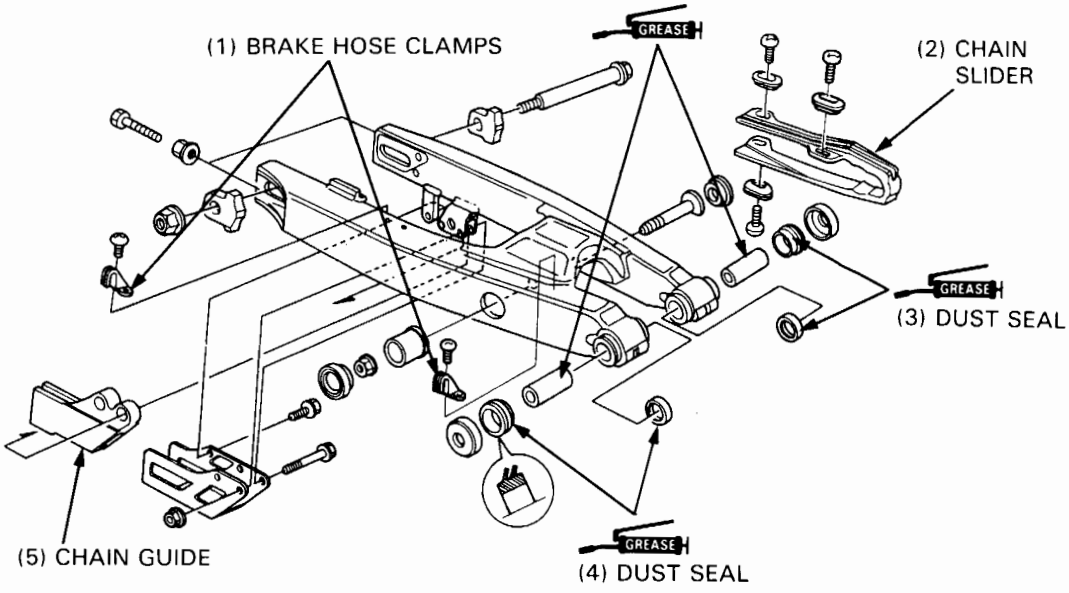


Assembly

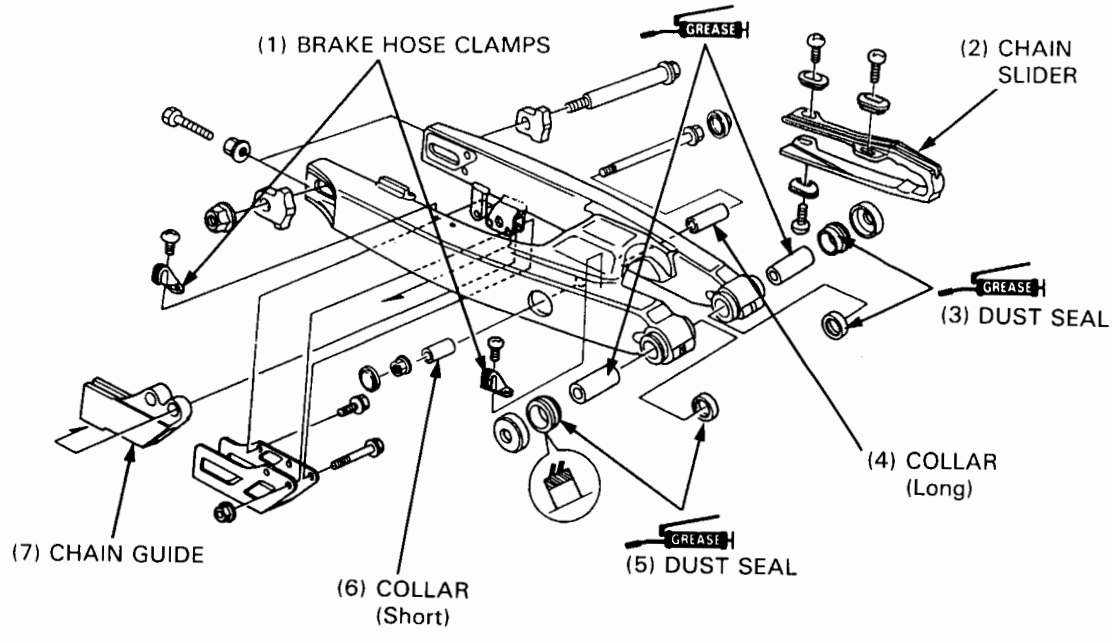
NOTE

- Install the dust seals in the directions shown.

'92:



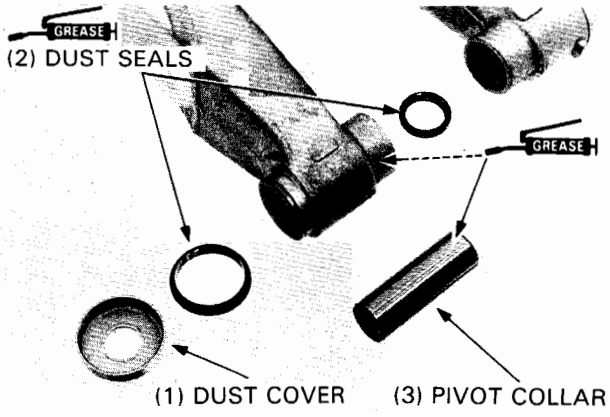
After '92:



Apply grease to the needle bearing surfaces and the inside of the dust seals and collars.

Install the dust covers, dust seals and collars.

Install the brake hose clamps, chain slider and chain guide.

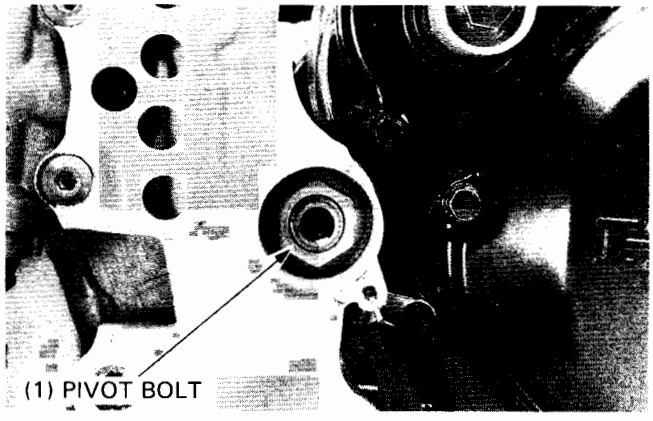


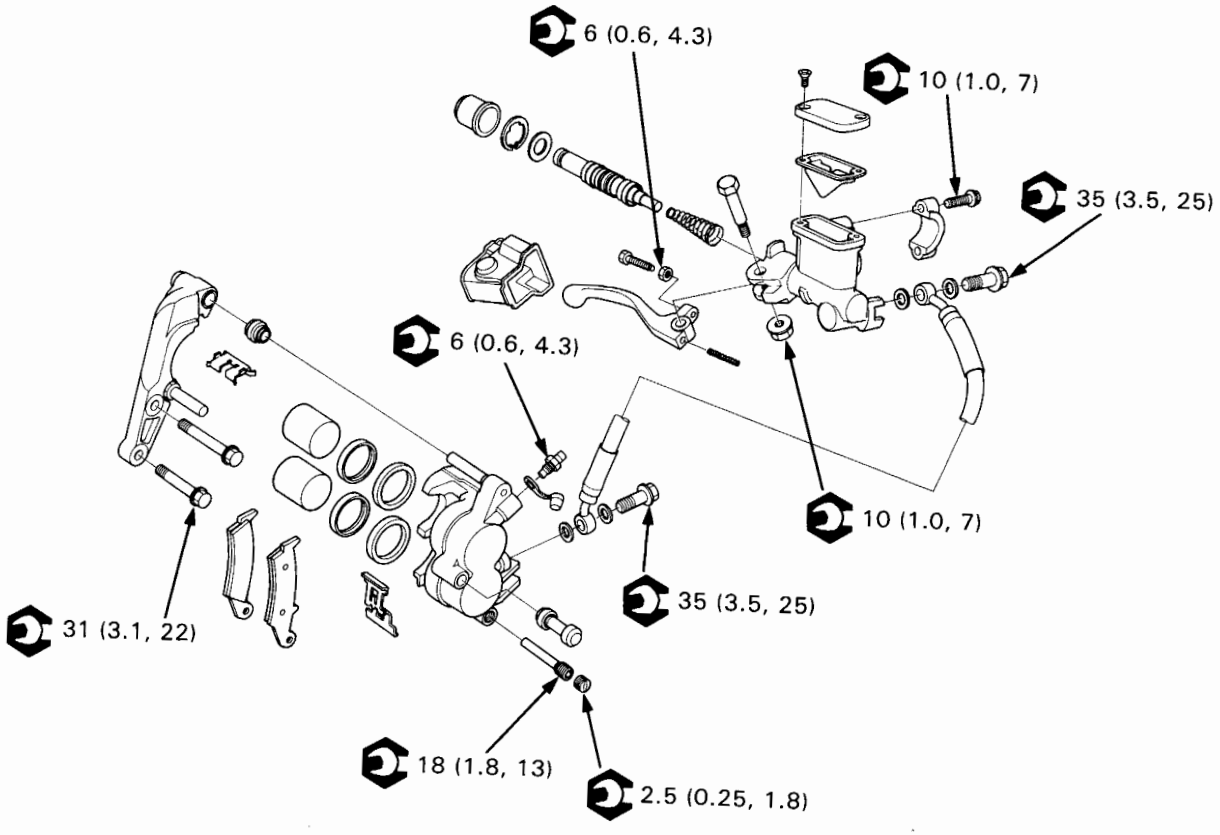
Installation

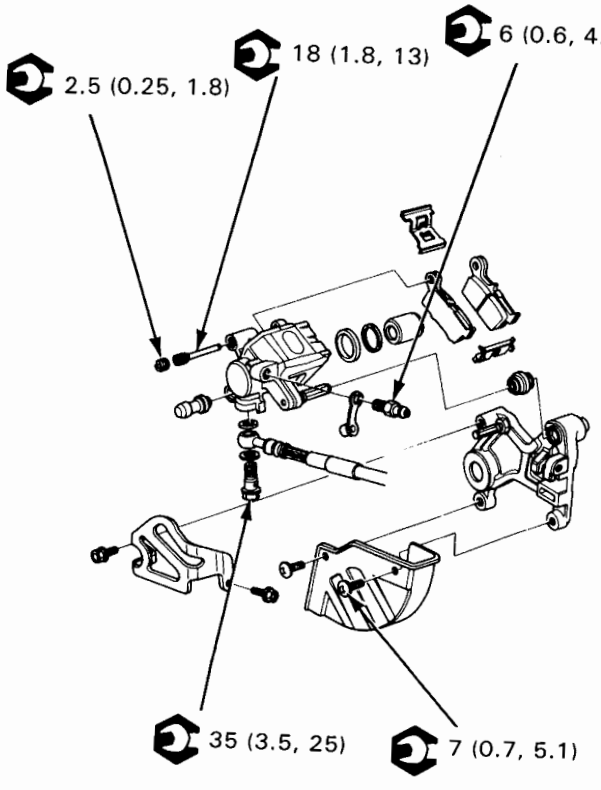
Install the swingarm and tighten the pivot bolts to the specified torque.

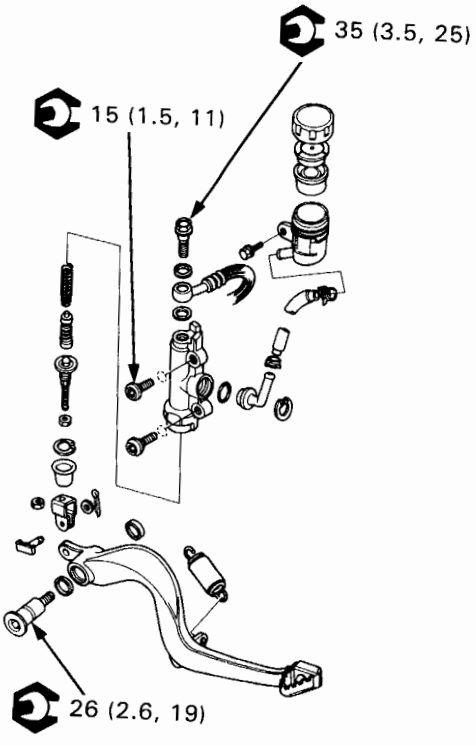
Torque: 90 N·m (9.0 kg-m, 65 ft-lb)

Route the crankcase breather tube and carburetor overflow tube.
Install the following:
- shock linkage (page 11-31)
- rear wheel (page 11-9)
- drive chain
- brake pedal
- brake hose clamps.









NEW : Dust seals
Piton seals
O-rings
Sealing washers

12. Brake System

Service Information	12-1	Front Master Cylinder	12-5
Troubleshooting	12-2	Rear Master Cylinder	12-7
Brake Fluid Replacement/ Air Bleeding	12-3	Front Brake Caliper	12-9
Brake Pad Replacement	12-5	Rear Brake Caliper	12-11

Service Information

General

⚠WARNING

- **A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a quality brake cleaning agent.**

CAUTION

- **Avoid spilling brake fluid on painted, plastic or rubber parts. Place a rag or shop towel over these parts wherever the system is services.**

- 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.
- Always check the brake operation before riding the motorcycle.

12

Specifications

Unit: mm (in)

Item			Standard	Service Limit
Brake disc	thickness	Front	3.0 (0.12)	2.5 (0.10)
		Rear	4.5 (0.18)	4.0 (0.16)
	warpage	Front	—	0.15 (0.006)
		Rear	—	0.15 (0.006)
Master cylinder I.D.		Front	11.000–11.043 (0.4331–0.4348)	11.05 (0.435)
		Rear	12.700–12.743 (0.5000–0.5017)	12.76 (0.502)
Master piston O.D.		Front	10.957–10.984 (0.4314–0.4324)	10.84 (0.427)
		Rear	12.657–12.684 (0.4983–0.4994)	12.64 (0.498)
Caliper cylinder I.D.		Front	27.000–27.050 (1.0630–1.0650)	27.06 (1.065)
		Rear	27.000–27.050 (1.0630–1.0650)	27.06 (1.065)
Caliper piston O.D.		Front	26.900–26.950 (1.0591–1.0610)	26.89 (1.059)
		Rear	26.935–26.968 (1.0604–1.0617)	26.89 (1.059)
Brake fluid		Front	DOT: 3 or 4	—
		Rear	DOT: 4	—

Torque Values

Front brake caliper mounting bolts	31 N•m (3.1 kg-m, 22 ft-lb) Apply locking agent to the threads
Pad pin plug	2.5 N•m (0.25 kg-m, 1.8 ft-lb)
Pad pin	18 N•m (1.8 kg-m, 13 ft-lb)
Front caliper pin bolt	23 N•m (2.3 kg-m, 17 ft-lb) Apply locking agent to the threads
Bracket pin bolt ('92—'93)	13 N•m (1.3 kg-m, 9 ft-lb) Apply locking agent to the threads
(After '93)	23 N•m (2.3 kg-m, 17 ft-lb) Apply locking agent to the threads
Brake caliper bleed valve	6 N•m (0.6 kg-m, 4.3 ft-lb)
Front master cylinder holder bolts	10 N•m (1.0 kg-m, 7 ft-lb)
Brake lever adjuster lock nut	6 N•m (0.6 kg-m, 4.3 ft-lb)
Brake hose bolt	35 N•m (3.5 kg-m, 25 ft-lb)
Rear brake master cylinder mounting bolts	
('92—'94)	15 N•m (1.5 kg-m, 11 ft-lb) Apply locking agent to the threads
(After '94)	15 N•m (1.5 kg-m, 11 ft-lb)
Rear brake disc guard screws	7 N•m (0.7 kg-m, 5.1 ft-lb)
Rear caliper pin bolt ('92—'94)	28 N•m (2.8 kg-m, 20 ft-lb) Apply locking agent to the threads
(After '94)	28 N•m (2.8 kg-m, 20 ft-lb)
bracket pin bolt	13 N•m (1.3 kg-m, 9 ft-lb) Apply locking agent to the threads
Brake lever pivot nut	6 N•m (0.6 kg-m, 4.3 ft-lb)
Brake hose guide	5.3 N•m (0.53 kg-m, 3.8 ft-lb)

Tools

Special

Snap ring pliers	07914—3230001 or Equivalent commercially available in U.S.A.

Troubleshooting

Brake lever (pedal) soft or spongy
- Air 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
- 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

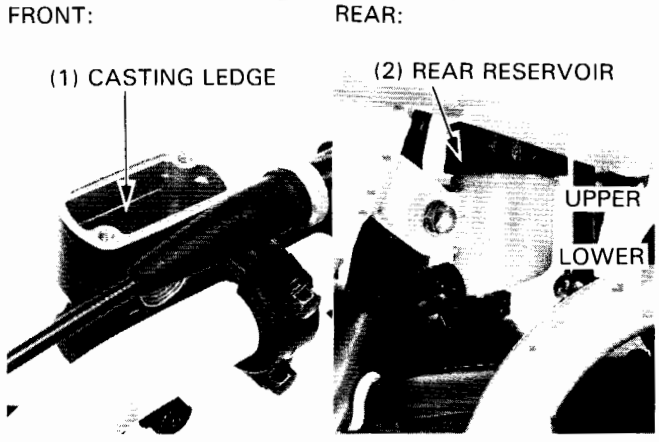
Brake drag
- Contaminated brake pad/disc
- Misaligned wheel
- Worn brake pad/disc
- Warped/deformed brake disc
- Caliper not sliding properly

Brake Fluid Replacement/ Air Bleeding

Turn the handlebar so that the front brake resorvoir is parallel to the ground.
Check the fluid level with the master cylinder or reservoir.

CAUTION

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

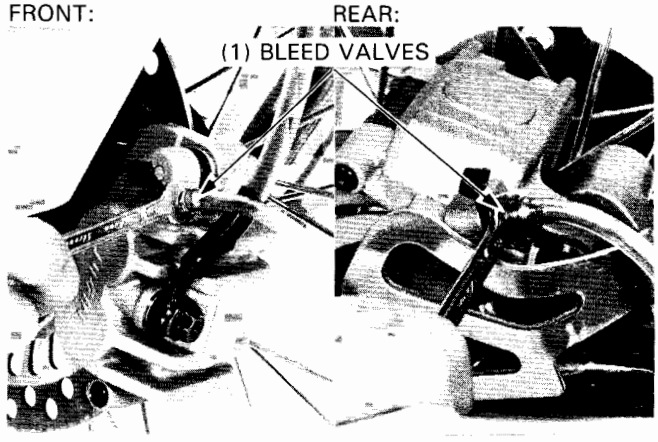


Brake Fluid Draining

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

⚠ WARNING

- **A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a quality brake cleaning agent.**



Brake Fluid Filling/Air Bleeding

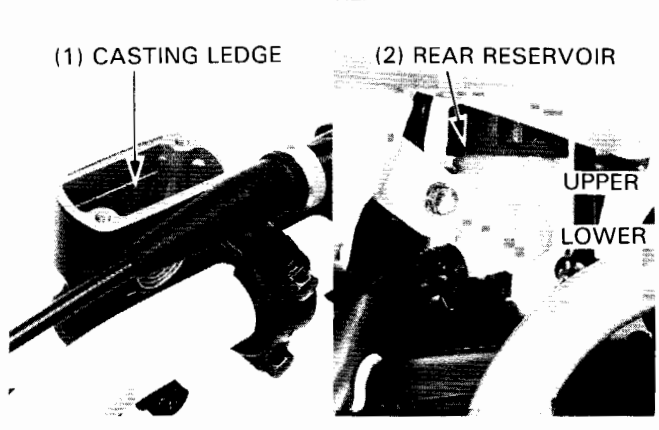
Close the bleed valve and fill up the brake fluid from a sealed container.

Front:
Fill the master cylinder with DOT 3 or DOT 4 brake fluid to the casting ledge.

Rear:
Fill the reservoir to upper level line with DOT 4 brake fluid.

NOTE

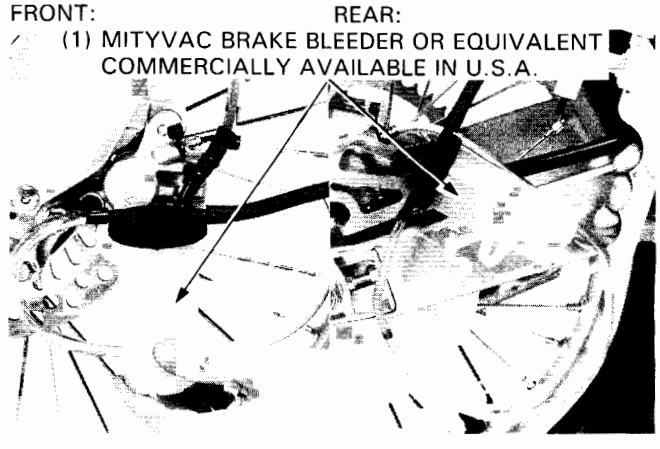
- Check the fluid level often while bleeding the brakes to prevent air from being pumped into the system.
- When using the Brake Bleeder, follow the manufacturer's instructions.



CAUTION

- **Use only the recommended brake fluid from a sealed container.**
- **Do not mix brake fluid types and never reuse contaminated fluid.**

Connect the Mityvac Brake Bleeder No. 6860 or equivalent to the bleed valve.
Pump the brake and loosen the bleed valve. Add fluid when the fluid level in the reservoir is low. Repeat above procedures until no air bubbles appear in the plastic hose.



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

Pump up the system pressure with the lever or pedal until there are no air bubbles in the fluid flowing out of the reservoir small hole and lever/pedal resistance is felt.

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

NOTE

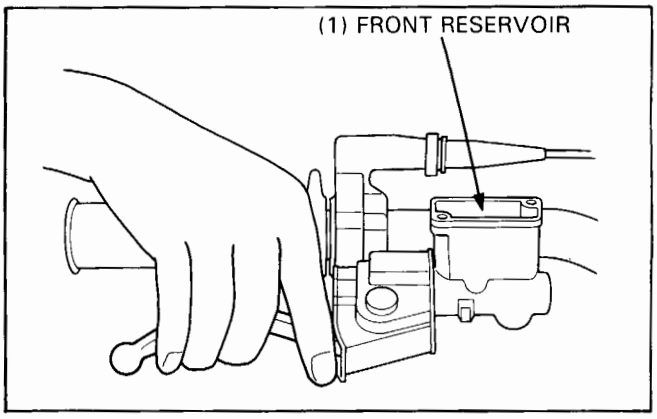
- Do not release the brake lever or pedal until the bleed valve has been closed.

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

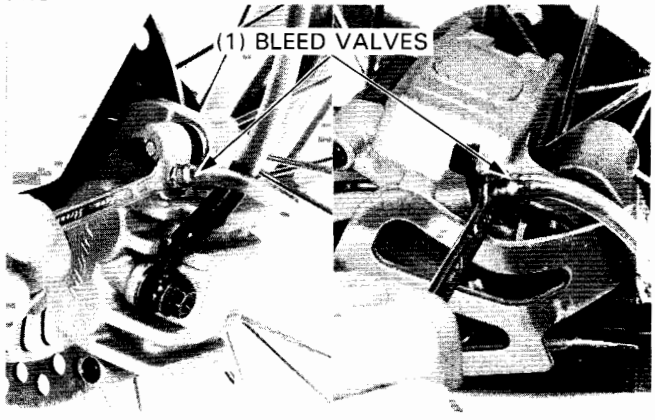
Repeat steps 1 and 2 until bubbles cease to appear in the fluid at the end of the hose.

Tighten the bleed valve to the specified torque.

Torque: 6 N·m (0.6 kg-m, 4.3 ft-lb)



FRONT: REAR:

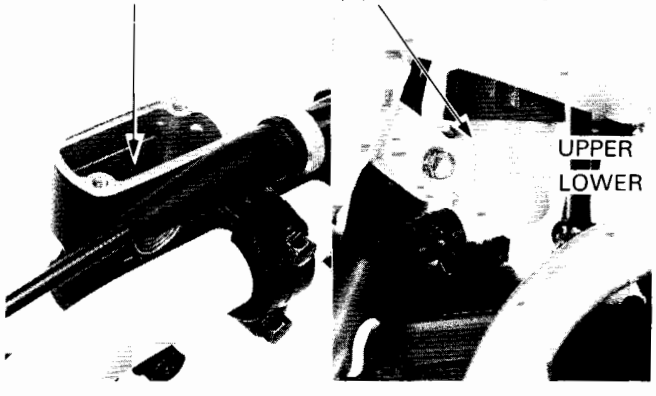


Fill the brake fluid resorvoirs with fresh brake fluid from a sealed container.

Front:
Fill the master cylinder with DOT 3 or DOT 4 brake fluid to the casting ledge.
Reinstall the diaphragm and master cylinder cover.
Tighten the screws securely.

Rear:
Fill the resorvoir to upper line with DOT 4 brake fluid.
Tighten the rear resorvoir cap securely.

FRONT: REAR:
(1) CASTING LEDGE (2) REAR RESERVOIR



⚠ WARNING

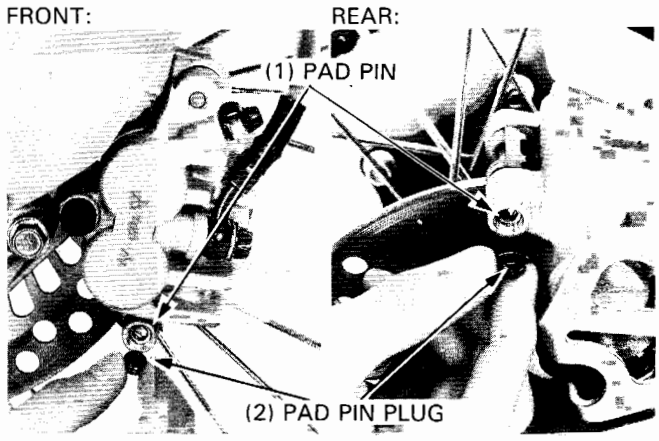
- **A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a quality brake cleaning agent.**

Brake Pad Replacement

NOTE

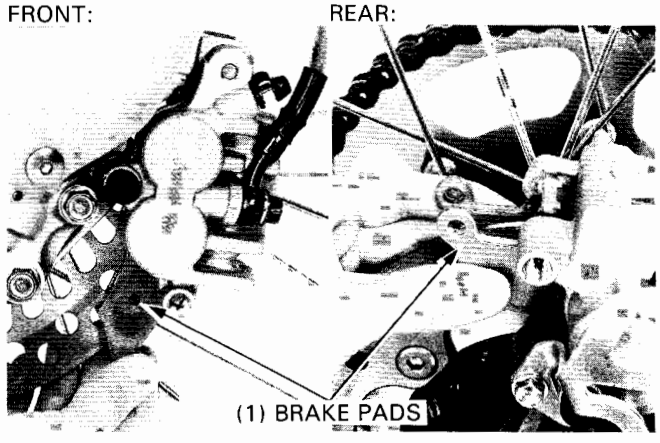
- Always replace the brake pads in pairs to assure even disc pressure.

Remove the pad pin plug and loosen the pad pin.
Pull the pad pin out of the caliper.



Remove the brake pad.

Install the new pads in the caliper.

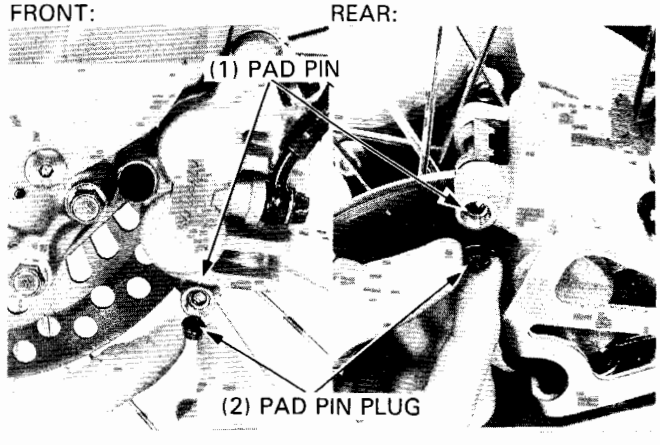


Install the pad pin by pushing the pads against the caliper to depress the pad spring. Tighten the pad pins to the specified torque.

Torque: 18 N·m (1.8 kg-m, 13 ft-lb)

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

Torque: 3 N·m (0.3 kg-m, 2.2 ft-lb)



Front Master Cylinder

Disassembly

Drain brake fluid from the hydraulic system (page 12-3).

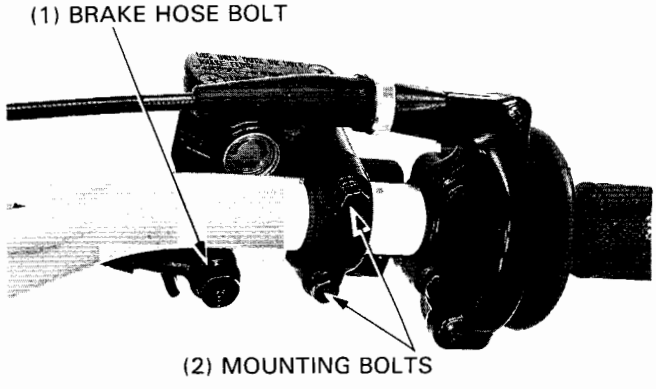
Remove the brake lever from the master cylinder.

Remove the brake hose bolt and two sealing washers.

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.

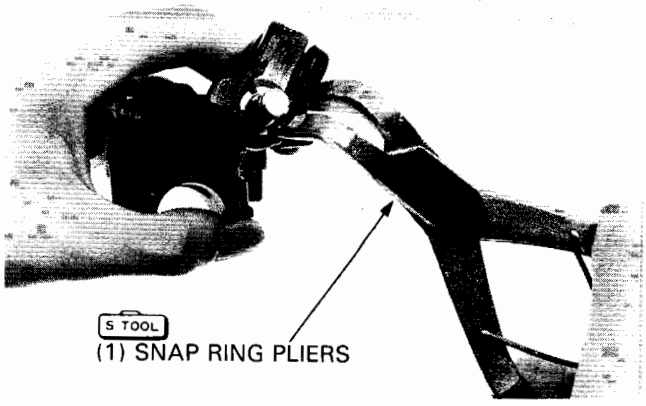
Remove the master cylinder from the handlebar.



Remove the piston boot and the snap ring from the master cylinder body.

S. TOOL

Snap ring pliers — **07914–3230001 or equivalent tool commercially available in U.S.A.**



Remove the washer, piston and spring.

Assembly

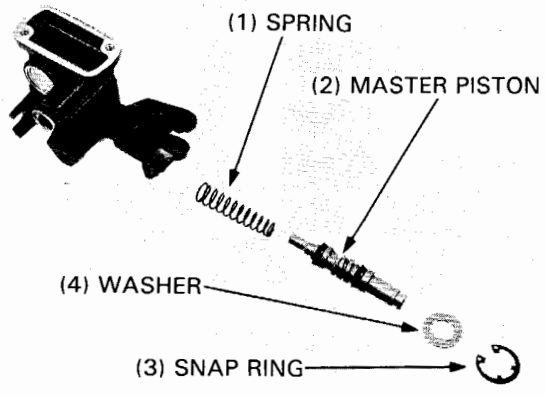
NOTE

- The master cylinder piston, cups and spring must be installed as a set.

Assemble the master cylinder. Coat all parts with clean brake fluid before assembly.
Dip the piston cups in clean brake fluid before assembly.

CAUTION

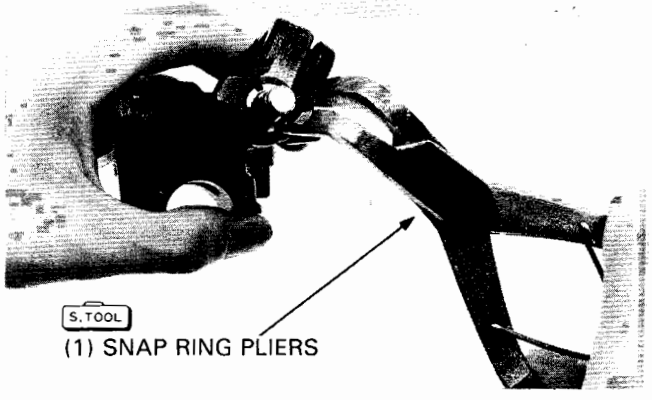
- **When installing the cups, do not allow the lips to turn inside out. Be certain the snap ring is seated firmly in the groove.**



Install the washer, snap ring and boot.

S. TOOL

Snap ring pliers — **07914–3230001 or equivalent tool commercially available in U.S.A.**



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 in the handlebar and tighten the upper bolt first, then tighten the lower bolt.

Torque: 10 N·m (1.0 kg-m, 7 ft-lb)

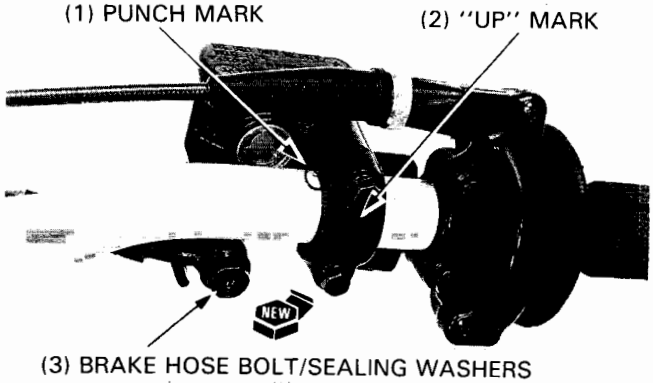
Install the brake hose with two new sealing washers and the brake hose bolt to the specified torque.

Torque: 35 N·m (3.5 kg-m, 25 ft-lb)

Apply silicone grease to the brake lever pivot and adjusting bolt end.
Install the brake lever to the master cylinder, and tighten the pivot bolt and nut to the specified torque.

Torque: 6 N·m (0.6 kg-m, 4.3 ft-lb)

Fill the master cylinder to the proper level and bleed the brake system (page 12-3).
Adjust the brake lever position (page 3-13).



Rear Master Cylinder

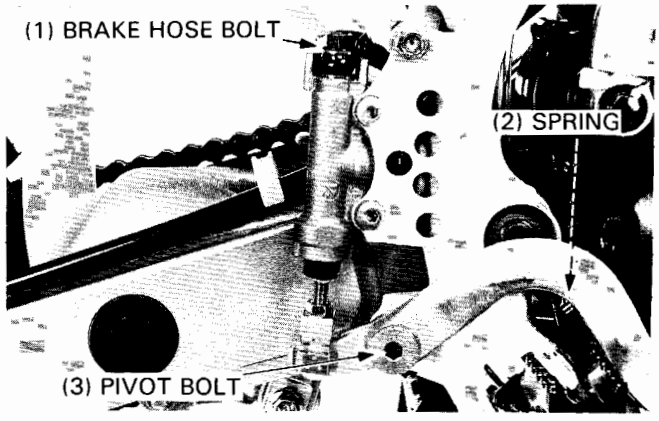
Removal

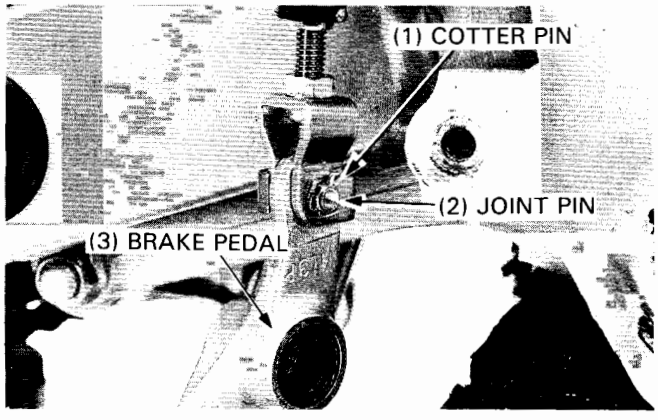
Drain brake fluid from the hydraulic system (page 12-3).

Loosen the rear brake hose bolt.
Remove the brake pedal pivot bolt and return spring, and remove the cotter pin and washer, then the joint pin.
Remove the brake hose bolt and two sealing washers and disconnect the brake hose.

NOTE

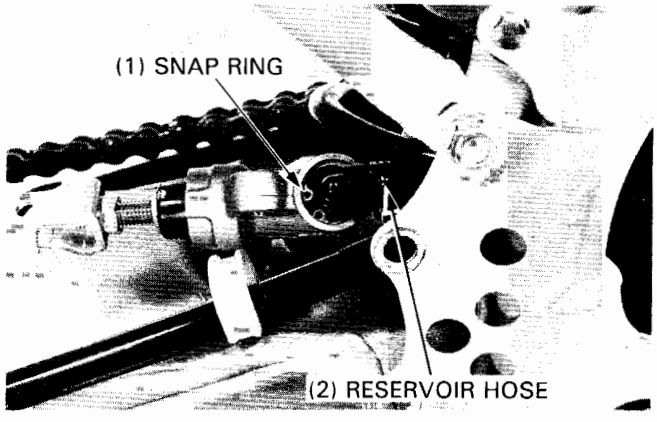
- When removing the brake hose bolt, cover the end of the hose to prevent contamination.





Remove the snap ring and disconnect the reservoir hose from the master cylinder.

S. TOOL
Snap ring pliers — **07914—3230001 or equivalent tool commercially available in U.S.A.**



Disassembly

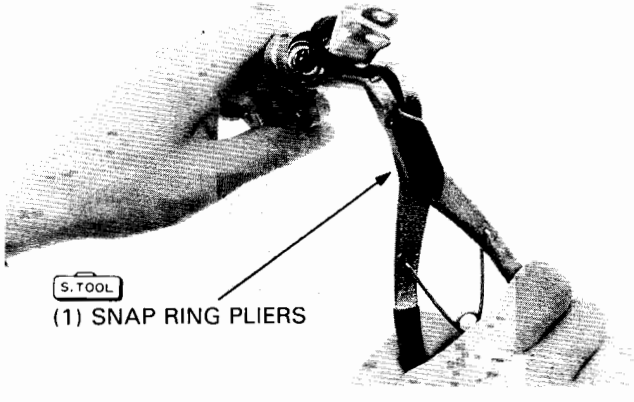
Remove the rubber boot.

Remove the snap ring and push rod from the master cylinder body.

CAUTION

- **The piston rod will pop out when removing the snap ring.**

S. TOOL
Snap ring pliers — **07914—3230001 or equivalent tool commercially available in U.S.A.**

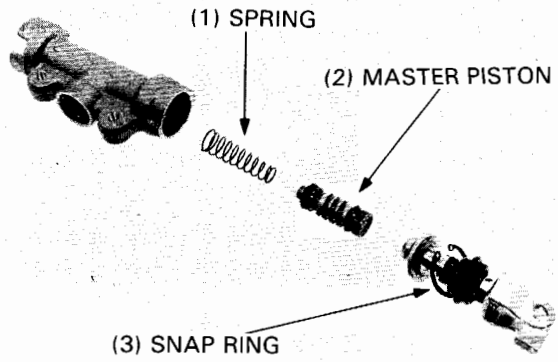


Remove the master piston and spring.

If may be necessary to apply a small amount of air pressure to the fluid outlet to remove the master piston and spring.

⚠WARNING

- **Wear adequate eye protection when using compression air.**



Assembly

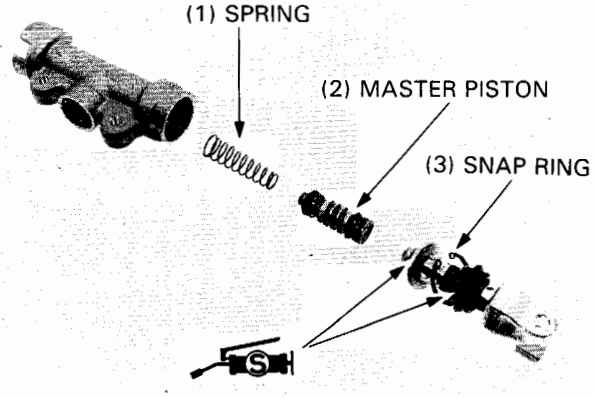
Clean the master cylinder with compressed air.
Dip the piston cups in clean brake fluid before assembly.
Install the spring and master piston together.

NOTE

- The master cylinder piston, cups and spring must be installed as a set.

CAUTION

- **When installing the cups, do not allow the lips to turn inside out.**

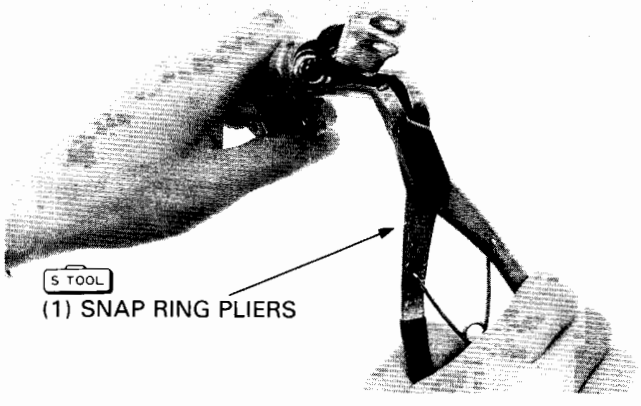


Install the push rod into the master cylinder.
Install the snap ring and rubber boot.

CAUTION

- **When installing the snap ring, be certain the snap ring is seated firmly in the groove.**

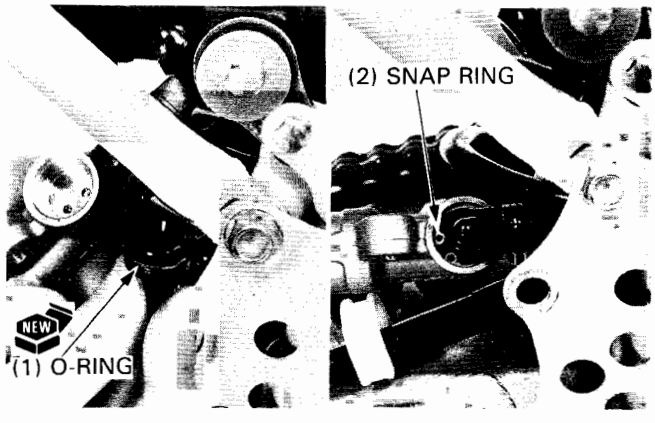
S. TOOL
Snap ring pliers — **07914—3230001 or equivalent tool commercially available in U.S.A.**



Installation

Coat the new O-ring with brake fluid and install a new O-ring on the reservoir hose to the master cylinder with a new snap ring.

S. TOOL
Snap ring pliers — **07914—3230001 or equivalent tool commercially available in U.S.A.**



Connect the rear brake pedal to the master cylinder push rod.
Attach the rear brake hose eyelet joint with the two new sealing washers and *install* the brake hose bolt as shown.
Tighten the brake hose bolt to the specified torque.

Torque: 35 N·m (3.5 kg-m, 25 ft-lb)

'92—'94:
Clean and apply a locking agent to the threads of rear master cylinder mounting bolts.

Install the master cylinder on the frame.
Tighten the rear brake master cylinder mounting bolts to the specified torque.

Torque: 15 N·m (1.5 kg-m, 11 ft-lb)

Apply grease to the sliding surface of brake pivot bolt.
Install the rear brake pedal and return spring.
Tighten the brake pedal pivot to the specified torque.

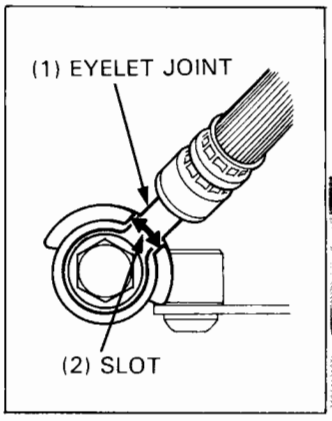
Torque: 26 N·m (2.6 kg-m, 19 ft-lb)

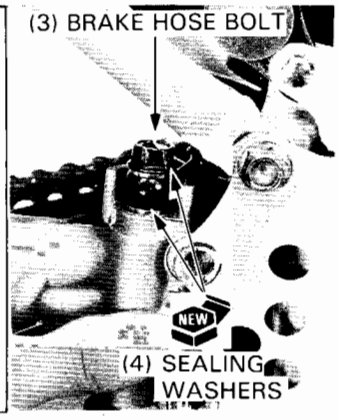
Adjust the brake pedal height (page 3-13).

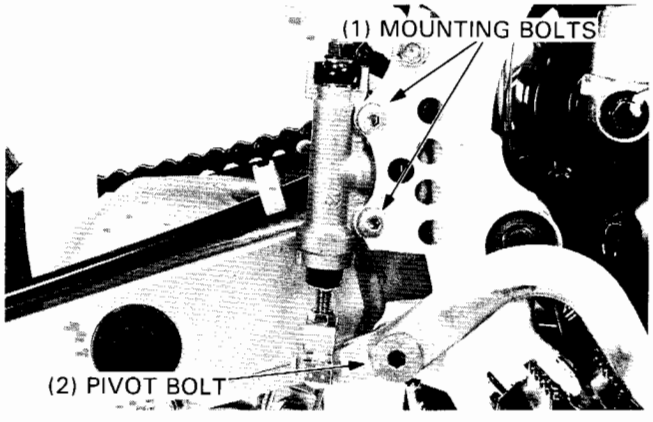
CAUTION

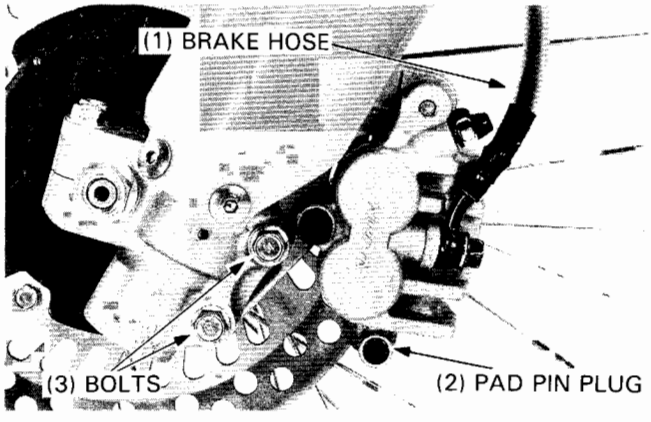
- **Turn the hose eyelet joint clockwise until it touches the master cylinder stopper boss, then tighten the bolt.**
- **After installing the brake hose to the master cylinder, check that the brake hose does not touch the shock absorber.**

Fill and bleed the rear brake hydraulic system (page 12-3).









Front Brake Caliper

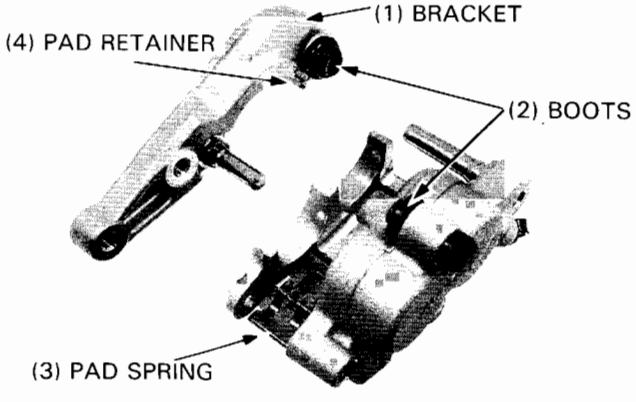
Removal

Place a clean container under the caliper and disconnect the brake hose from the caliper.

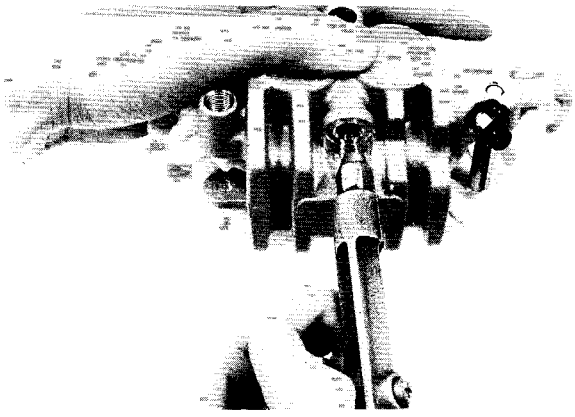
Remove the pad pin plug and loosen the pad pin.
Remove the caliper bolts, caliper and bracket.

Disassembly

Remove the following:
— caliper bracket
— brake pads
— pad spring and pad retainer
— caliper pivot boots
— piston from the caliper.



If necessary, 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.

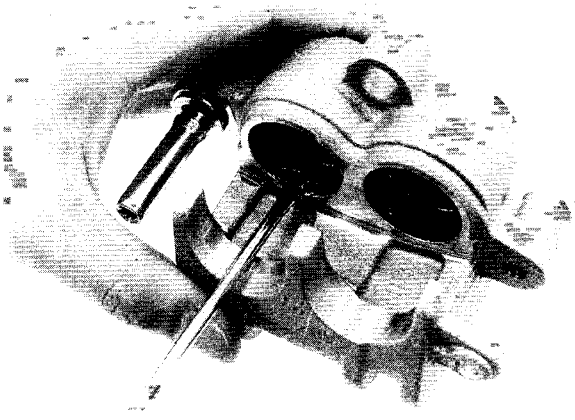


⚠WARNING

- **Wear adequate eye protection to prevent oil or other flying debris from getting on your eyes.**
- **Do not bring the air nozzle too close to the inlet.**

Examine the pistons and caliper for scoring, scratches or other damage and replace if necessary.

Push the piston seals in, then lift them out and discard them. Clean the brake piston seal grooves with clean brake fluid.

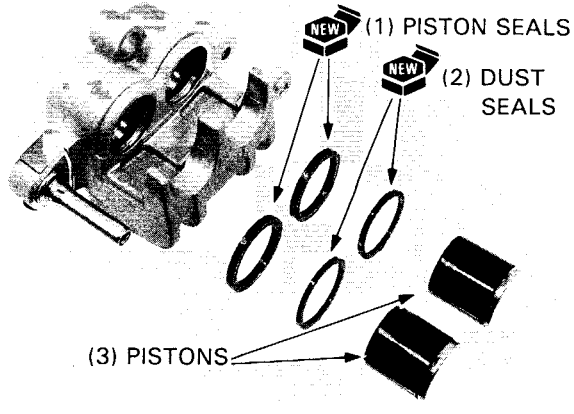


CAUTION

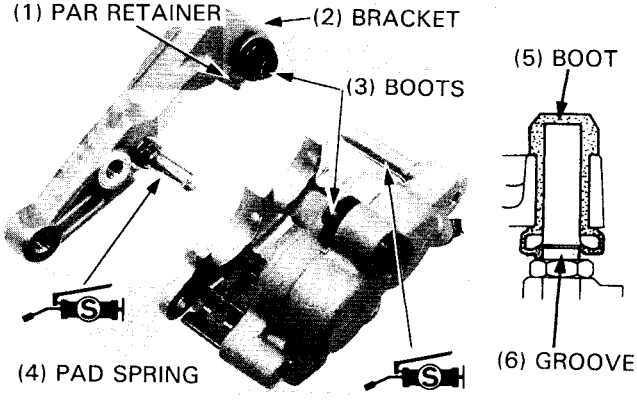
- **Be careful not to damage the piston sliding surfaces when removing the seals.**

Assembly

The dust seals and oil seals must be replaced with new ones whenever they are removed. Coat the new seals with brake fluid and install them.
Install the pistons with their closed ends toward the pad as shown.



Install the pad spring and pad retainer.
Install the pivot boots making sure they are securely seated in the caliper bracket pin grooves.
Apply silicone grease to the caliper bracket pins and assemble the caliper and bracket.
Temporarily install the brake pads with the pad pin.



Installtion

Clean and apply Honda Aerobic Thread Lock or equivalent to the caliper mounting bolt threads.
Install the caliper on the fork slider and tighten the caliper bolts to the specified torque.

Torque: 31 N·m (3.1 kg-m, 22 ft-lb)

Tighten the pad pin to the specified torque.

Torque: 18 N·m (1.8 kg-m, 13 ft-lb)

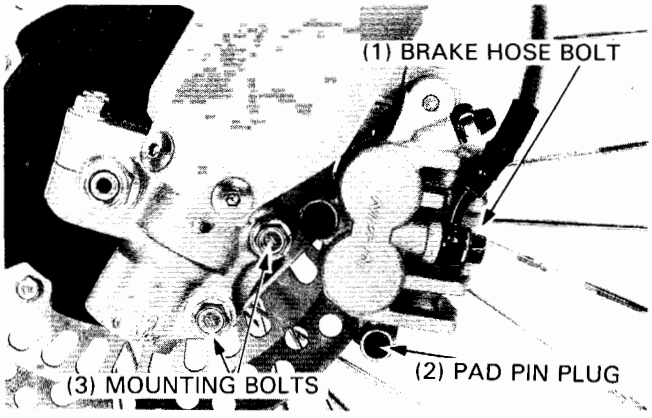
Tighten the pad plug to the specified torque.

Torque: 3 N·m (0.3 kg-m, 2.2 ft-lb)

Attach the brake hose with two new sealing washers and tighten the hose bolt to the specified torque.

Torque: 35 N·m (3.5 kg-m, 25 ft-lb)

Fill the master cylinder and bleed the brake system (page 3-11).



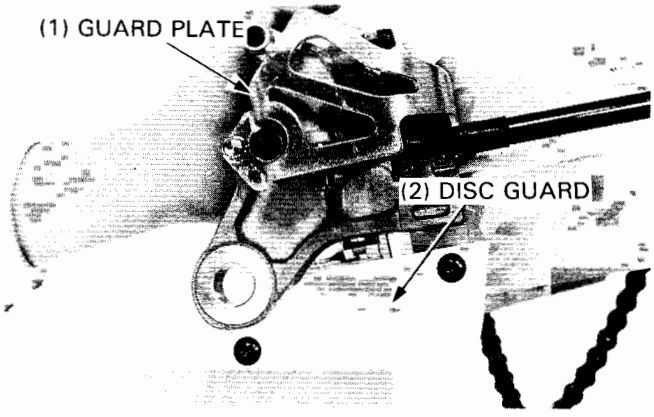
Rear Brake Caliper

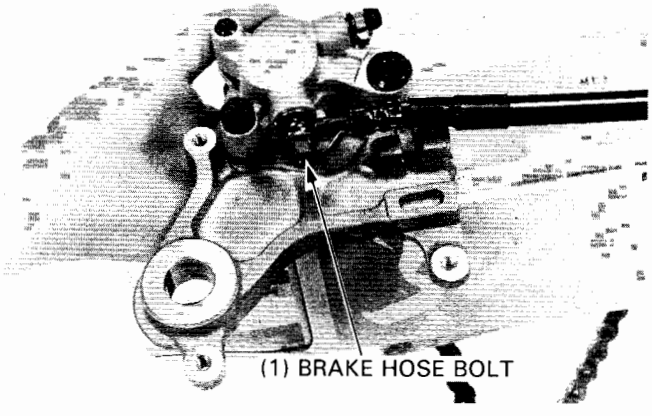
Removal

Remove the rear wheel (page 11-4).

Remove the pad pin plug and loosen the pad pin.
Slide the rear brake caliper bracket rearward and pull it off of the swingarm.
Remove the guard plate and disc guard.

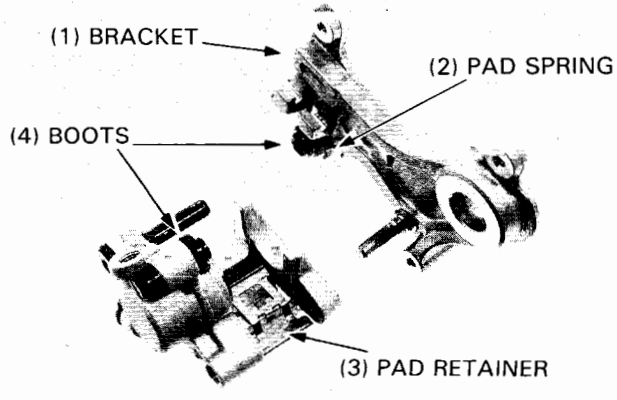
Place a clean container under the caliper and disconnect the brake hose from the caliper.





Disassembly

Remove the following:
- caliper bracket
- pads and pad spring
- caliper pivot boots
- pistons from the caliper.



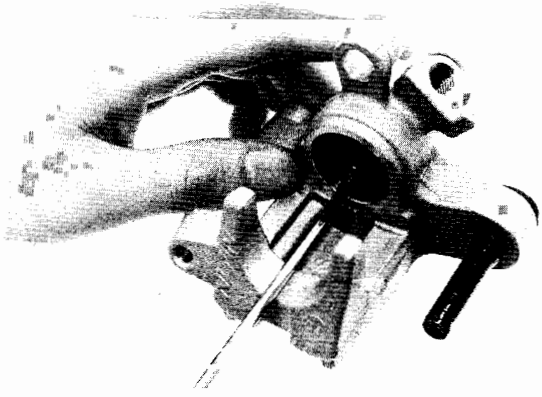
If necessary, apply compressed air to the caliper fluid inlet to get the piston out. Place a shop rag under the caliper to cushion the piston when it is expelled. Use the air in short spurts.

⚠WARNING

- **Wear adequate eye protection to prevent oil or other flying debris from getting on your eyes.**
- **Do not bring the air nozzle too close to the inlet.**

Examine the pistons and caliper for scoring, scratches or other damage and replace if necessary.

Push the piston seals in, then lift them out and discard them. Clean the brake piston seal grooves with brake fluid.

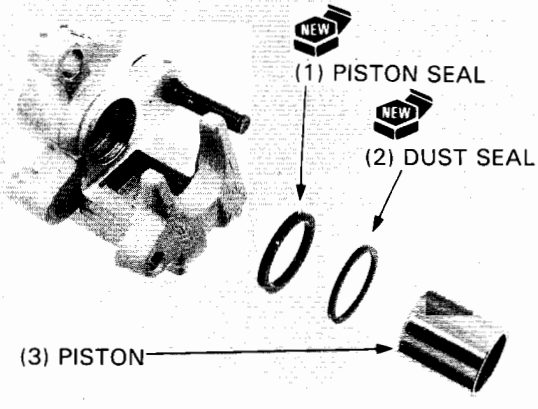


CAUTION

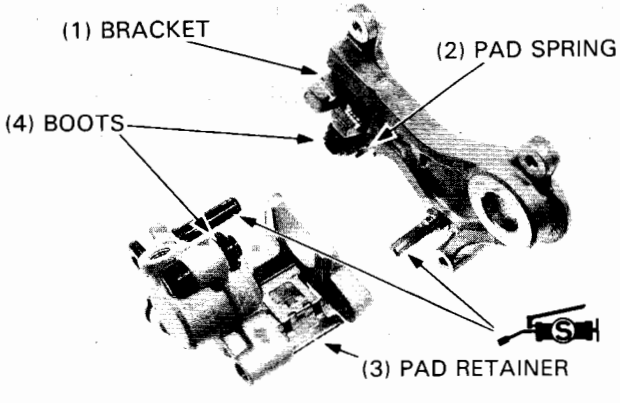
- **Be careful not to damage the piston sliding surfaces when removing the seals.**

Assembly

The dust seals and oil seals must be replaced with new ones whenever they are removed. Coat the new seals with brake fluid and install them.
Install the piston with the open end toward the pad as shown.



Install the pad spring and pad retainer.
Install the pivot boots making sure they are securely seated in the caliper bracket pin grooves (page 12-10).
Apply silicone grease to the caliper bracket pins and assemble the caliper and bracket.
Temporarily install the brake pads with the pad pin.



Installtion

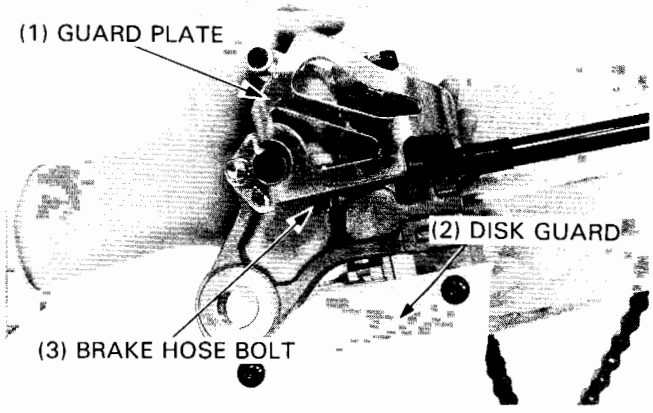
Install the rear brake disc guard with two screws and tighten them to the specified torque.

Torque: 7 N·m (0.7 kg-m, 5.1 ft-lb)

Attach the brake hose with two new sealing washers and tighten the brake hose bolt to the specified torque.

Torque: 35 N·m (3.5 kg-m, 25 ft-lb)

Install the caliper guard plate with two bolts and tighten them.



Install the rear brake caliper bracket to the swingarm slide rail.

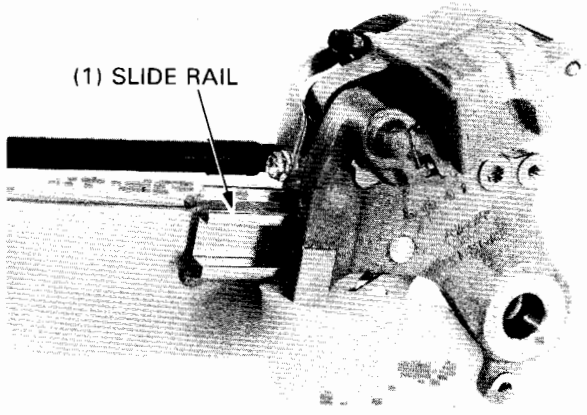
Install the rear wheel (pape 11-9).
Tighten the pad pin to the specified torque.

Torque: 18 N·m (1.8 kg-m, 13 ft-lb)

Tighten the pad pin plug to the specified torque.

Torque: 3 N·m (0.3 kg-m, 2.2 ft-lb)

Fill the master cylinder and bleed the brake system (page 12-3).



MEMO

13. Electrical System

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Troubleshooting	13-3	Ignition Timing	13-7
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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 lead to death.**

- 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 unit.
- 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.
- Replace the ignition pulse generator, exciter coil and stator base as a set.

Specifications

Item		Standard		Service Limit
Recommended spark plug	Standard	CHAMPION	QN-86	—
		NGK	BR8EG	
		NIPPONDENSO	W24ESR-V	
	Optional	CHAMPION	QN-2G	—
		NGK	BR8EV	
		NIPPONDENSO	W24ESR-G	
Spark plug gap		0.5–0.6 mm (0.020–0.024 in)		—
Ignition timing ("F" mark)		22° BTDC at 4000 rpm		—
Ignition coil resistance (at 20°C/68°F)	Primary	0.4–0.6 Ω		—
	Secondary	14–23 kΩ with spark plug cap		—
		10–16 kΩ without spark plug cap		—
Alternator exiter coil resistance (at 20°C/68°F)		1–40 Ω		—
Ignition pulse generator resistance (at 20°C/68°F)		180–280 Ω		—

Torque Values

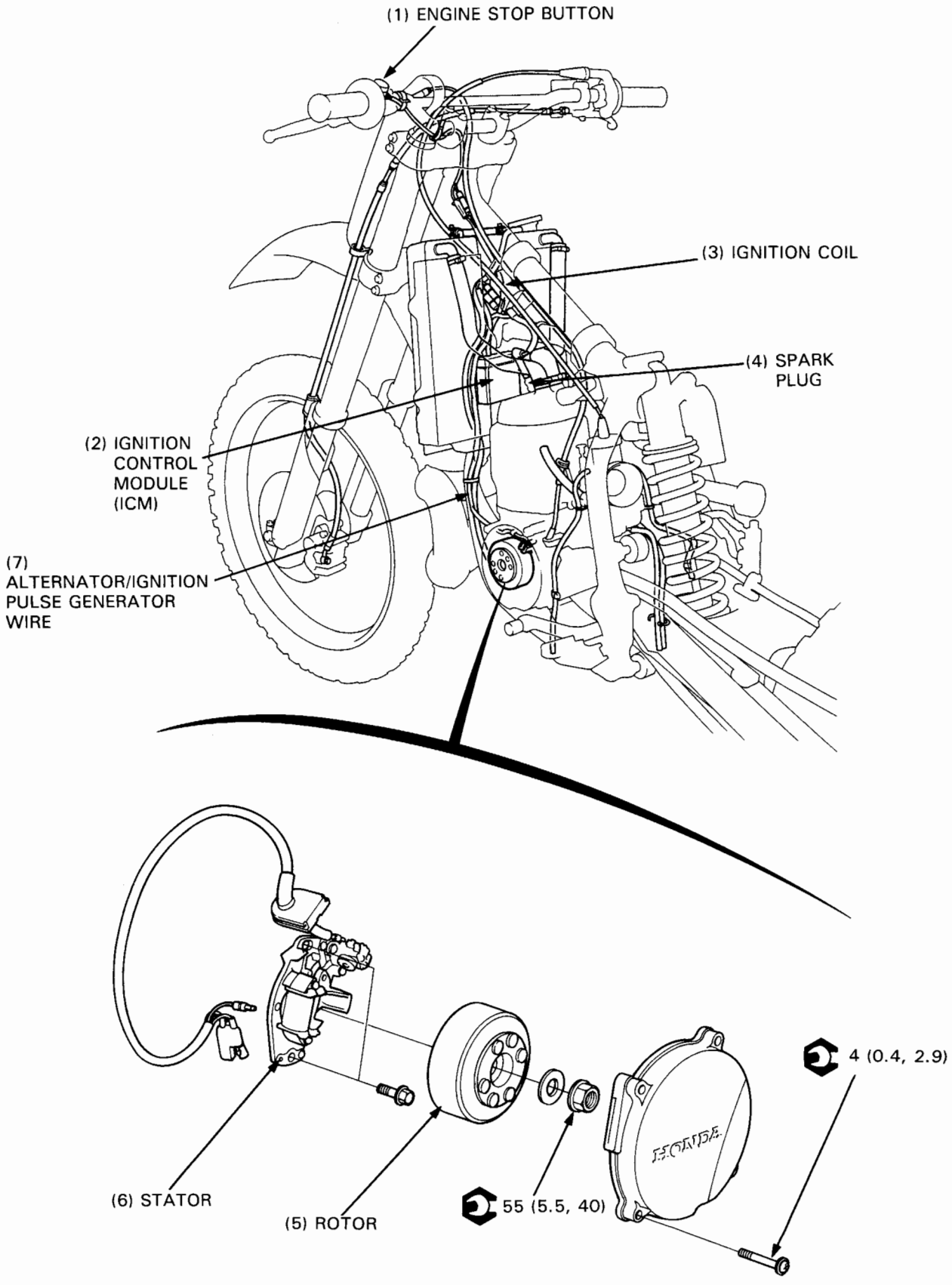
Flywheel nut	55 N·m (5.5 kg-m, 40 ft-lb)
Alternator cover screw	4 N·m (0.4 kg-m, 2.9 ft-lb)

Tools

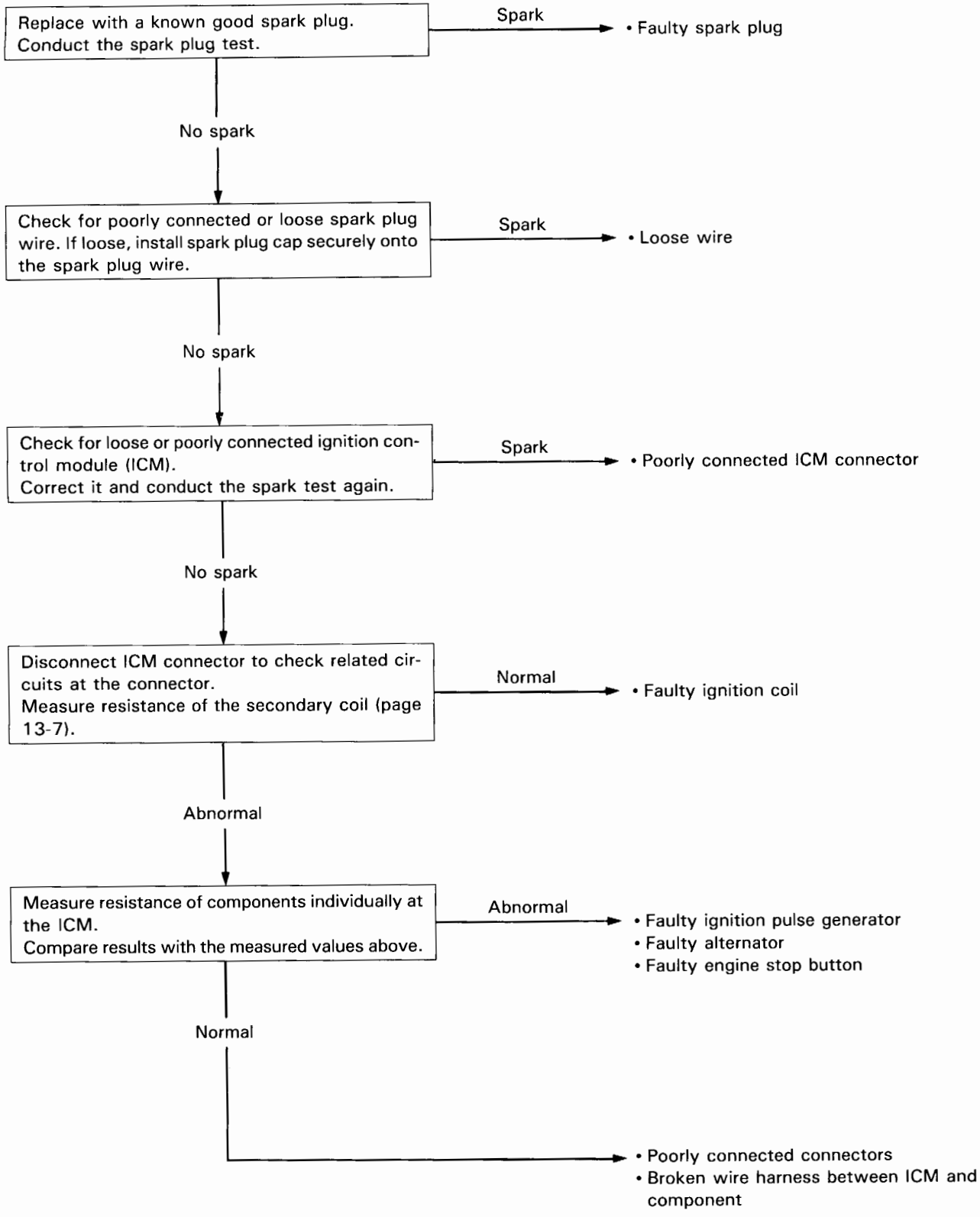
Common

Flywheel puller	07733–0010000 or 07933–0010000
Universal holder	07725–0030000 or Equivalent commercially availavle in U.S.A.

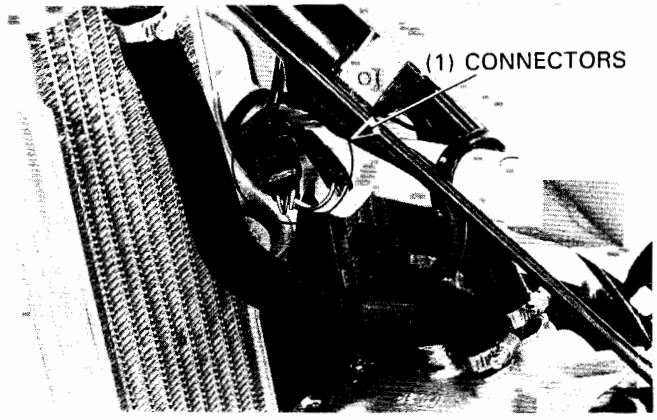
System Location



Troubleshooting



Ignition Control Module (ICM)



System Inspection

NOTE

- The ICM is an electronic component which includes ignition timing advance, retard system and other calculating circuits. It may be difficult to check the ICM by itself. Therefore, *testing is by* the process of eliminating other causes.

Remove the seat and fuel tank (page 2-2).
Disconnect the ICM connector.

In cases that the ignition timing is out of specification or poor or no spark at the spark plug, check the items below. If all are OK, replace the ICM and recheck.
- Spark plug
- Connection of all connectors
- Engine stop switch (page 13-8)
- Ignition coil (page 13-7)
- Alternator exciter coil (page 13-5)
- Ignition pulse generator (page 13-5).

Measure the data between the connector terminal using the following chart:

ITEM		STANDARD DATA: at 20°C/68°F	TERMINALS
IGNITION PULSE GENERATOR COIL		180–280 Ω	Blue/Yellow-Green/White
EXCITER COIL		1–40 Ω	Blue-White
IGNITION COIL	PRIMARY	0.4–0.6 Ω	—
	SECONDARY	13–23 kΩ	With spark plug cap
		10–16 kΩ	Without spark plug cap

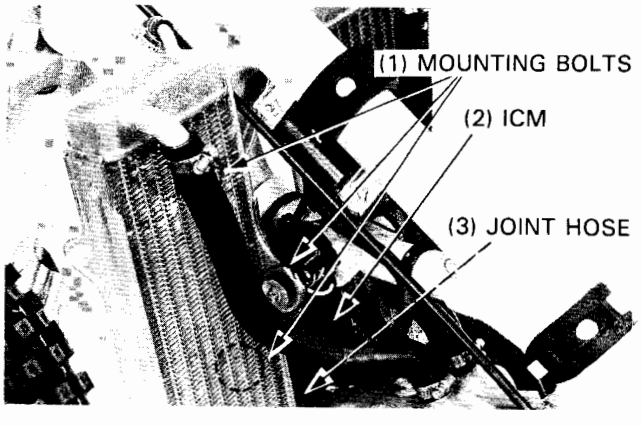
Removal/Installation

Drain the radiator coolant (page 5-3).
Remove the seat and fuel tank (page 2-2).
Disconnect the ICM connectors.

Remove the left radiator mounting bolts and disconnect the radiator joint hose, then swing the left radiator forward.

Remove the wire band.
Remove the ICM from the frame.

Installation is in the reverse order of removal.

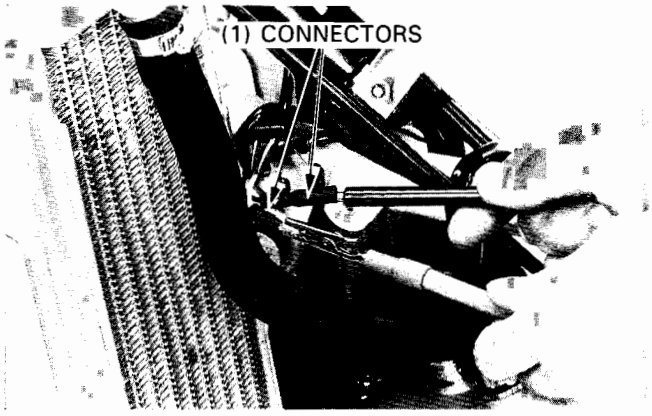


Alternator

Exciter Coil Inspection

Remove the seat and fuel tank (page 2-2).
Disconnect the exciter connectors from the ignition control module (ICM).
Measure the resistances between the terminals.
Replace the alternator stator and ignition pulse generator as a set, if the reading does not fall within the limits below.

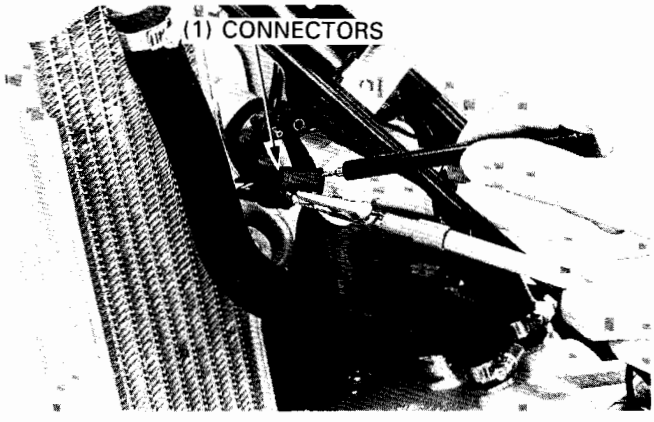
Resistance: (Blue-White) 1—40 Ω [at 20°C/68°F]



Ignition Pulse Generator Inspection

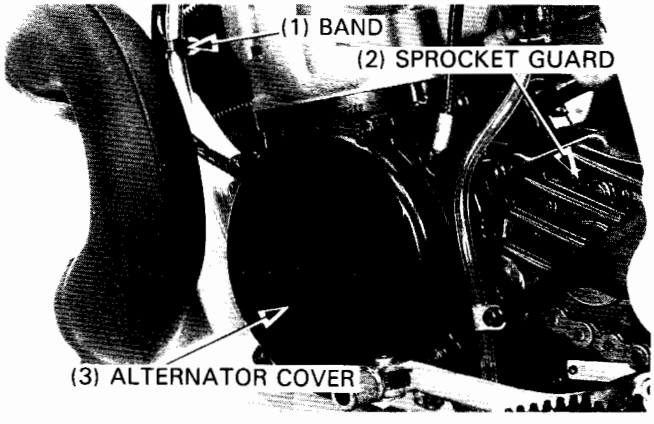
Remove the seat and fuel tank (page 2-2).
Disconnect the ignition pulse generator connectors from the ignition control module (ICM).
Measure the resistances between the terminals.
Replace the alternator stator and ignition pulse generator as a set, if the reading does not fall within the limits below.

Resistance: (Blue/Yellow-Green/White)
180—280 Ω [at 20°C/68°F]



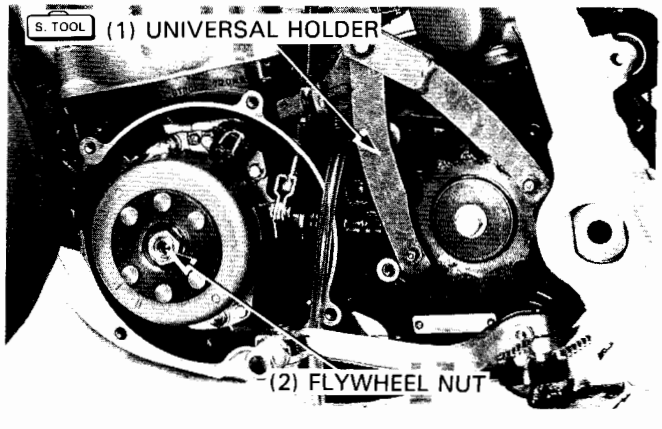
Removal

Remove the seat and fuel tank (page 2-2).
Disconnect the alternator wire and remove the wire bands.
Remove the alternator cover and sprocket guard.



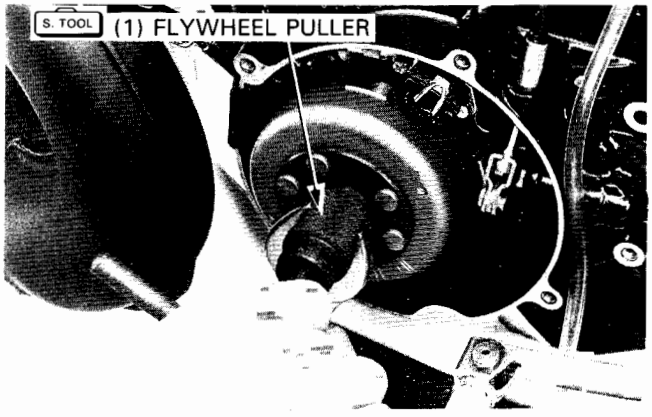
Remove the drive chain (page 3-10).
Shift the transmission into 5th gear.
Hold the drive sprocket with the universal holder and remove the flywheel nut and washer.

S. TOOL
Universal holder — **07725—0030000 or equivalent commercially available in U.S.A.**



Remove the flywheel with the flywheel puller.

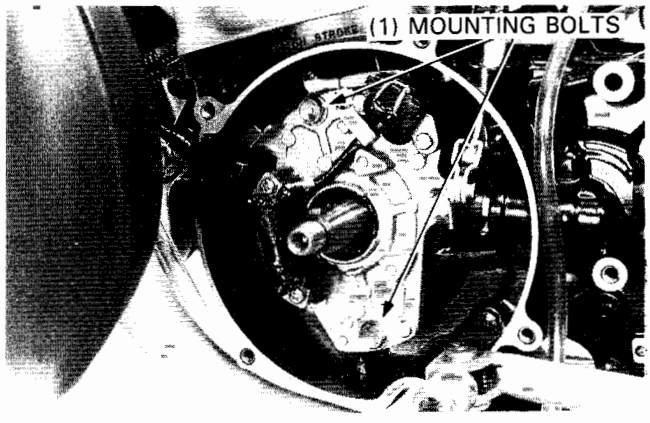
S. TOOL
Flywheel puller **07733–0010000 or 07933–0010000**



Remove the stator mounting bolts and stator assembly.

NOTE

- Replace the ignition pulse generator and alternator stator as a set.

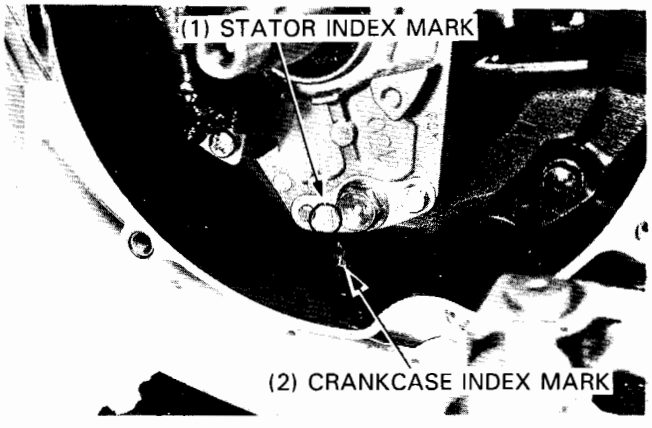


Installation

Install the stator assembly by aligning the index mark on the lower stator with the index mark on the left crankcase.

NOTE

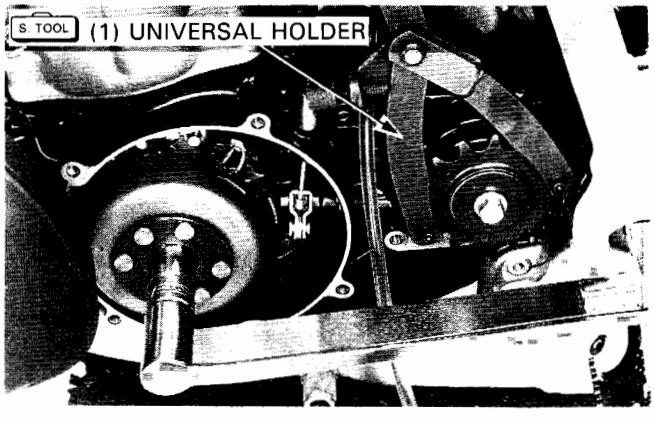
- Be careful not to contact the clutch lifter arm.
- Align the flywheel keyway with the woodruff key in the crankshaft.
- Inspect for proper operation by turning the flywheel by hand after assembly.



Install the flywheel, washer and nut.
Hold the drive sprocket with the universal holder and tighten the flywheel nut.

Torque: 55 N·m (5.5 kg-m, 40 ft-lb)

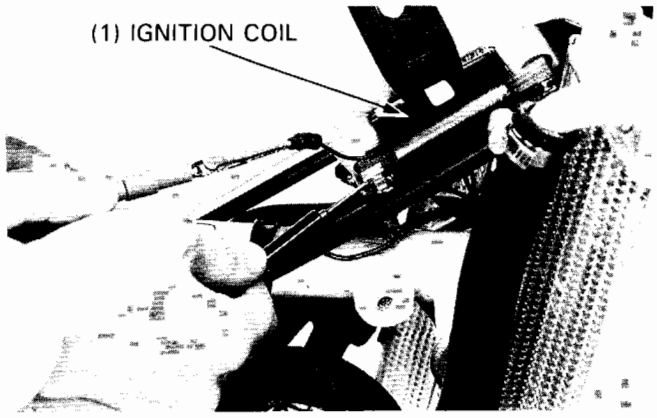
S. TOOL
Universal holder **07725–0030000 or equivalent commercially available in U.S.A.**



Install the drive chain.
Connect the alternator wires.
Check the ignition timing (page 13-7)

Install the alternator cover and drive chain.
Install the fuel tank and seat.

Ignition Coil



Inspection

Remove the seat and fuel tank (page 2-2).
Disconnect the spark plug cap and primary and ground leads.

Measure the primary coil resistance of the ignition coil.

Primary coil resistance: (at 20°C/68°F) 0.4—0.6 Ω

Measure the secondary coil resistance with and without spark plug cap.

Secondary coil resistance: without cap
(at 20°C/68°F) 10—16 kΩ
with cap
(at 20°C/68°F) 13—23 kΩ

Install the fuel tank and seat.

Ignition Timing

Remove the alternator cover.
Check that the stator index mark is aligned with the index mark in the crankcase.

Attach a timing light and tachometer according to the timing light and tachometer manufacture's instructions.
Warm up the engine sufficiently and inspect the ignition timing at 4,000 rpm.

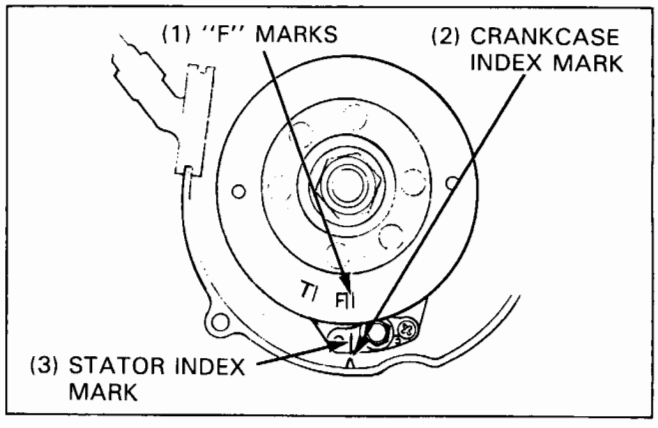
The crankcase index mark should be between the "F" marks on the flywheel.
If the crankcase index mark is not between the "F" marks, do the following:

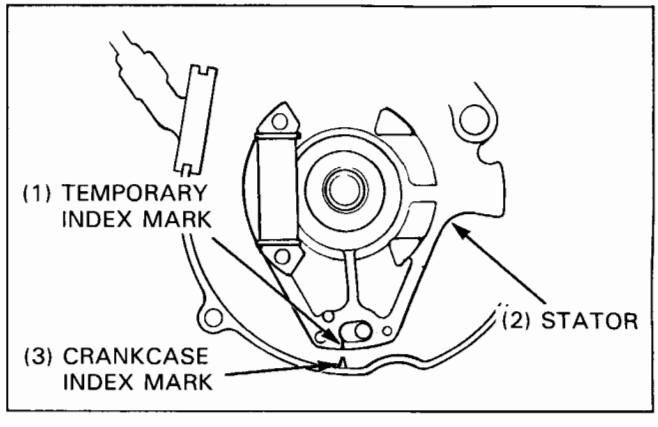
NOTE

- This procedure is to be done after replacing the ignition control module (ICM), ignition pulse generator, stator assembly or flywheel.
- If you have checked the ignition timing as a troubleshooting step and the marks do not align, inspect the ignition control module (ICM), ignition pulse generator and stator, before performing this procedure.

Scribe a temporary index mark on the lower stator plate that will align between the "F" marks at 4,000 rpm.
Stop the engine.

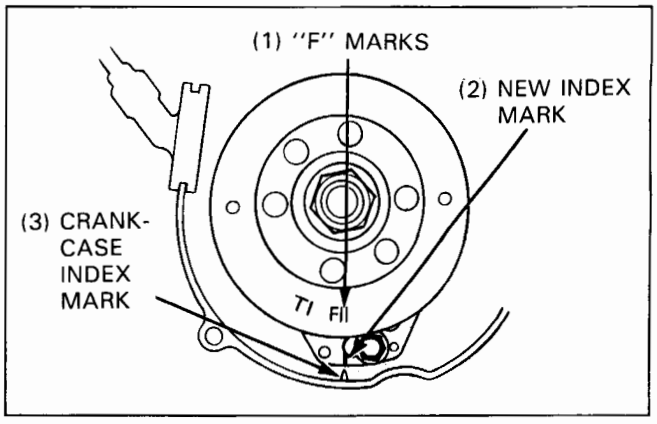
Remove the flywheel and stator assembly (page 13-6).
Elongate the lower stator plate, then reinstall it with its temporary index mark aligned with the index mark on the crankcase.





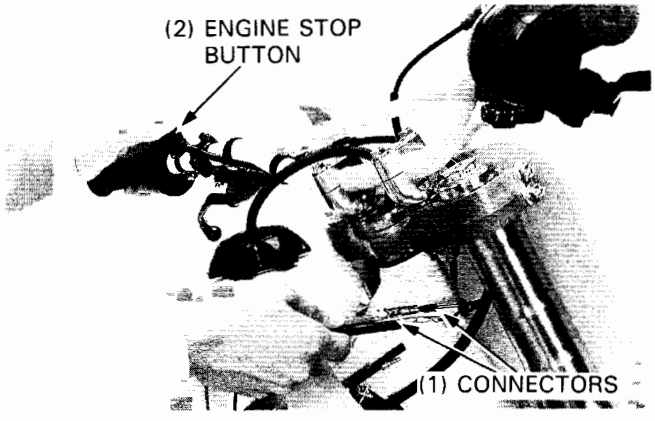
Install the flywheel and torque the nut (pae 13-6).

Recheck the ignition timing.
The crankcase index mark should now align between the "F" marks on the flywheel.
Repeat steps if the ignition timing is not correct.
Remove the flywheel and lower stator mounting bolt.
Scribe a new index mark on the lower stator plate and grind off the old index mark.

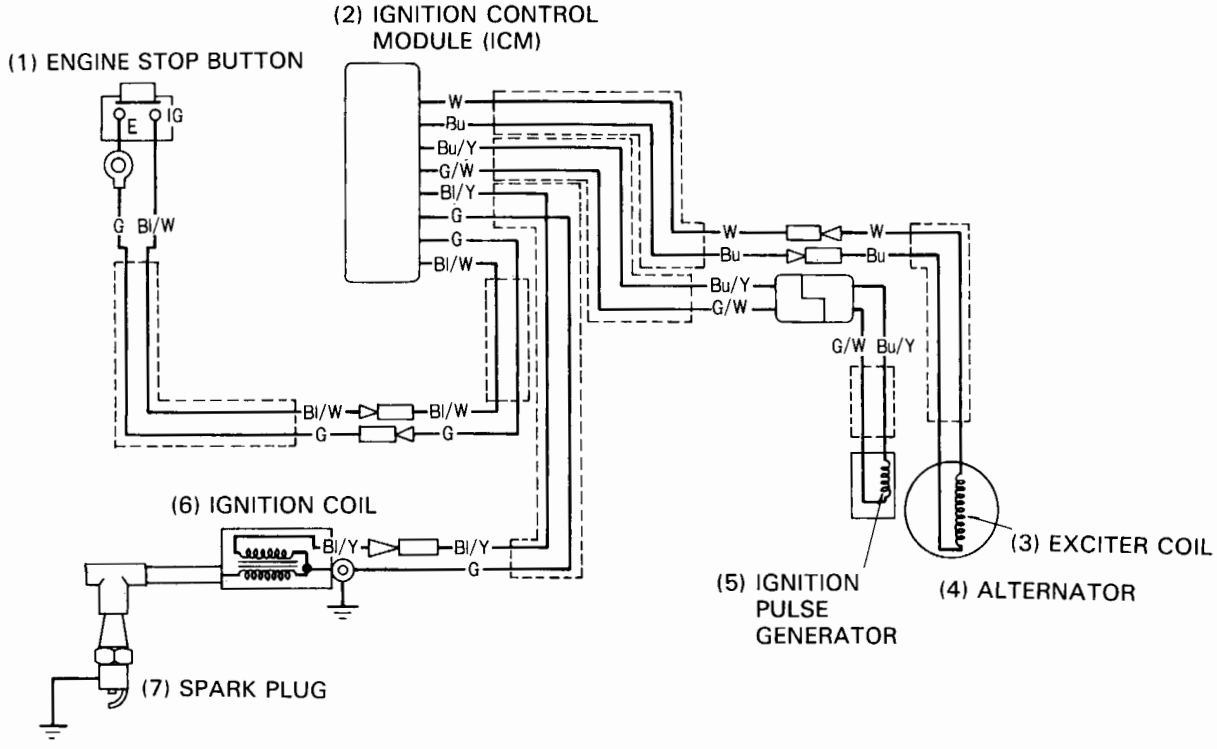


Engine Stop Button

Disconnect the engine stop button connectors.
Check the engine stop button for continuity with the button pressed; and no continuity when the button is not being pushed.



14. Wiring Diagram



ENGINE STOP BUTTON

POSITION	IG	E
NOT PUSHED		
PUSHED IN	O	O
WIRE COLOR	Bl/W	G

Bu.....Blue
Bl .....Black
W .....White
G .....Green
Y .....Yellow

0030Z-ML3-7700

14

MEMO

15. Troubleshooting

Engine Does Not Start Or Is Hard Start	**15-1**	**Poor Performance At High Speed**	**15-4**
Engine Lacks Power	**15-2**	**Poor Handling**	**15-4**
Poor Performance At Low And Idle Speeds	**15-3**		

Engine Does Not Start Or Is Hard To Start

		Possible Cause
1. Check the fuel flow to carburetor	Not Reaching Carburetor	• Clogged fuel tube or fuel strainer screen • Sticking float valve • Clogged fuel fill cap breather tube
Reaching Carburetor		
2. Perform a spark test	Weak Or No Spark	• Faulty spark plug • Fouled spark plug • Faulty ignition control module (ICM) • Broken or shorted spark plug wire • Broken or shorted ignition coil • Faulty ignition pulse generator • Faulty exciter coil • Faulty engine stop button • Loose or disconnected ignition system wires
Good Spark		
3. Test cylinder compression	Low Compression	• Stuck piston ring • Worn cylinder and piston ring • Damaged cylinder head gasket • Faulty reed valve • Cylinder head flaw • Compression leak past crankcase
Compression Normal		
4. Start by following normal procedure	Engine Starts But Stops	• Improper choke operation • Carburetor incorrectly adjusted • Intake pipe leaking • Improper ignition timing (faulty ignition coil or ignition pulse generator) • Crankcase leaking • Fuel contaminated
Engine Does Not Fire		
5. Remove and inspect spark plug	Wet Plug	• Flooded carburetor or engine • Damaged starting enrichment (SE) valve seat • Clogged air cleaner
Dry		
6. Start with choke on		

Engine Lacks Power

		Possible Cause
1. Raise wheels off ground and spin by hand	Wheels Do Not Spin Freely	• Brake dragging • Worn or damaged wheel bearings • Drive chain too tight
Wheel Spins Freely		
2. Check tire pressure	Pressure Low	• Faulty tire valve • Punctured tire
Pressure Normal		
3. Accelerate rapidly from low to second	Engine Speed Not Changed When Clutch Is Released	• Clutch slipping • Worn clutch discs/plates • Warped clutch discs/plates
Engine Speed Reduced When Clutch Is Released		
4. Accelerate lightly	Engine Speed Does Not Increase	• Starting enrichment (SE) valve is open • Clogged air cleaner • Restricted fuel flow • Clogged exhaust chamber • Pinched fuel fill cap breather tube
Engine Speed Increase		
5. Check ignition timing	Incorrect	• Faulty alternator • Faulty ignition pulse generator • Faulty ignition control module (ICM)
Correct		
6. Test cylinder compression using kickstarter	Incorrect	• Faulty reed valve • Worn cylinder and piston ring • Leaking head gasket • Flaws in cylinder head, cylinder or crankcase
Normal		
7. Check carburetor for clogging	Clogging	• Carburetor not serviced frequently enough
Not Clogging		
8. Remove spark plug	Fouled or discolored	• Plug not serviced frequently • Use of plug with improper heat range • Gas/oil mixture, too much oil
Not fouled or discolored		

9. Check if engine overheats — Overheating →
   - Excessive carbon build-up in combustion chamber
   - Use of poor quality fuel
   - Clutch slipping
   - Lean fuel mixture
   - Wrong type of fuel

   Not Overheat

10. Accelerate or run at high speed — Engine Knocks →
    - Worn piston and cylinder
    - Wrong type of fuel
    - Excessive carbon built-up in combustion chamber
    - Ignition timing too advanced [Faulty ignition control module (ICM)]
    - Lean fuel-air mixture

    Engine Does Not Knock

Poor Performance At Low And Idle Speed

		Possible Cause
1. Check ignition timing	Incorrect →	• Improper ignition timing [Faulty ignition control module (ICM), alternator, ignition pulse generator]
Correct		
2. Check carburetor air screw adjustment	Incorrect →	• Fuel-air mixture too lean (Too correct, screw out) • Fuel-air mixture too rich (To correct, screw in)
Correct		
3. Check if air is leaking past insulator	Leaking →	• Deteriorated insulator or reed valve gasket • Loose insulator clamps
Not Leaking		
4. Perform spark test	Weak Or Intermittent Spark →	• Faulty, carbon or oil fuel fouled spark plug • Faulty alternator • Faulty ignition coil • Broken or shorted spark plug wire • Faulty ignition pulse generator • Faulty ignition control module (ICM)
Good Spark		

Poor Performance At High Speed

		Possible Cause
1. Check ignition timing	Incorrect	• Faulty alternator • Faulty ignition pulse generator • Faulty ignition control module (ICM)
Correct		
2. Disconnect fuel line at carburetor and check for clogging	Fuel Flow Restricted	• Lack of fuel in tank • Clogged fuel line • Clogged fuel tank breather tube • Clogged fuel valve
Unrestricted Fuel Flow		
3. Remove the air cleaner	Fouled	• Not cleaned frequently enough
Not Fouled		
4. Check carburetor jet for clogging	Clogged	• Contaminants in the fuel
Not Clogged		
5. Replace carburetor main jet	Condition Worse	• Jet size wrong, rejet in the opposite direction

Poor Handling

	Possible Cause
1. If steering is heavy	• Steering head bearings adjusted too tight • Damaged steering head bearing(s)
2. If either wheel is wobbling	• Excessive wheel bearing play Bent rim • Improperly installed wheel hub • Swingarm pivot bushing excessively worn • Bent frame • Loose swingarm pivot bolt
3. If the motorcycle pulls to one side	• Front and rear wheels not aligned • Bent fork • Bent swingarm

NOTE

- For the following recommendations to be most useful, the motorcycle must be adjusted as follows: Fork—compression and rebound damping at standard position, standard fork oil quantity and viscosity, and air pressure zero; Shock—nitrogen pressure 980 kPa (10.0 kg/cm², 142 psi), compression and rebound damping at standard position, and spring, preload adjusted so the bike sags 100 mm (3.9 in) with rider seated—see Owner's Manual for spring preload adjustment.
- Make only one change at a time, then test ride and evaluate the difference before making further adjustments. The solutions are given in the preferred sequence of adjustment.

4. Front end oversteers; it cuts too sharply (such as in sand): → • Raise fork oil level • Use stiffer fork spring

5. Front end understeers; it washes out or pushes (such as on a tight track with hard ground): → • Lower fork oil level • Use softer fork spring

6. Front end hunts at high speed; it wanders under power: → • Raise fork oil level • Increase shock preload

7. Front end shakes under heavy braking: → • Decrease shock preload • Increase shock rebound damping • Raise fork oil level

8. Front end hops over bumps in smooth turns: → • Lower fork oil level • Decrease fork compression damping • Use softer fork spring

9. Rear end hops over bumps while accelerating: → • Decrease shock preload • Decrease shock compression damping

10. Rear end hops over bumps while braking: → • Decrease rebound damping

11. Rear end gets poor traction while accelerating away from a corner: → • Decrease shock preload • Decrease shock compression damping

— Whenever a solution says raise or lower fork oil level, do so in increments of 5 cc and retest each time until you reach the maximum or minimum. If the performance is still unsatisfactory and the next solution is to install a softer or stiffer spring, return the oil level to the standard height and begin testing again.

— Whenever a solution says increase or decrease damping (compression or rebound), do so in increments of two clicks and retest each time until you reach the maximum or minimum. If the next solution is to install a softer or stiffer spring, return the damping adjustment to the "standard setting" and begin testing again.

— Whenever a solution says to increase or decrease shock spring preload, alter the race sag by 2.5 mm and retest each time until you reach the maximum or minimum.

MEMO

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