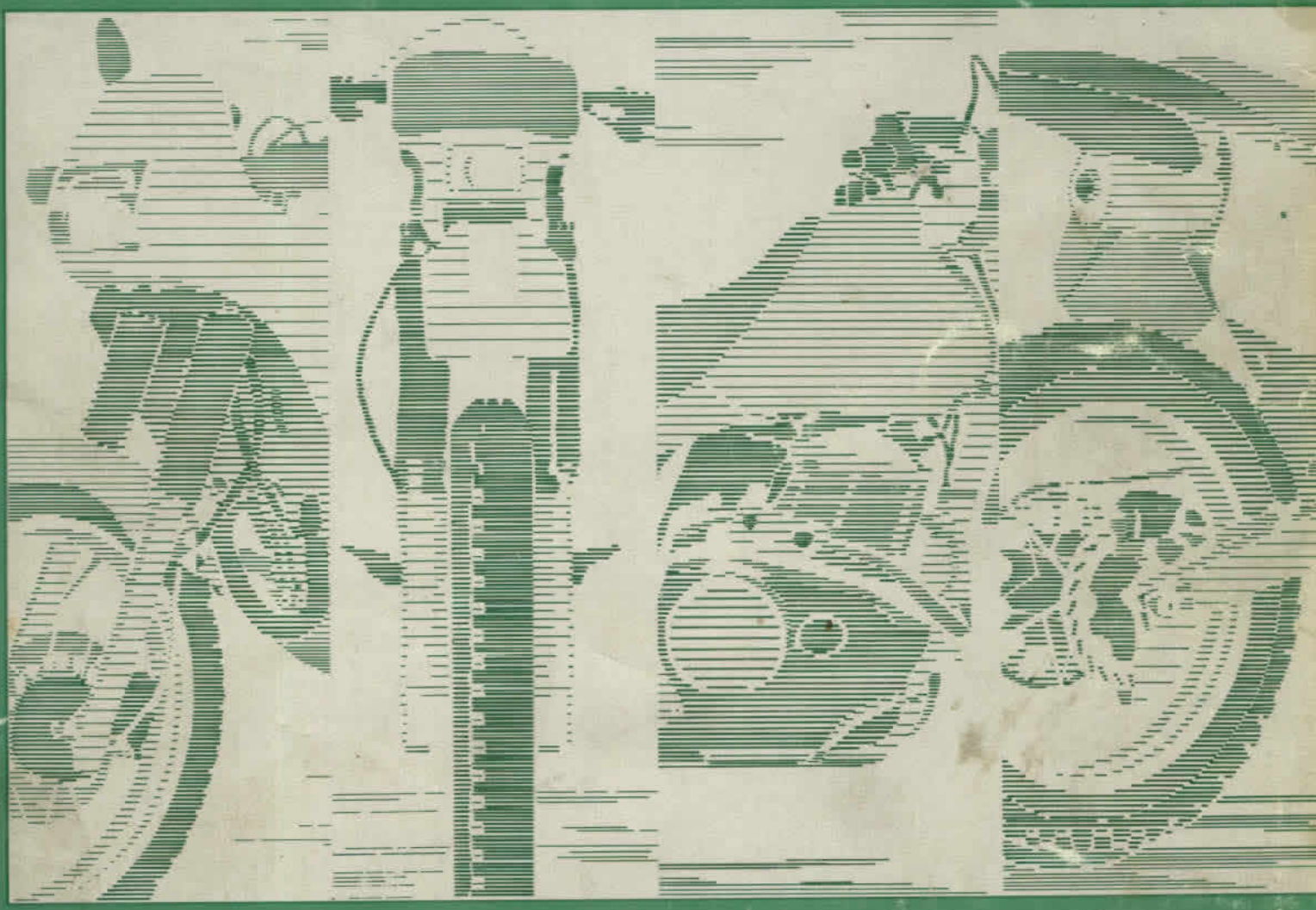
HONDA

SERVICE MANUAL



92-96
CR250R

Important Safety Notice

⚠WARNING Indicates a strong possibility of severe personal injury or death if instructions are not followed.

CAUTION: Indicates a possibility of equipment damage if instructions are not followed.

NOTE: Gives helpful information.

Detailed descriptions of standard workshop procedures, safety principles and service operations are not included. It is important to note that this manual contains some warnings and cautions against some specific service methods which could cause **PERSONAL IN JURY** to service personnel or could damage a vehicle or render it unsafe. Please understand that those warnings could not cover all conceivable ways in which service, whether or not recommended by Honda, might be done or of the possibly hazardous consequences of each conceivable way, nor could Honda investigate all such ways. Anyone using service procedures or tools, whether or not recommended by Honda, *must satisfy himself thoroughly* that neither personal safety not vehicle safety will be jeopardized by the service methods or tools selected.

Introduction

This service manual describes the service procedures for the CR250R.

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 15 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 are not familiar with this motorcycle, read Section 16, Technical Feature.

If you don't know the source of the trouble, go to section 17 Troubleshooting.

Contents

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 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

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-stroke) 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
Brake dust may contain asbestos.
Never use an air hose or dry brush to clean brake assemblies. Use and 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 pained, 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 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 absorber 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 and 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 absorber.

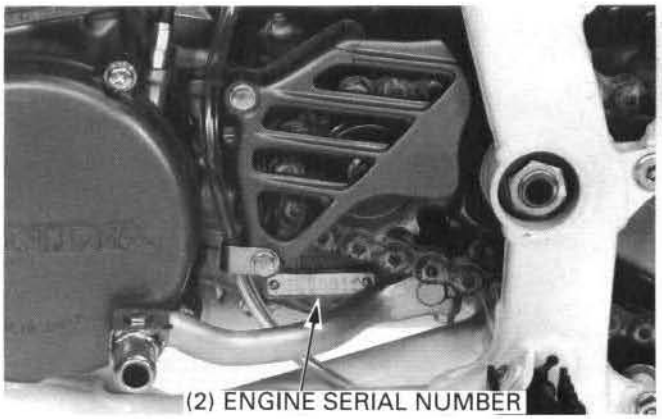
Service Rules

1. Use genuine HONDA or HONDA-recommended parts and lubricants or their equivalent. Parts that do not meet HONDA's design specifications may damage the motorcycle.
2. Use the special tools designed for this product.
3. Install new gaskets, O-rings, cotter pins, lock plates, etc. when reassembling.
4. When torquing bolts or nuts, begin with lager-diameter or inner bolt first, and tighten to the specified torque, diagonally, in incremental steps unless a particular sequence is specified.
5. Clean parts in non-flammable or high flash point solvent upon disassembly. Lubricate any sliding surfaces before reassembly.
6. When installing a new oil seal, make sure that the sealing lip is lubricated with grease. If any oil seal and related parts have been washed, apply proper grease to the lip of the oil seal.
7. After reassembly, check all parts for proper installation and operation.
8. Use only metric tools when servicing this motorcycle. Metric bolts, nuts, and screws are not interchangeable with any other type of fasteners. The use of incorrect tools and fasteners may damage the motorcycle.

Model Identification

'92 shown:

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



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

(3)The carburetor identification number is on the left side of the carburetor body.

Specifications

General

Item			Specifications
Dimensions	Overall length	'92:	2,161 mm (85.1 in)
		'93:	2,165 mm (85.2 in)
		After '93:	2,177 mm (85.7 in)
	Overall width	'92-'93:	825 mm (32.5 in)
		After '93:	835 mm (32.9 in)
	Overall height	'92:	1,262 mm (49.7 in)
		'93:	1,243 mm (48.9 in)
		After '93:	1,242 mm (48.9 in)
	Wheelbase	'92:	1,467 mm (57.8 in)
		'93:	1,471 mm (57.9 in)
		After '93:	1,483 mm (58.4 in)
	Seat height	'92:	970 mm (38.2 in)
		After '92:	958 mm (37.7 in)
	Footpeg height	'92:	445 mm (17.5 in)
		'93:	436 mm (17.2 in)
		After '93:	448 mm (17.6 in)
	Ground clearance	'92:	350 mm (13.8 in)
		'93:	343 mm (13.5 in)
		After '93:	345 mm (13.6 in)
	Dry weight	'92-'93:	96.5 kg (212.7 lbs)
		After '93:	97.0 kg (213.8 lbs)
Frame	Type		Semi-double cradle
	Front suspension		Telescopic
	Front wheel travel		309 mm (12.2 in)
	Rear suspension		Swingarm/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 64 M
	Tire brand (Dunlop)	Front	K990
		Rear	K990
	Front brake		Hydraulic single disc
	Front brake swept area		306 cm^2 (47.4 in^2)
	Rear brake		Hydraulic single disc
	Rear brake swept area		303 cm^2 (47.0 in^2)
	Caster angle	'92:	26° 03'
		'93:	26° 45'
		After '93:	27° 17'
	Trail length	'92:	103.7 mm (4.08 in)
		'93:	104.1 mm (4.10 in)
		After '93:	111.5 mm (4.39 in)
	Fuel tank capacity		7.5 liter (2.0 US gal, 1.6 Imp gal)
Engine	Bore and stroke		66.4 × 72.0 mm (2.612 × 2.83 in)
	Displacement		249.3 cm^3 (15.2 cu-in)
	Compression ratio		8.7 : 1
	Lubrication system		Fuel/oil mix
	Cooling system		Liquid cooled
	Aire filtration		Oiled polyurethane foam
	Crankshaft type		Assembled type
	Engine dry weight		23.3 kg (51.4 lbs)
	Cylinder arrangement		Single cylinder, inclined 5° from vertical

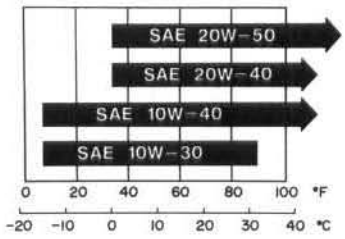
General (Cont'd)

Item		Specifications
Carburetor	Carburetor type	Piston valve
	Venturi diameter	38.0 mm (1.49 in)
Drive Train	Clutch system	Wet, multi-plate type
	Clutch operation system	Cable operated
	Transmission	5-speed constant mesh
	Primary reduction	3.000 : 1 (63/21)
	Final reduction	3.769 : 1 (49/13)
	Gear ratio 1st	1.800 : 1 (27/15)
	Gear ratio 2nd	1.470 : 1 (25/17)
	Gear ratio 3rd	1.210 : 1 (23/19)
	Gear ratio 4th	1.000 : 1 (21/21)
	Gear ratio 5th	0.869 : 1 (20/23)
	Gearshift pattern	Left foot-operated return system 1 – N – 2– 3 – 4 – 5
Electrical	Ignition system	CDI

Unit: mm (in)

Lubrication

Item			Standard	Service Limit
Recommended engine oil			PRO Honda HP2 2-Stroke Oil or equivalent	——
Fuel/oil mixing ratio			32 : 1	——
Transmission oil capacity	at draining	'92:	0.85 liter (0.90 US qt, 0.75 Imp qt)	——
		After '92:	0.75 liter (0.79 US qt, 0.66 Imp qt)	——
	at disassembly	'92:	0.95 liter (1.00 US qt, 0.84 Imp qt)	——
		After '92:	0.85 liter (0.90 US qt, 0.75 Imp qt)	——
Recommended transmission oil			Use PRO Honda GN4 4-Stroke Oil or equivalent API Service Classification: SF or SG Viscosity: SAE 10W-40 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:	PJ28E	——
		'93:	RJ28G	——
		After '93:	PJ28H	——
Main jet (Standard)			#175	——
Slow jet (Standard)			#55	——
Jet needle clip position (Standard)			3rd groove	——
Air screw initial opening		'92, After '93:	2 turns out	——
		'93:	1-3/4 turns out	——
Float level			16.0 (0.63)	——
Throttle grip free play			3 – 5 (1/8 – 1/4)	——

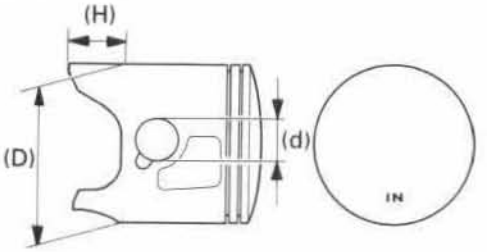
Cooling System

Recommended coolant			Use only a high quality ethylene glycol based anti-freeze containing corrosion protection inhibitors specially 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 change		1.10 liter (1.16 US qt, 0.97 Imp qt)	——
	at disassembly		1.15 liter (1.21 US qt, 1.01 Imp qt)	——
Radiator cap relief pressure			110 –140 kPa (1.1 – 1.4 kg/cm², 16 – 20 psi)	——

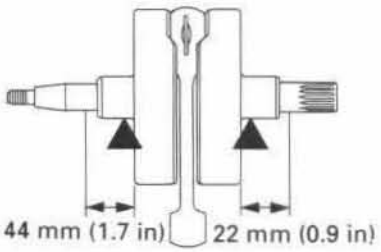
Clutch System

Clutch lever free play			10 – 20 (3/8 – 3/4)	——
Clutch spring free length		'92-'93:	44.7 (1.76)	43.7 (1.72)
		After '93:	45.7 (1.83)	44.7 (1.76)
Clutch outer guide O.D.			27.987 – 28.000 (1.1018 – 1.1024)	27.97 (1.101)
Clutch disc thickness			2.92 – 3.08 (0.114 – 0.121)	2.85 (0.112)
Clutch plate warpage			——	0.20 (0.008)

Unit: mm (in)

Cylinder Head/Cylinder/Piston Item	Standard	Service Limit
Cylinder head warpage	———	0.05 (0.002)
Cylinder I.D.	66.390 – 66.405 (2.6138 – 2.6144)	66.44 (2.616)
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)	66.330 – 66.350 (2.6114 – 2.6122)	66.28 (2.609)
Piston O.D. measurement point (H)	15 – 25 mm (0.59 – 0.98 in) from the bottom	———
Piston pin bore (d)	18.007 – 18.013 (0.7089 – 0.7092)	18.02 (0.709)
		
Cylinder-to-piston clearance	0.007 – 0.019 (0.0003 – 0.0007)	0.04 (0.002)
Piston pin O.D.	17.994 – 18.000 (0.7084 – 0.7087)	17.98 (0.707)
Piston-to-piston pin clearance	0.002 – 0.014 (0.0001 – 0.0006)	0.02 (0.001)
Piston ring-to-ring groove clearance Top '92–'93:	0.060 – 0.100 (0.002 – 0.004)	0.120 (0.0047)
After '93:	0.045 – 0.075 (0.002 – 0.003)	0.095 (0.0037)
Second '92–'93:	0.050 – 0.080 (0.002 – 0.003)	0.095 (0.0037)
After '93:	0.025 – 0.055 (0.001 – 0.002)	0.075 (0.0029)
Piston ring end gap	0.40 – 0.55 (0.016 – 0.022)	0.65 (0.026)
Piston ring mark direction	"IT" mark facing up	———

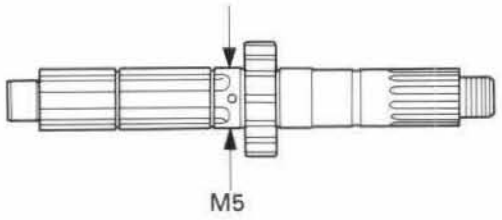
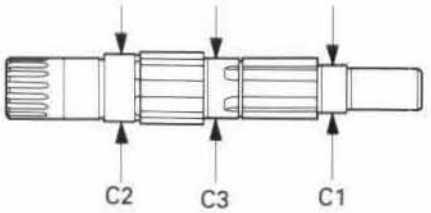
RC Valve		
Exhaust valve shaft O.D.	4.988 – 5.000 (0.1964 – 0.1969)	4.968 (0.196)

Crankshaft		
Connecting rod small end I.D.	21.997 – 22.009 (0.8660 – 0.8665)	22.02 (0.867)
Connecting rod big end side clearance	0.4 – 0.8 (0.02 – 0.03)	0.9 (0.04)
radial clearance	0.010 – 0.022 (0.0004 – 0.0009)	0.03 (0.001)
Crankshaft runout	———	0.05 (0.002)
		

Kickstarter		
Kickstarter pinion gear I.D.	22.020 – 22.041 (0.8669 – 0.8678)	22.06 (0.869)
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)
Countershaft O.D. at kickstarter idle gear	16.966 – 16.984 (0.6680 – 0.6687)	16.95 (0.667)
Kickstarter idle gear bushing I.D.	17.000 – 17.018 (0.6693 – 0.6700)	17.04 (0.671)
O.D.	19.979 – 20.000 (0.7866 – 0.7874)	19.96 (0.786)

Unit: mm (in)

Transmission

Item	Standard	Service Limit
Transmission gear I.D. M4	28.007 – 28.028 (1.1026 – 1.1035)	28.05 (1.104)
M5	25.020 – 25.041 (0.9850 – 0.9859)	25.07 (0.987)
C1	22.020 – 22.041 (0.8669 – 0.8678)	22.07 (0.869)
C2	30.020 – 30.041 (1.1819 – 1.1827)	30.07 (1.184)
C3	25.020 – 25.041 (0.9850 – 0.9859)	25.07 (0.987)
Transmission gear bushing O.D. M4	27.959 – 27.980 (1.1007 – 1.1015)	27.94 (1.100)
C1	21.979 – 22.000 (0.8653 – 0.8661)	21.95 (0.864)
C2	29.979 – 30.000 (1.1802 – 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 (1.064)
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 – 24.979 (0.9826 – 0.9834)	24.96 (0.983)
		
Gear-to-bushing clearance M4	0.027 – 0.069 (0.0011 – 0.0027)	0.11 (0.004)
C1	0.020 – 0.062 (0.0008 – 0.0024)	0.12 (0.005)
C2	0.020 – 0.062 (0.0008 – 0.0024)	0.12 (0.005)
Gear-to-shaft clearance M5	0.040 – 0.082 (0.0016 – 0.0032)	0.13 (0.005)
C3	0.041 – 0.082 (0.0016 – 0.0032)	0.11 (0.004)
Gear bushing-to-shaft clearance C1	0.020 – 0.062 (0.0008 – 0.0024)	0.12 (0.005)
C2	0.020 – 0.062 (0.0008 – 0.0024)	0.12 (0.005)
Shift fork claw 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 (0.4740 – 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	11.994 – 11.983 (0.4722 – 0.4718)	11.98 (0.472)

Unit: mm (in)

Wheels/Tires

Item	Standard	Service Limit
Cold tire pressure	100 kPa (1.0 kg/cm², 15 psi)	—
	100 kPa (1.0 kg/cm², 15 psi)	—
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	20.00 (0.787)	—
Front wheel hub standard surface	(See page 11-6)	—
Rear wheel hub-to rim distance	47.00 (1.850)	—
Rear wheel hub standard surface	(See page 12-5)	—
Drive chain slack	45 – 55 (1.8 – 2.2)	—
Drive chain size/link (DID)	520DS5/112	—
(RK)	520KZ3/112	—
Drive chain slider thickness	—	5 (0.2)
Drive chain tensioner roller O.D.	—	25 (0.98)

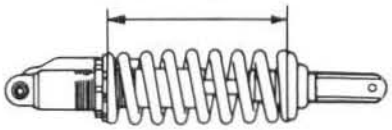
Front Suspension

Fork spring free length (Standard)	'92:	510.0 (20.08)	504.5 (19.86)
	'93:	509.5 – 514.5 (20.06 – 20.26)	504.4 (19.86)
	After '93:	512.0 (20.16)	504.5 (19.86)
Fork spring direction		With the tapered coil end facing up	—
Fork tube runout		—	0.2 (0.01)
Recommended fork oil		Pro Honda Suspension Fluid SS-7M or equivalent	—
Fork oil level (Standard)	'92:	105 (4.1)	—
	'93:	118 (4.6)	—
	After '93:	114 (4.5)	—
(Adjustable range: Max.)	'92-'93:	93 (3.7)	—
	After '93:	96 (3.8)	—
(Adjustable range: Min.)	'92:	124 (4.9)	—
	'93:	136 (5.4)	—
	After '93:	139 (5.9)	—
Fork oil capacity(Standard)	'92:	572 cc (19.35 US oz, 20.08 Imp oz)	—
	'93:	559 cc (18.91 US oz, 19.62 Imp oz)	—
	After '93:	549 cc (18.56 US oz, 19.27 Imp oz)	—
(Adjustable range: Max.)	'92-'93:	584 cc (19.75 US oz, 20.50 Imp oz)	—
	After '93:	567 cc (19.18 US oz, 19.90 Imp oz)	—
(Adjustable range: Min.)	'92:	552 cc (18.67 US oz, 19.38 Imp oz)	—
	'93:	541 cc (18.30 US oz, 18.99 Imp oz)	—
	After '93:	524 cc (17.72 US oz, 18.39 Imp oz)	—
Fork air pressure (Standard)		0 kg/cm²	—
Compression damping adjuster standard position	'92-'93:	5 clicks out from full in	—
	After '93:	10 clicks out from full in	—
Rebound damping adjuster standard position	'92:	11 clicks out from full in	—
	After '92:	10 clicks out from full in	—

Unit: mm (in)

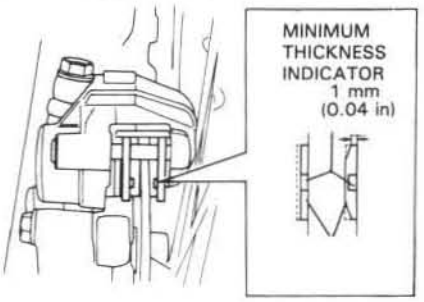
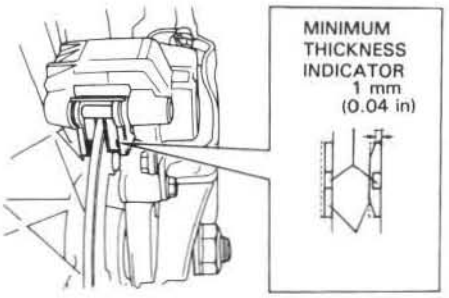
Rear Suspension

Item		Standard	Service Limit
Shock absorber spring free length		275.0 (10.83)	272.3 (10.72)
Damper gas pressure		981 kPa (10.0 kg/cm2, 142 psi)	——
Damper compressed gas		Nitrogen gas	——
Damper rod compressed force at 10mm compressed	'92:	15.4 – 20.0 kg (34.0 – 44.1 lbs)	15.4 kg (34.0 lbs)
	After '92:	20.1 – 26.1 kg (44.3 – 57.5 lbs)	——
Shock absorber spring installed length (Standard)	'92:	262.0 (10.31)	——
	'93:	261.0 (10.28)	——
	After '93:	263.0 (10.35)	——
(Adjustable range: Max.)	'92-'93:	271.0 (10.67)	——
(Adjustable range: Min.)	'92-'93:	256.0 (10.08)	——
(Adjusting limit)	After '93:	257.0 (10.12)	
Shock absorber spring direction		Narrow wound coil facing down	——
Recommended shock absorber oil		Pro Honda Suspension Fluid SS-7 or equivalent	——
Compression adjuster standard position	'92-'93:	16 – 19 clicks out from full in	——
	After '93:	8 – 11 clicks out from full in	——
Rebound adjuster standard position	'92:	8 – 11 clicks out from full in	——
	'93:	10 – 13 clicks out from full in	——
	After '93:	8 – 11 clicks out from full in	——



Unit: mm (in)

Brakes

Item		Standard	Service Limit
Front	brake fluid	DOT 3 or 4	———
	brake pad wear indicator	———	1.0 (0.04)
			
	brake disc thickness	3.0 (0.12)	2.5 (0.10)
	brake disc runout	———	0.15 (0.006)
	master cylinder I.D.	11.000 – 11.043 (0.4330 – 0.4347)	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 (1.0590 – 1.0610)	26.89 (1.059)
Rear	brake fluid	DOT 4	———
	brake pad wear indicator	———	1.0 (0.04)
			
	brake disc thickness	4.5 (0.18)	4.0 (0.16)
	brake disc runout	———	0.15 (0.006)
	master cylinder I.D.	12.700 – 12.743 (0.4999 – 0.5016)	12.76 (0.502)
	master piston O.D.	12.657 – 12.684 (0.4983 – 0.4993)	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)		QN86	———
(Standard: NGK)		BR8EG	———
(Standard: NIPPONDENSO)		W24ESR-V	———
(Optional: CHAMPION)		QN-2G	———
(Optional: NGK)		BR8EV	———
(Optional: ND)		W24ESR-G	———
Spark plug gap		0.5 – 0.6 (0.020 – 0.024)	———
Ignition timing "F" mark		15.5°/5,000 rpm	———
Ignition coil resistance			———
(Primary: at 20°C/68°F)	'92:	0.4 – 0.6 Ω	———
	After '92:	0.2 – 0.4 Ω	———
(Secondary with plug cap)	'92:	16 – 23 kΩ	———
	After '92:	9 – 16 Ω	———
(Secondary without plug cap)	'92:	10 – 16 kΩ	———
	After '92:	4 – 8 Ω	———
Alternator exciter coil resistance (At 20°C/68°F)	'92:	40 – 140 Ω	———
	After '92:	120 – 220 Ω	———
Pulse generator 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 the standard torque values listed above.

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.

Engine

Item		Thread dia. and pitch (mm)	Torque N·m (kg-m, ft-lb)	Remarks
Maintenance:				
Oil drain bolt		12 x 1.5	30 (3.0, 22)	
Spark plug		14 x 1.5	18 (1.8, 13)	
Oil check bolt		6 x 1.0	10 (1.0, 7)	
Cooling System:				
Water pump impeller		7 x 1.25	12 (1.2, 9)	
Water pump cover bolt		6 x 1.0	12 (1.2, 9)	
Coolant drain bolt		6 x 1.0	10 (1.0, 7)	
Fuel System:				
Carburetor insulator		5 x 1.0		
Cylinder Head/Cylinder/RC Valve:				
Cylinder stud bolt		8 x 1.25	12 (1.2, 9)	
RC valve tie-rod socket bolt		5 x 0.8	5.5 (0.55, 4.0)	
RC pinion holder socket bolt		5 x 0.8	5.5 (0.55, 4.0)	
Right cylinder cover bolt		6 x 1.0	10 (1.0, 7)	
Left RC valve cover		30 x 1.5	13 (1.3, 9)	
RC valve stopper bolt		8 x 1.25	16 (1.6, 12)	
Cylinder head nut	'92-'93:	8 x 1.25	27 (2.7, 20)	
	After '93:	8 x 1.25	28 (2.8, 21)	
Cylinder mounting nut		10 x 1.25	40 (4.0, 29)	
Clutch/kickstarter/Gearshift Linkage:				
Gearshift drum center pin		8 x 1.25	22 (2.2, 16)	Note 1
Gearshift drum stopper arm bolt		6 x 1.0	12 (1.2, 9)	
Clutch center lock nut		18 x 1.0	82 (8.2, 60)	
Right crankcase/clutch cover bolt		6 x 1.0	10 (1.0, 7)	
Clutch spring bolt		6 x 1.0	10 (1.0, 7)	
Gearshift pedal pinch bolt		6 x 1.0	12 (1.2, 9)	
Kickstarter pedal bolt		8 x 1.25	27 (2.7, 20)	
Crankshaft/Transmission:				
Countershaft bearing set plate screw		6 x 1.0	10 (1.0, 7)	Note 1
Gearshift drum bearing set plate screw		6 x 1.0	10 (1.0, 7)	Note 1
Drive sprocket bolt		8 x 1.25	27 (2.7, 20)	Note 5
Primary drive gear bolt	'92-'93:	10 x 1.25	45 (4.5, 33)	
	After '93:	10 x 1.25	95 (9.5, 70)	

Engine (cont'd)

Item		Thread dia. and pitch (mm)	Torque N·m (kg-m, ft-lb)	Remarks
Alternator:				
Flywheel nut		12 x 1.25	55 (5.5, 40)	
Alternator cover screw	'92-'93:	6 x 1.0	4 (0.4, 2.9)	
	After '93:	6 x 1.0	2 (0.2, 1.4)	

Frame

Item		Thread dia. and pitch (mm)	Torque N·m (kg-m, ft-lb)	Remarks
Frame Body Panels/Exhaust System:				
Seat mounting bolt		8 x 1.25	22 (2.2, 16)	
Sub-frame mounting bolt	'92:	8 x 1.25	27 (2.7, 20)	
(Upper)	After '92:	8 x 1.25	33 (3.3, 24)	
(Lower)	After '92:	8 x 1.25	43 (4.3, 31)	
Radiator shroud mounting bolt	After '93:	5 x 1.0	6 (0.6, 4.3)	
Seat bracket screw	After '93:	5 x 1.0	6 (0.6, 4.3)	
Wheel/Tires:				
Front axle nut		14 x 1.5	87 (8.7, 63)	
Front axle holder bolt		8 x 1.25	20 (2.0, 14)	
Front/rear spoke nipple		BC3.5/BC4.0	3.8 (0.38, 2.8)	
Front/rear rim lock		8 x 1.25	13 (1.3, 9)	
Front brake disc mounting bolt		6 x 1.0	20 (2.0, 14)	Note 1
Rear axle nut		18 x 1.5	95 (9.5, 69)	Note 4
Rear brake disc mounting bolt		8 x 1.25	43 (4.3, 31)	Note 1
Final driven sprocket nut		8 x 1.25	33 (3.3, 24)	Note 4
Rear wheel bearing retainer	After '93:	45 x 1.5	18 (1.8, 13)	
Front Suspension:				
Steering stem nut	'92-'93:	26 x 1.0	118 (11.8, 85)	
	After '93:	26 x 1.0	150 (15.0, 108)	
Steering stem adjusting nut	'92-'93:	30 x 1.0	2.0 (0.20, 1.4)	
	After '93:	30 x 1.0	7 (0.7, 5.1)	
Fork tube pinch bolt (Top)		8 x 1.25	22 (2.2, 16)	
(Bottom)		8 x 1.25	22 (2.2, 16)	
Fork protector guide screw	After '93:	3 x 0.5	0.4 (0.04, 0.3)	
Fork cap		48 x 1.5	35 (3.5, 25)	
Fork cap lock nut		12 x 1.0	22 (2.2, 16)	
Fork center bolt		14 x 1.0	80 (8.0, 58)	Note 1 ('92-'93:)
Fork protector mounting bolt	'92-'93:	6 x 1.0	13 (1.3, 9)	Note 1
	After '93:	6 x 1.0	12 (1.2, 9)	Note 1
Brake lever pivot bolt/nut		6 x 1.0	10 (1.0, 7)	
Handlebar upper holder bolt		8 x 1.25	22 (2.2, 16)	
Clutch lever pivot bolt		6 x 1.0	2 (0.2, 1.5)	
Clutch lever pivot lock nut		6 x 1.0	10 (1.0, 7)	
Clutch lever holder bolt	'92-'93:	6 x 1.0	10 (1.0, 7)	
	After '93:	6 x 1.0	9 (0.9, 6.5)	
Throttle housing bolt	'92-'93:	6 x 1.0	10 (1.0, 7)	
	After '93:	6 x 1.0	9 (0.9, 6.5)	
Throttle housing case screw		4 x 0.7	1.5 (0.15, 1.1)	
Engine stop button screw		4 x 0.7	1.5 (0.15, 1.1)	
Rear Suspension:				
Swingarm pivot nut		16 x 1.5	90 (9.0, 65)	
Shock arm (Swingarm side)		14 x 1.5	90 (9.0, 65)	Note 4
(Shock link side)		14 x 1.5	90 (9.0, 65)	Note 4
Shock link (Frame side)		14 x 1.5	90 (9.0, 65)	Note 4
Shock absorber mounting bolt (Upper)		10 x 1.25	45 (4.5, 33)	Note 4
(Lower)	'92:	10 x 1.25	43 (4.3, 31)	
	'93:	10 x 1.25	45 (4.5, 33)	
nut	After '93:	10 x 1.25	45 (4.5, 33)	Note 4
Shock absorber spring lock nut		56 x 1.5	90 (9.0, 65)	
Drive chain roller		8 x 1.25	22 (2.2, 16)	
Drive chain guide mounting bolt		6 x 1.0	12 (1.2, 9)	Note 4
Shock absorber damper rod end nut		12 x 1.25	38 (3.8, 27)	Note 3
Shock absorber damping adjuster		22 x 1.0	18 (1.8, 13)	Note 3

Frame (cont'd)

Item	Thread dia. and pitch (mm)	Torque	Remarks
Brake System:			
Brake hose oil bolt	10 x 1.25	35 (3.5, 25)	
Brake lever adjuster lock nut	5 x 0.5	6 (0.6, 4.3)	
Front brake hose guide	6 x 1.25	5 (0.5, 3.6)	
Front master cylinder holder bolt	6 x 1.0	10 (1.0, 7)	
Front caliper mounting bolt	8 x 1.25	31 (3.1, 22)	Note 1
Caliper bleeder valve	8 x 1.25	6 (0.6, 4.3)	
Rear disc guard mounting screw	6 x 1.0	7 (0.7, 5.1)	
Rear master cylinder mounting bolt	6 x 1.0	15 (1.5, 11)	Note 1
Caliper pin bolt A (Front)	8 x 1.25	23 (2.3, 17)	Note 1
(Rear)	12 x 1.25	28 (2.8, 20)	Note 1
Caliper pin bolt	8 x 1.25	13 (1.3, 9)	Note 1
Brake caliper pad pin	10 x 1.0	18 (1.8, 13)	
Brake caliper pad pin plug	10 x 1.0	3 (0.3, 2.2)	
Brake pedal pivot bolt	8 x 1.25	26 (2.6, 19)	
Engine Mounting:			
Engine hanger plate bolt	8 x 1.25	27 (2.7, 20)	
Engine upper mounting bolt '92–'93:	10 x 1.25	43 (4.3, 31)	
After '93:	10 x 1.25	40 (4.0, 29)	
Engine lower mounting bolt	10 x 1.25	65 (6.5, 47)	

Tools

Special

Description		Tool Number	Applicability
Maintenance:			
Spoke nipple wrench		07JMA – MR60100	or Equivalent commercially available in U.S.A.
Cooling System:			
Bearing remover set, 12 mm		07936 – 1660001	Not available in U.S.A.
– remover handle assembly		07936 – 1660101	
– remover head, 12 mm		07936 – 1660110	
– remover shaft		07936 – 1660120	
– remover weight		07741 – 0010201	or 07936 – 3710200
Attachment, 28 x 30 mm		07946 – 1870100	
Water seal driver		07945 – KA30000	GN – AH – 065 – 415 (U.S.A. only)
Crankshaft/Transmission:			
Crankcase puller		07937 – 4300000	or 07937 – 4300001
Bolt, 6 mm		07PMC – KZ40100	
Universal bearing puller		07631 – 0010000	or Equivalent commercially available in U.S.A.
Crankcase assembly tool set		07965 – 1660101	or 07965 – 1660102
– assembly tool shaft		07965 – 1660200	
– assembly collar		07965 – 1660301	or 07965 – 1660302
Bearing remover, 17 mm		07936 – 3710300	
Remover handle		07936 – 3710100	
Remover weight		07741 – 0010201	or 07936 – 3710200
Threaded adaptor		07965 – KA30000	or 07PMB – KZ4010A (U.S.A. only)
Front Suspension/Steering:			
Fork damper holder	After '92:	07PMB – KZ40100	
Oil seal driver		07KMD – KZ30100	
Oil seal driver attachment		07NMD – KZ30100	or 07NMD – KZ3010A (U.S.A. only)
Fork slider spacer	'92-'93:	07KMZ – KZ30101	or 07KMZ – KZ3010B (U.S.A. only)
Steering stem socket		07916 – 3710100	or 07916 – 3710101
Ball race remover	'92-'93:	07948 – 4630100	
	After '93:	07946 – 3710500	
Rear Wheel/Suspension:			
Slider guide attachment		07MAG – SP00101	or 07MAG – SP00102
Slider guide, 14 mm	'92:	07974 – KA40001	
Slider guide, 16 mm	After '92:	07PMG – KZ40100	
Spherical bearing driver		07HMF – KS60100	
Needle bearing driver		07946 – MJ00100	
Driver head		07946 – KM40701	
	After '93:	07946 – MJ00200	
Attachment, 28 x 30 mm		07946 – 1870100	
Brake System:			
Snap ring pliers		07914 – 3230001	

Common

Description	Tool Number	Applicability
Fuel System:		
Float level gauge	07401 – 0010000	
Cooling System:		
Driver	07749 – 0010000	
Attachment, 24 x 26 mm	07746 – 0010700	
Pilot, 12 mm	07746 – 0040200	
Pilot, 17 mm	07746 – 0040400	
Clutch/Kickstarter/Gearshift Linkage:		
Clutch center holder	07724 – 0050001	or Equivalent commercially available in U.S.A.
Crankshaft/Transmission:		
Universal holder	07725 – 0030000	
Driver	07749 – 0010000	
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	
Gear holder	07724 – 0010100	
Pilot, 17 mm	07746 – 0040400	
Pilot, 25 mm	07746 – 0040600	
Pilot, 28 mm	07746 – 0041100	
Wheels/Tires:		
Retainer wrench body	07710 – 0010401	
Bearing retainer wrench B	07710 – 0010200	
Bearing remover head, 17 mm	07746 – 0050500	
Bearing remover shaft	07746 – 0050100	
Bearing remover head, 20 mm	07746 – 0050600	
Attachment, 32 x 35 mm	07746 – 0010100	
Attachment, 42 x 47 mm	07746 – 0010300	
Pilot, 17 mm	07746 – 0040400	
Pilot, 20 mm	07746 – 0040500	
Front Suspension/Steering:		
Driver	07749 – 0010000	
Attachment, 52 x 55 mm	07746 – 0010400	
Inner driver, 30 mm After '92:	07746 – 0030300	
Extension bar	07716 – 0020500	
Rear Wheel/Suspension:		or Equivalent commercially available in U.S.A.
Driver	07749 – 0010000	
Attachment, 32 x 35 mm	07746 – 0010100	
Inner driver, 30 mm	07746 – 0030300	
Pilot, 20 mm	07746 – 0040500	
Pilot, 22 mm	07746 – 0041000	
Pilot, 25 mm After '93:	07746 – 0040600	
Ignition System/Alternator:		
Universal holder	07725 – 0030000	
Flywheel puller	07733 – 0010000	or 07933 – 00100000
Electrical Equipment:		
Digital multimeter (KOWA)	KS–AHM–32–003 (U.S.A only)	
Analogue tester	07308 – 0020001 (SANWA or TH-5H (KOWA)	

Optional

Description	Tool Number	Applicability
Pin spanner A	89201 – KS6 – 810	2 piece

Lubrication & Seal Points

Engine

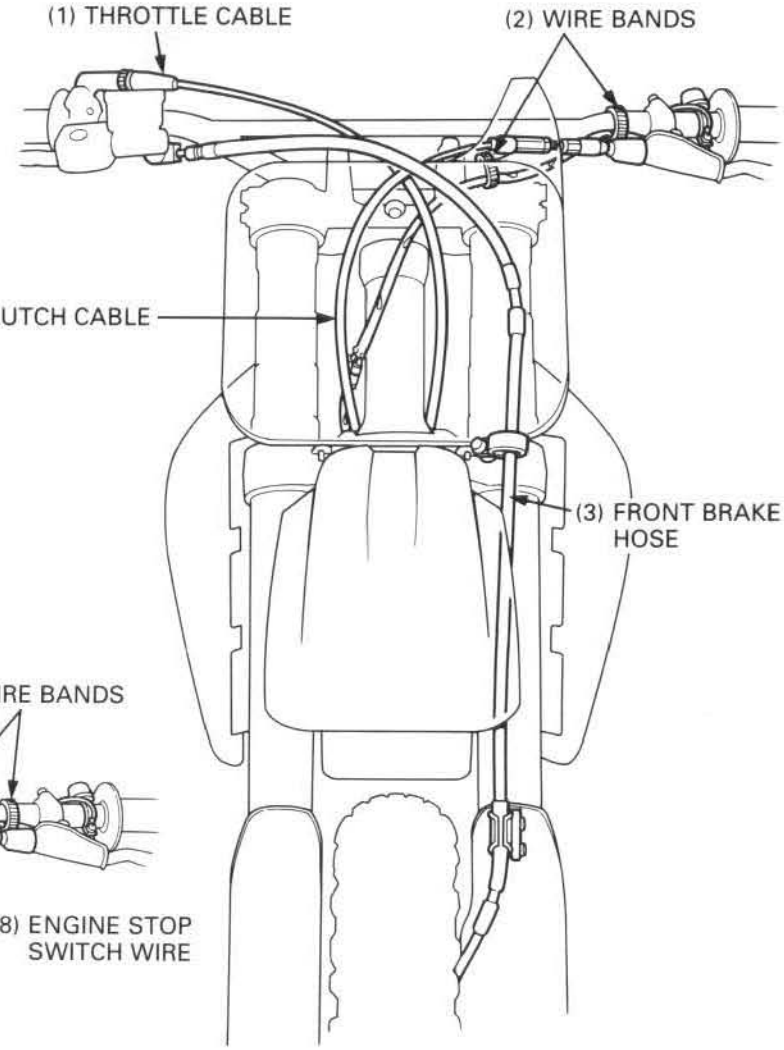
Location	Material	Remarks
Connecting rod big end small end and needle bearing Both crankshaft journal Piston outer surface Piston pin outer surface Piston ring and ring groove Cylinder: Sub-exhaust valve bearing area Flap valve bearing area Flap valve slot area Both sub-exhaust valve outer surface Exhaust valve bushing inner and outer surface	PRO Honda HP2 2-Stroke Oil or equivalent	
Cylinder: Exhaust valve shaft bearing area Exhaust valve rack bearing contact area Exhaust valve rack Exhaust valve tie-rod joint area Mainshaft spline and gear spinning area Countershaft spline and gear spinning area Kickstarter spindle serration Kickstarter spindle pinion gear spinning area Water pump shaft bearing area Governor steel ball Governor shaft bearing contact area Right crankcase outside bearing area (water pump, governor, rack, pinion, kickstarter) Gearshift spindle serration Gearshift drum groove Shift fork pawl Shift fork shaft surface	Use molybdenum solution (mixture of the engine oil and molybdenum grease with the ratio 100 g : 70 cc)	
Exhaust valve shaft bearing contact area Pinion shaft pinion area Pinion shaft bearing contact area Pinion shaft bushing inner surface Clutch lifter cam Right exhaust-valve shaft hole cap thread	Molybdenum paste	
Each gear teeth, rolling and contact area Clutch lifter piece needle bearing area Governor bearing Governor contact area Crankshaft bearings Transmission bearings Clutch lifter	PRO Honda GN4 4-Stroke Oil or equivalent	
Oil seal lips Water seal lips	Multi-purpose grease	
Countershaft bearing set plate screw thread Gearshift drum bearing set plate screw thread	Honda Anaerobic Thread Lock or equivalent	

Frame

Location	Material	Remarks
Throttle cable end Throttle grip sliding surface	PRO Honda GN4 4-Stroke Oil or equivalent	
Steering stem bearing Wheel bearing dust seal lips Wheel axle and swingarm pivot outer surface Throttle cable roller and collar Rear shock absorber spherical bearing Suspension linkage bearings Swingarm bearings Brake pedal pivot sliding surface Dust seal lips	Multi-purpose grease (NLGI No.2 – Molybdenum disulfide MoS_2 additive)	Apply thin coat of grease
Brake lever pivot bolt sliding surface Brake lever adjusting bolt	Silicone grease	
Fork protector mounting bolt Front brake caliper mounting bolt Fork center bolt threads Brake disc mounting bolt Brake hose guide screw Rear brake disc guide mounting screw Brake caliper pin bolt Brake caliper pin bolt A Rear brake master cylinder mounting bolt	Honda Anaerobic Thread Lock or equivalent	
Fork cap O-ring Fork oil seal lips	Pro Honda Suspension Fluid SS-7M or equivalent	
Handle grip	Honda Hand Grip Cement (U.S.A. Only)	

Cable & Harness Routing

'92:



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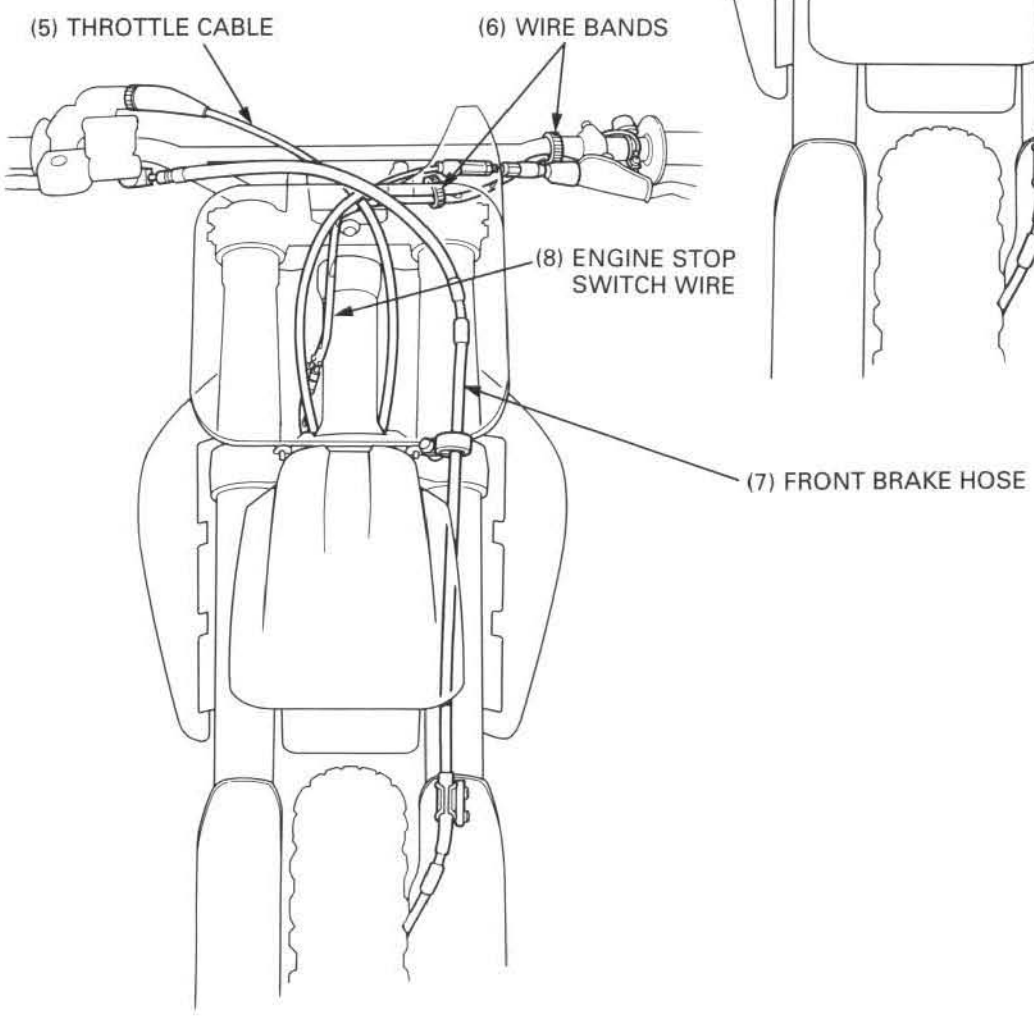

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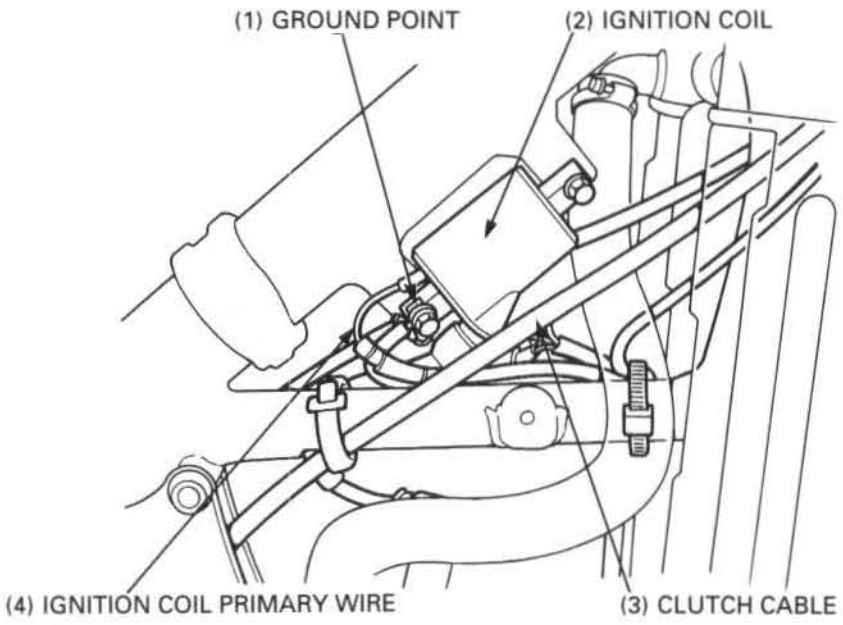

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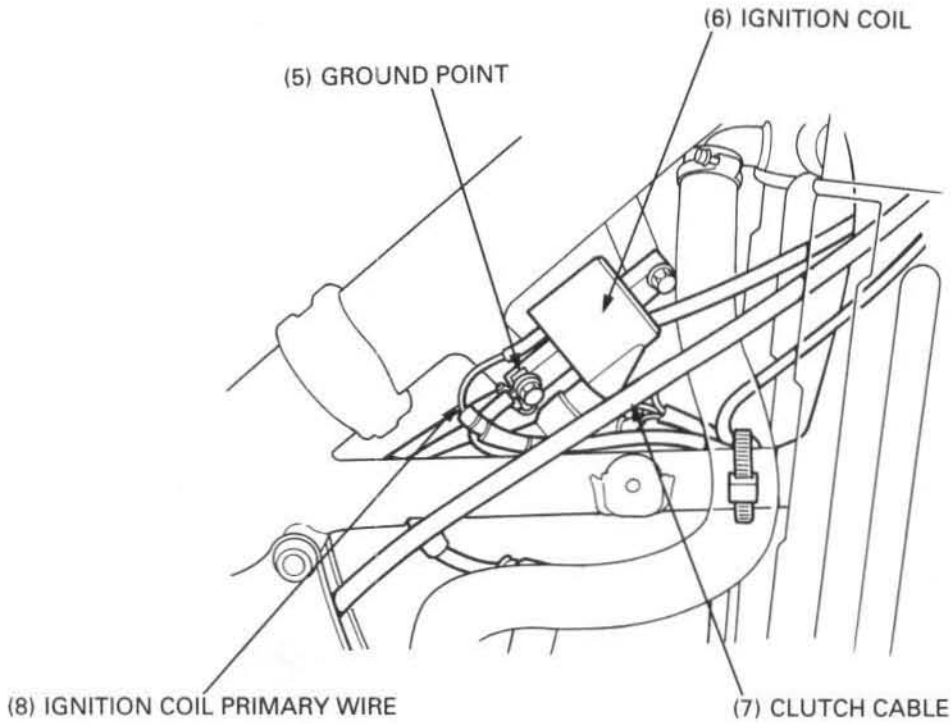

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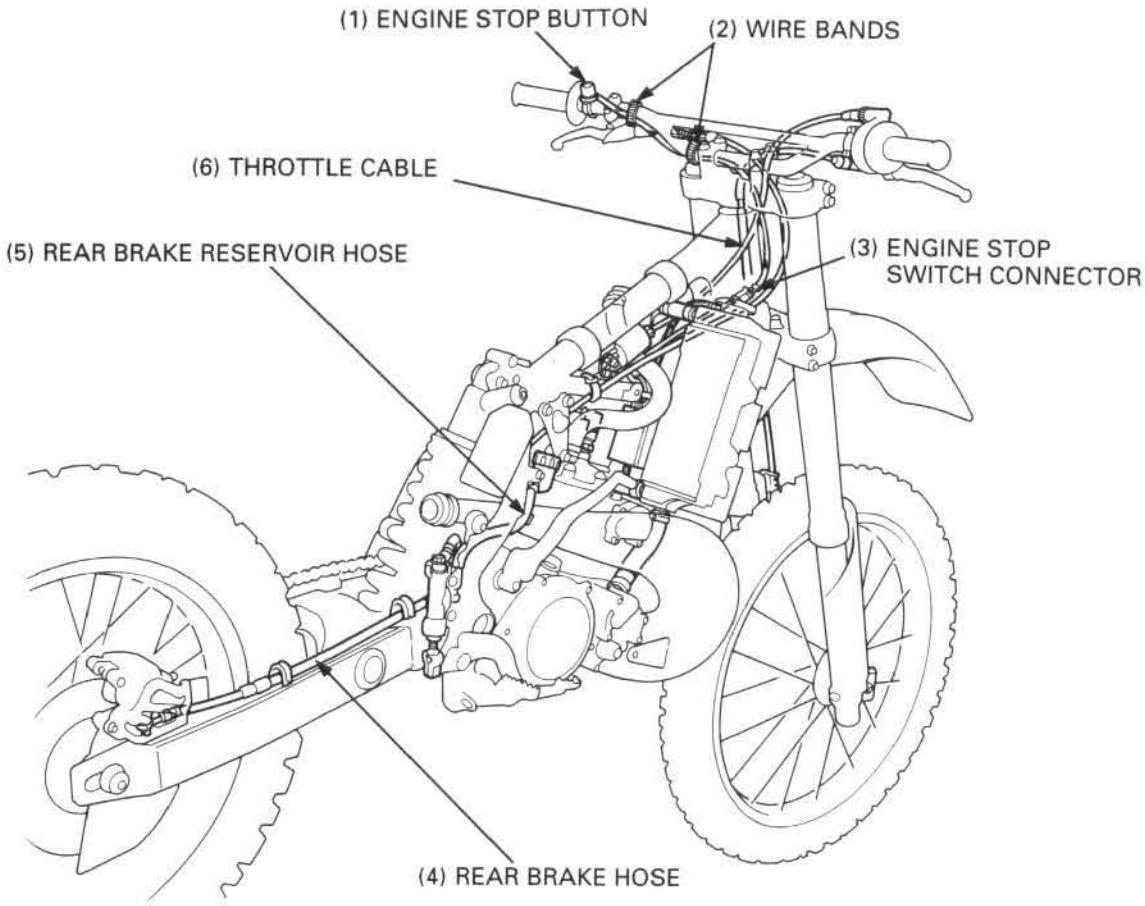

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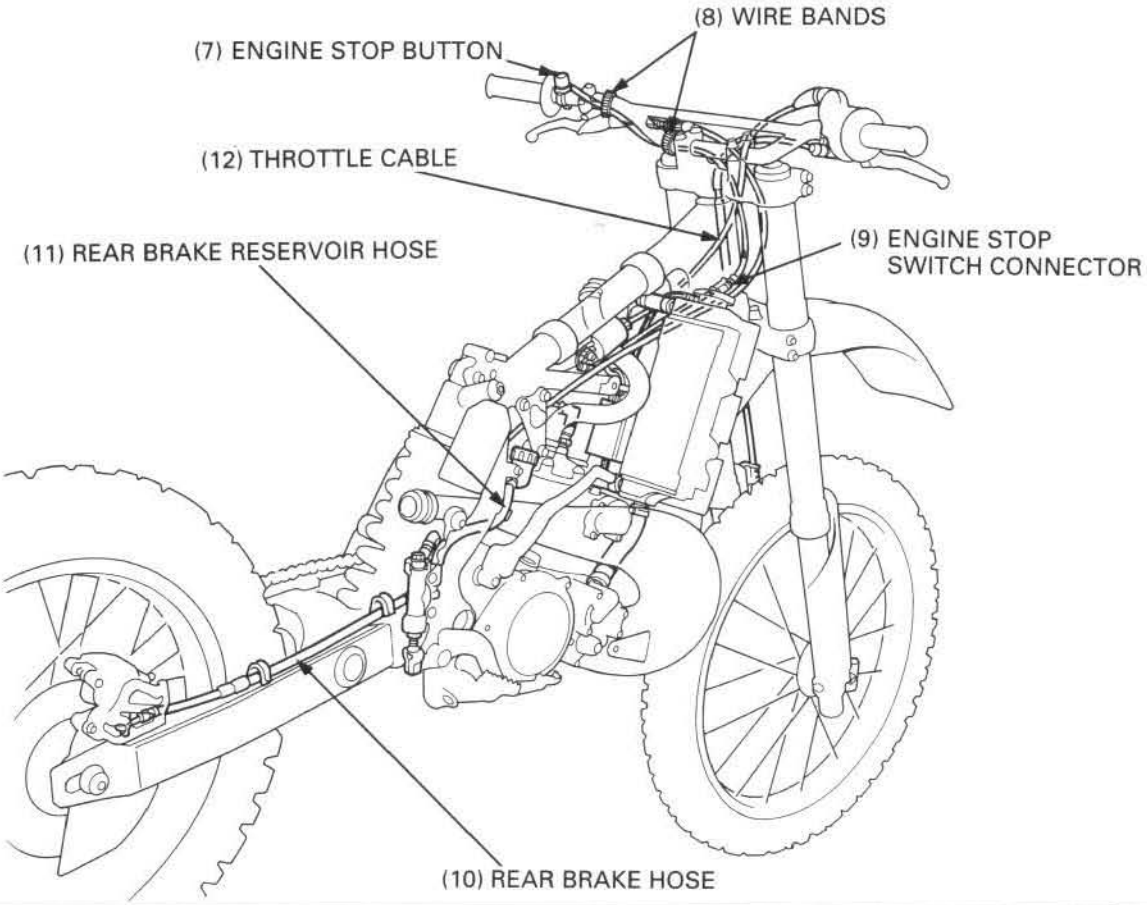

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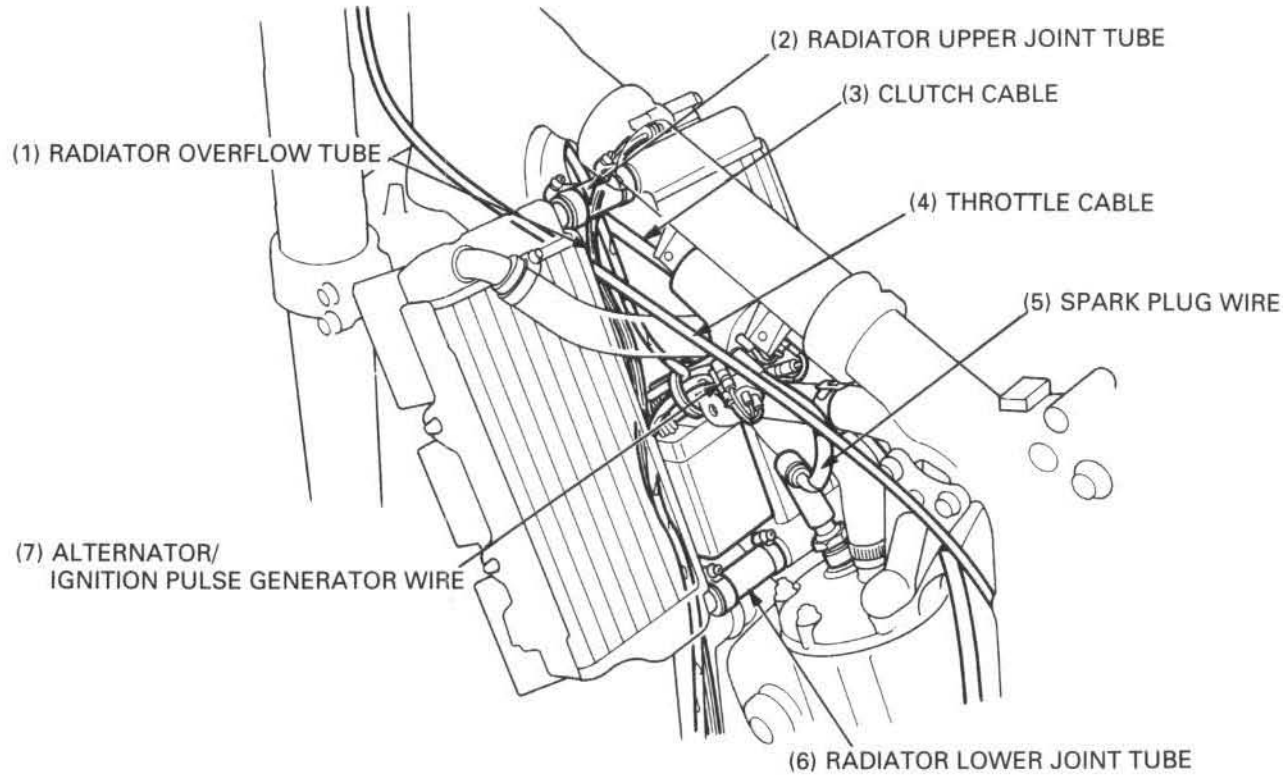

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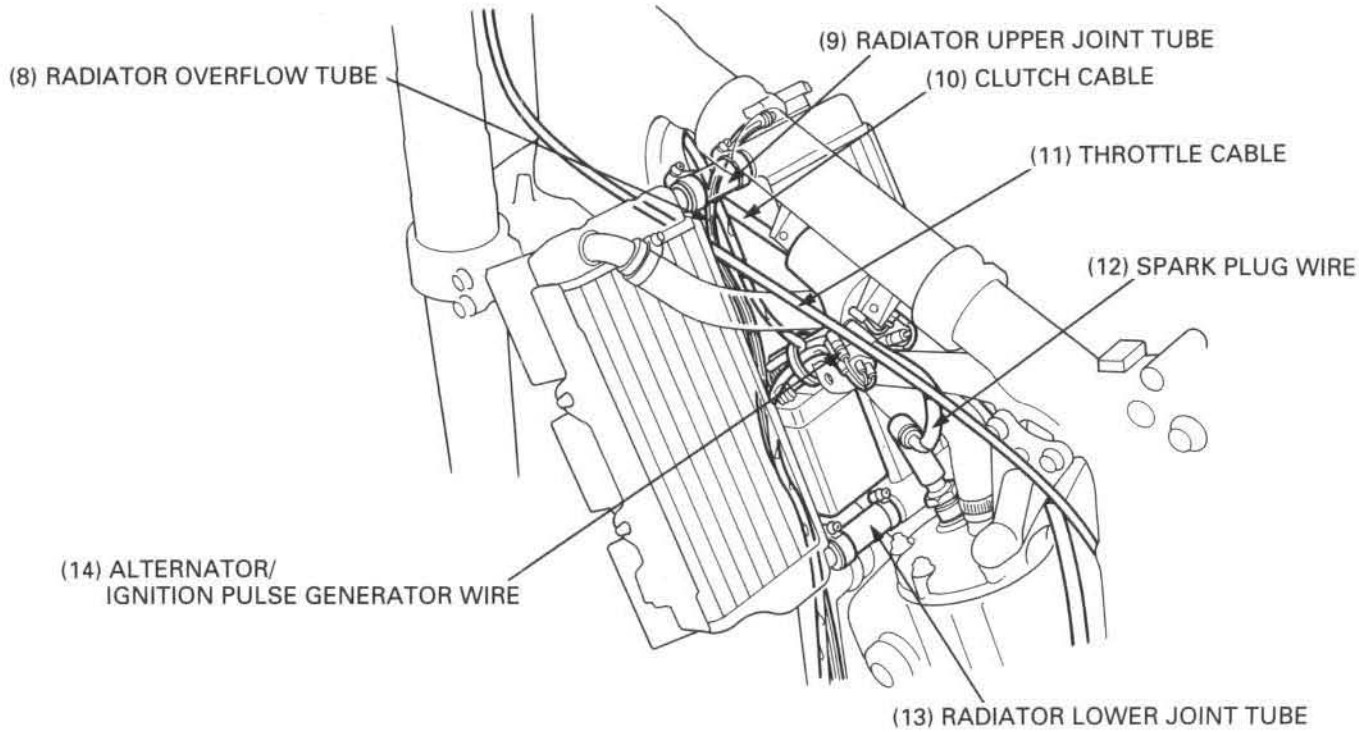

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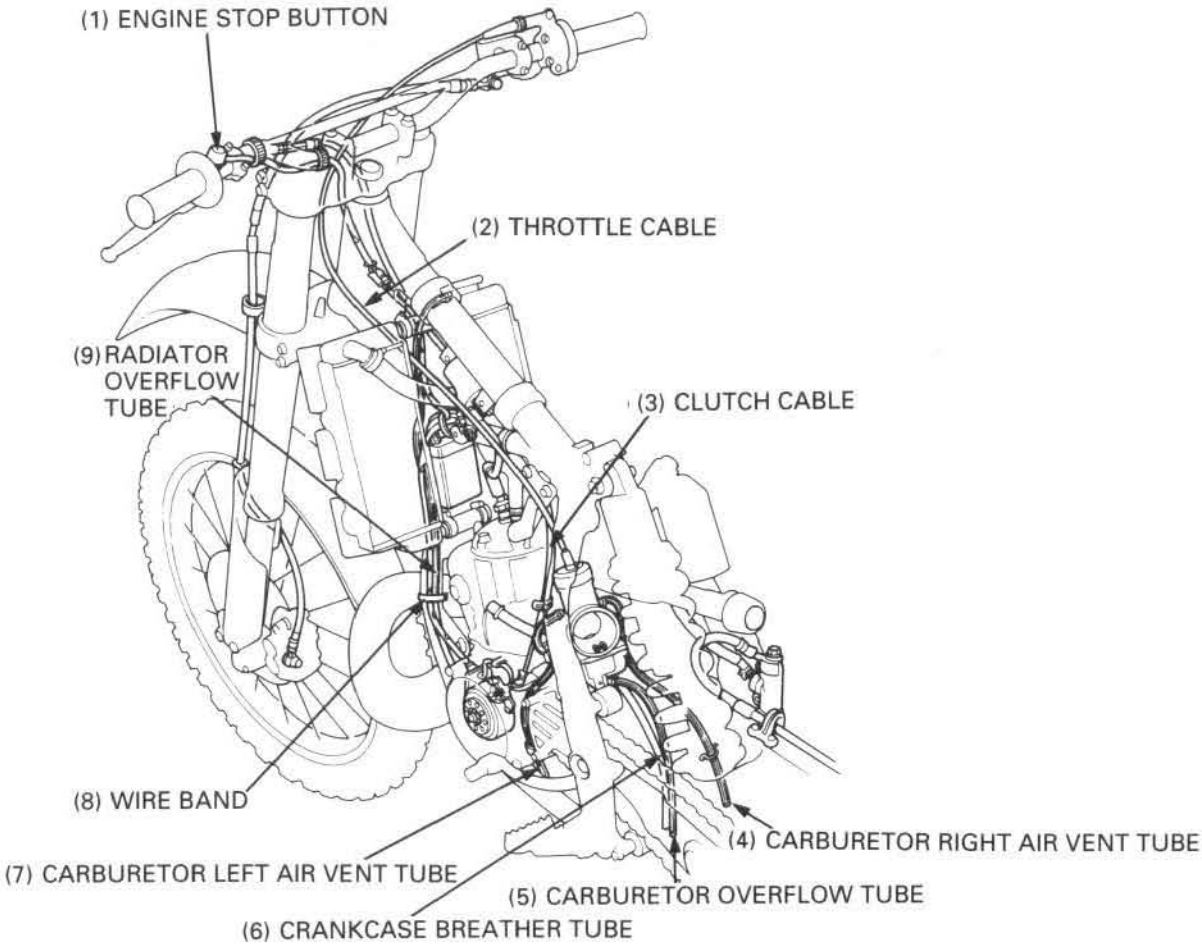

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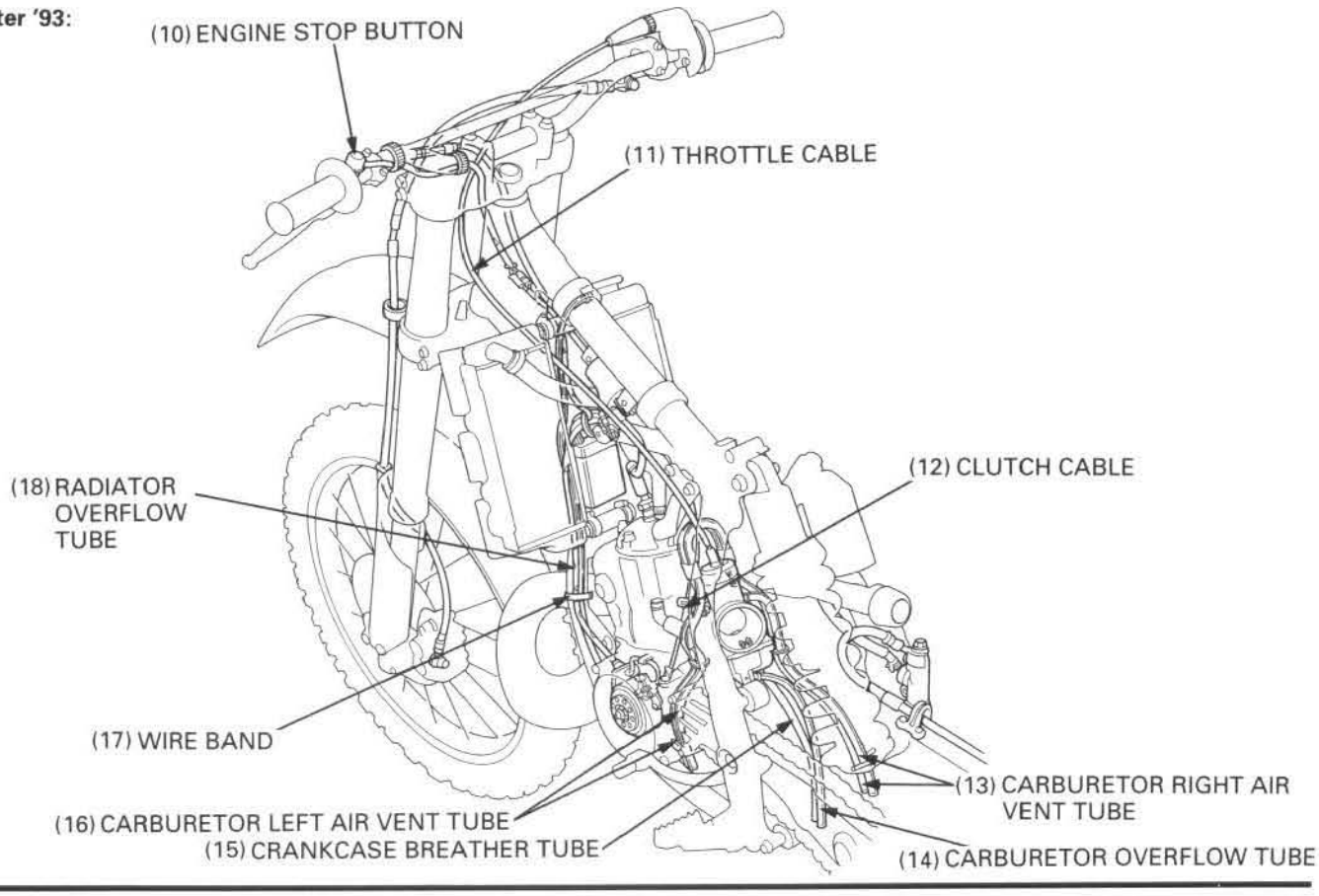
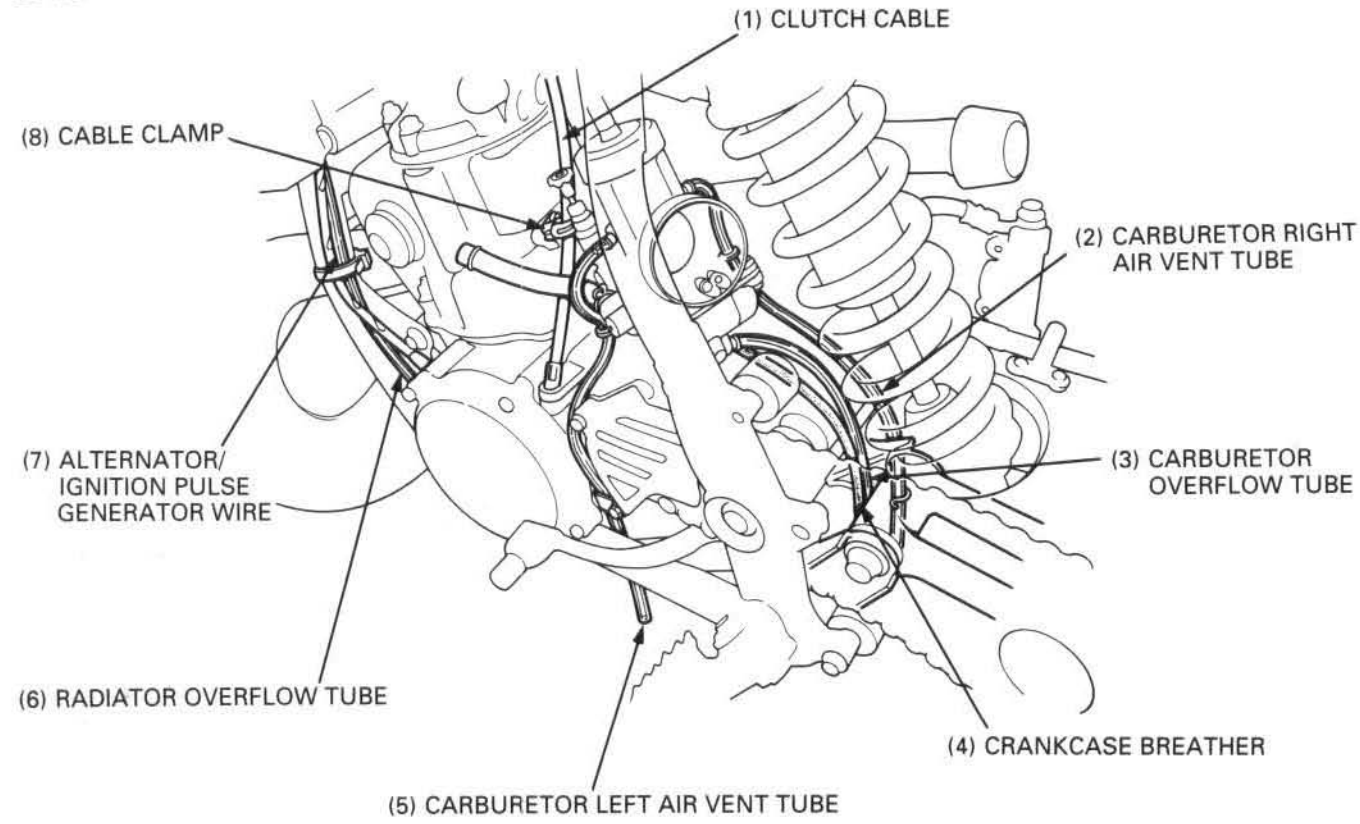
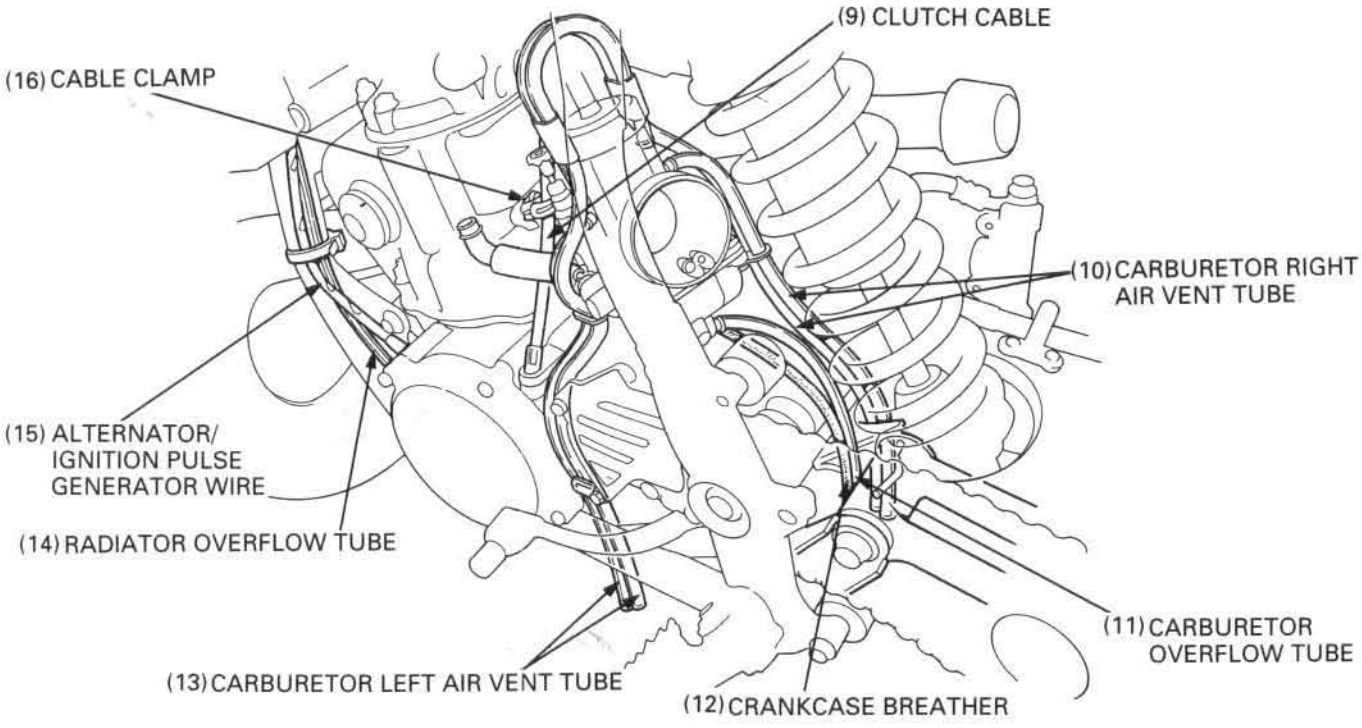


'92–'93:



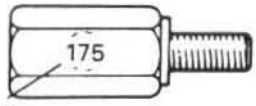
After '93:



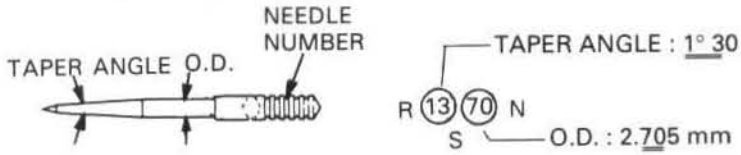
Optional Parts List

Engine

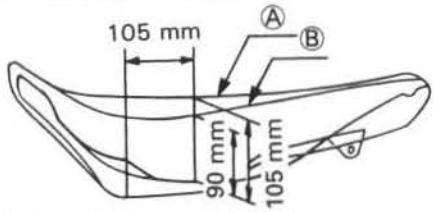
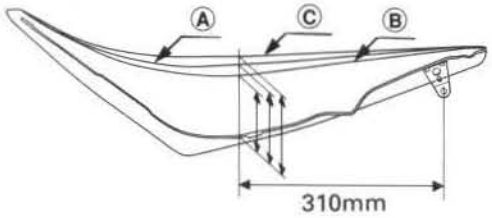
Item			Remarks			
Carburetor:						
Main jet	Standard		#175			
	Optional		#165 – #185 (in increments of 2 or 3)			
Jet needle	Standard '92–'93:		R1370NS (ϕ 2.705 – 1° 30')			
	General Flow Characteristics		Jet needle number	O.D. (mm)	Taper angle	Sepcific flow characteristics
	Leaner than the standard R1369NS needle		R1370NS	2.705	1° 30'	Leaner only at 1/8 to 1/4 throttle.
	Richer than the standard R1369NS needle		R1368NS	2.685	1° 30'	Richer only at 1/8 to 1/4 throttle.
Jet needle	Standard After '93:		R1368MS (ϕ 2.685 – 1° 30')			
	General Flow Characteristics		Jet needle number	O.D. (mm)	Taper angle	Sepcific flow characteristics
	Leaner than the standard R1368MS needle		R1369MS	2.695	1° 30'	Leaner only at 1/8 to 1/4 throttle.
	Richer than the standard R1368MS needle		R1367MS	2.675	1° 30'	Richer only at 1/8 to 1/4 throttle.
Jet needle clip standard position			3rd groove			
Slow jet	Standard		#55			
	Optional		#50 – #60 (in increments of 2 or 3)			



Explanation of the jet needle numbers
(Example)



Frame

Item			Remarks
Maintenance:			
Work stand			For maintenance
Air pressure gauge			For checking tire air pressure
Pin spanner			Pin spanner A x 2 For shock absorber spring installed length (preload) adjustment (two required)
Seat:	'92:	Standard	Seat A: Seat thickness 105 mm (4.1 in) Seat B: Seat thickness 90 mm (3.5 in)
		Optional	
	After '92:	Standard	Seat A: Seat thickness 105 mm (4.1 in) Seat B: Seat thickness 90 mm (3.5 in) Seat C: Seat thickness 118 mm (4.6 in)
		Optional	
Drive Chain & Sprocket:			
Driven sprocket/chain link			
	Standard	'92-'93:	51T (Aluminum)/116
		After '93:	49T (Aluminum)/114
	Optional	'92-'93:	49T (Aluminum)/114 53T (Aluminum)/116 51T (Steel; for Muddy or Sandy track conditions)/116
		After '93:	47T (Aluminum)/114 51T (Aluminum)/116 49T (Steel; for Muddy or Sandy track conditions)/114
Driven chain	Standard		RK 520KZ3 DID 520DS5
	Optional		RK 520KZ3 DID 520DS5

Frame

Item	Remarks
Fork: Spring	

'92-'93:

Type	Spring Rate	Identification Mark
Light	0.36 kg/mm (20.16 lb/in)	3 coils 
Standard	0.38 kg/mm (21.28 lb/in)	1 coil 
Heavy	0.40 kg/mm (22.40 lb/in)	2 coils 

After 93:

Type	Spring Rate	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)	Cut out 

Frame

Item	Remarks
Shock Absorber: Spring	

'92-'93:

Type	Spring Rate	Identification Mark
Light	4.6 kg/mm (257.6 lb/in)	Black paint 
Standard	5.0 kg/mm (280.0 lb/in)	No paint 
Heavy	5.4 kg/mm (302.4 lb/in)	Light blue paint 

After '93:

Type	Spring Rate	Identification Mark
Light	5.0 kg/mm (280.0 lb/in)	No paint 
Standard	5.4 kg/mm (302.4 lb/in)	Light blue paint 
Heavy	5.8 kg/mm (324.8 lb/in)	White paint 

2. Frame/Body Panels/Exhaust System

Service Information

General

⚠ WARNING

- **Gasoline is extremely flammable and is explosive under certain conditions. Work in a well ventilated area. Do not smoke or allow sparks or flames in the work area or where gasoline is stored.**
- **Serious burns may result if the exhaust system is not allowed to cool before components are removed or serviced.**

- This section covers removal and installation of the frame body panels, fuel tank and exhaust system.
- Always replace the exhaust chamber gasket when removing the exhaust chamber 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	'92: 27 N•m (2.7 kg-m, 20 ft-lb)
(Upper) After '92:	33 N•m (3.3kg-m, 24ft-lb)
(Lower) After '92:	43 N•m (4.3kg-m, 31ft-lb)

Troubleshooting

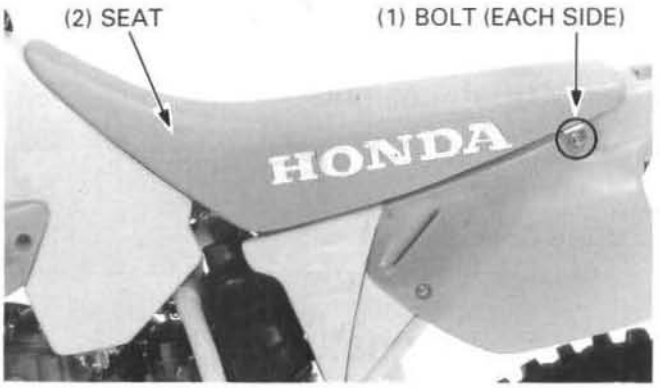
Excessive Exhaust Noise
- Broken exhaust system
- Exhaust gas leak
- Worn silencer glass wool packing

Poor Performance
- Deformed exhaust system
- Exhaust gas leak
- Clogged chamber/silencer

Seat

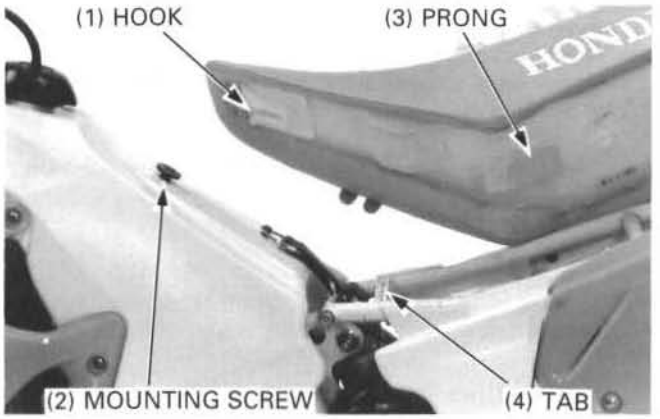
Removal

Remove the two mounting bolts and seat.



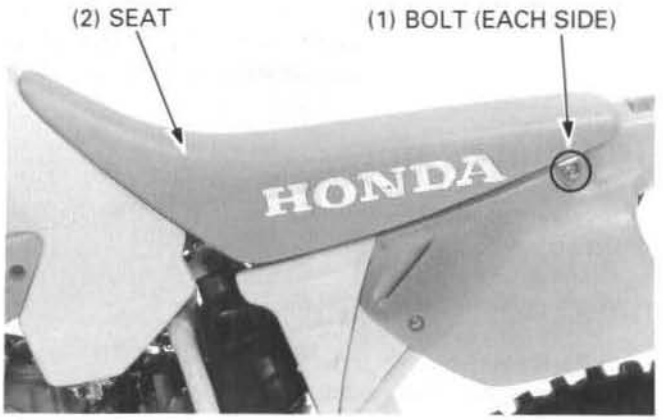
Installation

Align the hook of the seat with the mounting screw on the fuel tank and the seat prong with the sub-frame tab.



Install and tighten the seat mounting bolts to the specified torque.

Torque: 22 N·m (2.2 kg-m, 16 ft-lb)

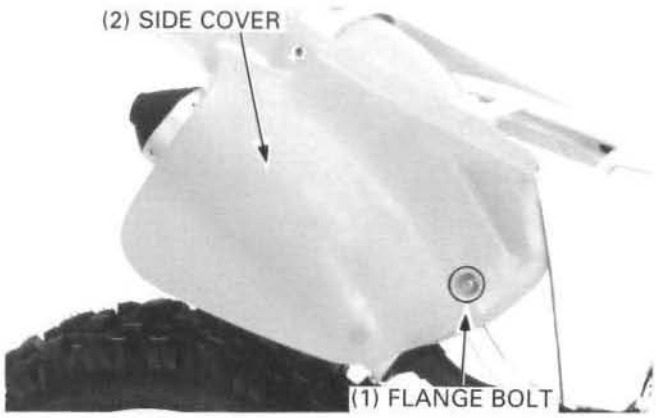


Side Covers

Removal/Installation

Remove the seat.
Remove the flange bolt and side cover.

Installation is in the reverse order of removal.



Fuel Tank

⚠ WARNING

- **Gasoline is extremely flammable and is explosive under certain condition. Do not smoke or allow sparks or flames in the work area or where gasoline is stored.**

Fuel Filter Maintenance

Drain the fuel from the fuel tank into an approved gasoline container.

Disconnect the fuel line from the fuel valve.
Remove the bolts and fuel valve.

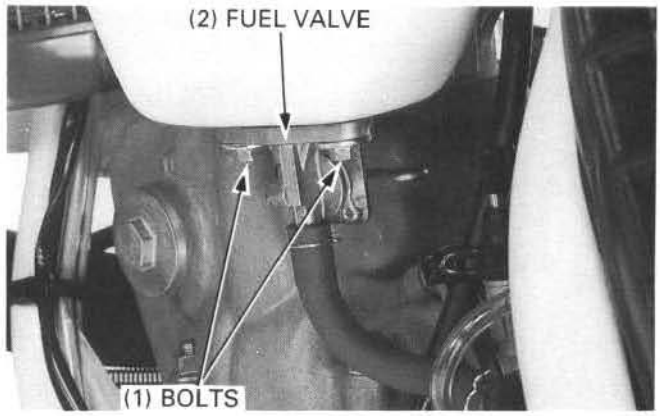
Wash the fuel filter in high flash point cleaning solvent.

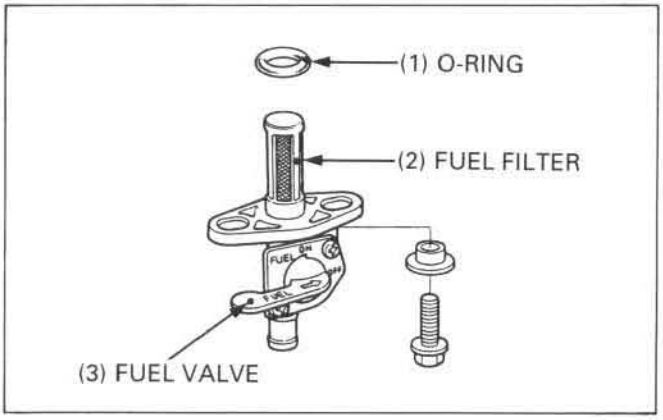
Check the O-ring is in good condition, install it onto the fuel valve.

Install the fuel valve in the reverse order of removal.

NOTE

- After installation, make sure there are no fuel leaks.



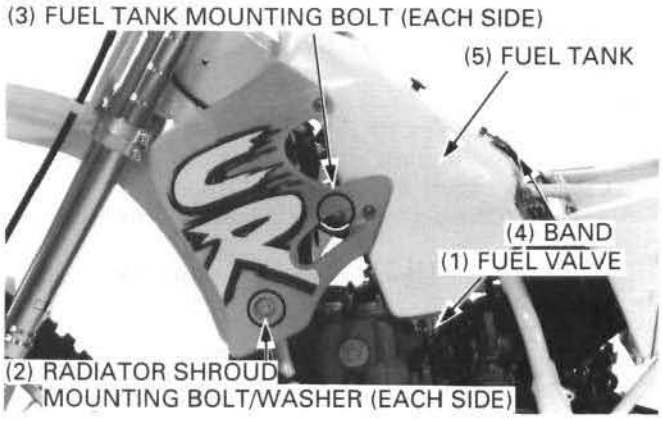


Removal/Installation

Remove the seat (page 2-2).
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.

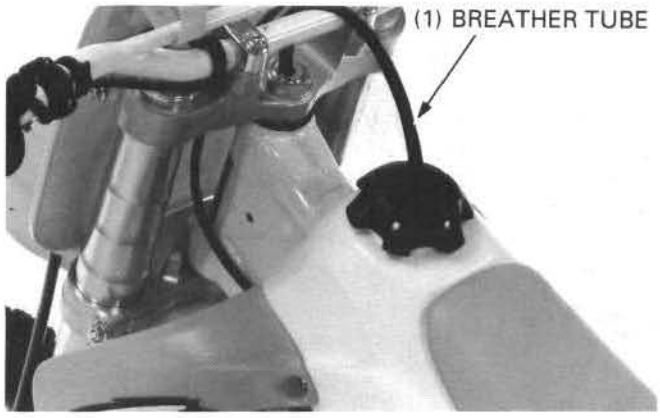
Remove the bolts and radiator shroud.

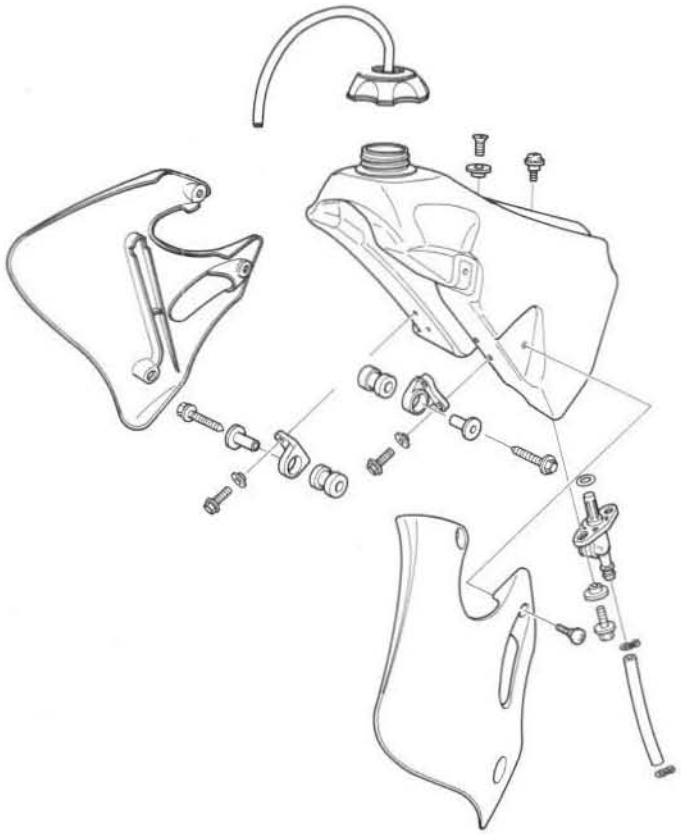


Installation is in the reverse order of removal.

NOTE

- After installation, make sure there are no fuel leaks.
- Install the breather tube into the stem nut as shown.





Exhaust Pipe

⚠WARNING

- **The exhaust system becomes extremely hot with the engine running and remains hot for some time after the engine has been shut off.**
  Touching the system while it is hot will cause severe burns.
  Allow some time for the system to cool before touching it.

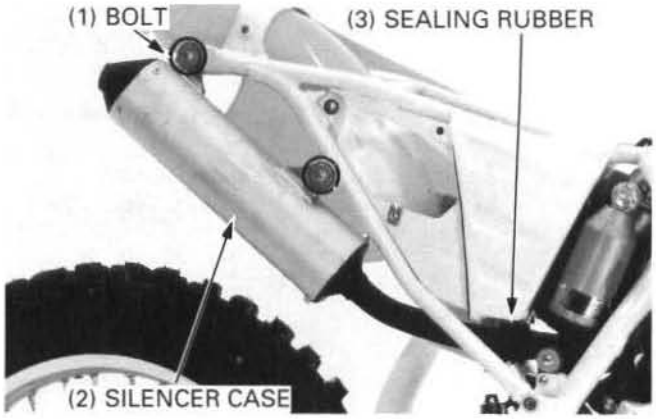
Silencer Removal/Installation

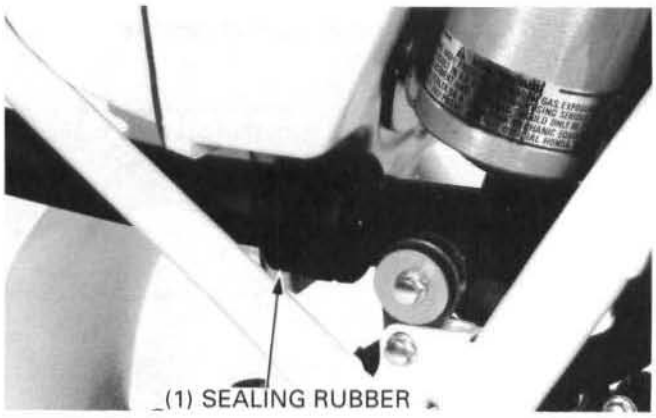
Remove the seat and right side cover (page 2-2).

Remove the silencer case mounting bolt, silencer case and sealing rubber.

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

Installation is in the reverse order of removal.

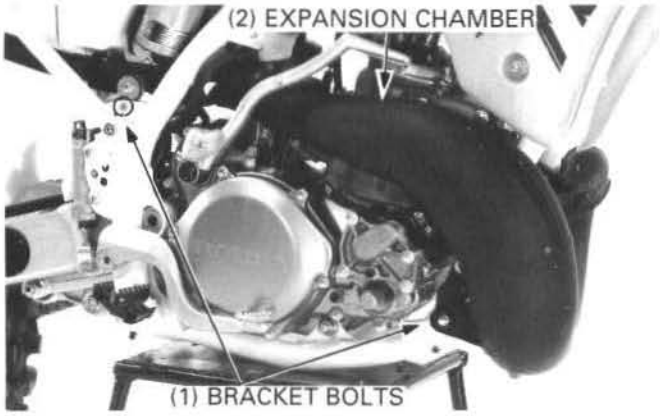




Expansion Chamber Removal/Installation

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

Loosen the chamber bracket bolts.

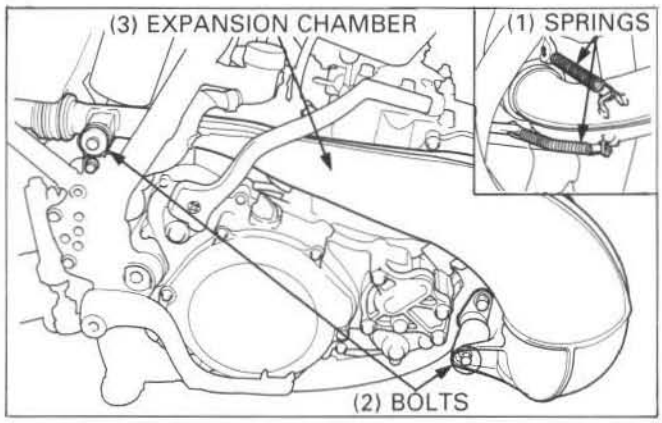


Unhook and remove the chamber springs.
Remove the mounting bolts and expansion chamber.

Installation is in the reverse order of removal.

NOTE

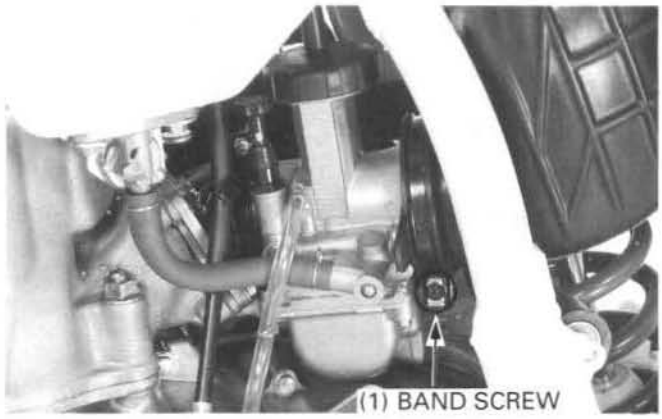
- Always replace the expansion chamber gasket and O-ring with a new one.
- Install the sealing rubber securely.



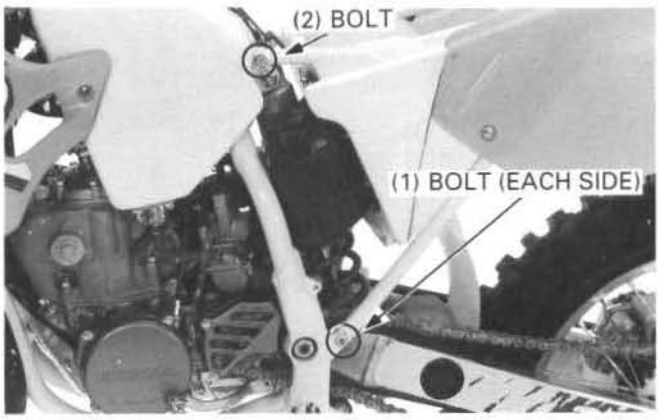
Sub-frame

Removal

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



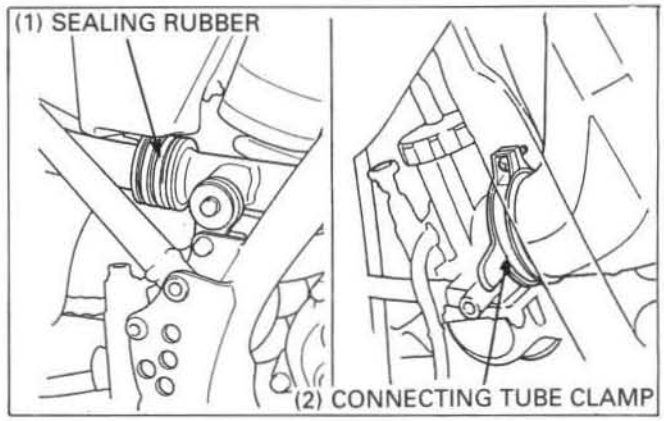
Remove the three sub-frame mounting bolts.
Remove the sub-frame by pulling it straight backward.



Installation

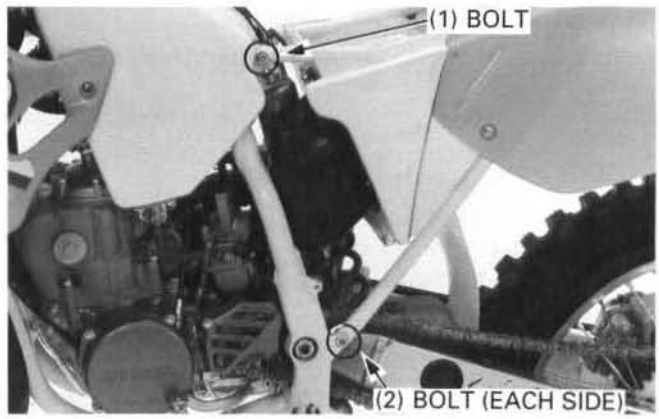
Loosely attach the upper and lower ends of the sub-frame to the main-frame while connecting the expansion chamber to the silencer pipe with the sealing rubber and the air filter connecting tube to the carburetor.

Tighten the screw on the connecting tube clamp.
Snug but do not tighten the three attaching bolts.



Tighten the sub-frame mounting bolts to the specified torque.

Torque: '92: 27 N•m (2.7 kg-m, 20 ft-lb)
After '92:
Upper: 33 N•m (3.3kg-m, 24 ft-lb)
Lower: 43 N•m (4.3kg-m, 31 ft-lb)



3. Maintenance

Service Information

Specifications

Engine

Item			Standard	Service Limit
Transmission oil capacity	at draining	'92:	0.85 liter (0.90 US qt, 0.75 Imp qt)	—
		After '92:	0.75 liter (0.79 US qt, 0.66 Imp qt)	—
	at disassembly	'92:	0.95 liter (1.00 US qt, 0.84 Imp qt)	—
		After '92:	0.85 liter (0.90 US qt, 0.75 Imp qt)	—
Recommended transmission oil			PRO Honda GN4 4-Stroke Oil or equivalent API Service Classification: SF or SG SAE 10W – 30, 10W – 40	—
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 (or equvalent) [Optional]		CHAMPION	QN-86 [QN-2G]	—
		NGK	BR8EG [BR8EV]	—
		NIPPONDENSO	W24ESR-V [W24ESR-G]	—
Spark plug gap			0.5 – 0.6 mm (0.020 – 0.024 in)	—

Frame

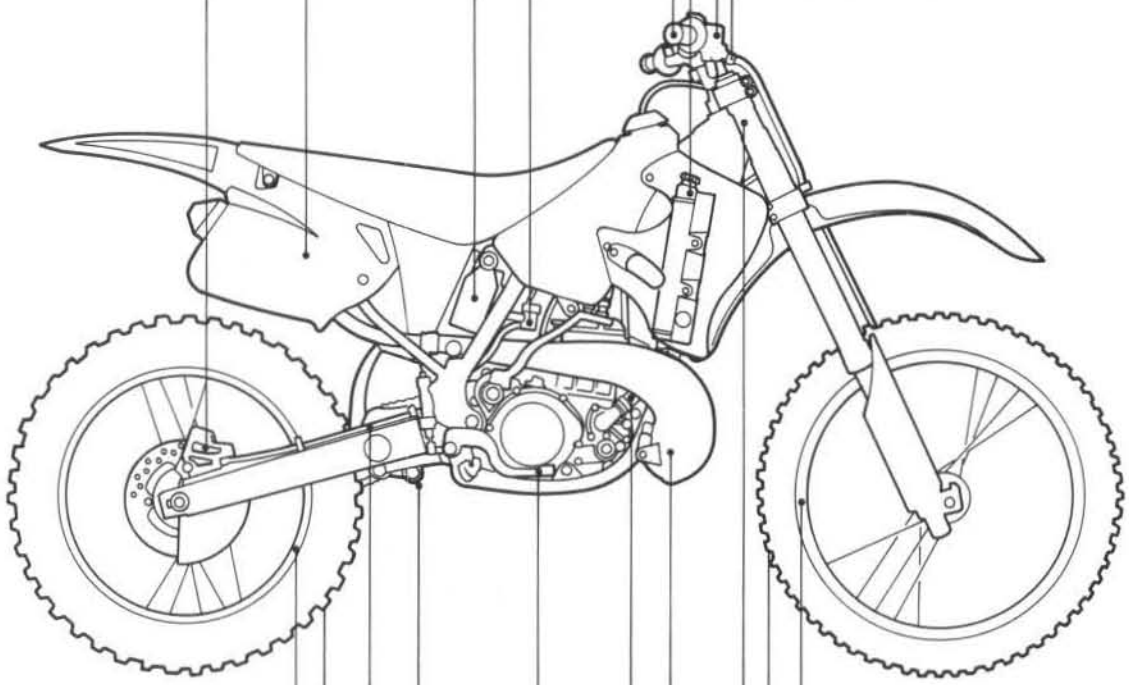
Drive chain slack		45 – 55 mm (1-7/8 – 2-1/4 in)	—
Chain tensioner roller O.D.		———	25 mm(0.98 in)
Chain slider (from upper surface)		———	5 mm (0.2 in)
Tire size	Front	80/100 – 21 51M	—
	Rear	110/100 – 18 64M	—
Tire pressure	Front/Rear	100 kPa (1.0 kg/cm², 15 psi)	—

Torque Values

Oil check bolt	10 N·m (1.0 kg-m, 7 ft-lb)
Oil drain bolt	30 N·m (3.0 kg-m, 22 ft-lb)
Rear axle nut	95 N·m (9.5 kg-m, 69 ft-lb)
Drive chain roller bolt	22 N·m (2.2 kg-m, 16 ft-lb)
Brake lever adjuster lock nut	6 N·m (0.6 kg-m, 4.3 ft-lb)
Spoke nipple	3.8 N·m (0.38 kg-m, 2.8 ft-lb)
Rim lock	13 N·m (1.3 kg-m, 9 ft-lb)

Service Access Guide

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



(1) Brake Reservoir
(Fluid level, fluid replacement)

(2) Rear Suspension
(Operation, looseness, wear, damage)

(3) Silencer
(Grass wool packing replacement)
- Right side cover

(4) Caliper
(Pad wear)

(5) Throttle Grip
(Operation)

(6) Radiator
(Leakage, damage)

(7) Master Cylinder
(Oil level, fluid replacement)

(8) Brake Lever
(Air in system, free play)

(14) Wheel
(Damage, runout, corrosion, loose spokes)

(15) Tire
(Wear, damage, air pressure)

(16) Brake Hose
(Fitting, oil leaks)

(17) Shock Linkage
(Damage, lubrication)

(18) Brake Pedal
(Air in system, height adjustment)

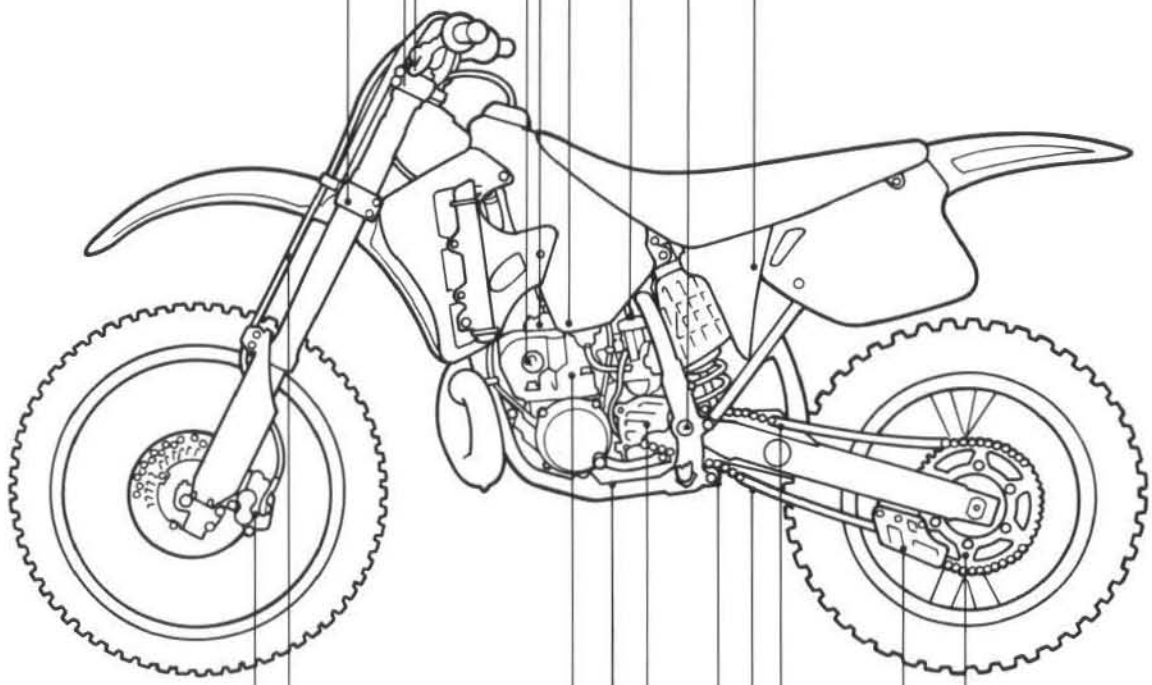
(9) Wheel
(Damage, runout, corrosion, loose spokes)

(10) Tire
(Wear, damage, air pressure)

(11) Front Suspension
(Operation, looseness, wear, damage)

(12) Expansion Chamber
(Cracks, deformation, spring tension)

(13) Radiator Hose
(Leakage, degradation, damage)



(1) Spark Plug
(Wear, damage, fouling)

(2) Exhaust Valve
(Decarbonization)

(3) Clutch Lever
(Free play, operation)

(4) Steering Head Bearings
(Damage, lubrication)

(5) Cylinder Head
(Decarbonization)
• Seat, fuel tank

(6) Throttle Cable
(Damage, lubrication)

(7) Swingarm
(Damage, lubrication)

(8) Air Cleaner
(Contamination, clogging)
• Seat

(9) Driven Sprocket
(Wear, damage,
loose nut)

(10) Drive Chain Slider
(Wear, damage)

(11) Drive Chain
(Wear, damage, lubrication)

(12) Drive Chain Roller
(Wear, damage)

(13) Drive Sprocket
(Loose bolt, wear, damage)

(14) Caliper
(Pad wear)

(15) Brake Hose
(Fitting, fluid leaks)

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

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

(18) Transmission Oil Drain Bolt
(Oil change)

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 4 races or about 7.5 hours	Every 9 races or about 22.5 hours	Refer To 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
Exhaust Valve And Exhaust Linkage Decarbonizing			C		8-4
Piston And Piston Rings			R		7-7
Piston Pin And Connecting Rod Small End Bearing				R	7-7, 8
Transmission Oil			R		3-9
Drive Chain		I, L	R		3-10
Drive Chain Sliders		I			3-11
Drive Chain Rollers		I			3-12
Drive Sprocket		I			3-12
Driven Sprocket		I			3-12
Brake Fluid	Note 2	I			3-12
Brake Pad Wear		I			3-13
Brake System		I			3-13
Clutch System		I			3-14
Control Cables		I, L			3-14
Expansion Chamber/Silencer		I			3-15
Suspension		I			3-16
Swingarm/Shock Linkage			L		3-17 12-26, 31
Fork Oil	Note 3		R		11-19
Nuts, Bolts, Fasteners		I			3-18 1-12
Wheels/Tires		I			3-18
Steering Head Bearings				I	3-18

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

Notes: 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
Right crankcase cover gasket	Damage	Replace whenever disassembled
Exhaust valve cover gasket	Damage	

Frame

Item	Cause	Remark
Front/rear tire	Wear	Minimum cleat height: 8 mm (5/16 in)
Front/rear brake pad	Wear	Minimum thickness: 1 mm (0.04 in)
Sub-frame mounting bolts	Fatigue or damage	
Chain guide plate	Wear or damage	
Side cover	Damage	
Front number plate	Damage	
Front/rear fender	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 chamber spring/hook	Fatigue or damage	

Note: These parts and their possible replacement schedule are based upon average riding conditions. Machines subjected to severe use require more frequent servicing.

Throttle Operation

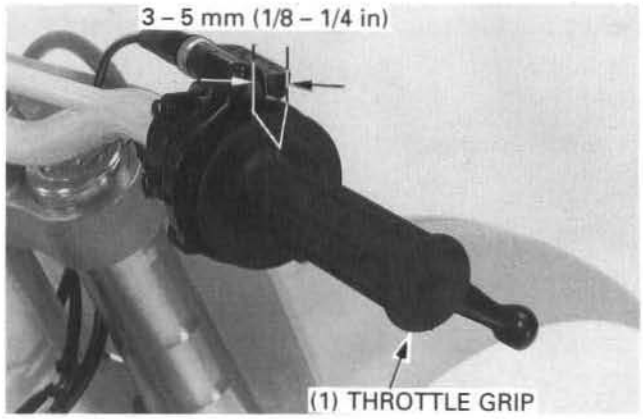
Check that the throttle returns from the full open to the full closed position, smoothly and automatically in all steering positions.

Inspect the throttle cable damage, or kinks.

Replace the cable as requires.

Measure throttle grip free play at the throttle grip flange.

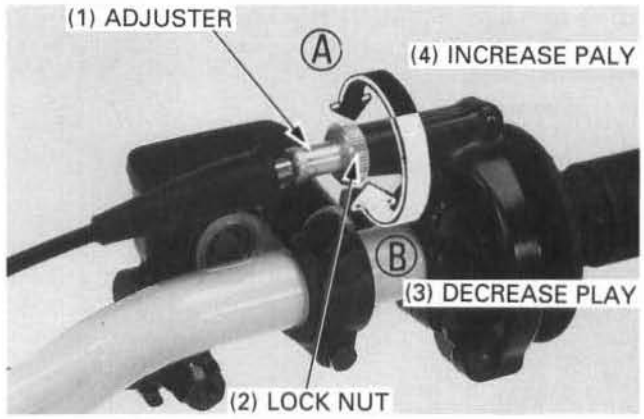
Throttle Grip Free Play: 3 – 5 mm (1/8 – 1/4 in)



Minor adjustments are made with the adjuster on the housing.

Slide the rubber protector away from the adjuster and loosen the lock nut.

Tighten the lock nut after making the adjustment.



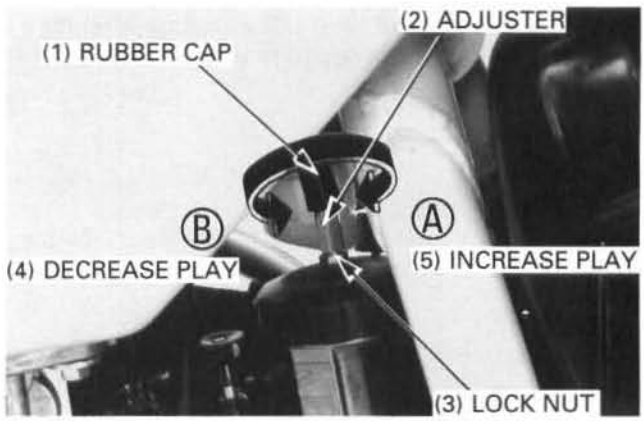
Major adjustments are made at the carburetor end of the cable.

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

Pull the carburetor 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.



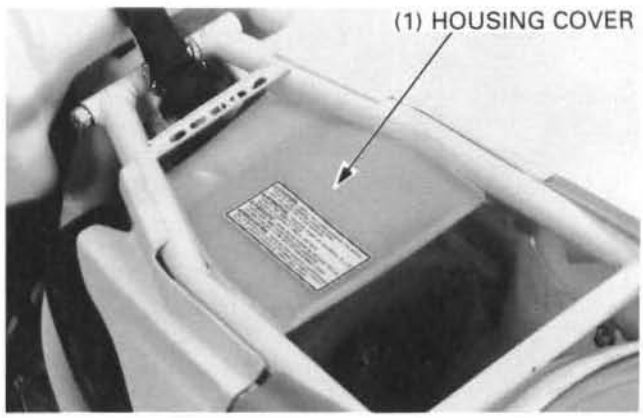
Air Cleaner

Remove the seat (page 2-2).

Remove the air cleaner housing cover if installed.

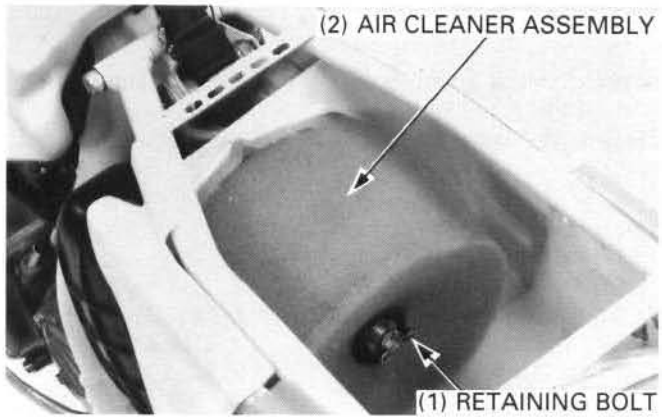
NOTE

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



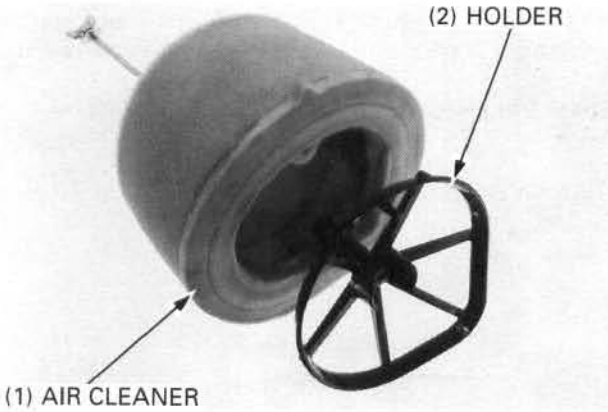
Loosen the air cleaner retaining bolt.

Remove the air cleaner assembly.



Remove the air cleaner from the cleaner holder.

Thoroughly wash the air cleaner in clean non-flammable or high flash point cleaning solvent.
Then wash the element again in a solution of hot water and dishwashing liquid soap.
Clean the inside of the air cleaner housing.



⚠WARNING

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

After cleaning, be sure there is no dirt or sand trapped between the inner and outer layer of the cleaner.
Wash again if necessary.

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. Gentry squeeze out excess oil. It is important not to over-oil, or under-oil the element.

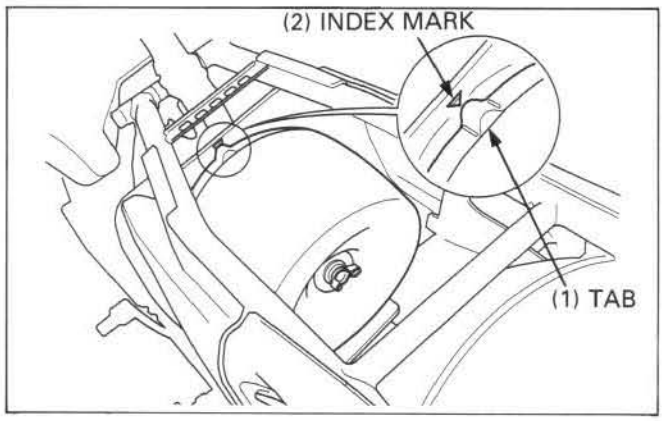
Apply a thin coat of Honda White Lithium Grease or an equivalent to the sealing surface.

Assemble the air cleaner onto the holder.
Slip the air cleaner retaining bolt through the assembly.

Align the air cleaner tab with the index mark on the housing and install it.
Tighten the retaining bolt securely.

Install the air cleaner housing cover.

Install the seat (page 2-2).



CAUTION

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

Spark Plug

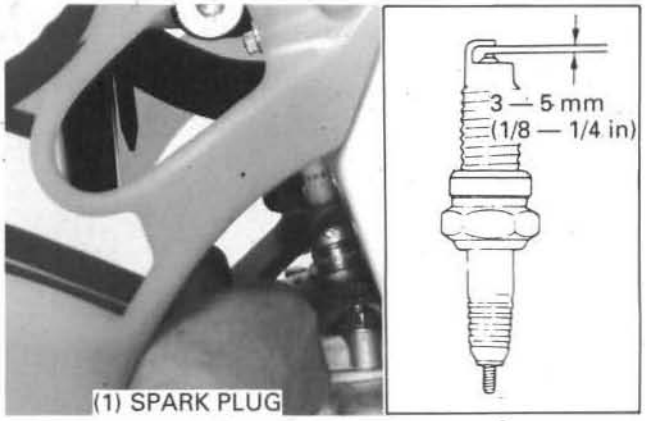
Remove the spark plug and inspect it for damage.

Discard the plug if the insulator is cracked, chipped of fouled.

Recommended Spark Plug (or equivalent):

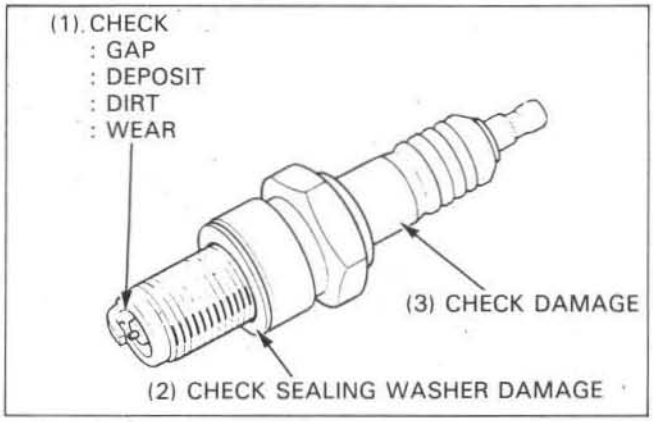
CHAMPION	QN-86 [QN-2G]
NGK	BR8EG [BR8EV]
NIPPONDENSO	W24ESR-V [W24ESR-G]

[ ]: Optional



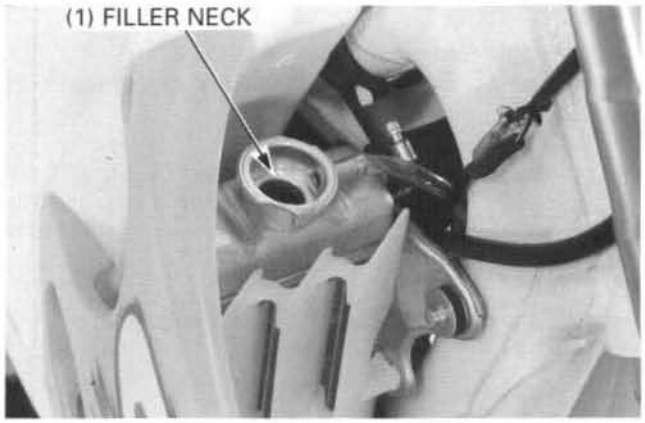
If necessary, adjust the gap by carefully bending the side electrode. Then measure the gap again and reinstall.

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).

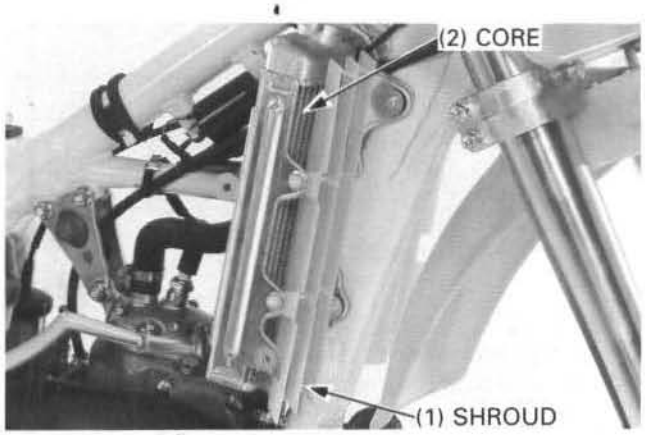


Cooling System

Remove the radiator shrouds (page 5-3).

Inspect the hoses for cracks and deterioration.

Use low pressure water and a soft brush to rinse off any dirt that may be stuck in the radiator core.
Inspect the hoses for cracks and deterioration.
Replace if necessary. Check the tightness of the hose clamps and radiator mounting bolts.



Transmission Oil

Oil Level Check

⚠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.**

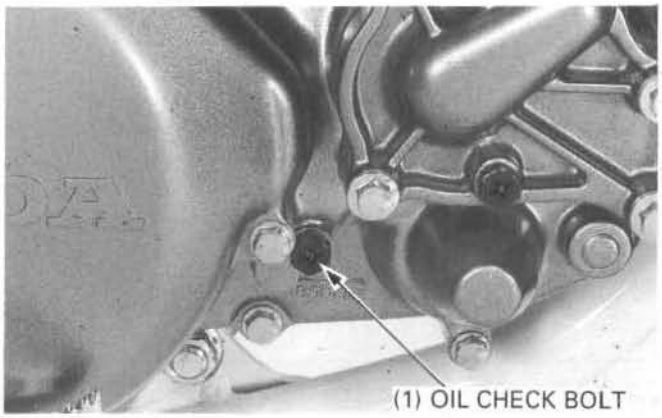
'92:
NOTE

- Do not use the oil check bolt for oil level inspection.

After '92:

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 motorcycle in an upright position on a level surface.
4. Remove the oil filter cap and check bolt from the right crankcase cover. A small amount of oil should folw 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 checking the oil level or adding oil, tighten the oil check bolt and filler cap securely.

Torque: 10N • m (1.0kg-m, 7ft-lb)



Oil Change

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

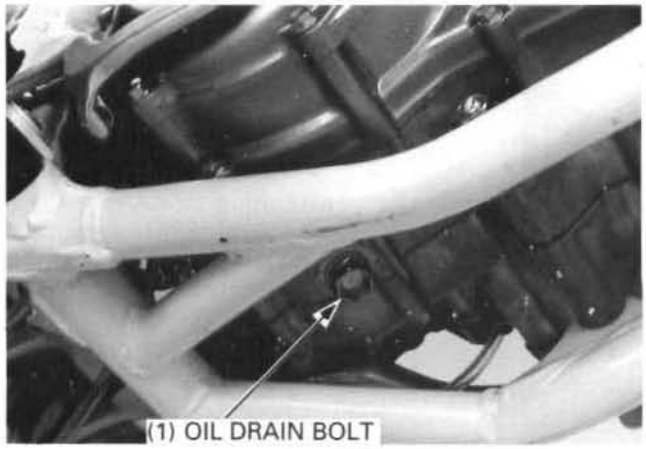
- **If the engine must be running to do some work, make sure the area is well ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that can cause loss of consciousness and may lead to death.**

1. Run the engine for three minutes, then shut it off.
2. Support the motorcycle in an upright position on a level surface.
3. Remove the oil filter 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

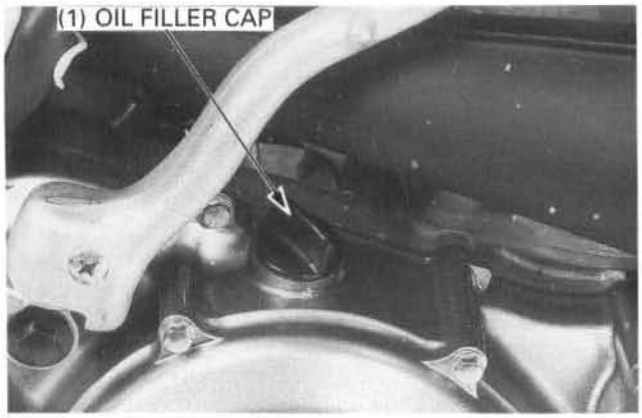
- **Used tramsmission oil may cause skin cancer if repeatedly left in contact with the skin for prolonged periods.**
  Although this is unlikely unless you handle used oil or daily basis, it is still advisable to thoroughly wash your hads with soap and water as soon as possible after handing used oil.



5. After the oil has drained completely, install the drain bolt with a new sealing washer.
Torque: 30N· m (3.0 kg-m, 22ft-lb)

6. Add the recommended oil.
Capacity (at draining):
'92: 0.85 liter(0.90 US qt, 0.75 Imp qt)
After '92: 0.75 liter(0.79 US qt, 0.66 Imp qt)

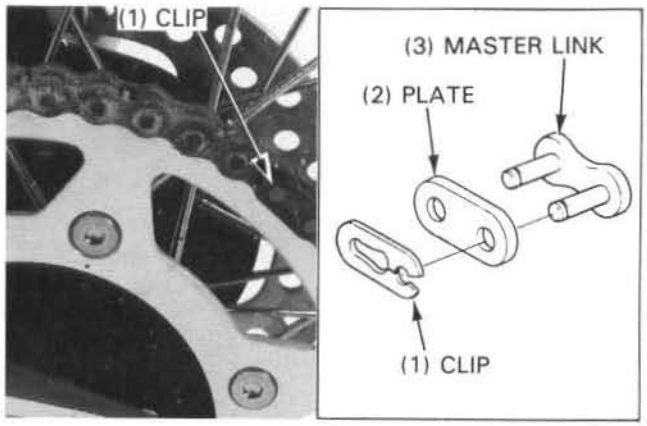
Recommended oil: PRO Honda GN4 4–Stroke oil
SAE 10W–40 or equivalent



7.
'92:
NOTE

- Do not use the oil check bolt for oil level inspection.

After '92:
Check the oil level by following the steps 1-6 in Oil Level Check procedure (page 3-9).



Drive Chain

NOTE

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

Perform the following service with the engine stopped and the transmission into neutral.

Place a workstand under the engine.

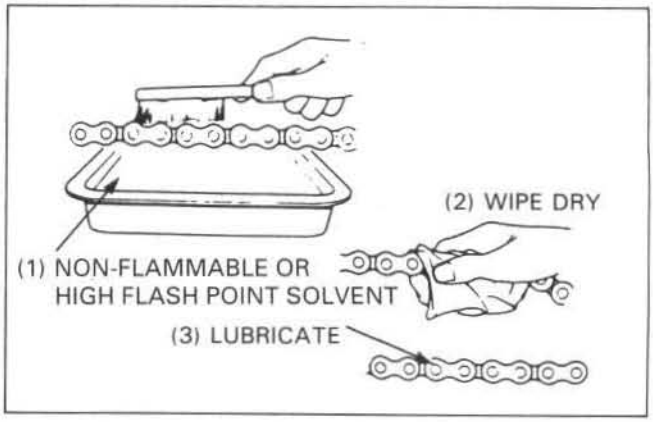
Carefully remove the master link clip with pliers.
Remove the master link and the drive chain.

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 or loose fitting links.

Reinstall the drive chain and lubricate it with Pro Honda Chain Lube or its equivalent.

Install the open end of the master link opposite the direction of chain travel.

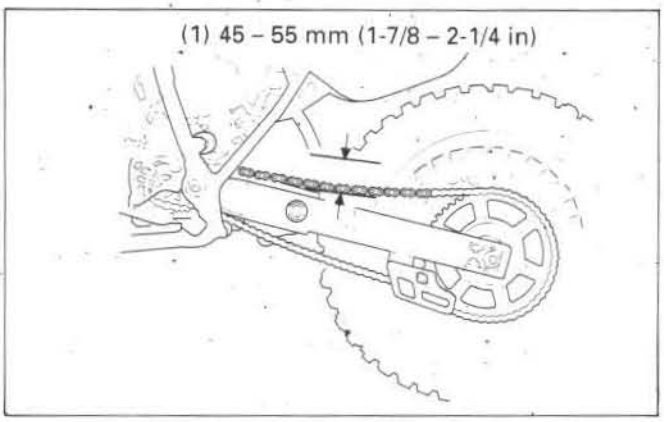


Adjustment

Raise the rear wheel off the ground by placing a workstand under the engine.

Measure the chain slack, in the upper chain run, mid-way between the sprockets.

Chain Slack: 45 – 55 mm (1–7/8 — 2–1/4 in)

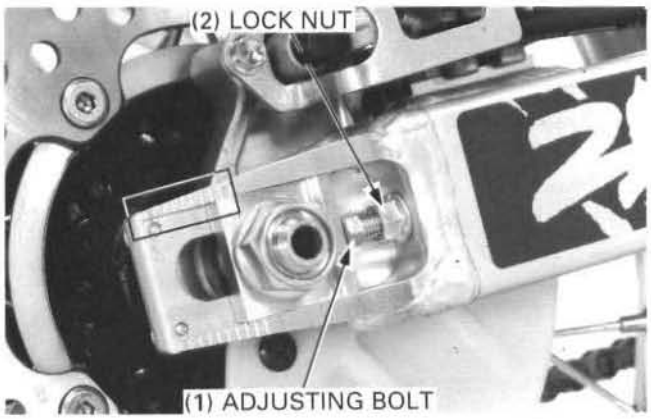


If the chain needs adjustment, loosen the axle nut and adjuster lock nuts, and turn the adjusting bolts.

Check that the chain adjuster index marks are in the same position on each side, then tighten the axle nut to the specified torque.

Torque: 95 N·m (9.5 kg-m, 69 ft-lb)

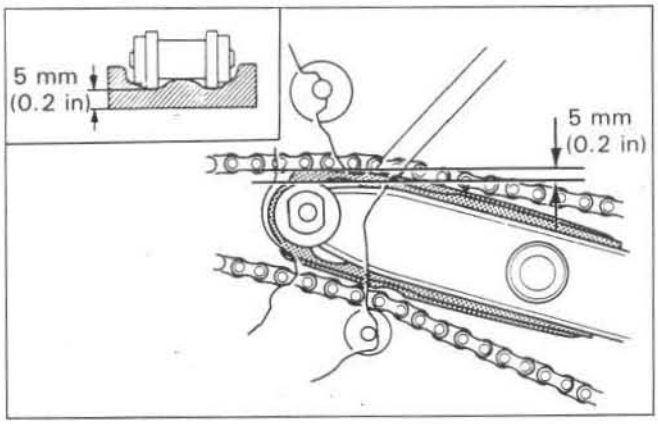
After torquing the axle nut, seat the adjusting bolts snugly against the axle adjustment plates and tighten the adjuster lock nuts.



Drive Chain Sliders

Inspect the drive chain slider for excessive wear.

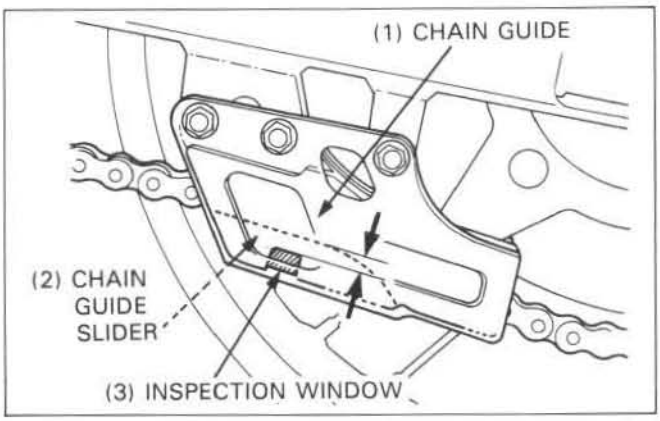
Service Limit: 5 mm (0.2 in) from upper surface



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

Replace the chain guide if it is damaged or worn.

Replace the chain guide slider if the chain is visible through the wear inspection window.



Drive Chain Rollers

Inspect the drive chain rollers for excessive wear or binding.

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

Replace the roller if necessary, and tighten the roller bolts to the specified torque.

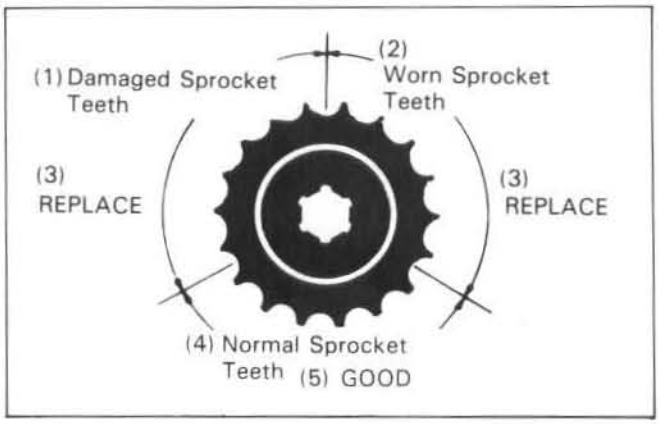
Torque: 22 N·m (2.2 kg-m, 16 ft-lb)

Drive/Driven Sprockets

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

NOTE

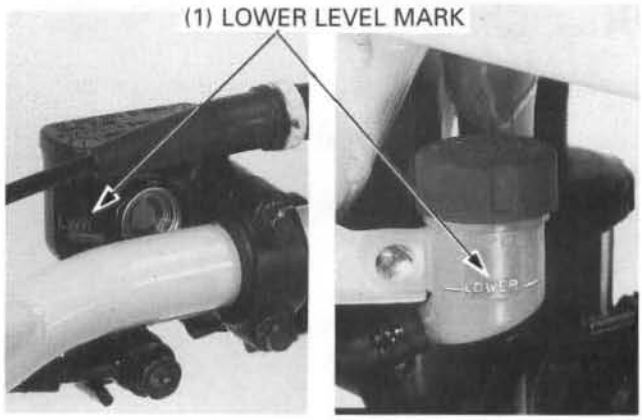
- Never install a new drive chain on worn sprockets or a worn chain on new sprockets.
  Installing a new part (chain or sprocket) with a worn part, will cause the new part to wear rapidly.



Brake Fluid

Fluid Level Inspection

Front/Rear:
Check the front and rear brake reservoir fluid level.
If the level is near the lower level mark, check the brake pad wear (page 3-13).

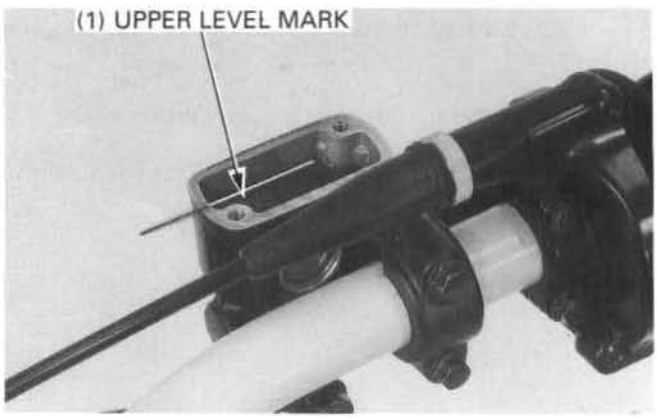


Fluid Filling

CAUTION

- **Brake fluid will damage painted, plastic or rubber parts. Place a rag over these parts whenever the system is serviced.**
- **Do not mix different types of fluid, as they are not compatible.**

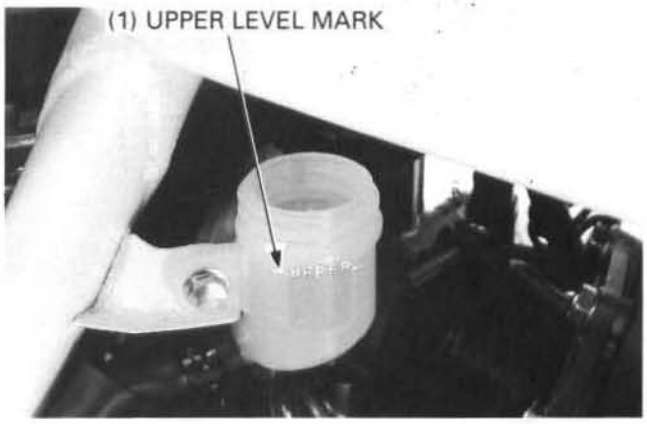
Front:
Remove the cover, diaphragm and plate and fill the reservoir with DOT 3 or 4 brake fluid to the upper level mark.Install the plate, diaphragm and cover, Tighten the screws securely.
Check the entire system for leaks.



Rear:
Remove the cap, diaphragm and plate and fill the reservoir with DOT 4 brake fluid to the upper level mark.
Install the plate, diaphragm and cap.
Tighten the cap securely.
Check the entire system for leaks.

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

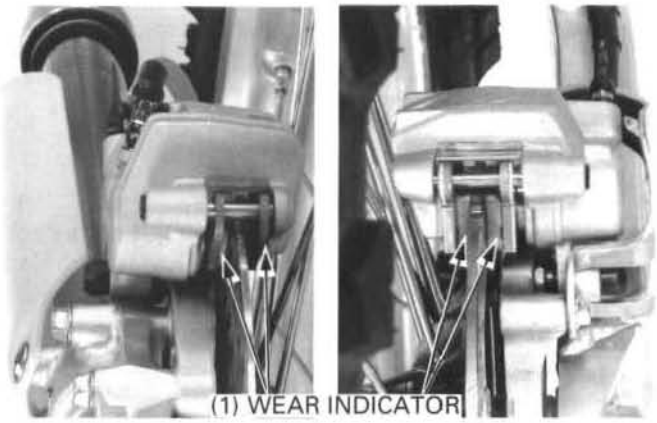
Replace the hose and fittings as required.



Brake Pad Wear

Inspect the pads visually from under the caliper to determine the pad wear.

If either pad is worn anywhere to a thickness of 1 mm (0.04 in), both pads must be replaced.



Brake System

Lever Position Adjustment

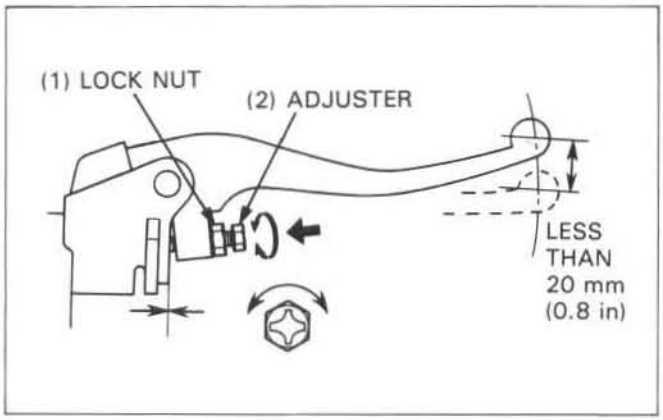
The brake lever position can be adjusted by loosening the lock nut and turning the adjuster.

Turning the adjuster clockwise moves the brake lever farther away from the grip; turning the adjuster counterclockwise moves the brake lever closer to the grip.

After adjustment, hold the adjuster and tighten the lock nut to the specified torque.

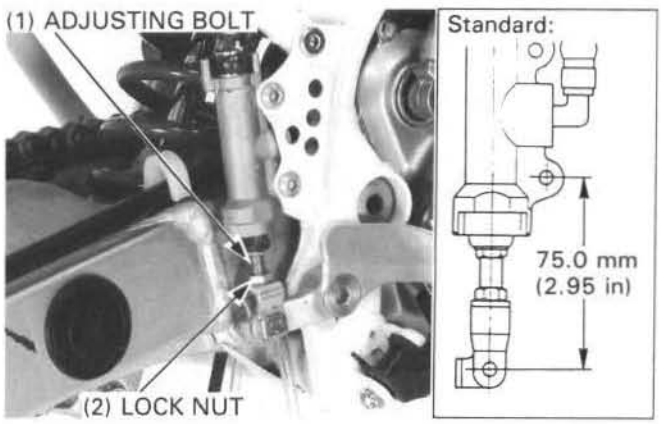
Torque: 6 N·m (0.6 kg-m, 4.3 ft-lb)

If the brake lever free play exceeds 20 mm (0.8 in), there is air in the system that must be bled.
Refer to page 13-3 for brake system bleeding.



NOTE

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



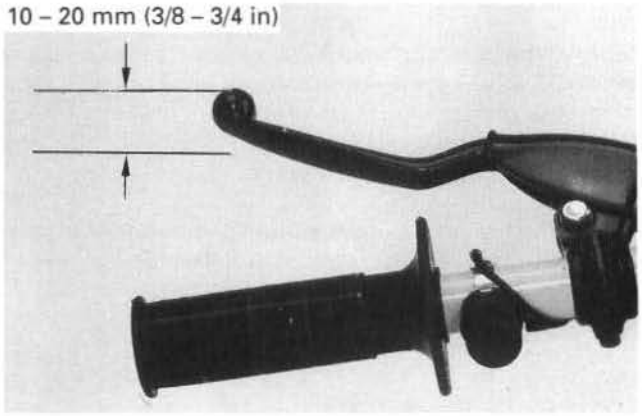
Brake Pedal Height

Adjust the brake pedal to the desired height by loosing the lock nut and turning the pedal height adjusting bolt.
Tighten the lock nut.

Clutch System

Measure the clutch free play at lever end.

Free Play: 10 – 20 mm (3/8 – 3/4 in)



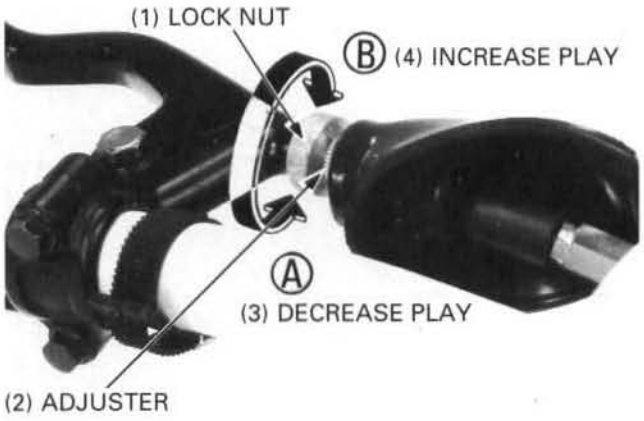
Minor adjustments are made at the adjuster on the lever.

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.

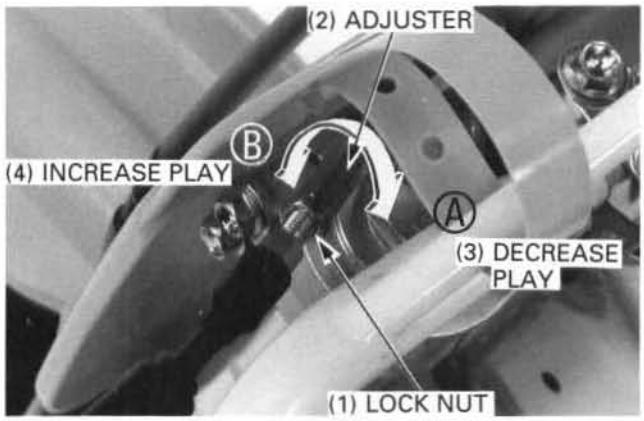
Tighten the lock nut, install the dust cover and make a major adjustment, as follows.



Major adjustments are made with the in line cable adjuster located behind the front number plate.

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

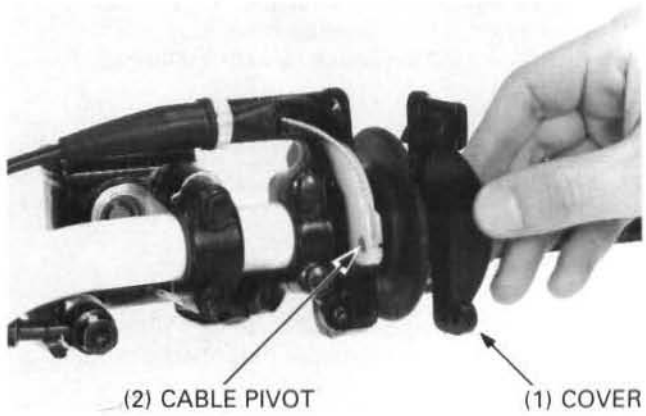
If proper free play connot be obtained using both procedures or the clutch slips during the test ride, disassemble and inspect the clutch (See section 9).



Control Cables

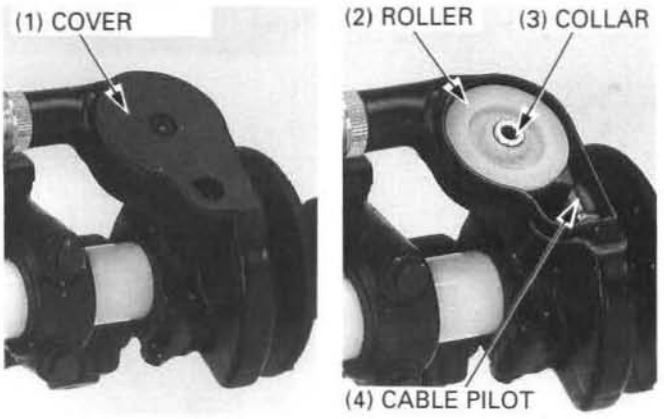
'92:
Remove the throttle cable end cover.

Disconnect the throttle cable upper end from the throttle grip.



After '92:
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.

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

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

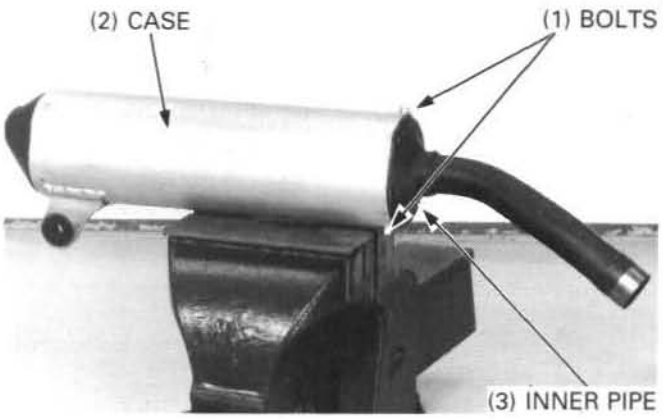
- **Be sure the throttle returns freely from fully open to fully closed automatically, in all steering positions.**

Expansion Chamber/Silencer

Silencer Glass Wool Replacement

Remove the silencer case (page 2-4).

Remove the silencer case bolts.
Pull out the inner pipe.



NOTE

- Hold the mounting tab of the silencer case gently in a vise protected with a shop towel or soft jaws.

Remove the glass wool packing.

Remove the carbon deposits from the inner pipe using a wire brush.

Install the new glass wool packing material.

NOTE

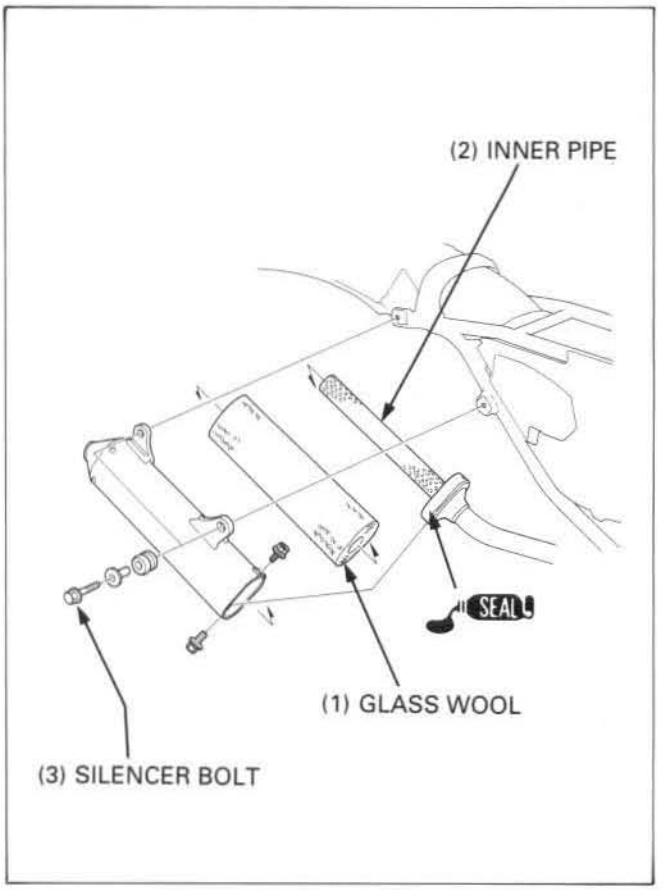
- Be careful not to damage the glass wool packing.

Apply muffler sealant (high-temperature silicone) in the area shown.

Insert the inner pipe and packing into the silencer case and align the bolt holes.

Install an tighten the silencer case bolts.

Wipe off the excess sealant.



Suspension

Front:
Check the action of the fork by compressing the suspension several times.

Check the entire fork assembly for signs of leaks, damage or loose fasteners.

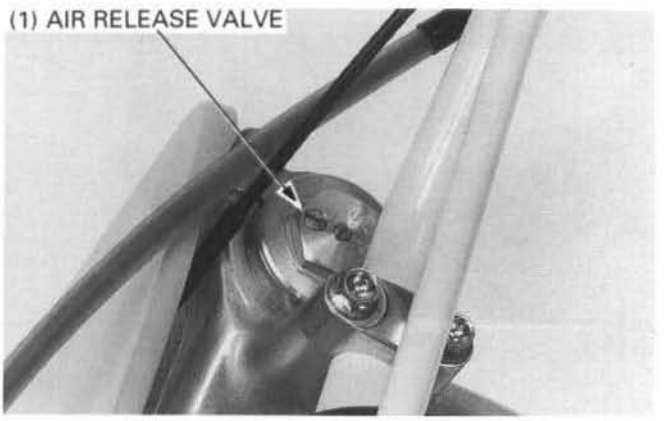
Make sure that the fork protectors and dust seals are clean and not packed with mud and dirt.
Remove any dirt that has accumulated on the bottom of the fork seals.

Replace any component which is unserviceable.
See section 11 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.



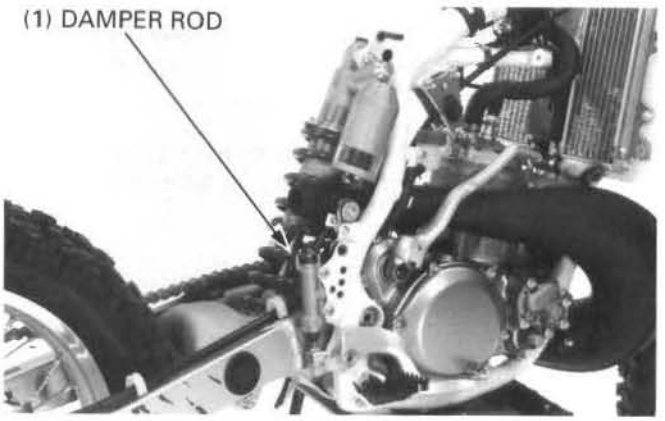
Rear:
Compress and release the rear suspension several times to check for proper operation.

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

Remove the sub-frame (page 2-5).

Check that the damper rod is not bent and no oil is leaking from the seals.

Check that the shock spring preload adjusting/lock nuts are tightened securely.



Swingarm/Shock Linkage

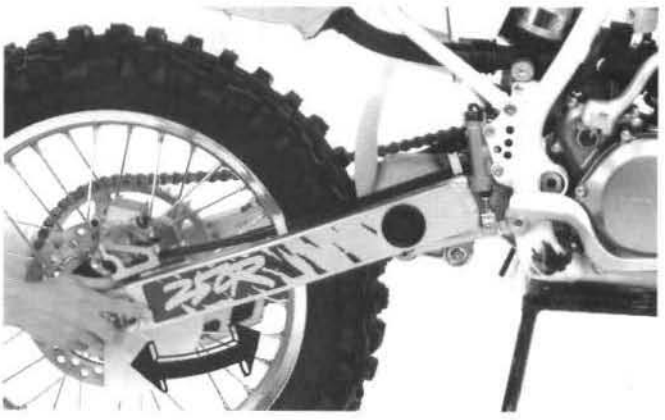
Place the motorcycle on a work stand or box to raise the rear wheel off the ground.

Move the rear wheel sideways with force to see if the swingarm bearings are worn.

Replace the bearings if excessively worn (page 12-28).

Check that the shock linkage, spherical bearing and needle bearings are not damaged.

Disassemble, clean, inspect the swingarm and shock linkage pivot bearings and related seals each 3 races or about 7.5 hours of running (page 12-24 through 12-29). Lubricate and reassemble.



Nuts, Bolts, Fasteners

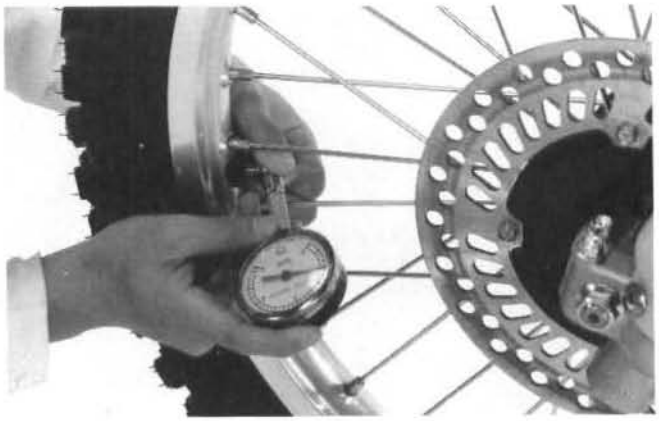
Check that all chassis nuts and bolts are tightened to their correct torque values (page 1-12).

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

Wheels/Tires

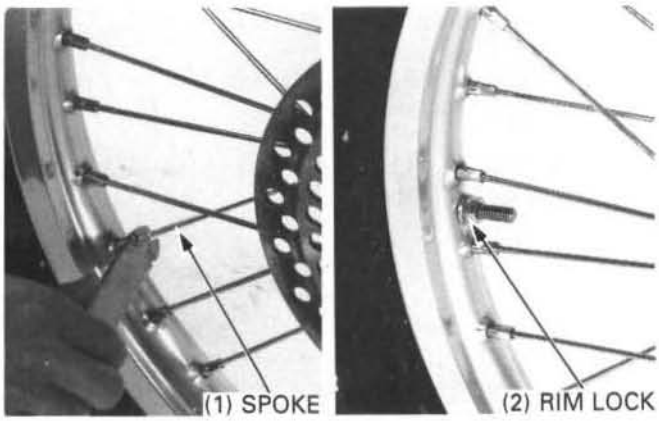
Check the tire for cuts, embedded objects, or excessive wear.

Tire Pressure (Front and Rear): 100 kPa (1.0 kg/cm², 15 psi)



Inspect the wheel rims and spokes for damage.
Tighten any loose spokes and rim locks to the specified torque.

Torque: Spokes: 3.8 N·m (0.38 kg-m, 2.8 ft-lb)
Rim lock: 13 N·m (1.3 kg-m, 9.5 ft-lb)



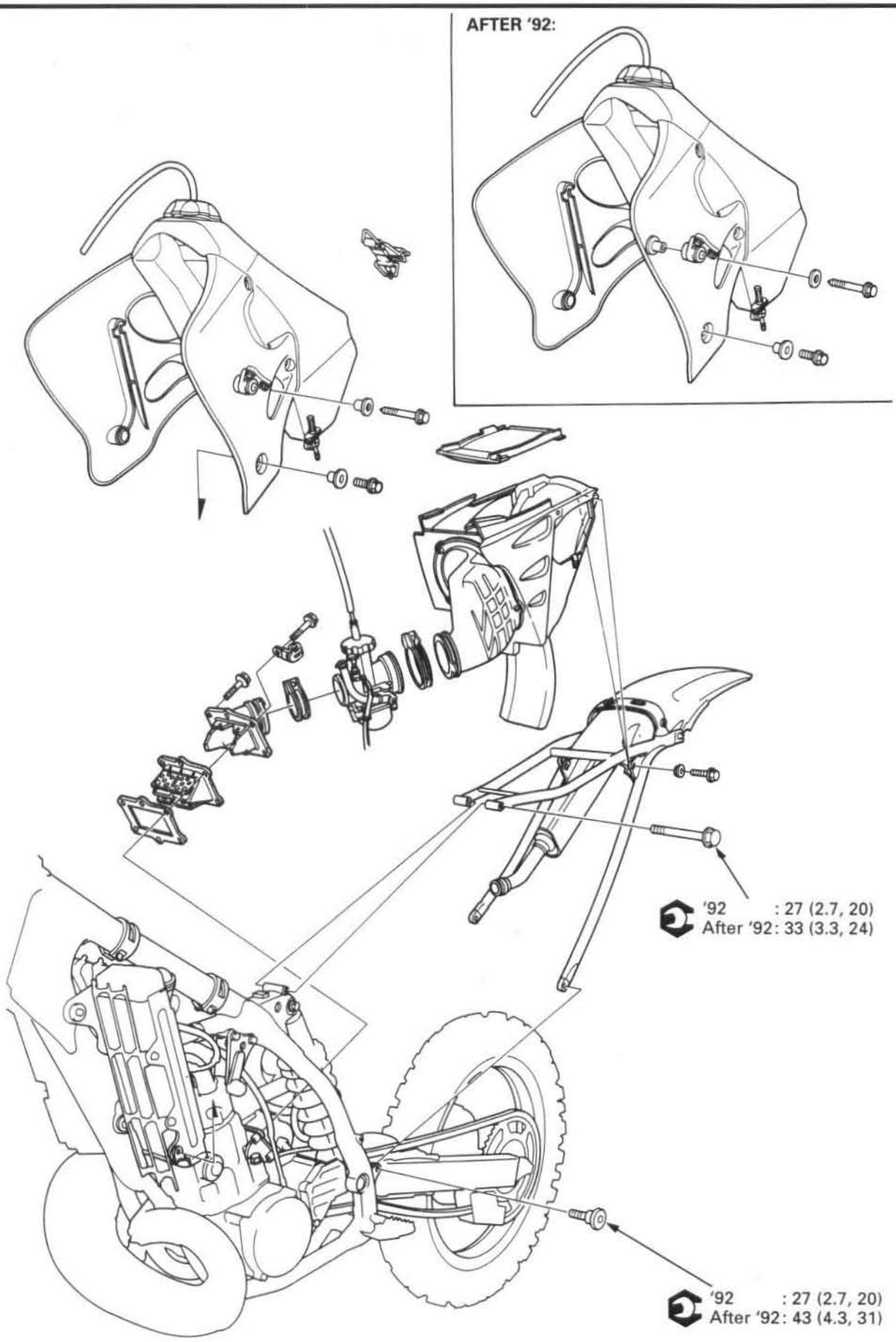
Steering Head Bearings

Raise the front wheel off the ground and check that the fork moves freely from stop to stop.

Check that the control cables do not interfere with fork movement.

If the fork moves unevenly, binds or has vertical movement, adjust the steering head bearing adjustment nut (page 11-27).
If excessive play has developed, check the steering stem for cracks.

MEMO


AFTER '92:
'92 : 27 (2.7, 20)
After '92: 33 (3.3, 24)
'92 : 27 (2.7, 20)
After '92: 43 (4.3, 31)

4. Fuel System

Service Information

General

⚠WARNING

- **Gasoline is extremely flammable and is explosive under certain conditions. Work in a well ventilated area with the engine stopped. Do not smoke or allow flames or smoke in the work area or where gasoline is stored.**
- **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.**

- Refer to section 2 for fuel tank removal and 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 the suitable container under the carburetor, 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 piece of 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 float bowl may cause clogged jets, resulting in hard starting or poor driveability.

Specifications

Item		Specification
Fuel tank capacity		7.5 liter (2.0 US gal, 1.6 Imp. gal)
Recommended fuel		Premium or unleaded gasoline (Octane rating 92 – 100), RON
Recommended engine oil		PRO Honda HP2 2-stroke oil or equivalent
Fuel/oil mixing ratio		32 :1
Carburetor identification mark	'92:	PJ28E
	'93:	PJ28G
	After '93:	PJ28H

Item		Specification
Carburetor type		Piston valve
Venturi diameter		38 mm (1.49 in)
Float level		16.0 mm (0.63 in)
Air screw initial opening	'92, After '93:	2 turns out
	After '92:	1-3/4 turns out
Jet needle		R1370NS-3
Main jet		#175
Slow jet		#55
Jet needle clip position		3rd groove

Torque Values

Sub-frame mounting bolt '92: 27 N•m (2.7 kg-m, 20 ft-lb)
(Upper) After'92: 33 N•m (3.3 kg-m, 24ft-lb)
(Lower) After'92: 43 N•m (4.3 kg-m, 31ft-lb)

Tool

Float level gauge 07401 – 0010000

Troubleshooting

Engine Won't Start
- No fuel to carburetor
  - Fuel filter clogged
  - Fuel tube clogged
  - Fuel 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)

Engine Stall, Or Runs Poorly
- Faulty spark plug or ignition malfunction
- Low compression
- Rich mixture
- Lean mixture
- Air cleaner clogged
- Intake air leak
- Fuel contaminated/deteriorated

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

Minor Carburetor Adjustment

(Idle Mixture and Idle Speed)

To adjust the idle speed, warm up the engine and push the choke/idle speed knob down to the off position. Turn the choke/idle speed knob clockwise to decrease engine speed, or counterclockwise to increase engine speed.

NOTE

- For a stable idle speed, turn the choke/idle speed knob at least 6 turns (36 clicks) counterclockwise from the fully seated position.

Idle mixture can be adjusted by turning the air screw; turning it in richens the mixture, while turning it out leans the mixture.

To adjust: turn the air screw in until it seats lightly, then back it out to the initial setting.

Standard: '92: 2 turns out
After'92: 1-3/4 turns out

Start the engine.
When the engine is warm enough to run without the choke, make fine adjustments in the air screw setting until the engine revs up smoothly.

Test the adjustment by accelerating away from a slow corner.
Readjust as necessary.
A combination of a slightly rich mixture and an idle speed that's set too high may lead to plug fouling when shutting off for tight sections of the track.
Reduce idle speed of this occurs.

Major Carburetor Adjustment

(For Temperature and Altitude)

1) Check that the carburetor is adjusted to the standard settings.

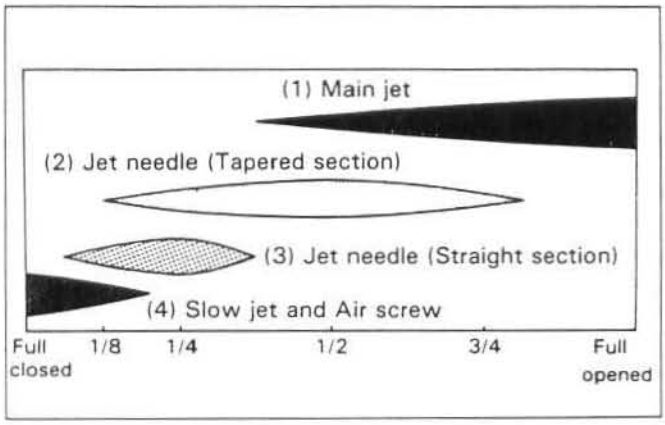
NOTE

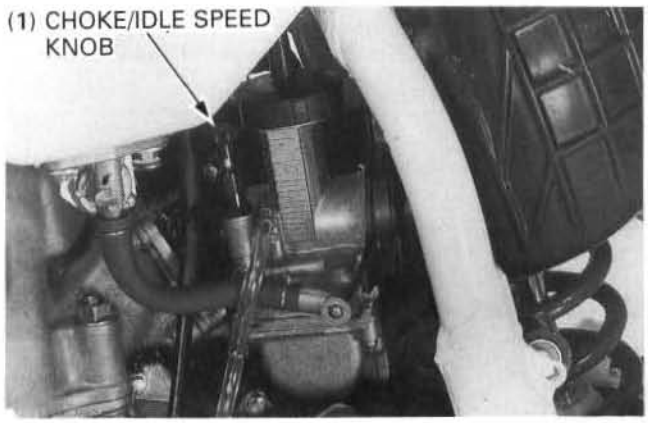
- For the following recommendations to be accurate, you must use these standard settings as a baseline.
- The standard settings are ideal for a motorcycle with an unmodified engine running under the following conditions:

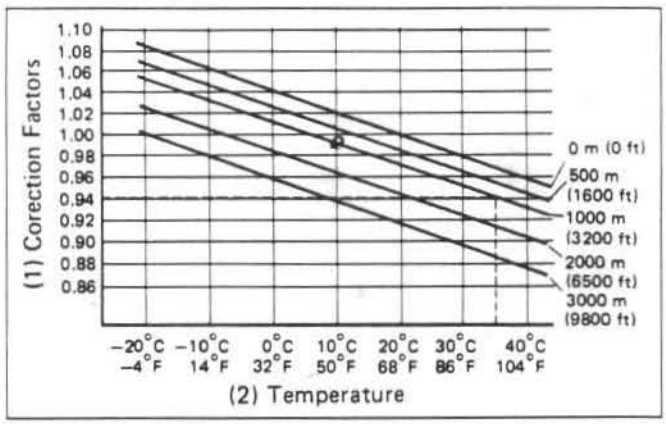
- 32-to-1 premix ratio with PRO Honda HP2 2-Stroke oil or equivalent.
- Altitude – sea level.
- Temperature – 20°C (68°F)

CAUTION

- **If you are using a different premix ratio of engine is modified, you must adjust the mixture accordingly to prevent engine damage.**







Standard Settings:
Float level — 16.0 mm (0.63 in)
Air screw initial setting — 2.0 turns out('92)
1-3/4 turns out (After '92)

Slow jet — #55
Main jet — #175
Jet needle — R1369 NS
Jet needle clip position — 3rd groove from top

2) Find your correction factor on the chart above.
Example: 1,000 meters (3,200 ft) altitude with an air temperature of 35°C (95°F). The correction factor is 0.94.

3) Using you correction factor, select the correct main and slow jets.
EXAMPLE: For a correction factor of 0.94, multiply the jet size by that number.

Main jet #175 x 0.94 = #165
Slow jet #55 x 0.94 = #52

4) Find your factor on the Jet Needle/Air Screw Chart and adjust the jet needle clip position and air screw opening as shown.

EXAMPLE: For a correction factor of 0.94, raise the needle clip one position and turn out the air screw one extra turn.

JET NEEDLE/AIR SCREW CHART					
CORRECTION FACTORS	1.06 or above	1.06–1.02	1.02–0.98	0.98–0.94	0.94 or below
JET NEEDLE CLIP POSITION	Lower clip 1 groove	STANDARD			Raise clip 1 groove
AIR SCREW OPENING	1 turn in	1/2 turn in	STANDARD	1/2 turn out	1 turn out

Jet needle clip setting
3rd groove from top minus 1-2nd groove. form top.

Air screw opening
2 + 1 turn = 3 turns out.

5) Start the engine and let it warm up for a few minutes. Adjust the idle speed, as necessary. Test ride the motorcycle. Does it perform poorly in any of the speed range? If so, make adjustments as required.

NOTE

- The correction factors will get you very close to the ideal jetting. However, because of differences in pressure and humidity, you may need to fine tune the carburetor for race day conditions.

- 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 rage of air screw adjustments is 1 to 3 turns out. If you must exceed these limits, you need the next smallest slow jet or the next largest slow jet. Select the correct slow jet (page 1-21) and begin again from step 4.

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

CAUTION

- **To prevent engine damage, always adjust the main jet (top end) before adjusting the jet needle (mid-range). Always jet one number on the rich side for safety.**

- 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.

6) Test ride again and readjust as required.

NOTE

- If you used the correction factors correctly, it shouldn't be necessary to adjust more than one increment, richer or leaner. 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.

Tuning For Special Condition

Once you've adjusted the carburetor for temperature and altitude,it shouldn't need major readjustment unless the race conditions change drastically. Exclusive of the correction factors, there are some unique atmospheric or race day situations 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 circumstance, 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 1-21.

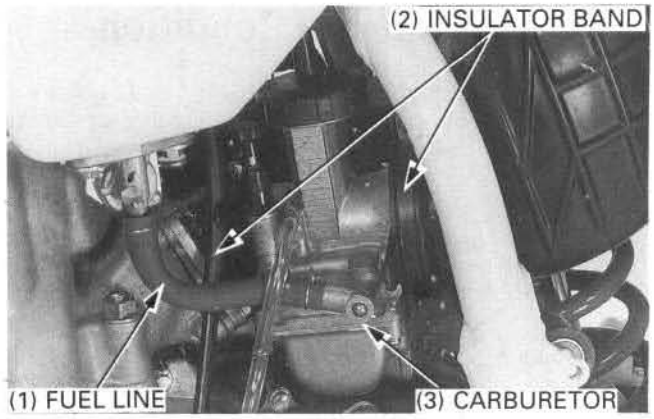
Carburetor Removal/Disassembly

Removal

⚠ WARNING

- **Gasoline is extremely flammable and is explosive under certain condition.**
- **Work in a well ventilated area with the engine stopped.**
- **Do not smoke or allow flames or sparks in the work area or where gasoline is stored.**

Turn the fuel valve OFF and disconnect the fuel line from the carburetor.

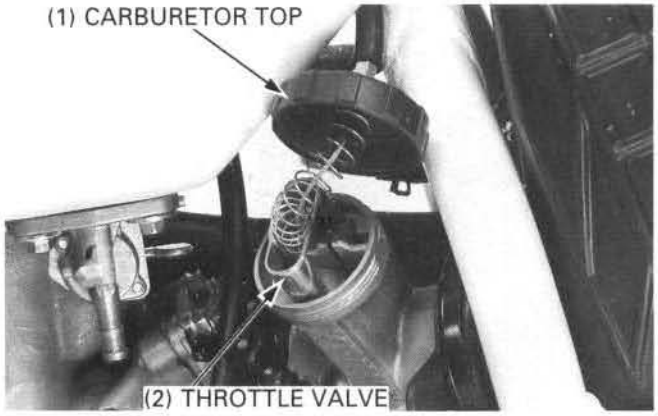


Turn the handlebar fully to the left.

Loosen the carburetor insulator band screw and connecting tube band screw, and lean the carburetor to the left.

Remove the carburetor top and pull out the throttle valve.

Remove the carburetor.

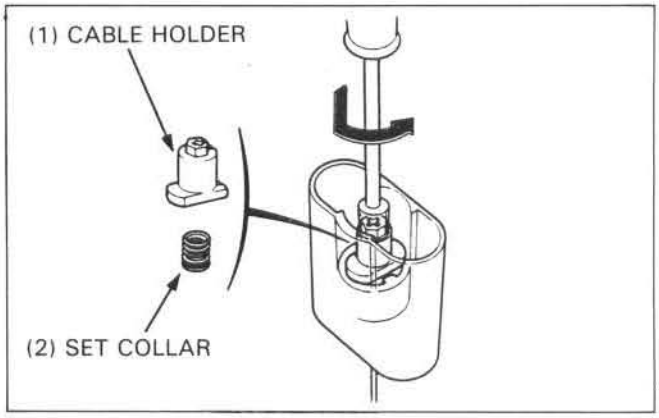


Disassembly

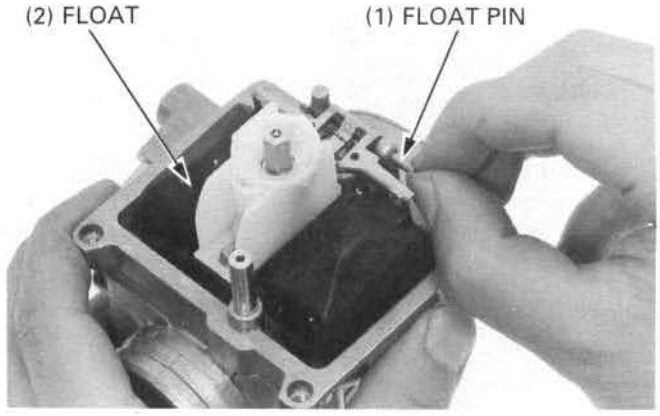
Remove the throttle cable from the cable holder.

Remove the throttle valve spring from the carburetor top.

Push down on the cable holder and turn it 90 degrees. Remove the cable holder, set collar, spring and jet needle.



Remove the following:
- Float chamber
- Float pin
- Float
- Float valve



Remove the following:
- Main jet
- Baffle plate
- Slow jet

CAUTION

- **Do no try remove the jet block from the carburetor body.**

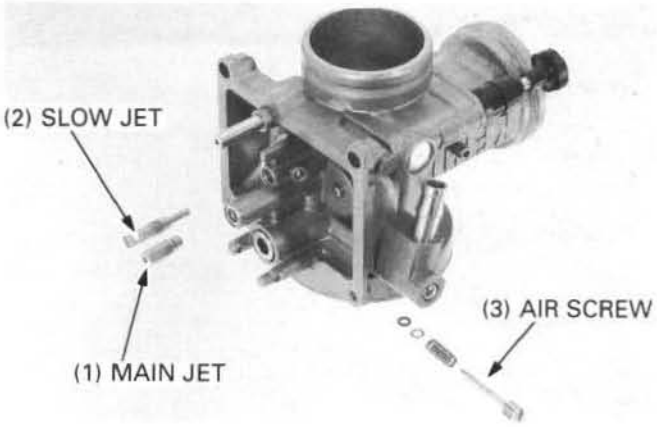
NOTE

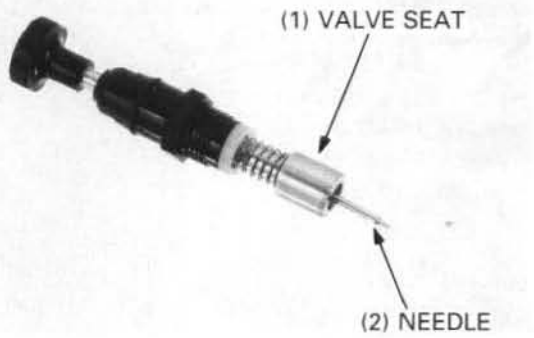
- Before removing the air screw, record the number of turns in until it seat lightly, so it can be returned to its original position.

- Air screw, spring, washer, O-ring

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

Check the valve seat and needle for damage.

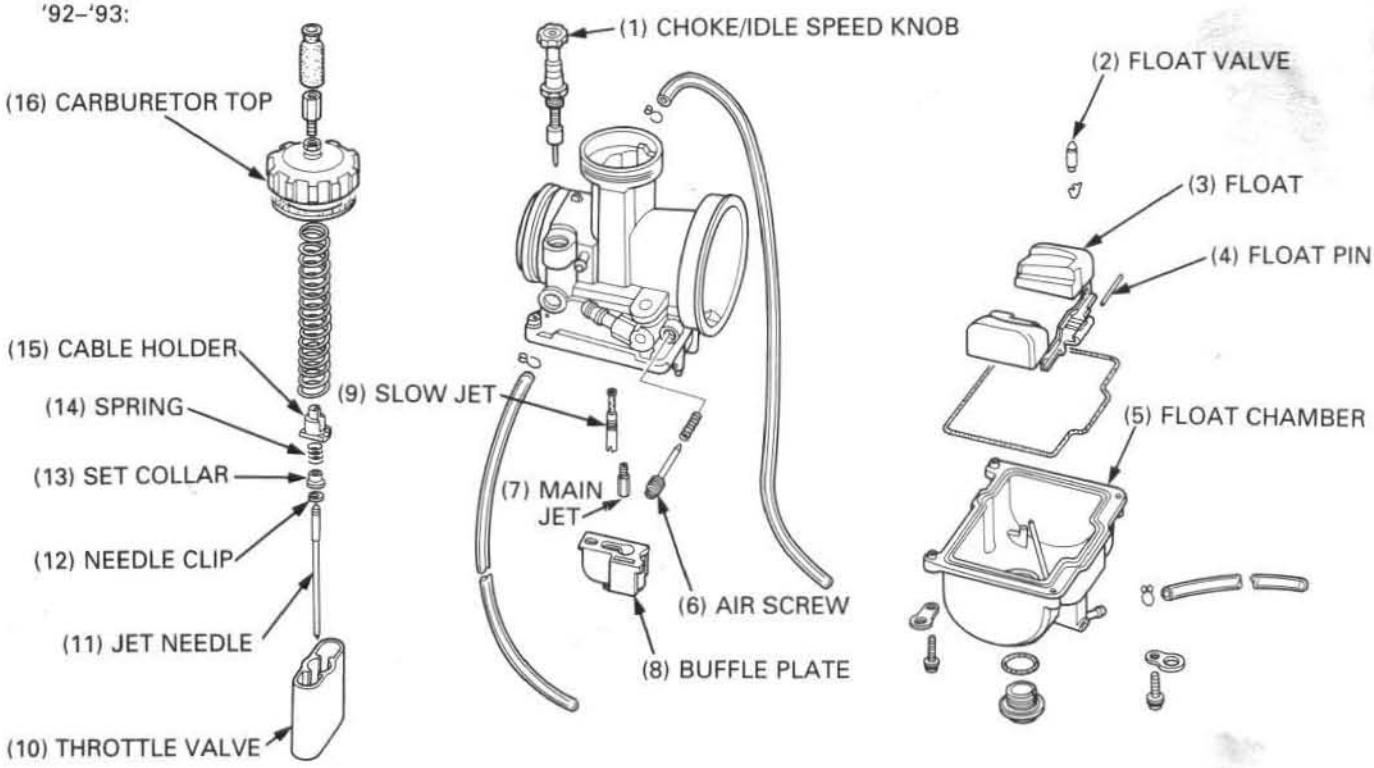




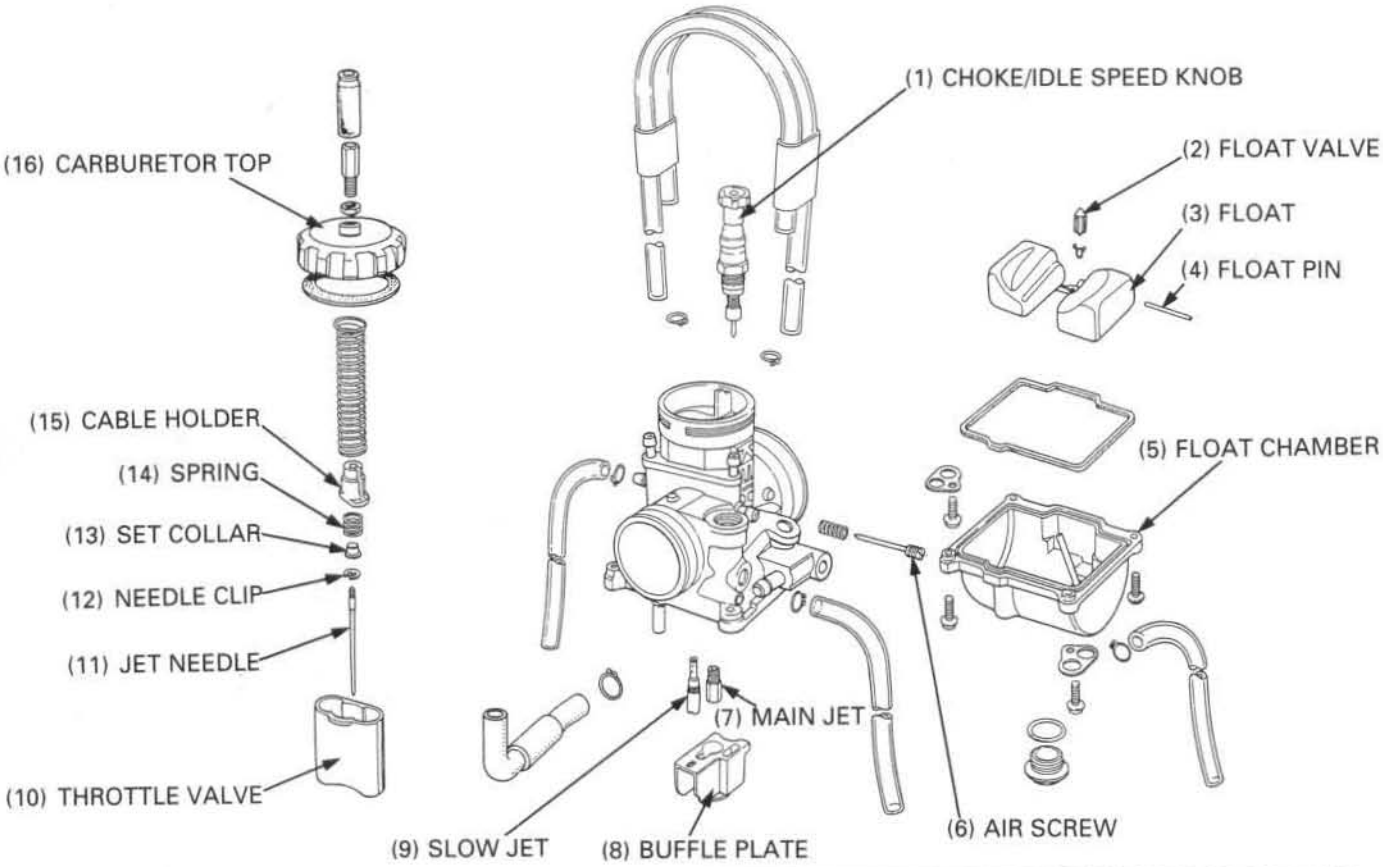
Carburetor Assembly/Installation

Assembly

'92–'93:



After '93:

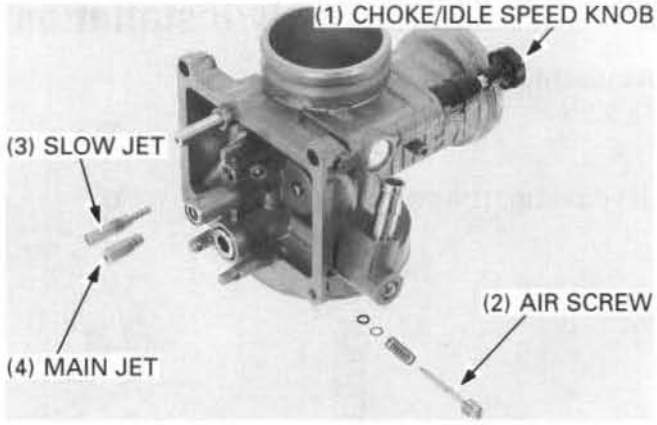


Install the following:
- Choke/idle screw knob
- O-ring, washer, spring, air screw

NOTE

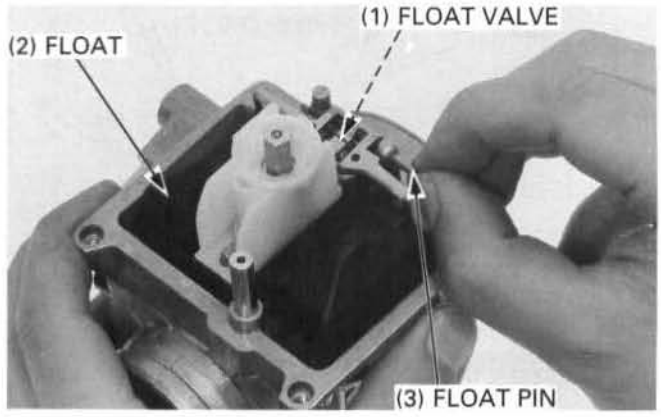
• Install the air screw and return it to its original position as noted during removal.

- Slow jet
- Baffle plate
- Main jet



Install the float valve, float and float pin.

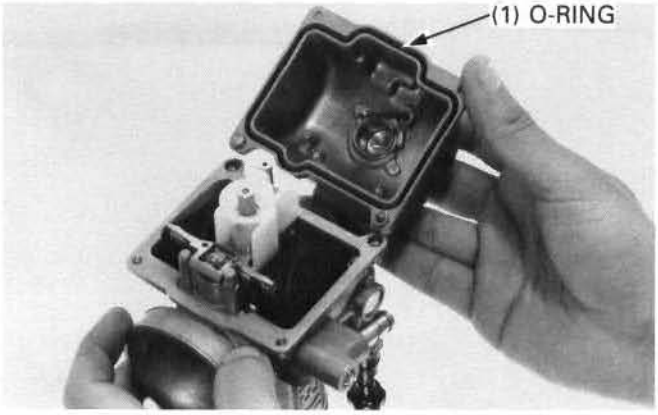
Measure the float level. (Specification; page 1-6)



Install a new float chamber O-ring.
Install the float chamber and tighten the screws securely.

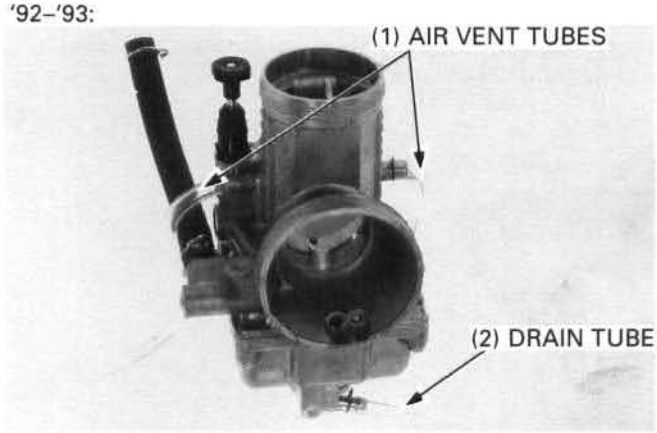
NOTE

- Install the air vent tube guide with the screw.

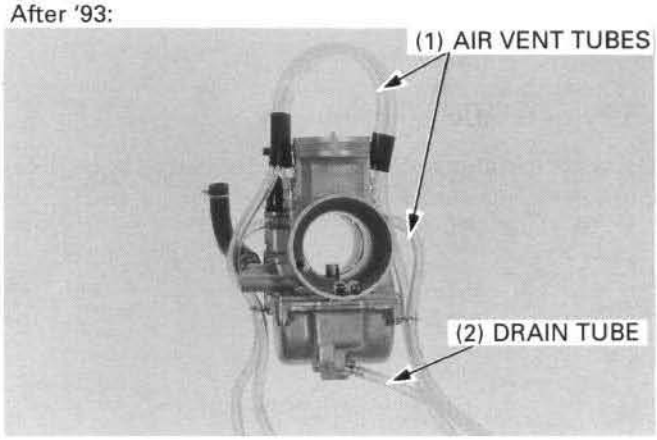


Install the carburetor tubes as shown.

'92–'93:



After '93:



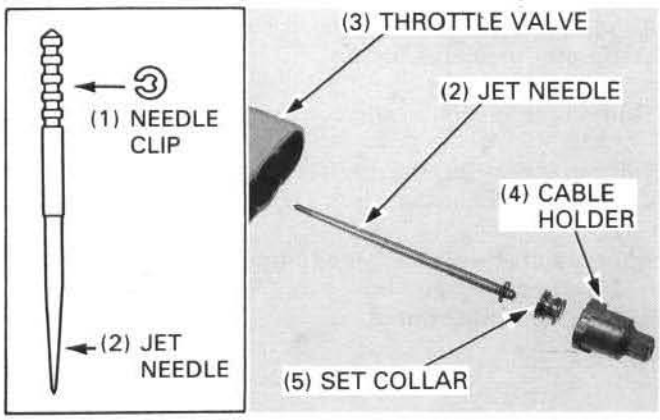
Install the needle clip on the jet needle.

Standard Clip Position: 3rd groove

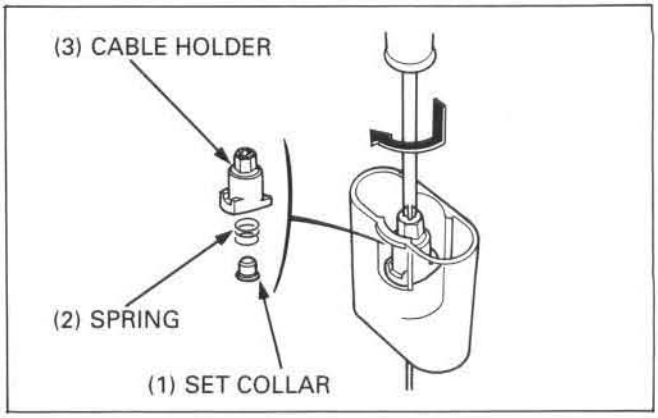
Assemble the set spring and collar and cable holder.

Install the jet needle into the throttle valve.

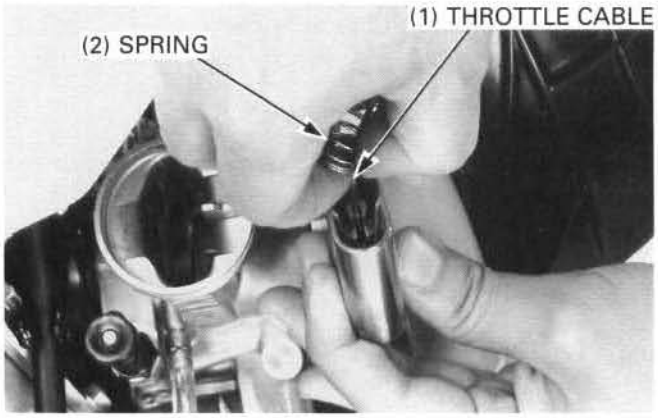
Install the set collar over the jet needle and clip, install the cable holder.



Push the cable holder in and turn it 90 degrees.



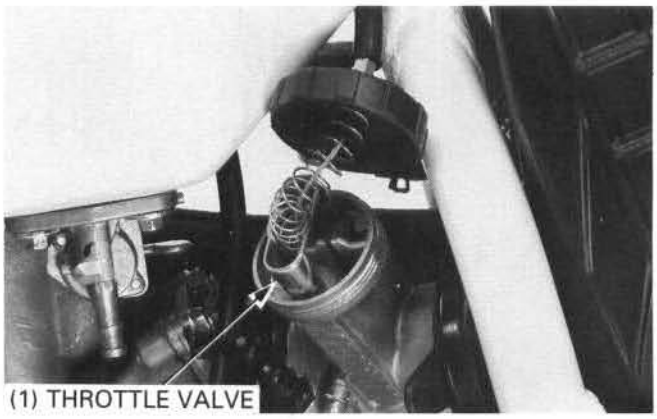
Assemble the throttle cable, carburetor top, rubber cap and throttle valve spring.



Installation

Loosely install the carburetor.

Move the carburetor to the left and slide the throttle valve into the carburetor body.

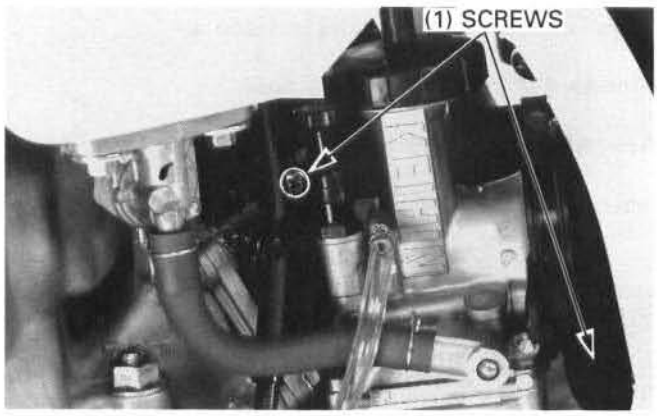


Align the lug on the carburetor with the groove of the carburetor insulator band.

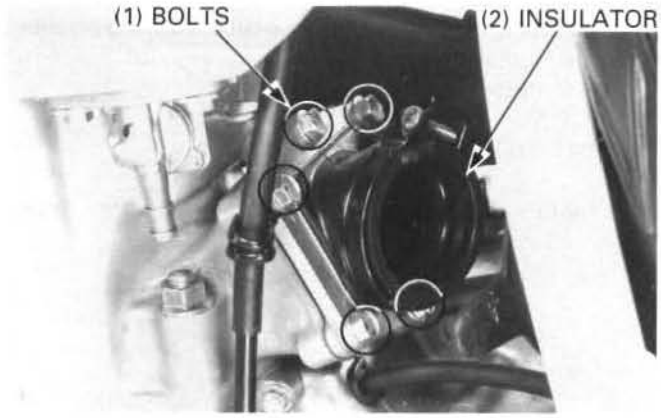
Tighten the insulator and connecting tube band screws.

Tighten the carburetor top securely.
Connect the fuel tube.

After installation, check the following:
- Throttle grip free play
- Air screw adjustment



Reed Valve



Removal

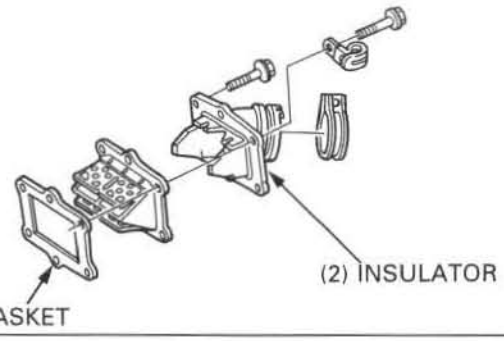
Remove the carburetor (page 4-6)

Remove the following:
- Insulator mounting bolts
- Insulator
- Reed valve
- Gasket

CAUTION

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

'92-'93:



Installation

Check the insulator and gasket for damage and replace them if necessary.

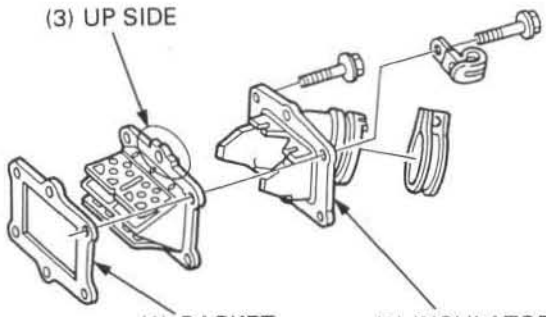
Reed valve installation is in the reverse order of removal.

NOTE

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

After '93:

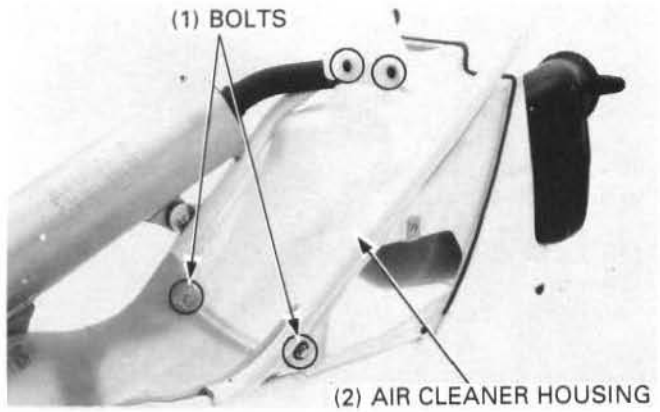
After '93:



NOTE

- At installation, install the reed valve with it tab facing up.

Air Cleaner Housing



Removal

Remove the sub-frame (page 2-5)

Remove the air cleaner housing mounting bolts and the air cleaner housing.

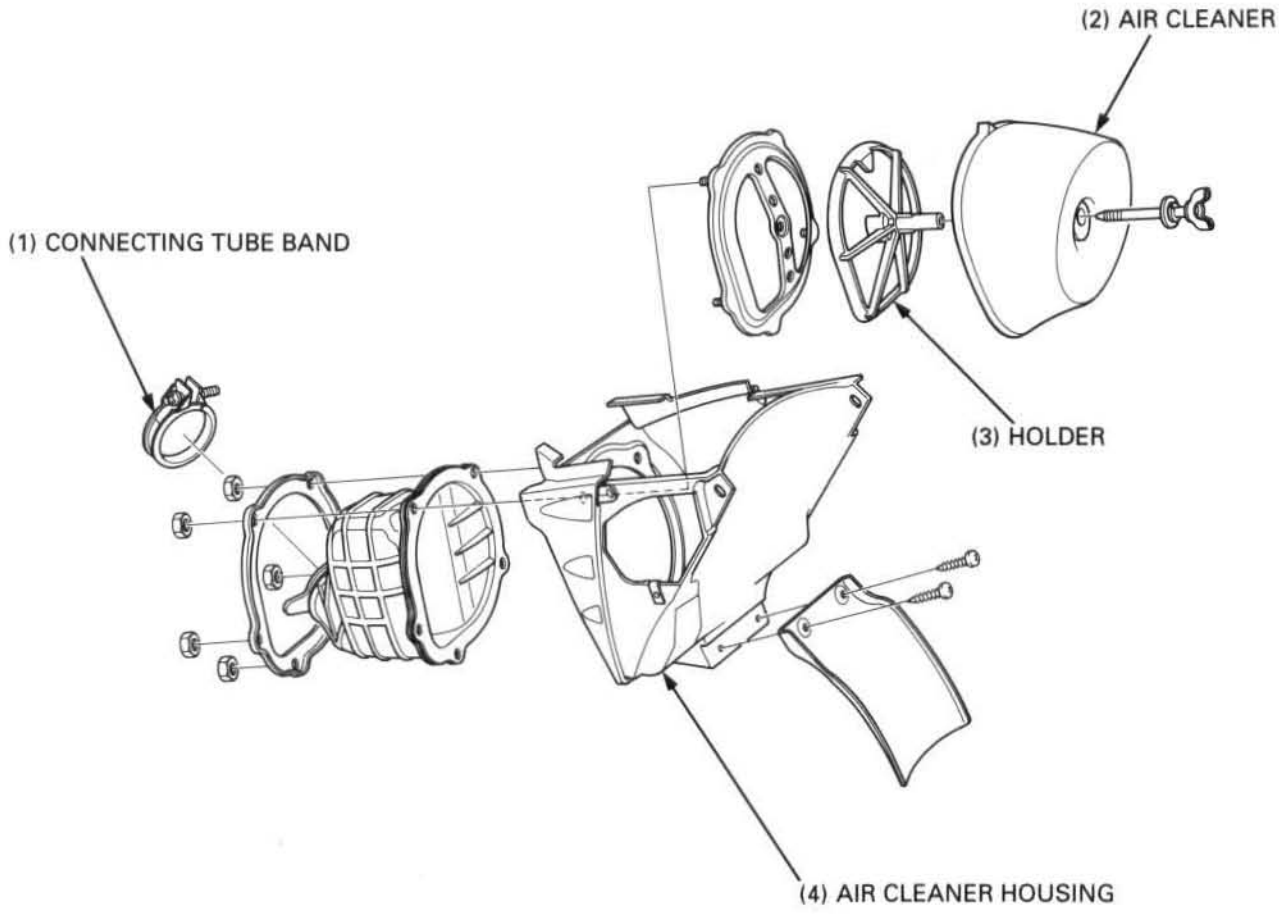
For air cleaner service, see page 3-6.

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

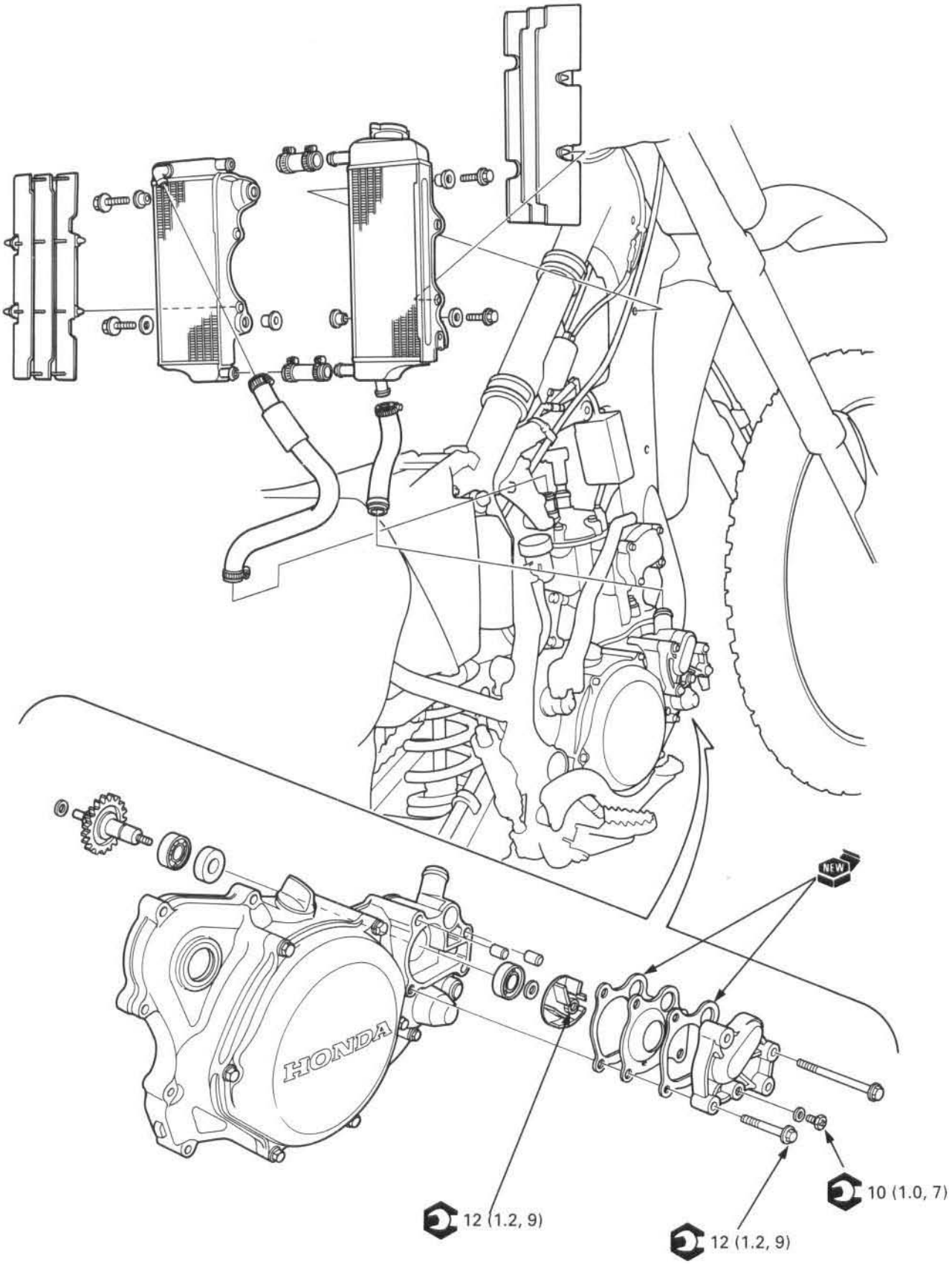
Remove the carburetor connecting tube from the air cleaner housing and seal thoroughly if any sign of inadequate sealing is defected.

Installation

Air cleaner housing installation is in the reverse order of removal.



MEMO


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

5. Cooling System

Service Information

General

⚠ 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 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 of coolant and can die if they drink it.**

- All cooling system services can be done with the engine in the frame.
- To service the water pump seal, necessary to remove the right crankcase cover (Section 9).
- After servicing the system, check for leaks with a cooling system tester.
- Recycle used coolant in an ecologically correct manner.

Specifications

Item		Specifications
Recommended coolant		Use only a high quality ethylene glycol based anti-freeze containing corrosion inhibitors specially recommended for use in aluminum engine. A 50/50 mixture of anti-freeze and water is recommended for most operating conditions. (See anti-freeze container label for other mixture ratios)
Coolant capacity	At change	1.10 liter (1.16 US qt, 0.97 Imp qt)
	At disassembly	1.15 liter (1.21 US qt, 1.01 Imp qt)
Radiator cap relief pressure		110 – 140 kPa (1.1 – 1.4 kg/cm², 16 – 20 psi)

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 or GN – AH – 065 – 415 (U.S.A. only)
Bearing remover set, 12 mm	07936 – 1660001 – Not available in U.S.A.
– Remover handle assembly	07936 – 1660101
– Remover weight	07741 – 0010201 or 07936 – 3710200

Common

Driver	07749 – 0010000
Attachment, 28 x 30 mm	07946 – 1870100
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

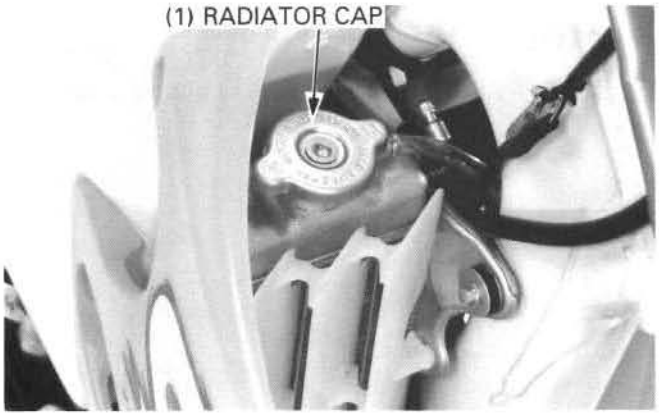
Coolant Leaks
- Faulty water pump oil seal
- Deteriorated water seal
- Faulty radiator cap
- Damaged or deteriorated gaskets
- Loose hose connection or clamp
- Damaged or deteriorated hoses
- Damaged radiator

Coolant Replacement

⚠ WARNING

- **Wait until the engine is cool before servicing the cooling system. Removing the radiator 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 at the water pump, and drain the coolant.

Check the drain bolt sealing washer is in good condition, then install and torque it.

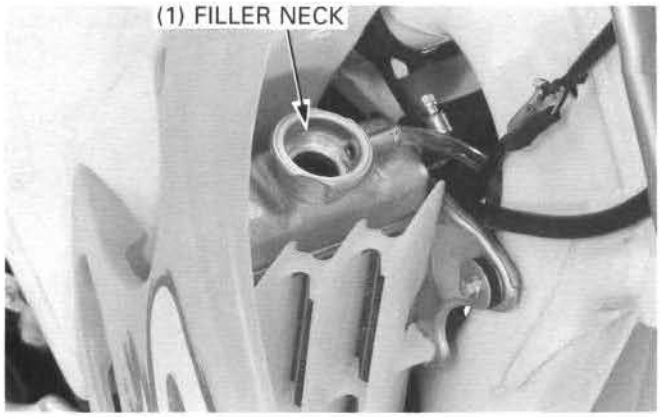
Torque: 10 N·m (1.0 kg-m, 7 ft-lb)

Add the recommended coolant mixture to the radiator filler neck (page 1-6).

Capacity: 1.10 liter (1.16 US oz, 0.97 Imp oz)

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

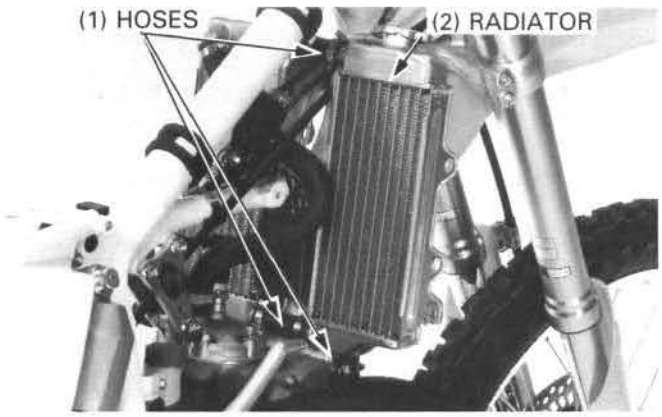
Remove the expansion chamber (page 2-4).

Drain the radiator coolant.
Remove the radiator upper joint hose.

NOTE

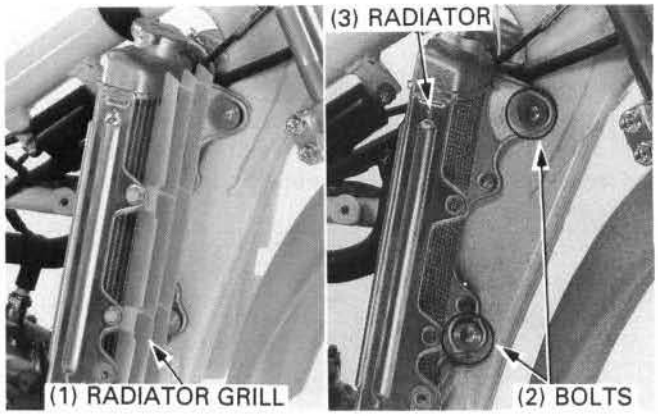
- **Note the direction of the hose clamps for reinstallation.**

Loosen the radiator hose clamp and remove the following hoses:
- Radiator-to-cylinder head
- Radiator-to-water pump

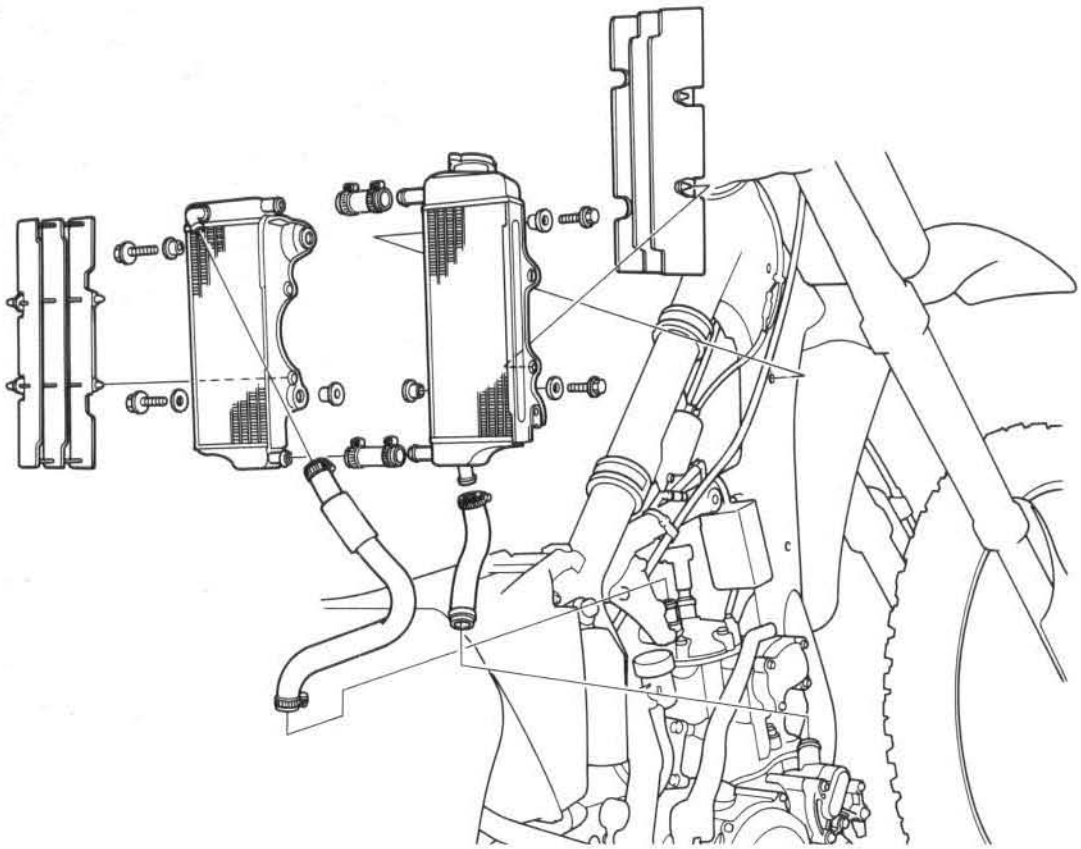


Remove the radiator shroud and grill.

Remove the radiator mounting bolts and radiator.



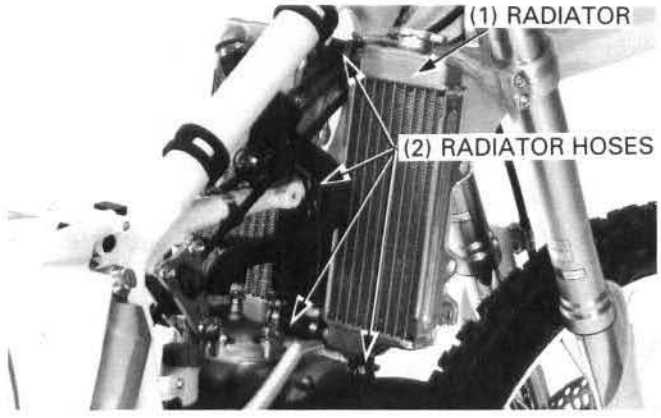
Installation



Installation is essentially the reverse order of removal.

Add the recommend coolant mixture up to the filler neck and bleed the air (page 5-3).

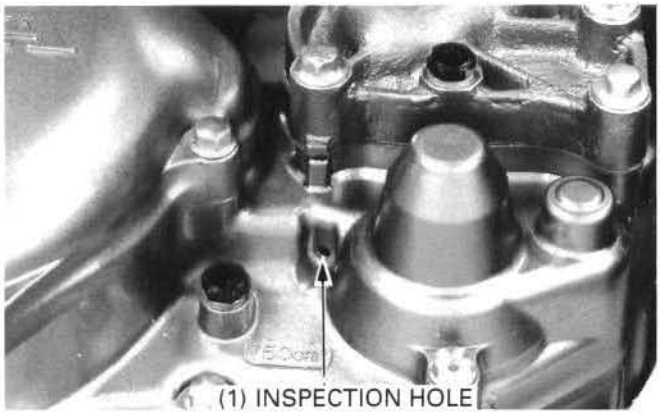
After installation, check the radiator and radiator hoses for leaks.



Water Pump

Water Seal Inspection

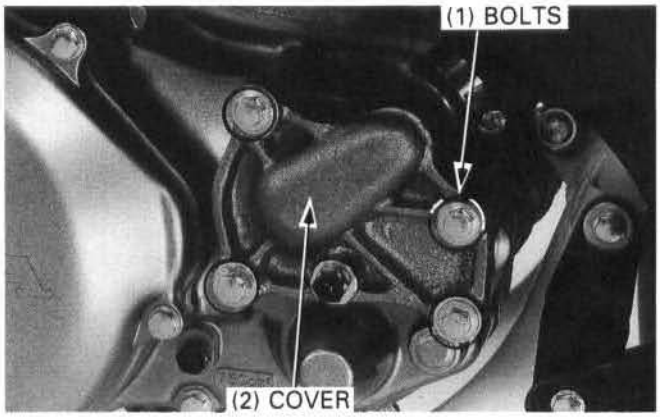
Check the inspection hole for signs of coolant leakage. Replace the water seal if coolant is leaking (page 5-6).



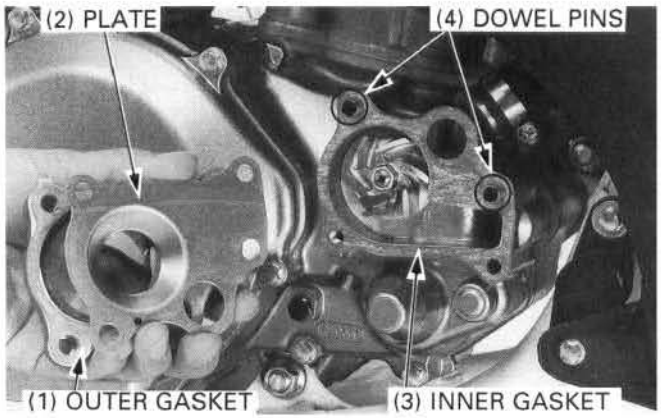
Disassembly

Drain the radiator coolant (page 5-3).

Remove the following:
- Water pump cover bolts and cover

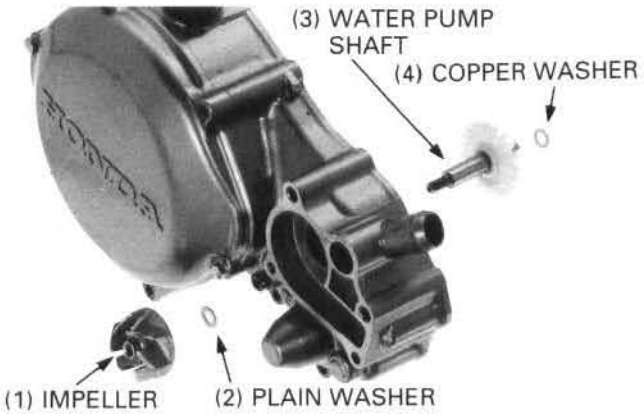


- Outer gasket
- Plate
- Inner gasket
- Dowel pin

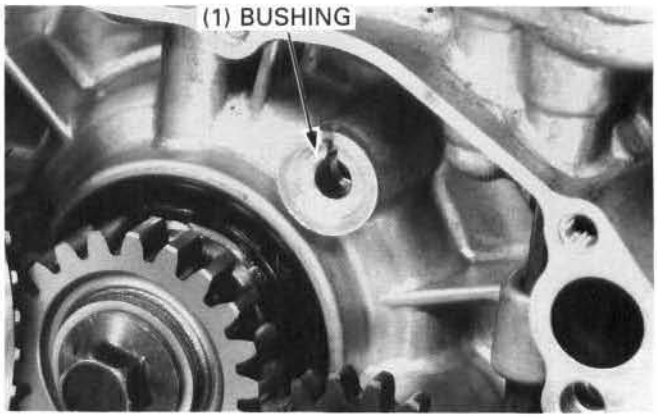


- Impeller and plain washer
- Right crankcase cover (page 9-2)
- Copper washer
- Water pump shaft from the right crankcase cover

Check the water pump shaft and gear to be sure they are not bent or damage.



Check the water pump shaft bushing in the right crankcase for wear or damage.

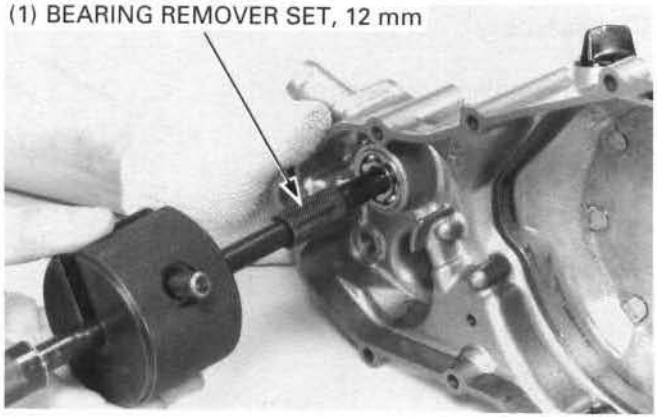


Bearing/Water Seal Replacement

Remove the bearing using the special tools.

S. TOOL

Bearing remover set, 12 mm	**07936 – 1660001 Not available in U.S.A.**
– Bearing remover handle	**07936 – 1660101 Not available in U.S.A.**
– Bearing remover, 12 mm	**07936 – 166010A**
– Remover handle	**07936 – 3710100**
– Remover weight	**07741 – 0010201 or 07936 – 3710200**

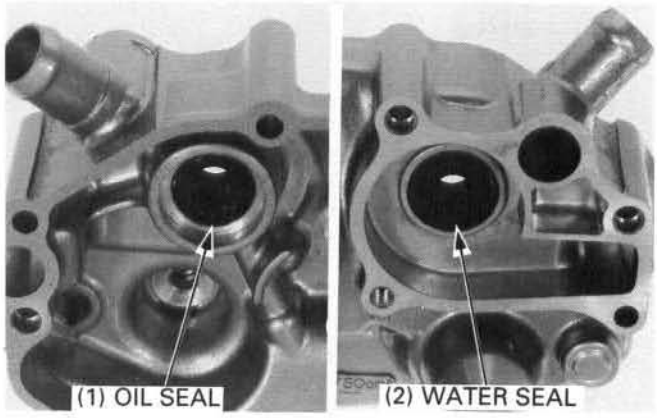


Remove the oil seal.

Drive out the worn or damaged water seal from the right crankcase cover using special tools.

S. TOOL

Driver	**07749 – 0010000**
Pilot, 17 mm	**07746 – 0040400**



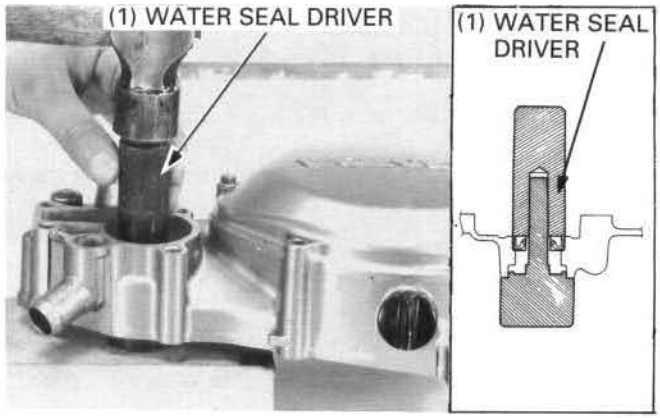
Install the water seal driver into the right crankcase cover as shown.
Drive in the new water seal.

S. TOOL

Water seal driver	**07945 – KA30000 or**
Mechanical seal installer	**GN – AH – 065 – 415 (U.S.A. only)**

NOTE

- Do not damage the water seal lips during installation.

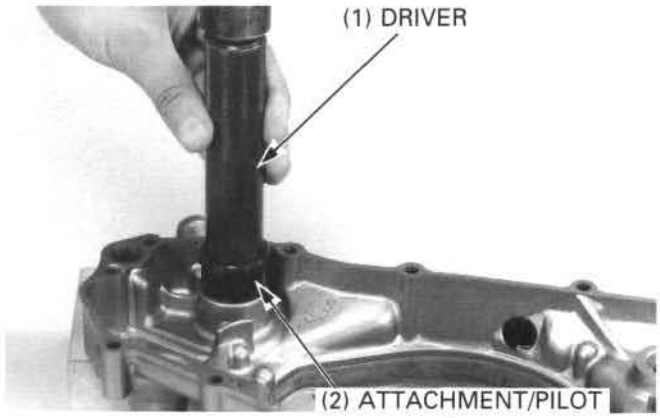


Install the new oil seal.

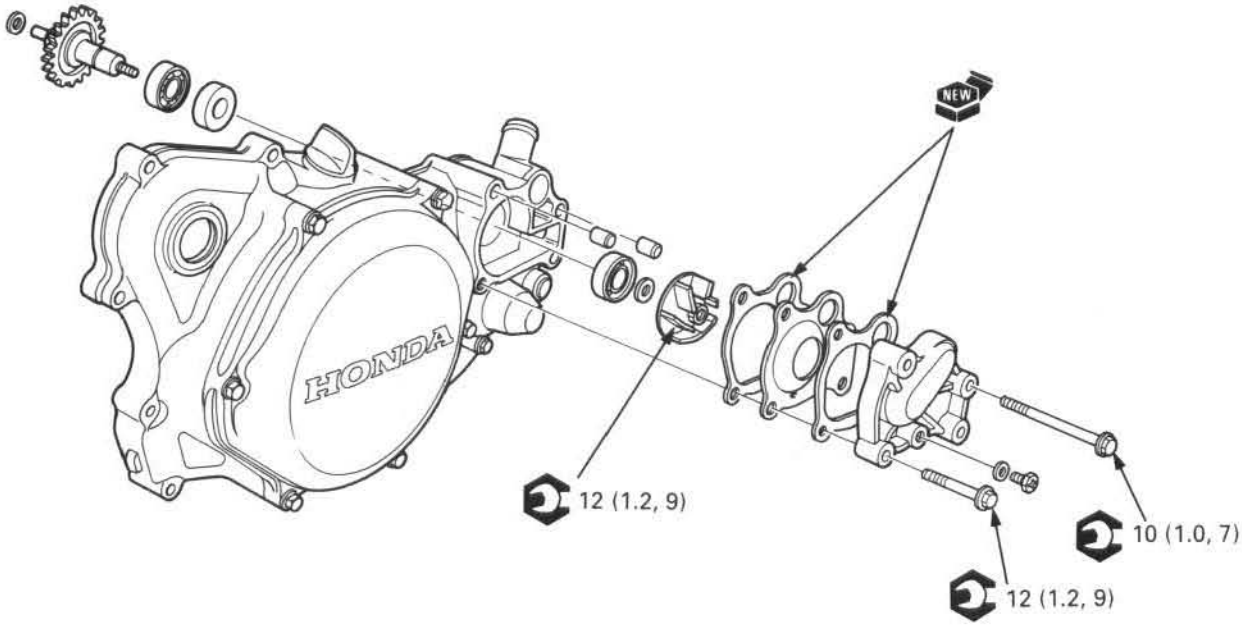
Drive in the new bearing into the right crankcase cover.

S. TOOL

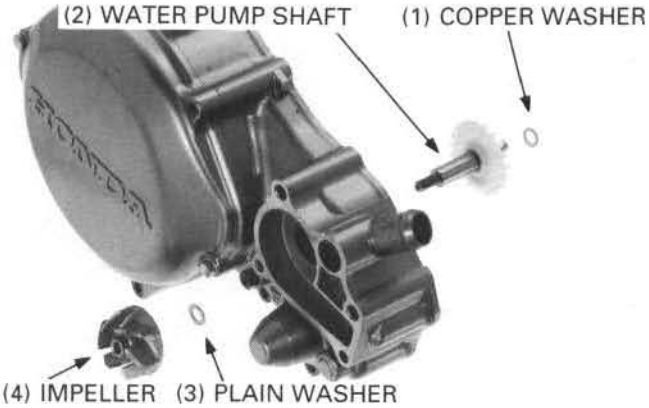
Driver	**07749 – 0010000**
Attachment, 28 x 30 mm	**07946 – 1870100**
Pilot, 12 mm	**07746 – 0040200**



Assembly



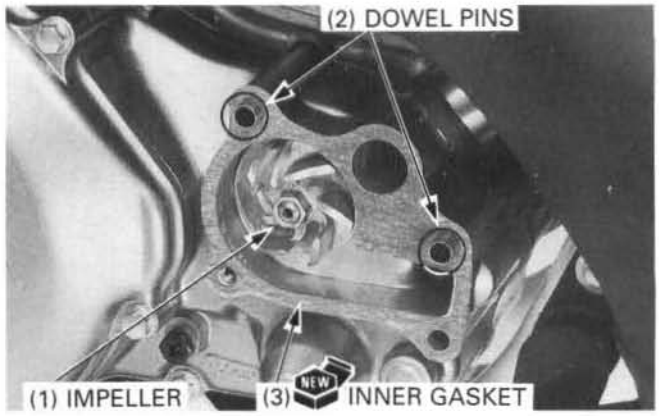
Install the following:
- Water pump shaft/gear into the right crankcase cover
- Copper washer onto the right crankcase
- Right crankcase cover (page 9-2)
- Plain washer and impeller on the water pump shaft



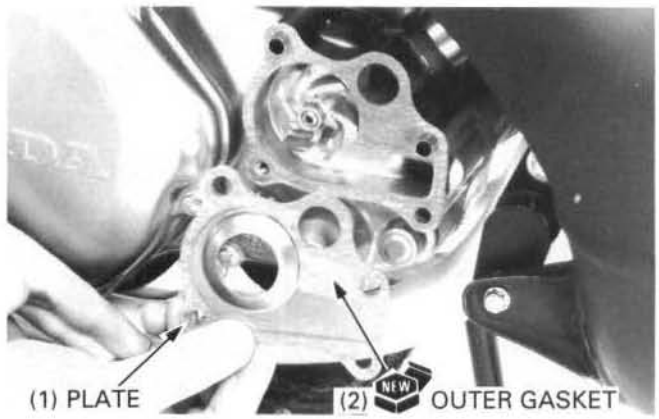
Tighten the impeller to the specified torque.

Torque: 12 N·m (1.2 kg-m, 9 ft-lb)

Install the following:
- Dowel pins
- New inner gasket



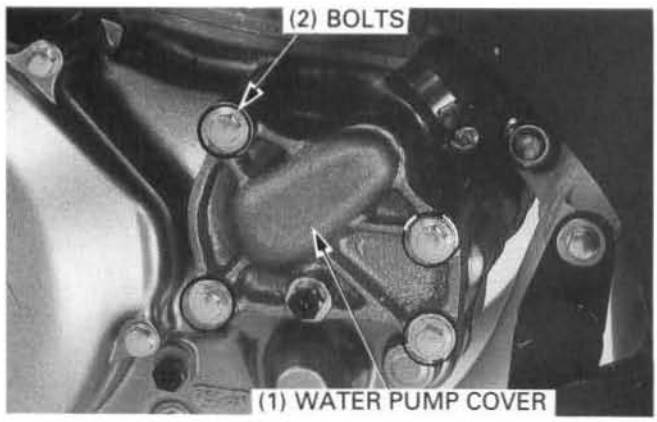
- Plate
- New outer gasket



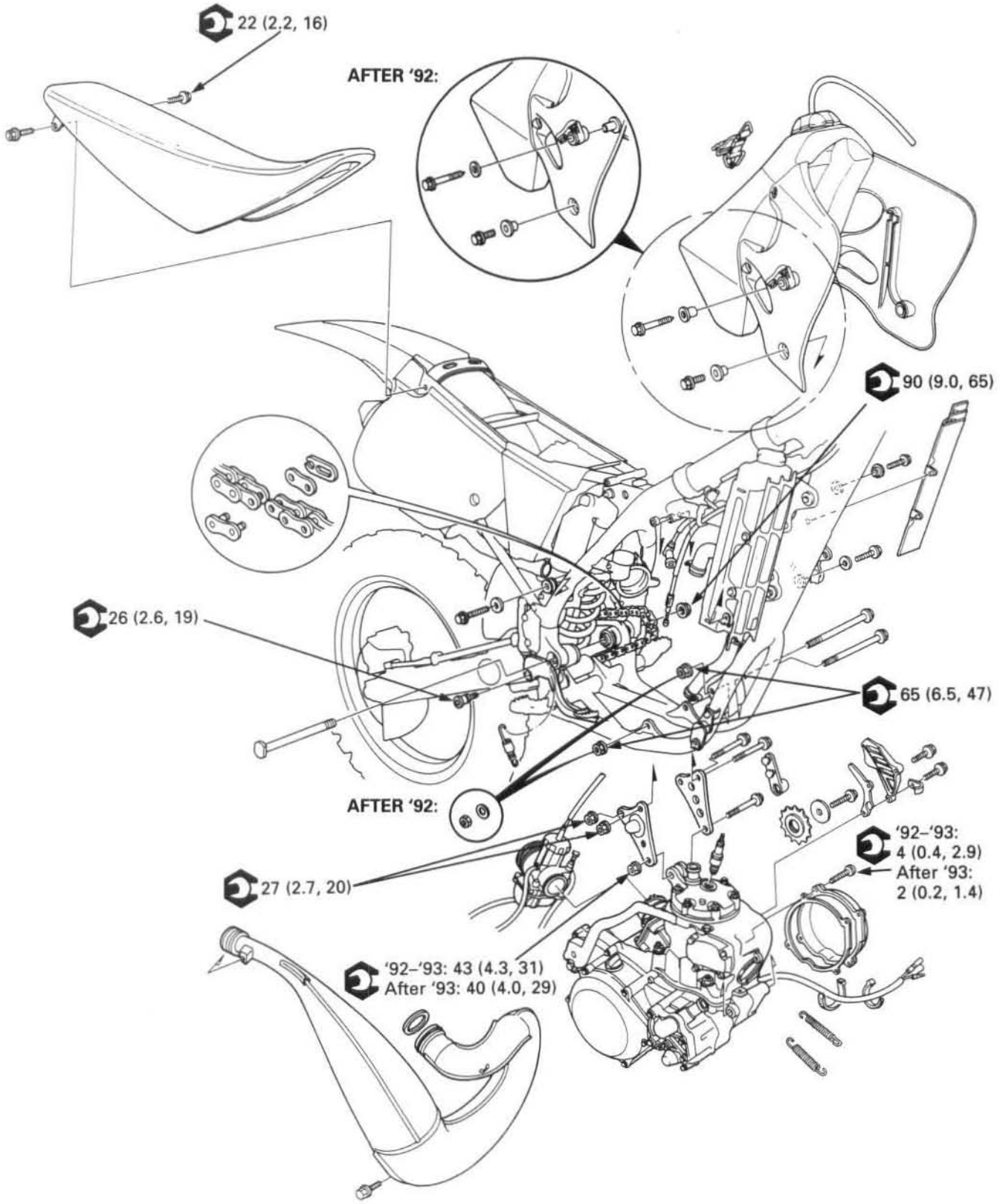
Install the water pump cover and tighten the mounting bolts to the specified torque.

Torque: 12 N·m (1.2 kg-m, 9 ft-lb)

Add the recommend coolant mixture up to the filler neck and bleed the air (page 5-3).



MEMO


22 (2.2, 16)
AFTER '92:
90 (9.0, 65)
26 (2.6, 19)
65 (6.5, 47)
AFTER '92:
'92–'93:
4 (0.4, 2.9)
After '93:
2 (0.2, 1.4)
27 (2.7, 20)
'92–'93: 43 (4.3, 31)
After '93: 40 (4.0, 29)

6. Engine Removal/Installation

Service Information

General

- During removal and installation, place a work stand or box under the engine to support the motorcycle securely.
- The following components can be serviced with the engine in the frame:
  - Alternator (Section 14)
  - Clutch/gearshift linkage (Section 9)
  - Cylinder head/cylinder/piston (Section 7)
  - RC valve system (Section 8)
- The following components require engine removal for service:
  - Crankshaft/transmission (Section 10)
  - Shift forks/shift drum (Section 10)

Specifications

Item			Specifications
Engine dry weight			23.3 kg (51.4 lbs)
Recommended transmission oil			PRO Honda GN4 4-Stroke Oil or equivalent SAE 10W-30, 10W-40, API service classification: SF or SG
Transmission oil capacity	at draining	'92:	0.85 liter (0.90 US qt, 0.75 Imp qt)
		After '92:	0.75 liter (0.79 US qt, 0.66 Imp qt)
	at disassembly	'92:	0.95 liter (1.00 US qt, 0.84 Imp qt)
		After '92:	0.85 liter (0.90 US qt, 0.75 Imp qt)
Coolant capacity		at draining	1.10 liter (1.16 US qt, 0.75 Imp qt)
		at disassembly	1.15 liter (1.21 US qt, 1.01 Imp qt)

Torque Values

Engine hanger plate bolt	27 N·m (2.7 kg-m, 20 ft-lb)
Engine upper mounting bolt	43 N·m (4.3 kg-m, 31 ft-lb)
Engine lower mounting bolt	65 N·m (6.5 kg-m, 47 ft-lb)
Swingarm pivot bolt	90 N·m (9.0 kg-m, 65 ft-lb)
Alternator cover screw	4 N·m (0.4 kg-m, 2.9 ft-lb)
Brake pedal pivot bolt	26 N·m (2.6 kg-m, 19 ft-lb)
Seat mounting bolt	22 N·m (2.2 kg-m, 16 ft-lb)

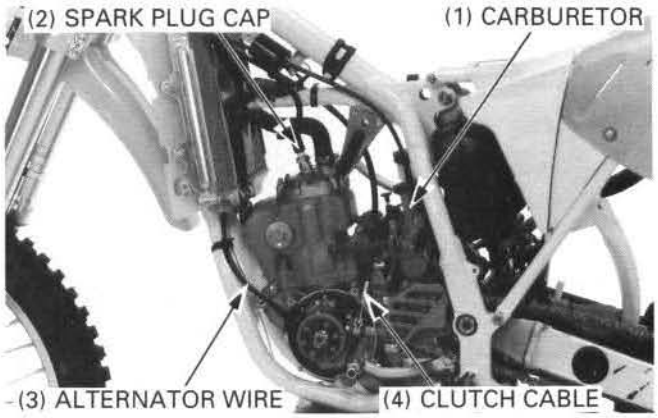
Engine Removal

Drain the transmission oil (page 3-9).
Drain the coolant (page 5-3).

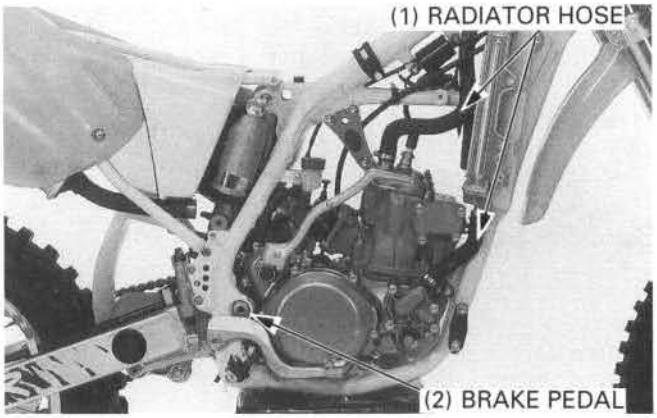
Place a work stand or box under the engine.

Remove the following:
- Expansion chamber (page 2-4)
- Wire clamp
- Alternator wire connector
- Pulse generator wire connector
- Drive chain

Remove the alternator cover and disconnect the clutch cable.

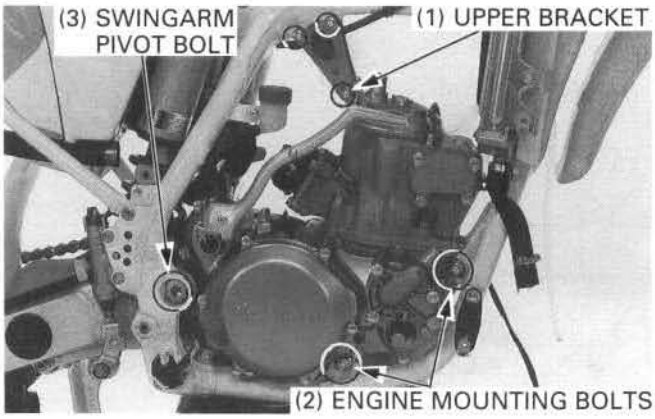


Remove the following:
- Brake pedal (page 13-14)
- Carburetor (page 4-5)
- Spark plug cap
- Radiator hose from cylinder head
- Radiator hose from right crankcase cover



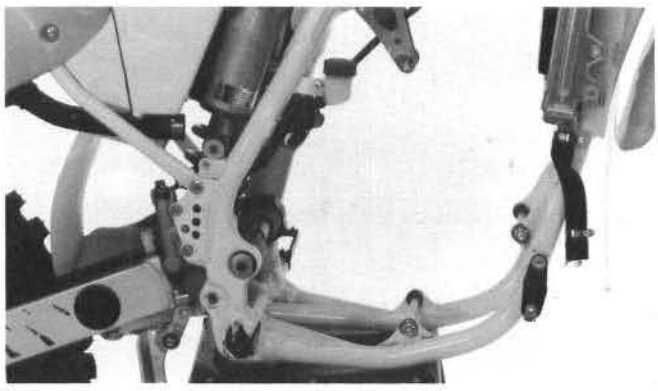
Remove the following:
- Engine upper bracket bolts and hanger bracket
- Engine mounting bolts
- Swingarm pivot bolt

Remove the engine from the frame.



NOTE

- Note the direction of the engine mounting bolts and swingarm pivot bolt for reassembly (page 6-1).



Engine Installation

Installation is in the reverse order of removal.

Torque:
Swingarm pivot bolt:
90 N·m (9.0 kg-m, 65 ft-lb)
Engine upper mounting bolt:
'92–'93: 43 N·m (4.3 kg-m, 31 ft-lb)
After '93: 40 N·m (4.0 kg-m, 29 ft-lb)
Engine lower mounting bolt:
63 N·m (6.3 kg-m, 47 ft-lb)
Engine hanger bracket bolt:
27 N·m (2.7 kg-m, 20 ft-lb)

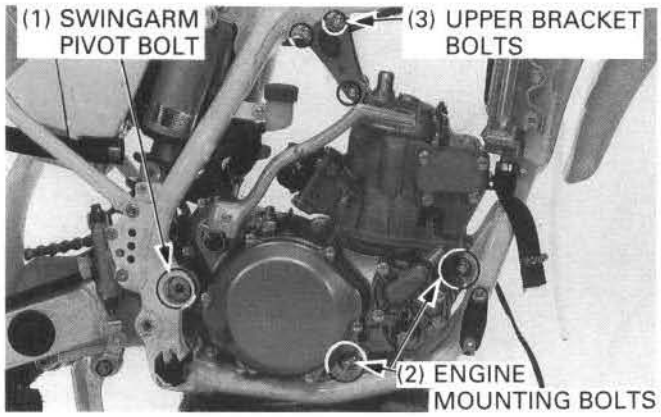
NOTE

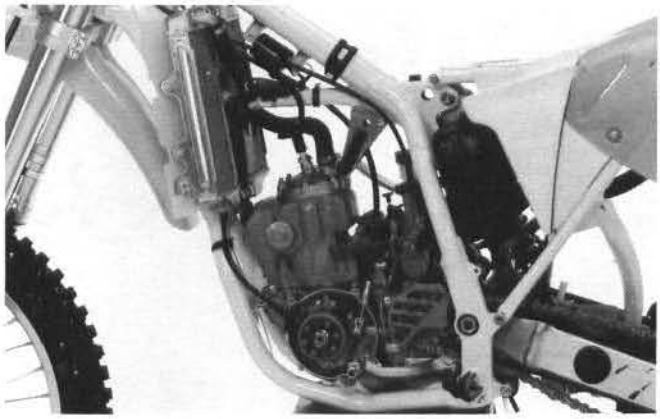
- Route the wires and cables properly (page 1-19 through 1-22).
- Always install a new exhaust gasket and O-ring.

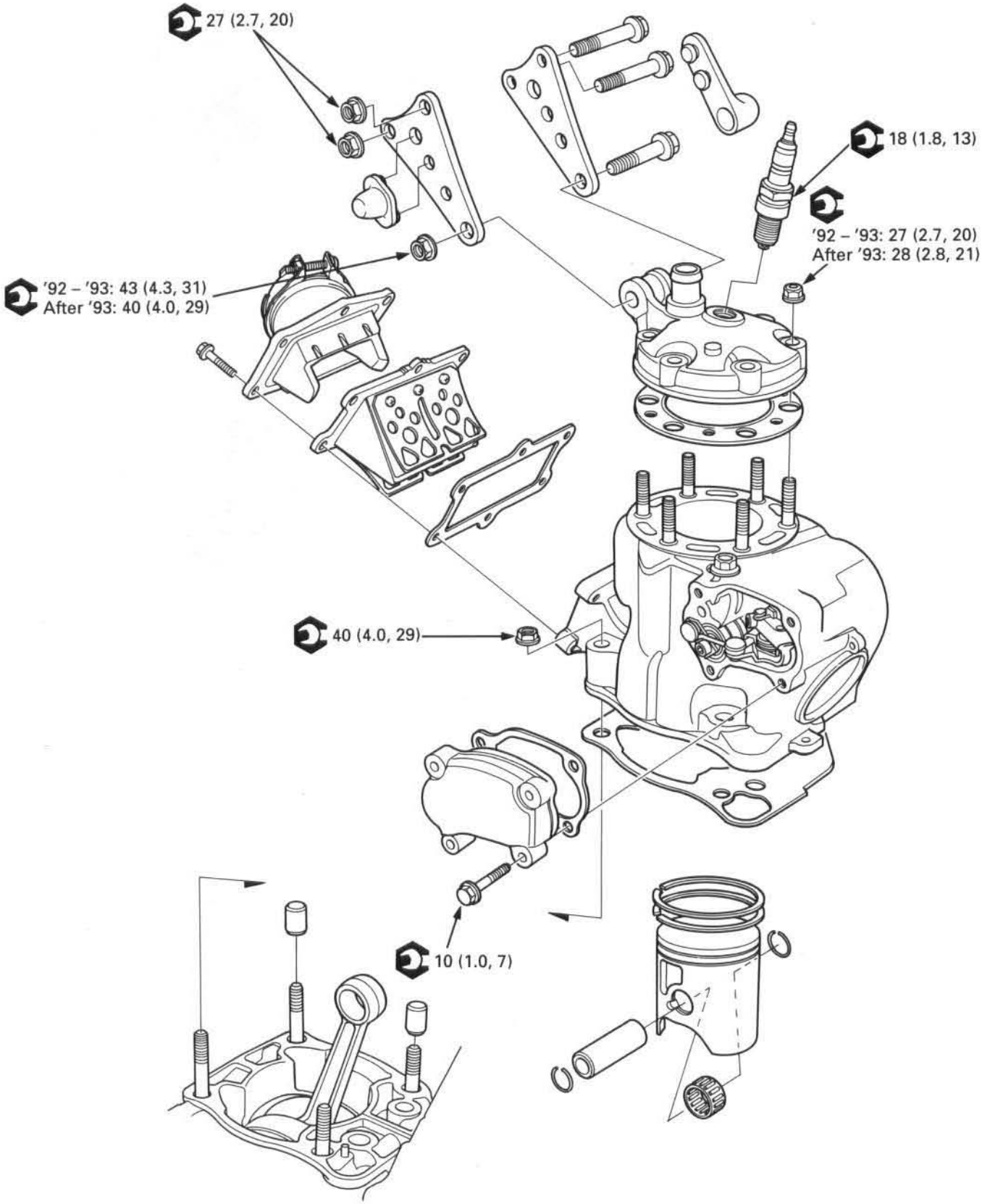
Fill the transmission with recommended oil to the correct level (page 3-9).
Pour radiator coolant mixture into the radiator up to the correct level (page 5-3).

After installing the engine, perform the following inspections and adjustments:
- Transmission oil level (After '92)
- Throttle grip free play adjustment
- Rear brake pedal height
- Drive chain slack
- Clutch lever free play

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






27 (2.7, 20)
18 (1.8, 13)
'92 – '93: 27 (2.7, 20)
After '93: 28 (2.8, 21)
'92 – '93: 43 (4.3, 31)
After '93: 40 (4.0, 29)
40 (4.0, 29)
10 (1.0, 7)

7. Cylinder Head/Cylinder/Piston

Service Information

General

- This section covers maintenance of the cylinder head, cylinder and piston. These procedures 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 Honda HP2 2-stroke engine oil to all sliding surfaces.
- Under racing conditions, the piston and piston rings should be replaced after 7.5 hours of running. Replace the piston pin and connecting rod small end bearing replaced after 22.5 hours of running.
- Refer to section 4 for reed valve servicing.
- Refer to section 8 for RC valve system decarbonizing, disassembly and assembly.

Specifications

Unit: mm (in)

Item			Standard	Service Limit
Cylinder head warpage			——	0.05 (0.002)
Cylinder	I.D.		66.390 – 66.405 (2.6138 – 2.6144)	66.44 (2.616)
	Taper		——	0.05 (0.002)
	Out of round		——	0.05 (0.002)
	Warpage across top		——	0.05 (0.002)
Piston, Piston pin, Piston ring	O.D.		66.330 – 66.350 (2.6114 – 2.6122)	66.28 (2.609)
	Piston pin bore		18.002 – 18.008 (0.7087 – 0.7090)	18.02 (0.709)
	Piston pin O.D.		17.994 – 18.000 (0.7084 – 0.7087)	17.98 (0.707)
	Piston-to-piston pin clearance		0.002 – 0.014 (0.0001 – 0.0006)	0.02 (0.001)
	Piston ring-to-ring groove clearance '92 – '93:	Top	0.060 – 0.100 (0.002 – 0.004)	0.120 (0.0047)
		Second	0.050 – 0.080 (0.002 – 0.003)	0.095 (0.0037)
	Piston ring-to-ring groove clearance After '93:	Top	0.045 – 0.075 (0.002 – 0.003)	0.095 (0.0037)
		Second	0.025 – 0.055 (0.001 – 0.002)	0.075 (0.0030)
	Piston ring end gap		0.40 – 0.55 (0.016 – 0.022)	0.65 (0.026)
Cylinder-to-piston clearance			0.040 – 0.075 (0.0015 – 0.0030)	0.10 (0.004)
Connecting rod small end I.D.			22.002 – 22.014 (0.8662 – 0.8667)	22.03 (0.867)

Torque Values

Cylinder head nut	27 N·m (2.7 kg-m, 20 ft-lb)
Cylinder mounting nut	40 N·m (4.0 kg-m, 29 ft-lb)
Cylinder stud	12 N·m (1.2 kg-m, 9 ft-lb)
Engine hanger bracket bolt	27 N·m (2.7 kg-m, 20 ft-lb)
Engine upper mounting bolt	43 N·m (4.3 kg-m, 31 ft-lb)
RC valve tie-rod socket bolt	5.5 N·m (0.55 kg-m, 4.0 ft-lb)
RC valve pinion holder socket bolt	5.5 N·m (0.55 kg-m, 4.0 ft-lb)
Right cylinder cover bolt	10 N·m (1.0 kg-m, 7 ft-lb)
Left cylinder cover	13 N·m (1.3 kg-m, 9 ft-lb)

Troubleshooting

Compression Too Low, Hard Starting Or Poor Performance At Low Speed
- Blown cylinder head gasket
- Loose spark plug
- Worn, stuck or broken piston ring
- Worn or damaged cylinder and piston
- Faulty reed valve
- Worn crankshaft 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 ring
- Worn or damaged cylinder

Contaminated Coolant
- Leaking cylinder head gasket

Cylinder Head

Removal

Drain the radiator coolant (page 5-3).
Remove the seat and fuel tank (page 2-2, 3).

⚠ WARNING

- **Gasoline is extremely flammable and is explosive under certain condition.**
- **Work in a ventilated area.**
- **Do not allow smoking, flames or sparks in the work area or where gasoline is stored.**

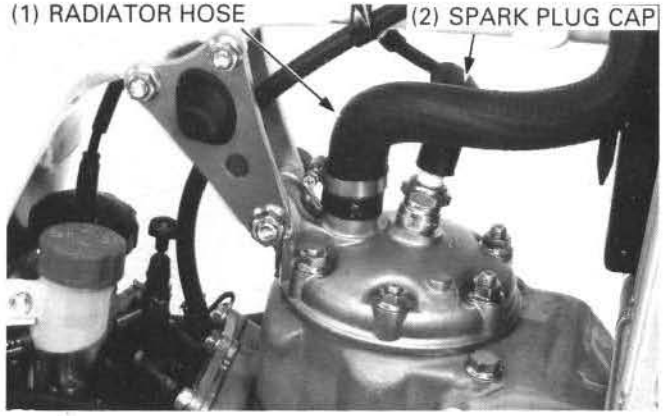
NOTE

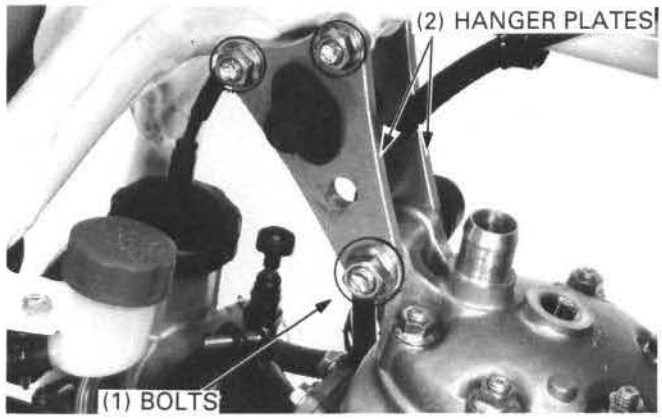
- Note the direction of the hose clamp for reinstallation.

Loosen the radiator hose clamp and remove the radiator hose from the cylinder head.

Remove the spark plug cap and spark plug.

Remove the engine upper hanger plate bolts and hanger plates.



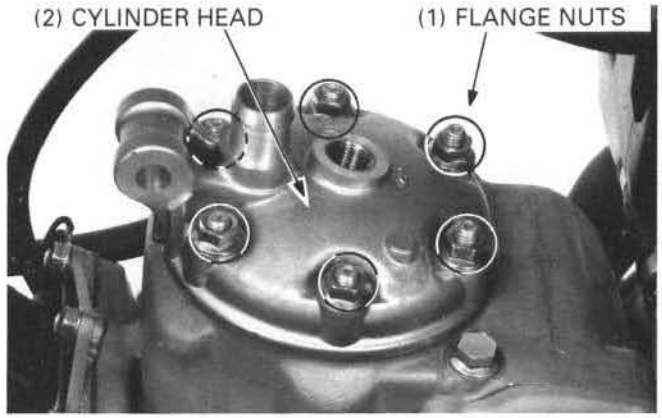


Remove the six cylinder head flange nuts.
Remove the cylinder head.

CAUTION

- **To avoid warping the cylinder head, use a crisscross pattern to loosen each nut about 1/4 turn in 2-3 steps, then remove the nuts.**

Remove the cylinder head gasket.

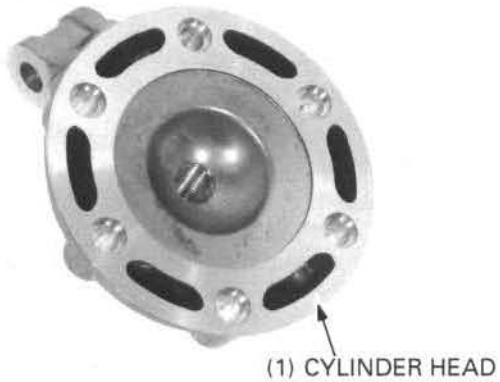


Inspection

Clean the head gasket surface of any gasket material.
Remove the carbon deposits from the combustion chamber.

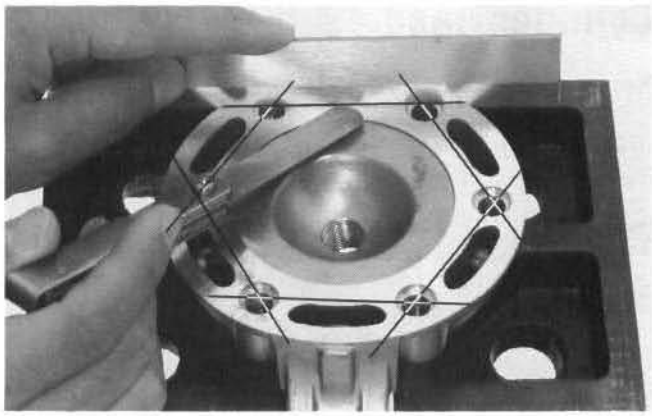
NOTE

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



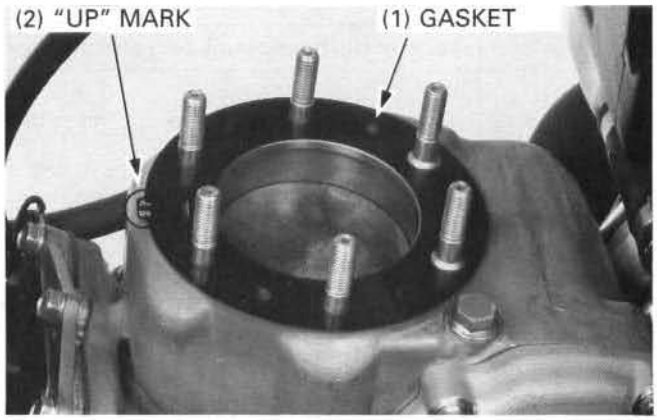
Check the cylinder head for warpage in diagonal directions using a straight edge and a feeler gauge.

Service Limit: 0.05 mm (0.002 in)



Installation

Install the new cylinder head gasket with the "UP" mark facing up and to the rear.

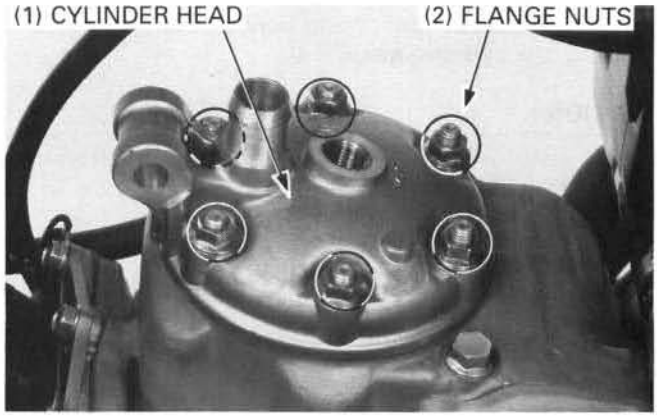


Place the cylinder head on the cylinder.
Install the six cylinder head flange nuts and tighten to the specified torque.

Torque: '92 – '93: 27 N·m (2.7 kg-m, 20 ft-lb)
After '93: 28 N·m (2.8 kg-m, 21 ft-lb)

NOTE

- Tighten the nuts in a crisscross pattern in 2 or 3 steps.



Install the engine upper hanger brackets and bolts/nuts.

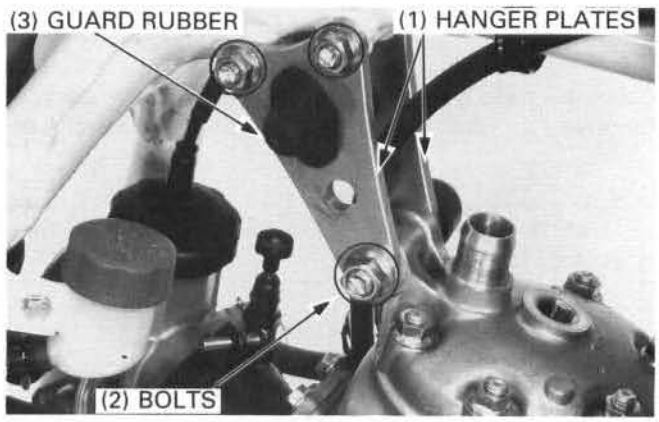
NOTE

- Route the clutch cable between the hanger plates as shown.

Tighten the mounting nuts to the specified torque.

Torque: Engine hanger plate bolt:
27 N·m (2.7 kg-m, 20 ft-lb)
Engine upper mounting bolt:
'92 – '93: 43 N·m (4.3 kg-m, 31 ft-lb)
After '93: 40 N·m (4.0 kg-m, 29 ft-lb)

Install the fuel tank guard rubbers.



Install the spark plug and plug cap.

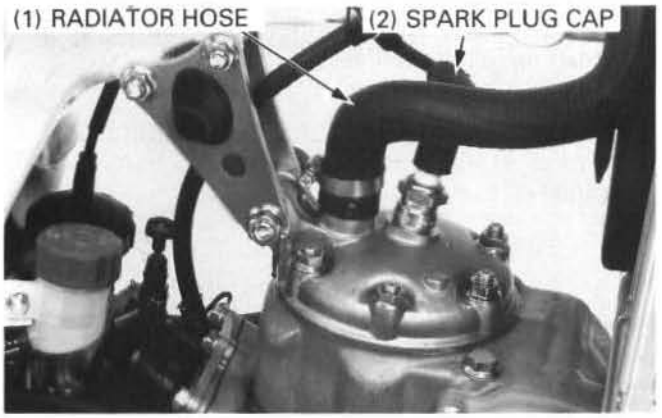
Connect the radiator hose to the cylinder head.

NOTE

- Note the direction of the hose clamp.

Add the recommend coolant mixture into the radiator up to the correct level (page 5-3).

Install the fuel tank and seat (page 2-2, 3).



Cylinder/Piston

Cylinder Removal

Remove the following:
- Cylinder head (page 7-3)
- Expansion chamber (page 2-4)
- Carburetor (page 4-6)
- Radiator (page 5-3)
- Ignition control module (page 14-4)

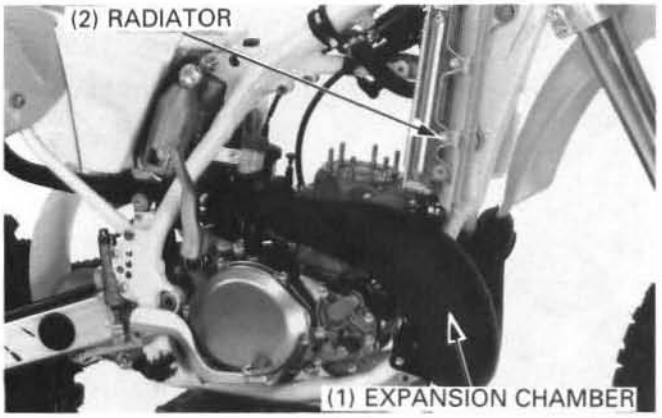
Remove the reed valve from the cylinder (page 4-10).
Remove the right cylinder cover and gasket.

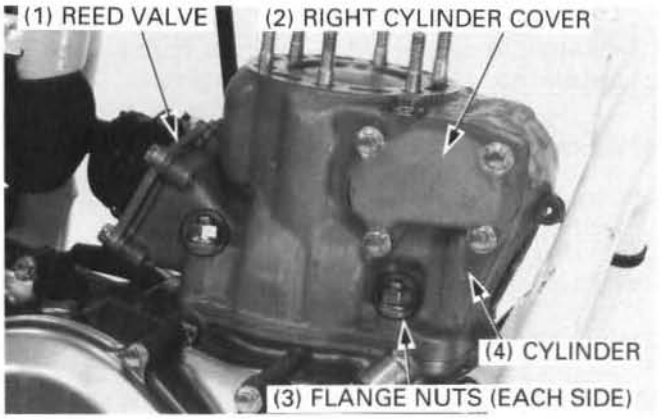
Remove the four cylinder mounting flange nuts.

NOTE

- Loosen the nuts in a crisscross pattern in 2 or 3 steps.

Remove the following:
- Cylinder
- Gasket
- Dowel pins





Piston Removal

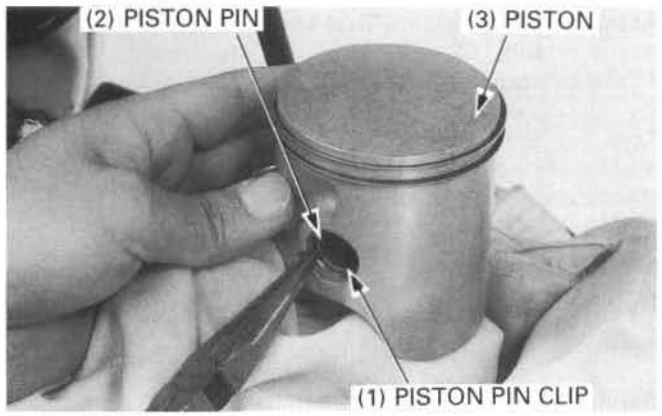
NOTE

- Do not let the clips fall into the crankcase.
- Always support the piston when pressing out the pin.

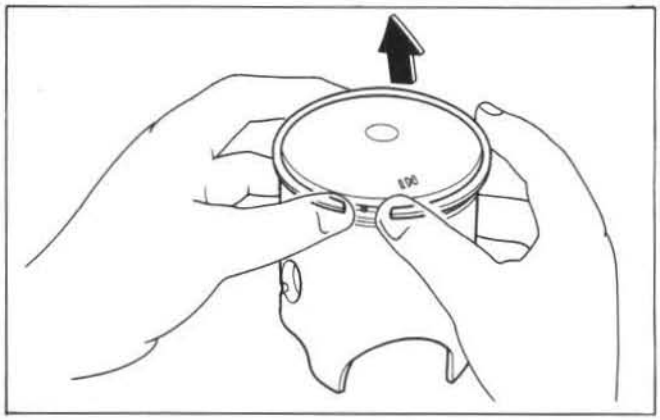
Remove the following:
- Piston pin clip
- Piston pin
- Piston

NOTE

- Under racing condition, the piston and piston rings should be replaced according to the maintenance schedule. See page 3-4.



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

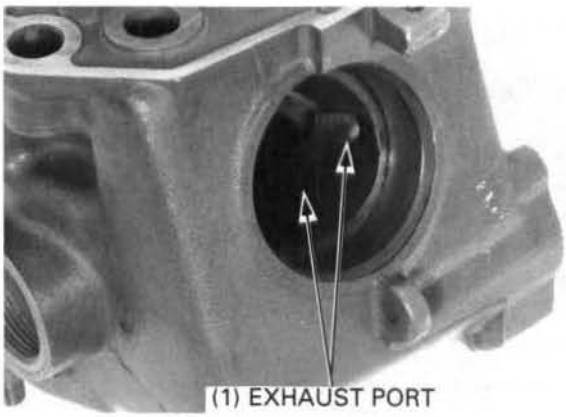


NOTE

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

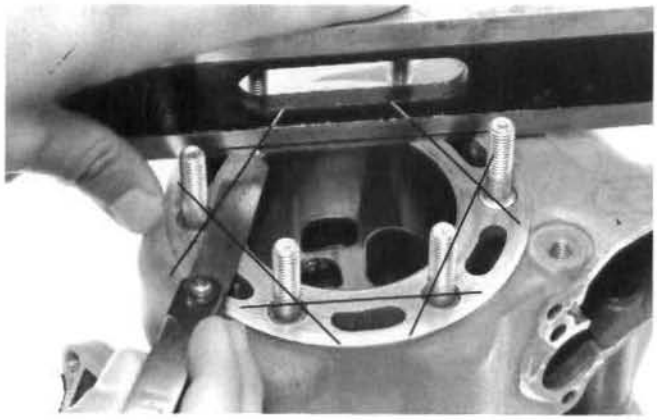
Cylinder Inspection

Remove the carbon deposits from the exhaust port area.



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 as necessary.

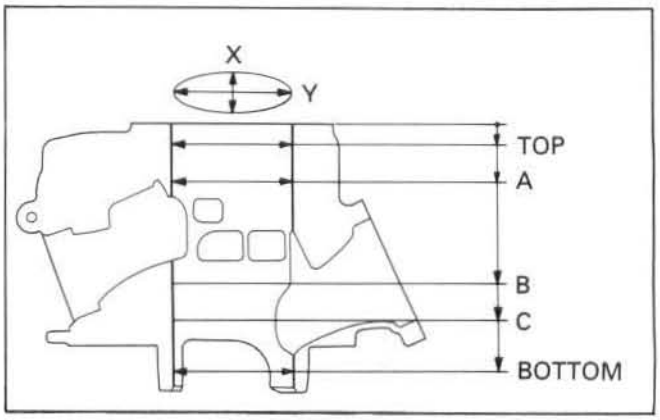
Service Limit: 0.05 mm (0.002 in)

Check that the cylinder studs are tight.
If any are loose, tighten them to the specified torque.

Torque: 12 N·m (1.2 kg-m, 9 ft-lb)

Measure the bore diameter at five positions, top, middle (A), middle (B), middle (C) and the bottom.

At the top and middle (A), measure the "X" and "Y" axis.
At the middle (C) and middle (D), measure the "Y" axis.
At the bottom, measure the "X" axis.



Top: **10 mm (0.39 in)**
Middle (A): **30 mm (1.18 in)**
Middle (B): **80 mm (3.15 in)**
Middle (C): **100 mm (3.94 in)**
Bottom: **130 mm (5.12 in)**

Use the largest figure measured to determine the cylinder wear.

Service Limit: 66.44 mm (2.616 in)

Piston Inspection

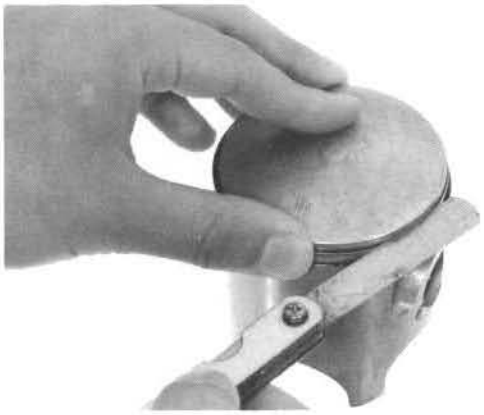
Measure the piston O.D. 20 – 50 mm (0.79 – 0.98 in) from the bottom of the skirt and at a right angle to the piston pin hole.

Service Limit: 66.28 mm (2.609 in)

If the O.D. is under the service limit or if nearly 7.5 hours of running time have elapsed, replace the piston with a new one.

Calculate the piston-to-cylinder clearance.

Service Limit: 0.10 mm (0.004 in)



Remove the carbon deposits from the piston ring grooves. Measure the piston ring-to-groove clearance.

Service Limit: Top: 0.120 mm (0.0047 in)
Second: 0.095 mm (0.0037 in)

Measure the piston pin bore I.D.

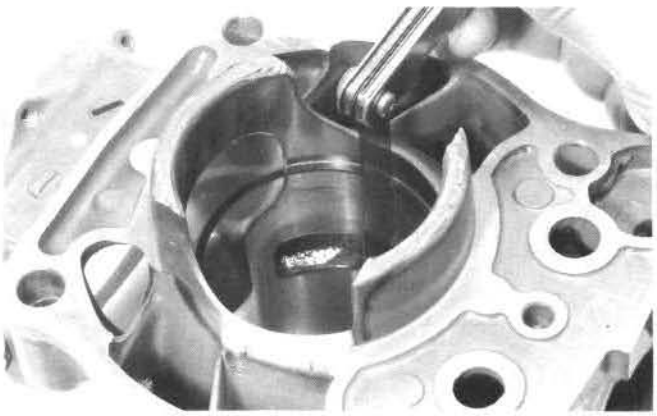
Service Limit: 15.022 mm (0.5914 in)

Check the piston pin for wear and excessive discoloration.

Measure the piston pin O.D.

Service Limit: 14.980 mm (0.5898 in)

If the O.D. is under the service limit, discolored, or if nearly 22.5 hours of running time have elapsed, replace the piston pin and bearing.



Insert the each piston ring into the cylinder to the distance from the cylinder bottom shown.

Use the piston to push the ring squarely into the cylinder.

Measure the piston ring end gaps with the feeler gauge.

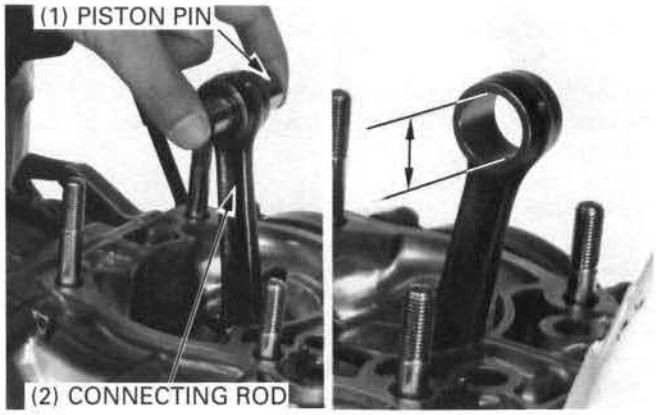
Service Limit: Top/Second: 0.65 mm (0.026 in)

Connecting Rod Inspection

Install the needle bearing and piston pin in the connecting rod small end and check it for excessive play.

If it feels loose, measure the connecting rod small end I.D.

Service Limit: 22.03 mm (0.867 in)



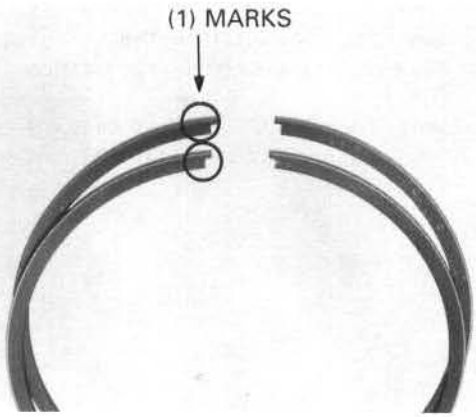
Piston Installation

Clean the piston ring grooves.

Lubricate the piston rings and piston ring grooves with clean Honda HP2 2-stroke oil.

Install the piston rings on the piston with its marks facing up.

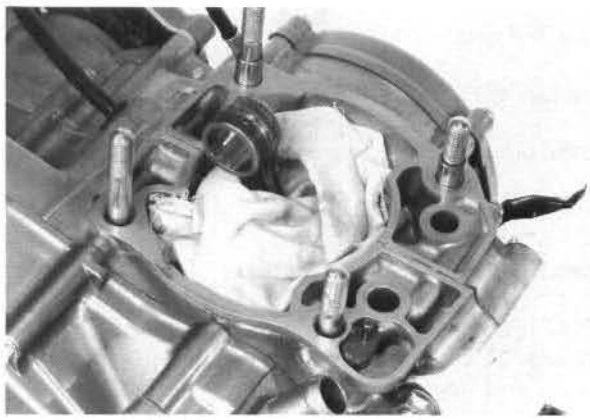
Locate the ring end gaps on the pins in the piston ring grooves.



Clean off any gasket material from the cylinder surface.

NOTE

- Be careful not to remove any material from the gasket surface.



Lubricate the small end bearing and piston pin with clean Honda HP2 2-stroke engine oil.

Install the connecting rod small end bearing, piston and piston rings.

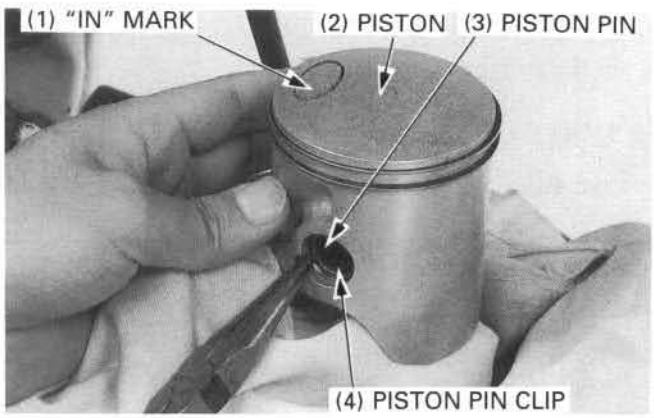
Install the new piston pin clips in the positions shown.

NOTE

- Install the piston with the "IN" mark facing the intake side. If the "IN" mark is obliterated, install the piston with the hole facing the intake side.

CAUTION

- **Use new piston pin clips. Never reuse old clips.**
- **Do not let the piston pin clips fall into the crankcase.**
- **Position piston pin clips as shown in photo detail at right.**

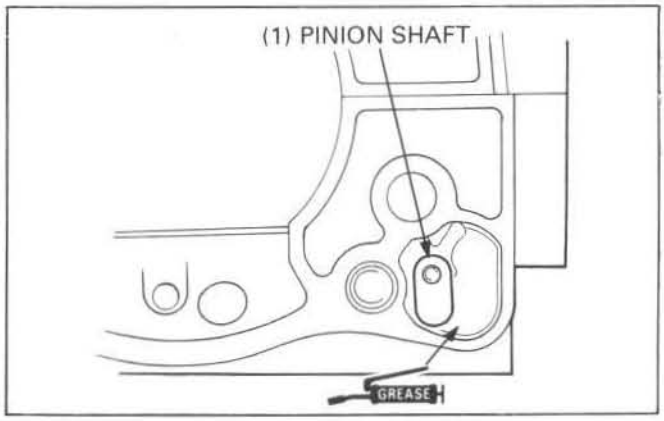


Cylinder Installation

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

Position the pinion shaft as shown before installing the cylinder.

Apply grease to the pinion joint area.

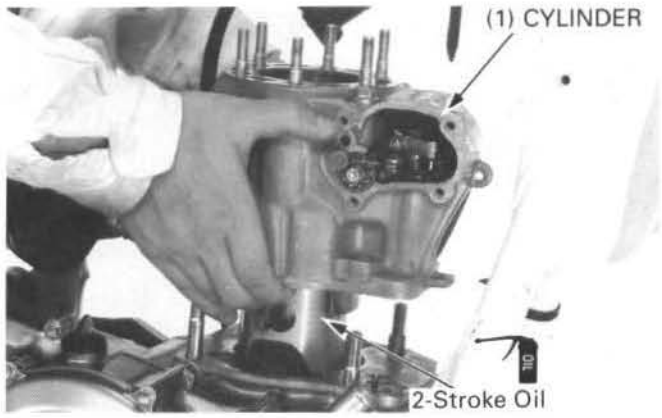


Align the ring end gaps with the piston ring pins.

Lubricate the piston with Honda HP2 2-stroke engine oil and slip the cylinder over the piston while compressing the piston rings.

CAUTION

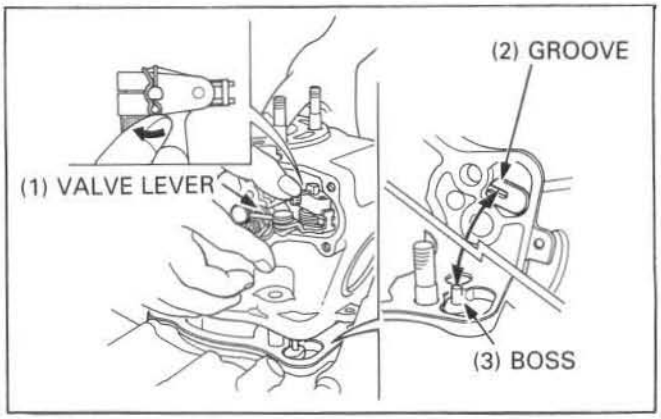
- **Do not rotate the cylinder, since this may cause the piston rings to snag a cylinder port and break.**



Turn the valve lever counterclockwise, make sure the flap valve and rotary valves are in the fully closed position.
Turn the valve lever clockwise just slightly, and align the valve drive shaft slot with the pinion shaft pin.
Install the cylinder onto the crankcase.

NOTE

- If you loosen the valve link holder bolt, you must adjust the exhaust valve linkage (page 8-9).
- Before tightening the cylinder nuts, be sure the cylinder is seated completely against the crankcase.
- Align the valve linkage correctly as shown. Incorrect alignment will prevent valve operation.



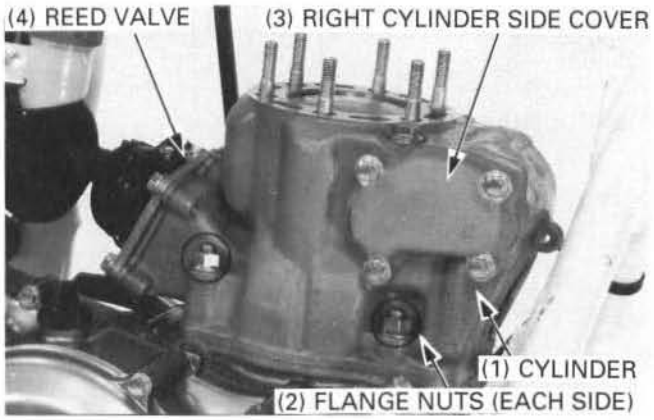
Install the four flange nuts and tighten to the specified torque.

Torque: 40 N·m (4.0 kg-m, 29 ft-lb)

NOTE

- Tighten the nuts in a crisscross pattern in 2 or 3 steps.

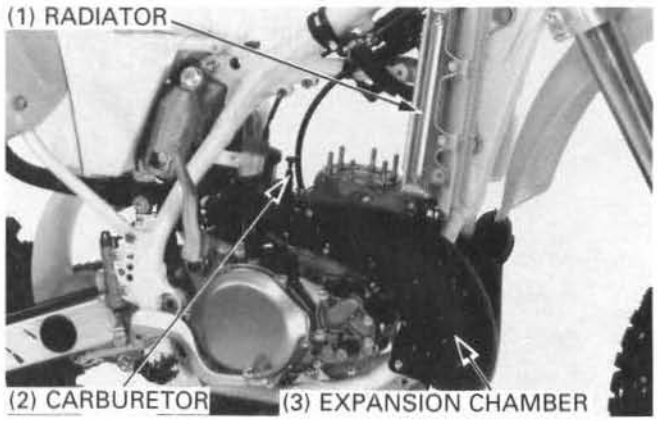
Install the new gasket and right cylinder side cover (page 8-6).
Install the reed valve (page 4-10).



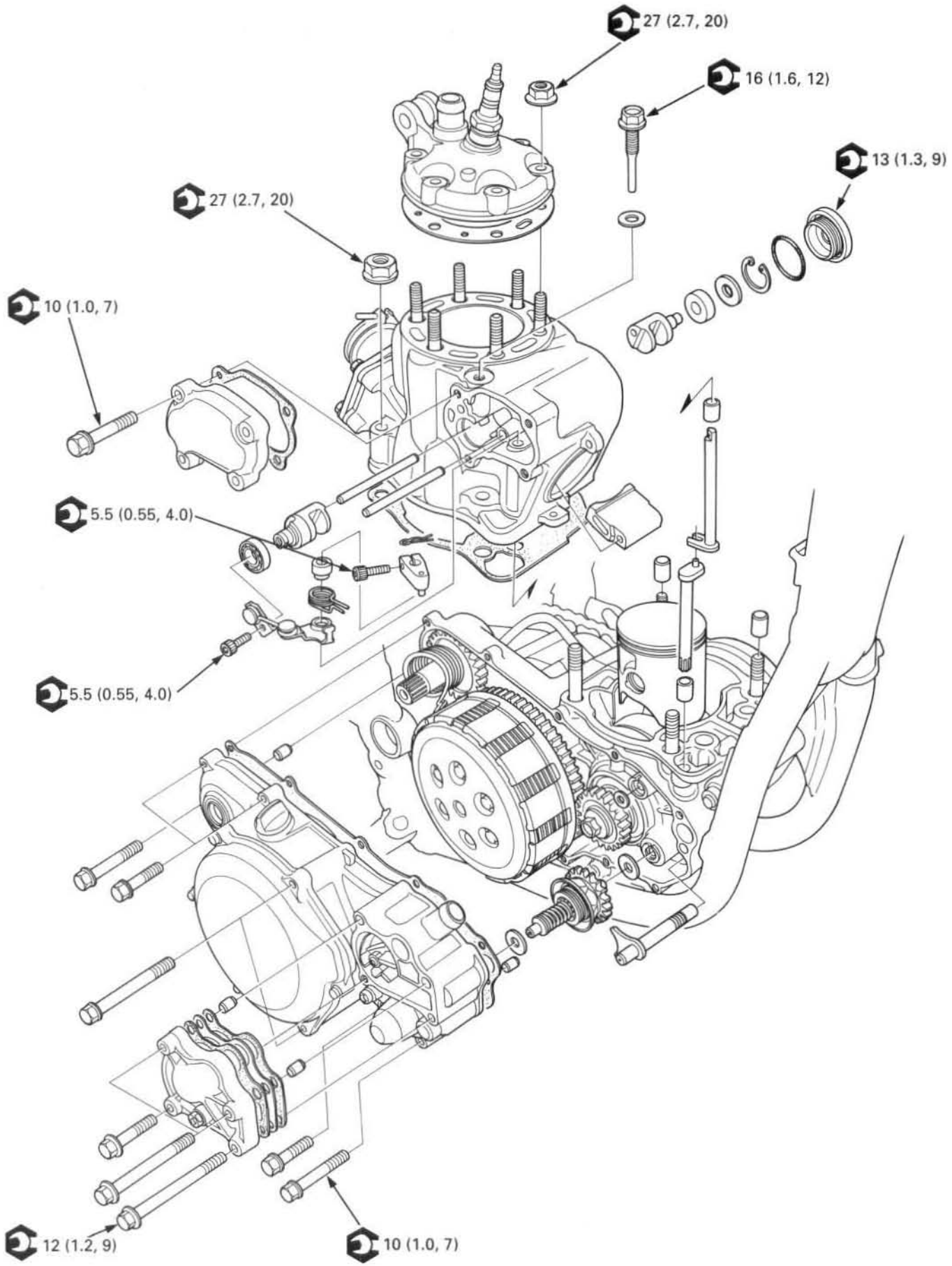
Install the following:
- Ignition control module (page 14-4)
- Radiator (page 5-4)
- Carburetor (page 4-10)
- Expansion chamber (page 2-4)
- Cylinder head (page 7-3)
- Fuel tank and seat (page 2-2, 3)

Add the recommended coolant mixture into the radiator up to the correct level (page 5-3).

Check for the following:
- Compression leaks
- Abnormal engine noise
- Secondary air leaks
- Coolant leaks



MEMO


27 (2.7, 20)
16 (1.6, 12)
13 (1.3, 9)
27 (2.7, 20)
10 (1.0, 7)
5.5 (0.55, 4.0)
5.5 (0.55, 4.0)
12 (1.2, 9)
10 (1.0, 7)

8. RC Valve

Service Information

General

- This section covers the maintenance of the RC Valve.
- Decarbonize the valve every 7.5 hours of running (approximately three races).
- Adjust the exhaust valve system only when
  - The valve don't operate properly.
  - The linkage is removed.
  - Related parts (governor, cam, water pump shaft) are removed or replaced.

Specifications

Unit: mm (in)

Item	Standard	Service Limit
Exhaust valve shaft O.D.	4.988 – 5.000 (0.1964 – 0.1969)	4.968 (0.196)

Torque Value

Cylinder right side cover	10 N·m (1.0 kg-m, 7 ft-lb)
Cylinder left side cover	13 N·m (1.3 kg-m, 9 ft-lb)
Exhaust valve lever socket bolt	5.5 N·m (0.55 kg-m, 4.0 ft-lb)
Exhaust valve stopper bolt	16 N·m (1.6 kg-m, 12 ft-lb)

Tools

Snap ring pliers	07914 – 3230001

Troubleshooting

Poor Performance At Low Speed

- Exhaust valve do not close fully
  - Improper adjustment
  - Faulty governor
  - Broken pinion lever spring
  - Bent valve shaft
- Excessive carbon build-up on exhaust valves
- Damaged exhaust valve

Poor Performance At High Speed

- Exhaust valve do not open fully
  - Improper installation
  - Faulty governor
  - Broken pinion lever spring
- Excessive carbon build-up on exhaust valve
- Damaged exhaust valve

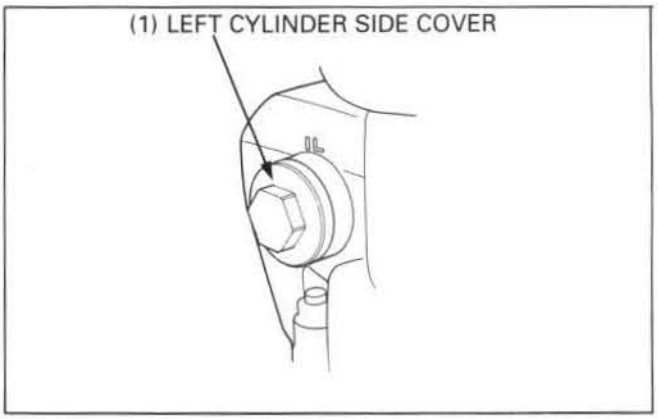
Exhaust Valve

Operating Inspection

NOTE

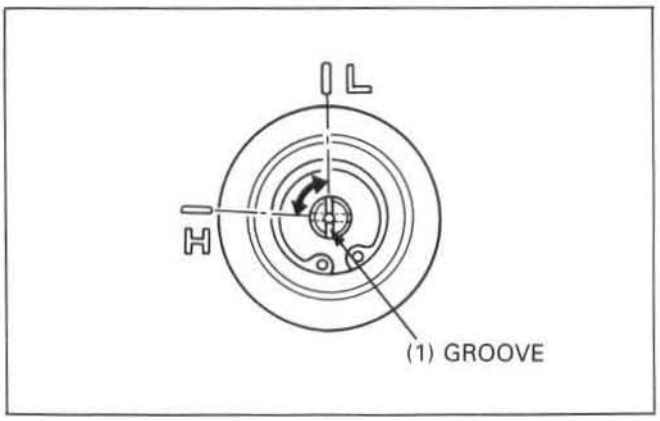
- Before inspection, clean the engine thoroughly to keep dirt from entering the engine.

Warm up the engine to operating temperature.
Stop the engine, and remove the left cylinder side cover.



Check that the left sub-exhaust valve groove is aligned with the cylinder "L" mark.

Start the engine.
Increase the engine speed, check that the left sub-exhaust valve turns counterclockwise about 90 degree and align its groove with the cylinder "H" mark.



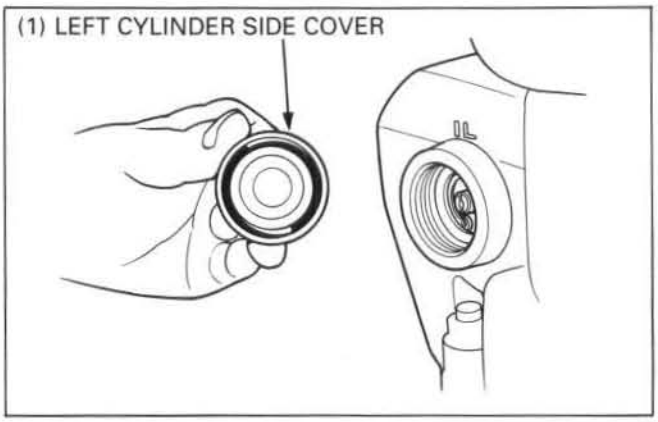
NOTE

- If the exhaust valve does not operate properly, remove all carbon deposits from the exhaust valves. After removing the carbon deposits, adjust the exhaust valve linkage.

Check that the left cylinder side cover O-ring is in good condition.

Apply Pro Honda Moly 60 or equivalent molybdenum paste to the threads and install the cover onto the cylinder.

Torque: 13 N·m (1.3 kg-m, 9 ft-lb)



Disassembly

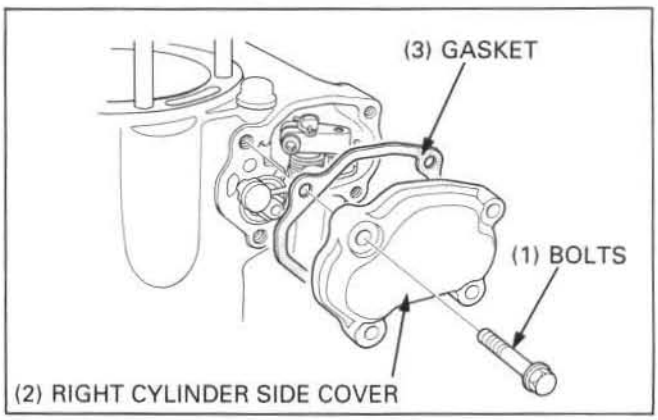
NOTE

- Before inspection, clean the engine thoroughly to keep dirt from entering the engine.

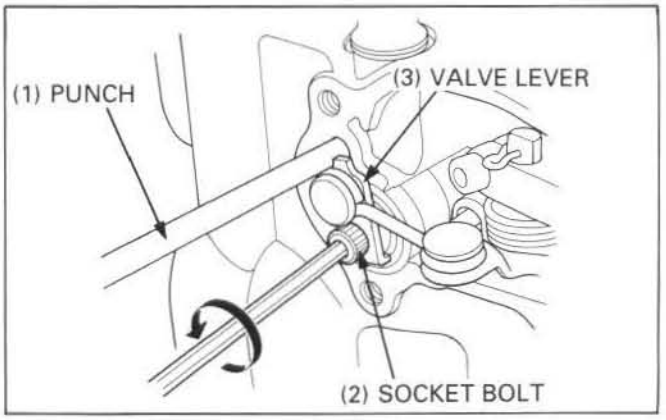
Remove the cylinder (page 7-5).

Remove the bolts, right cylinder side cover and gasket.

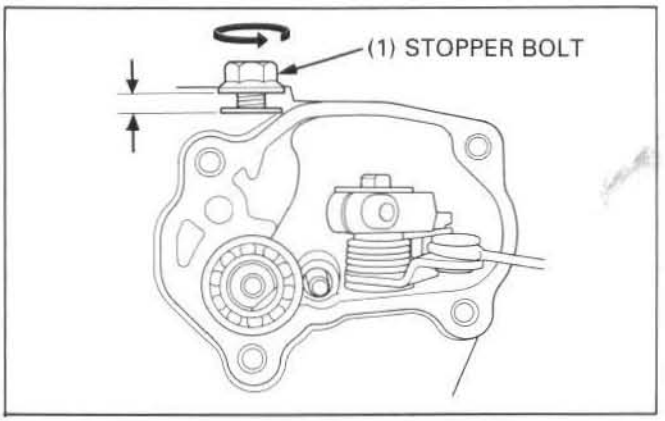
Remove the cylinder left side cover.



Secure the exhaust valve lever using a punch or equivalent as shown.
Remove the valve lever socket bolt and lever.



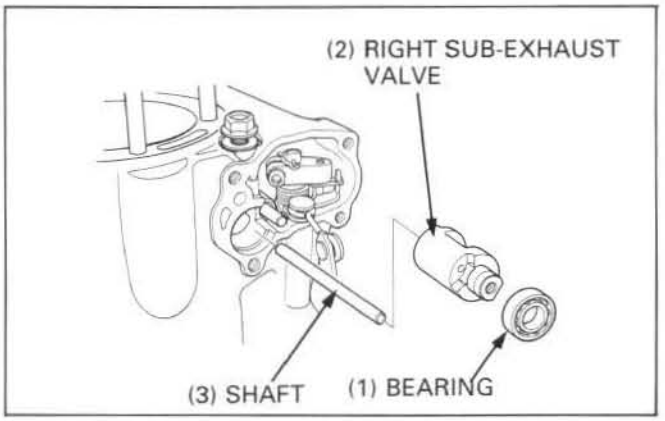
Loosen the valve stopper bolt.



Remove the following from cylinder light side:
- Bearing
- Right sub-exhaust valve
- Sub-exhaust valve shaft

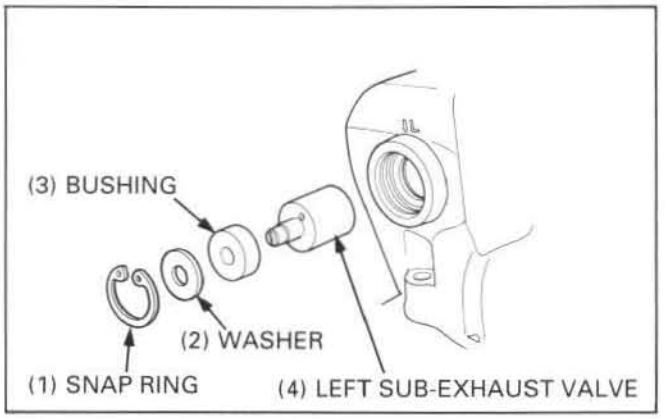
CAUTION

- **It is sometime difficult to remove the sub-exhaust valve shaft from the sub-exhaust valve; be careful not to bend the shaft.**
  If the sub-exhaust valve shaft is bent, the exhaust valve will not operate properly.

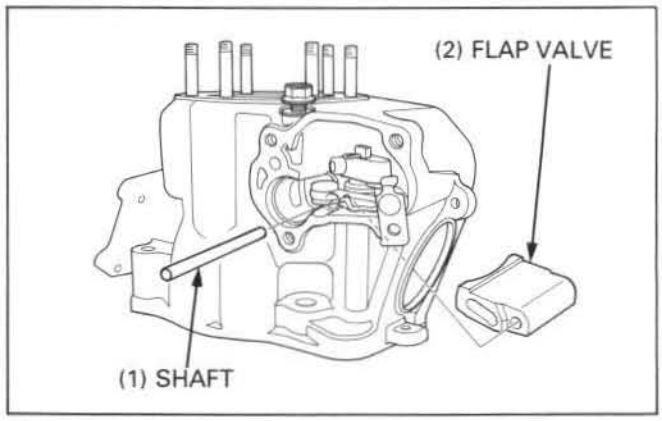


Remove the snap ring, washer, bushing and left sub-exhaust valve.

S. TOOL
Snap ring pliers **07914 – 3230001**



Remove the flap valve shaft, then remove the flap valve from the exhaust port.



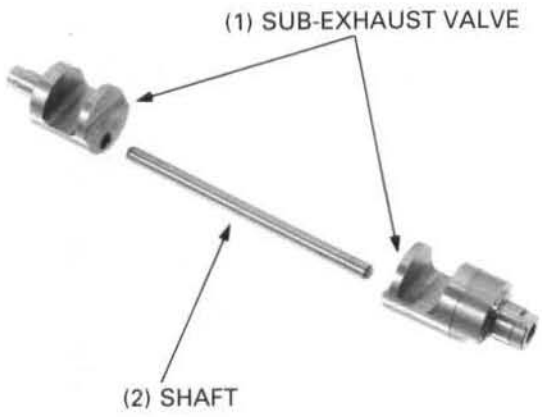
Decarbonizing

NOTE

- Decarbonize the exhaust valve 7.5 hours of running (approximately every three races).

Sub-Exhaust Valve
Clean the carbon deposits from the sub-exhaust valve.

Inspect the sub-exhaust valve and shaft wear or damage.

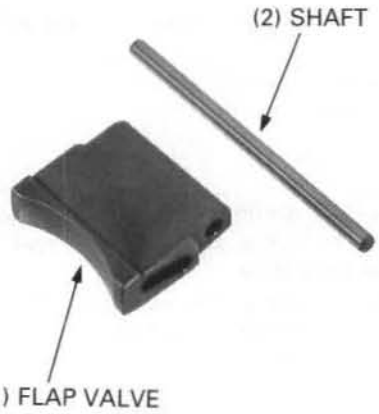


Flap Valve
Clean the carbon deposits from the flap valve.

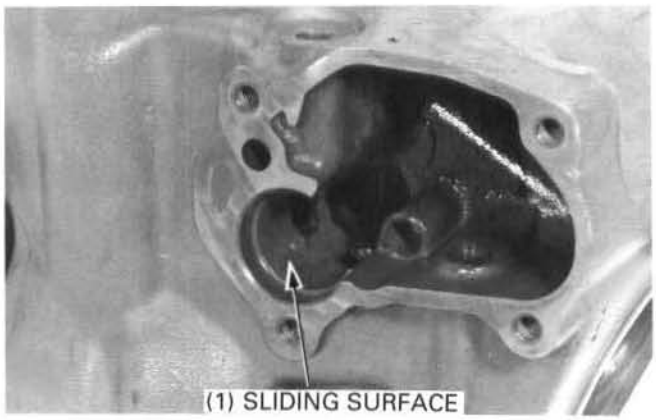
NOTE

- Also clean the carbon deposit from the flap valve hole.
  If there is carbon in the hole, the flap valve will not operate properly.

Inspect the flap valve and shaft wear or damage.

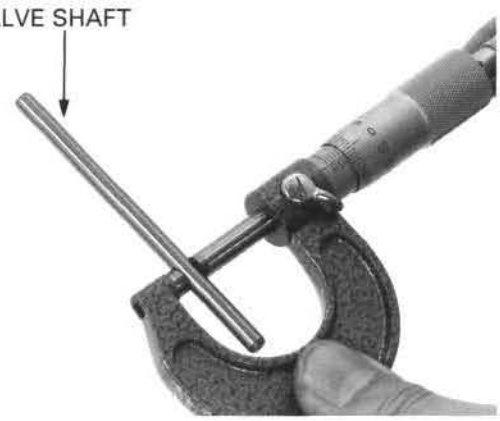


Inspect the sub-exhaust valve sliding surface in the cylinder for wear or damage.
Replace the cylinder if necessary (section 7).



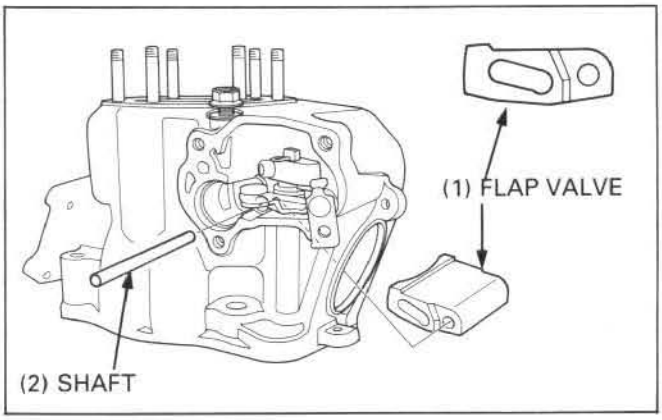
Measure the flap valve and sub-exhaust valve shaft O.D.

Service Limit: 4.968 mm (0.196 in)



Apply Pro Honda Moly 60 or equivalent molybdenum paste to the flap valve shaft surface.
Insert the flap valve into the exhaust port with the projection facing up as shown.

Aligning the flap valve hole with the hole in the cylinder, install the flap valve shaft.

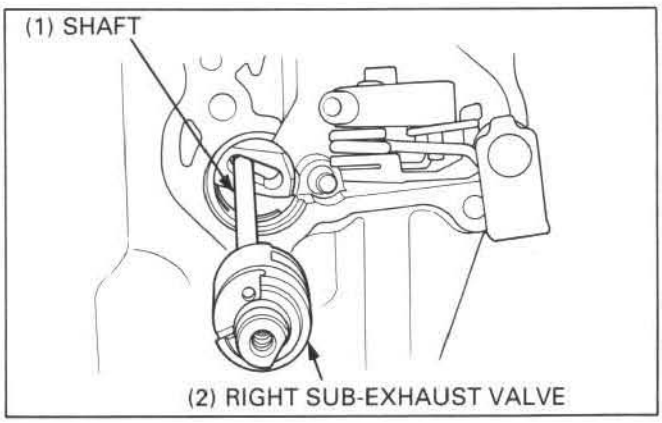


Apply Honda HP2 2-stroke engine oil or equivalent to the right sub-exhaust valve.

Apply Pro Honda Moly 60 or equivalent molybdenum paste to the sub-exhaust valve shaft surface.

Assemble the right sub-exhaust valve and valve shaft.

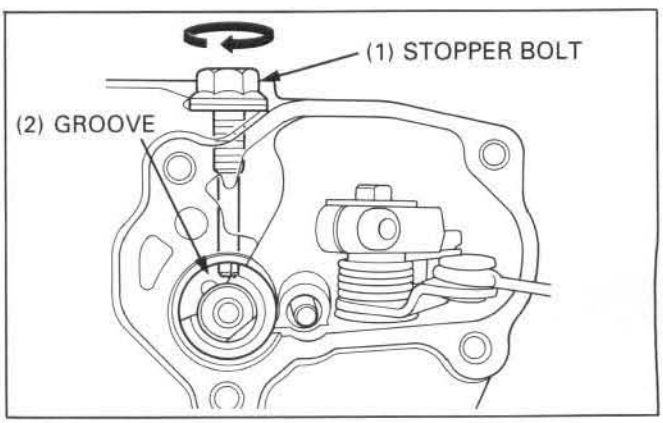
Install the right sub-exhaust valve and shaft into the cylinder aligning the slot in the flap valve with the sub-exhaust valve shaft.



Align the stopper bolt with the right sub-exhaust valve groove, then tighten the stopper bolt to the specified torque.

Torque: 5.5 N·m (0.55 kg-m, 4.0 ft-lb)

Install the exhaust valve bearing.

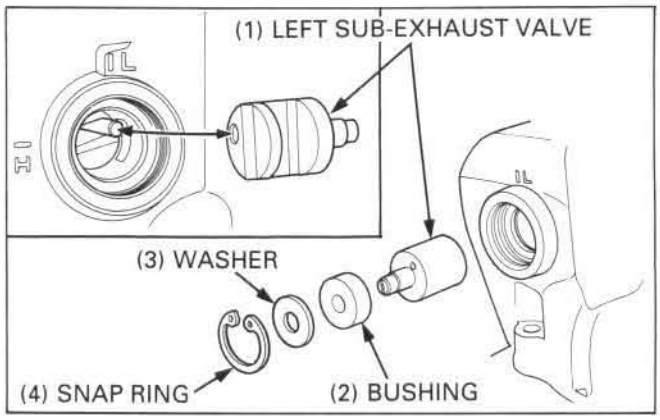


Apply Honda HP2 2-stroke engine oil or equivalent to the exhaust valve bushing and left sub-exhaust valve outer surface.

Aligning the sub-exhaust valve shaft with the hole on the sub-exhaust valve, install the valve.
Install the exhaust valve bushing, washer and snap ring.

S. TOOL

Snap ring pliers — **07914 – 3230001 or Equivalent commercially available in U.S.A.**



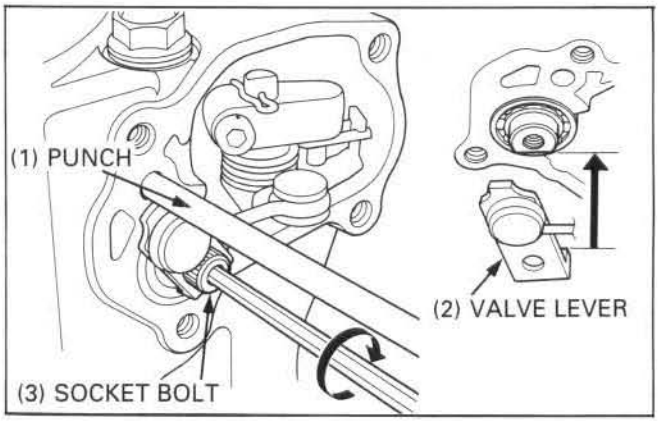
NOTE

- Make sure the snap ring is seated securely in the cylinder groove.

Install the exhaust valve lever onto the right sub-exhaust valve, and temporarily tighten the socket bolt.

Secure the exhaust valve lever using a punch or equivalent as shown.
Tighten the exhaust valve lever socket bolt to the specified torque.

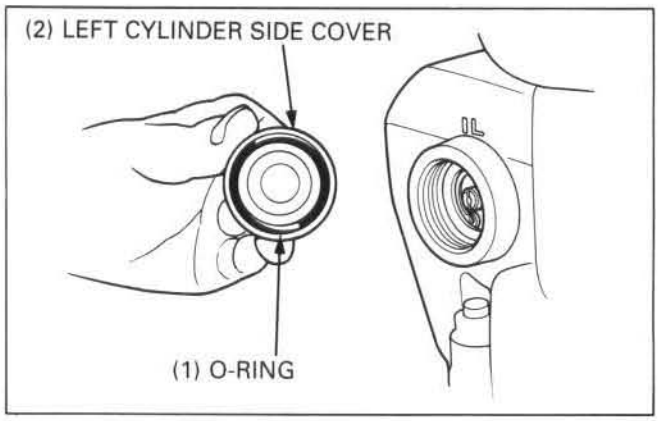
Torque: 5.5 N·m (0.55 kg-m, 4.0 ft-lb)



Install the cylinder (Section 7).
Check that the left cylinder side cover O-ring is in good condition.

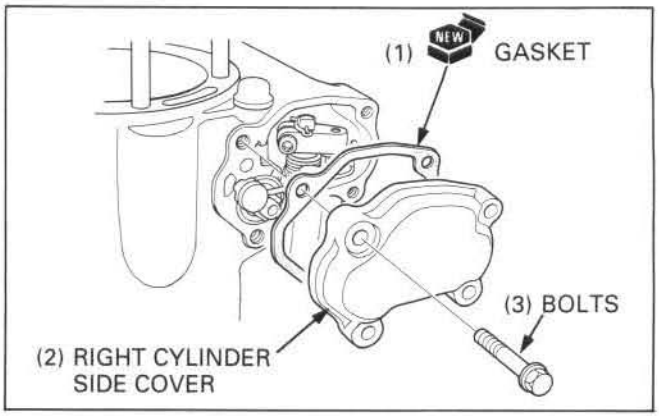
Apply Pro Honda Moly 60 or equivalent molybdenum paste to the threads and install the cover onto the cylinder.
Tighten the left cylinder side cover to the specified torque.

Torque: 13 N·m (1.3 kg-m, 9 ft-lb)



Install the new gasket onto the right cylinder side cover.
Install the right cylinder side cover and tighten the bolt to the specified torque.

Torque: 10 N·m (1.0 kg-m, 7 ft-lb)

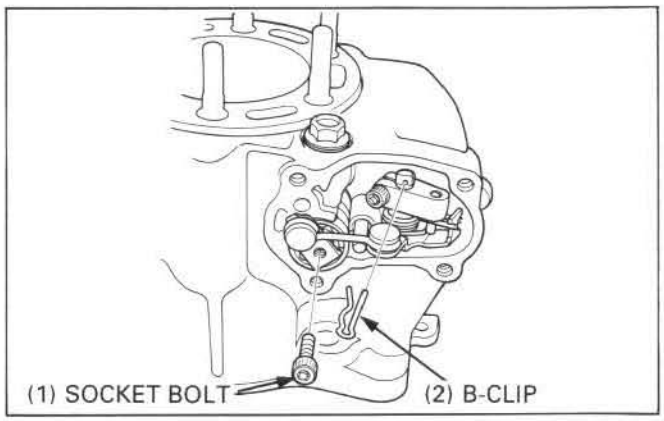


Exhaust Valve Linkage

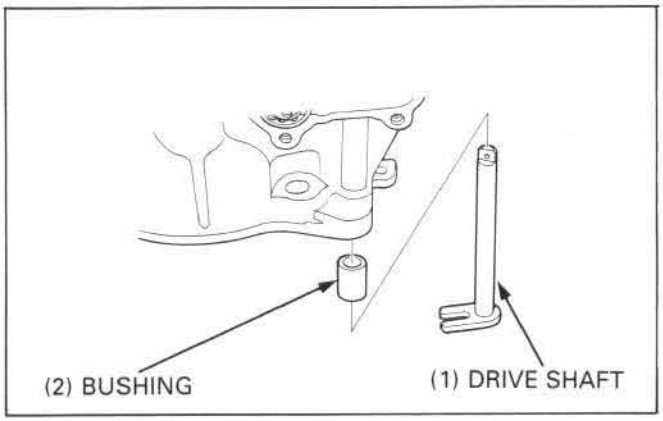
Disassembly

Remove the cylinder (page 7-5).

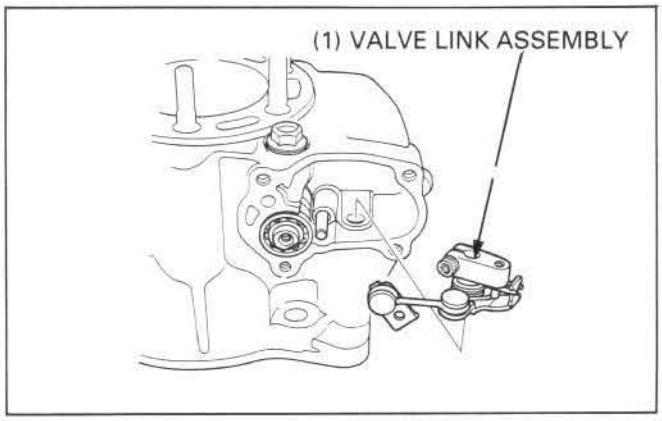
Loosen the pinion holder socket bolt.
Remove the exhaust valve lever socket bolt.
Remove the B-clip.



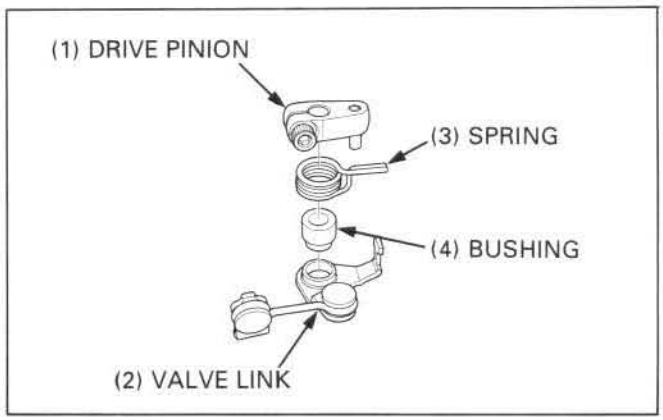
Remove the exhaust valve drive shaft and bushing.



Remove the valve link as an assembly.



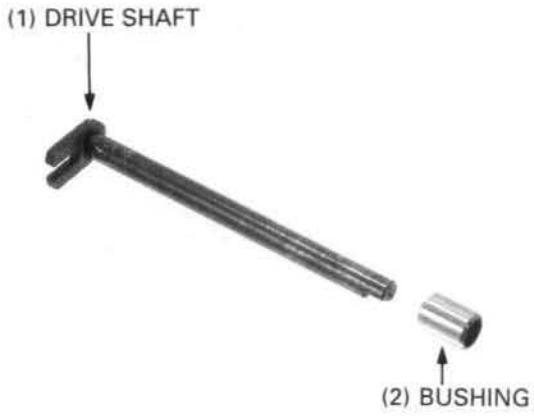
Disassemble the drive pinion and valve link assembly.



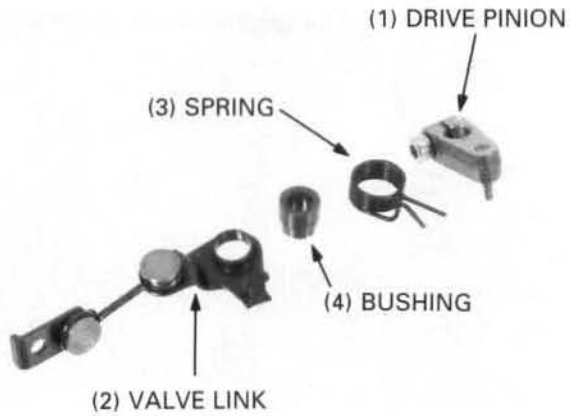
Inspection

Inspect the mating surfaces of the pinion holder and exhaust valve drive shaft for wear or damage.

Inspect the bushing for excessive wear or damage.



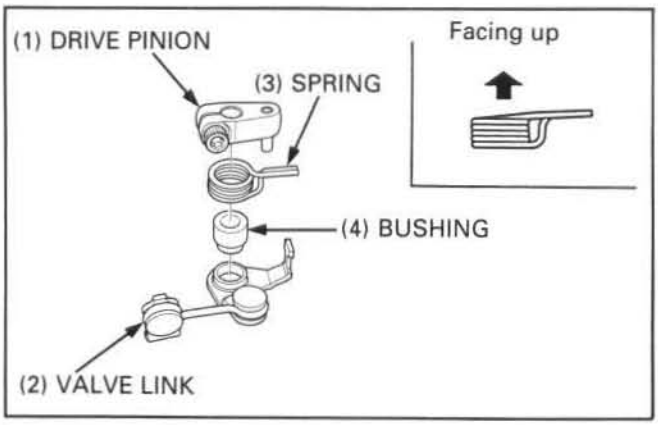
Inspect the tie-rod, bushing, link lever spring for wear or damage.



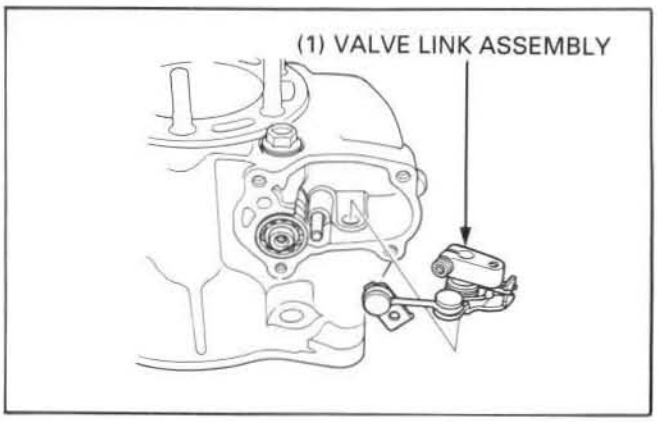
Assembly

Apply molybdenum disulfide oil (a 50/50 mixture of molybdenum disulfide grease and engine oil) to the valve link joint.

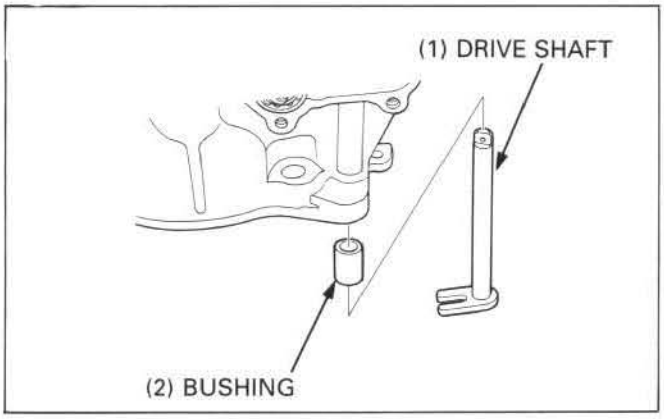
Assemble the valve link, bushing, exhaust valve link spring and pinion holder.



Install the valve link as an assembly into the cylinder.

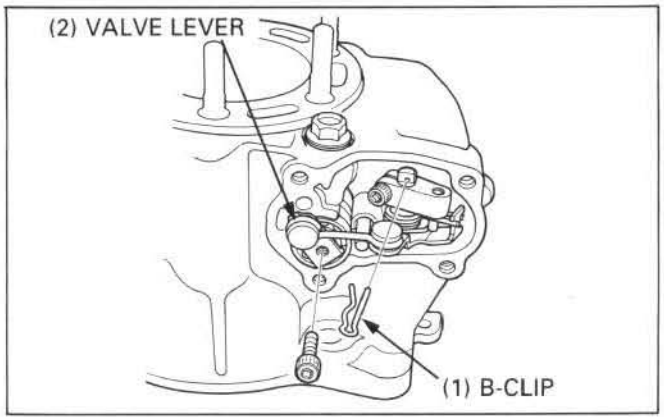


Apply multi-purpose grease to the exhaust valve drive shaft and bushing.
Install them into the cylinder.



Install the B-clip.

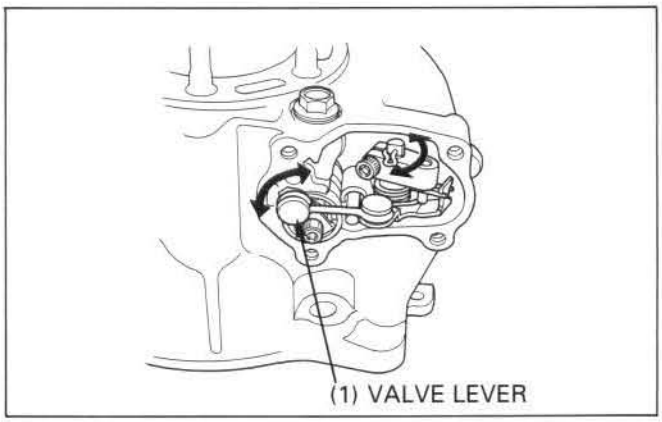
Install the exhaust valve lever onto the right sub-exhaust valve.



Operate the exhaust valve lever by hand, to check that exhaust valve mechanism operates smoothly.

If it does not operate smoothly, recheck that the exhaust valve mechanism is installed correctly.

Install the cylinder (Section 7).



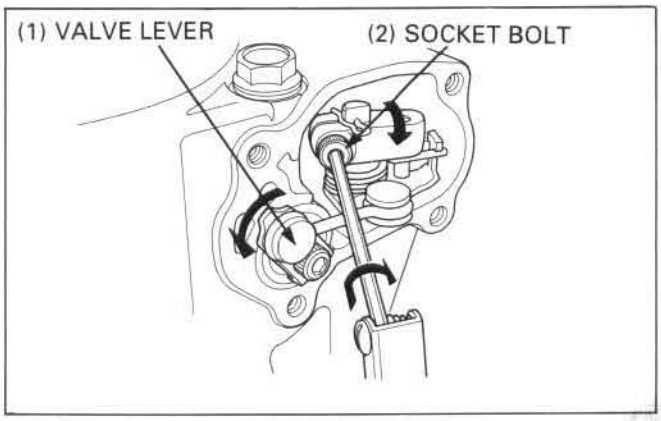
Adjustment

NOTE

- If you loosen the pinion lever socket bolt, adjust the exhaust valve linkage.

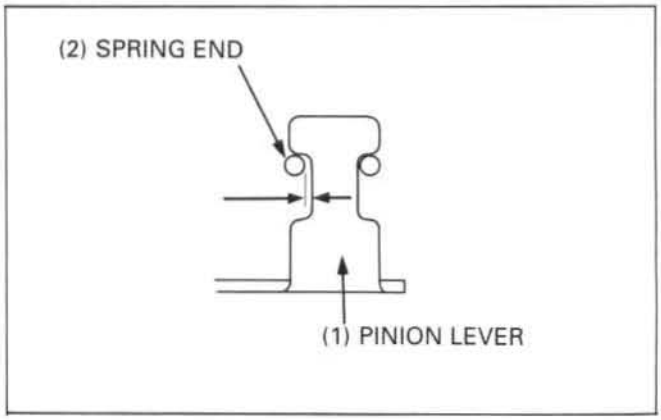
Turn the exhaust valve lever counterclockwise, and make sure that the exhaust valve is in the fully closed position. Tighten the pinion socket bolt to the specified torque.

Torque: 5.5 N·m (0.55 kg-m, 4.0 ft-lb)



After adjustment, check the clearance between the pinion lever return spring end and pinion lever.

Standard: 0 – 0.5 mm (0 – 0.02 in)

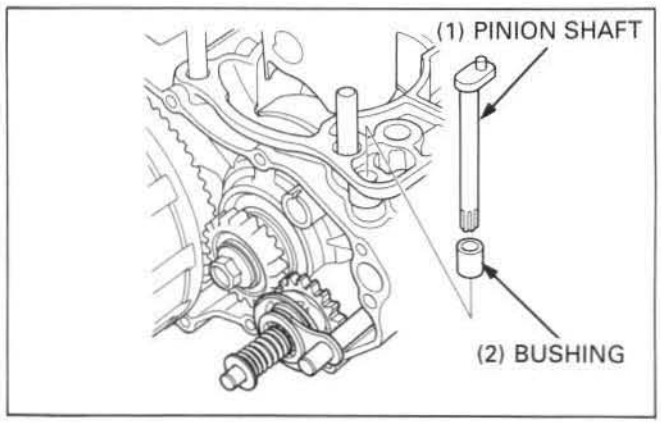


Governor/Cam

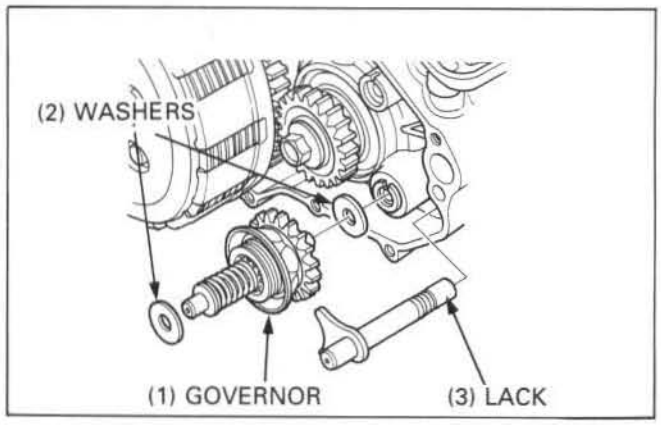
Removal

Remove the following:
- Cylinder (page 7-5)
- Right crankcase cover (page 9-2)

Remove the pinion shaft and pinion shaft bushing from the crankcase.



Remove the governor, two washers and the rack.



Inspection

Inspect the governor teeth for excessive wear or damage.

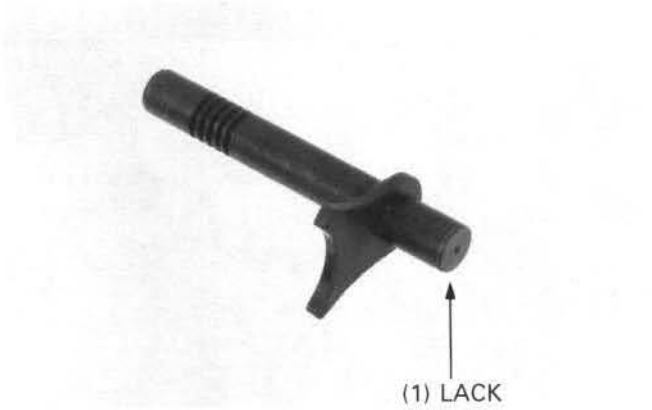
NOTE

- Do not disassemble the governor assembly.

Inspect the rack worm gear teeth for excessive wear or damage.

Inspect the pinion shaft surface and pinion gear for wear or damage.

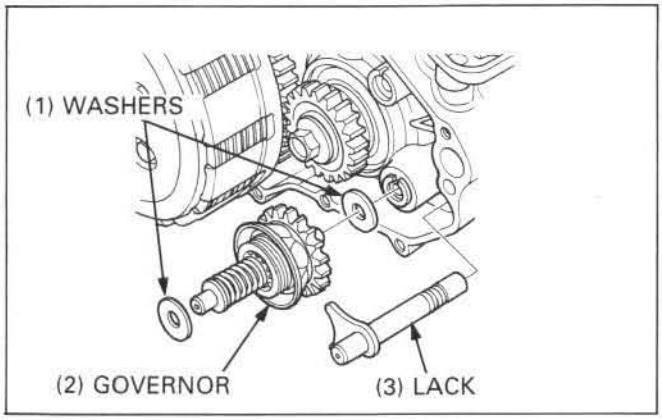
Inspect the bushing for excessive wear or damage.



Installation

Apply transmission oil to the governor bearing and sliding surface of the rack.
Apply molybdenum disulfide oil (a 50/50 mixture of molybdenum disulfide grease and engine oil) to the steel balls and both governor shaft.

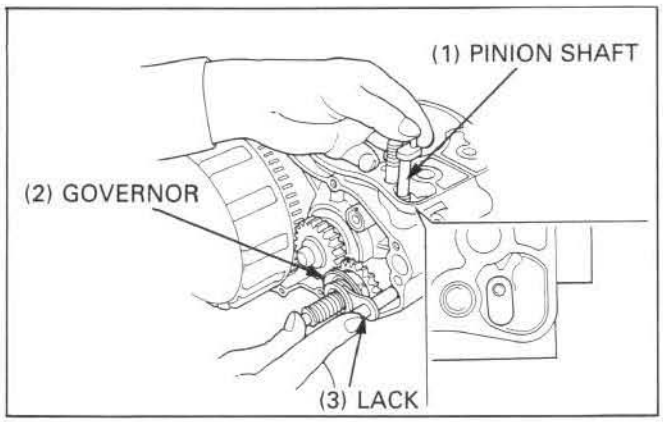
Install the washers, governor and rack.

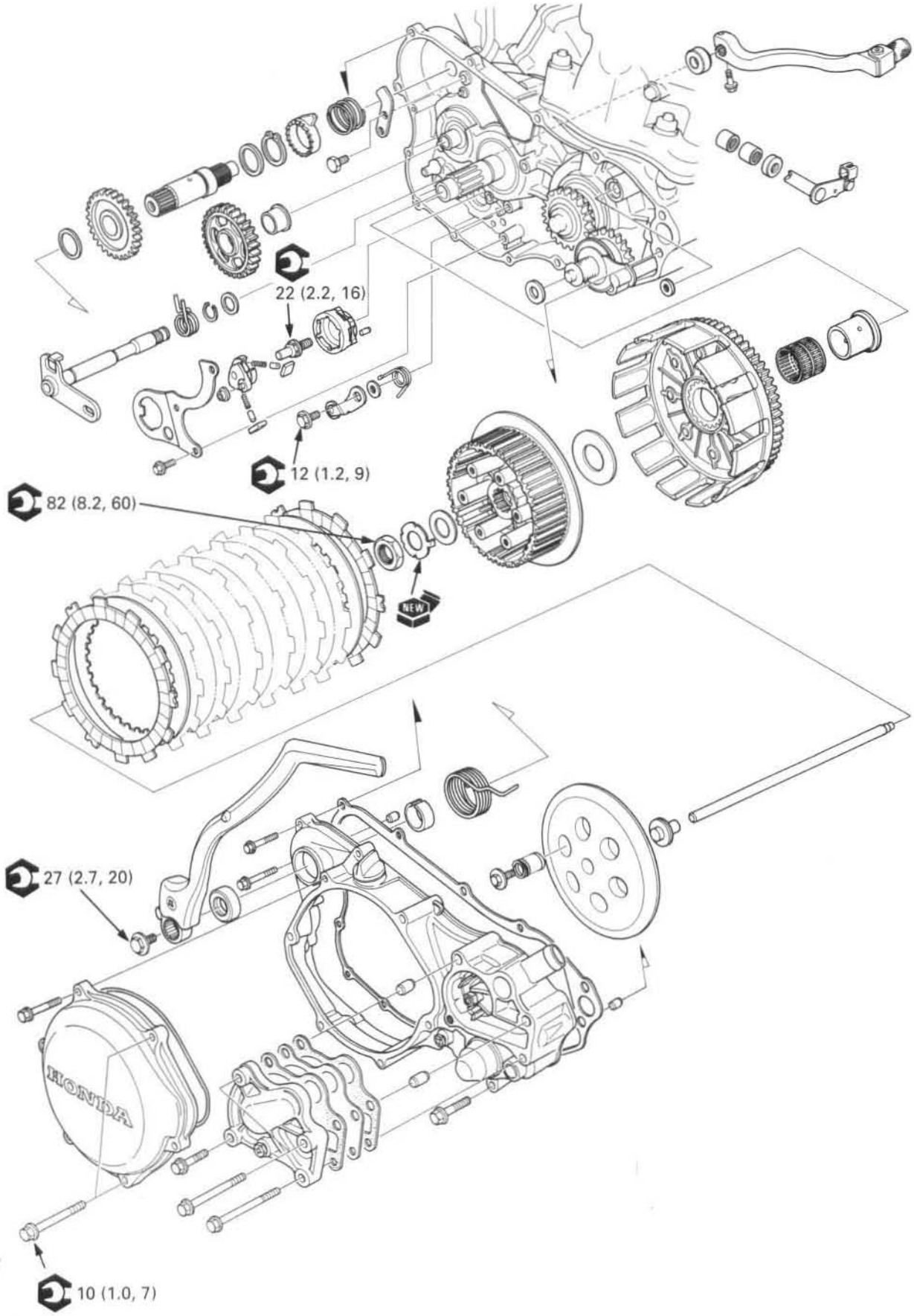


Apply Pro Honda Moly 60 or equivalent molybdenum paste to the pinion shaft and bushing, and instell them into the crankcase.

Install the pinion shaft while pushing the governor and rack against the crankcase.

Install the following:
- Right crankcase cover (page 9-2)
- Cylinder (page 7-9)
- Right cylinder side cover (page 8-6)




22 (2.2, 16)
12 (1.2, 9)
82 (8.2, 60)
NEW
27 (2.7, 20)
HONDA
10 (1.0, 7)

9. Clutch/Kickstarter/Gearshift Linkage

Service Information

General

- The clutch can be serviced with the engine/transmission in the frame.
- Transmission oil viscosity and level have an effect on clutch disengagement. Oil additives also affect clutch performance and are not recommended. When the clutch does not disengage or the vehicle creeps with clutch pulled in, inspect the transmission oil and oil level before servicing the clutch system.

Specifications

Unit: mm (in)

Item		Standard	Service Limit
Clutch lever free play		10 – 20 (3/8 – 3/4)	——
Clutch spring free length	'92 – '93:	44.2 (1.74)	42.4 (1.67)
	After '93:	45.7 (1.83)	44.7 (1.76)
Clutch disc thickness		2.92 – 3.08 (0.114 – 0.121)	2.85 (0.112)
Clutch plate warpage		——	0.20 (0.008)

Torque Values

Right crankcase cover/clutch cover bolt	10 N·m (1.0 kg-m, 7 ft-lb)
Clutch center lock nut	82 N·m (8.2 kg-m, 60 ft-lb)
Clutch spring bolt	10 N·m (1.0 kg-m, 7 ft-lb)
Shift drum center pin	22 N·m (2.2 kg-m, 16 ft-lb)
Shift drum stopper arm bolt	12 N·m (1.2 kg-m, 9 ft-lb)
Kickstarter pedal bolt	27 N·m (2.7 kg-m, 20 ft-lb) Apply a locking agent

Tools

Common

Clutch center holder	07724 – 0050001

Troubleshooting

Hard To Shift
- Incorrect clutch adjustment
- Loose stopper plate bolt
- Damaged stopper plate and pin
- Damaged gearshift spindle

Transmission Jumps Out Of Gear
- Worn shift drum stopper arm
- Weak or broken shift arm return spring
- Loose stopper plate bolt

Gearshift Pedal Will Not Return
- Weak or broken gearshift spindle return spring
- Bent gearshift spindle

Clutch Slips When Accelerating
- Incorrect clutch adjustment
- Worn clutch discs
- Weak clutch springs
- Transmission oil mixed with molybdenum or graphite additive

Motorcycle Creeps With The Engine Idling
- Incorrect clutch adjustment
- Clutch plates warped
- Faulty clutch lifter
- Incorrect transmission oil

Right Crankcase Cover

Removal

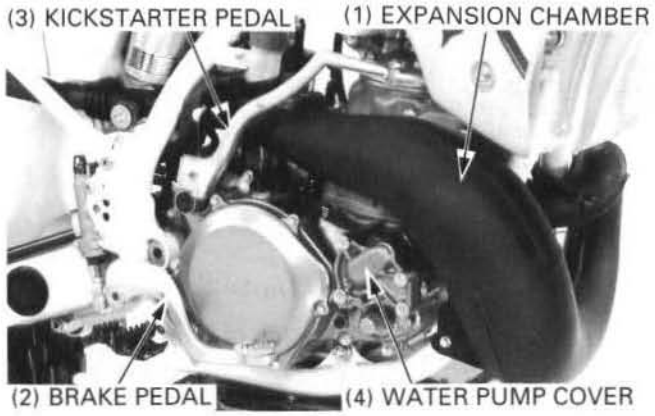
Drain the coolant (page 5-3).
Drain the transmission oil.

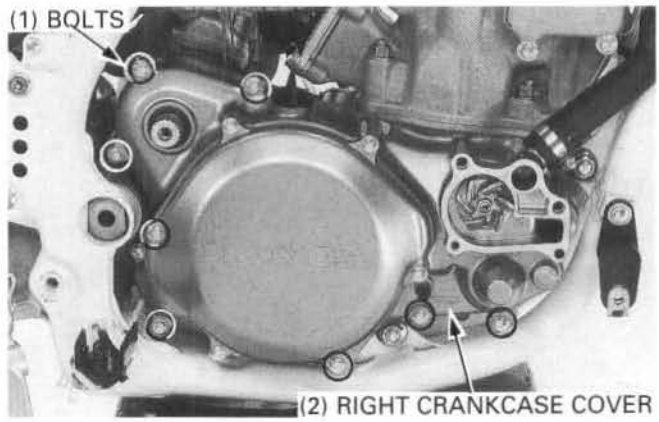
Remove the following:
- Expansion chamber (page 2-4)
- Brake pedal (page 13-14)
- Kickstarter pedal

Disconnect the radiator hose from the right crankcase cover.
Remove the bolts and water pump cover (page 5-5).

Remove the cover bolts and right crankcase cover.

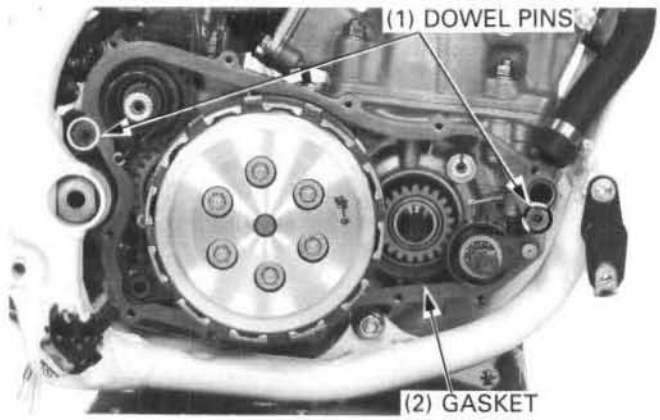
Remove the gasket and dowel pins.





Installation

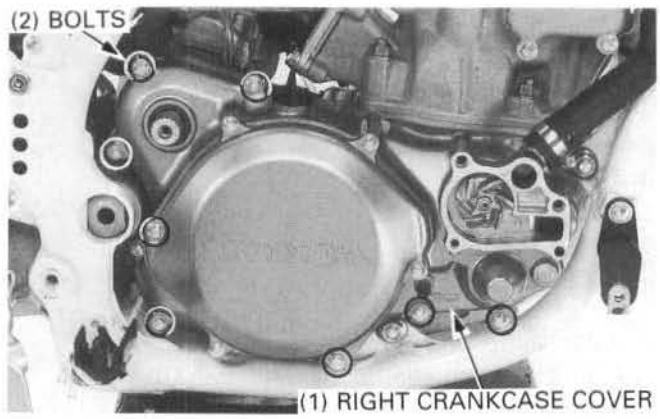
Install the dowel pins and a new gasket.



Install the right crankcase cover while engaging the water pump gear with the primary drive gear.

Install and tighten the bolts.

Torque: 10 N·m (1.0 kg-m, 7 ft-lb)



Install the water pump cover (page 5-8).

Connect the radiator hose to the right crankcase cover.

Install the following:
- Expansion chamber (page 2-4)
- Brake pedal (page 13-14)

Install the kickstarter pedal.

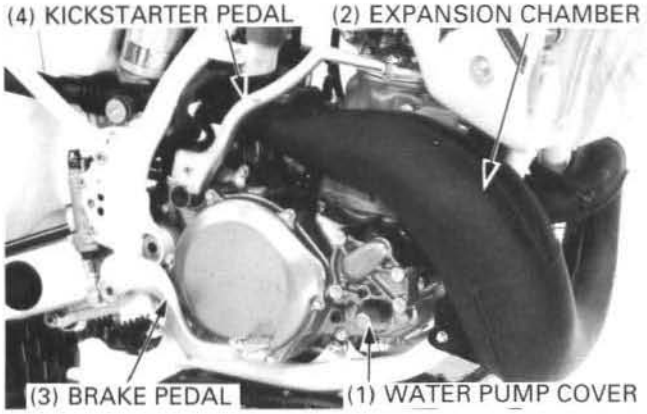
Clean the kickstarter pedal bolt thread and apply Honda Anaerobic Thread Lock or equivalent.
Tighten the bolt to the specified torque.

Torque: 27 N·m (2.7 kg-m, 20 ft-lb)

Fill the transmission with recommended oil to the correct level (page 3-9).

Pour the radiator 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 oil leaks.

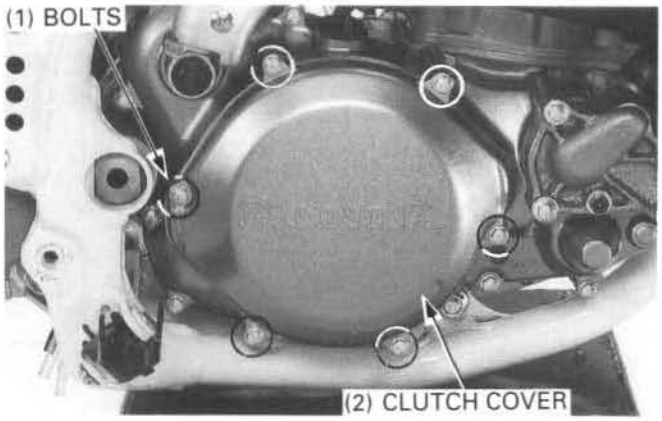


Clutch

Clutch Removal

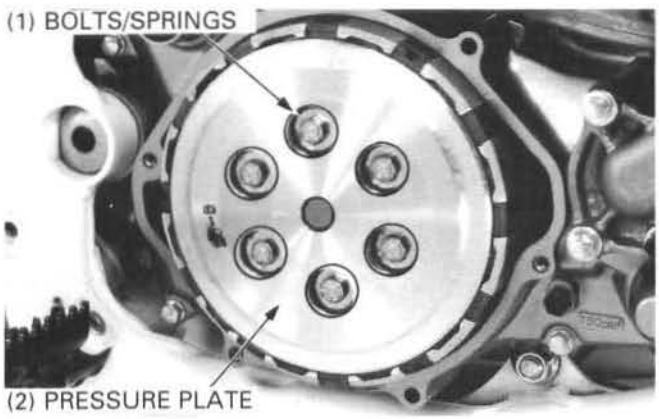
Remove the brake pedal (page 13-14).

Remove the bolts and clutch cover.



Remove the six clutch spring bolts in a crisscross pattern in 2 or 3 steps.
Remove the clutch springs.

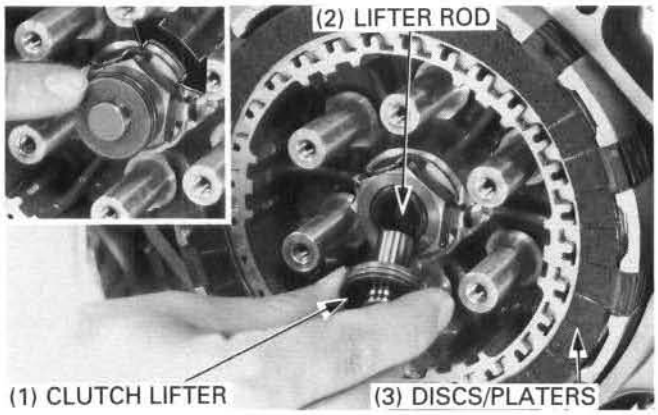
Remove the clutch pressure plate.



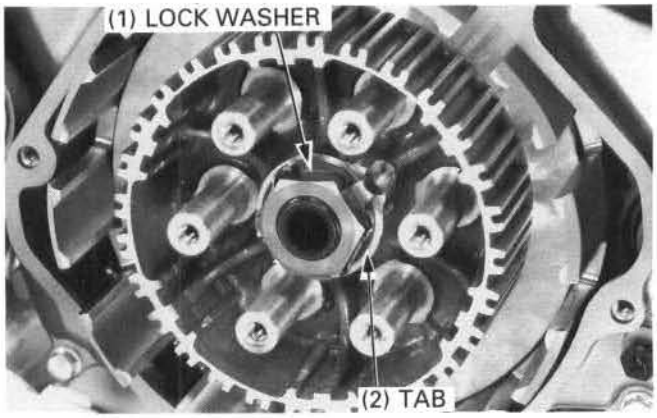
Remove the clutch lifter and clutch lifter rod.

Turn the clutch lifter with your finger, check that the clutch lifter needle bearing turns smoothly.

Remove the eight clutch friction discs and seven clutch plates.



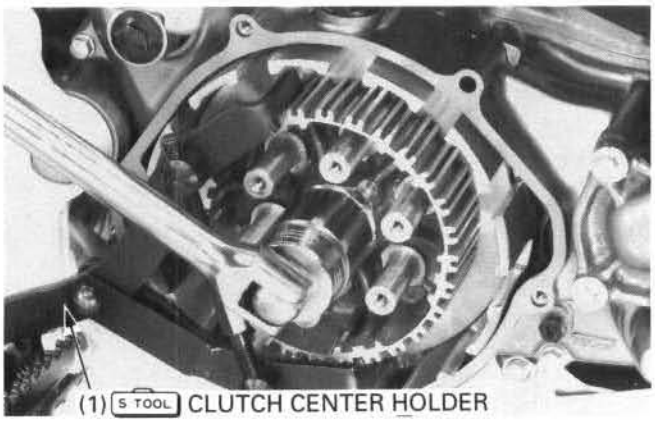
Bend the tabs of the lock washer away from the lock nut.



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

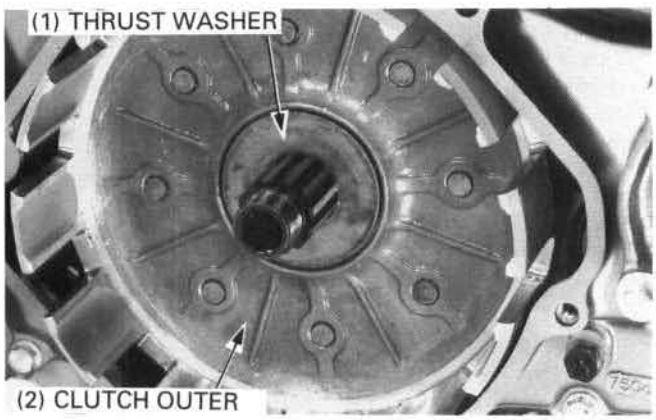
S. TOOL
Clutch center holder **07724 – 0050001 or Equivalent commercially avaiable in U.S.A.**

Remove the tool and clutch center.



After '92:
Remove the right crankcase cover (page 9-2) to gain clearance for the enlarged clutch outer.

Remove the following:
- Thrust washer
- Clutch outer
- Needle bearing
- Clutch outer guide



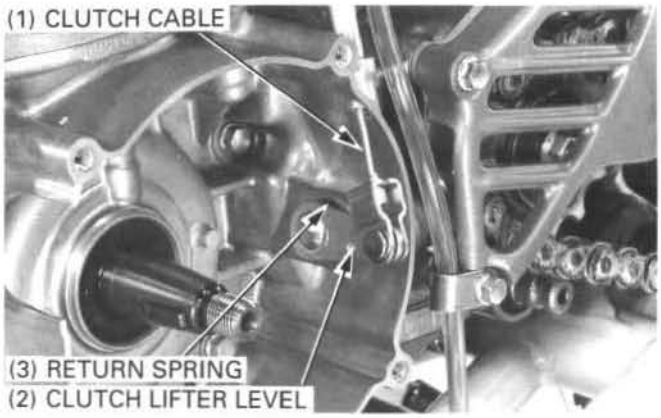
Clutch Lifter Lever Removal

Remove the alternator cover (page 14-6).

Disconnect the clutch cable from the clutch lifter lever by loosening the clutch cable adjuster.

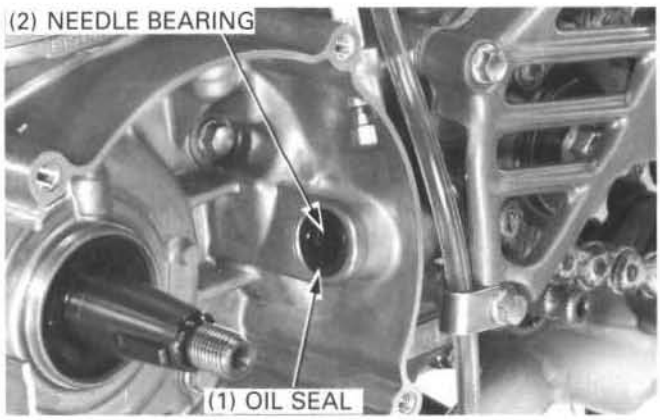
Remove the flywheel and stator (page 14-6).

Remove the clutch lifter lever from the left crankcase.



Inspect the following:
- Clutch lifter lever for damage

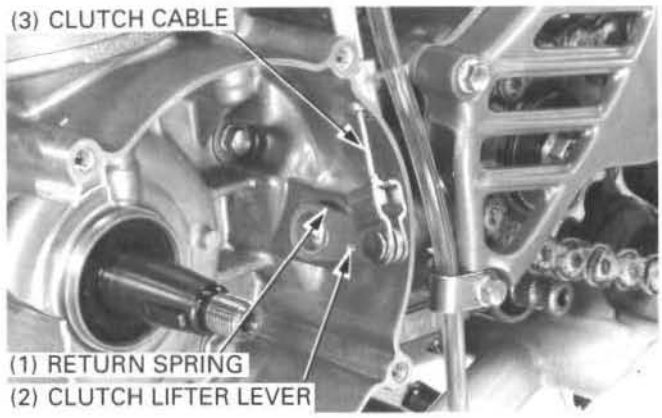
- Oil seal and needle bearings for wear or damage



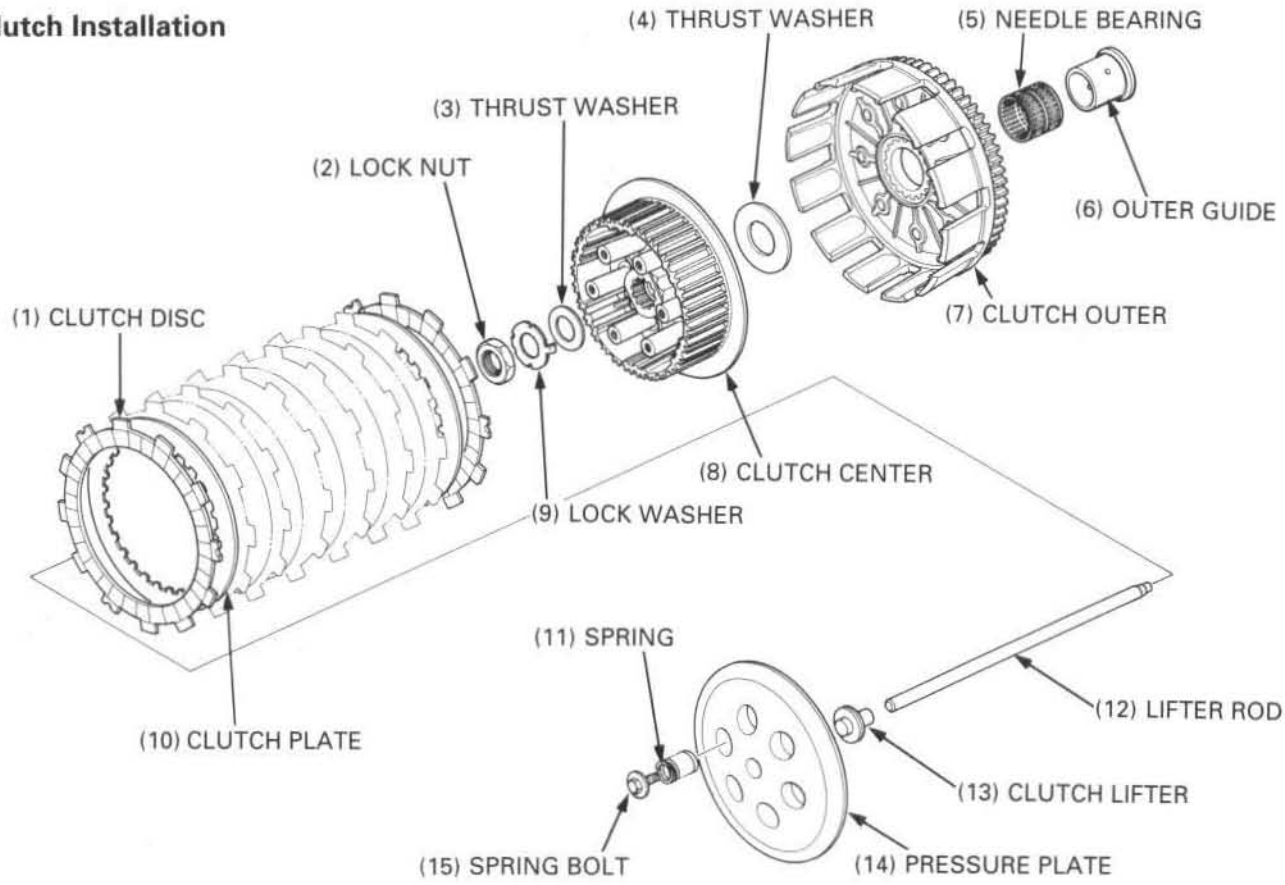
Clutch Lifter Lever Installation

Coat the clutch lifter lever with grease, then install the clutch lifter lever.
Install the stator and flywheel (page 14-7).

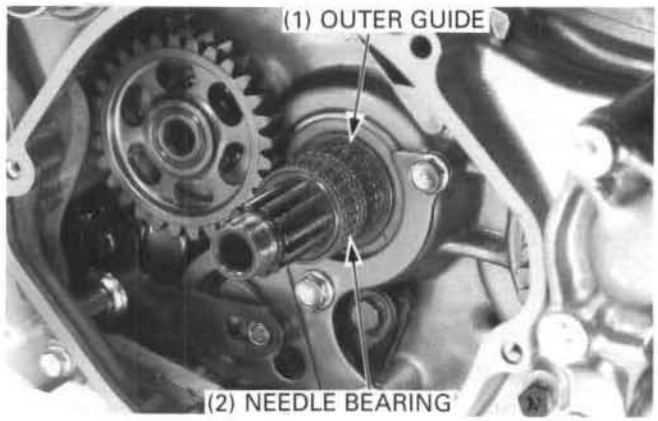
After installation, check the following:
- Ignition timing (page 14-8)
- Clutch operation



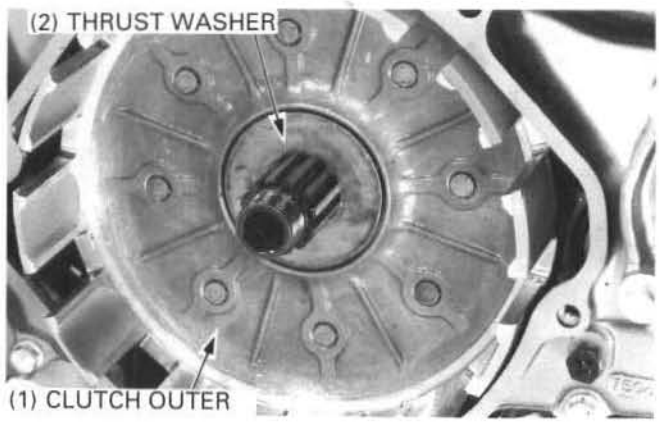
Clutch Installation



Install the clutch outer guide and needle bearing onto the mainshaft.
Apply clean transmission oil to the needle bearing and outer guide.

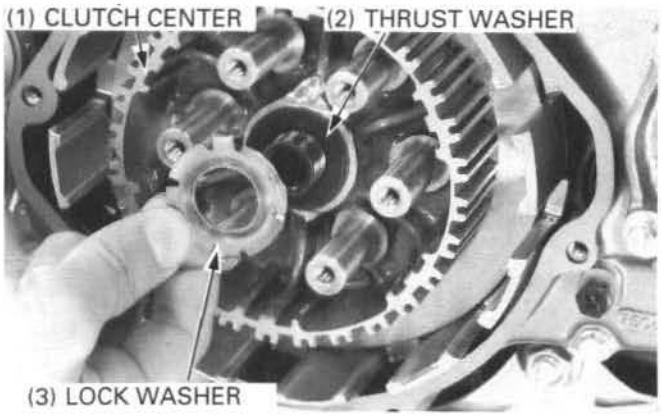


Install the clutch outer and thrust washer.



Install the clutch center onto the mainshaft.

Install the thrust washer.
Align the groove of a new lock washer with a rib on the clutch center and slip it into place on the mainshaft.



Install the clutch center nut and tighten the nut to the specified torque while holding the clutch center with the clutch center holder.

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

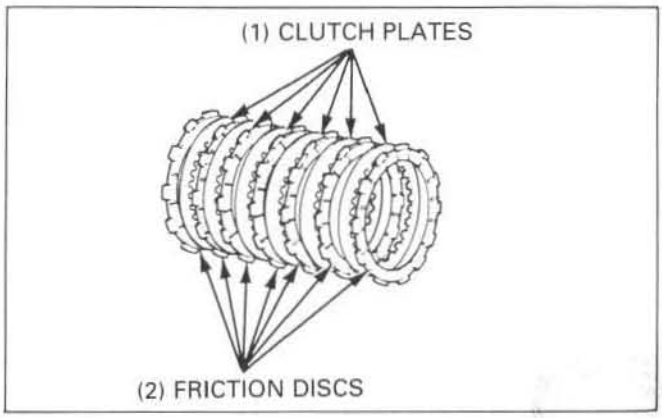
Torque: 82 N·m (8.2 kg-m, 60 ft-lb)

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

After '92:
Install the right crankcase cover (page 9-2).

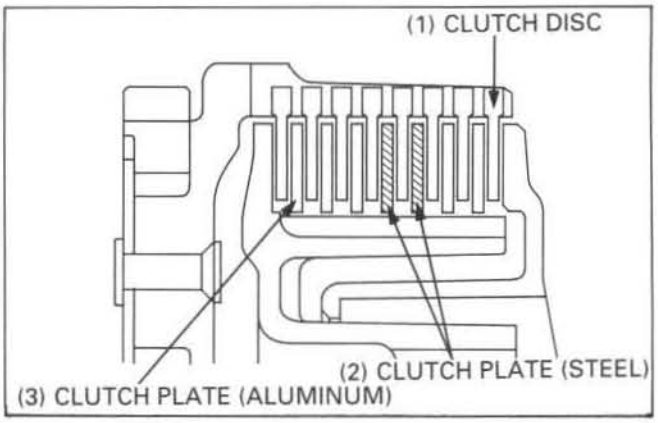
'92 – '93:
Coat the clutch plates with clean transmission oil.

Install the eight friction discs and seven clutch plates alternately, starting with a disc.



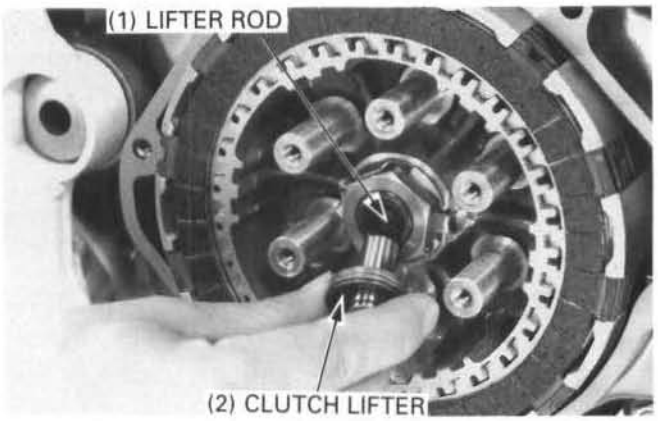
After '93
Coat the clutch plates with clean transmission oil.

Install the eight friction discs and seven clutch plates (five aluminum plates and two steel plates) alternately, starting with a disc.
Install the two steel plates as shown.



Apply molybdenum disulfide grease to the lifter and clutch lifter rod contact surface.

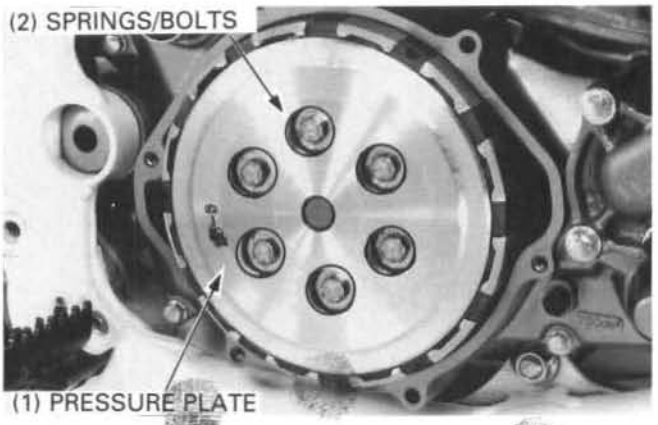
Insert the clutch lifter rod into the mainshaft.
Install the clutch lifter.



Install the clutch pressure plate.

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

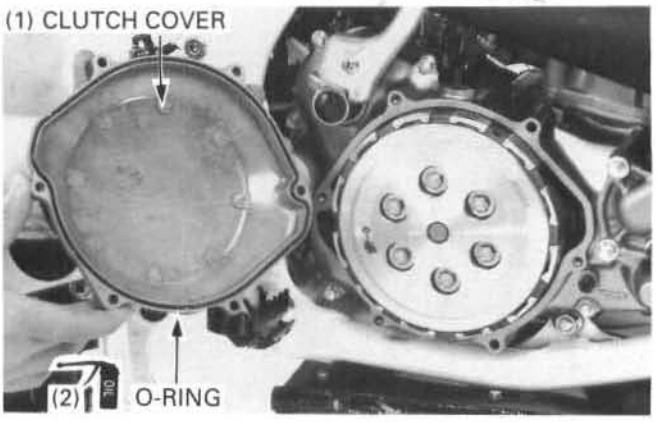
Torque: 10 N·m (1.0 kg-m, 7 ft-lb)



Check that the clutch cover O-ring is in good condition.
Apply oil to the O-ring and install the clutch cover.
Install and tighten the clutch cover bolts.

Torque: 10 N·m (1.0 kg-m, 7 ft-lb)

Install the brake pedal (page 13-14).



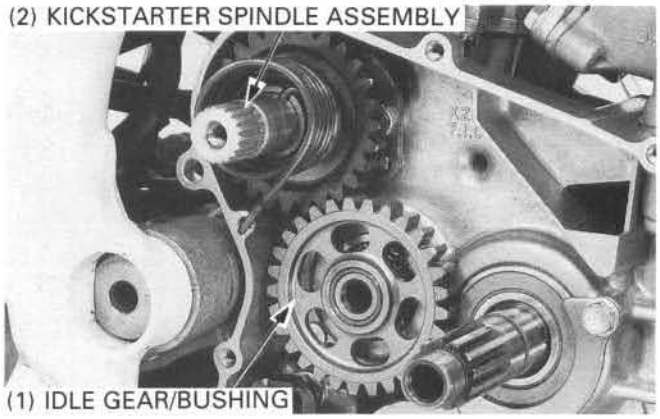
Kickstarter

Removal

Remove the right crankcase cover (page 9-2).
Remove the clutch (page 9-3).

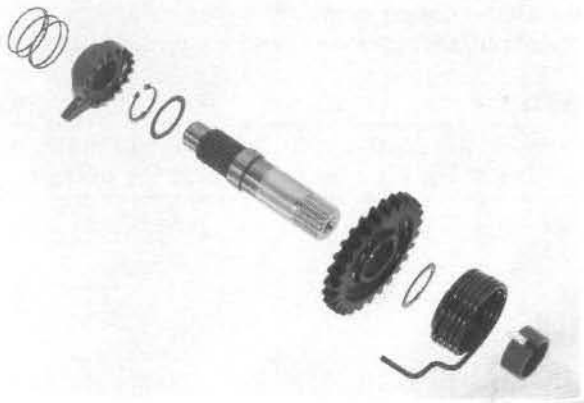
Remove the idle gear and bushing.

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

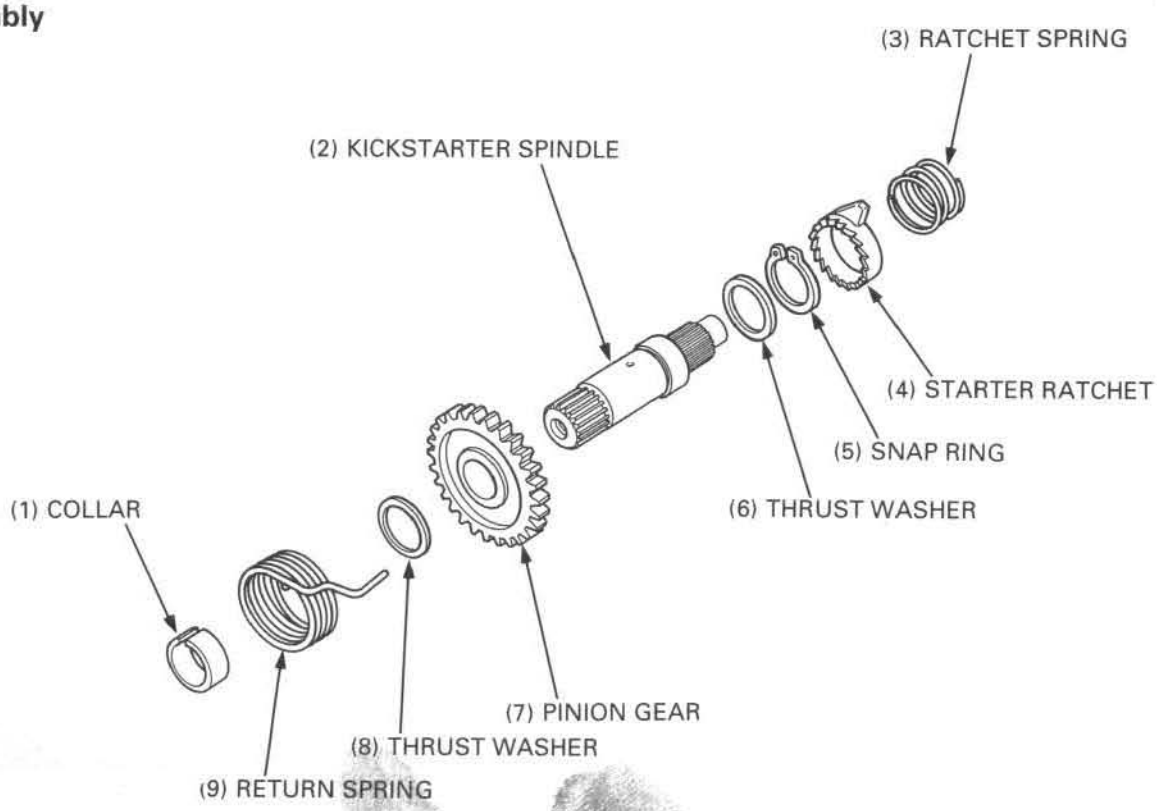


Disassembly

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

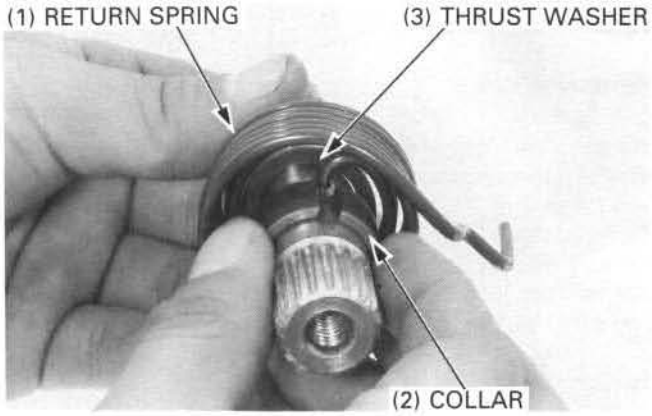


Assembly



Insert the return spring into the spring hook on the starter spindle.

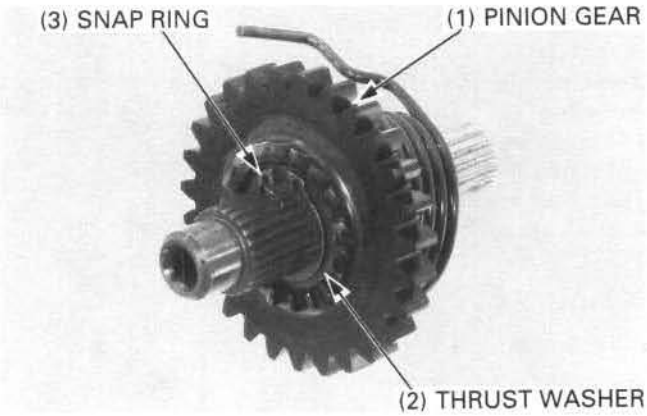
Install the collar aligning the groove of the collar with the spring, then install the thrust washer.



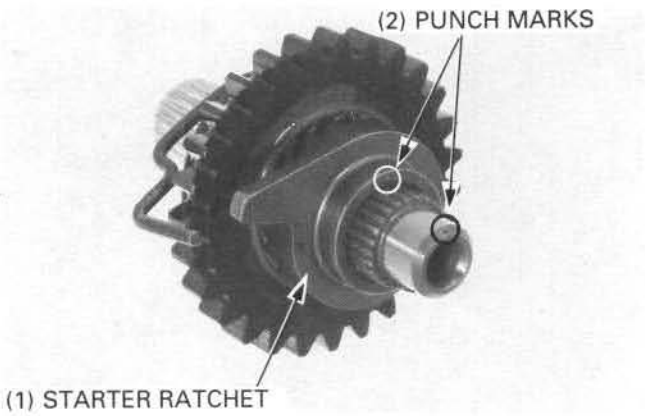
Install the pinion gear.
Install the thrust washer and snap ring.

NOTE

- Seat the snap ring in the groove of the spindle with the sharp edge facing towards the outside.



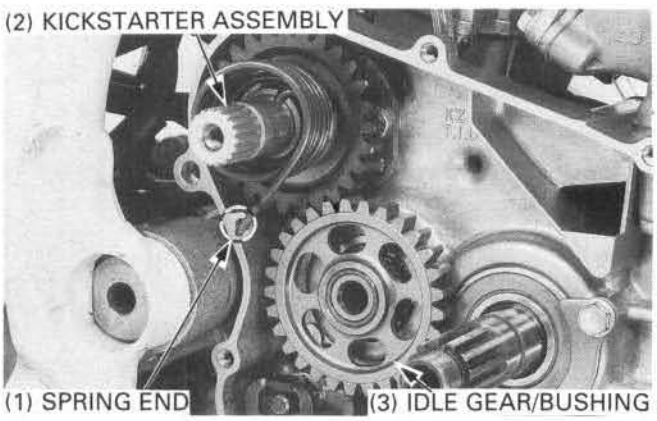
Align the punch marks and install the starter ratchet.
Install the ratchet spring.



Install the kickstarter spindle and hook the return spring end to the crankcase.

Install the thrust washer onto the countershaft.
Install the starter idle gear bushing and idle gear onto the countershaft.

Install the following:
- Clutch (page 9-6)
- Right crankcase cover (page 9-2)

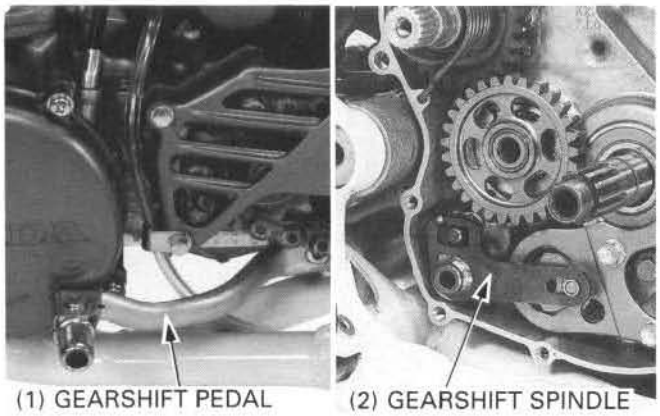


Gearshift Linkage

Removal

Remove the following:
- Right crankcase cover (page 9-2)
- Clutch (page 9-3)

Remove the gearshift pedal and pull the gearshift spindle out.

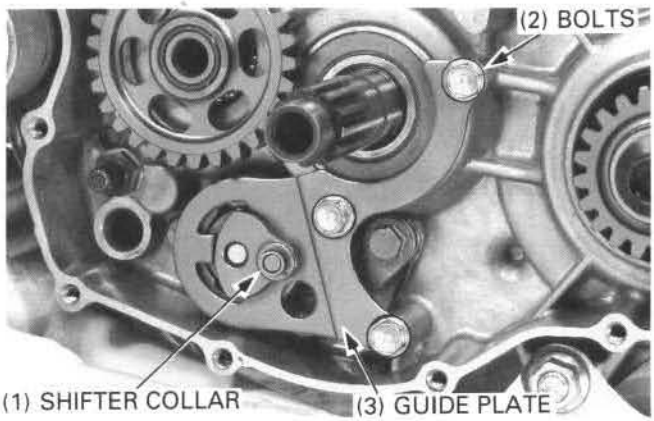


Remove the shifter collar.

Remove the guide plate and drum shifter as an assembly.

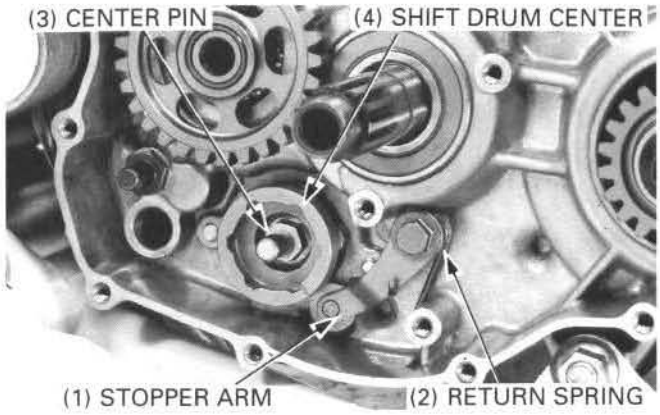
NOTE

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



Remove the stopper arm and return spring.

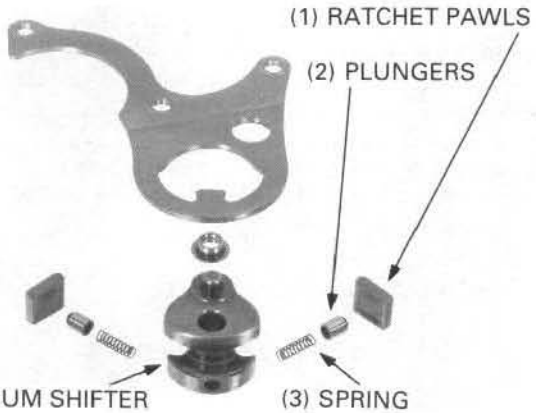
Remove the shift drum center pin and shift drum center.



Installation

Apply clean transmission oil to the ratchet pawls, springs and plunger.

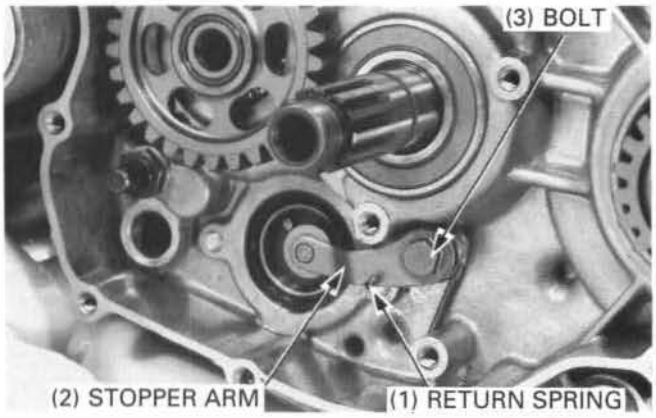
Assemble the drum shifter, springs, plungers and ratchet pawls in the guide plate as shown.



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

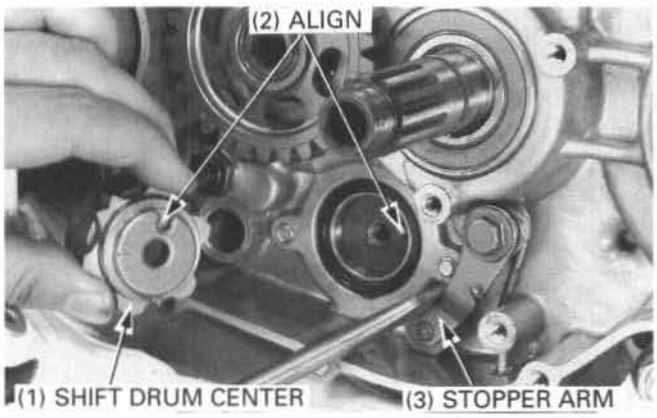
Torque: 12 N·m (1.2 kg-m, 9 ft-lb)

Check the stopper arm for proper operation.



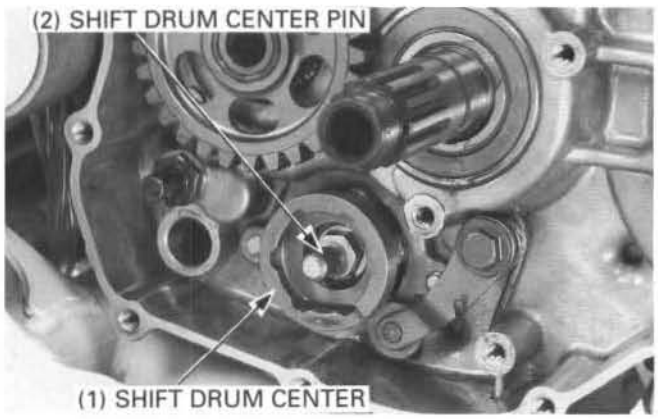
Install the dowel pin into the shift drum.

Move the stopper arm out of the way using a screwdriver. Align the shift drum center hole with the dowel pin and slip it into place.



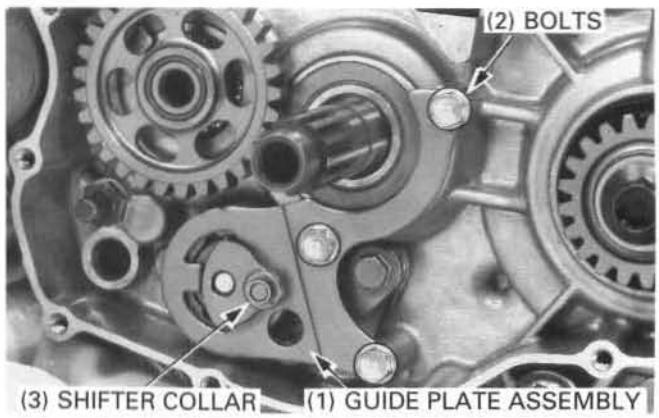
Install and tighten the shift drum center pin to the specified torque.

Torque: 22 N·m (2.2 kg-m, 16 ft-lb)



Position the drum center in a gear other than neutral. Holding the ratchet pawls in place in the guide plate, and drum shifter, install the assembly onto the shift drum center pin.

Install and tighten the guide plate bolts.
Install the shifter collar onto the drum shifter.



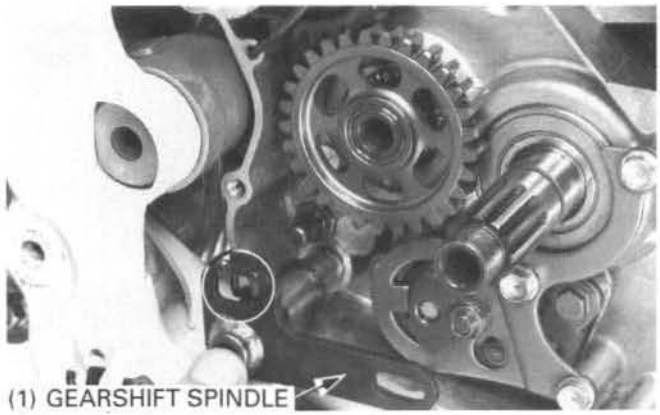
Assemble and install the gearshift spindle.

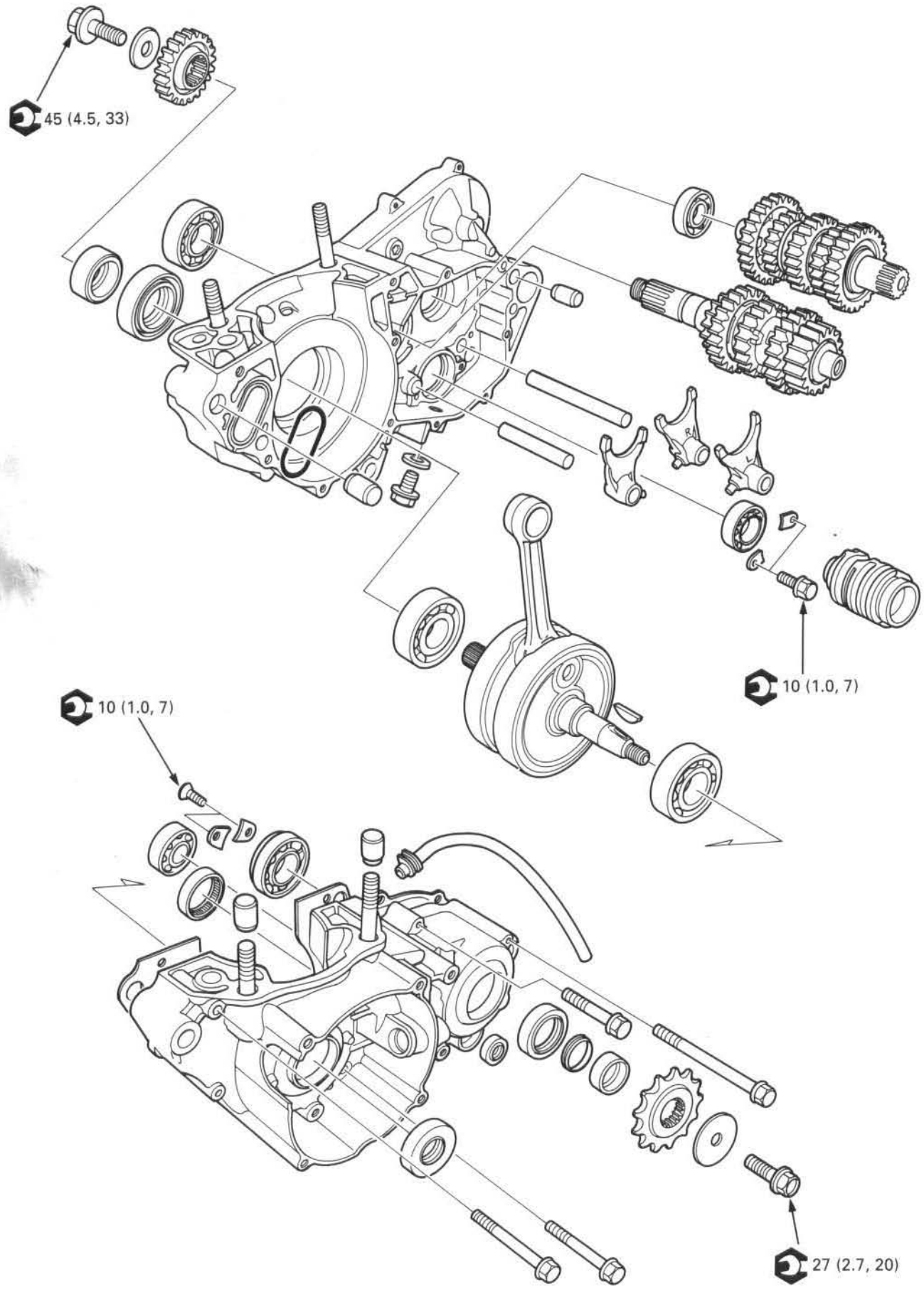
NOTE

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

Check that the shift drum turns smoothly.

Install the following:
- Clutch (page 9-6)
- Right crankcase cover (page 9-2)
- Gearshift pedal


(1) GEARSHIFT SPINDLE


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

10. Crankcase/Crankshaft/Transmission

Service Information

General

- This section covers crankcase separation for service of the crankshaft, transmission and kickstarter.
- The engine must be out of the frame for this service.
- The following parts must be removed before separating the crankcase.
  - Alternator (Section 14)
  - Clutch/kickstarter/gearshift linkage (Section 9)
  - Cylinder head/cylinder/piston (Section 7)
  - Engine (Section 6)

Specifications

Unit: mm (in)

Item		Standard	Service Limit
Connecting rod big end	Side clearance	0.4 – 0.8 (0.02 – 0.03)	0.9 (0.04)
	Radial clearance	0.010 – 0.022 (0.0004 – 0.0009)	0.03 (0.001)
Crankshaft runout		—	0.05 (0.002)
Transmission gear I.D.	M4	28.007 – 28.028 (1.1026 – 1.1035)	28.05 (1.104)
	M5	25.020 – 25.041 (0.9850 – 0.9859)	25.07 (0.987)
	C1	22.020 – 22.041 (0.8669 – 0.8678)	22.07 (0.869)
	C2	30.020 – 30.041 (1.1819 – 1.1827)	30.07 (1.184)
	C3	25.020 – 25.041 (0.9850 – 0.9859)	25.07 (0.987)
Transmission gear bushing O.D.	M4	27.959 – 27.980 (1.1007 – 1.1015)	27.94 (1.100)
	C1	21.979 – 22.000 (0.8653 – 0.8661)	21.95 (0.864)
	C2	29.979 – 30.000 (1.1802 – 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 (1.064)
Gear-to-bushing clearance	M4	0.027 – 0.069 (0.0011 – 0.0027)	0.11 (0.004)
	C1, C2	0.020 – 0.062 (0.0008 – 0.0024)	0.12 (0.005)
Gear-to-shaft clearance	M5	0.040 – 0.082 (0.0016 – 0.0032)	0.13 (0.005)
	C3	0.041 – 0.082 (0.0016 – 0.0032)	0.11 (0.004)
Mainshaft O.D. at M5 gear		24.959 – 24.980 (0.9826 – 0.9835)	24.94 (0.982)
Countershft 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 – 24.979 (0.9826 – 0.9834)	24.96 (0.983)
Gear bushing-to-shaft clearance	C1	0.020 – 0.062 (0.0008 – 0.0024)	0.12 (0.005)
	C2	0.006 – 0.035 (0.0002 – 0.0014)	0.12 (0.005)
Shift fork claw 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 (0.4740 – 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	11.994 – 11.983 (0.4722 – 0.4718)	11.98 (0.472)

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 bolt	10 N·m (1.0 kg-m, 7 ft-lb) Apply a locking agent
Gearshift drum bearing set plate	10 N·m (1.0 kg-m, 7 ft-lb)

Tools

Special

Crankcase puller	07937 – 4300000 or 07937 – 4300001
Bolt, 6 mm	07PMC – KZ40100
Universal bearing puller	07631 – 0010000 or equivalent commercially available in U.S.A.
Crankcase assembly tool set	07965 – 1660100 – Not available in U.S.A. or 07965 – 1660101
– Shaft puller	07965 – 1660200
– Assembly collar	07965 – 1660300 or 07965 – 1660301
Bearing remover, 17 mm	07936 – 3710300
– Remover handle	07936 – 3710100
– Remover weight	07741 – 0010201 or 07936 – 3710200
Threaded adaptor	07965 – KA30000

Common

Gear holder	07724 – 0010100
Driver	07746 – 0010000
Attachment, 32 x 35 mm	07746 – 0010100
Attachment, 42 x 47 mm	07746 – 0010300
Attachment, 52 x 55 mm	07746 – 0010400
Pilot, 17 mm	07746 – 0040400
Pilot, 20 mm	07746 – 0040500
Pilot, 22 mm	07746 – 0041000
Pilot, 25 mm	07746 – 0040600
Universal holder	07725 – 0030000 or equivalent commercially available in U.S.A.

Troubleshooting

Engine Noise
- Worn crankpin bearing
- Worn transmission bearing(s)
- Worn crankshaft bearing(s)

Transmission Jumps Out Of Gear
- Worn gear dogs or slots
- Bent fork shaft
- Broken shift drum stopper
- Worn or bent shift forks
- Broken shift linkage return spring

Hard To Shift
- Improper clutch operation
- Incorrect transmission oil
- Incorrect clutch adjustment
- Bent shift fork
- Bent shift fork shaft
- Bent shift fork claw
- Damaged shift drum cam grooves
- Bent shift spindle

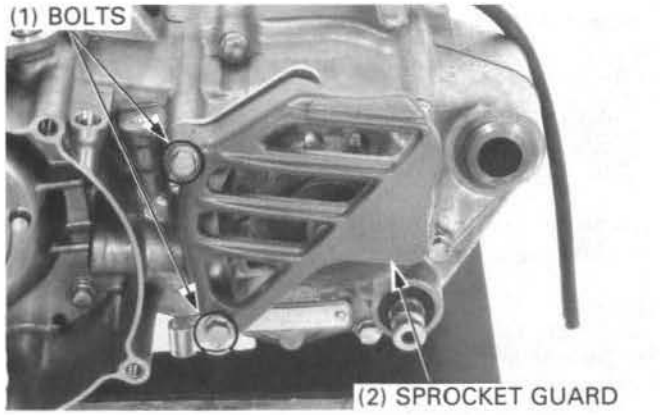
Engine Vibration
- Excessive crankshaft runout

Crankcase Separation

NOTE

- Refer to Service Information (page 10-1) for removal of necessary parts before separating the crankcase.

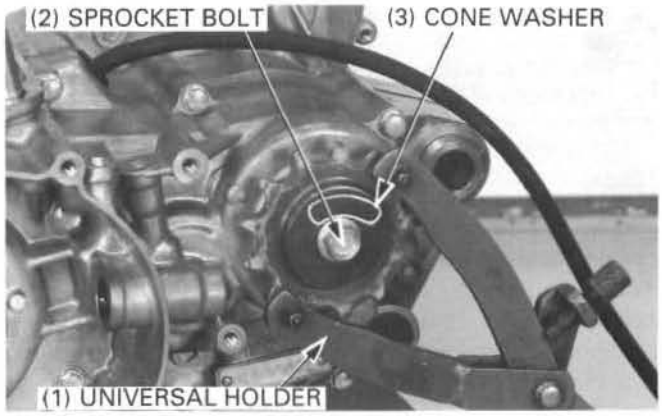
Remove the sprocket guard by removing the two bolts.



Loosen the drive sprocket bolt while holding the sprocket with the universal holder.

S. TOOL
Universal holder **07725 – 0030000**

Remove the cone spring washer and drive sprocket.

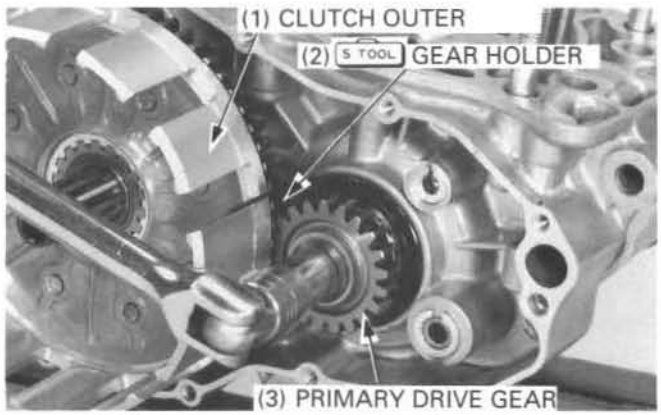


Temporarily install the clutch outer guide, needle bearing and clutch outer onto the mainshaft.

Insert the gear holder between the primary drive and driven gear.

Remove the primary drive gear bolt, then remove the washer, drive gear.

S. TOOL
Gear holder **07724 – 0010100**



Remove the clutch outer, needle bearing and outer guide.

Remove the collar from the crankshaft.

Remove the countershaft collar.

Remove the ten crankcase bolts.

NOTE

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

Attach the crankcase puller to the left crankcase and separate the crankcase halves.

NOTE

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

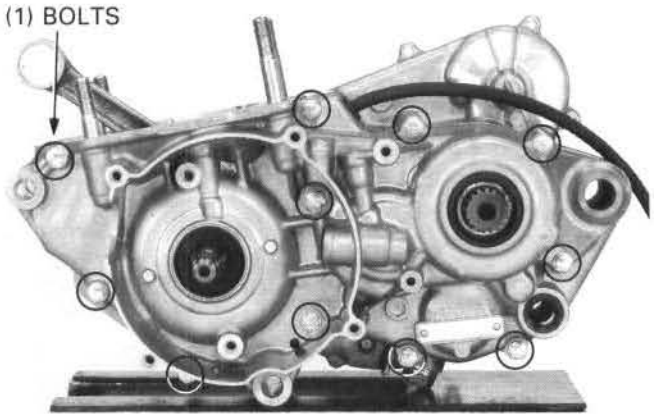
CAUTION

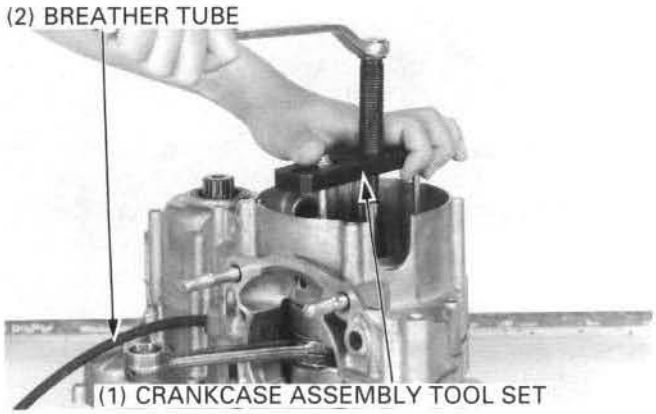
- **Do not pry the crankcase halves apart with a screwdriver.**

S. TOOL

Crankcase puller	**07937 – 4300000 and**
Bolt, 6 mm	**07PMC – KZ40100 or**
Crankcase puller	**07937 – 4300001**

Remove the gasket and dowel pins.



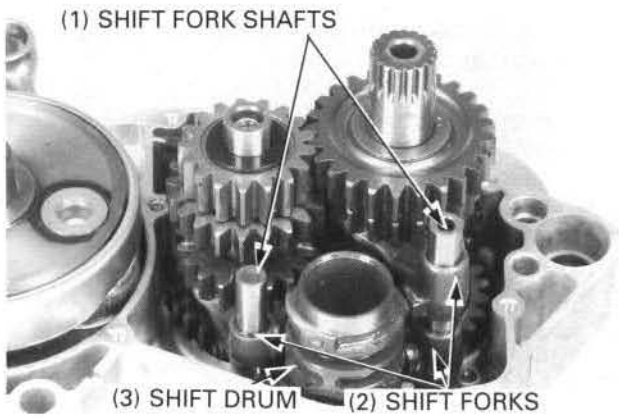


Transmission Disassembly

Separate the crankcase halves (page 10-3).

Remove the shift fork shafts and shift forks.

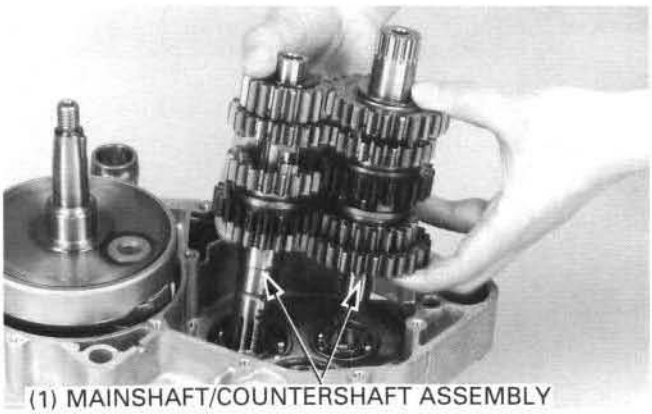
Remove the shift drum.



Remove the mainshaft and countershaft assemblies as a set.

Disassemble the mainshaft and countershaft.

Inspect the disassembled parts.
Specifications see page 1-8 of this manual.



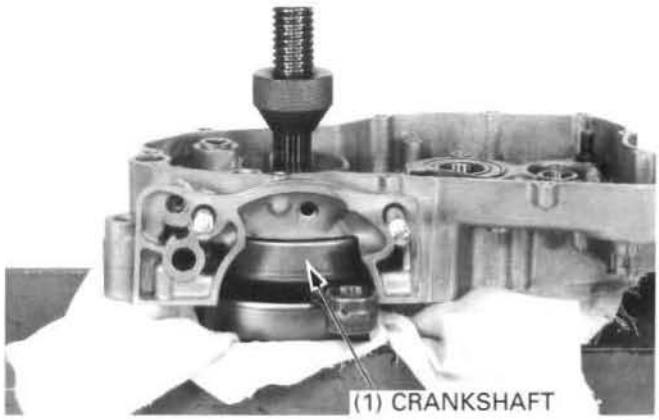
Crankshaft Removal

CAUTION

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

Separate the crankcase (page 10-3).
Remove the transmission (page 10-4).

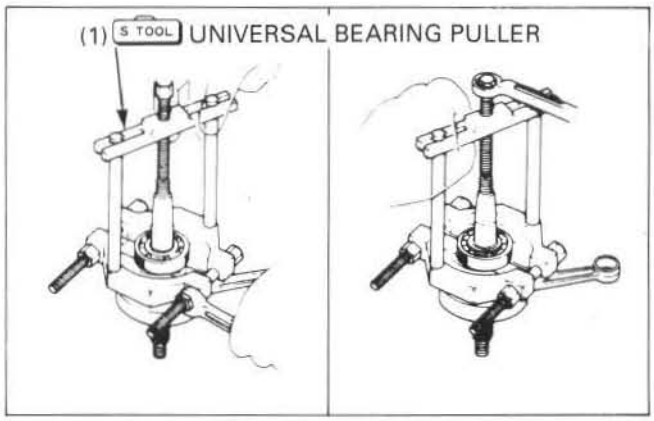
Remove the crankshaft from the right crankcase using a hydraulic press as shown.



If the crankshaft bearing is removed with the crankshaft, remove the bearing using the bearing puller and discard the bearing.

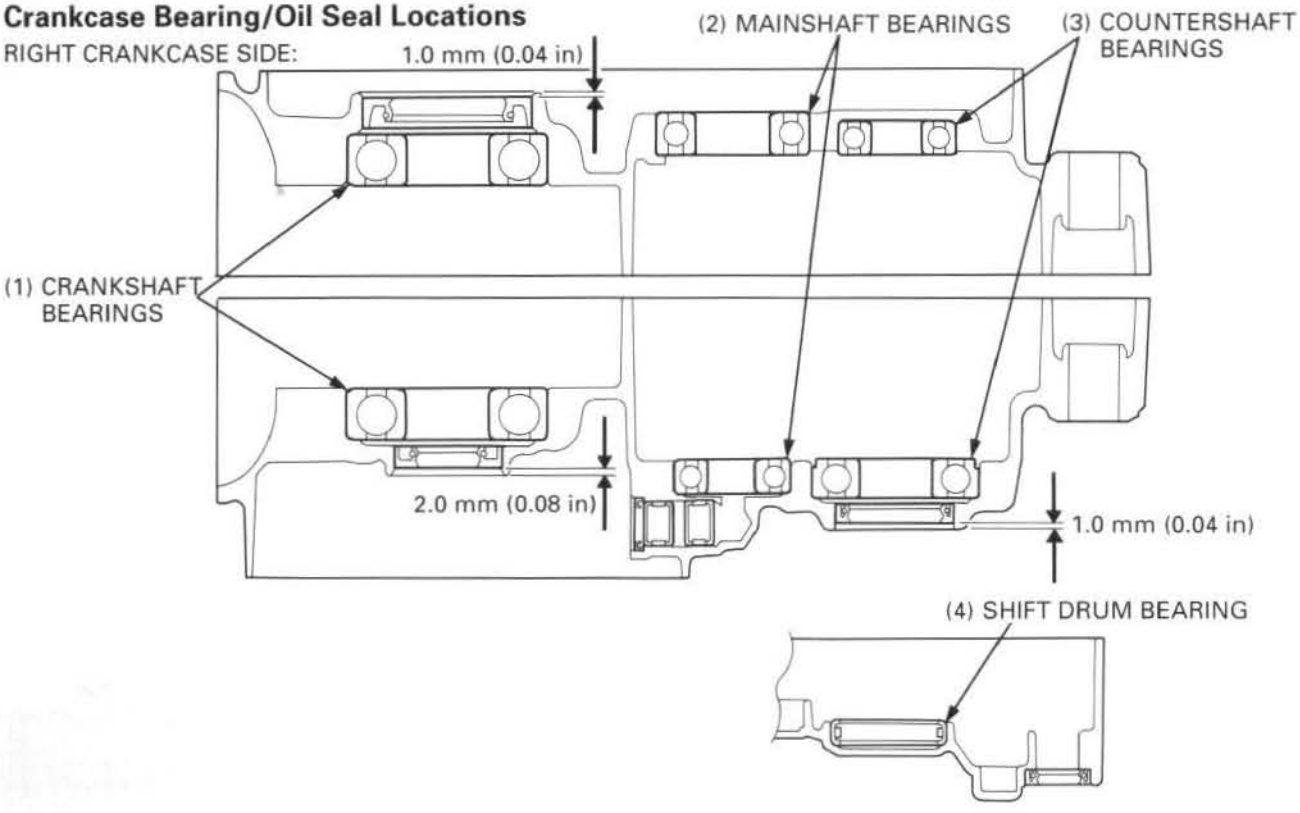
S. TOOL

Universal bearing puller — **07631 – 0010000 or Equivalent commercially available in U.S.A.**



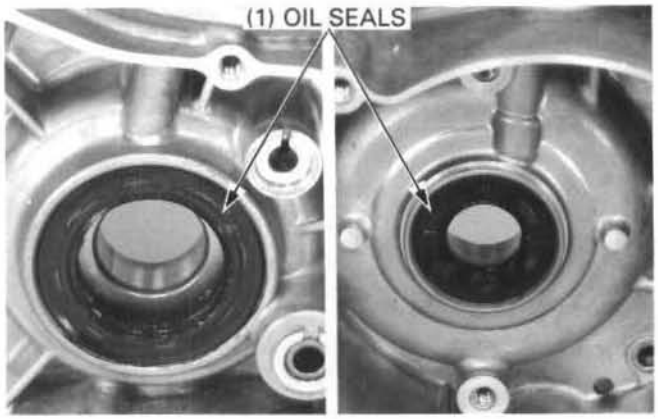
Crankcase Bearing Replacement

Crankcase Bearing/Oil Seal Locations

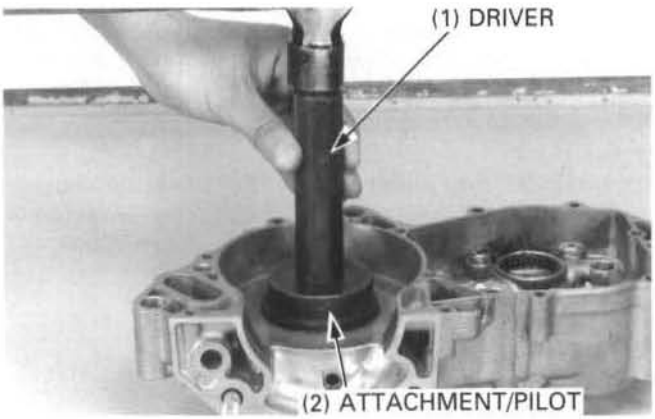


Crankshaft Bearings

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

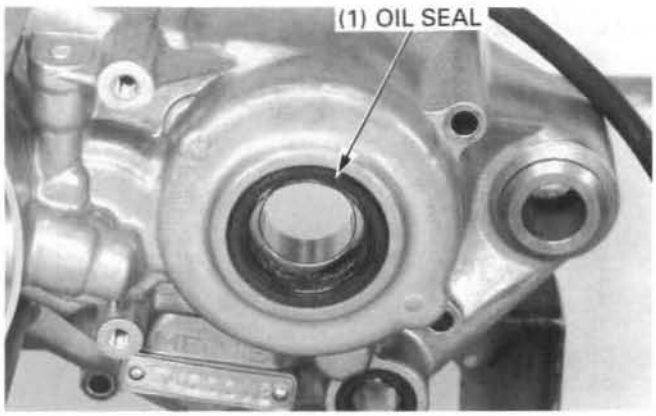


Drive new crankshaft bearings into both cases.



Transmission Bearings

Left Crankcase:
Remove the countershaft oil seal.



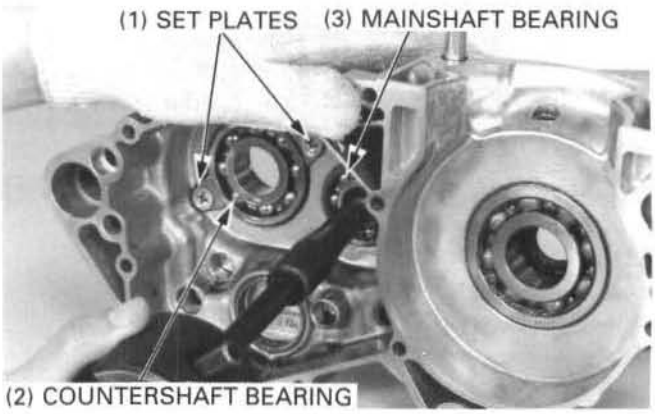
Remove the set plates countershaft bearing.

Remove the mainshaft bearing using the following tools.

S. TOOL

Bearing remover, 17 mm	**07936 – 3710300**
– Remover handle	**07936 – 3710100**
– Remover weight	**07741 – 0010201 or 07939 – 3710200**

Remove the shift drum bearing.



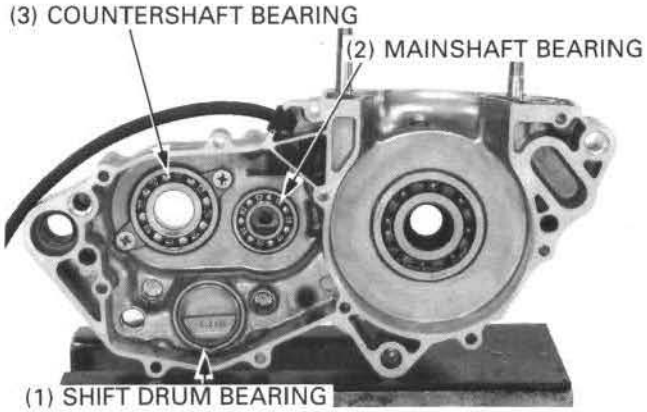
Drive in a new bearings into the left crankcase.

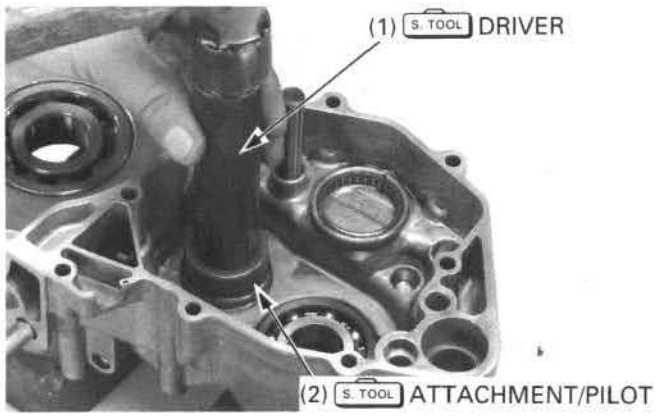
S. TOOL

Shift drum bearing:	
Driver	**07749 – 0010000**
Attachment, 37 x 40 mm	**07746 – 0010200**
Mainshaft bearing:	
Driver	**07749 – 0010000**
Attachment, 37 x 40 mm	**07746 – 0010200**
Pilot, 17 mm	**07746 – 0040400**
Countershaft bearing:	
Driver	**07749 – 0010000**
Attachment, 52 x 55 mm	**07746 – 0010400**

Apply a locking agent to the countershaft bearing set plate screws and tighten the screws with the set plates.

Torque: 10 N·m (1.0 kg-m, 7 ft-lb)





Right Crankcase Bearings:
Remove the mainshaft and countershaft bearings.

Remove the shift drum bearing set plates and drive out the shift drum bearing.

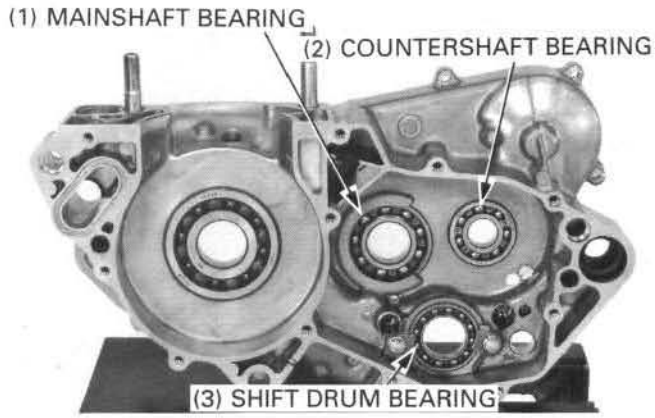
Drive in new bearing into the right crankcase.

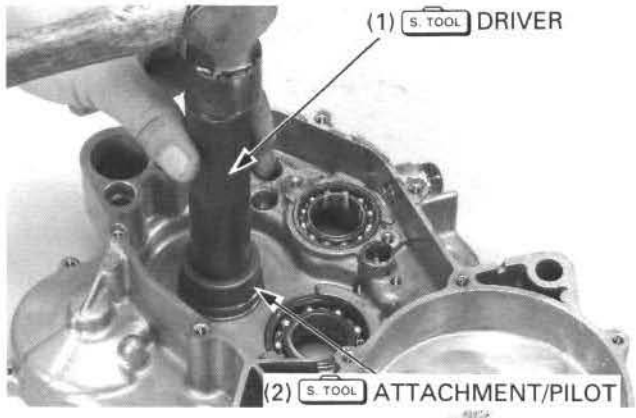
S. TOOL

Mainshaft bearing:	
Driver	**07749 – 0010000**
Attachment, 52 x 55 mm	**07746 – 0010400**
Pilot, 25 mm	**07746 – 0040600**
Countershaft bearing:	
Driver	**07749 – 0010000**
Attachment, 37 x 40 mm	**07746 – 0010200**
Pilot, 17 mm	**07746 – 0040400**
Shift drum bearing:	
Driver	**07749 – 0010000**
Attachment, 37 x 40 mm	**00746 – 0010200**
Pilot, 25 mm	**07746 – 0040600**

Apply a locking agent to the shift drum bearing set plate screws and tighten the screws with the set plates.

Torque: 10 N·m (1.0 kg-m, 7 ft-lb)





Crankshaft Installation

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

NOTE

- If there is minor roughness or irregularities on the crankcase mating surfaces, dress them with an oil stone.
- After cleaning, lubricate the crankshaft bearings with clean 2-stroke oil of the recommended type.

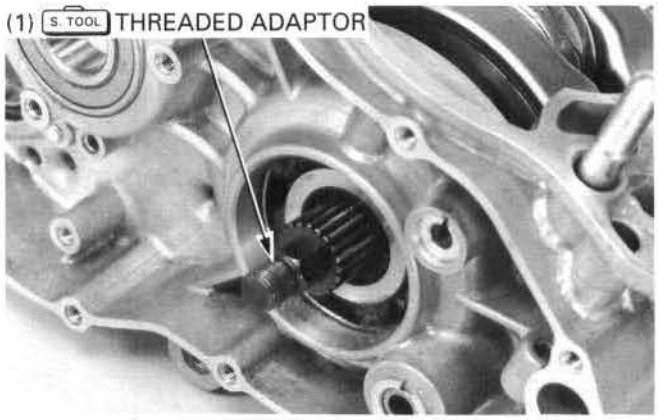
Install the threaded adaptor onto the crankshaft.

S. TOOL

Threaded adaptor	**07965 – KA30000**

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

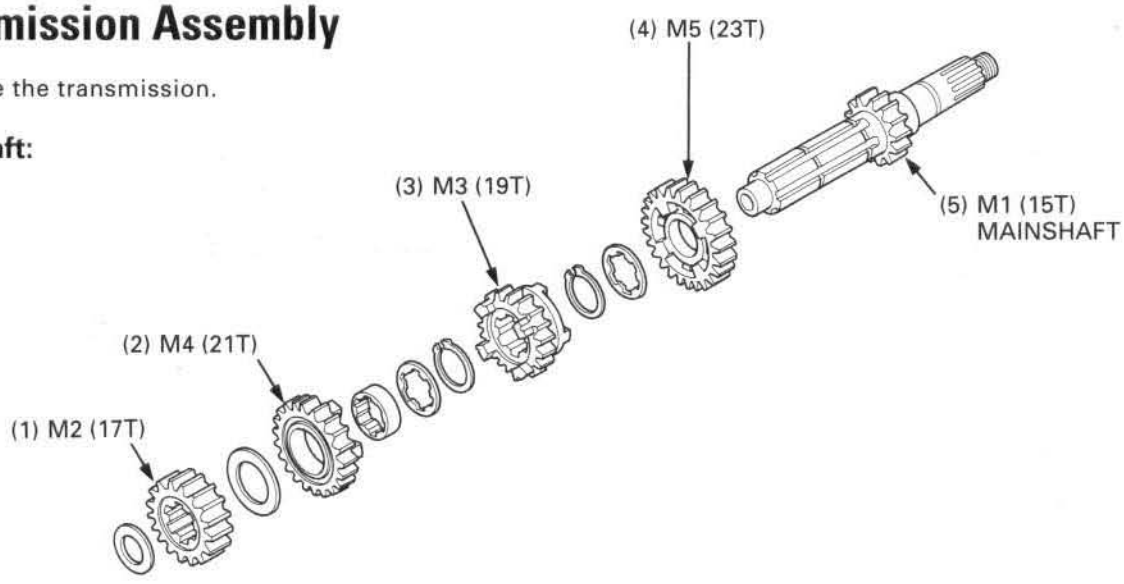
Crankcase assembly tool set	**07965 – 1660100 or 07965 – 1660101 Not available in U.S.A.**
– Assembly shaft	**07965 – 1660200**
– Assembly collar	**07965 – 1660300 or 07965 – 1660301**

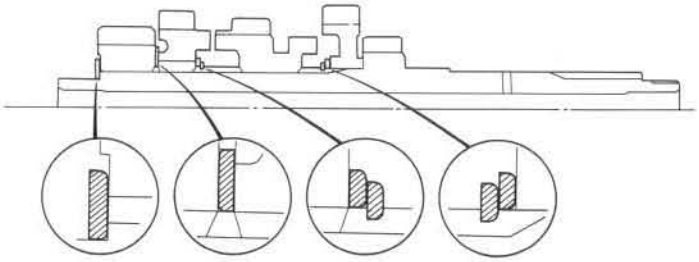


Transmission Assembly

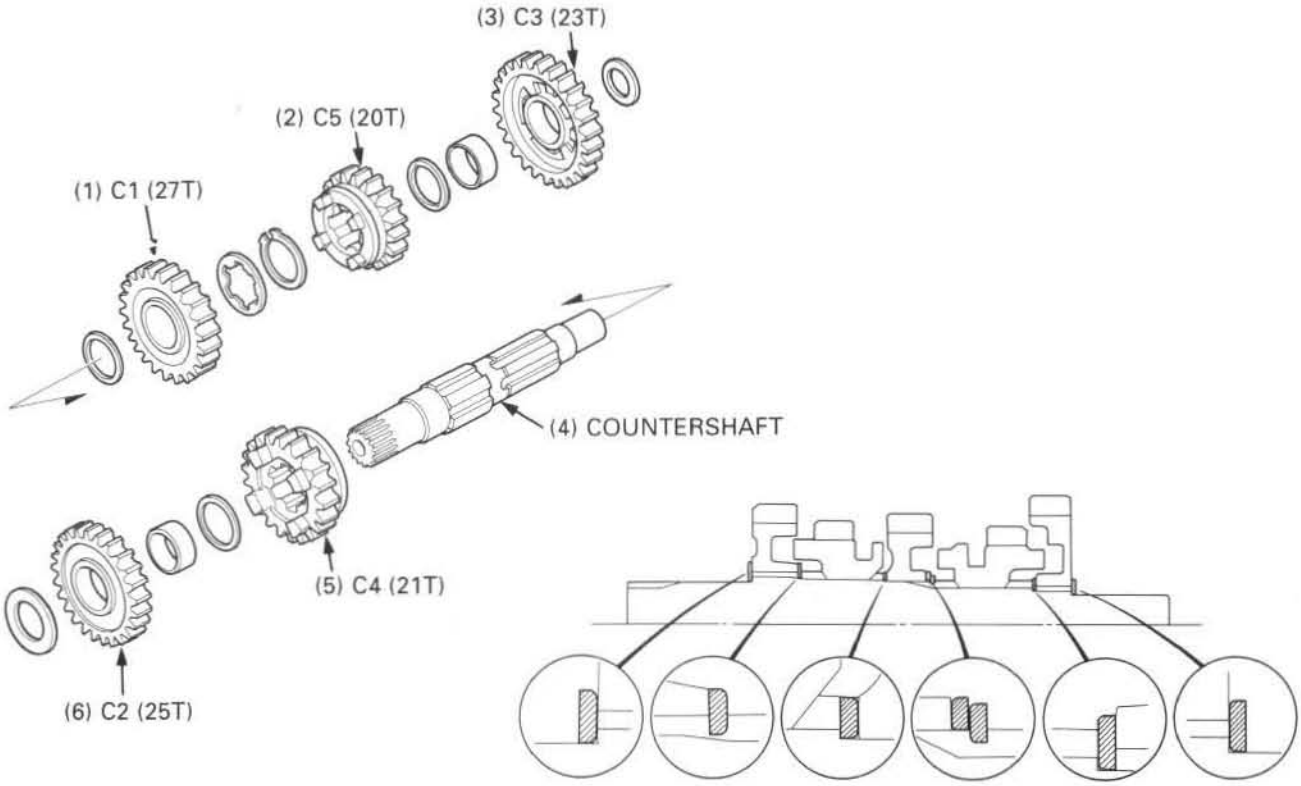
Assemble the transmission.

Mainshaft:





Countershaft:



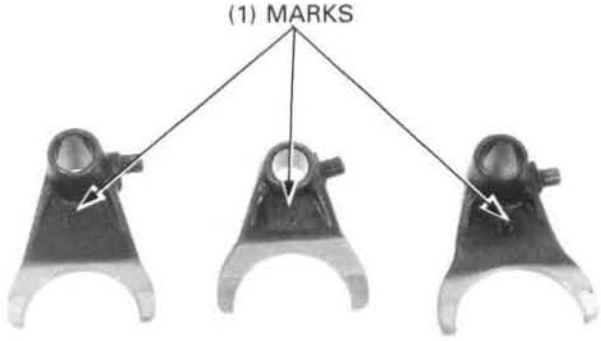
Coat each gear with transmission oil and check for smooth movement.

Engage the mainshaft and countershaft gears and place the transmission assembly into the right crankcase.

Install the shift forks into the shifter gear grooves.

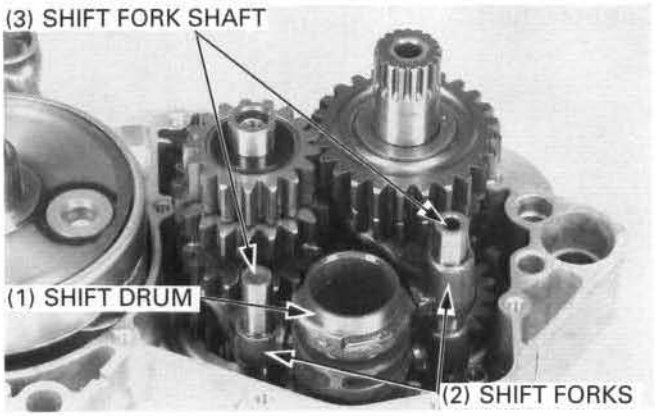
NOTE

- Face the shift fork marks as follows:
  - Right and Left fork marks to Left crankcase
  - Center shift fork mark to Right crankcase



Slide the shift fork shafts through the shift forks, and into the crankcase.

After installation, check for smooth transmission operation.

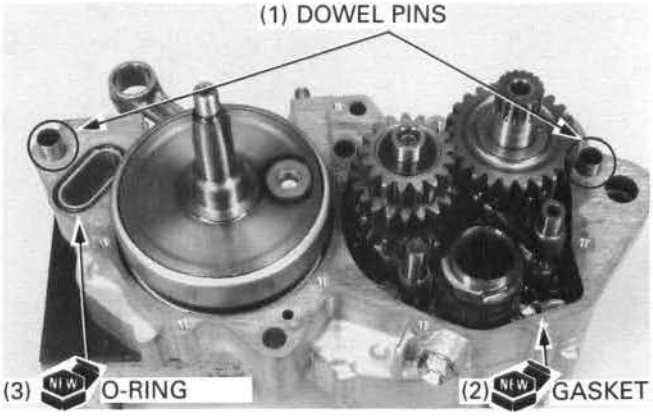


Crankcase Assembly

NOTE

- Before assembly, lubricate the transmission bearings with clean transmission oil.

Install the dowel pins, new gasket and O-ring.

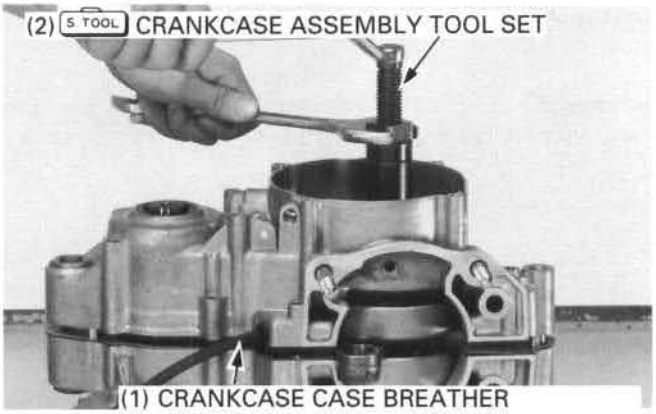


Install the crankcase breather onto the left crankcase.

Place the left crankcase onto the right crankcase using the crankcase assembly tool.

S. TOOL

Crankcase assembly tool set	**07965 – 1660100 or 07965 – 1660101 Not available in U.S.A. or 07965 – 1660102**
– Assembly shaft	**07965 – 1660200**
– Assembly collar	**07965 – 1660300 or 07965 – 1660301 or 07965 – 1660302**



Pack grease into the cavity between the oil seal lips.

Press the oil seal into the crankcase using the crankcase assembly tool as shown.

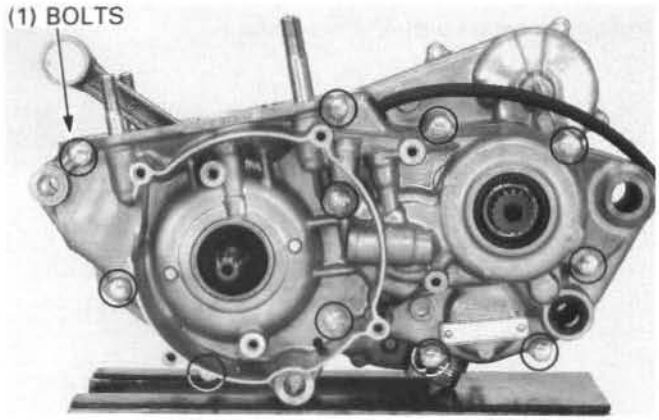
NOTE

- Install the crankshaft oil seals to the specified depth from the crankcase surfaces (page 10-5).
  - Right crankshaft oil seal: 1.0 mm (0.04 in)
  - Left crankshaft oil seal: 2.0 mm (0.08 in)

Install and tighten the crankcase bolts.

NOTE

- Tighten the bolts in a crisscross pattern in 2 or 3 progressive steps.

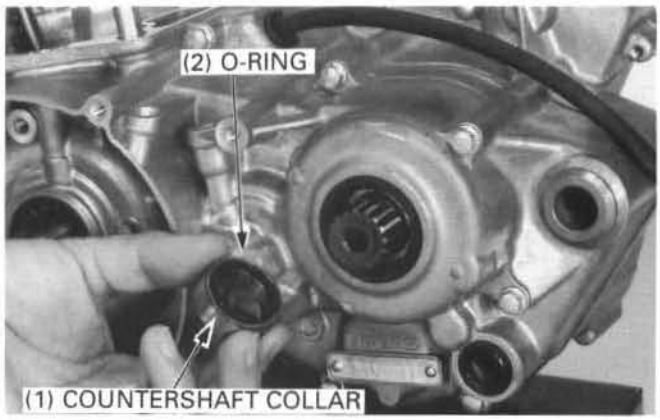


Carefully trim the protruding gasket material from the cylinder base gasket surface.

CAUTION

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

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



Install the drive sprocket onto the countershaft as described below.

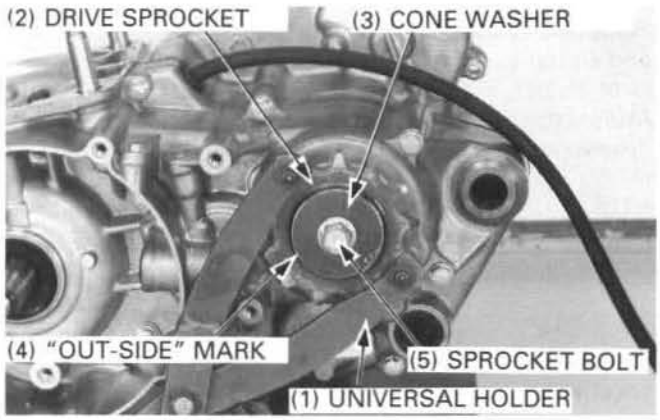
CAUTION

- **Install the drive sprocket with its flat side facing the outside.**

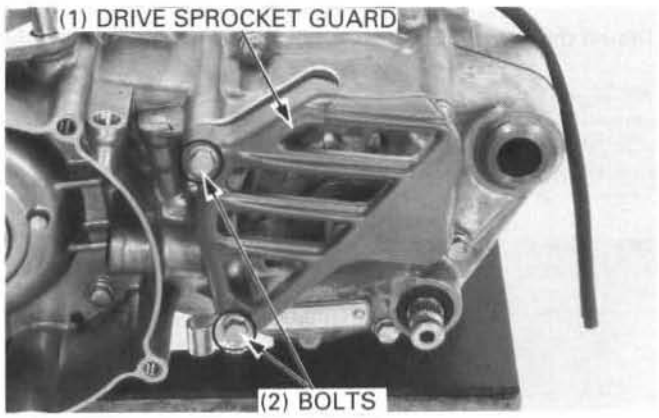
Install the cone washer with the "OUTSIDE" mark facing out.
Hold the drive sprocket with the universal holder and install and tighten the sprocket bolt to the specified torque.

S. TOOL
Universal holder **07725 – 0030000**

Torque: 27 N·m (2.7 kg-m, 20 ft-lb)



Install the drive sprocket guard and tighten the bolts.



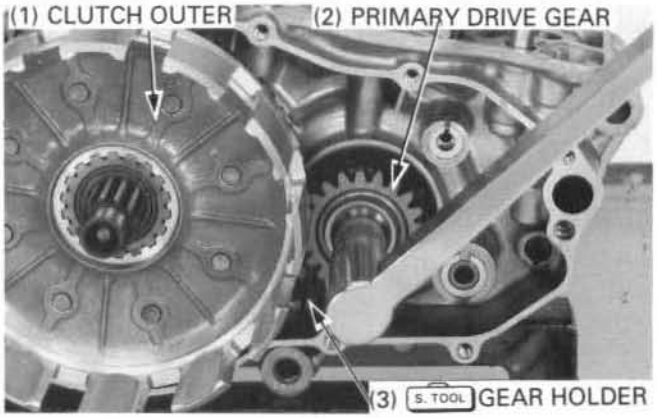
Install the collar onto the crankshaft.

Install the primary drive gear and washer.

Temporarily install the clutch outer guide, needle bearing and clutch outer onto the mainshaft.

Attach the gear holder between the primary drive and driven gear.

S. TOOL
Gear holder **07724 – 0010100**



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

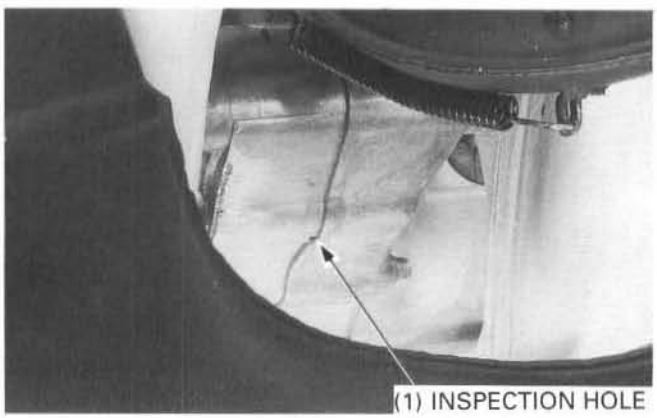
Torque: 45 N·m (4.5 kg-m, 33 ft-lb)

Install the remaining parts in the reverse order of removal.

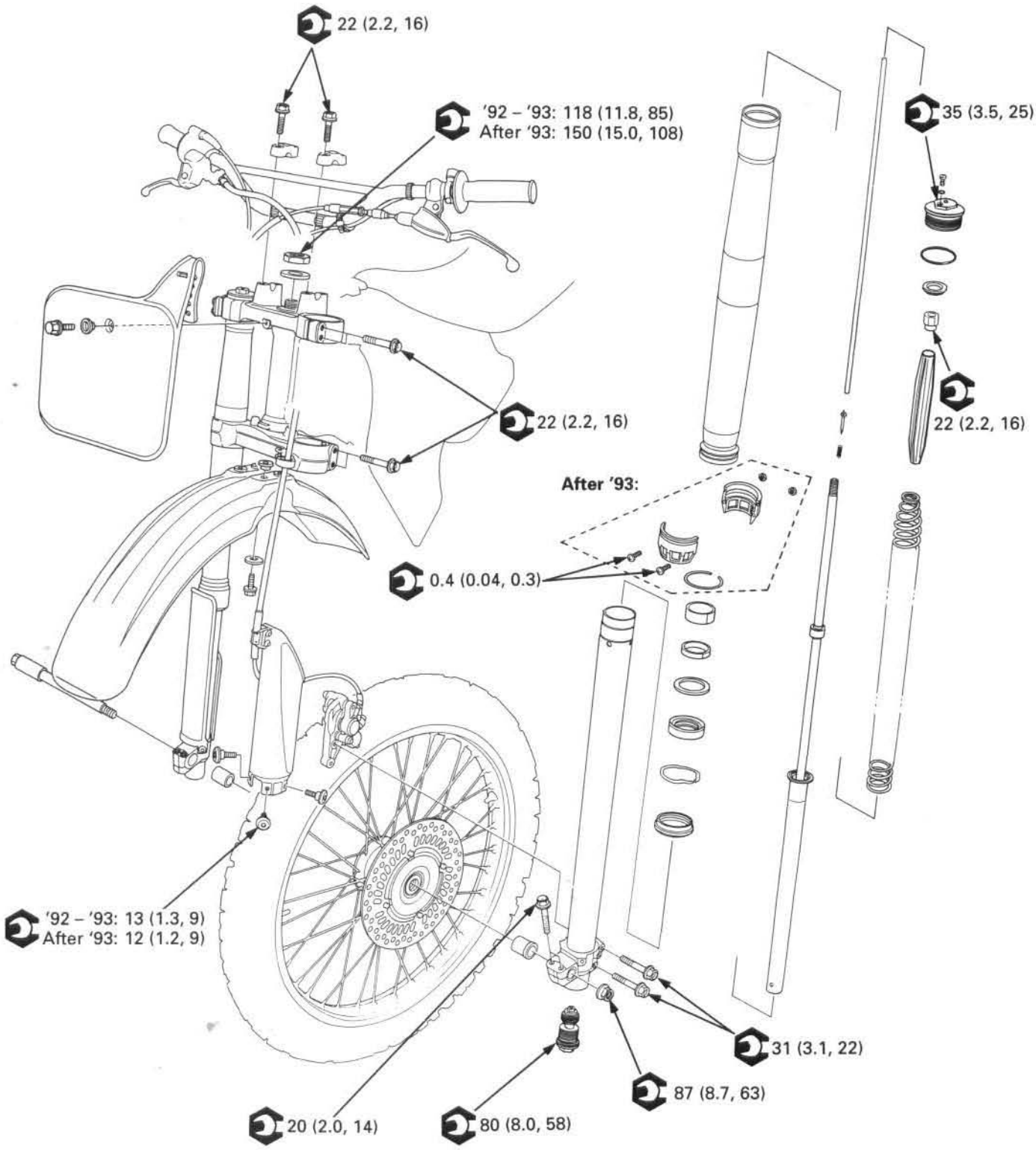
NOTE

- Refer to Service Information (page 10-1) for installation of parts referenced.

Start the engine and check for leaks from the inspection hole.



MEMO


22 (2.2, 16)
'92 – '93: 118 (11.8, 85)
After '93: 150 (15.0, 108)
35 (3.5, 25)
22 (2.2, 16)
22 (2.2, 16)
After '93:
0.4 (0.04, 0.3)
'92 – '93: 13 (1.3, 9)
After '93: 12 (1.2, 9)
31 (3.1, 22)
87 (8.7, 63)
20 (2.0, 14)
80 (8.0, 58)

11. Front Wheel/Suspension/Steering

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 a contaminated disc with Pro Honda Contact/Brake Cleaner or equivalent 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 fork 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 from the internal parts.
- Refer to the section 13 for brake system information.

Specifications

Unit: mm (in)

Item		Standard	Service Limit
Axle runout		—	0.20 (0.008)
Wheel rim runout	Radial	—	2.0 (0.08)
	Axial	—	2.0 (0.08)

Unit: mm (in)

Item			Standard	Service Limit
Fork spring free length (Standard)		'92:	510.0 (20.08)	504.5 (19.86)
		'93:	509.5 – 514.5 (20.06 – 20.26)	504.5 (19.86)
		After '93:	512.0 (20.16)	504.5 (19.86)
Fork tube runout			—	0.2 (0.01)
Recommended fork oil			Pro Honda Suspension Fluid SS-7M or equivalent	—
Fork oil level	Standard	'92:	105 (4.1)	—
		'93:	118 (4.6)	—
		After '93:	114 (4.5)	—
	Adjustment range: Max.	'92-'93:	93 (3.7)	—
		After '93:	96 (3.8)	—
	Adjustment range: Min.	'92:	124 (4.9)	—
		'93:	136 (5.4)	—
		After '93:	139 (5.9)	—
Fork oil capacity	Standard	'92:	572 cc (19.35 US oz, 20.08 Imp oz)	—
		'93:	559 cc (18.91 US oz, 19.62 Imp oz)	—
		After '93:	549 cc (18.56 US oz, 19.27 Imp oz)	—
	Adjustment range: Max.	'92-'93:	584 cc (19.75 US oz, 20.50 Imp oz)	—
		After '93:	567 cc (19.18 US oz, 19.90 Imp oz)	—
	Adjustment range: Min.	'92:	552 cc (18.67 US oz, 19.38 Imp oz)	—
		'93:	541 cc (18.30 US oz, 18.99 Imp oz)	—
		After '93:	524 cc (17.72 US oz, 18.39 Imp oz)	—

Torque Values

Front axle holder bolt		20 N·m (2.0 kg-m, 14 ft-lb)
Front axle nut		87 N·m (8.7 kg-m, 63 ft-lb)
Front brake disc mounting bolt		20 N·m (2.0 kg-m, 14 ft-lb)
Spoke nipple		3.8 N·m (0.38 kg-m, 2.8 ft-lb)
Rim lock		13 N·m (1.3 kg-m, 9.5 ft-lb)
Handlebar holder bolt		22 N·m (2.2 kg-m, 16 ft-lb)
Front master cylinder holder bolt		10 N·m (1.0 kg-m, 7 ft-lb)
Clutch lever holder bolt	'92-'93:	10 N·m (1.0 kg-m, 7 ft-lb)
	After '93:	9 N·m (0.9 kg-m, 6.5 ft-lb)
Clutch lever pivot bolt		2 N·m (0.20 kg-m, 1.5 ft-lb)
Clutch lever pivot lock nut		10 N·m (1.0 kg-m, 7 ft-lb)
Throttle housing bolt	'92-'93:	10 N·m (1.0 kg-m, 7 ft-lb)
	After '93:	9 N·m (0.9 kg-m, 6.5 ft-lb)
Throttle housing cover screw		1.5 N·m (0.15 kg-m, 1.1 ft-lb)
Engine stop switch screw		1.5 N·m (0.15 kg-m, 1.1 ft-lb)
Front brake caliper mounting bolt		31 N·m (3.1 kg-m, 22 ft-lb) Apply a locking agent
Fork cap		35 N·m (3.5 kg-m, 25 ft-lb)
Fork cap lock nut		22 N·m (2.2 kg-m, 16 ft-lb)
Fork center bolt		80 N·m (8.0 kg-m, 58 ft-lb) Apply a locking agent ('92-'93)
Fork protector mounting bolt	'92-'93:	13 N·m (1.3 kg-m, 9 ft-lb) Apply a locking agent
	After '93:	12 N·m (1.2 kg-m, 9 ft-lb) Apply a locking agent
Fork pinch bolt	Top	22 N·m (2.2 kg-m, 16 ft-lb)
	Bottom	22 N·m (2.2 kg-m, 16 ft-lb)
Steering stem nut	'92-'93:	118 N·m (11.8 kg-m, 85 ft-lb)
	After '93:	150 N·m (15.0 kg-m, 108 ft-lb)
Steering stem adjusting nut	'92-'93:	2 N·m (0.2 kg-m, 1.4 ft-lb)
	After '93:	7 N·m (0.7 kg-m, 5.1 ft-lb)
Protector guide screw (After '93)		0.4 N·m (0.04 kg-m, 0.3 ft-lb)

Tools

Special

Fork damper holder	After '92:	07PMB – KZ40100 or 07PMB-KZ4010A (U.S.A. only)
Spoke nipple wrench		07JMA – MR60100 or equivalent commercially available in U.S.A.
Ball race remover		07953 – 4250002 or 07953 – MJ1000A
Steering stem socket		07916 – 3710100 or 07916-3710101
Ball race remover	'92-'93:	07948 – 4630100
	After '93:	07946 – 3710500
Oil seal driver		07KMD – KZ30100
Oil seal driver attachment		07NMD – KZ30100 or 07NMD – KZ3010A (U.S.A. only)
Fork slider spacer	'92-'93:	07KMZ – KZ30100 or 07KMZ – KZ3010B (U.S.A. only)

Common

Driver		07749 – 0010000
Inner driver, 30mm	After '92:	07746 – 0030300
Extension bar		07716 – 0020500 or equivalent commercially available in U.S.A.
Attachment, 32 x 35 mm		07746 – 0010100
Attachment, 42 x 47 mm		07746 – 0010300
Attachment, 52 x 55 mm		07746 – 0010400
Pilot, 17 mm		07746 – 0040400
Bearing remover head, 17 mm		07746 – 0050500 or equivalent commercially available in U.S.A.
Bearing remover shaft		07746 – 0050100

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 bearings
- 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, got to optional stiffer spring

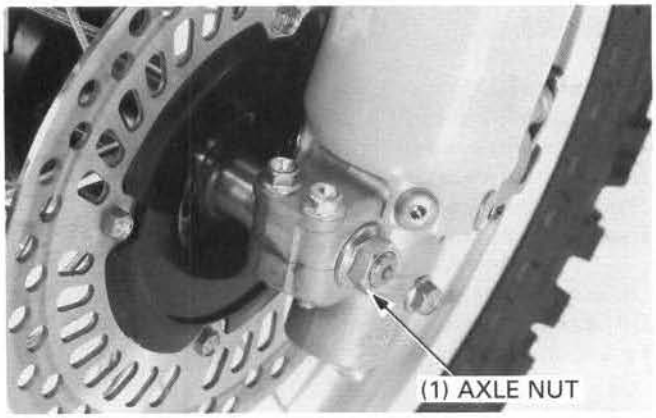
Hard Suspension
- Fork oil level too high (too much oil)
- Fork oil viscosity too thick
- Fork tube(s) bent and/or fork slider(s) are damaged

Front Suspension Noisy
- Slider binding
- Insufficient fluid in fork
- Loose fork fasteners

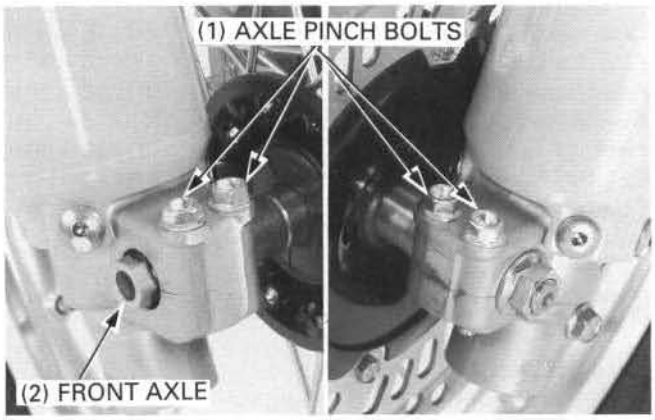
Front Wheel

Removal

Remove the axle nut.

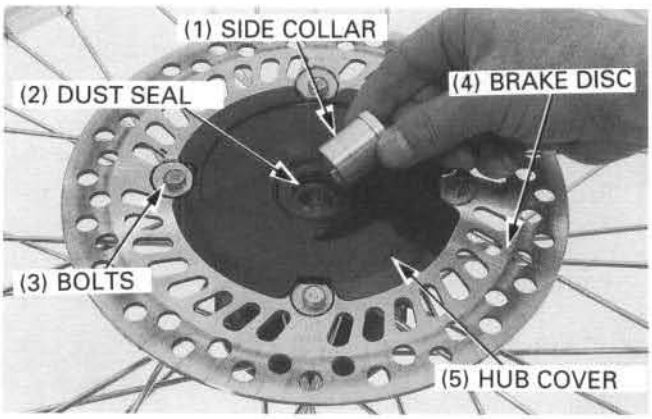


Loosen the axle pinch bolts and pull out the axle.
Remove the front wheel assembly.



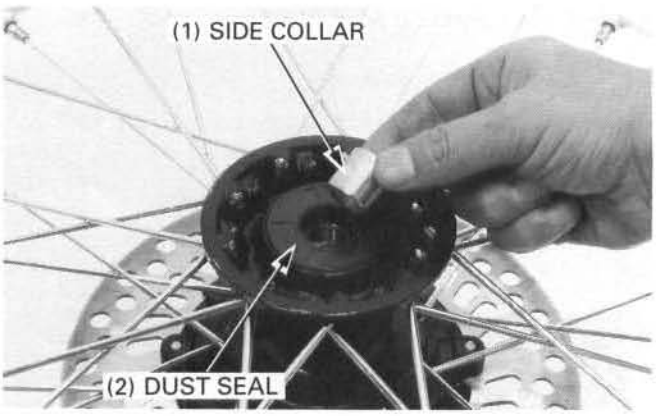
Disassembly

Remove the following:
- Left side collar
- Dust seal
- Brake disc bolts and disc
- Wheel hub cover



- Right side collar
- Dust seal

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

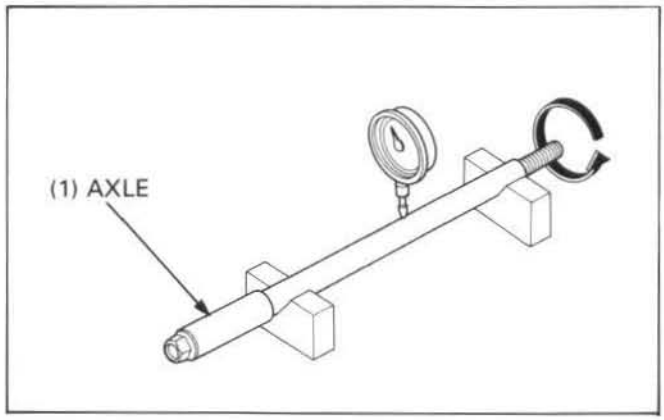


Inspection

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 (0.08 in)



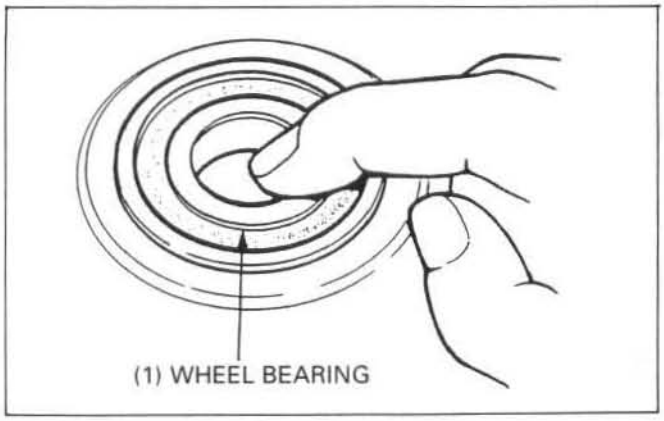
Wheel Bearings

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

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

NOTE

- Replace the bearing in pair.

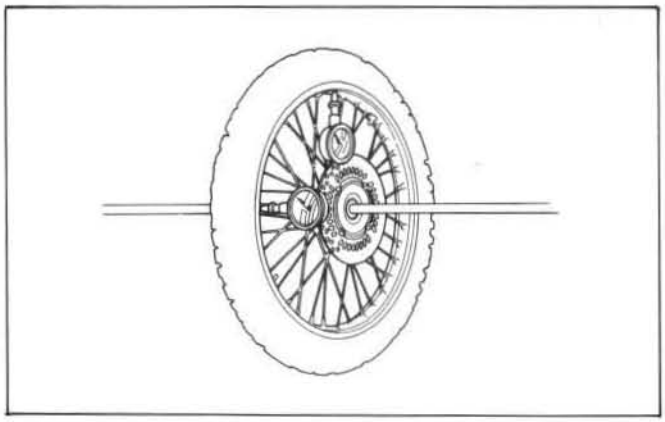


Wheel Rim

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 Limit: Radial: 2.0 mm (0.08 in)
Axial: 2.0 mm (0.08 in)

Check the spokes and tighten any that are loose.

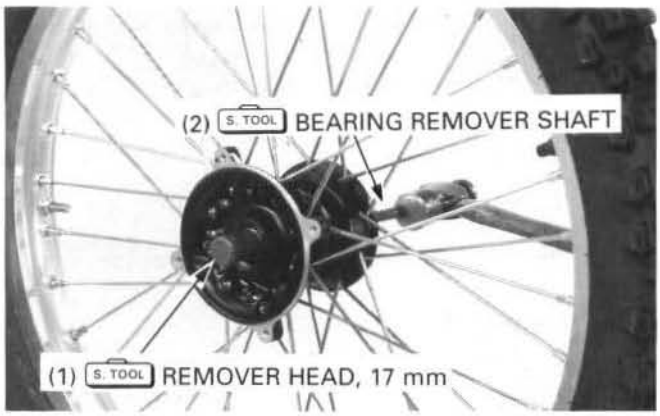


Remove the wheel bearings and distance collar.

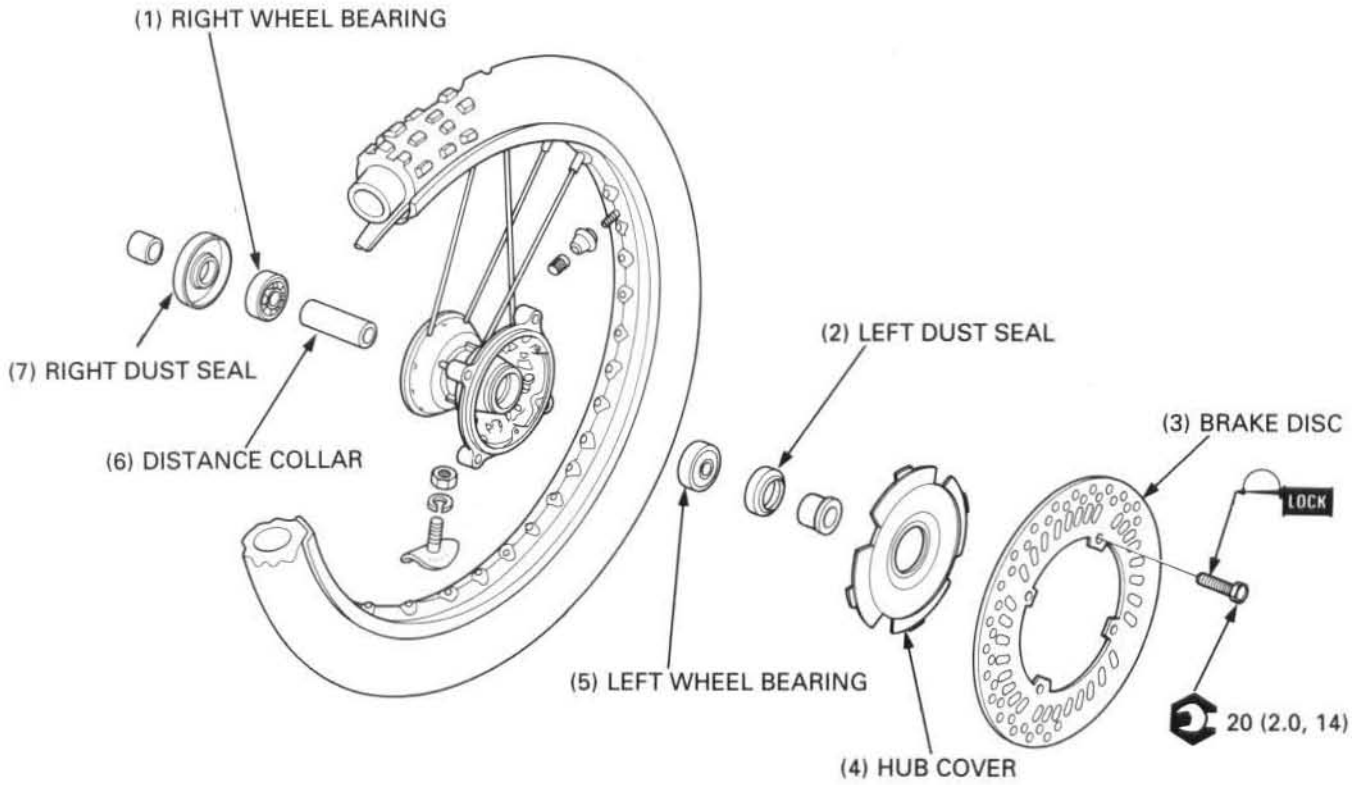
S. TOOL
Bearing remover head, 17 mm 07746 – 0050500
Bearing remover shaft 07746 – 0050100

NOTE

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



Assembly

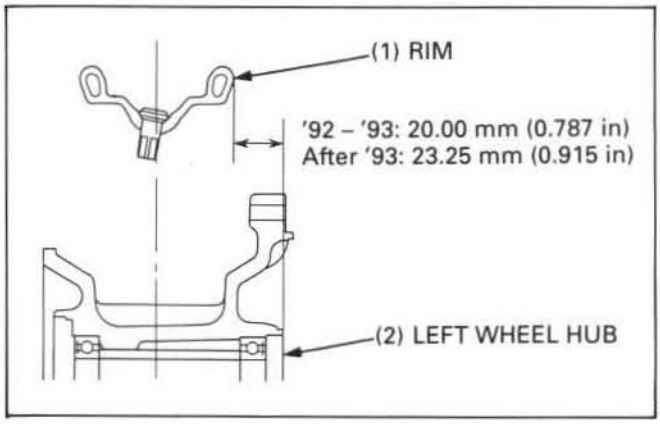


Place the rim on the work bench.

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

Adjust the hub position so that the distance from the hub left end surface to the side of rim is as shown.

'92 – '93: 20.00 mm (0.787 in)
After '93: 23.25 mm (0.915 in)

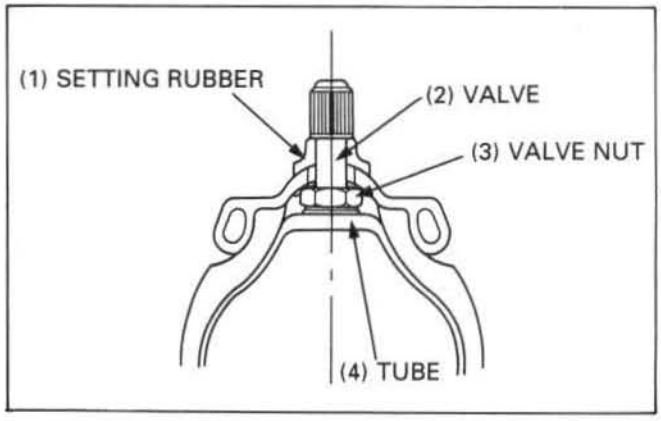


Torque the spokes in 2 or 3 progressive steps.

S. TOOL

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

Torque: 3.8 N·m (0.38 kg-m, 2.8 ft-lb)



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

Torque the rim lock nut to the specified torque.

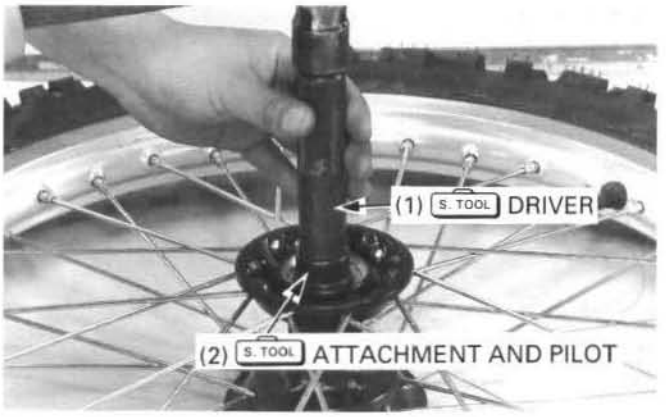
Torque: 13 N·m (1.3 kg-m, 9.5 ft-lb)

Pack all bearing cavities with grease.

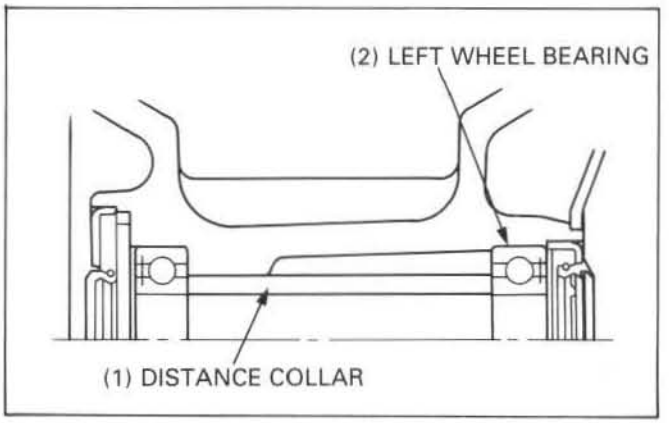
Drive in the right wheel bearing into the hub.

S. TOOL

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



Install the distance collar into place , then drive the left wheel bearing using same tool.

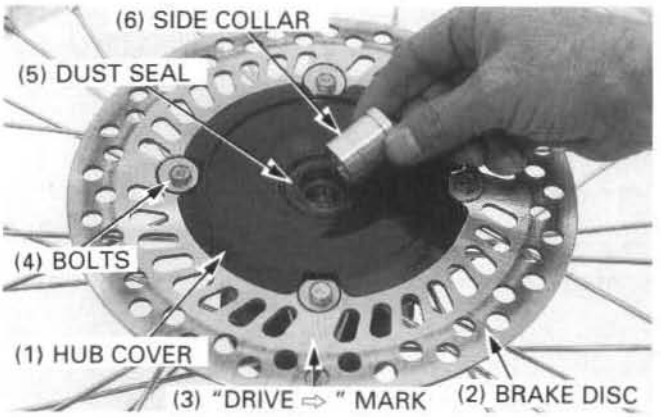


Install the hub cover onto the wheel hub.

Install the brake disc onto the wheel hub with the minimum thickness DRIVE ⇨ marking facing out.

Clean and apply a Honda Anaerobic Thread Lock or equivalent to the brake disc bolt threads.
Tighten the brake disc mounting bolts to the specified torque.

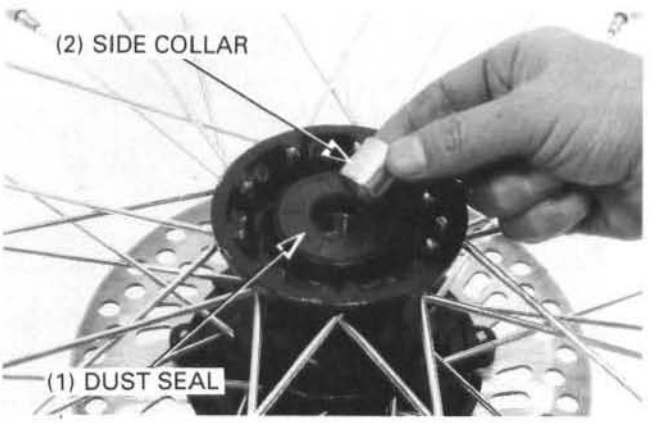
Torque: 20 N·m (2.0 kg-m, 14 ft-lb)



Pack the left dust seal lip with grease and install the left dust seal.
Install the left side collar.

Pack the right dust seal lip with grease and install the right dust seal.

Install the right side collar.



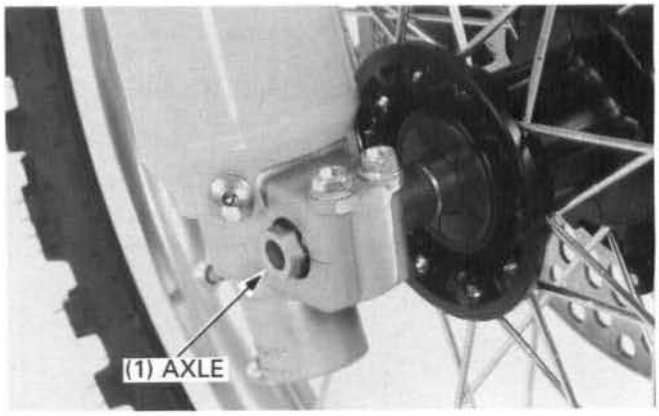
Installation

Clean the clamping surfaces of the axle shaft and axle holders.

Place the front wheel between the fork legs.

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

Apply a thin layer of grease to the axle and insert the axle from the right side.

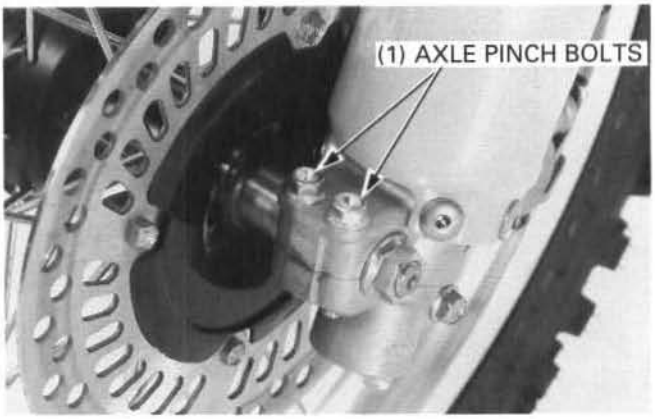


Install and tighten the axle nut to the specified torque.

Torque: 87 N·m (8.7 kg-m, 63 ft-lb)

Tighten the left axle pinch bolts to the specified torque.

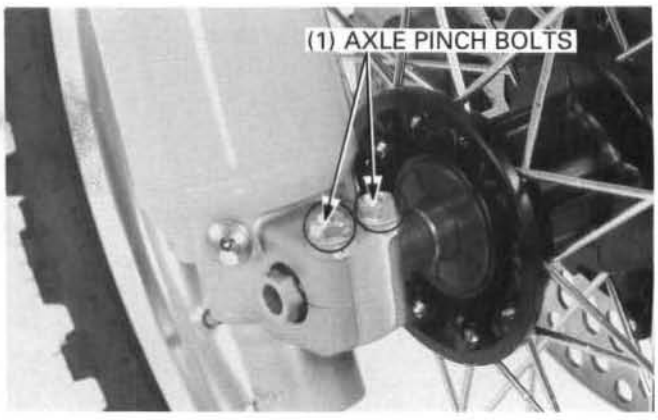
Torque: 20 N·m (2.0 kg-m, 14 ft-lb)



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

Be sure the fork legs are parallel, then tighten the right axle pinch pinch bolts to the specified torque.

Torque: 20 N·m (2.0 kg-m, 14 ft-lb)

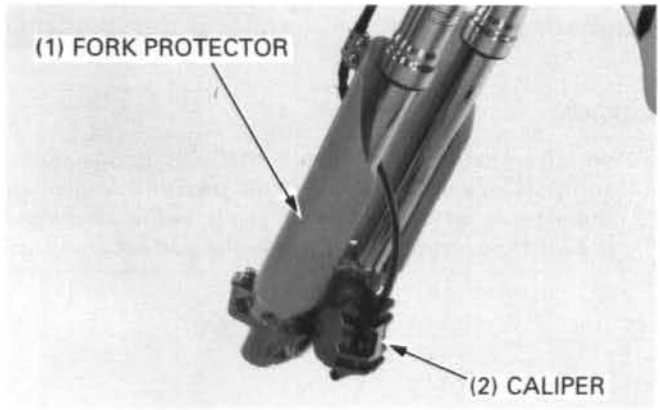


Fork

Removal

Remove the front wheel (page 11-4).

Remove the fork protector and brake caliper.

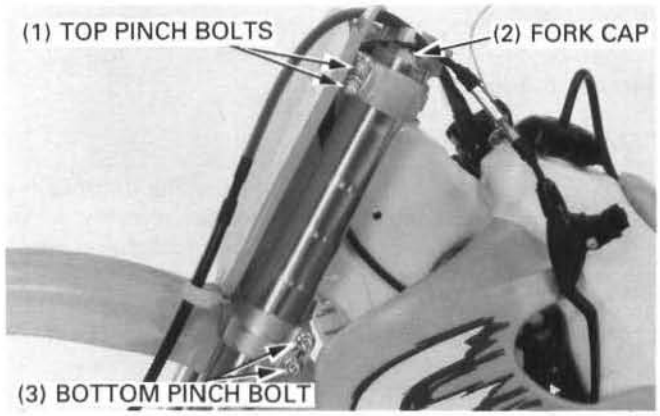


When the fork leg is to be disassembled, loosen the fork cap as follows:
- Remove the handlebar assembly (page 11-19).
- Loosen the fork top pinch bolts first, then loosen the fork cap.

CAUTION

- **Do not use an adjustable wrench to loosen the fork caps; the caps could be damaged.**

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

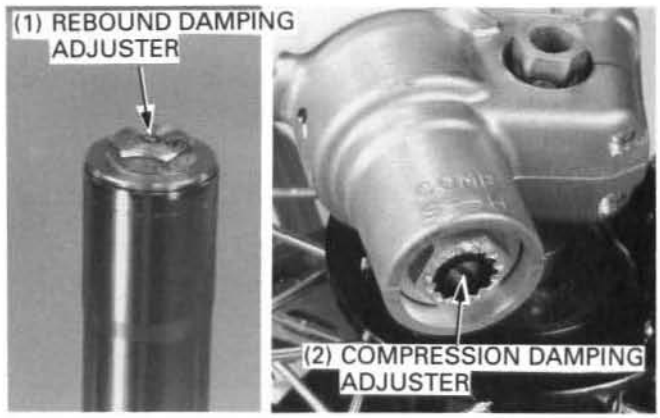


Disassembly

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

CAUTION

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



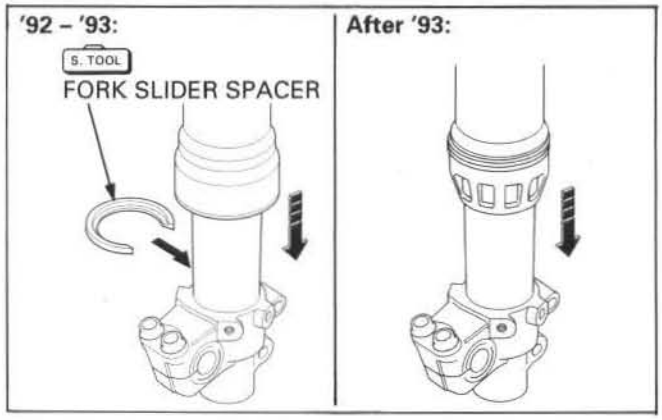
'92 – '93:
Install the oil level spacer on the axle holder of the slider.

S. TOOL

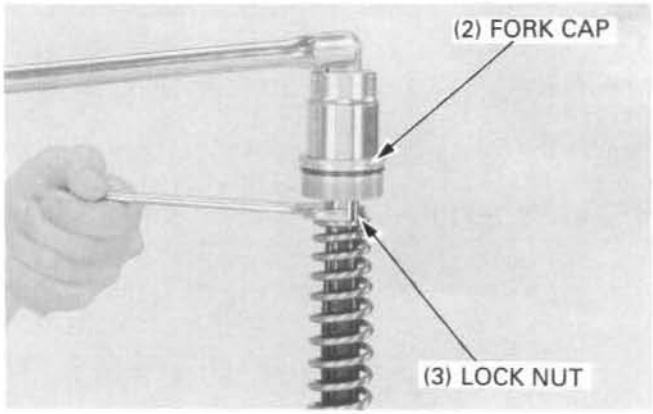
Fork slider spacer	**07KMZ – KZ30101 or**
Spacer	**07KMZ – KZ3010B (U.S.A. only)**

Hold the fork tube, remove the fork cap, and slide the fork tube down onto the slider spacer.

After '93:
Hold the fork tube, remove the fork cap, and slide the fork tube down to the protector guide onto the fork slider.



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

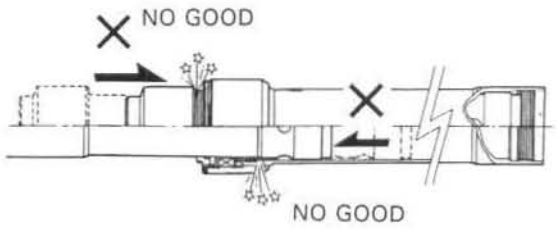


CAUTION

- **When removing the fork cap, turn the 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.

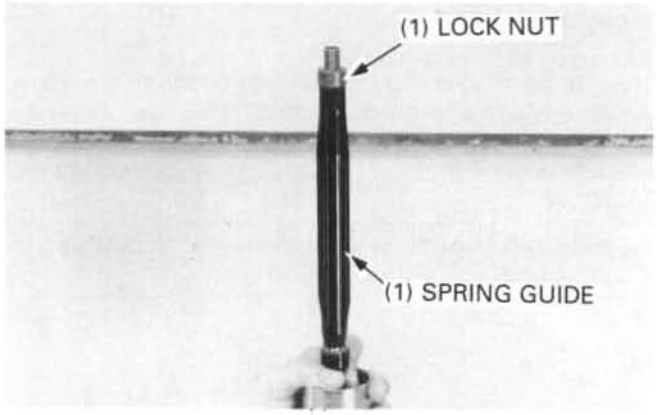


CAUTION

- **When the fork cap is removed from the damper rod, the fork tube can move up and down freely on the fork slider. Always hold both the fork tube (upper position) and fork slider (lower position) with your hand after removing the fork cap, or the guide and slide bushings might be damaged and fork oil will leak from the fork slider.**

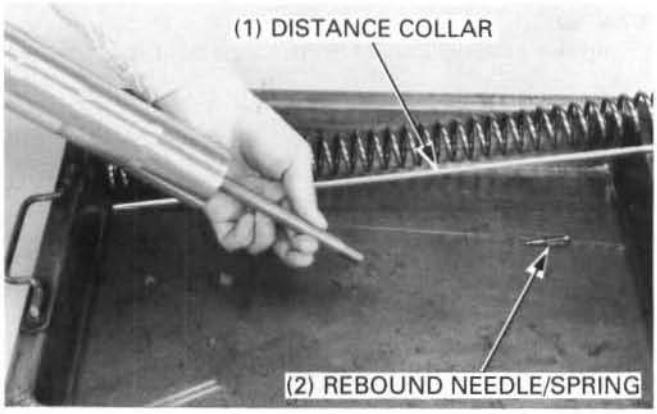
Remove the lock nut and spring guide from the piston rod.

Inspect 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, rebound needle and spring from the damper rod.



'92:
Clamp the lower end (axle holder) of the fork slider in a vise with a piece of wood or soft jaws to avoid to damage.

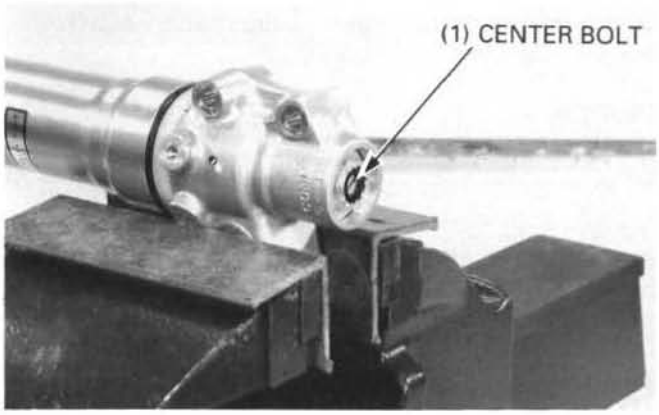
CAUTION

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

Loosen and remove the center bolt and sealing washer.

NOTE

- If the center bolt turns together with the fork damper, temporarily install the fork spring and cap.



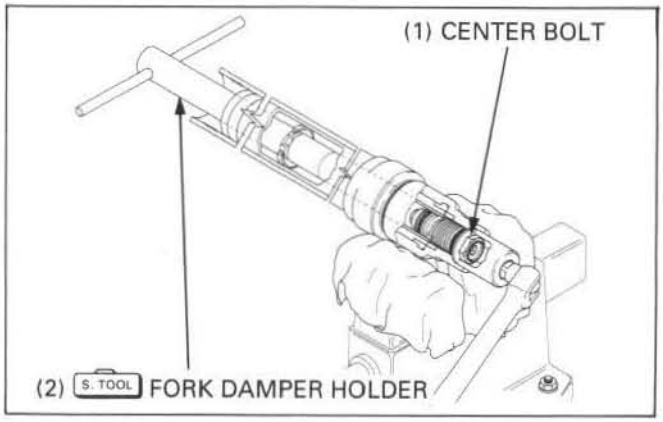
After '92:
Clamp the lower end (axle holder) of the fork slider in a vise with a piece of wood or soft jaws to avoid to damage.

CAUTION

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

Loosen the center bolt using the special tool as shown.

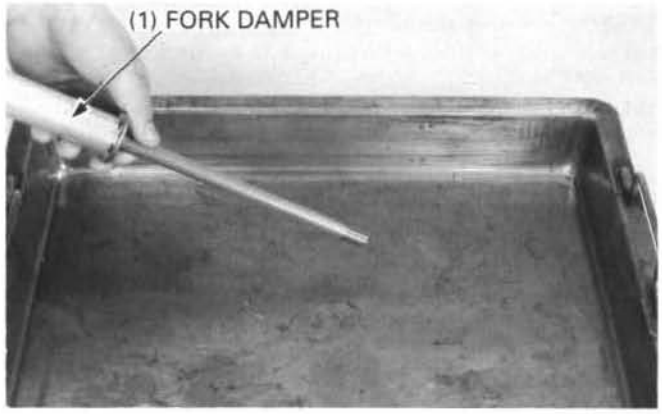
S. TOOL
Fork damper holder **07PMB-KZ40100 or 07PMB-KZ4010A (U.S.A. only)**



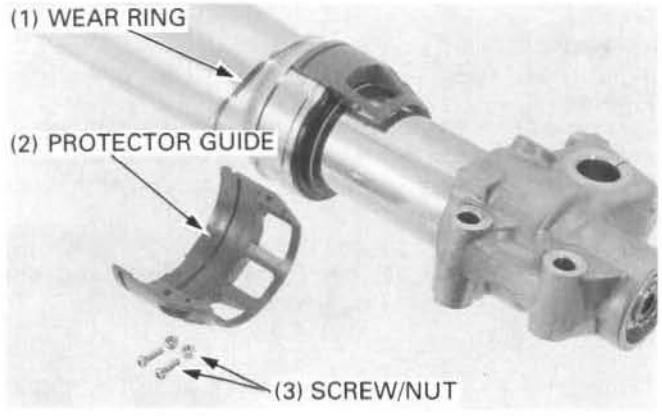
Remove the center bolt and sealing washer.

Remove the fork damper from the fork slider.

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



After '93:
Remove the screws, nuts and wear ring.
Remove the protector guide.



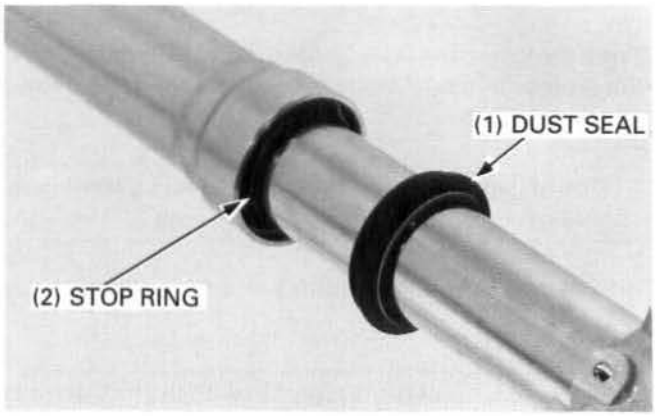
Remove the fork slider spacer from the fork slider.
Remove the dust seal and stop ring.

CAUTION

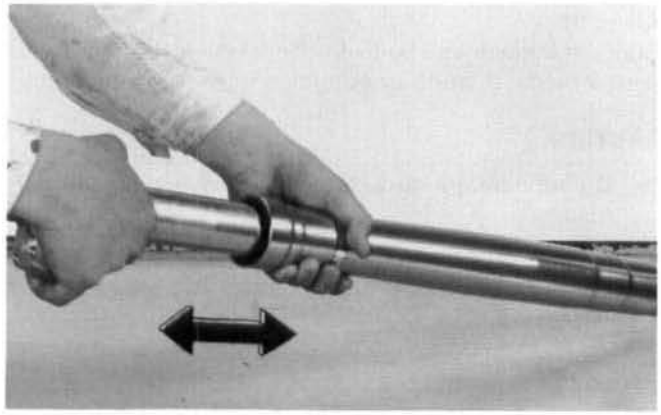
- **Be careful not to scratch the fork tube.**

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 fork tube.



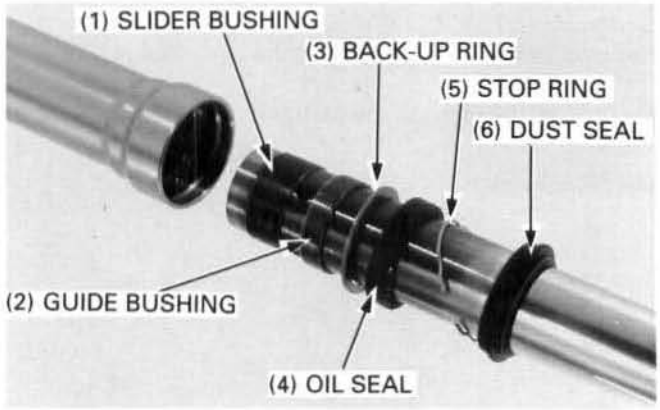
In quick successive motions, pull the slider and guide bushing out of the fork tube.



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 maintain rebound damping effectiveness not open the bushing more than necessary.**



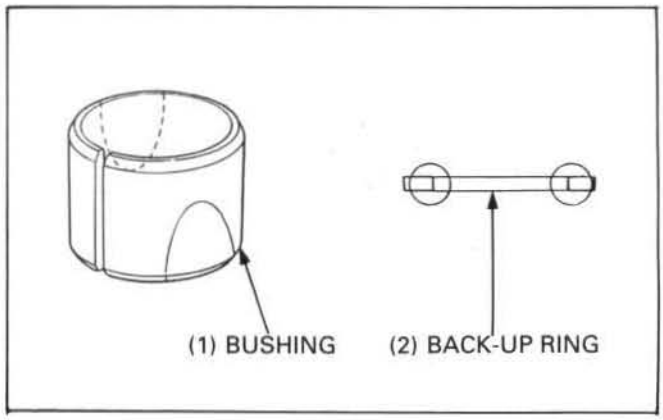
Remove the following from the fork slider:
- Guide bushing
- Back-up ring
- Oil seal
- Stop ring
- Dust seal

Inspection

Bushing

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

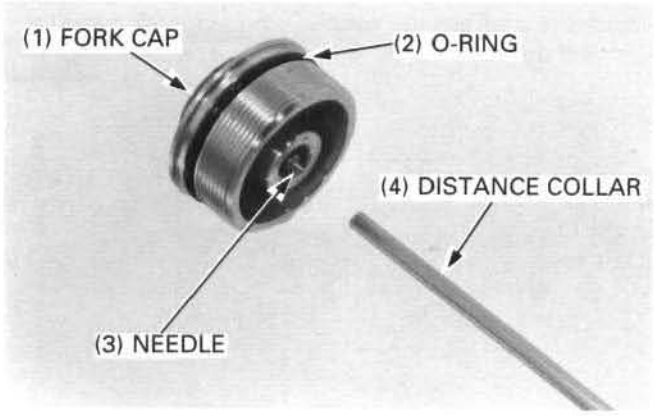
Remove any metal powder from the slider and guide bushings with a nylon brush and fork oil.

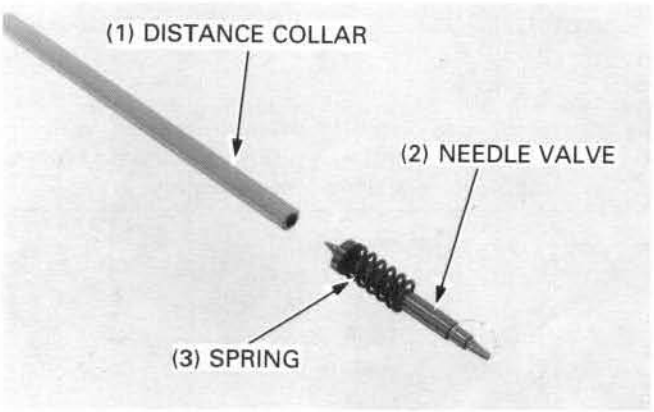


Fork Cap/Rebound Adjuster
Check that the O-ring on the fork cap is in good condition.
Check that needle of the rebound adjuster for bending or other damaged.

CAUTION

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

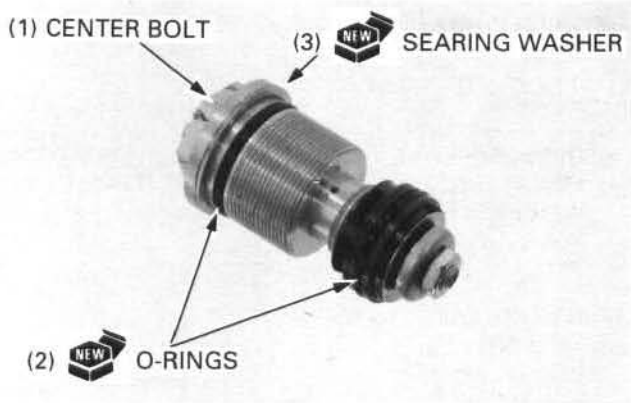




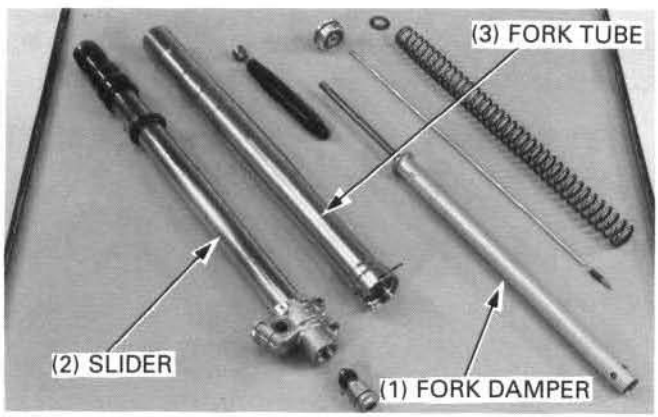
Center Bolt
Check the center bolt for damage.
Replace the O-ring and sealing washer with new ones.

NOTE

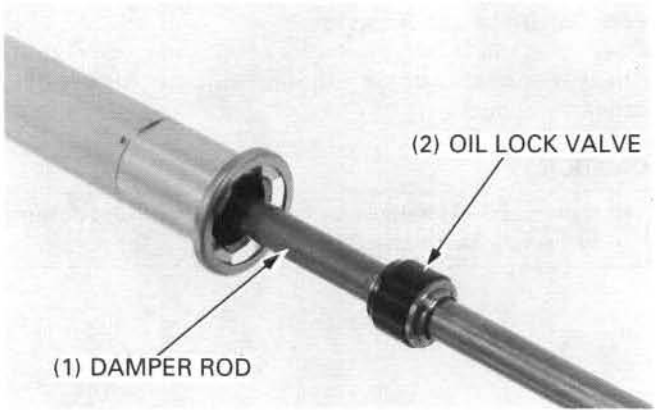
- Replace the O-ring and sealing washer as a set.



Fork Damper/Slider/Outer Tube
Check the fork slider for score marks, scratches and excessive or abnormal wear.
Check the fork tube for damage or deformation.
Check the spring guide for damege or wear.



Check the damper rod for bending, wear or damage.
Check the oil lock valve for wear or damage.

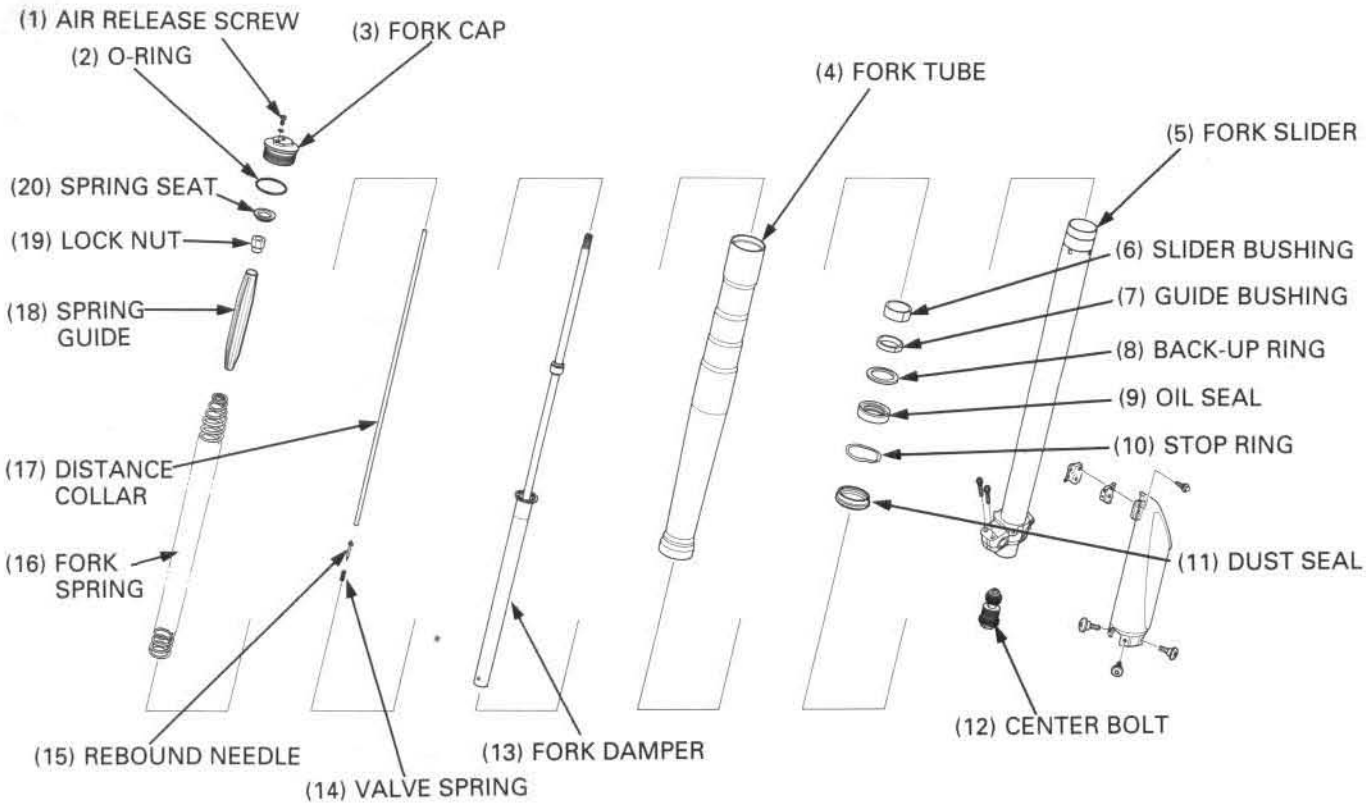


Assembly

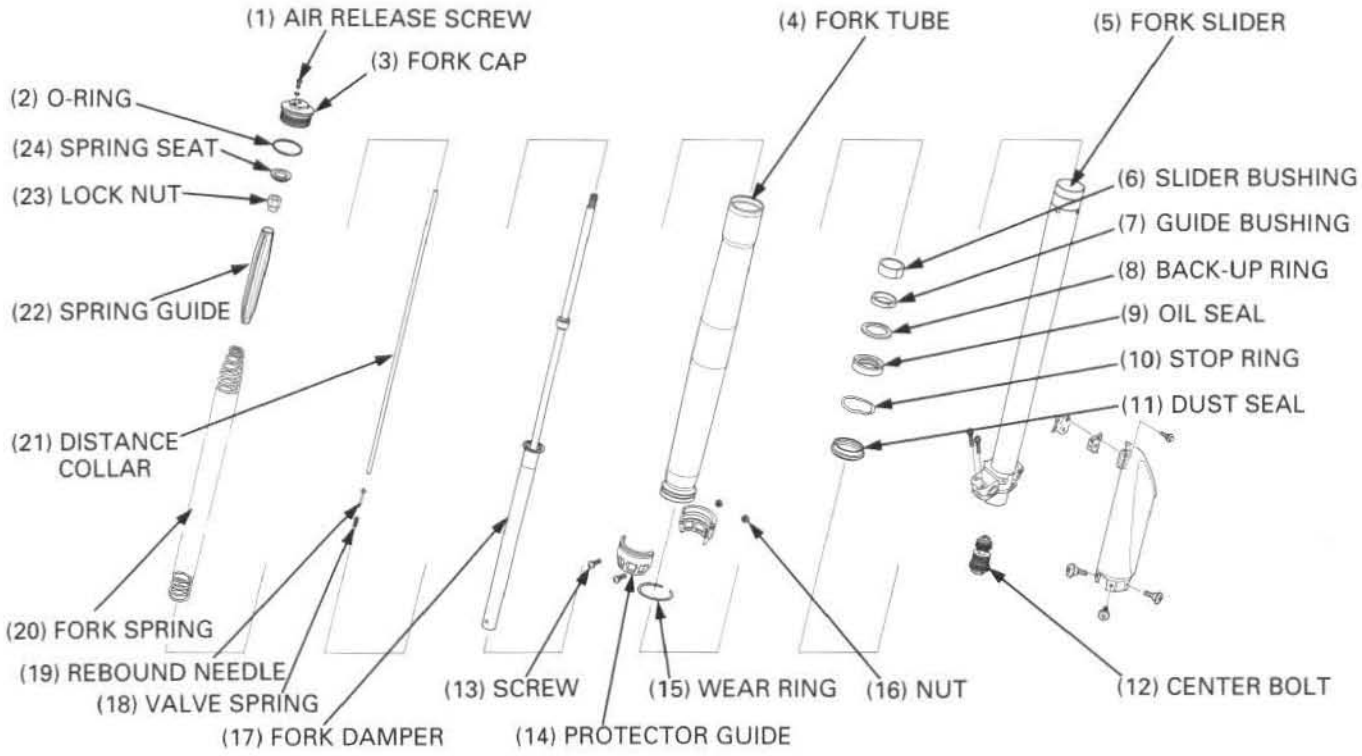
NOTE

- Clean the disassembled parts thoroughly with non-flammable or high flash point solvent and blow dry with compressed air before assembly.

'92 – '93:



After '93:

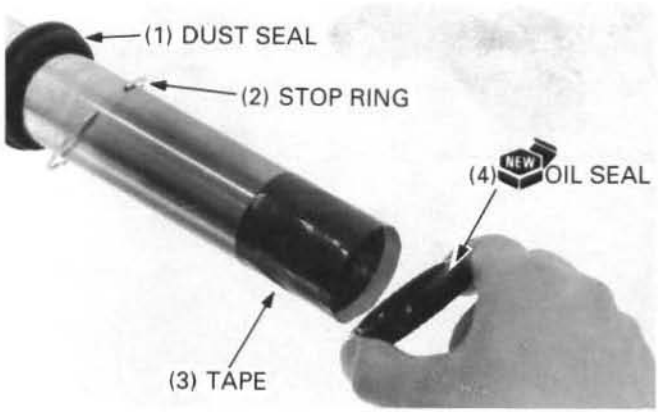


Wrap the end of the fork slider with tape.
Coat the new oil seal lips with fork oil.

Install the following onto the fork slider:
- Dust seal
- Stop ring
- Oil seal

NOTE

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

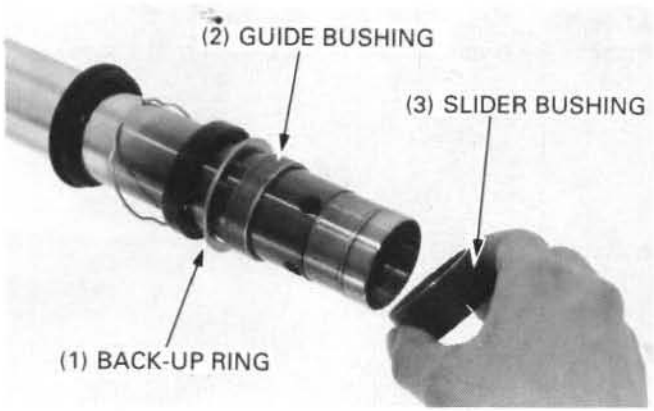


- Back-up ring
- Guide bushing
- Slider bushing

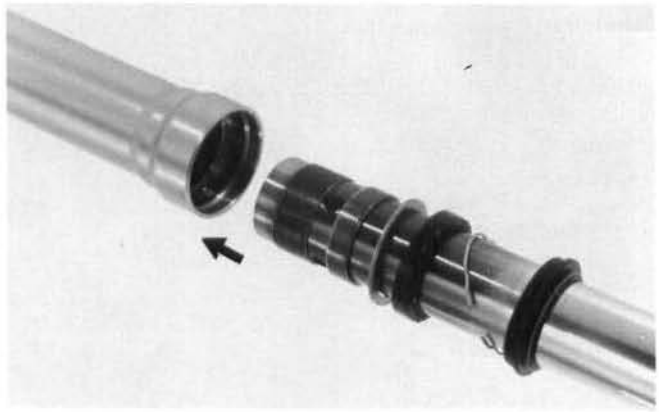
NOTE

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

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



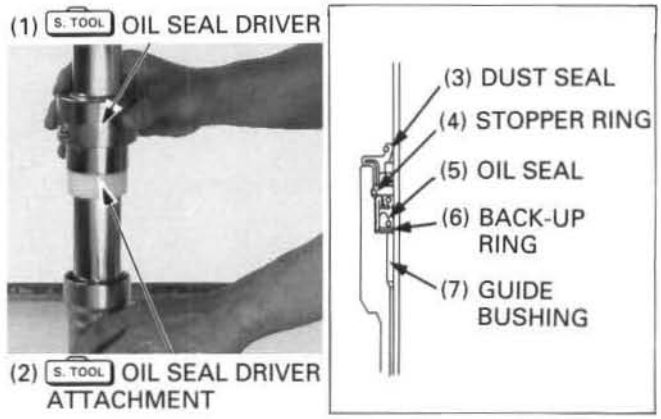
Coat the slider and guide bushings with the recommended fork oil and install the slider into the fork tube.



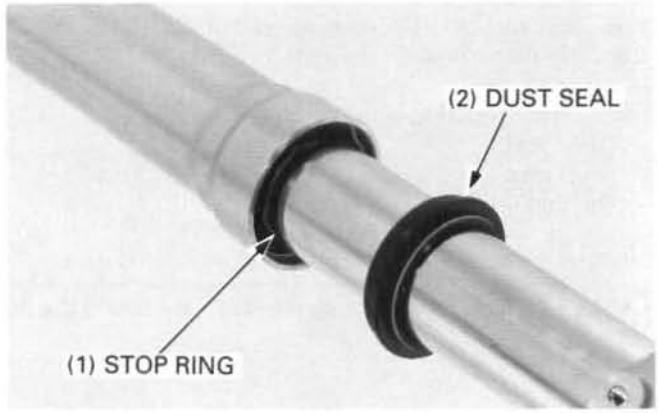
Drive in the guide bushing together with the back-up ring into the fork tube, using the special tool.
Then drive the oil seal into the oil seal case using the special tools.

S. TOOL

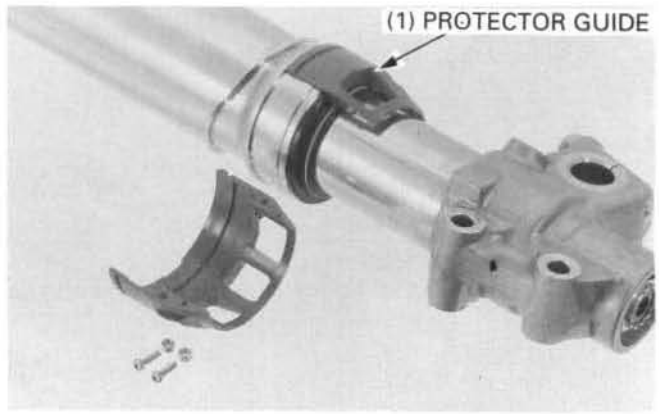
Oil seal driver	**07KMD – KZ30100**
Oil seal driver attachment	**07NMD – KZ30100 or**
Fork seal driver	**07NMD – KZ3010A (U.S.A. only)**



'92 – '93:
Install the stop ring and dust seal.



After '93:
Inspect the protector guide for cracks or damage.



Install the protector guide.
Install the nuts.
Install the screws from the front side and tighten them.

Torque: 0.4 N·m (0.04 kg-m, 0.3 ft-lb)

Install the wear ring with the end gap facing rearward.

Inspect the wear ring for wear or damage.

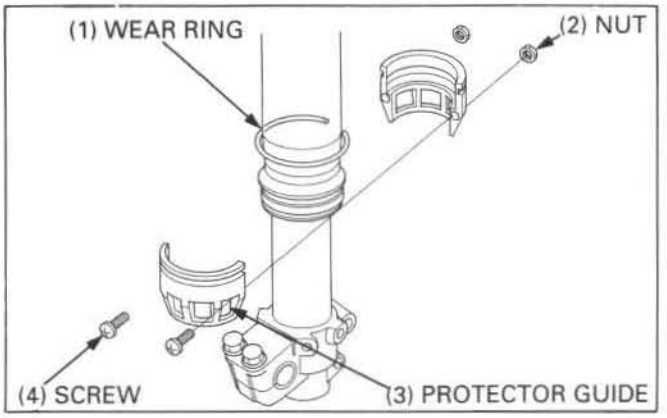
Replace the wear ring, if it is within 1.5 mm (0.06 in) of the protector guide.

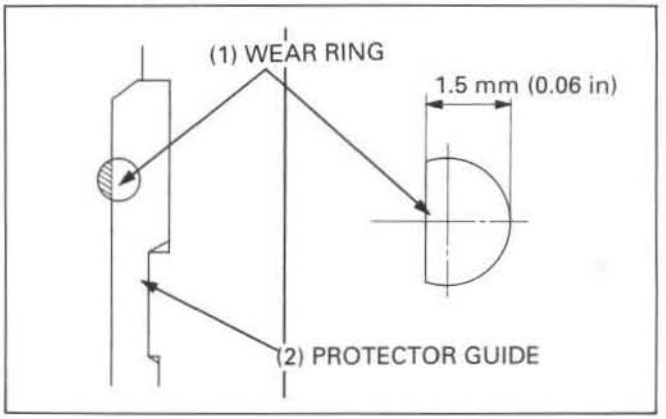
NOTE

- Install the wear ring securely in the protector guide groove.

CAUTION

- **The outer tube can move up and down freely on the slider. Always hold the slider and fork tube with your hands, or the guide and slider bushings and dust seal might be damaged.**



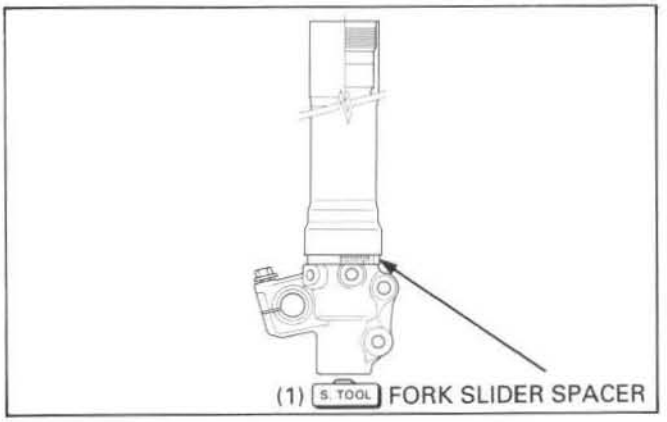


'92 – '93:
CAUTION

- **The fork tube can move up and down freely on the fork slider. Always hold the fork slider and fork tube with your hand, or the guide and slider bushings and the dust seal might be damaged.**

To avoid damaging the dust seal, install the special tool and lower the fork tube gently onto the tool.

S. TOOL	
Fork slider spacer	**07KMZ – KZ30101 or**
Spacer	**07KMZ – KZ30101B (U.S.A. only)**

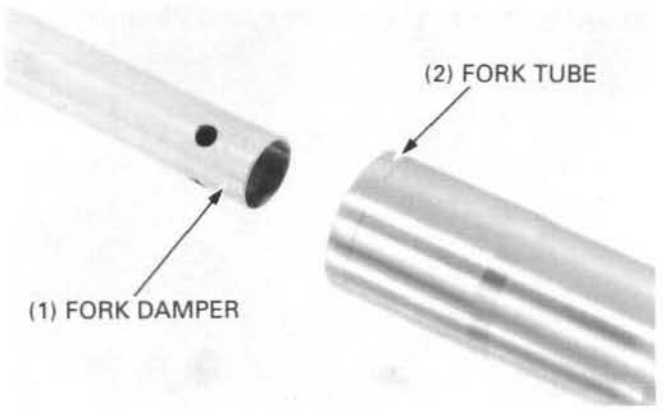


Install the fork damper into the fork slider.

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

CAUTION

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

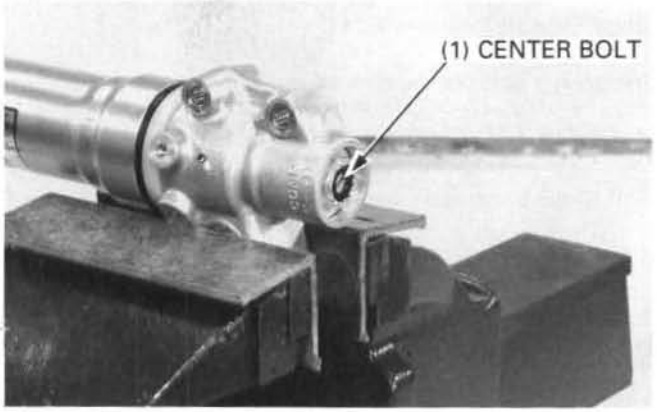


'92:
Clean the center threads of the center bolt thoroughly.
Apply a Honda Anaerobic Thread Lock or equivalent to the center bolt threads.
Install the center bolt with a new sealing washer and tighten the bolt to the specified torque.

Torque: 80 N·m (8.0 kg-m, 58 ft-lb)

NOTE

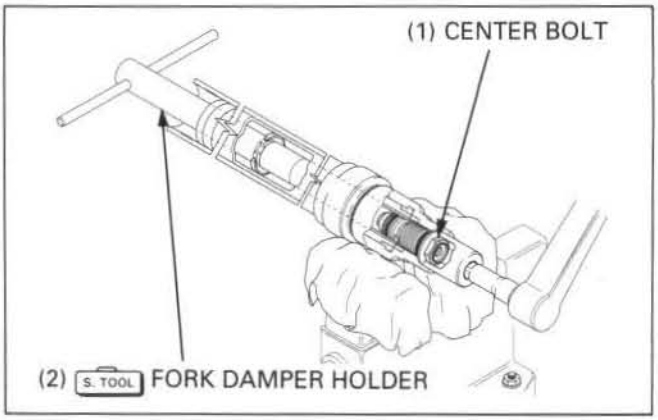
- If the center bolt turns together with the fork damper, temporarily install the fork spring and cap.



After '92:
Clean the center threads of the center bolt thoroughly.
Apply a Honda Anaerobic Thread Lock or equivalent to the center bolt threads ('93 only).
Install the center bolt with a new sealing washer.
Tighten the center bolt using the special tool as shown.

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

Torque: 80 N·m (8.0 kg-m, 58 ft-lb)



Wipe off any excess oil from the spring guide.

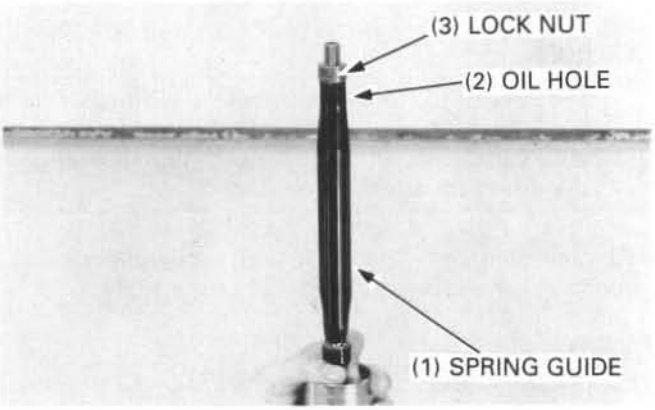
Install the guide with the oil hole facing up.

Temporarily install the lock nut with the flange side facing down.

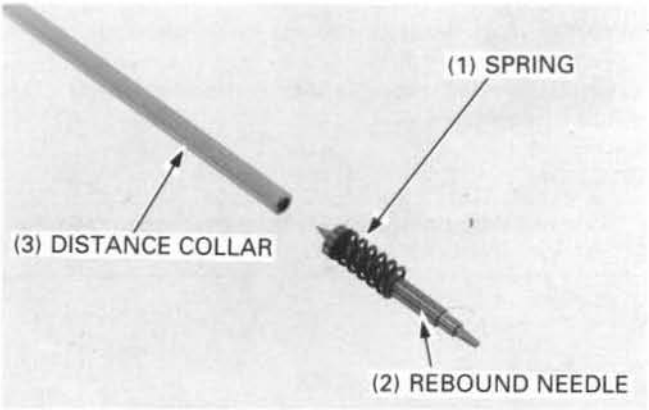
Wipe off any excess oil from the spring guide.

Install the guide with the oil hole facing up.

Temporarily install the lock nut with the flange side facing down.

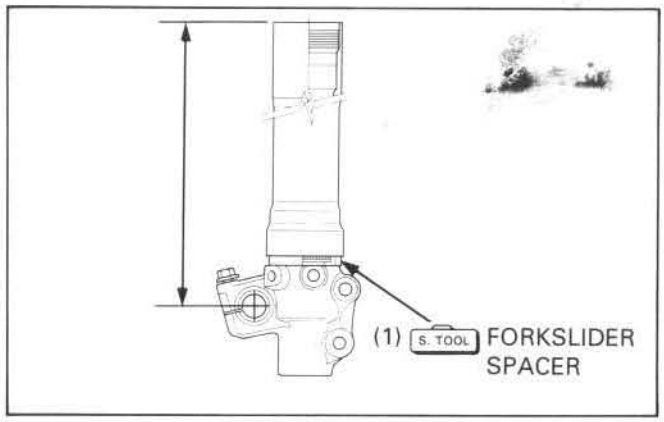


Install the spring, rebound needle and distance collar.



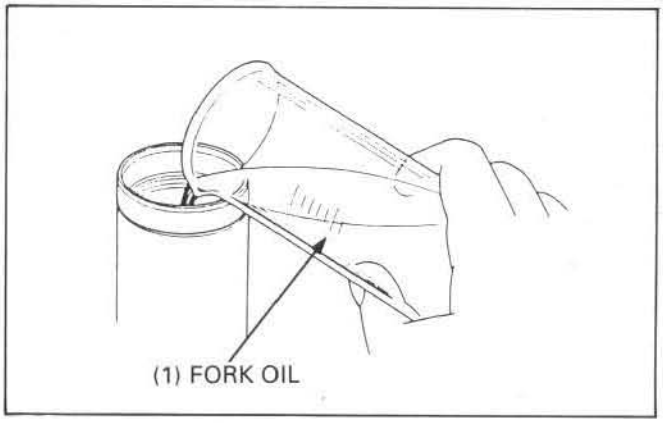
'92 – '93:
CAUTION

- **You must use the fork slider spacer to obtain the correct oil level adjustment.**



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

Recommended Oil: Pro Honda Suspension Fluid SS-7M or equivalent
Standard capacity:
'92: 572 cc (19.4 oz)
'93: 559 cc (18.9 oz)
After '93: 549 cc (18.6 oz)

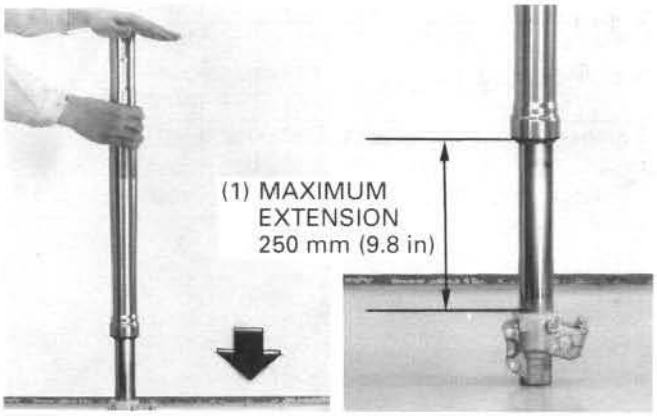


Add half the amount of recommended fork oil into the fork leg.

Bleed the air from the fork as follows:
'92 – '93:
1. Extend the fork. Cover the top of the upper fork tube with your hand and compress the fork slowly.

CAUTION

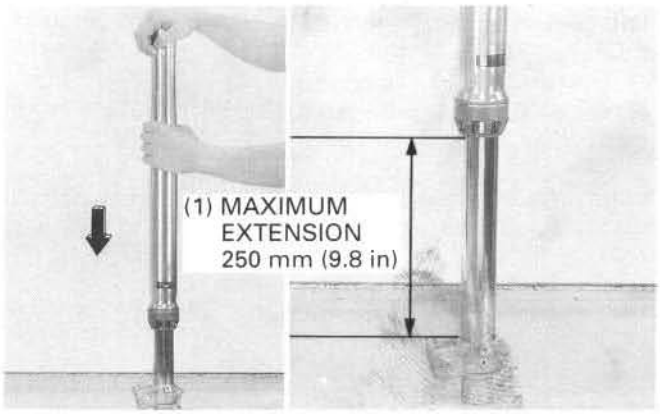
- **Fork oil will spill out of the oil hole within the fork tube. Do not pull up the upper fork tube more than 250 mm (9.8 in) from the axle holder to extend the fork.**



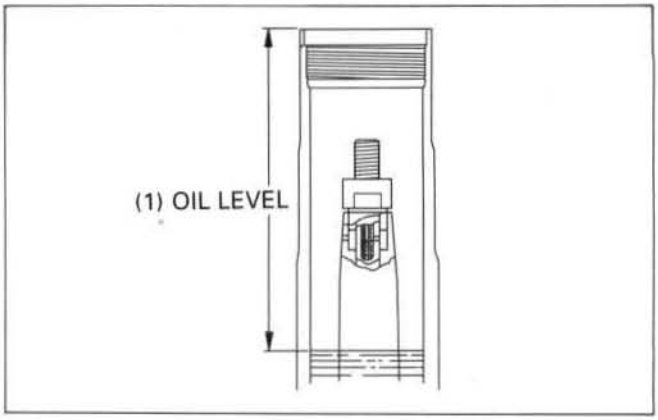
After '93:
1. Extend the fork. Cover the top of the outer tube with your hand and compress the fork slowly.

CAUTION

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



2. With the damper rod pushed fully in, add the recommended fork oil into the rod until a little flows out of the rod end.
3. Pump the fork tube and rod slowly 8 – 10 times.
4. Add additional oil up to the specified capacity and repeat step 3.



Standard oil level:
'92: 105 mm (4.1 in)
'93: 118 mm (4.6 in)
After '93: 114 mm (4.5 in)
Standard capacity:
'92: 572 cc (19.4 oz)
'93: 559 cc (18.9 oz)
After '93: 549 cc (18.6 oz)

NOTE

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

'92:

Maximum oil level capacity	93 mm (3.7 in) 584 cc (19.8 oz)	Slightly stiffer as it nears full compression.
Minimum oil level capacity	124 mm (4.9 in) 552 cc (18.7 oz)	Slightly softer as it nears full compression.

'93:

Maximum oil level capacity	93 mm (3.7 in) 584 cc (19.8 oz)	Slightly stiffer as fork nears full compression.
Minimum oil level capacity	136 mm (5.4 in) 541 cc (18.3 oz)	Slightly softer as fork nears full compression.

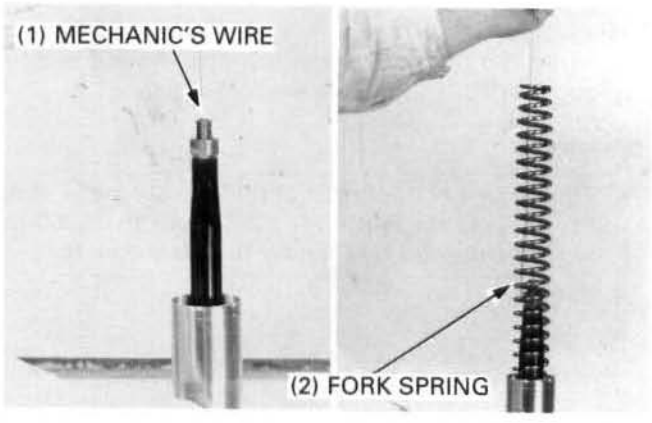
After '93:

Maximum oil level capacity	96 mm (3.8 in) 567 cc (19.2 oz)	Slightly stiffer as fork nears full compression.
Minimum oil level capacity	139 mm (5.9 in) 524 cc (17.7 oz)	Slightly softer as fork nears full compression.

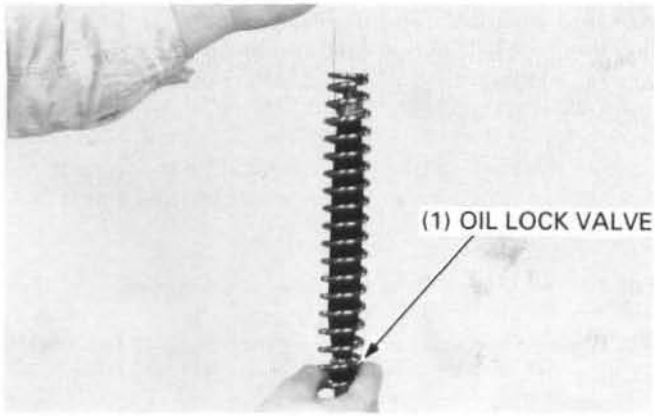
For complete details on oil level adjustment, refer to Owner's Manual.

Attach a 60 mm (2 feet) length of mechanic's wire to the lock nut on the damper rod.

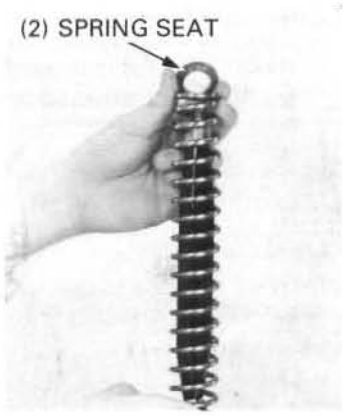
Wipe off any excess oil from fork spring, then install it over the wire and into fork tube with tapered end facing up.



Pull the mechanic's wire up and hold the damper rod by the oil lock valve.
Remove the mechanic's wire from the rod.



Turn the lock nut on by hand until it bottoms on the damper rod.
Install the spring seat onto the fork spring.

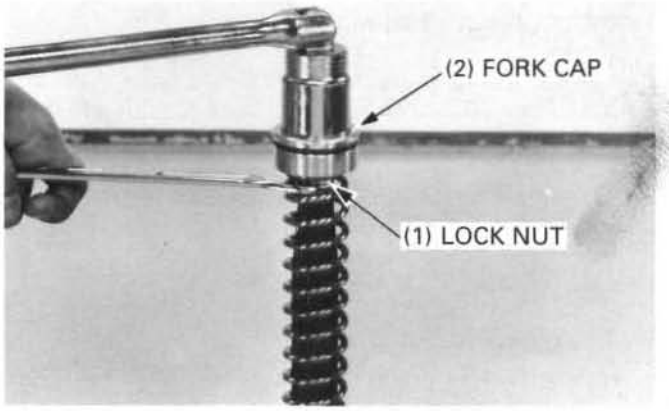


Check that the fork cap O-ring is in good condition.

Screw the fork cap on the damper rod.
Hold the lock nut and tighten the fork cap to the specified torque.

Torque: 22 N·m (2.2 kg-m, 16 ft-lb)

Temporarily install the fork cap in the fork tube.



Installation

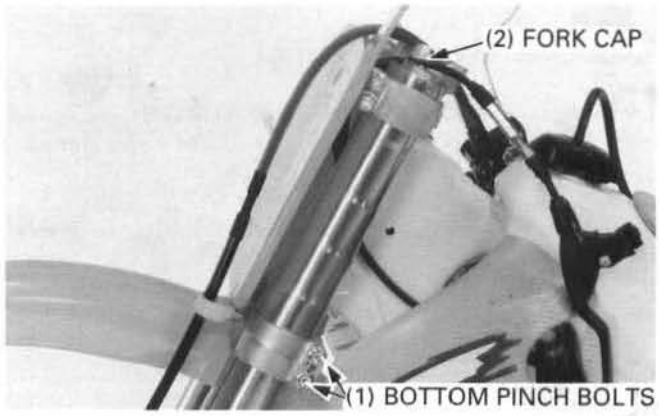
Install the both fork legs into the fork clamps.

Temporarily tighten the bottom pinch bolts to the specified torque.

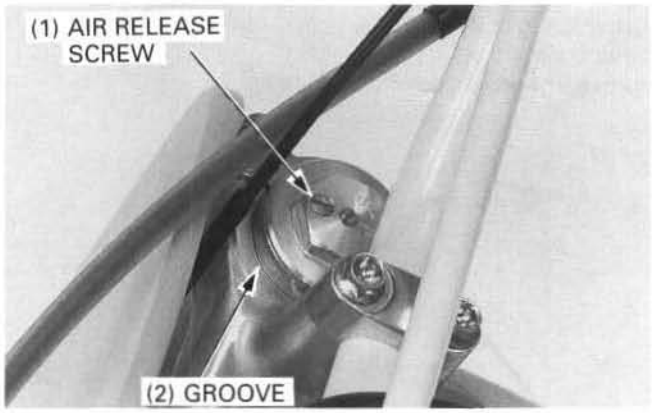
Torque: 22 N·m (2.2 kg-m, 16 ft-lb)

Tighten the fork caps to the specified torque.

Torque: 35 N·m (3.5 kg-m, 25 ft-lb)



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



Loosen the bottom 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.

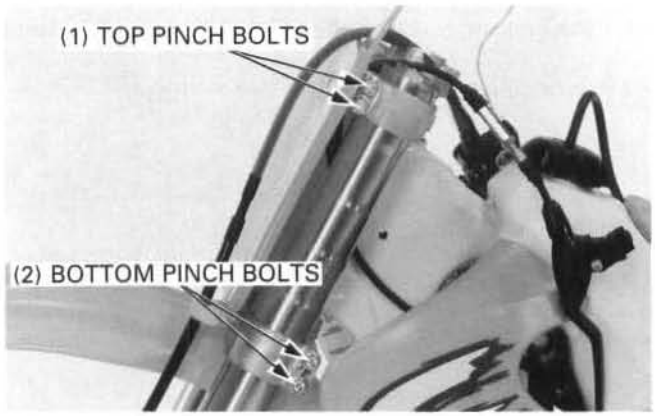
For alternate positions, see Owner's Manual.

The top and bottom fork clamp pinch bolts to the specified torque.

Torque: 22 N·m (2.2 kg-m, 16 ft-lb)

CAUTION

- **Over tightening the pinch bolts can deform the upper fork tubes. Deformed outer tubes must be replaced.**



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

'92 – '93:
Clean the threads of the fork protector bolts thoroughly. Apply a Honda Anaerobic Thread Lock or equivalent to the fork protector bolts.

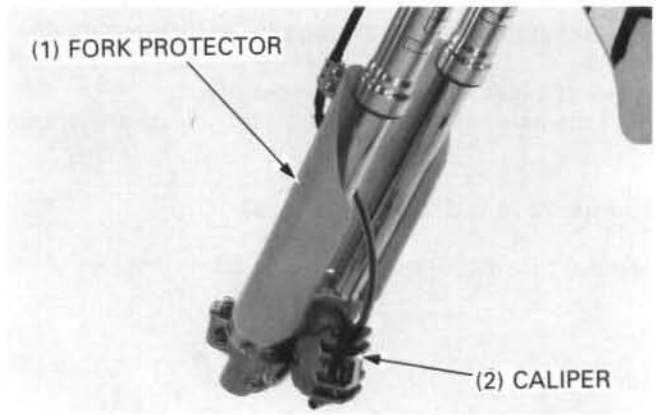
Install the fork protector and tighten the bolts to the specified torque.

Torque: 13 N·m (1.3 kg-m, 9.5 ft-lb)

Clean the threads of the caliper bracket bolts thoroughly. Apply a Honda Anaerobic Thread Lock or equivalent to the caliper bracket bolt.

Install the caliper and tighten the bolts to the specified torque.

Torque: 31 N·m (3.1 kg-m, 22 ft-lb)



After '93:
Clean the threads of the fork protector bolts thoroughly.

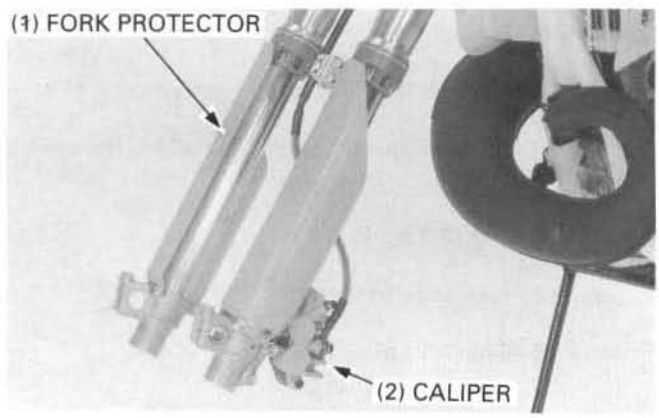
Install the fork protector and tighten the bolts to the specified torque.

Torque: 12 N·m (1.2 kg-m, 9 ft-lb)

Clean the threads of the caliper bracket bolts thoroughly. Apply a Honda Anaerobic Thread Lock or equivalent to the caliper bracket bolt.

Install the caliper and tighten the bolts to the specified torque.

Torque: 31 N·m (3.1 kg-m, 22 ft-lb)



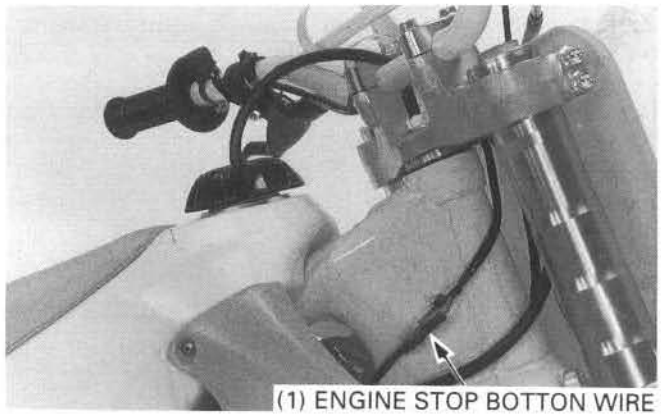
Install the handlebar assembly (page 11-25).
Install the front wheel (page 11-8).

Handlebar

Removal

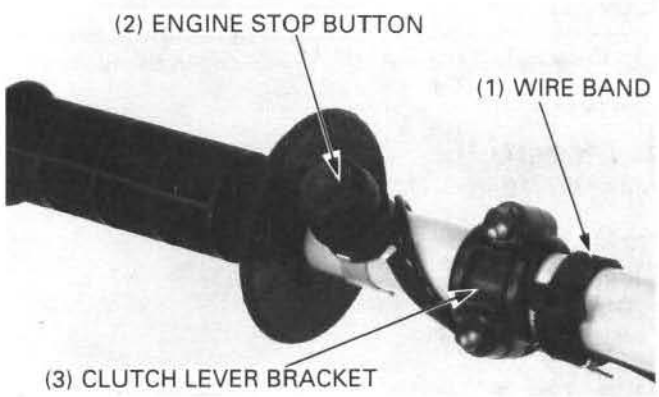
Disconnect the engine stop button wires.

Unhook the holding tab of the number plate.

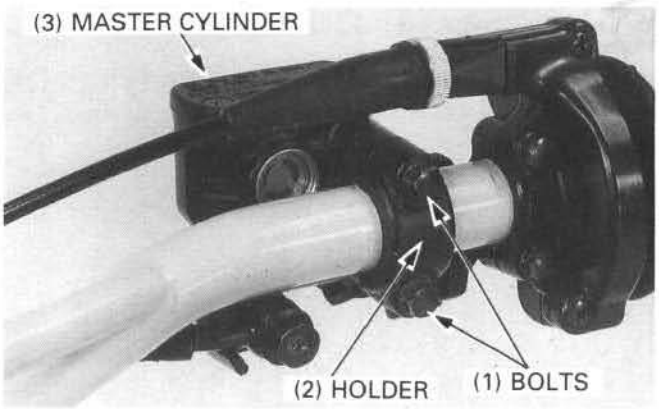


Remove the wire bands securing the engine stop button wire and remove the engine stop button.

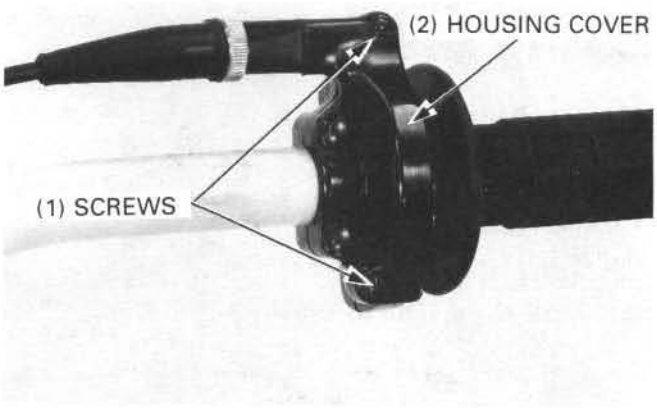
Disconnect the clutch cable and remove the clutch lever bracket.



Remove the front brake master cylinder, with its holder, keeping it upright to prevent air from entering the hydraulic system.

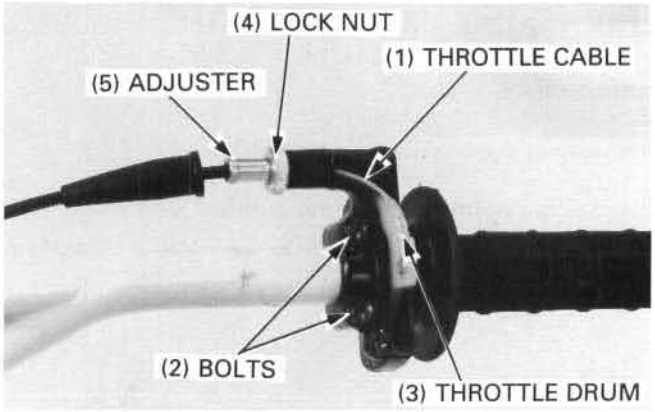


'92:
Remove the throttle housing cover by removing the screws. Slide the rubber protector off and loosen the lock nut and adjuster.

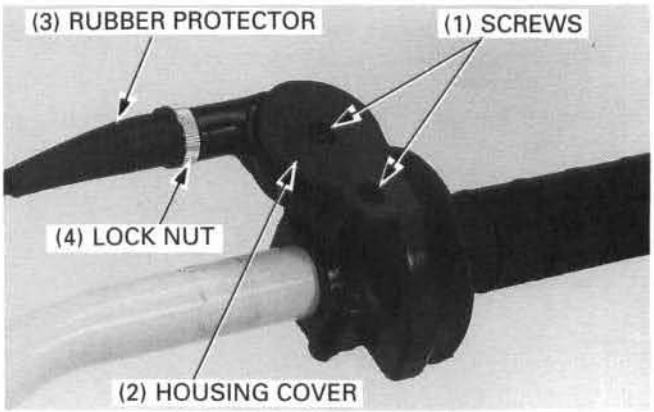


Disconnect the throttle cable from the throttle drum by removing the lock nut and adjuster.

Loosen the throttle housing mounting bolts and remove the throttle grip from the handlebar.



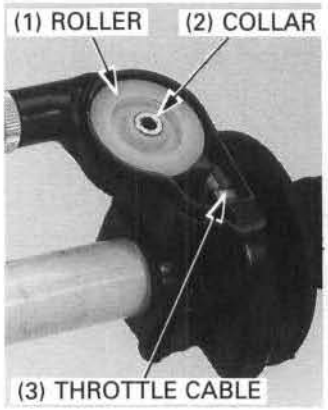
After '92:
Remove the throttle housing cover by removing the screws. Slide the rubber protector off and loosen the lock nut and adjuster.

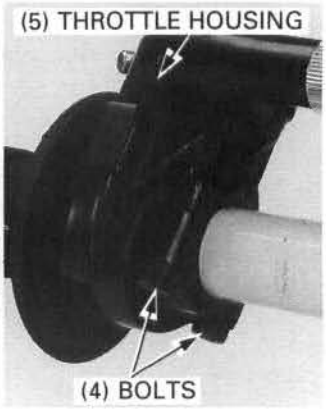


Remove the throttle cable roller and collar.

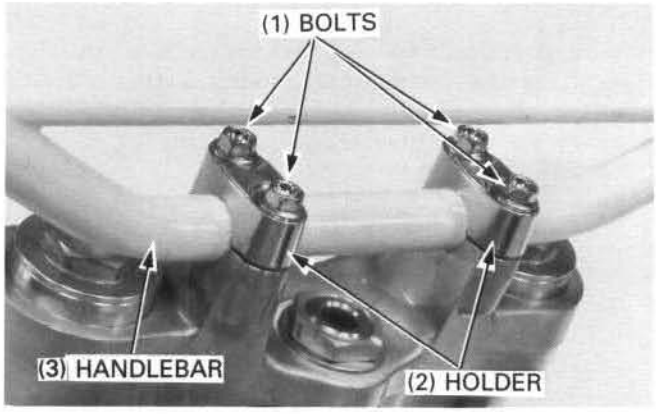
Disconnect the throttle cable end from the throttle drum by removing the lock nut and adjuster.

Loosen the throttle housing mounting bolts and remove the throttle drum from the handlebar.





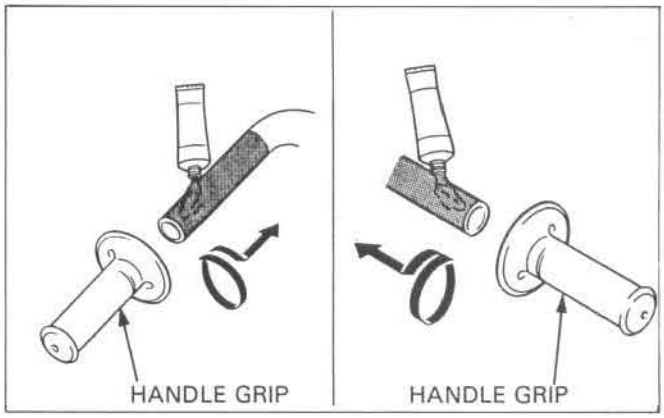
Remove the handlebar holder bolts, upper holders and handlebar.



Apply Honda Bond A or Honda Hand Grip Cement (U.S.A. only) to the inside surface of the grips and to the clean surface of the left handlebar and throttle pipe.
Wait 3 – 5 minutes and install the grips.
Rotate the grips for even application of the adhesive.

NOTE

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



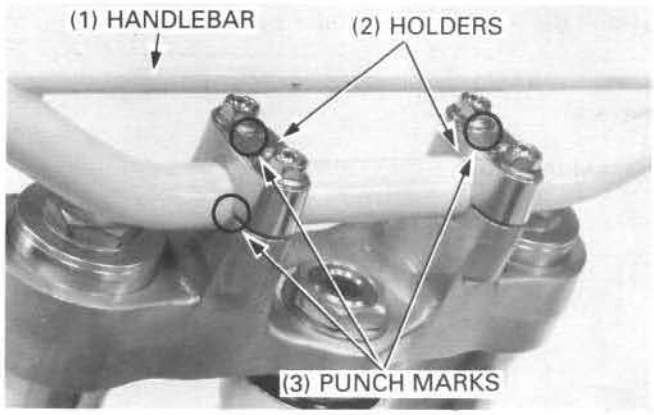
Installation

Align the punch mark on the handlebar with the top of the lower holder.

Place the upper holder on the handlebar with the punch marks facing forward.

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

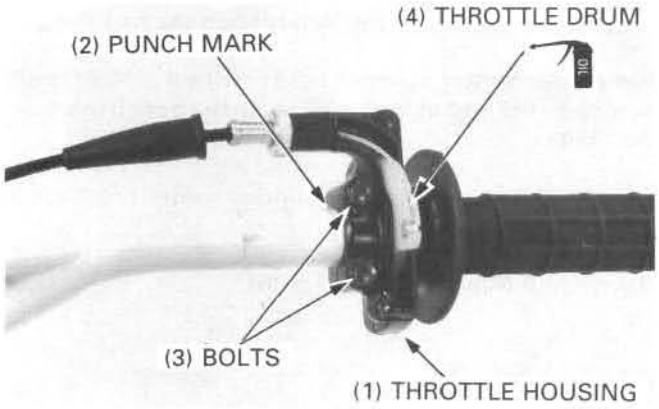
Torque: 22 N·m (2.2 kg-m, 16 ft-lb)



'92:
Apply thin coat of oil to the sliding surfaces of the throttle housing.
Connect the throttle cable end to the throttle drum.

Install the throttle housing aligning the slot in the housing with the punch mark on the handlebar.
Tighten the upper bolt first, then tighten the lower bolt.

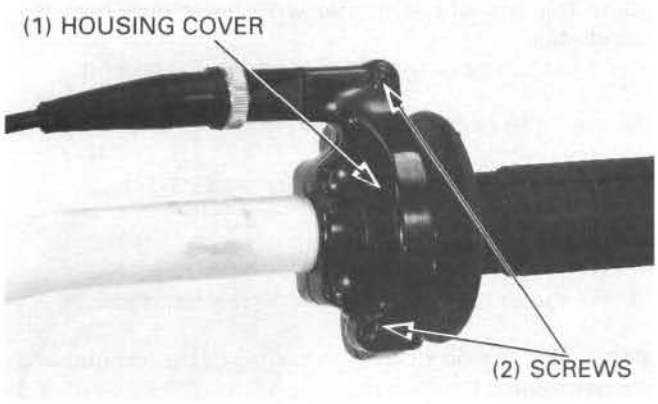
Torque: 10 N·m (1.0 kg-m, 7 ft-lb)



Install the throttle housing cover and tighten the screws.

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

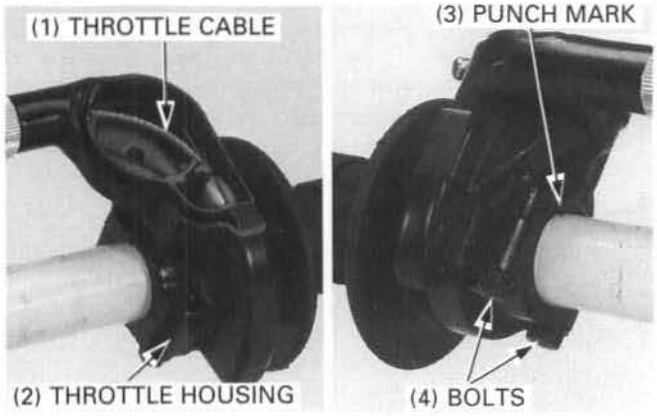
Adjust the throttle grip free play (page 3-6).



After '92:
Apply a thin coat of oil to the sliding surfaces of the throttle grip and throttle housing.
Connect the throttle cable end to the throttle drum.

Install the throttle housing aligning the punch mark of the housing with the punch mark on the handlebar.
Tighten the upper bolt first, then the lower bolt.

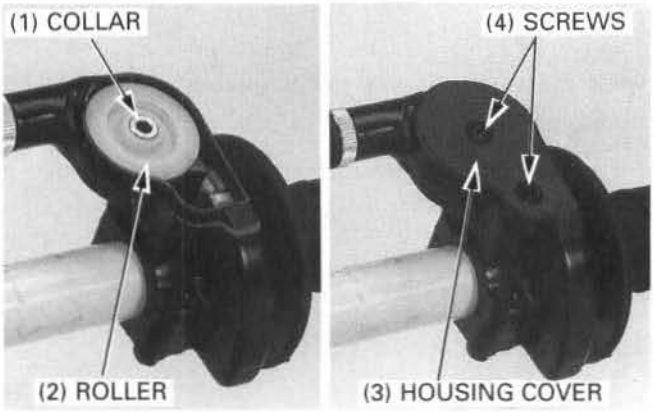
Torque: '92-'93: 10 N·m (1.0 kg-m, 7 ft-lb)
After '93: 9 N·m (0.9 kg-m, 6.5 ft-lb)



Install the throttle cable roller and collar.

Install the throttle housing cover and tighten the screws securely.

Adjust the throttle grip free play (page 3-6).

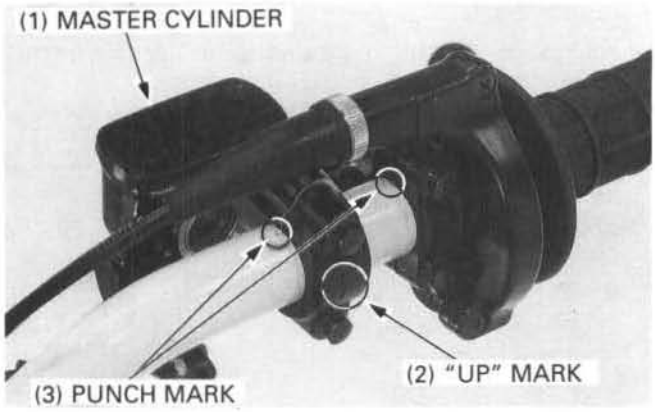


Position the brake master cylinder on the handlebar.

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

Tighten the upper master cylinder holder bolt first, then tighten the lower bolt.

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

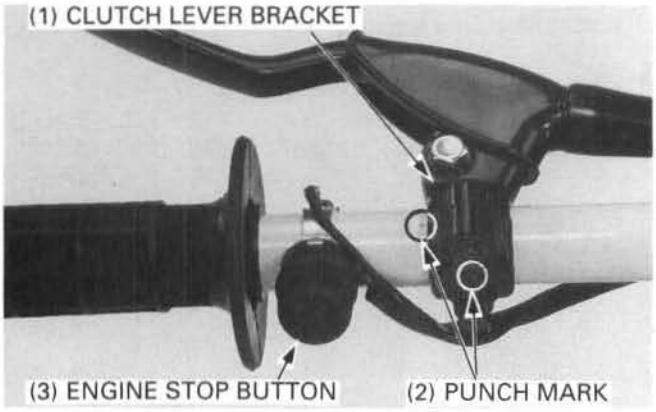
Connect the clutch cable.

Adjust the clutch lever free play (page 3-14).

Route the engine stop button wire.

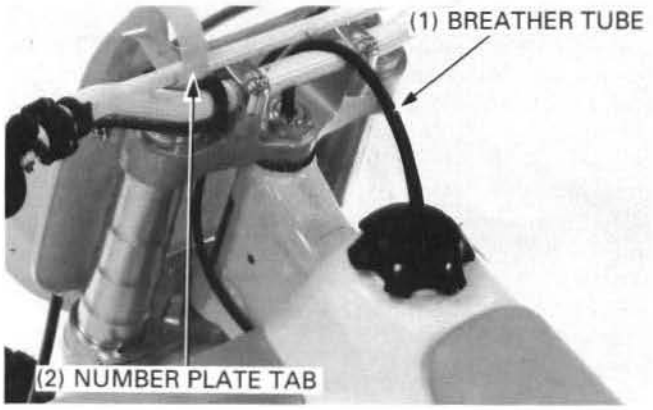
Install the engine stop button on the handlebar.

Attach the engine stop button wires to the handlebar using the wire bands.



Route the fuel cap breather tube.

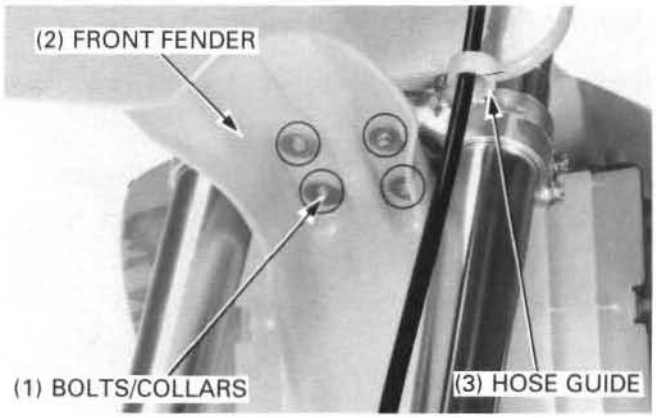
Route the number plate tab around the handlebar cross bar as shown.



Steering Stem

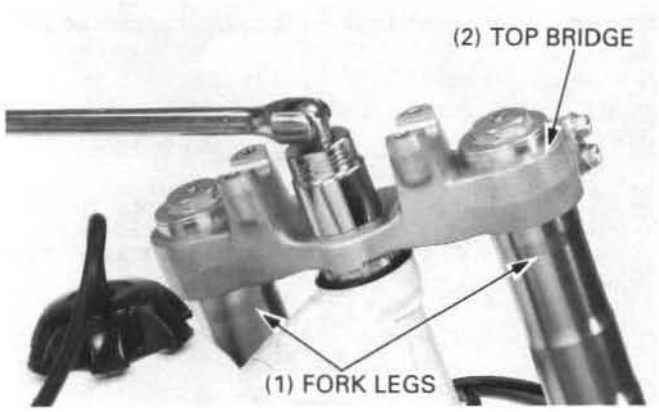
Removal

Remove the following:
- Handlebar (page 11-23)
- Front wheel (page 11-4)
- Front fender mounting bolts and collar
- Front fender
- Brake hose guide



Remove the steering stem nut and washer.

Remove the fork legs (page 11-9).
Remove the fork top bridge.

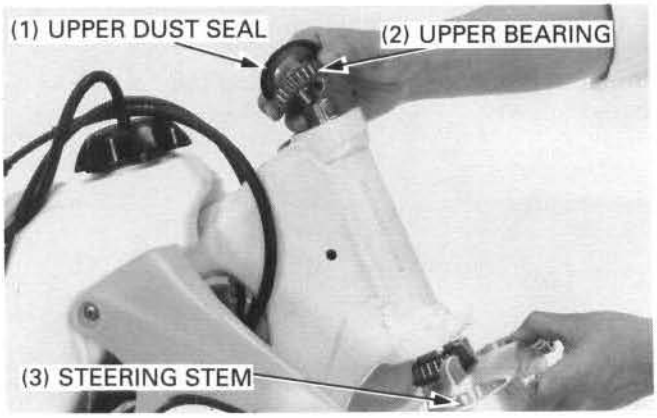


Remove the steering head adjusting nut.

S. TOOL

Steering stem socket	**07916 – 3710100 or 07916 – 3710101**
Extension bar	**07716 – 0020500 or Equivalent commercially available in U.S.A.**

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

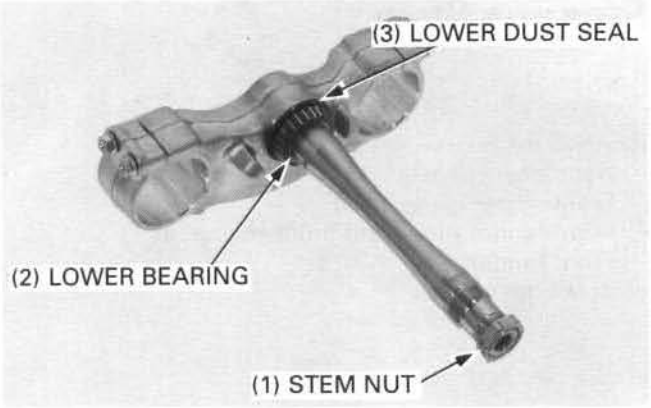


Bearing Replacement

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

NOTE

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

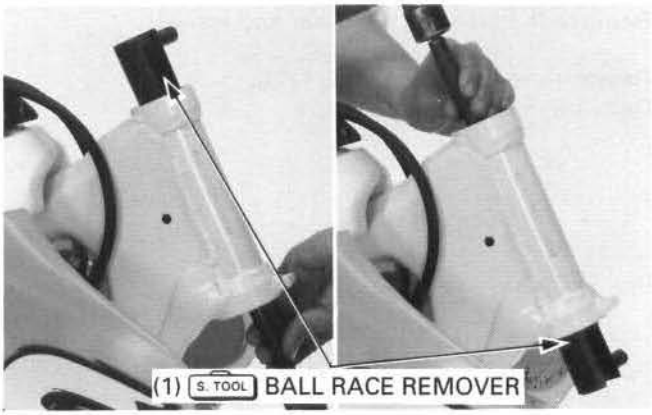


Remove the upper and lower bearing outer races from the head pipe.

S. TOOL
Ball race remover **07946 – 3710500**

NOTE

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



Installation

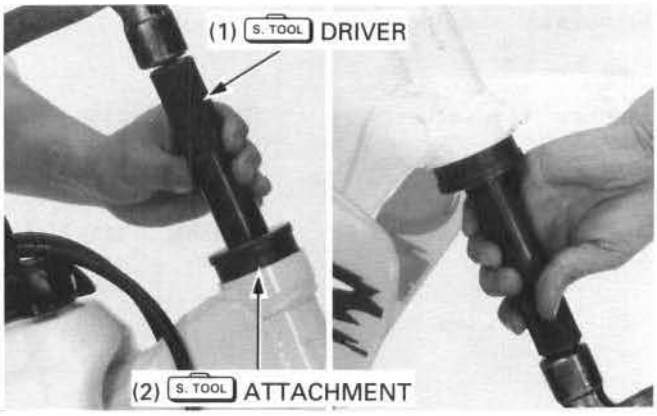
Install new bearing races.

NOTE

- If the motorcycle has been involved in an accident, examine the steering stem and the area around the steering head for cracks.

S. TOOL

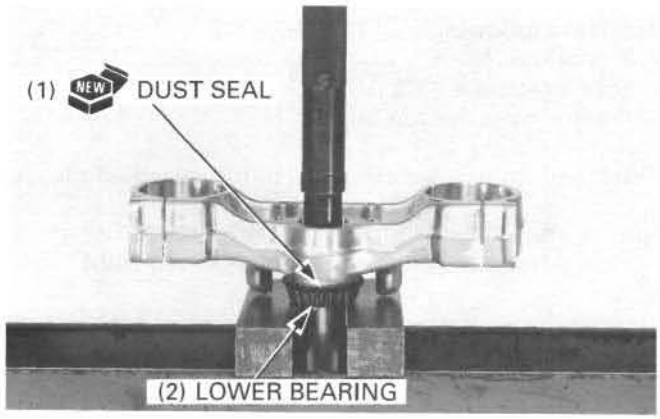
Driver	**07749 – 0010000**
Attachment, 52 x 55 mm	**07746 – 0010400**



'92:
Install a new dust seal.

Pack the upper and lower tapered roller bearings with grease.

Install the lower bearing using a hydraulic press as shown.



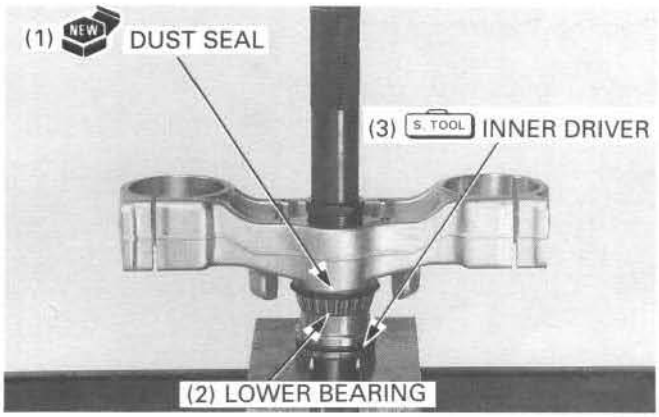
After '92:
Install a new dust seal.

Pack the upper and lower tapered roller bearings with grease.

Install the lower bearing using a hydraulic press and inner driver.

S. TOOL

Inner driver, 30 mm	**07746-0030300**
Driver	**07749-0010000**
Attachment, 32 x 35 mm	**07746-0010100**

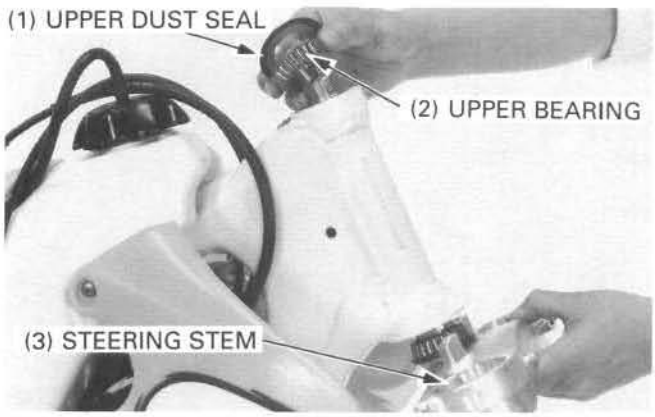


Apply grease to all of the bearing area.

Install the upper tapered roller bearing in the steering head.

Slide the steering stem into the steering head from the bottom.

Install the dust seal washer and steering head adjusting nut.



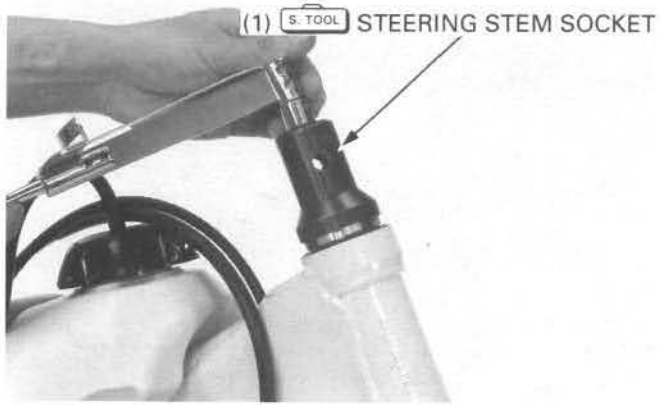
Tighten the steering head adjusting nut with the steering stem socket.

Torque: '92 – '93: 2 N·m (0.2 kg-m, 1.4 ft-lb)
After '93: 7 N·m (0.7 kg-m, 5.1 ft-lb)

S. TOOL

Steering stem socket	**07916-3710100 or 07916-3710101**

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



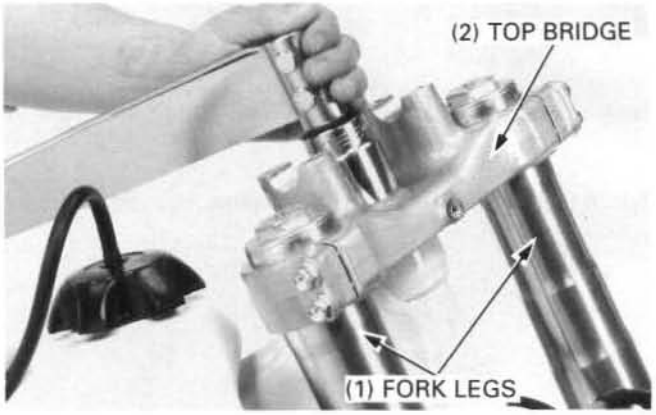
Install the following:
- Top bridge
- Fork legs (page 11-21)
- Washer onto the top bridge

Install and tighten the stem nut to the specified torque.

Torque: '92 – '93: 118 N·m (11.8 kg-m, 85 ft-lb)
After '93: 150 N·m (15.0 kg-m, 108 ft-lb)

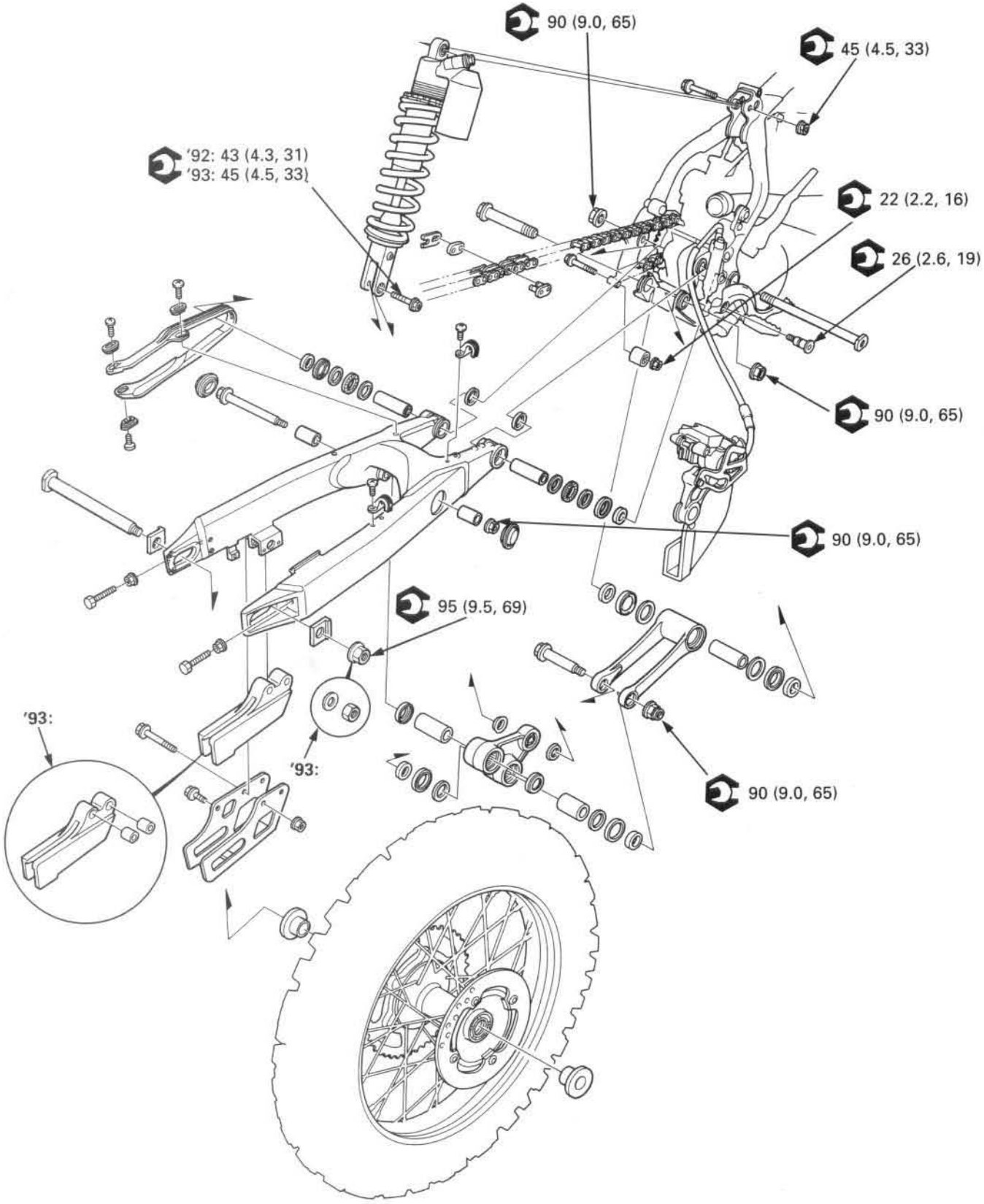
Recheck the steering stem adjustment before installing the removed parts.

Install the remaining removed parts in the reverse order of removal.



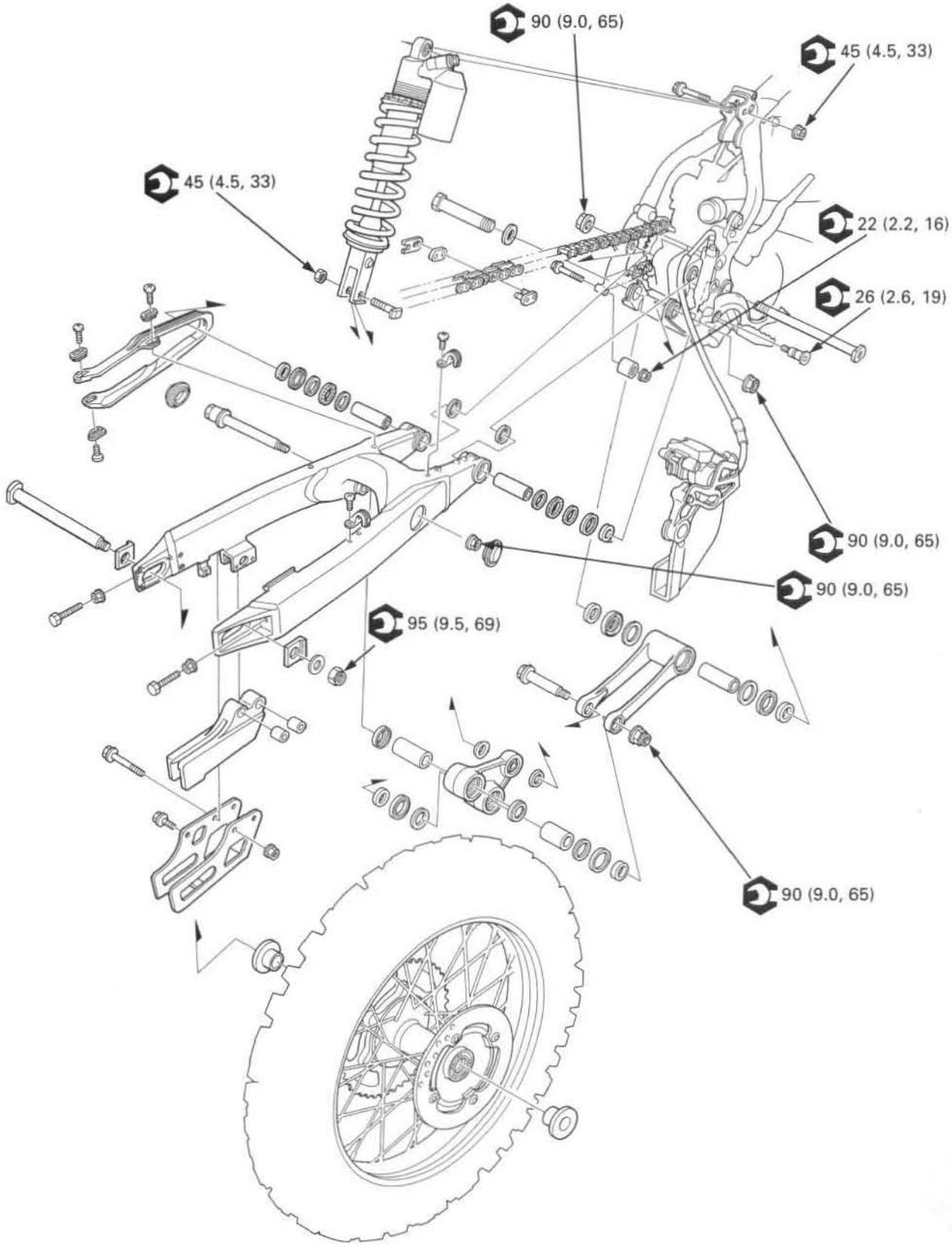
MEMO

'92 – '93:


90 (9.0, 65)
45 (4.5, 33)
'92: 43 (4.3, 31)
'93: 45 (4.5, 33)
22 (2.2, 16)
26 (2.6, 19)
90 (9.0, 65)
90 (9.0, 65)
95 (9.5, 69)
'93:
'93:
90 (9.0, 65)

After '93:

12. Rear Wheel/Suspension



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 in 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.**

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 a contaminated disc with Pro Honda Contact/Brake Cleaner or equivalent high quality brake degreasing agent.**

- Use genuine Honda bolts for the rear suspension linkage and shock absorber pivot and mounting; ordinary bolts lack adequate strength for these applications. Also take note of the installation direction of these bolts since they must be installed correctly.
- 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 multi-purpose grease NLGI No. 2 (molybdenum disulfide additive) each 3 races or 7.5 hours of running.
- 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.
- Refer to the section 13 for brake system information.

Specifications

Unit: mm (in)

Item			Standard	Service Limit
Axle runout			—	0.20 (0.008)
Wheel rim runout	Radial		—	2.0 (0.08)
	Axial		—	2.0 (0.08)
Shock absorber spring free length			275.0 (10.83)	272.3 (10.72)
Damper gas pressure			981 kPa (10.0 kg/cm², 142.2 psi)	——
Shock absorber spring installed length	Standard	'92:	262.0 (10.31)	——
		'93:	261.0 (10.28)	——
		After '93:	263.0 (10.35)	——
	Adjustment range: Max. '92-'93:		271.0 (10.87)	——
	Adjustment range: Min. '92-'93:		256.0 (10.08)	——
	Adjusting limit	After '93:	257.0 (10.12)	——
Recommended shock absorber oil			Pro Honda Suspension Fluid SS-7M or equivalent	

Torque Values

Rear axle nut	95 N·m (9.5 kg-m, 69 ft-lb)	
Final driven sprocket nut	33 N·m (3.3 kg-m, 24 ft-lb)	
Rear brake disc mounting bolt	43 N·m (4.3 kg-m, 31 ft-lb)	Apply a locking agent
Shock absorber mounting (Upper)	45 N·m (4.5 kg-m, 33 ft-lb)	
(Lower) '92:	43 N·m (4.3 kg-m, 31 ft-lb)	
After '92:	45 N·m (4.5 kg-m, 33 ft-lb)	
Shock absorber damper rod end nut	38 N·m (3.8 kg-m, 37 ft-lb)	
Shock absorber damping adjuster	18 N·m (1.8 kg-m, 13 ft-lb)	
Shock absorber spring lock nut	90 N·m (9.0 kg-m, 65 ft-lb)	
Drive chain roller bolt	22 N·m (2.2 kg-m, 16 ft-lb)	
Shock arm bolt (Swingarm side)	90 N·m (9.0 kg-m, 65 ft-lb)	
(Shock link side)	90 N·m (9.0 kg-m, 65 ft-lb)	
Shock link bolt (Frame side)	90 N·m (9.0 kg-m, 65 ft-lb)	
Swingarm pivot bolt	90 N·m (9.0 kg-m, 65 ft-lb)	
Chain guide mounting bolt	12 N·m (1.2 kg-m, 9 ft-lb)	

Tools

Special

Spoke nipple wrench		07JMA – MR60100 or equivalent commercially available in U.S.A.
Needle bearing driver		07946 – KA50000
Spherical bearing driver		07HMF – KS60100
Slider guide, 14 mm	'92:	07974 – KA40001
Slider guide, 16 mm	After '92:	07PMG – KZ40100
Slider guide attachment		07MAG – SP00102
Attachment, 28 x 30 mm		07946 – 1870100
Needle bearing driver		07946 – MJ00100
Driver head		07946 – KM40701
	After '93:	07946 – MJ00200

Common

Driver		07749 – 0010000
Attachment, 42 x 47 mm		07746 – 0010300
Remover head, 20 mm		07746 – 0050600
Remover shaft		07746 – 0050100
Inner driver, 30 mm		07746 – 0030300
Pilot, 20 mm		07746 – 0040500
Retainer wrench B		07710 – 0010200
Retainer wrench body		07710 – 0010401
Attachment, 24 x 26 mm		07746 – 0010700
Attachment, 32 x 35 mm		07746 – 0010100
Pilot, 22mm		07746 – 0041000
Pilot, 25mm	After '93:	07746 – 0040600

Optional

Pin spanner A	89201 – KS6 – 810 x 2

Troubleshooting

Soft Suspension
- Weak spring
- Oil leakage from damper unit

Hard Suspension
- Incorrectly mounted suspension components
- Bent swingarm pivot
- Damaged swingarm pivot bearings
- Damaged shock absorber

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

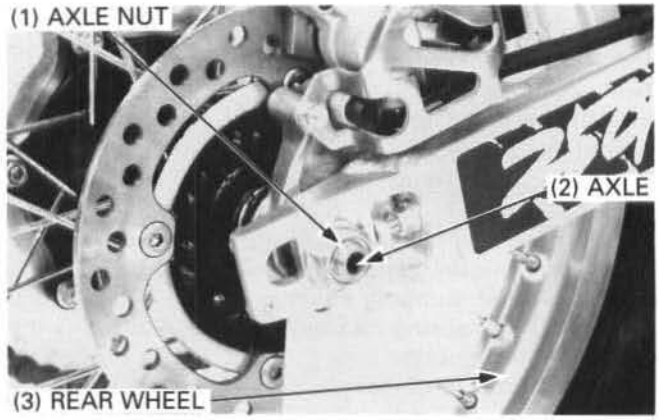
Rear Wheel

Removal

Raise the rear wheel off the ground with a box or workstand under the engine.

Loosen the lock nuts and drive chain adjusting bolts. Remove the axle nut and axle.

Push the wheel forward, remove the drive chain from the driven sprocket, and remove the rear wheel.

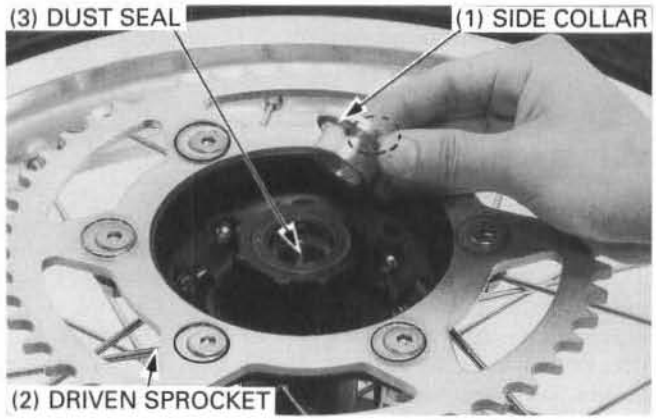


CAUTION

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

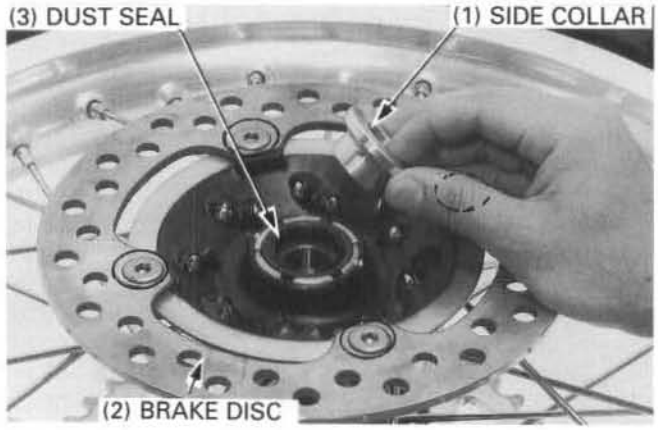
Disassembly

Remove the following:
- Left side collar
- Driven sprocket
- Dust seal



- Right side collar
- Brake disc
- Dust seal

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

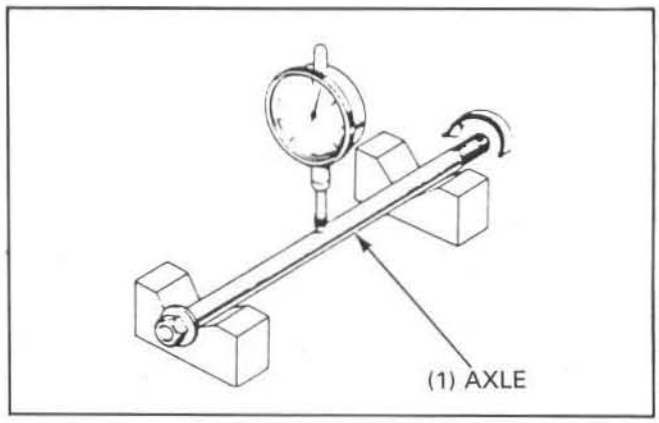


Inspection

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 (0.08 in)



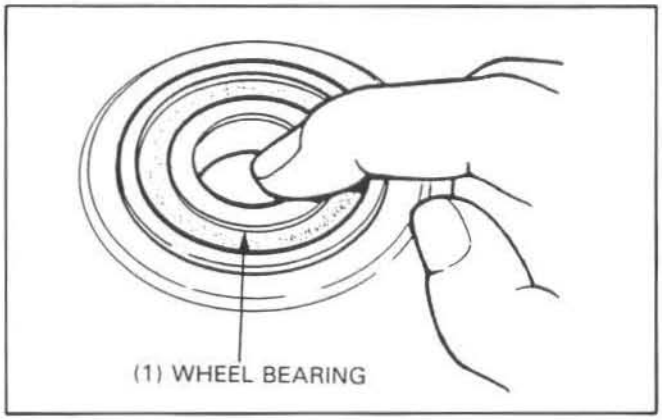
Wheel Bearings

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

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

NOTE

- Replace the bearings in pair.

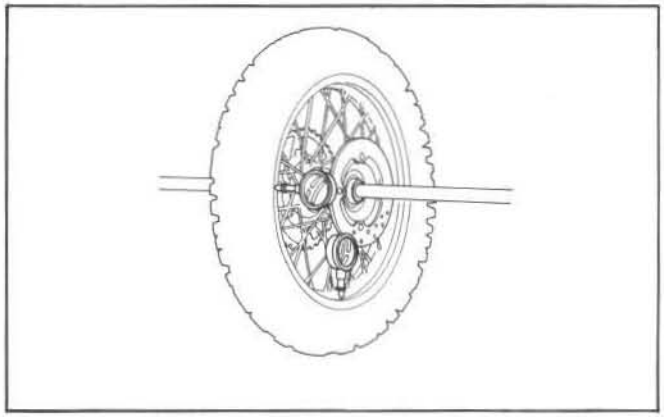


Wheel Rim

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 Limit: Radial: 2.0 mm (0.08 in)
Axial: 2.0 mm (0.08 in)

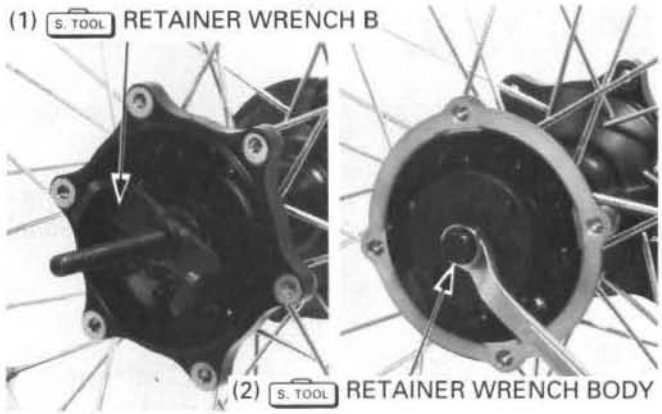
Check the spokes and tighten any that are loose.



Remove the bearing retainer using the special tool.

S. TOOL

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



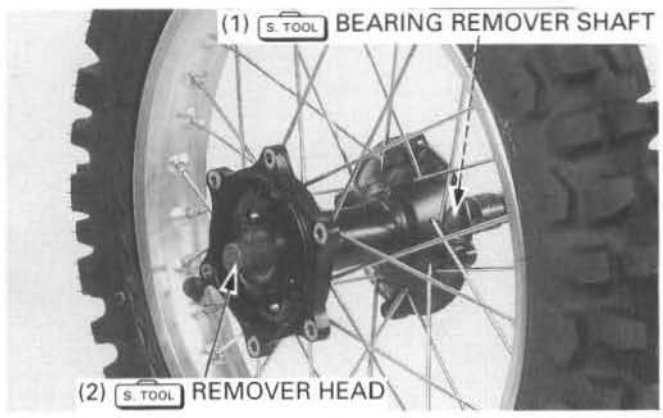
Remove the wheel bearings and distance collar.

S. TOOL

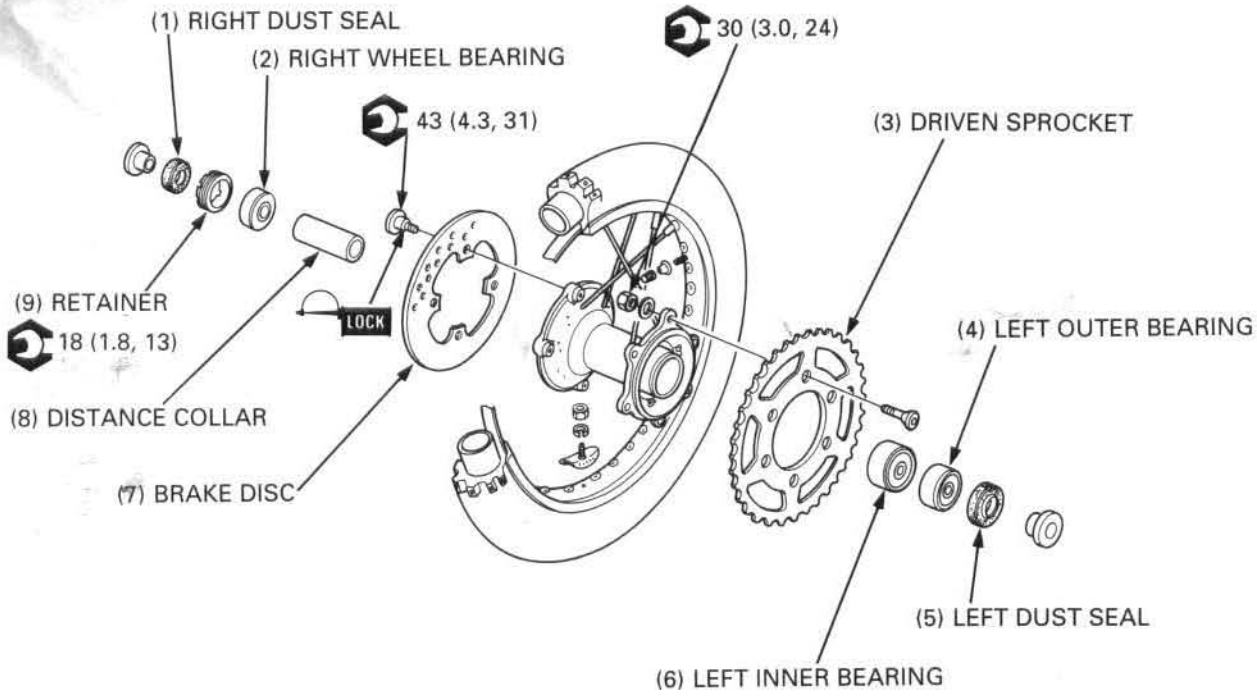
Bearing remover head, 20 mm	**07746 – 0050600**
Bearing remover shaft	**07746 – 0050100**

NOTE

- Never reinstall the old bearings; once the bearings have been removed, they must be replaced with new ones.
- Replace the bearing as a set.



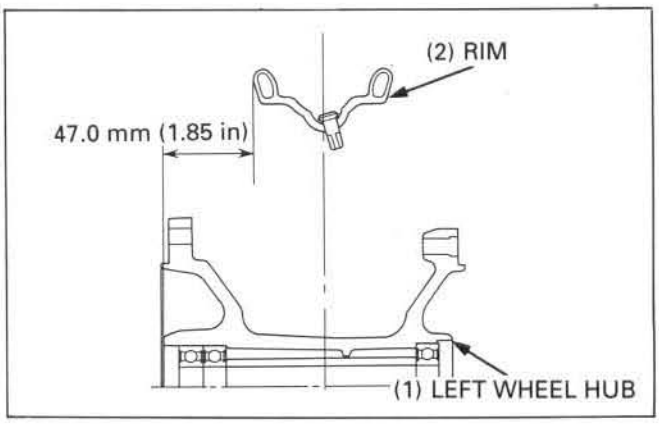
Assembly



Place the rim on the work bench, with its directional arrow going counterclockwise.

Place the hub in the center of rim, 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 47.0 mm (1.85 in) as shown.
Torque the spokes in 2 or 3 progressive steps.



S. TOOL

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

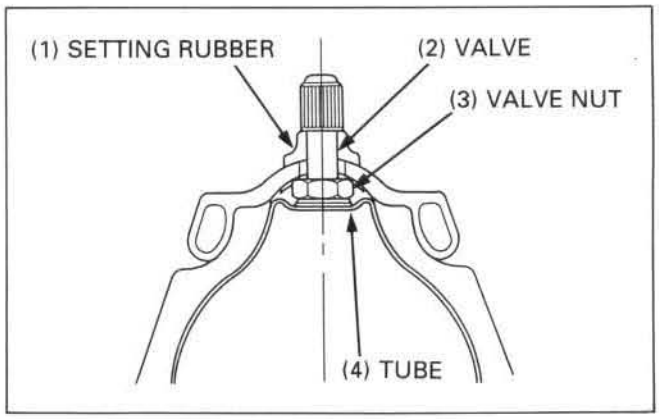
Torque: 3.8 N·m (0.38 kg-m, 2.8 ft-lb)

Check the wheel runout.

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

Tighten the rim lock nut to the specified torque.

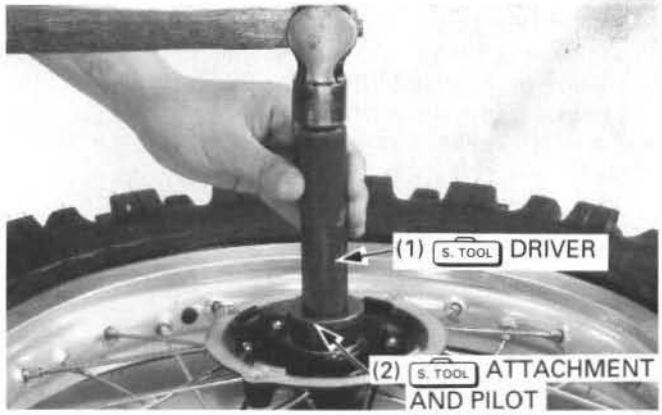
Torque: 13 N·m (1.3 kg-m, 9.5 ft-lb)



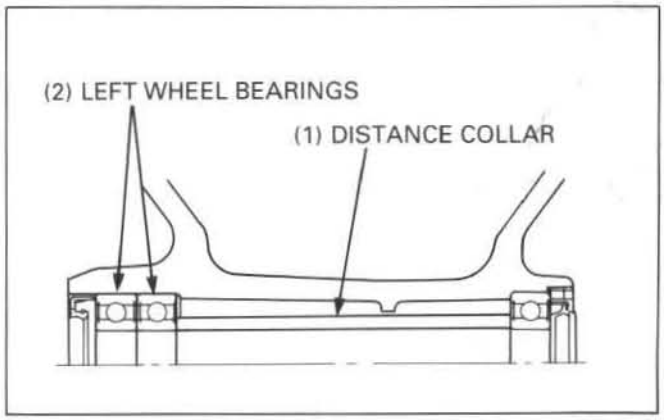
Drive in the right wheel bearing into the hub.

S. TOOL

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



Install the distance collar into place, then drive the left wheel bearings using same tool.

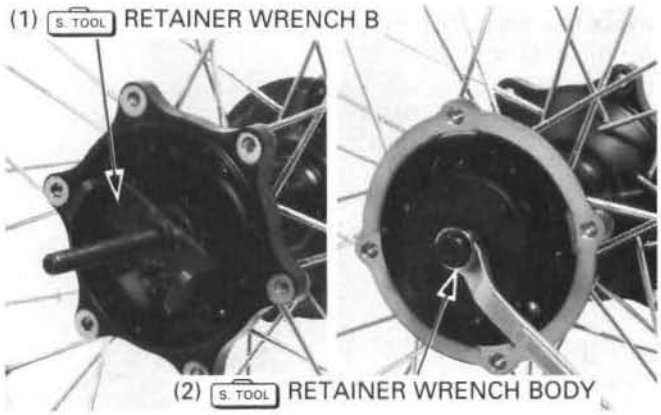


Apply grease to the bearing retainer and install it into the hub using the special tools.

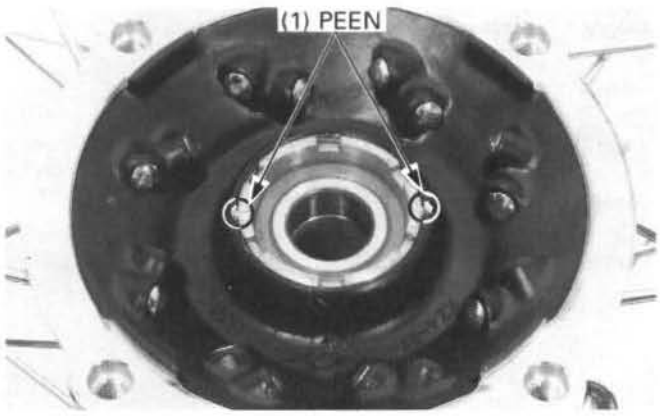
S. TOOL

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

After '93:
Tighten the retainer to the specified torque.
Torque: 18 N·m (1.8 kg-m, 13 ft-lb)



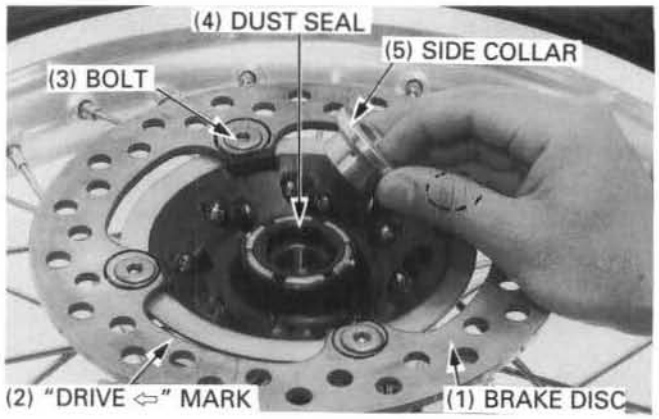
Peen the edge of the retainer.



Install the brake disc onto the wheel hub with the minimum thickness and DRIVE ⇦ markings facing out.
Clean the brake disc bolts and apply a Honda Anaerobic Thread Lock or equivalent to the threads.
Tighten the brake disc mounting bolts to the specified torque.

Torque: 43 N·m (4.3 kg-m, 31 ft-lb)

Pack the dust seal lip with grease and install the right dust seal.
Install the right side collar.



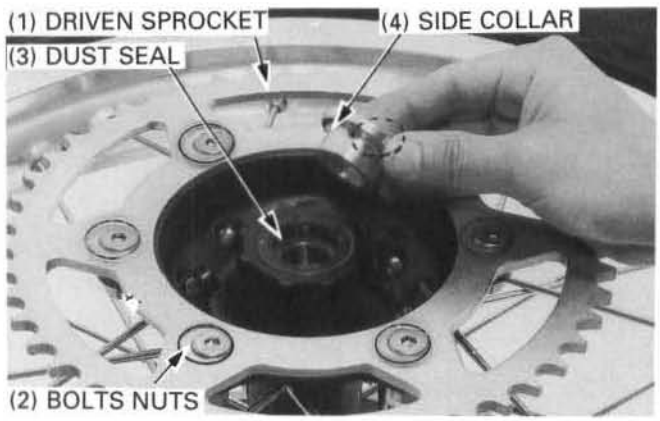
Install the driven sprocket onto the wheel hub.
Install the bolts, washers and nuts, and tighten the nuts to the specified torque.

Torque: 33 N·m (3.3 kg-m, 24 ft-lb)

NOTE

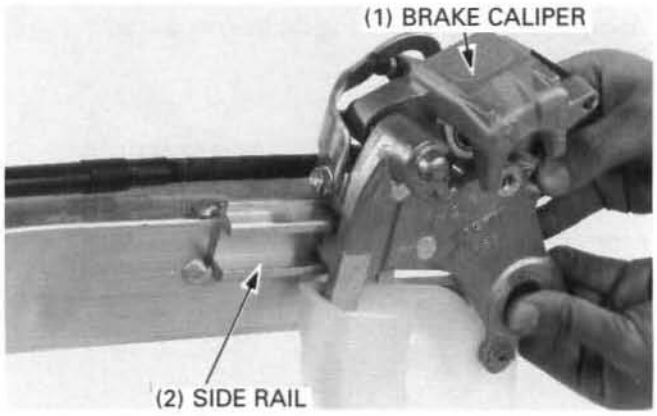
- It is important to hold the bolts while tightening the nuts to achieve proper torque.

Pack the dust seal lip with grease and install the left dust seal.
Install the left side collar.



Installation

Install the rear brake caliper by aligning the bracket with the side rail on the swingarm.

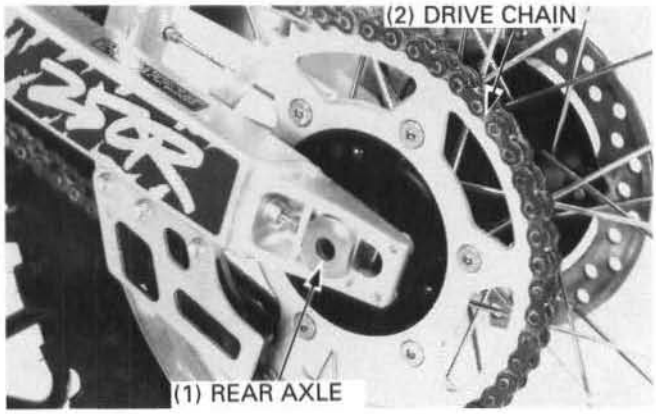


Apply thin layer of grease to the axle.

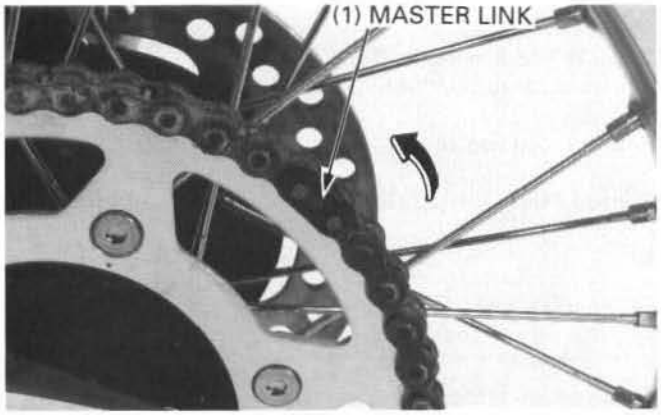
Insert the rear axle into the left chain adjuster.

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

Install the drive chain.



If the master link retaining clip was removed, install it on the drive chain with the closed end of the clip in the direction of wheel rotation.

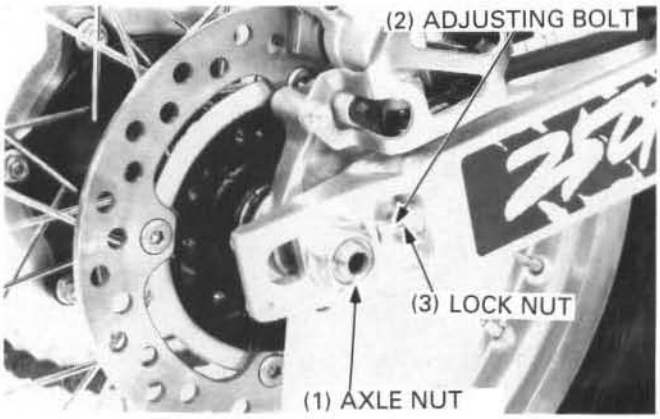


Install the rear axle nut.

Check the drive chain slack and adjust as required. 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.

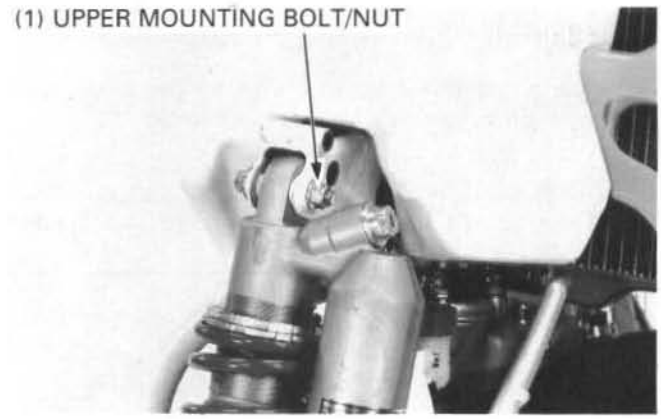


Shock Absorber

Removal

⚠ 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 rear shock absorber contains nitrogen gas 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.**



'92 – '93:
Raise the rear wheel off the ground by placing the box or work stand under the engine.

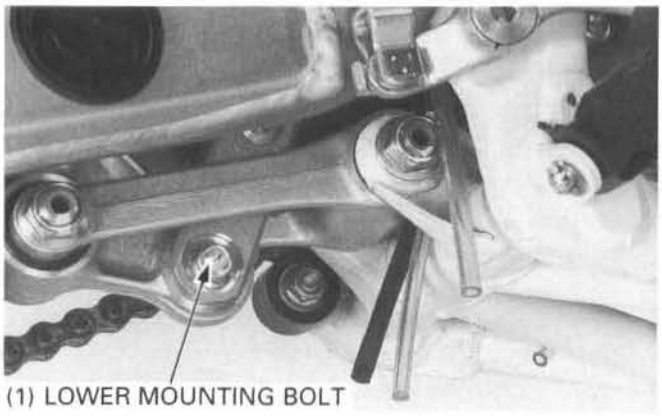
Remove the seat and sub-frame (Section 2).

Remove the rear shock absorber upper mounting bolt.

NOTE

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

Remove the shock absorber lower mounting bolt and pull the rear shock absorber up and out of frame.



After '93:
Raise the rear wheel off the ground by placing the box or work stand under the engine.

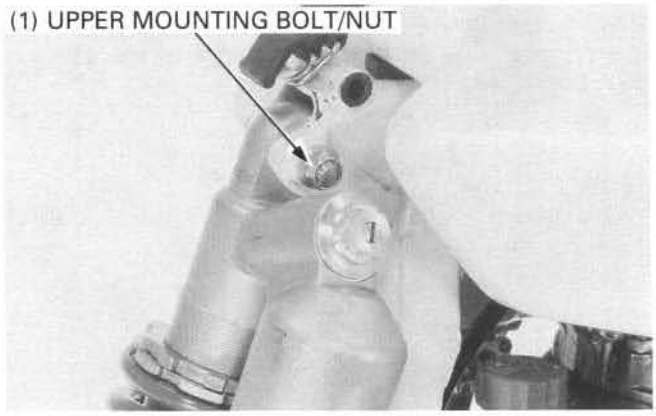
Remove the seat and sub-frame (Section 2).

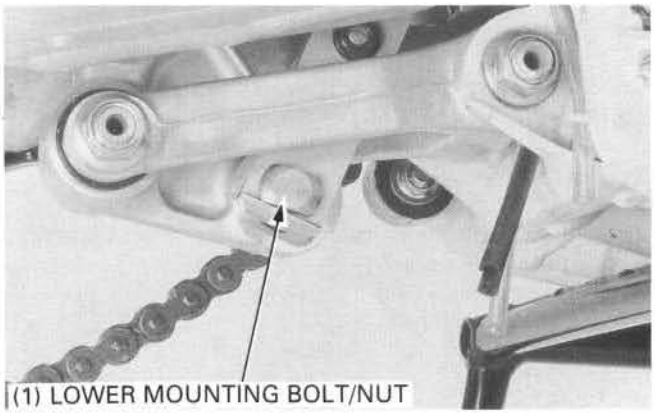
Remove the rear shock absorber upper mounting bolt.

NOTE

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

Remove the shock absorber lower mounting bolt, nut and pull the rear shock absorber up and out of frame.





Disassembly

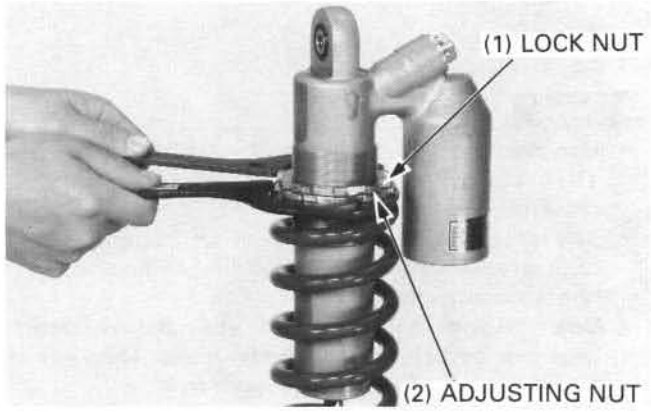
Hold the shock absorber in a vise by the lower mount, protected on both sides by pieces of wood.

NOTE

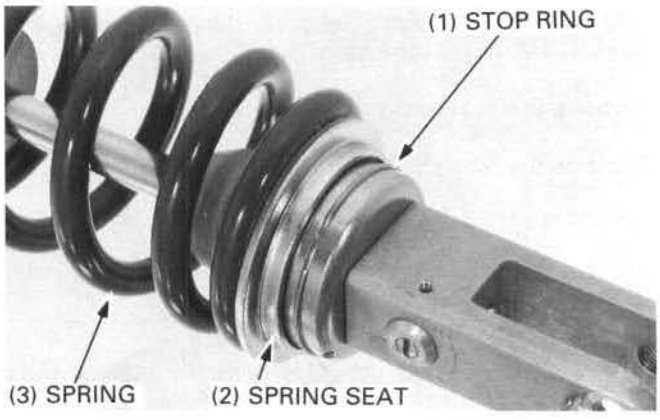
- Measure and record the assembled shock spring length for installation later.

Loosen the lock nut and adjusting nut.

S. TOOL
Pin spanner A **89201 – KS6 – 810 x 2**



Remove the stop ring, spring seat and spring.



Bladder Replacement

NOTE

- Replace the bladder when oil leaks around the chamber cap or oil spills out when releasing the nitrogen from the reservoir.
- Perform this procedure before draining the oil from the damper.

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

⚠ WARNING

- **Release all nitrogen pressure before disassembly; otherwise the chamber cap will be under significant pressure and could cause serious injury or death.**
- **Wear protective clothing and adequate eye protection against injury and prevent 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 stop ring.

CAUTION

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

NOTE

- Depress the chamber cap just the minimum amount necessary for stopper ring access.

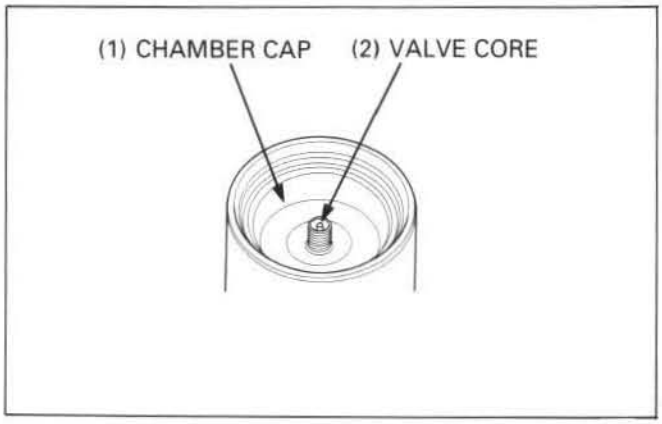
You'll need two small screwdrivers and a shop towel to remove the stop ring.

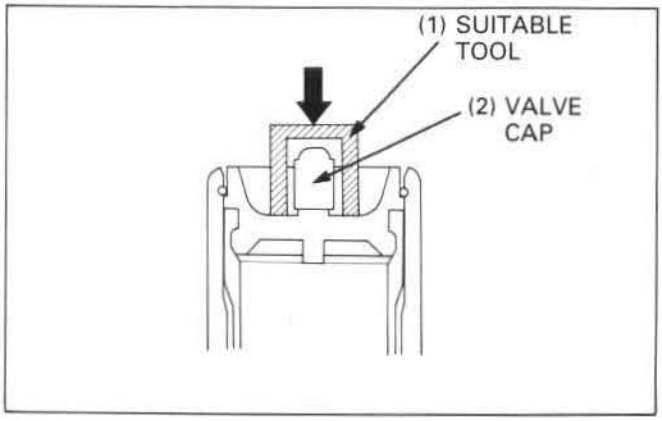
The stop ring groove in the reservoir is ramped toward the inside to give the stop ring a square shoulder on which to seat securely.

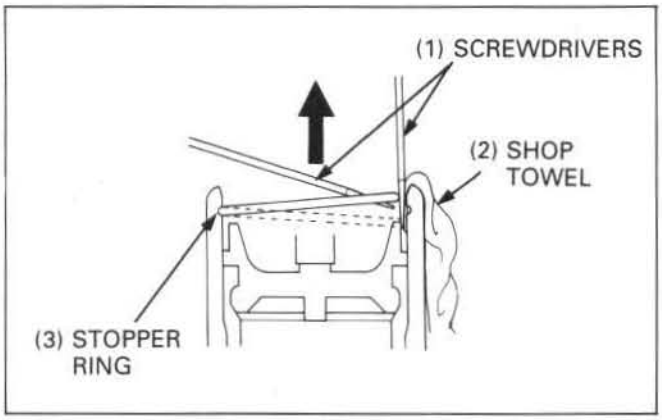
CAUTION

- **To avoid damage the inside surfaces of the reservoir, cover the screwdriver with shop towel.**

To remove the stop ring, first push one end of the stop ring out of its groove, then slip the second screwdriver between the stop ring and the reservoir to act as a ramp.







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

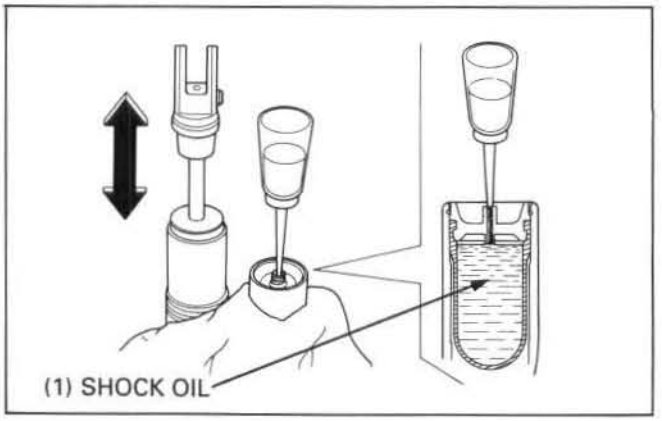
NOTE

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

Hold the shock absorber in a vise protected with shop towel or soft jaws.

Using a suitable squeeze bottle, fill the reservoir with the recommended shock oil.

Recommended shock oil: Pro Honda Suspension Fluid SS-7

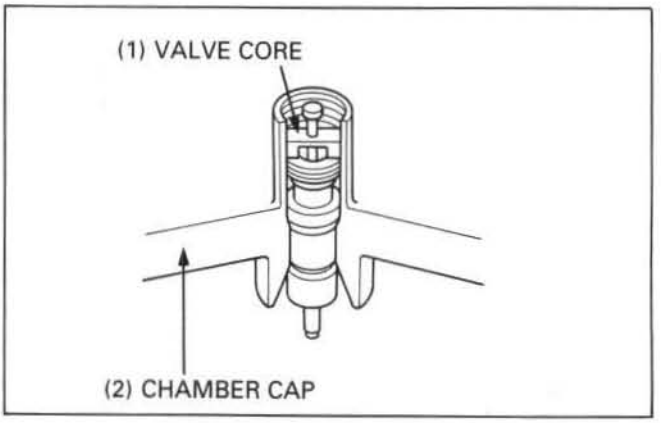


Slowly pump the damper rod until no air bubbles appear in the valve core hole, then pull the damper rod all the way.

Install the valve core securely.

Remove the chamber cap and bladder following the procedure below:

1. Wrap a shop towel around the chamber cap. Compress the damper rod slowly, to force the chamber cap out.



CAUTION

- **The chamber cap will be removed with hydraulic pressure so its force can be significant considering the air in the bladder.**
  Wear protective clothing and a face guard to protect your eyes and face in case the chamber cap pops out quickly and forcibly.

2. Place the damper in a vise with soft jaws with the damping adjuster facing up being careful not to distort the damper body. Remove the damping adjuster.

CAUTION

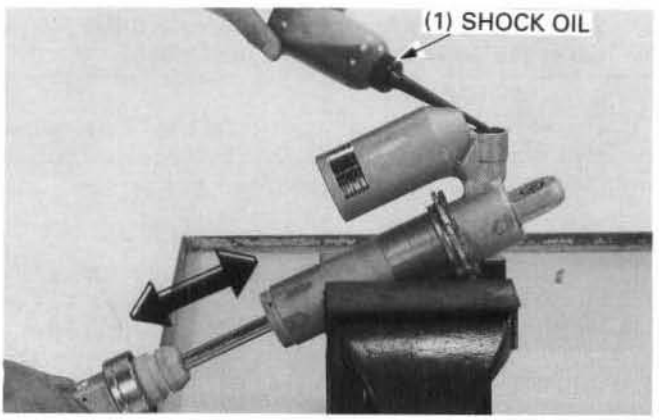
- **Do not overtighten the vise. Damage to the shock body will result.**

3. Fill the damper with Honda Suspension Fluid SS-7 through the damping adjuster hole, while slowly pulling the damper rod out.
4. Reinstall the damping adjuster after filling the damper.

NOTE

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

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

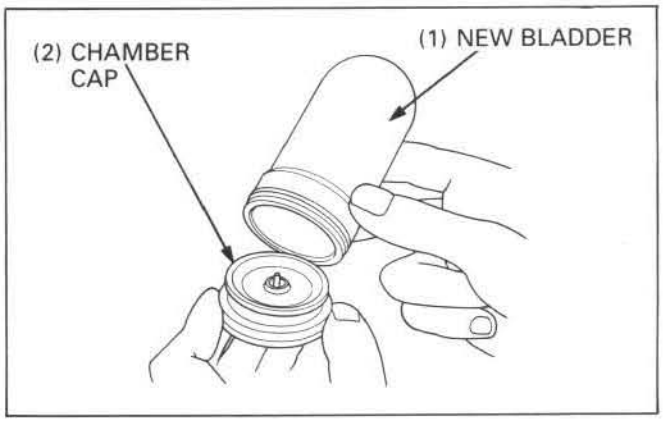


Remove the bladder from the chamber cap.

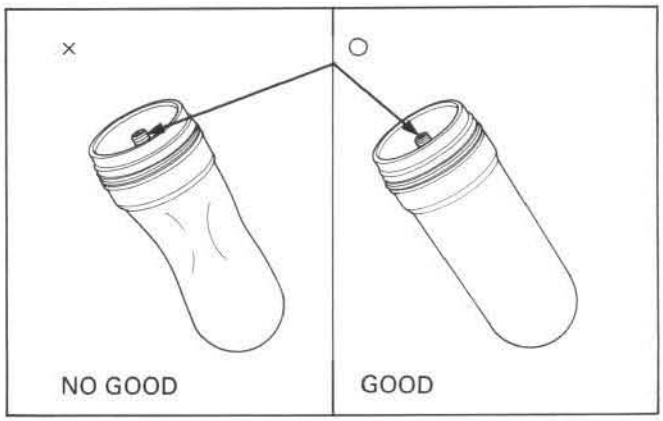
CAUTION

- **Do not use any sort of tool to remove the bladder, because it may damage the chamber cap.**
- **Replace the bladder with a new one. Do not reuse the removed one.**

Attach the new bladder to the chamber cap.



If the bladder becomes distorted during installation, depress the valve core to reform it.

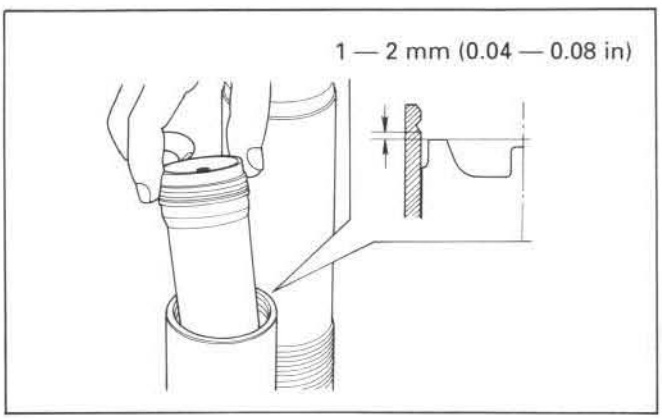


Clean the inside the reservoir and fill it with Honda Suspension Fluid SS-7.

Recommended shock oil: Pro Honda Suspension Fluid SS-7

Apply a light coating of shock oil to the lip of the bladder, and press the chamber cap into the reservoir to about 1 – 2 mm (0.04 – 0.08 in) below the stop ring groove.

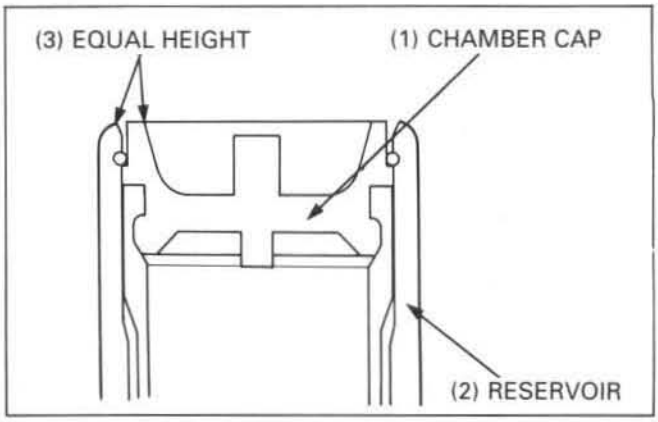
Install the stop ring in the groove of the reservoir securely. Temporarily fill the reservoir with air slowly until the chamber cap seats against the stop ring.



⚠ WARNING

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

Then make sure that chamber cap face is equal height level with reservoir face.



⚠ WARNING

- **If the chamber cap does not seat fully, the chamber cap may fly out when filling the reservoir with nitrogen.**

Release the air from the reservoir depressing the valve core.

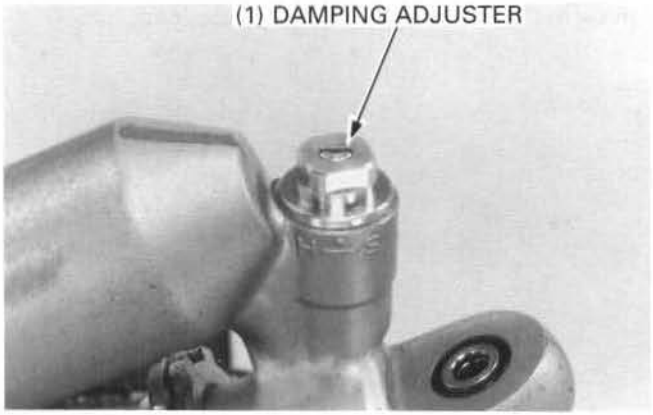
Bleed the air from the shock absorber bladder (page 12-22). Fill the reservoir with nitrogen to the specified pressure (page 12-23).

Damper Disassembly

Depress the valve core to release the nitrogen from the reservoir (page 12-11).

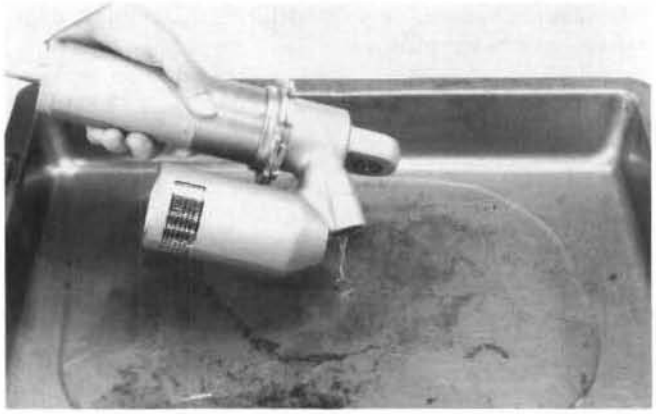
⚠ WARNING

- **Point the valve away from you to prevent debris getting in your eyes.**
- **Before disposal of the shock absorber, release the nitrogen by pressing the valve core. Then remove the valve from the shock absorber.**



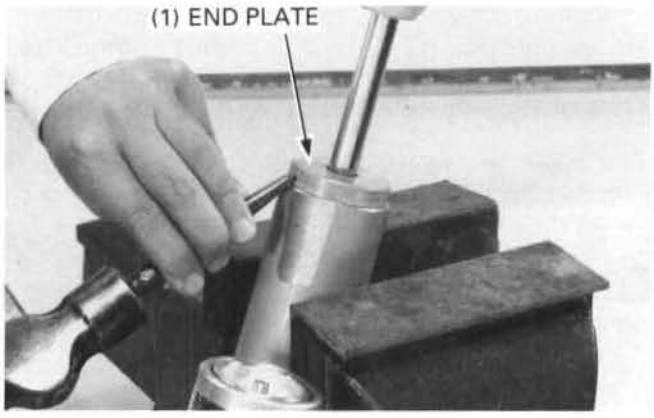
Remove the damping adjuster.

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

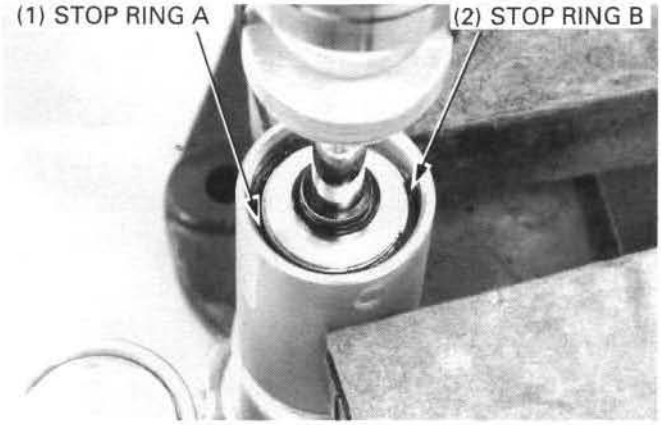


Clamp the shock absorber in a vise by the damper case protected on both sides by pieces of wood.

Remove the end plate and tape or tie it to the bump rubber so it won't get in the way.



Remove the stop ring A from the rod guide case, then remove the stop ring B from the damper case groove.



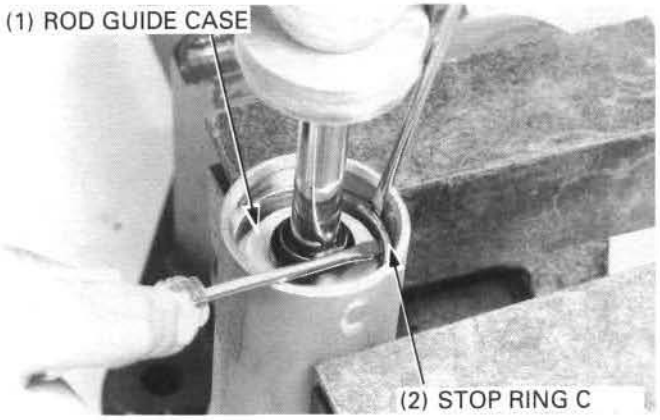
Push in the rod guide case until you have good access the stop ring C.

You'll need two small screwdrivers to remove the stop ring.

The stop ring groove in the damper case is ramped towards the inside to give the stop ring a square shoulder on which to seat securely.

To remove the stop ring, first push one end of the stop ring out of its groove, then slip the second screwdriver between the stop ring and the damper case to act as a ramp.

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



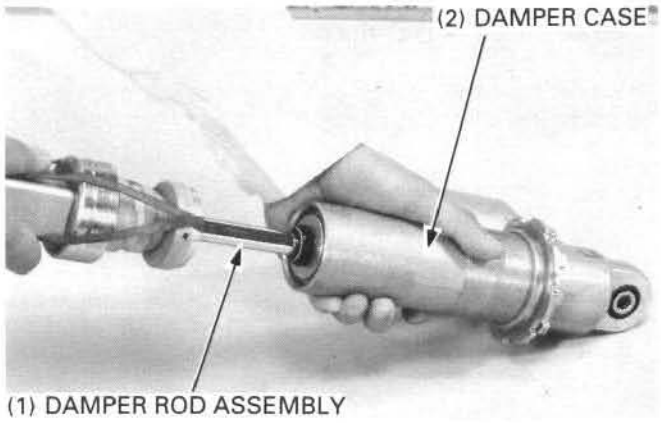
CAUTION

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

NOTE

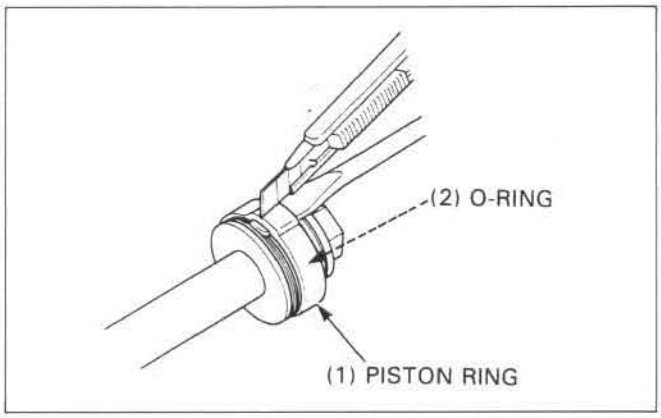
- Check the stop ring groove for burrs. Remove any burrs with fine emery cloth before pulling the damper rod out of the case.

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



Piston Ring Replacement

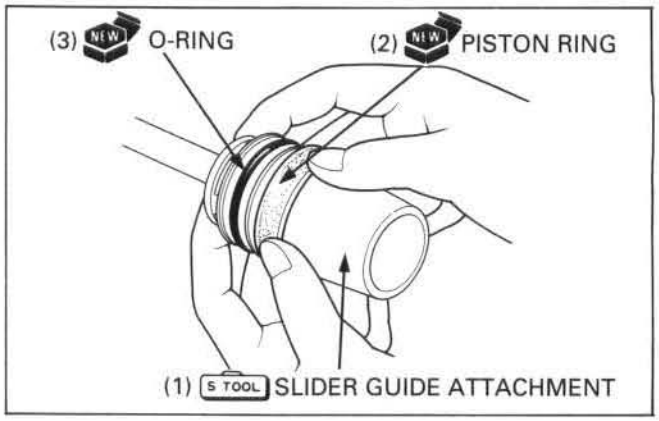
Inspect the piston ring.
If the piston ring is damaged, cut the piston ring and replace the piston ring and O-ring under the piston ring with a new one.



Place the slider guide attachment over the piston and install a new O-ring, piston ring onto place with your finger.

S. TOOL
Slider guide attachment **07MAG – SP00101 or 07MAG – SP00102**

Compress the piston ring against the ring groove, and seat the piston ring into the ring groove.

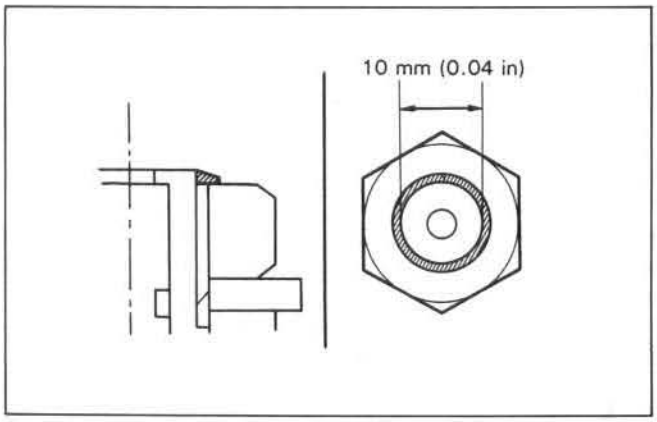


Damper Rod Disassembly

CAUTION

- **To keep lint or dirt from getting onto damper rod parts, do not wear gloves while working on the damper rod.**
- **Be careful to grind the end nut so that the O.D. of the rod end is about 10 mm (0.04 in).**
  Be careful too not over grind.

Unstake the damper rod end nut with a grinder as shown.

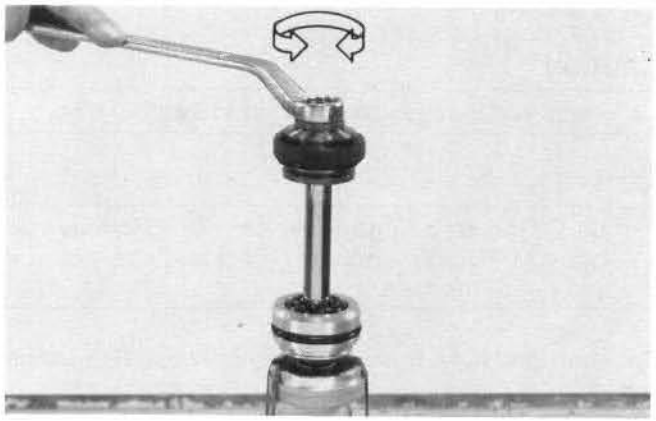


Place the damper in a vise protected with piece of wood or shop towel, being careful not to distort the lower mount.

Remove the end nut and discard it.

NOTE

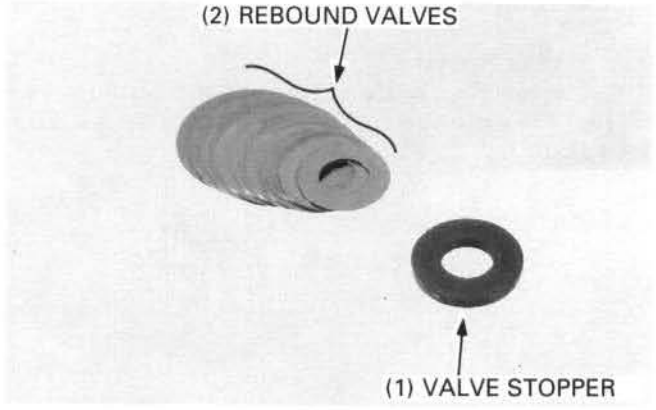
- If the damper rod is cracked or damaged when removing the end nut, replace the damper rod assembly with a new one.
- Remove the all burrs from the end of the damper rod.



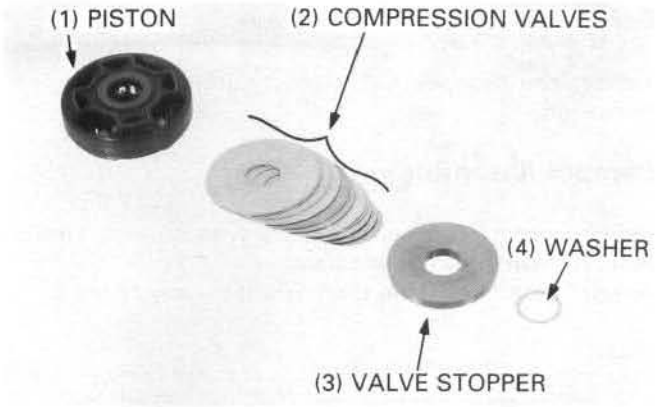
Remove, valve stopper and rebound valves from the damper rod.

NOTE

- Pass a piece of thin wire through the removed valves to ensure correct reassembly.
- Keep dust and abrasives away from all damper rod parts.
- Thoroughly clean the valves in solvent and blow them dry with compressed air if they have been disassembled and separated.
- Be careful not to get solvent on the O-ring and piston ring.
- The valve arrangement and number of valves shown is typical and may not represent this model exactly.



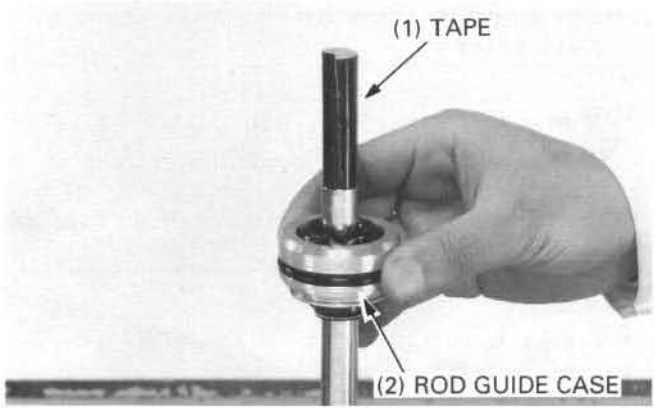
Remove the piston, compression valves, valve stopper and washer.



Wrap the top threads of the damper rod with tape.

Remove the rod guide case from the damper rod.

Remove the end plate, bump rubber and rubber seat from the damper rod.

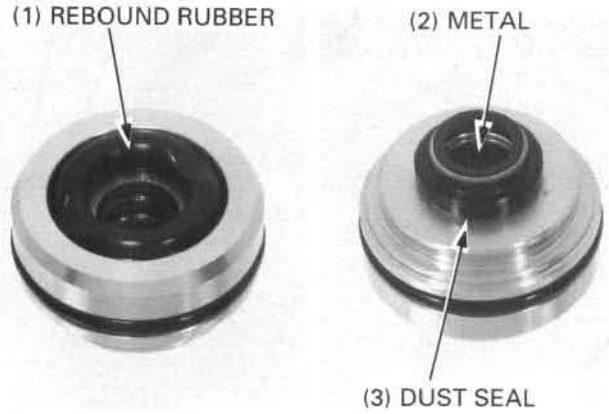


Rod Guide Case Inspection

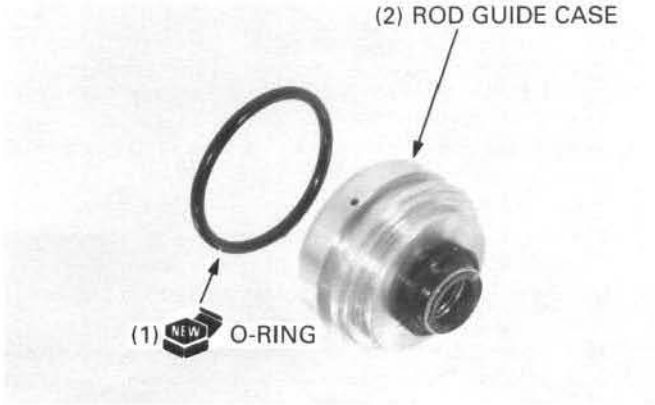
Inspect the rebound rubber for wear or damage and replace the rod guide case with a new one.

Inspect the dust seal lips for wear 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.

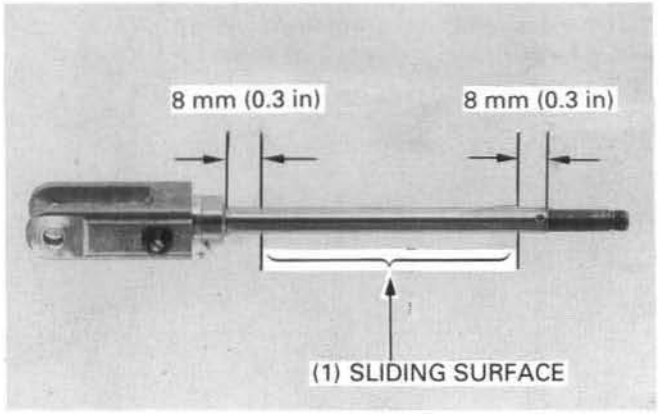


Remove the O-ring from the rod guide case and replace it with a new one.



Damper Rod Inspection

Inspect the damper rod sliding surface for damage or distortion.



Damper Assembly

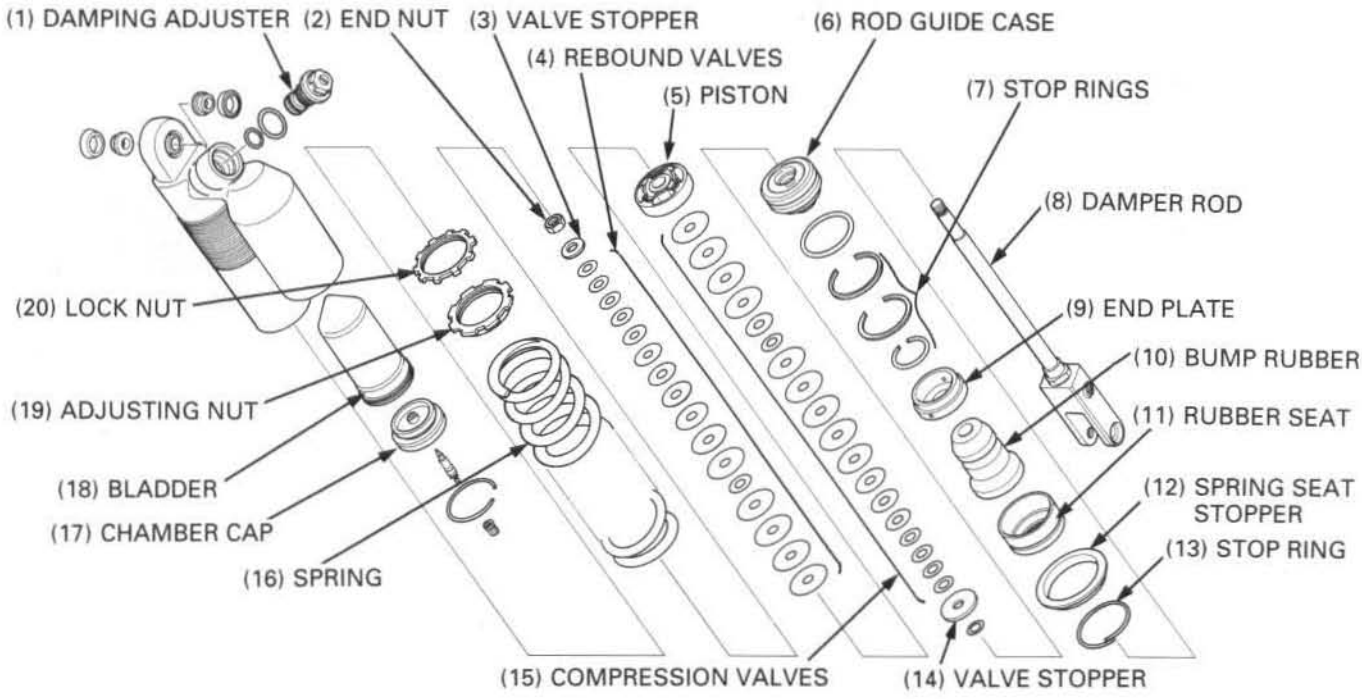
Before assembly, wash all parts with solvent and blow them dry with compressed air.
Be sure that there is no dust or lint on any of the parts.

NOTE

- Never assemble valves which might have gotten dusty or otherwise contaminated during the disassembly process. Disassemble them, thoroughly clean them with solvent and blow them dry with compressed air before assembly.

CAUTION

- **Use added care to avoid getting solvent on the piston ring and O-ring.**
- **The valve arrangement and number of valves may differ from those shown.**



Hold the lower shock mount in a vise with soft jaws, a piece of wood, or a shop towel.

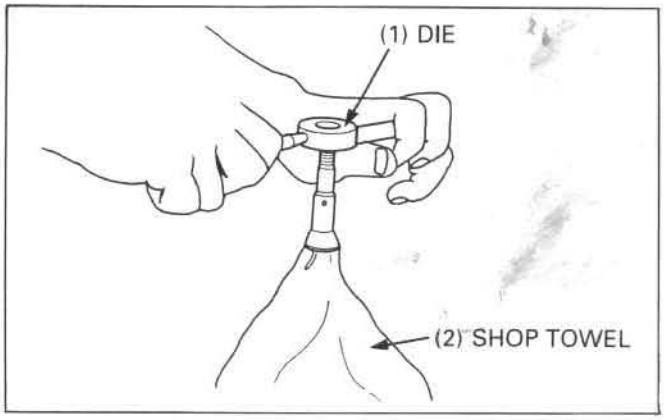
Remove the burrs from the damper rod end with a file and correct the threads with a die.

DIE: 12 x 1.5 mm

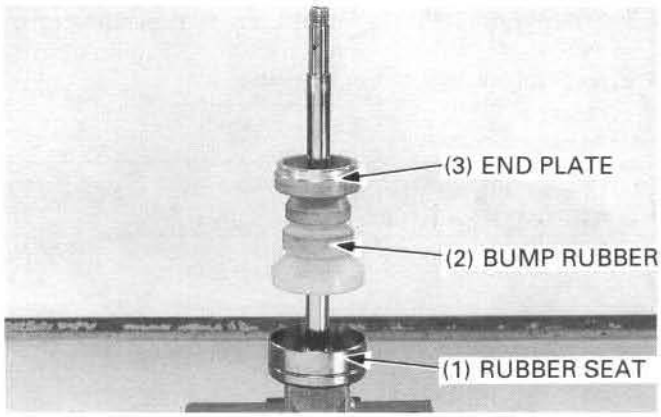
Clean the damper rod with solvent after correcting the threads.

NOTE

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



Install the rubber seat, bump rubber and end plate.



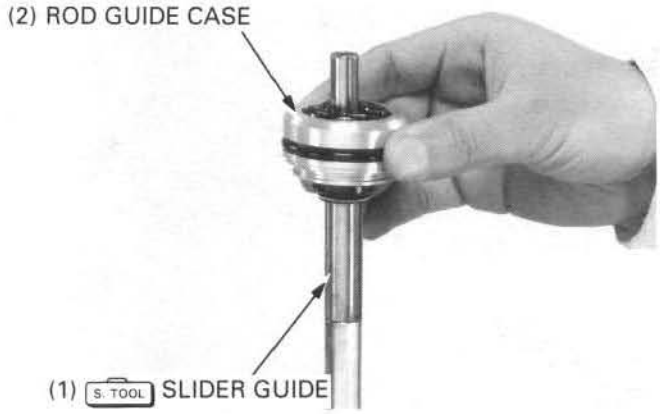
Install the special tool onto the damper rod.

S. TOOL

'92:

Slider guide, 14 mm	**07974 – KA40001**
After '92:	
Slider guide, 16mm	**07PGM – KZ40100**

Carefully install the rod guide case with the rebound rubber facing up, over the damper rod.



NOTE

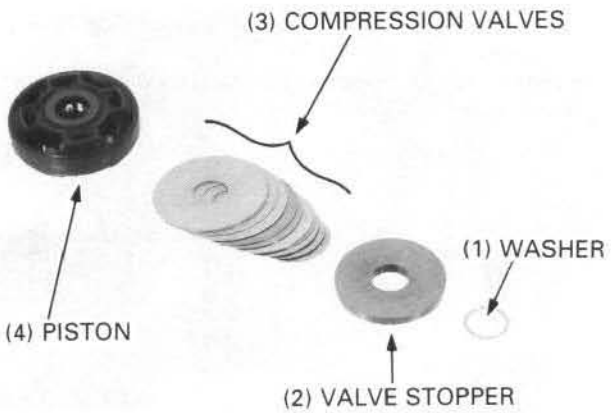
- The rod guide case oil seal is filled with grease.
- Be careful not to remove grease from the seal.
- Be careful not to damage the dust seal lip or turn it inside out.

Remove the special tool.

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

NOTE

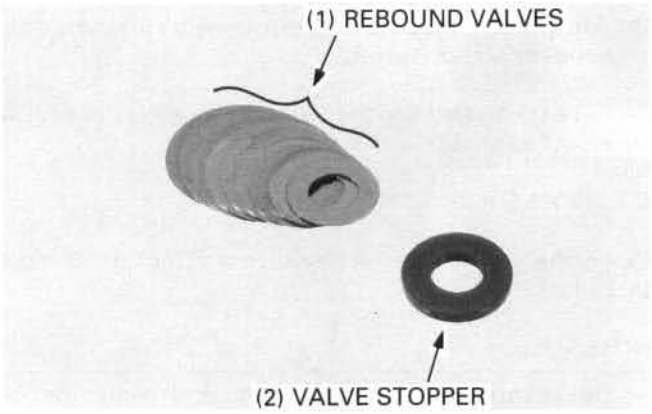
- The valve arrangement and number of valves may vary from those shown.



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

NOTE

- Do not install the end washer, except when installing new damper rod.
- Note the installation direction of the piston and valves.
- Be careful that the valves do not bind when installing the piston onto the damper rod. Also, check to be sure they are concentric with the damper rod.

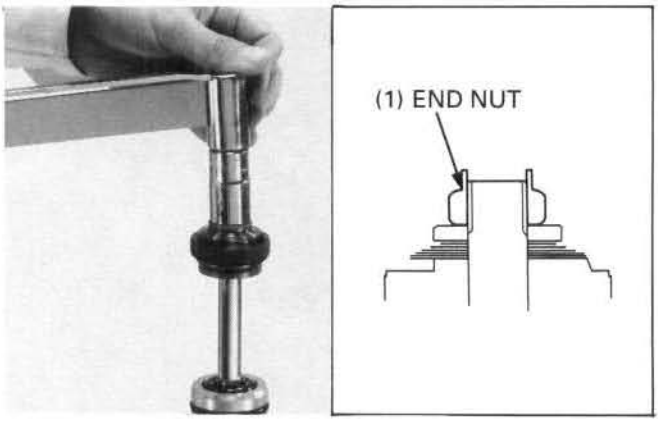


Install and tighten the new end nut to the specified torque.

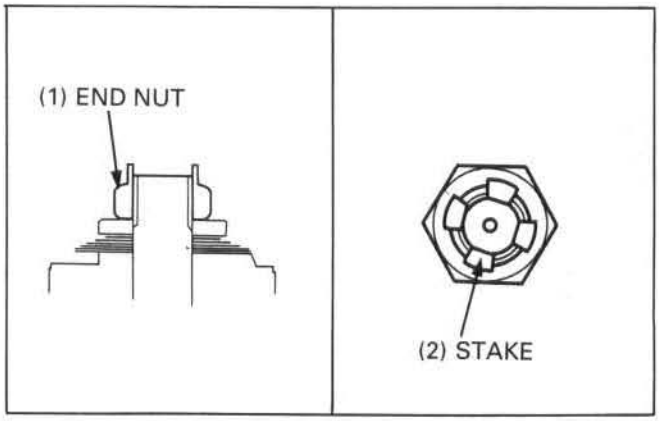
Torque: 38 N·m (3.8 kg-m, 27 ft-lb)

NOTE

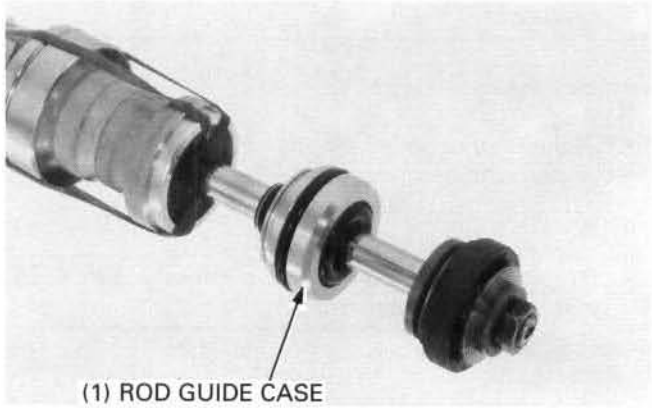
- To prevent damage to the lower mount, use a shop towel a vise with soft jaws.



Stake the damper rod end nut in four places as shown.



Coat the damper rod with Honda Suspension Fluid SS-7 or equivalent.
Check the rod guide case by sliding it up and down fully to be sure there is no restriction.



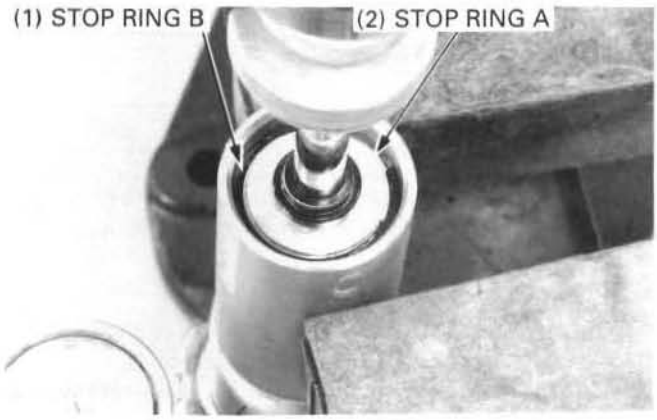
Coat the damper case inner surface, piston ring and O-ring with Honda Suspension Fluid SS-7, and carefully insert the damper rod assembly into the case.
Install the stop ring C into the groove in the damper case.

NOTE

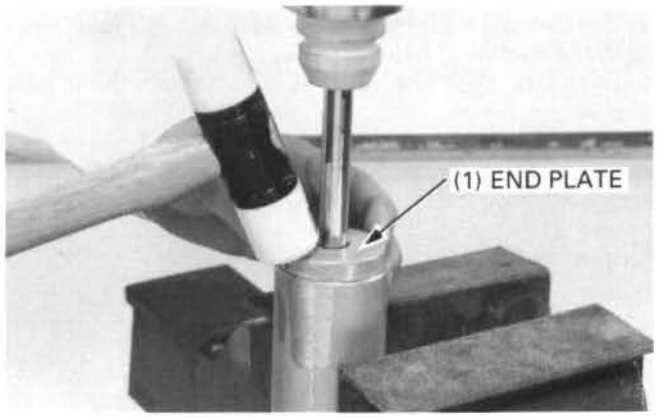
- After assembling, check that the stop ring is seated in the groove of the damper case completely. You should not be able to pull it out of the damper case.

Push the rod guide case in and install the stop ring B into the damper case groove.

Install the stop ring A into the rod guide case groove.



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



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

CAUTION

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

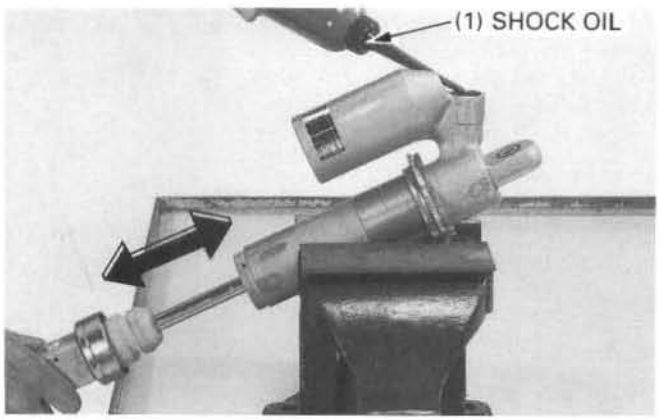
Fill the damper case and reservoir with Honda Suspension Fluid SS-7 through the damping adjuster hole.

Recommended shock oil:
Honda Suspension Fluid SS-7 or equivalent.

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

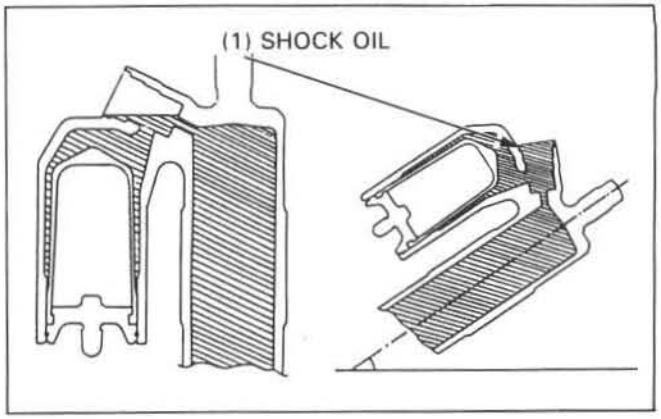
NOTE

- Make sure the rod guide case is seated against the stop ring by pulling the damper rod out all the way.



Remove the damper unit from the vise.

Position the damper the damping adjuster 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 out of the reservoir.

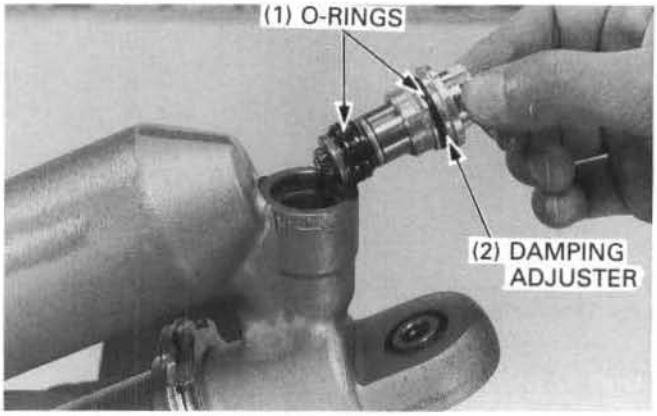
Temporarily charge the reservoir with 49 kPa (0.5 kg/cm², 7.1 psi) of air slowly to inflate the bladder inside.

NOTE

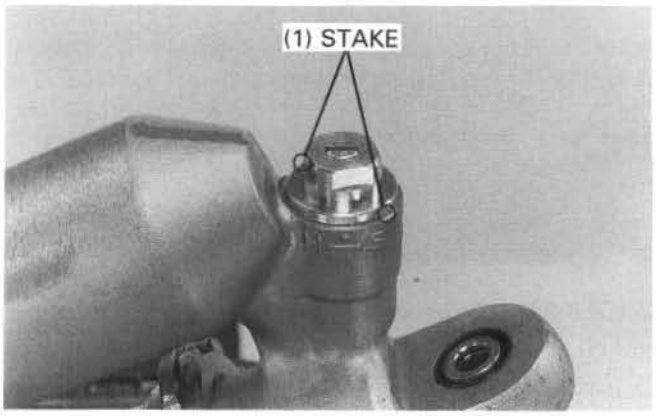
- Check for any oil that may leak out of the valve while pressurizing. Replenish oil as necessary.
  Be sure that the reservoir pressure is correct with an accurate pressure gauge.

Fill the damper with the Honda Suspension Fluid SS-7 oil up to the damping adjuster hole neck.
Apply oil to the new O-rings and install them to the damping adjuster.
Dip the damping adjuster in clean shock oil.
Slowly install the damping adjuster, and tighten it to the specified torque.

Torque: 18 N·m (1.8 kg-m, 13 ft-lb)



Stake the damping adjuster as shown.

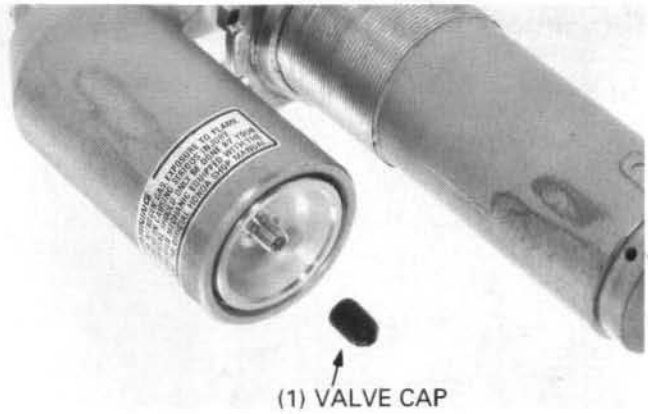


Wipe off all oil from the damper rod; oil left on the damper rod can lead to premature failure of the oil seal.
Check for oil leaks.

Release the air that was in the reservoir at precompression. Fill the reservoir with 981 kPa (10.0 kg/cm², 142 psi) of nitrogen gas.

⚠ WARNING

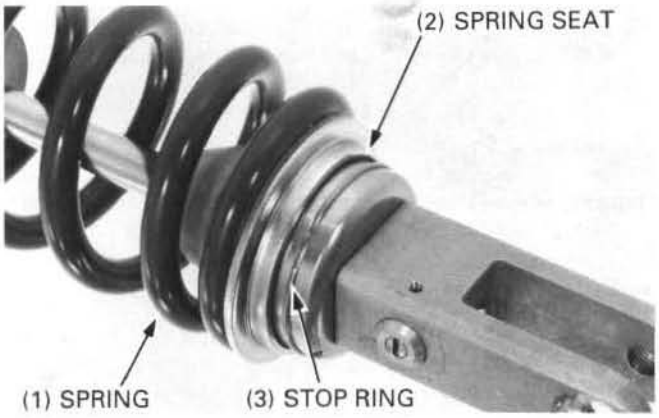
- **The shock absorber is fitted with a gas-filled reservoir. Use only nitrogen gas to pressurize the shock absorber. The use of an unstable gas can cause a fire or explosion resulting in serious injury.**



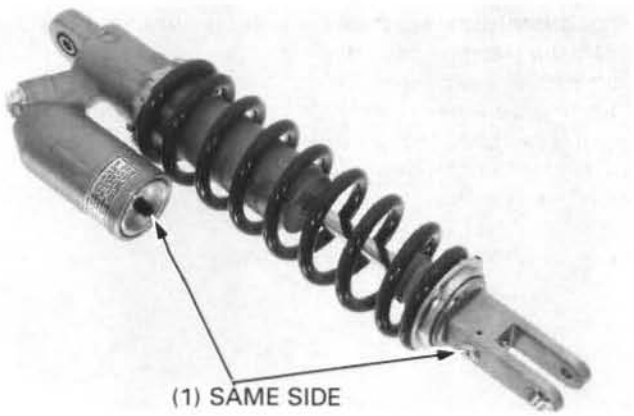
Install the valve cap.

Install the shock spring with its narrow wound coil end facing down.
Install the spring seat and stop ring.

Temporarily tighten the adjusting nut and lock nut.



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



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

NOTE

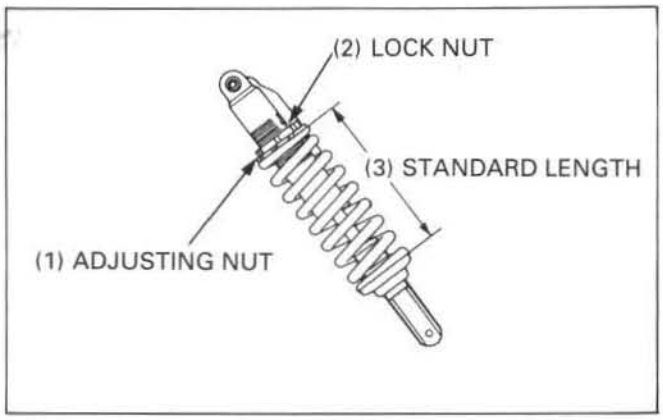
- One turn of the adjusting nut changes the spring length by 1.5 mm (0.06 in).

Standard Spring Install Length '92: 262.0 mm (10.31 in)
'93: 261.0 mm (10.28 in)
After '93: 263.0 mm (10.35 in)

Hold the adjusting nut and tighten the lock nut.

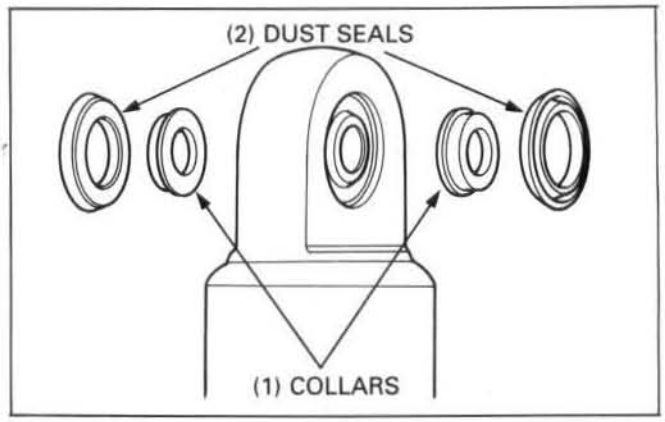
Torque: 90 N·m (9.0 kg-m, 65 ft-lb)

Use this standard spring length is just as a baseline.
See the Owner's Manual for detail instructions on adjusting preload and damping setting for rider weight and setting damping for riding conditions and rider skill.



Sherical Bearing Replacement
Check the spherical bearing for wear or damage.
If it is worn or damaged, it must be replaced.

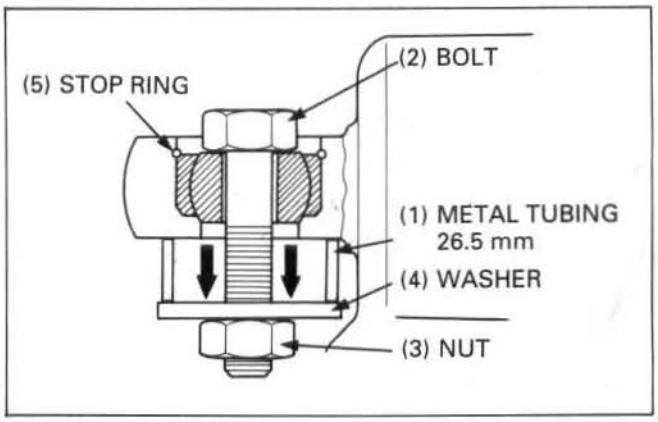
Remove the upper collars and dust seals.



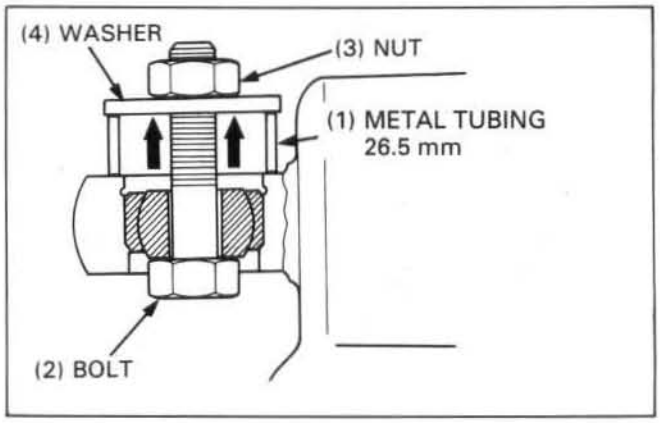
Assemble the following items for the bearing replacement:
- Metal tubing for the vase holder: I.D. 26.5 mm over.
- Metal tubing for the driver: O.D. 23 x 20 mm length.
- Flange bolt and nut: thread dia. 10 mm
- Two suitable washers for the tubing: O.D. 26.5 mm over.

Assemble these items onto the upper mount as shown.

Tighten the bolt and nut to get the clearance to access to remove the stop ring.
Remove the stop ring.



Tighten the bolt and nut and pull the spherical bearing out of the upper mount.



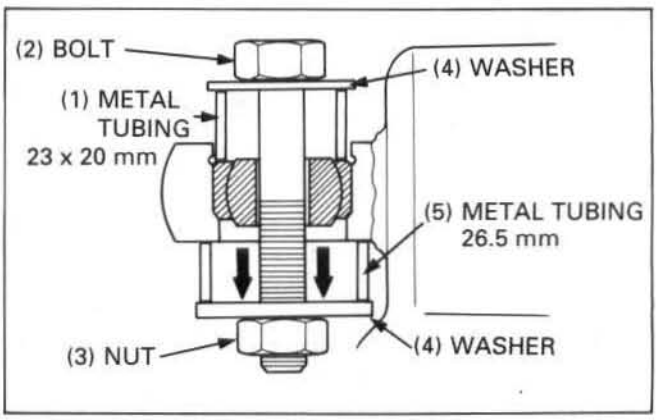
Apply multi-purpose grease NLGI No. 2 (Molybdenum disulfide MoS_2 additive) to the new spherical bearing.

Assemble the items onto the upper mount as shown.
Tighten the bolt and nut and install the spherical bearing onto the upper mount.

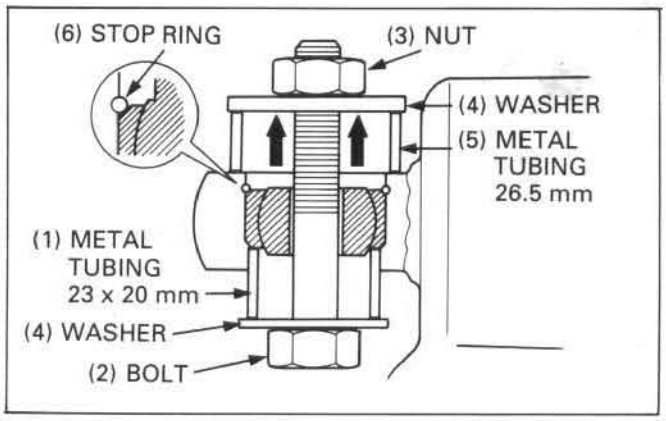
NOTE

- Drive the bearing in evenly; do not allow it to tilt.

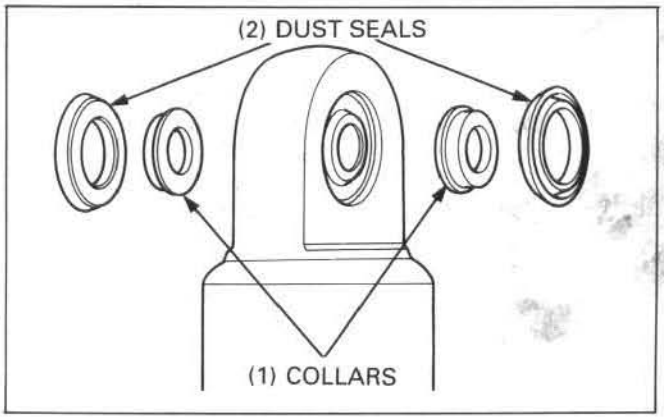
Disassemble the bolt, nut, washer and tubes.



Install the new stop ring into the groove of the upper mount securely.
Assemble the items onto the upper mount as shown.
Tighten the bolt and nut to press the spherical bearing into the upper mount until it seats against the stop ring.



Install the collars.
Apply grease to the lip of the new dust seals and install them.

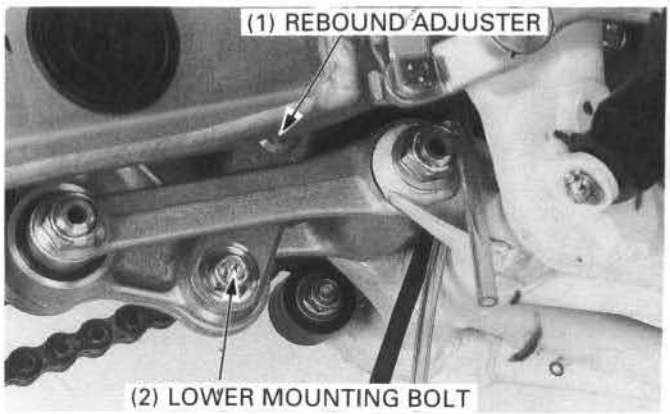


Installation

'92 – '93:
Set the shock absorber onto the shock arm with the rebound adjuster facing to the right.

Torque the lower mounting bolt.

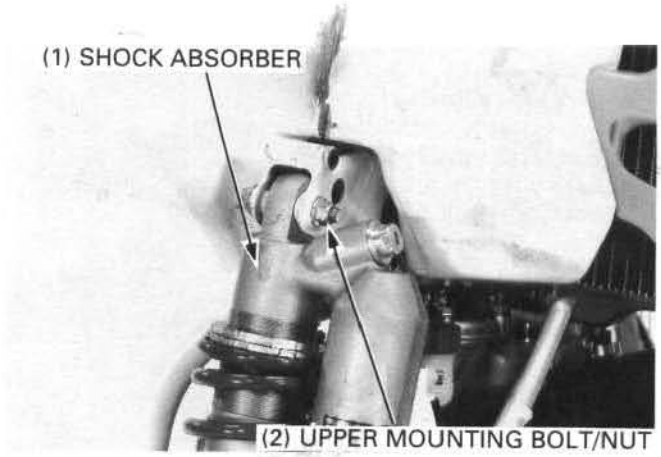
Torque: '92: 43 N·m (4.3 kg-m, 31 ft-lb)
'93: 45 N·m (4.5 kg-m, 33 ft-lb)



Install and tighten the rear shock absorber upper mounting nut/bolt.

Torque: 45 N·m (4.5 kg-m, 33 ft-lb)

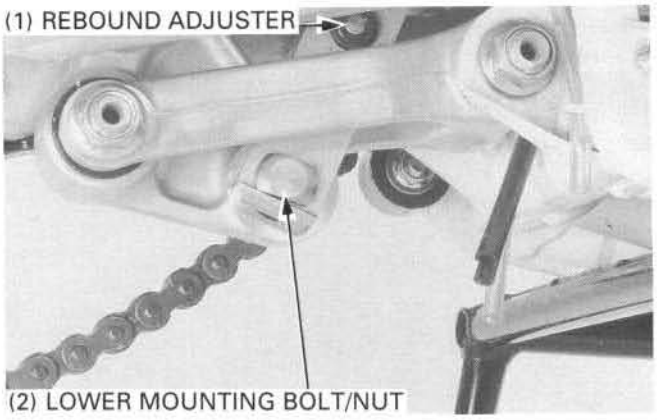
Tighten the spring adjuster lock nut (page 12-23).
Install the sub-frame (page 2-4).



After '93:
Set the shock absorber onto the shock arm with the rebound adjuster facing to the right.
Install the lower mounting bolt aligning the cut out of the bolt with the stopper on the shock absorber.

Install and tighten the lower mounting nut.

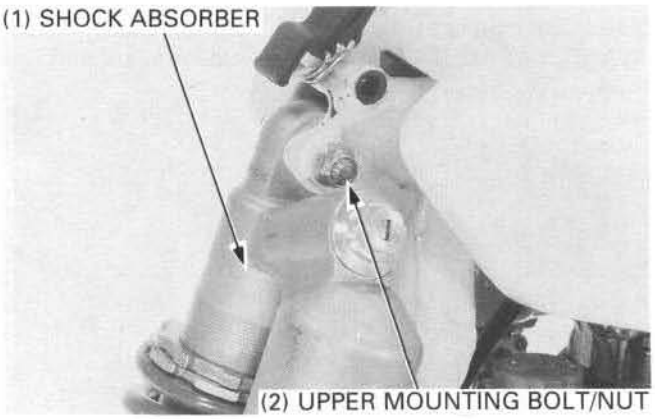
Torque: 45 N·m (4.5 kg-m, 33 ft-lb)



Install and tighten the rear shock absorber upper mounting nut/bolt.

Torque: 45 N·m (4.5 kg-m, 33 ft-lb)

Tighten the spring adjuster lock nut (page 12-23).
Install the sub-frame (page 2-4).

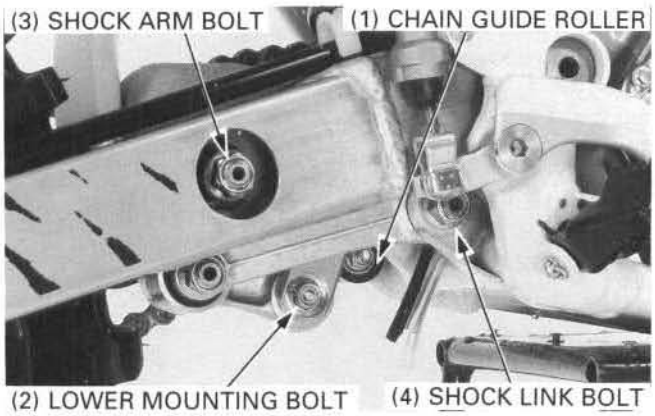


Shock Linkage

Removal

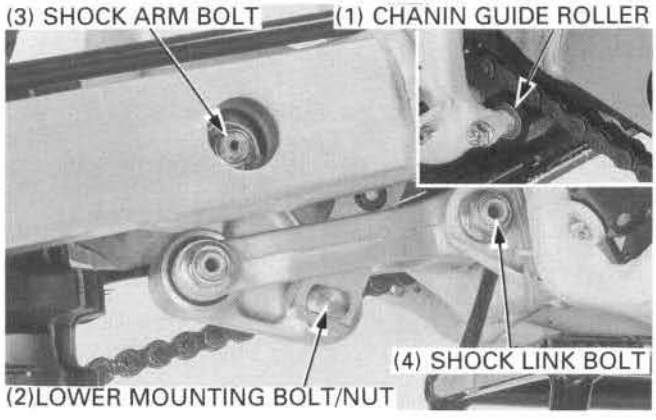
'92 – '93:
Remove the following:
- Lower chain guide roller
- Swingarm caps
- Rear shock absorber lower mounting bolt
- Shock arm bolt (swingarm side)
- Shock link bolt (frame side)
- Shock linkage assembly

Disassemble the shock arm and shock link.



After '93:
Remove the following:
- Lower chain guide roller
- Swingarm caps
- Rear shock absorber lower mounting bolt/nut
- Shock arm bolt (swingarm side)
- Shock link bolt (frame side)/collar
- Shock linkage assembly

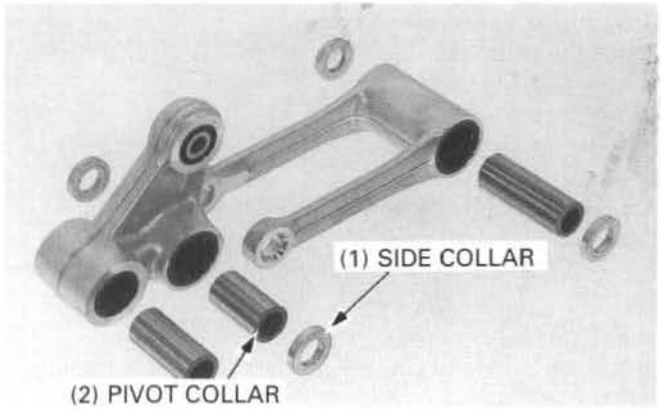
Disassemble the shock arm and shock link.



Remove the side collars, pivot collars, dust seals and washers.

Inspect the shock arm/shock link collars, dust seals and needle bearings for wear or damage.

Inspect the spherical bearing for wear or damage. Replace any parts that have scratches, score marks, excessive or abnormal wear.

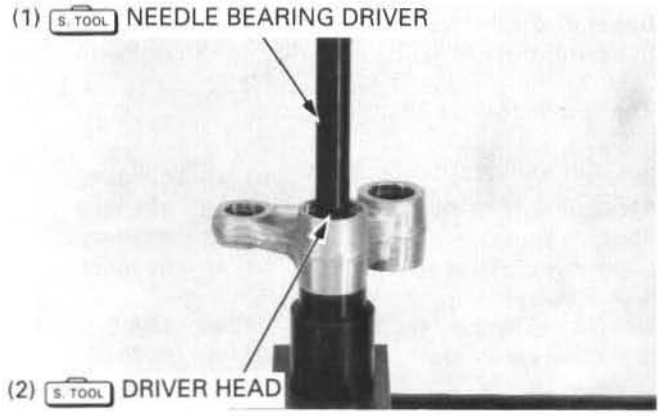


Bearing Replacement

Shock Arm Needle Bearing
'92 – '93:
Press out the needle bearings using the following tools.

S. TOOL

Swingarm side:	
Needle bearing driver	**07946 – MJ00100**
Inner driver, 30 mm	**07746 – 0030300**
Driver head	**07946 – KM40701**
Shock link side:	
Needle bearing driver	**07946 – KA50000**
Inner driver, 30 mm	**07746 – 0030300**



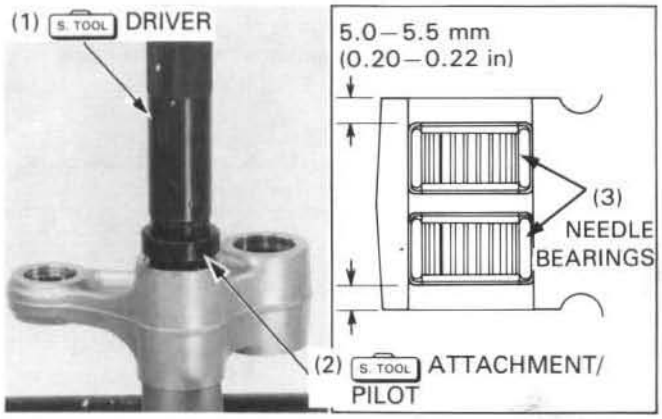
Pack the new needle bearings with grease.
Carefully press the needle bearings into the swingarm side pivot to 5.0 – 5.5 mm (0.20 – 0.22 in) below the surface of the pivot on both side.

NOTE

- Install the bearings with the marks facing out.

S. TOOL

Driver	**07749 – 0010000**
Attachment, 28 x 30 mm	**07946 – 1870100**
Pilot, 22 mm	**07746 – 0041000**



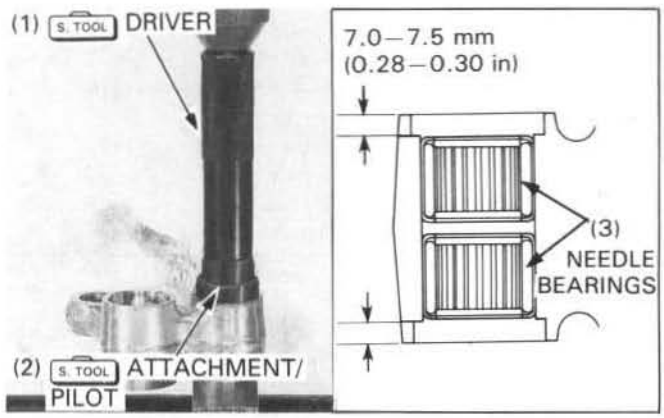
Pack the new needle bearings with grease.
Carefully press the needle bearings into the shock link side pivot to 7.0 – 7.5 mm (0.28 – 0.30 in) below the surface of the pivot on both side.

NOTE

- Install the bearings with the marks facing out.

S. TOOL

Driver	**07749 – 0010000**
Attachment, 24 x 26 mm	**07946 – 0010700**
Pilot, 20 mm	**07746 – 0040500**



Shock Arm Spherical Bearing

Press the spherical bearing out of the shock arm using special tool.

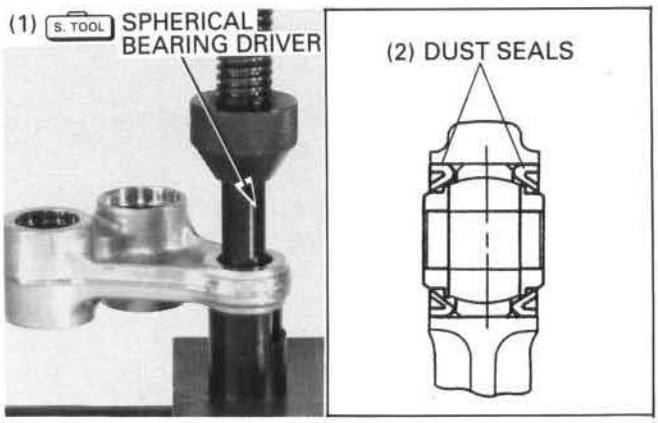
S. TOOL

Spherical bearing driver	**07HMF – KS60100 or**
Driver	**07749 – 0010000**
Attachment, 24 × 26 mm	**07746 – 0010700**

Carefully press the spherical bearing into the shock arm to 2.9 – 3.1 mm (0.11 – 0.12 in) below the surface using same tool.

Install the side collars.

Install the dust seals in the direction shown in the detail to right.

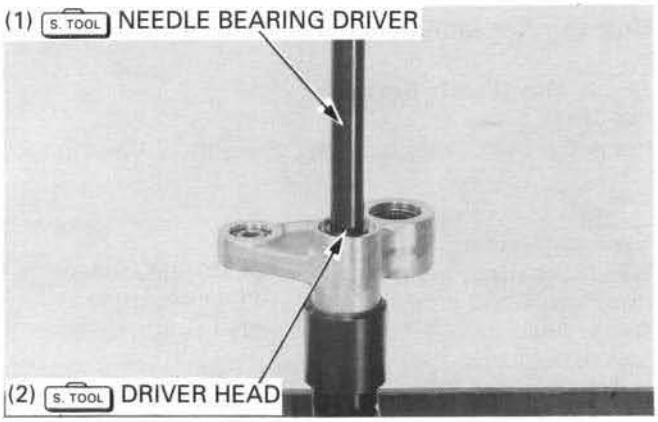


After '93:

Press out the needle bearings using the following tools.

S. TOOL

Swingarm side:	
Driver	**07749 – 0010000**
Attachment, 28 × 30 mm	**07946 – 1870100**
Pilot, 25 mm	**07746 – 0040600**
Inner driver, 30 mm	**07746 – 0030300**
Shock link side:	
Needle bearing driver	**07946 – MJ00100**
Inner driver, 30 mm	**07746 – 0030300**



Pack the new needle bearings with grease.

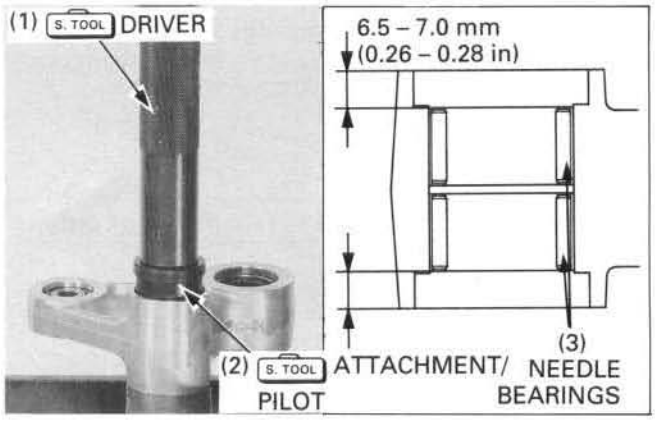
Carefully press the needle bearings into the swingarm side pivot to 6.5 – 7.0 mm (0.26 – 0.28 in) below the surface of the pivot on both side.

NOTE

- Install the bearings with the marks facing out.

S. TOOL

Driver	**07749 – 0010000**
Attachment, 28 × 30 mm	**07946 – 1870100**
Pilot, 22 mm	**07746 – 0041000**



Pack the new needle bearing with grease.

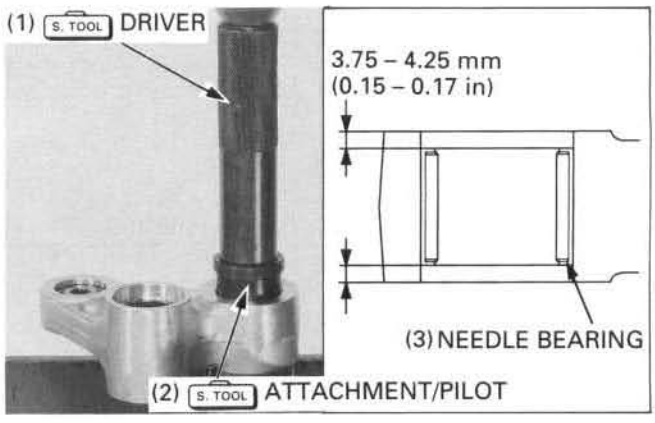
Carefully press the needle bearing into the shock link side pivot to 3.75 – 4.25 mm (0.15 – 0.17 in) below the surface of the pivot on both side.

NOTE

- Install the bearing with the marks facing out.

S. TOOL

Driver	**07749 – 0010000**
Attachment, 32 × 35 mm	**07746 – 0010100**
Pilot, 25 mm	**07746 – 0040600**

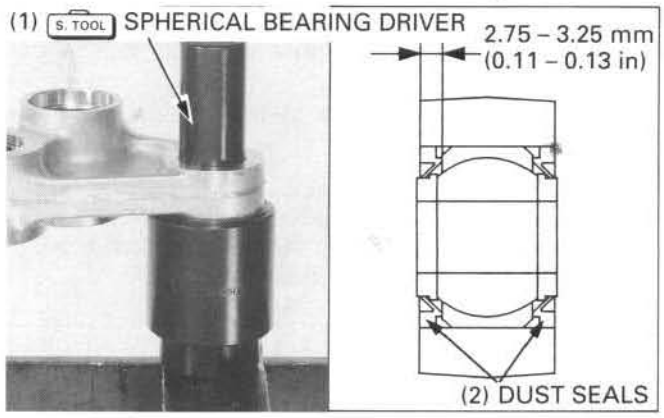


Shock Arm Spherical Bearing
Press the spherical bearing out of the shock arm using special tool.

S. TOOL
Spherical bearing driver **07HMF – KS60100**

Carefully press the spherical bearing into the shock arm to 2.75 – 3.25 mm (0.11 – 0.13 in) below the surface using same tool.

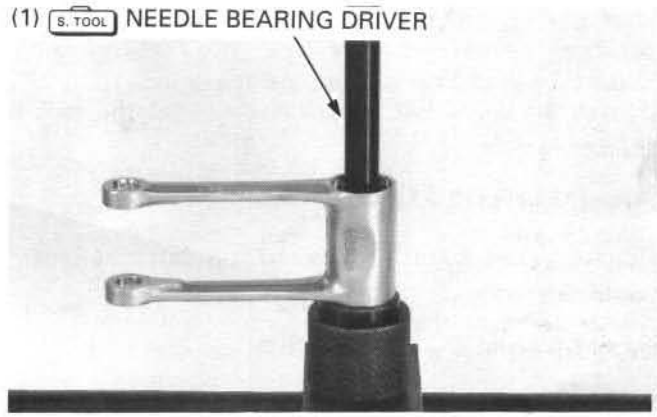
Install the side collars.
Install the dust seals in the direction shown in the detail to right.



Shock Link Needle Bearing
Remove the needle bearing using the special tool.

S. TOOL
'92 – '93:
Needle bearing driver **07946 – MJ00100**
Driver head **07946 – KM40701**
After '93:
Needle bearing driver **07946 – MJ00100**

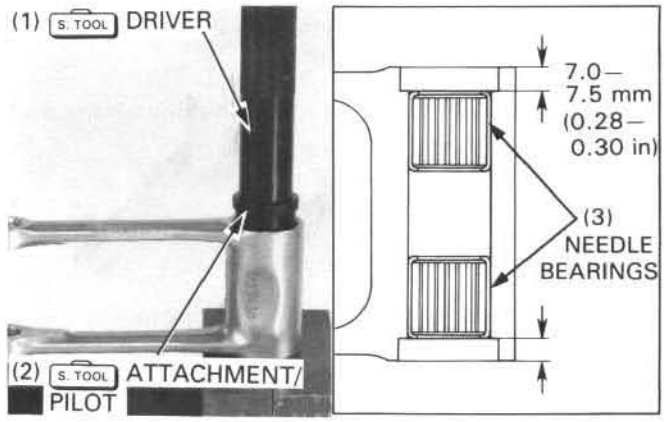
Pack the new needle bearings with grease.
Carefully press the needle bearings into the shock link pivot to 7.0 – 7.5 mm (0.28 – 0.30 in) below the surface of the pivot on both side.



NOTE

- Install the bearings with the marks facing out.

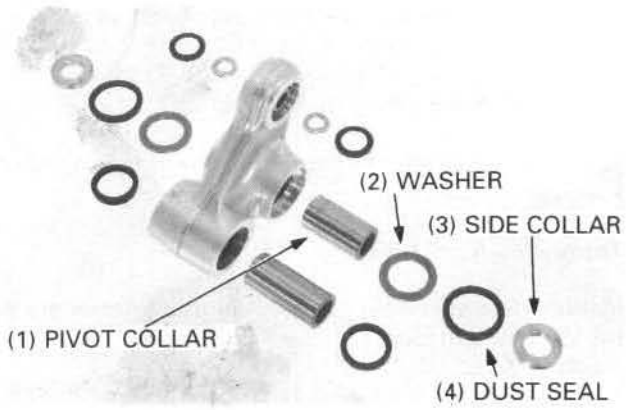
S. TOOL
'92 – '93:
Driver **07749 – 0010000**
Attachment, 24 x 26 mm **07946 – 0010700**
Pilot, 20 mm **07746 – 0040500**
After '93:
Driver **07749 – 0010000**
Attachment, 28 x 30 mm **07946 – 1870100**
Pilot, 22 mm **07746 – 0041000**



Apply multi-purpose grease NLGI No.2 (molybdenum disulfide additive) to the shock arm, collars, bearings and dust seal lips.
Install the washers, dust seals, pivot collars and side collars.

NOTE

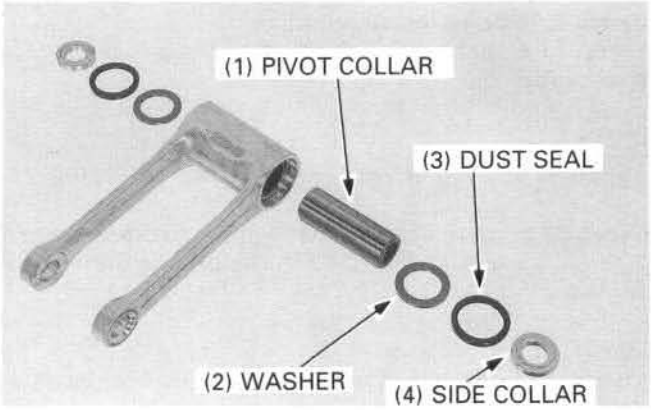
- Make sure that the needle bearing rollers are in position before installing the pivot collars.
  Number of needle rollers:
  '92 – '93:
  shock link side: 33
  swingarm side: 36
  After '93:
  shock link side: 36
  swingarm side: 35



Apply multi-purpose grease NLGI No.2 (molybdenum disulfide additive) to the shock link, collar, bearings and dust seal lips.
Install the washers, dust seals, pivot collar and side collars.

NOTE

- Make sure that the needle bearing rollers are in position before installing the pivot collars.
  Number of needle rollers: '92 – '93: 33
  After '93: 36



Connect the shock link to the shock arm.

Installation

'92 – '93:
Install the shock linkage onto the swingarm.
Tighten the shock link bolt (frame side) to the specified torque.

Torque: 90 N·m (9.0 kg-m, 65 ft-lb)

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

Torque: 90 N·m (9.0 kg-m, 65 ft-lb)

Tighten the rear shock absorber lower mounting bolt to the specified torque.

Torque: '92: 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 guide roller and tighten the bolt to the specified torque.

Torque: 22 N·m (2.2 kg-m, 16 ft-lb)

After '93:

Install the shock linkage onto the swingarm.
Tighten the shock link bolt (frame side) to the specified torque.

Torque: 90 N·m (9.0 kg-m, 65 ft-lb)

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

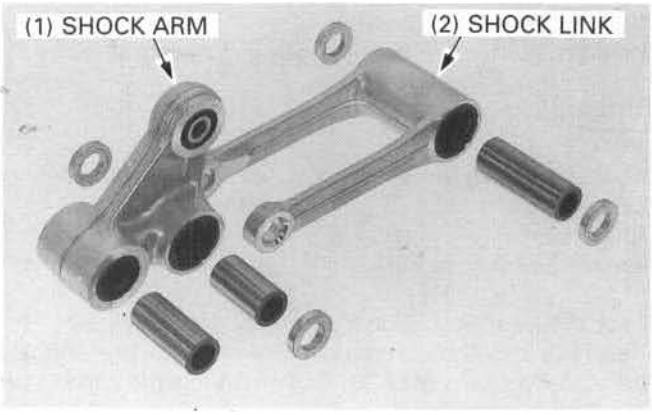
Torque: 90 N·m (9.0 kg-m, 65 ft-lb)

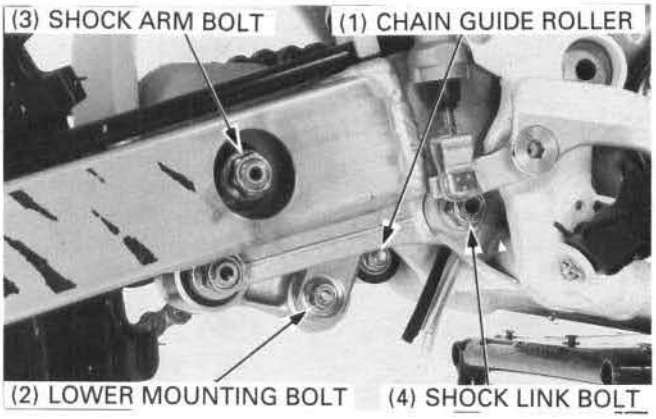
Tighten the rear shock absorber lower mounting nut to the specified torque.

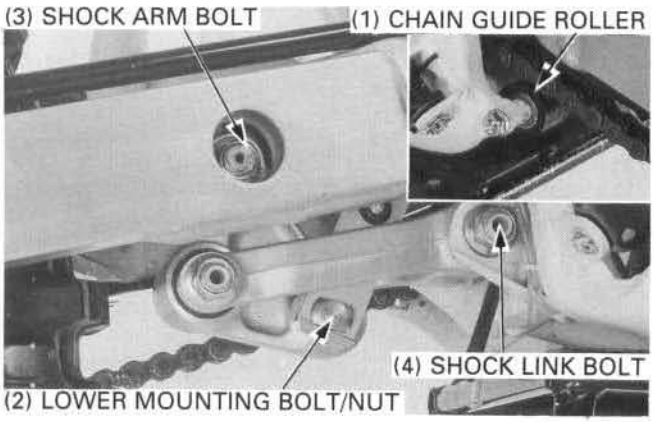
Torque: 45 N·m (4.5 kg-m, 33 ft-lb)

Install the lower chain guide roller and tighten the bolt to the specified torque.

Torque: 22 N·m (2.2 kg-m, 16 ft-lb)





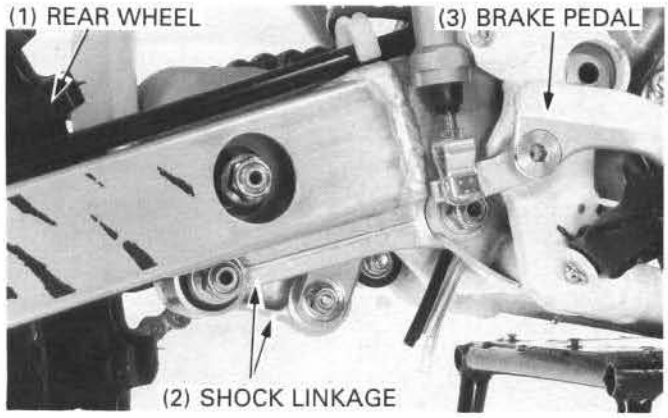


Swingarm

Removal

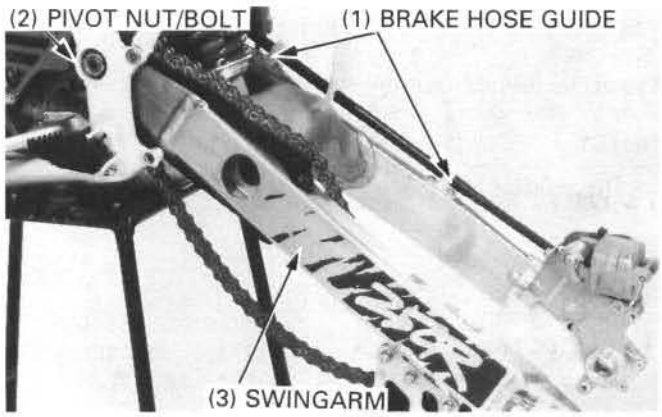
Raise the rear wheel off the ground with a box or workstand under the engine.

Remove the following:
- Rear wheel (page 12-4)
- Shock linkage (page 12-26)
- Brake pedal (page 13-14)

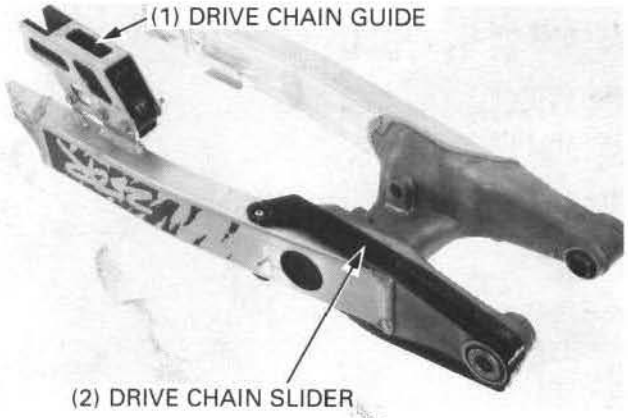


Remove the brake hose guide and brake hose.
Disconnect the carburetor tubes from the clamps.

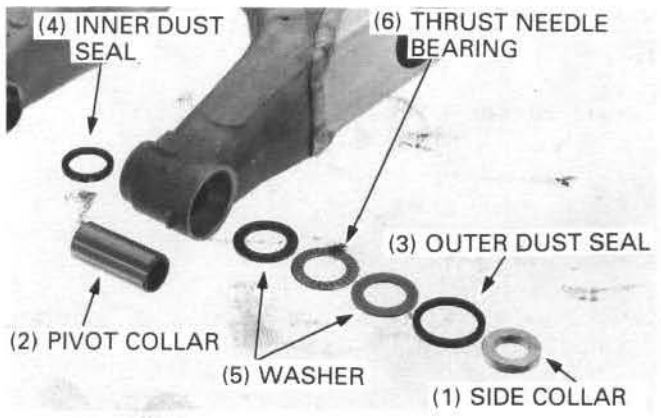
Remove the swingarm pivot bolt and swingarm.



Remove the drive chain guide and slider.

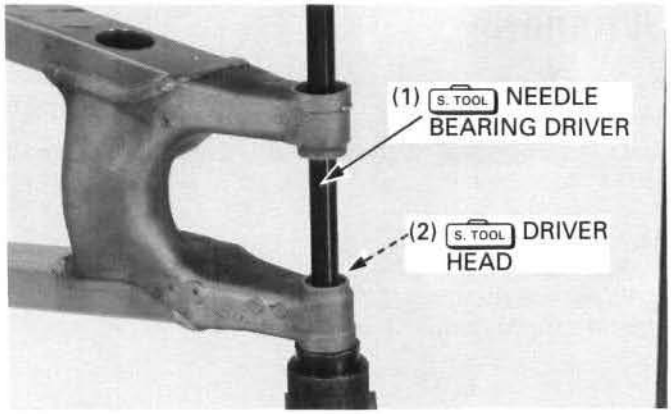


Remove the following:
- Side collars
- Pivot collars
- Outer and inner dust seals
- Washers
- Thrust needle bearings



Bearing Replacement

Press out the needle bearings using the following tools.



S. TOOL

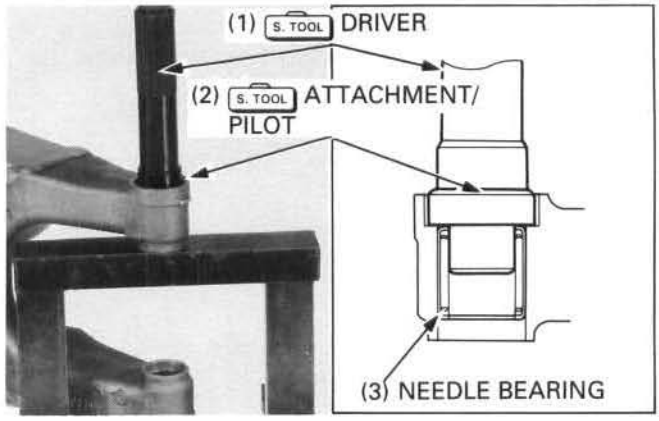
'92 – '93:	
Needle bearing driver	**07946 – MJ00100**
Driver head	**07946 – KM40701**
After '93:	
Needle bearing driver	**07946 – MJ00100**
Driver head	**07946 – KM00200**

Apply grease to the new needle bearings.

Press the needle bearing into the swingarm pivot.

NOTE

- Install the bearings with the marks facing out.

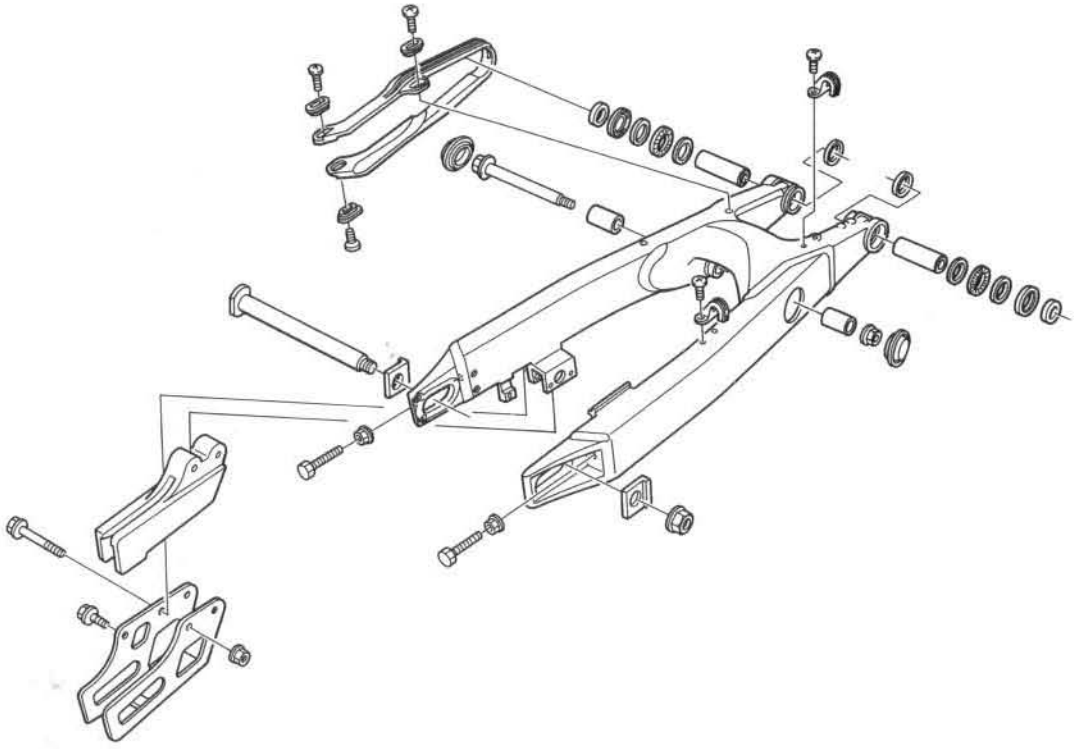


S. TOOL

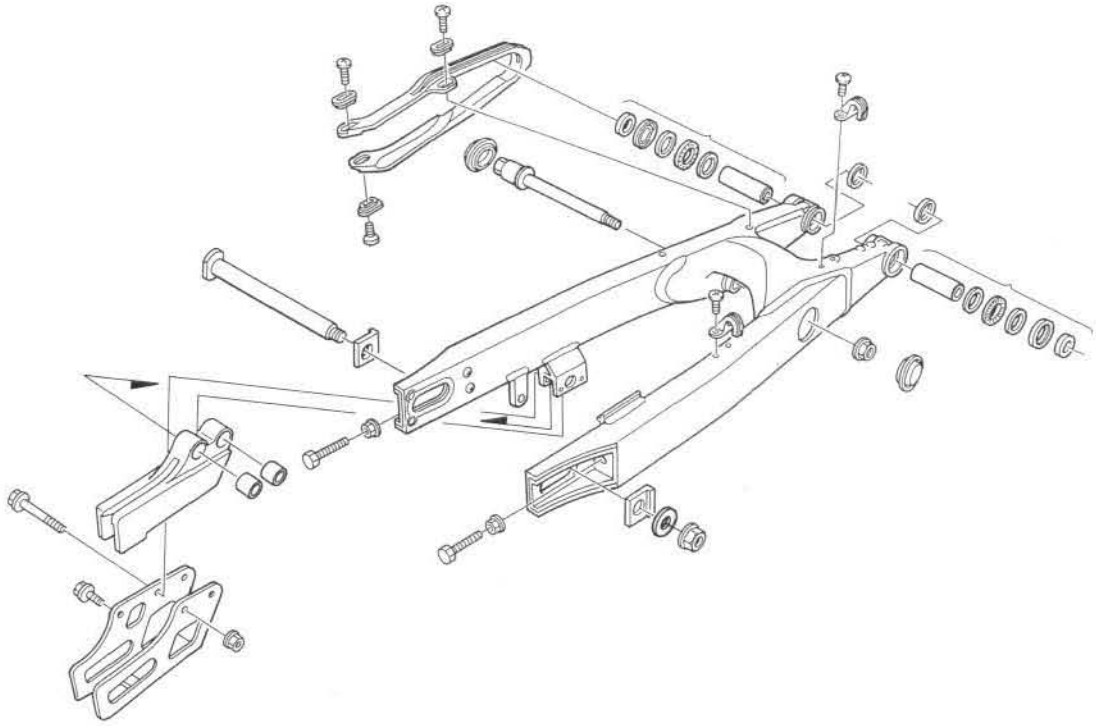
'92 – '93:	
Driver	**07749 – 0010000**
Attachment, 32 x 35 mm	**07746 – 0010100**
Pilot, 22 mm	**07746 – 0041000**
After '93:	
Driver	**07749 – 0010000**
Attachment, 28 x 30 mm	**07946 – 1870100**
Pilot, 22 mm	**07746 – 0041000**

Assembly

'92 – '93:

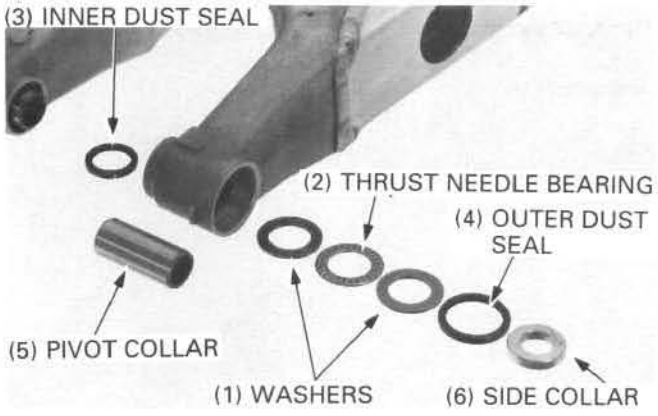


After '93:

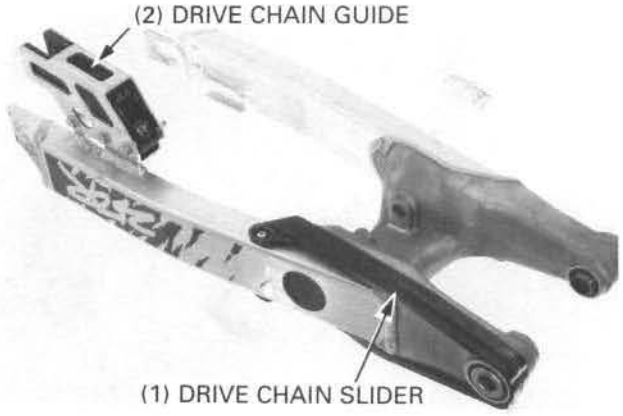


Apply grease to the needle bearings and the inside of the dust seals and collars.

Install the following:
- Washers
- Thrust needle bearing
- Inner and outer dust seal
- Pivot collar
- Side collar



Install the drive chain slider and drive chain guide.

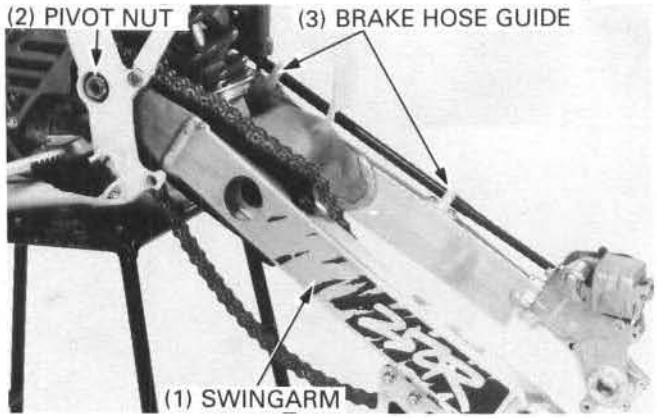


Installation

Install the swingarm onto the frame, and tighten the pivot nut to the specified torque.

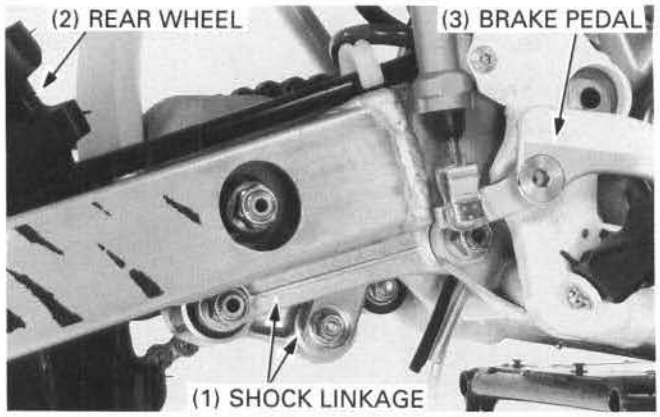
Torque: 90 N·m (9.0 kg-m, 65 ft-lb)

Route the carburetor air vent tube and drain tube.
Route the brake hose and install the brake hose guide.

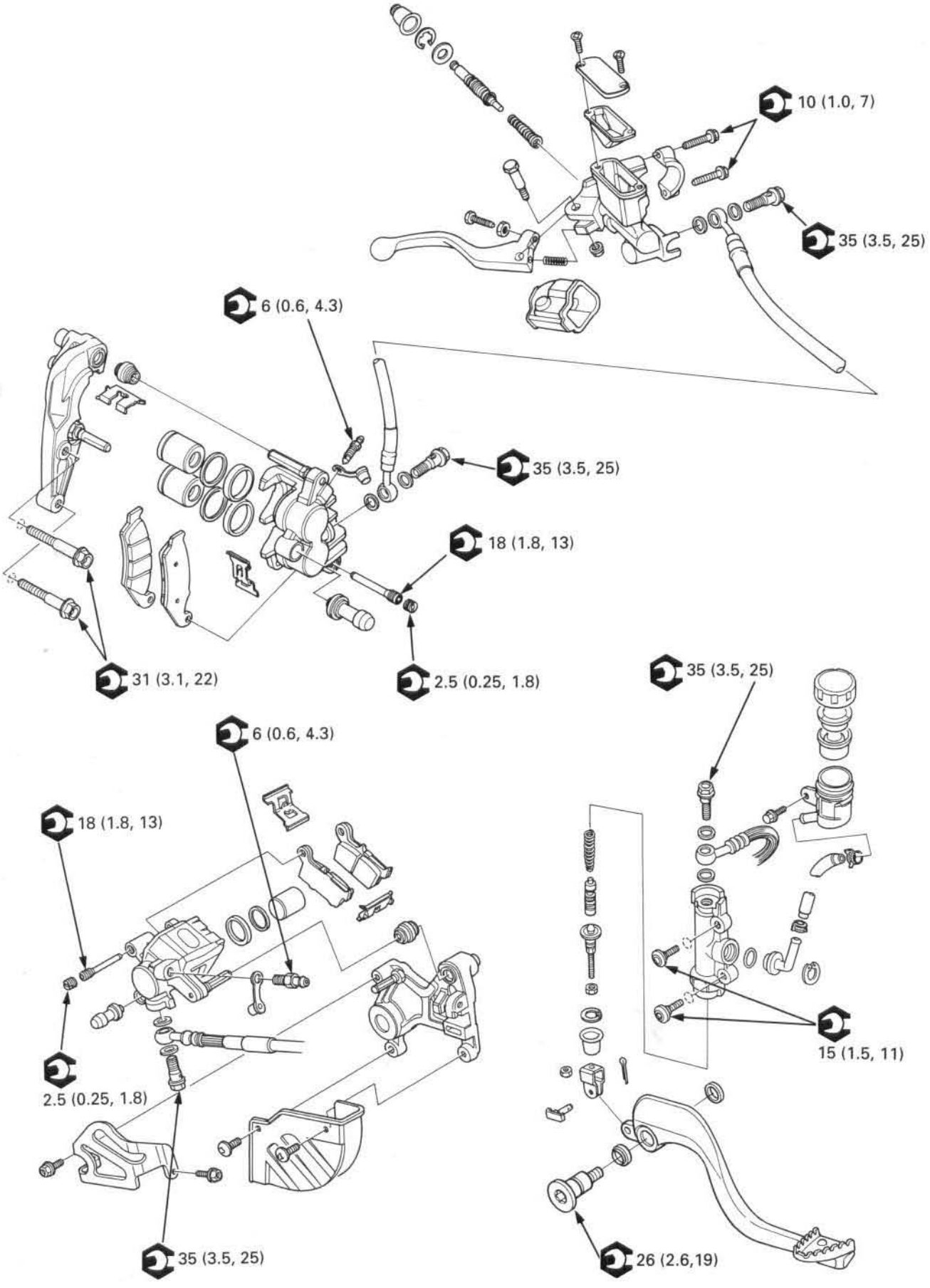


Install the following:
- Shock linkage (page 12-30)
- Rear wheel (page 12-8)
- Rear brake pedal (page 13-14)
- Drive chain

Adjust the drive chain slack.



MEMO


10 (1.0, 7)
35 (3.5, 25)
6 (0.6, 4.3)
35 (3.5, 25)
18 (1.8, 13)
31 (3.1, 22)
2.5 (0.25, 1.8)
6 (0.6, 4.3)
18 (1.8, 13)
2.5 (0.25, 1.8)
35 (3.5, 25)
35 (3.5, 25)
15 (1.5, 11)
26 (2.6,19)

13. Brake System

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 pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with Honda Contact/Brake Cleaner or equivalent high quality brake degreasing agent.**

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

13

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.**

- Always check the brake operation before riding the motorcycle.

Specifications

Unit: mm (in)

Item		Standard	Service Limit
Brake fluid	Front	DOT 3 or 4	———
	Rear	DOT 4	———
Brake disc thickness	Front	3.0 (0.12)	2.5 (0.10)
	Rear	4.5 (0.18)	4.0 (0.16)
Brake disc runout	Front	———	0.15 (0.006)
	Rear	———	0.15 (0.006)
Master cylinder I.D.	Front	11.000 – 11.043 (0.4330 – 0.4347)	11.05 (0.435)
	Rear	12.700 – 12.743 (0.4999 – 0.5016)	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 – 0.4993)	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 (1.0590 – 1.0610)	26.89 (1.059)
	Rear	26.935 – 26.968 (1.0604 – 1.0617)	26.89 (1.059)

Torque Values

Brake hose banjo bolt	35 N·m (3.5 kg-m, 25 ft-lb)
Brake lever adjuster lock nut	6 N·m (0.6 kg-m, 4.3 ft-lb)
Front brake hose guide	5 N·m (0.5 kg-m, 3.6 ft-lb)
Front master cylinder holder bolt	10 N·m (1.0 kg-m, 7 ft-lb)
Front caliper mounting bolt	31 N·m (3.1 kg-m, 22 ft-lb) Apply a locking agent
Caliper bleeder valve	6 N·m (0.6 kg-m, 4.3 ft-lb)
Rear disc guard mounting screw	7 N·m (0.7 kg-m, 5.1 ft-lb)
Rear master cylinder mounting bolt	15 N·m (1.5 kg-m, 11 ft-lb)
Caliper pin bolt A (Front)	23 N·m (2.3 kg-m, 17 ft-lb) Apply a locking agent
(Rear)	28 N·m (2.8 kg-m, 20 ft-lb) Apply a locking agent
Caliper pin bolt	13 N·m (1.3 kg-m, 9 ft-lb) Apply a locking agent
Brake caliper pad pin	18 N·m (1.8 kg-m, 13 ft-lb)
Brake caliper pad pin plug	2.5 N·m (0.25 kg-m, 1.8 ft-lb)
Brake pedal pivot bolt	26 N·m (2.6 kg-m, 19 ft-lb)

Tools

Special

Snap ring pliers	07914 – 3230001 or equivalent commericially 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/worm 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

Check the master cylinder parallel to the ground.

CAUTION

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

Brake Fluid Draining

Connect a bleed hose to the bleed valve.

Loosen the caliper bleed valve and pump the brake lever. 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 the contaminated disc with Honda Contact/Brake Cleaner or equivalent high quality brake degreasing agent.**

Brake Fluid Filling/Air Bleeding

CAUTION

- **Do not mix different types of fluid since they are not compatible.**

Close the master cylinder with DOT 3 or 4 (Rear DOT 4) brake fluid to the upper level.

Connect the Mityvac Brake Bleeder No. 6860 or equivalent to-the bleed valve.

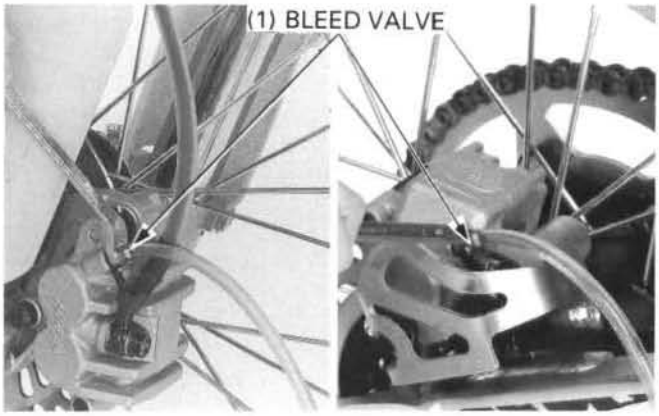
NOTE

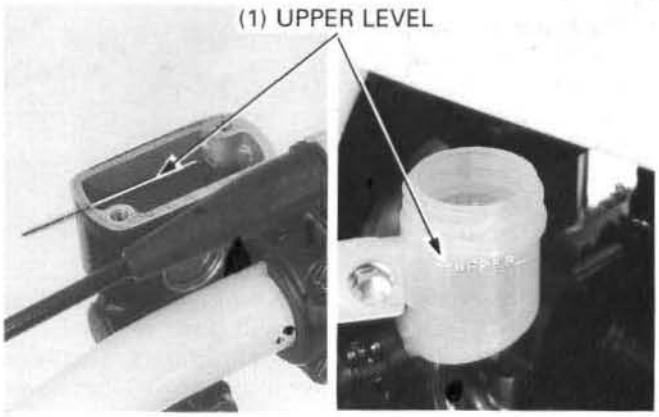
- Check the fluid level often while bleeding the brakes to prevent air from being pumped into the system.
- Do not mix brake fluid types and never reuse the contaminated fluid which has been pumped out during brake bleeding, because this will impair the efficiency of the brake system.
- When using a brake bleeding tool, follow the manufacturer's operating instruction.

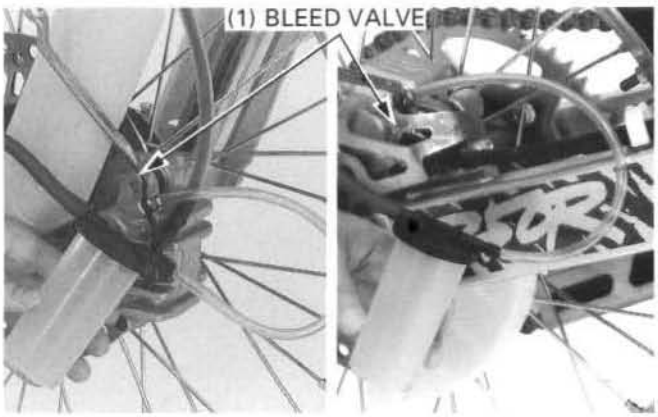
Pump the brake bleeder and loosen the bleed valve. Add fluid when the fluid level in the master cylinder is low to prevent drawing air into the system.
Repeat the above procedures until no air bubbles appear in the plastic hose.

NOTE

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







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

Pump up the system pressure with the lever until these are not air bubbles in the fluid flowing out of the reservoir small hole and lever resistance is felt.

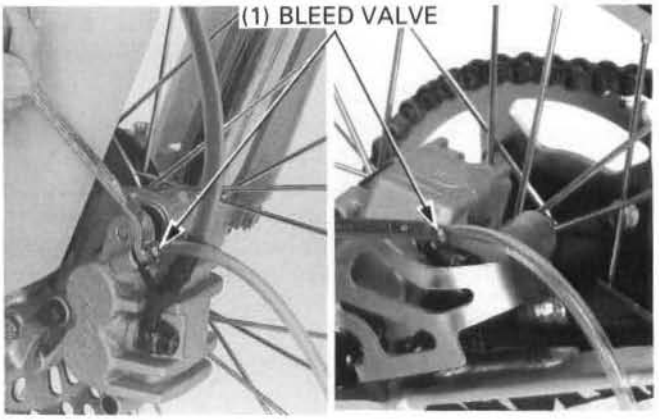
1) Operate the brake lever or pedal, then open the bleed valve 1/2 turn and close the valve.

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.

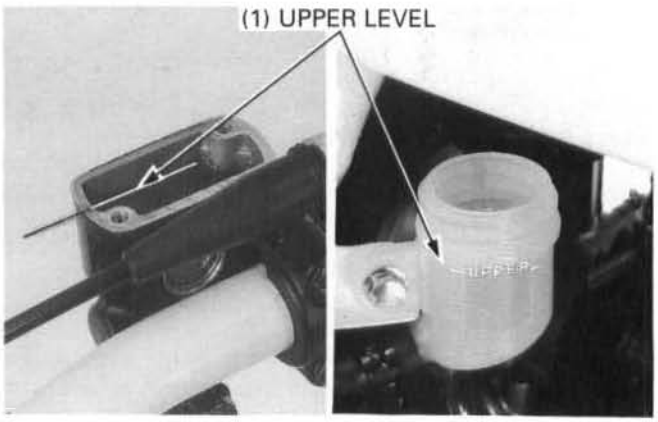
Repeat step 1 and 2 until bubbles cease to appear in the fluid at the end of the hole.



Tighten the bleed valve.

Torque: 6 N·m (0.6 kg-m, 4.3 ft-lb)

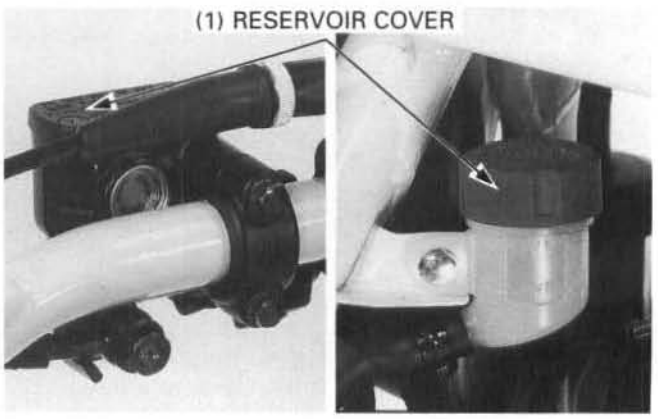
Fill the reservoir with DOT 3 or 4 (Rear: DOT 4) brake fluid to the upper level.



Reinstall the diaphragm and master cylinder reservoir cover.

⚠ WARNING

- **A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean the contaminated disc with Honda Contact/Brake Cleaner or equivalent high quality brake degreasing agent.**



Brake Pad Replacement

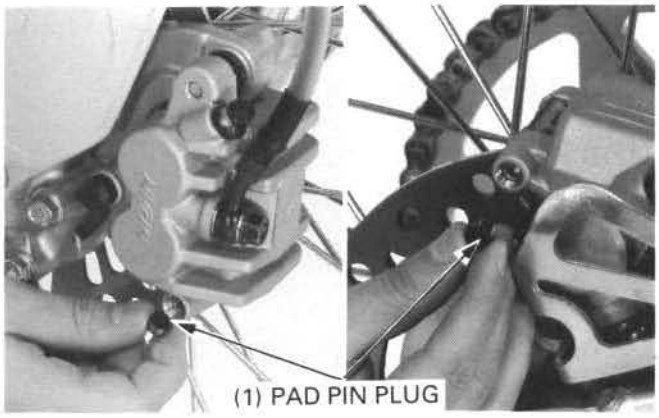
⚠ WARNING

- **A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with Honda Contact/Brake Cleaner or equivalent high quality brake degreasing agent.**

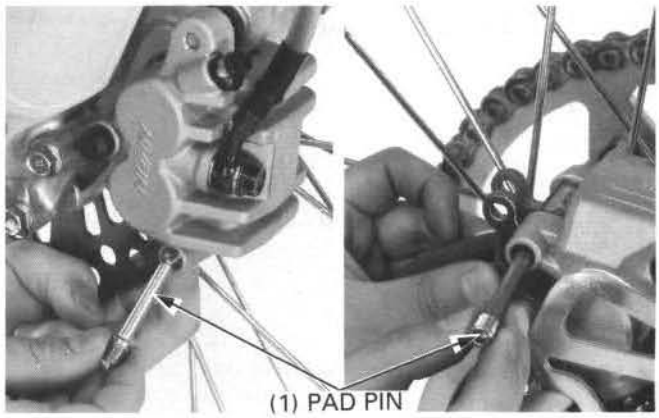
NOTE

- 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.

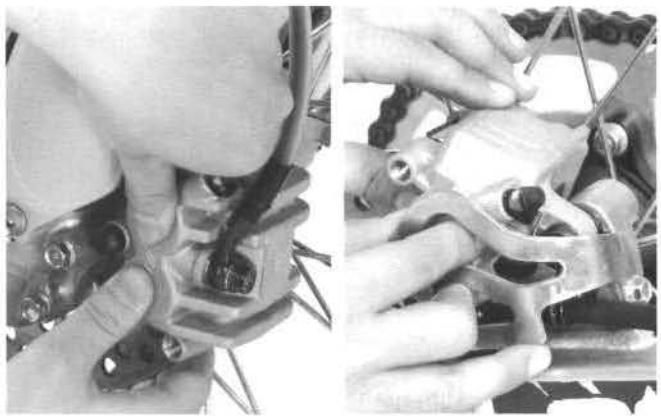


Remove the brake pad.



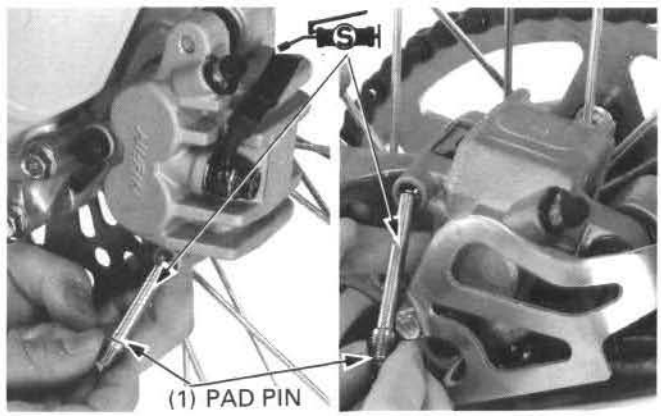
Insert new outside pad and push the caliper piston in allow clearance for installation of the new left side pad.

Install new left side pad.



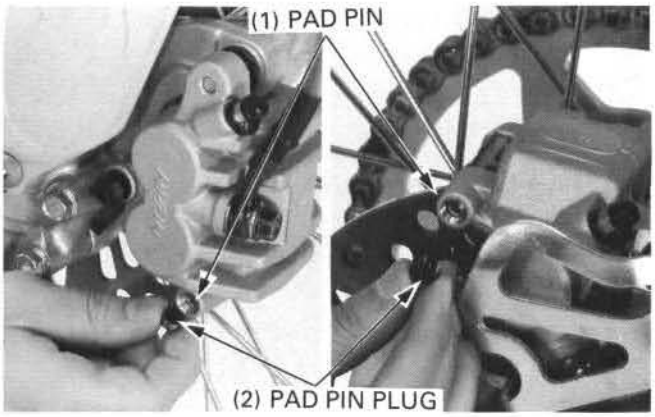
Install the pad pin by pushing the pads against the caliper to depress the pad spring.
Tighten the pad pin to the specified torque.

Torque: 18 N·m (1.8 kg-m, 13 ft-lb)



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

Torque: 2.5 N·m (0.25 kg-m, 1.8 ft-lb)



Front Master Cylinder

Removal

CAUTION

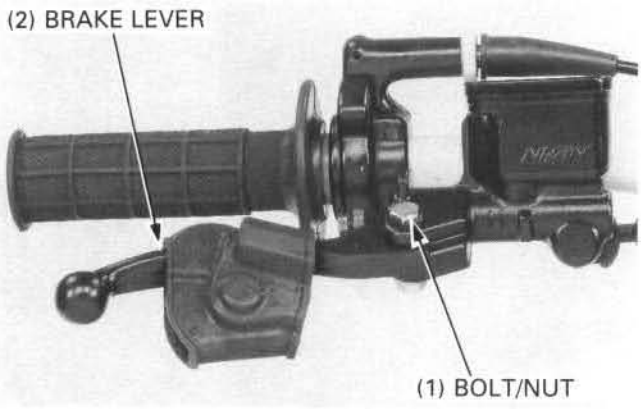
- **Avoid spilling fluid on painted, plastic or rubber parts. Place a shop towel over these parts whenever the system is serviced.**

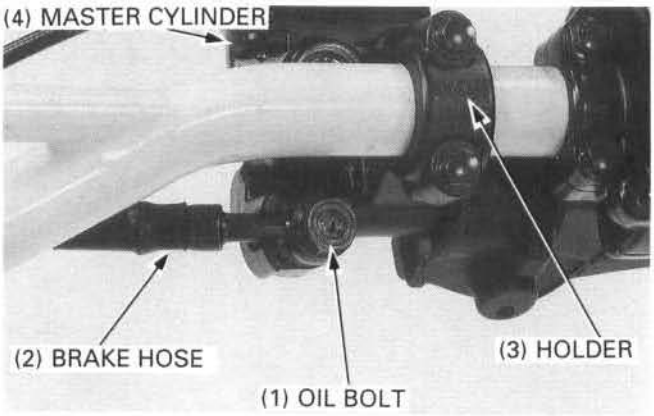
NOTE

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

Drain the front brake hydraulic system (page 13-3).
Remove the pivot nut/bolt and brake lever.

Remove the oil bolt and disconnect the brake hose.
Remove the master cylinder holder and master cylinder.

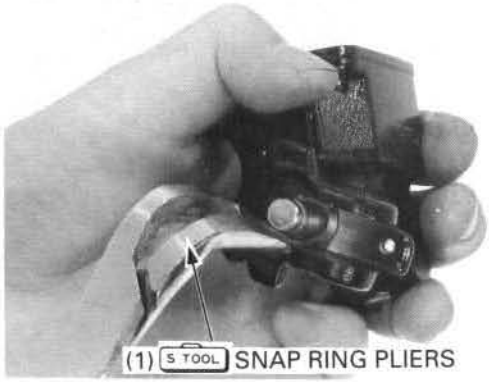




Diassembly

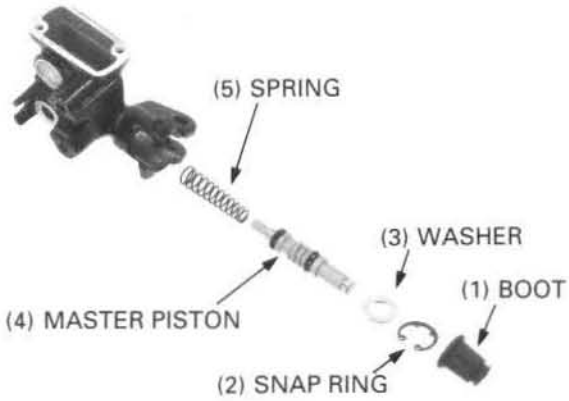
Remove the piston boot, snap ring and washer from the master cylinder body.

S. TOOL
Snap ring pliers — **07914 – 3230001 or Equivalent commercially available in U.S.A.**



Remove the piston and spring.
Clean the inside of the master cylinder and reservoir with brake fluid.

Inspect the disassembled parts.



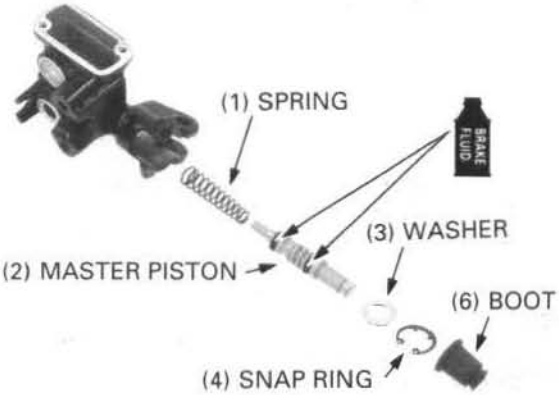
Assembly

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.**

NOTE

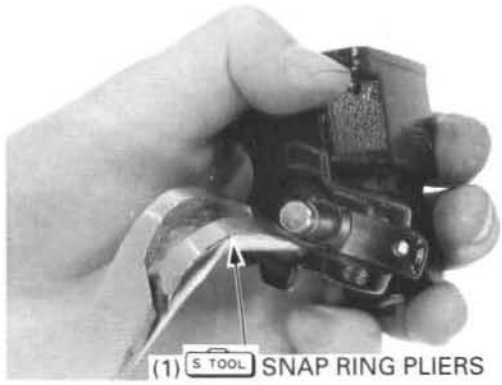
- Replace the master cylinder piston, cups, spring and washer as a set.



Clean the master cylinder with compressed air.
Assemble the master cylinder.
Dip the piston cups in clean brake fluid before assembly.

Install the washer, snap ring and boot.

S. TOOL
Snap ring pliers — **07914 – 3230001 or Equivalent commercially available in U.S.A.**



Installation

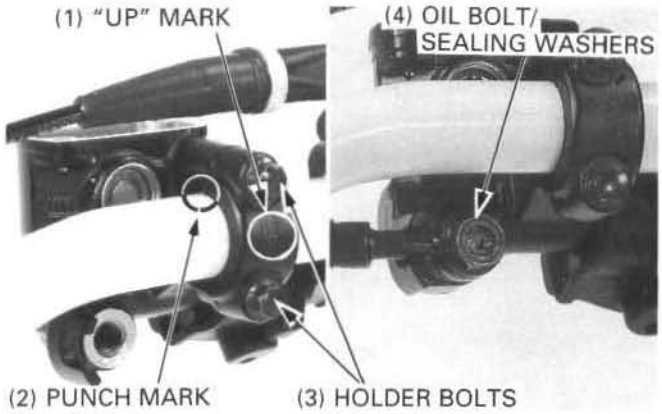
Place the master cylinder on the handlebar and install the holder and two mounting bolts with holder's "UP" mark facing up.

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

Torque: 10 N·m (1.0 kg-m, 7 ft-lb)

Connect the brake hose eyelet joint with a new sealing washers.
Tighten the oil bolt to the specified torque.

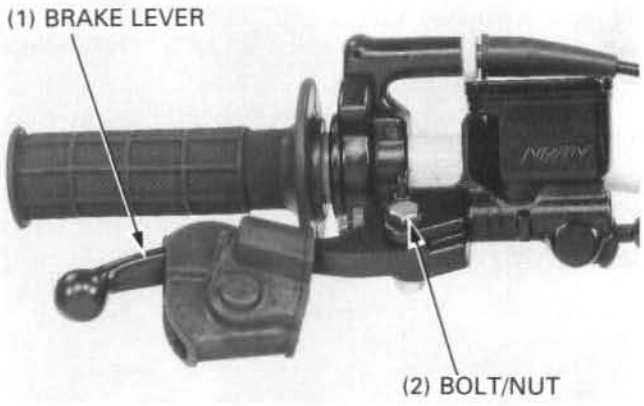
Torque: 35 N·m (3.5 kg-m, 25 ft-lb)



Apply silicone grease to the pivot and install the brake lever.
Install and tighten the brake lever pivot nut to the specified torque.

Torque: 10 N·m (1.0 kg-m, 7 ft-lb)

Fill the master cylinder to the proper level and bleed the brake system (page 13-3).



Rear Master Cylinder

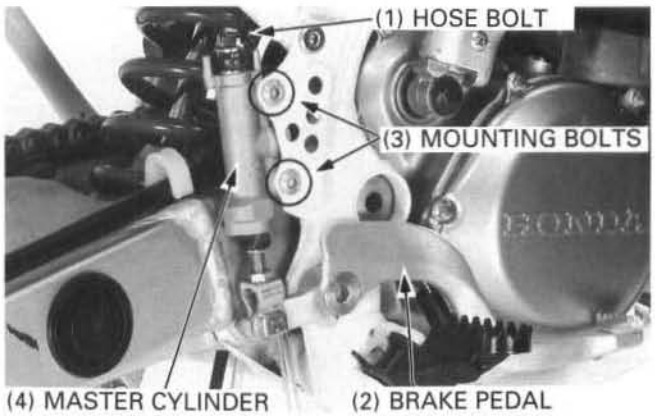
Removal

Drain the rear brake hydraulic system (page 13-3).

Remove the brake hose oil bolt and disconnect the brake hose.

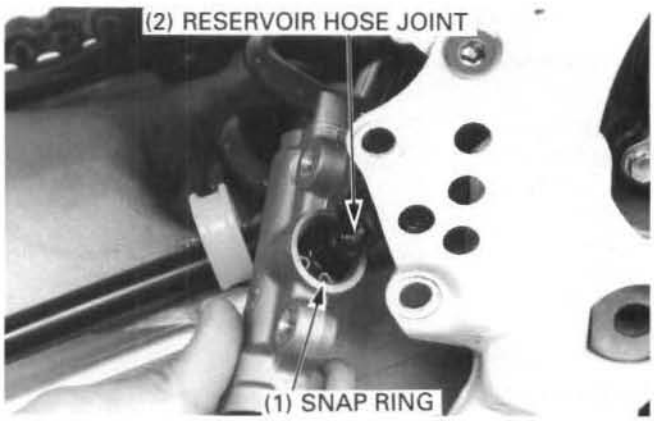
Remove the brake pedal (page 13-14).

Remove the rear master cylinder mounting bolts and rear master cylinder from the frame.



Remove the snap ring and disconnect the reservoir hose joint from the master cylinder.

S. TOOL
Snap ring pliers — **07914 – 3230001 or Equivalent commercially available in U.S.A.**



Disassembly

Remove the rubber boot.
Remove the snap ring and push rod from the master cylinder body.

CAUTION

- **Be aware that the push rod will pop out when the snap ring is removed.**

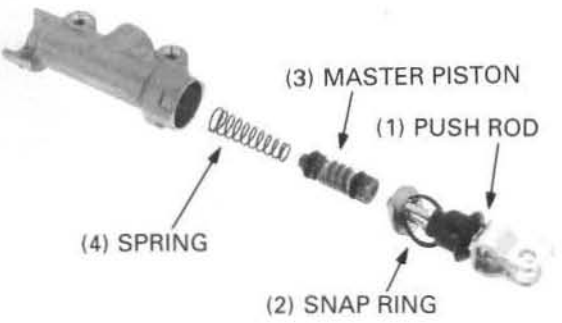
S. TOOL
Snap ring pliers — **07914 – 3230001 or Equivalent commercially available in U.S.A.**

Remove the master piston and spring.

It may be necessary to apply a small amount of air pressure to the fluid outlet to remove the master piston and spring. Place a shop rag under the master cylinder to cushion the piston when it is expelled.
Use the air in short spurts.

⚠WARNING

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



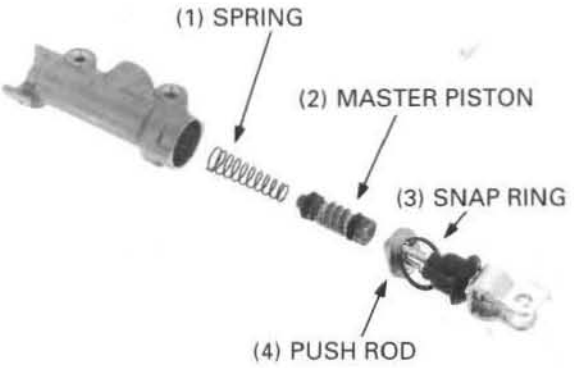
Assembly

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.**

NOTE

- Replace the master cylinder piston, cups and spring as a set.

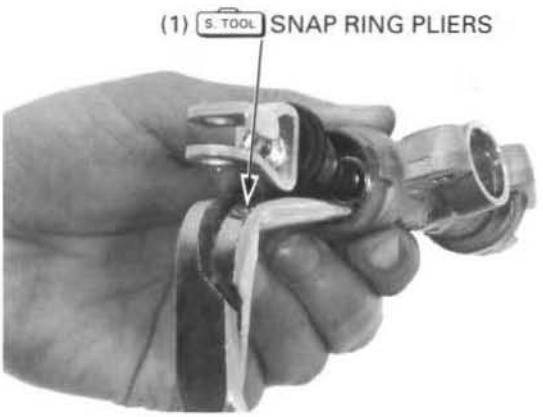


Clean the master cylinder with compressed air.

Dip the piston cups in clean brake fluid before assembly.

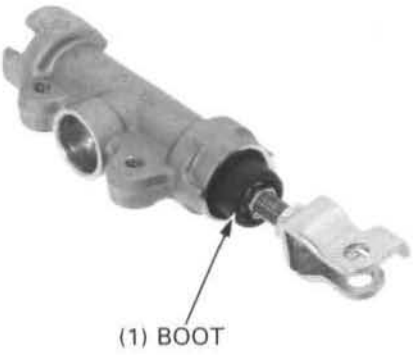
Install the spring and master piston together.

Install the push rod and washer into the master cylinder. Install the snap ring.



S. TOOL
Snap ring pliers — **07914 – 3230001 or Equivalent commercially available in U.S.A.**

Install the rubber boot.

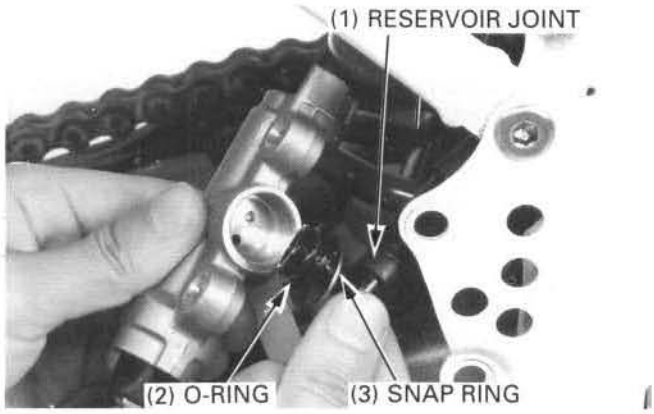


Installation

Coat a new O-ring with clean brake fluid and install it in the reservoir hose joint cup.
Connect the reservoir hose to the master cylinder with a new snap ring

S. TOOL

Snap ring pliers — **07914 – 3230001 or Equivalent commercially available in U.S.A.**



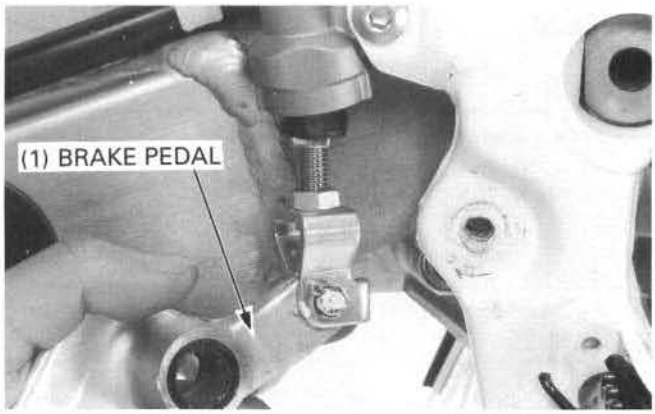
Attach the master cylinder to the frame.

Connect the rear brake pedal to the master cylinder push rod and install the brake pedal (page 13-14).

Apply Honda Anaerobic Thread Lock or equivalent to the rear master cylinder mounting bolts threads.

Install and tighten the rear master cylinder mounting bolts to the specified torque.

Torque: 15 N·m (1.5 kg-m, 11 ft-lb)



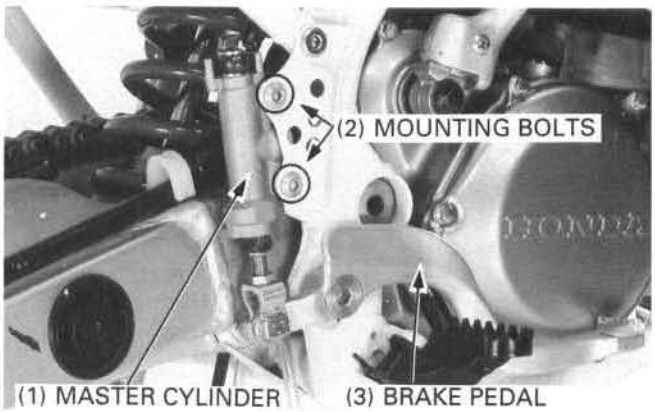
Connect the rear brake hose banjo fitting with the hose oil bolt and two new sealing washers.

CAUTION

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

Tighten the oil bolt to the specified torque.

Torque: 35 N·m (3.5 kg-m, 25 ft-lb)



Fill the brake system with DOT 4 brake fluid from a sealed container and bleed the system of air (page 13-3).

Front Brake Caliper

Removal

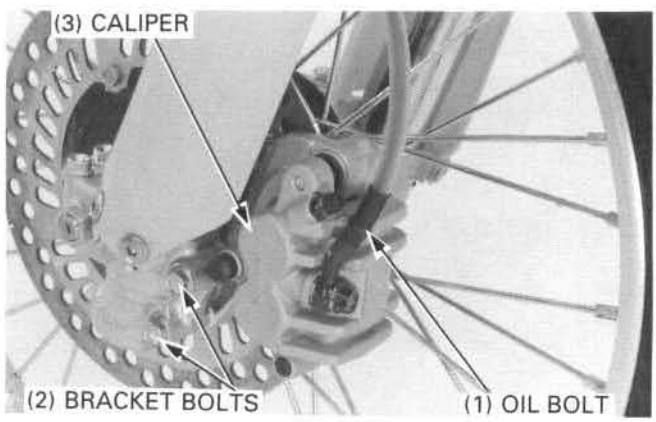
CAUTION

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

Drain the front brake fluid from the hydraulic system.

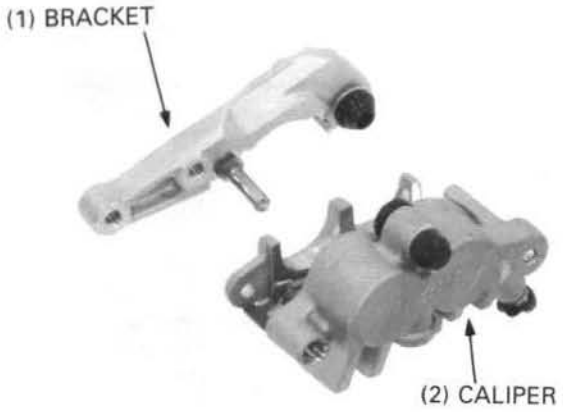
Remove the brake pads (page 13-5).

Place a clean container under the caliper and remove the oil bolt, sealing washer and eyelet joint from the caliper. Remove the brake caliper bracket bolt, then remove the brake caliper and bracket as an assembly.



Disassembly

Remove the following:
- Caliper bracket
- Brake pad retainer
- Pad spring
- Caliper pin boot
- Bracket pin boot
- Pistons from cylinder

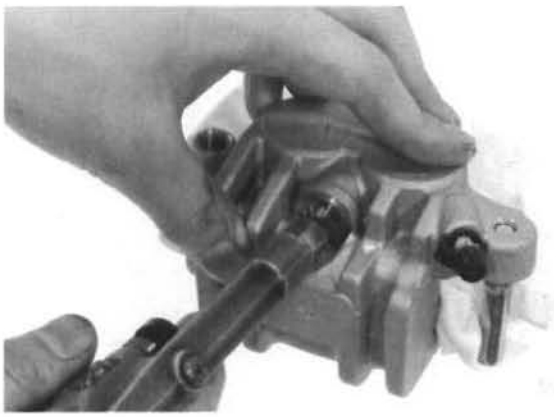


If necessary, lightly apply compressed air to the caliper fluid inlet to get the piston out.

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

⚠ WARNING

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

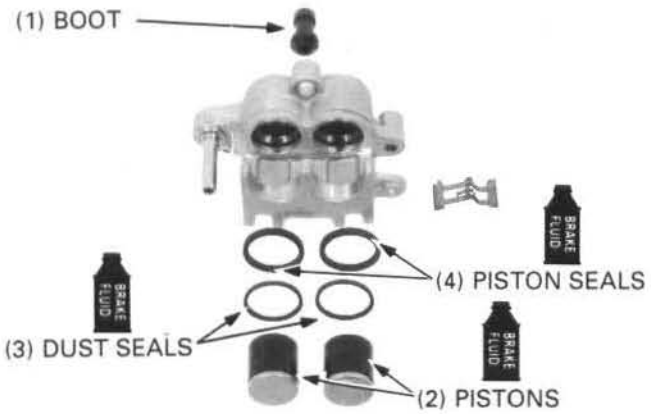


Examine the pistons and caliper cylinders for scoring, scratches or other damage.
Replace if necessary.

Assembly

Coat the new piston seals and dust seals with clean brake fluid and install them in the seal grooves of the caliper.

Lubricate the caliper cylinders and pistons with clean brake fluid and install the pistons into the caliper cylinders with the closed end of the piston facing the pad side.

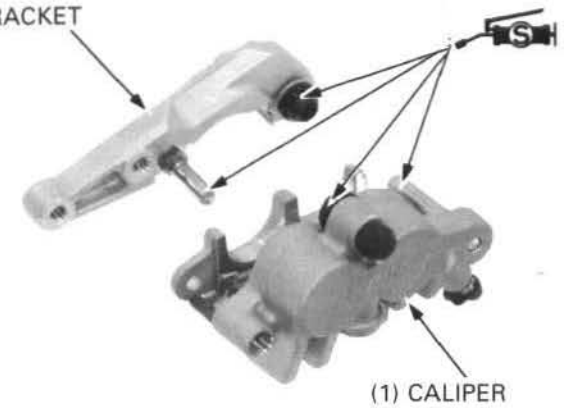


Apply silicon grease to the pivot boots and install them making sure that they are seated in the caliper and bracket grooves properly.

Coat the caliper and bracket pins with silicon grease.

Install the pad retainer on the caliper bracket.
Install the pad spring on the caliper.

Assemble the caliper and bracket.



Installation

Apply Honda Anaerobic Thread Lock or equivalent to the caliper mounting bolt threads.

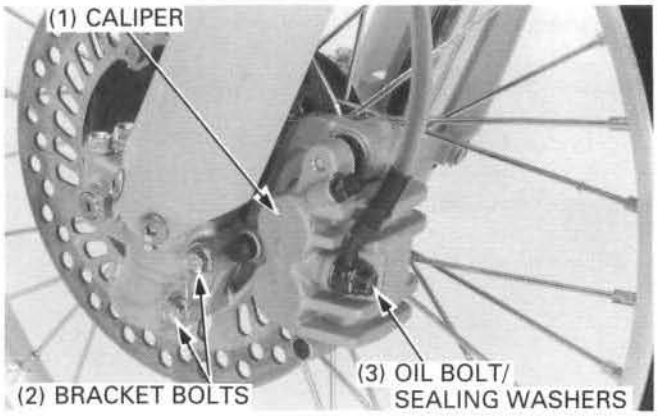
Install the caliper and bracket assembly on the fork leg and tighten the bracket bolts to the specified torque.

Torque: 31 N·m (3.1 kg-m, 22 ft-lb)

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

Torque: 35 N·m (3.5 kg-m, 25 ft-lb)

Fill the master cylinder with DOT 4 brake fluid from a sealed container and bleed any air the front brake system. Install the brake pads (page 13-5).



Rear Brake Caliper

Removal

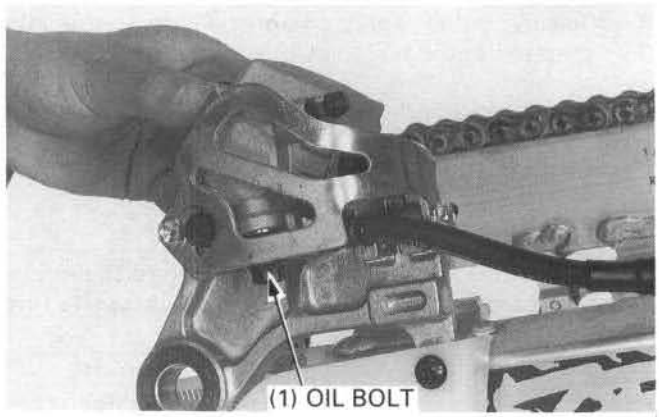
CAUTION

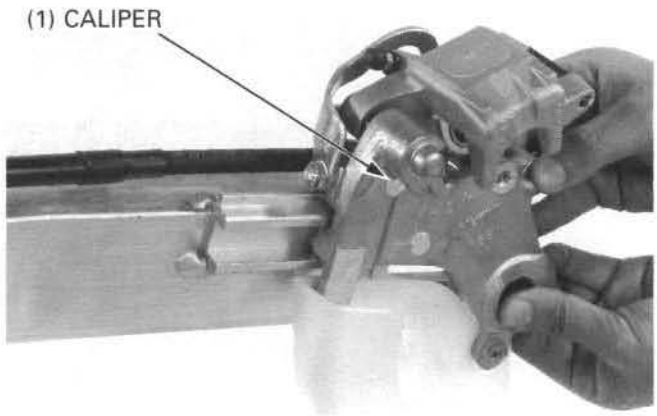
- **Avoid spilling fluid on painted, plastic or rubber parts. Place a shop towel over these parts whenever the system is serviced.**

Drain the rear brake fluid from the hydraulic system.
Remove the rear wheel (page 12-3).
Remove the brake pads (page 13-5).

Place a clean container under the caliper and remove the oil bolt, sealing washer and eyelet joint from the caliper.

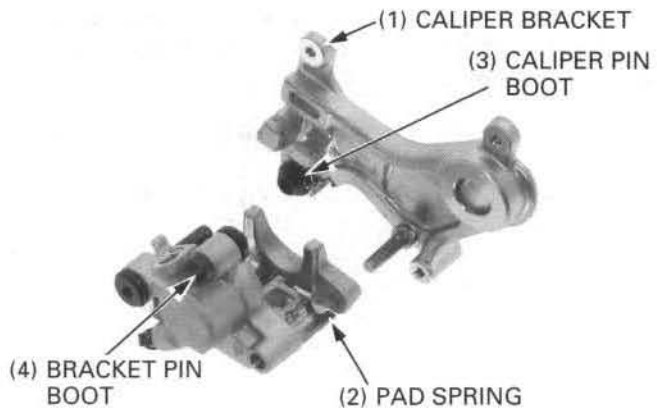
Slide the brake caliper backward and pull it off of the swingarm.





Disassembly

Remove the following:
- Caliper guard plate
- Caliper bracket
- Brake pad retainer
- Pad spring
- Caliper pin boot
- Bracket pin boot
- Piston from cylinder



If necessary, lightly apply compressed air to the caliper fluid inlet to get the piston out.
Place a shop rag under the caliper to cushion the piston when it is expelled.
Use the air in short spurts.

⚠WARNING

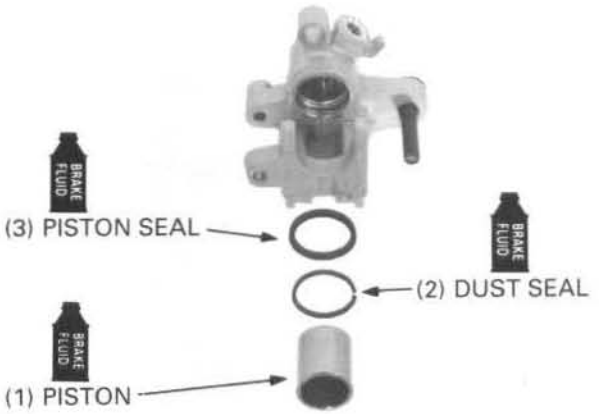
- **Do not bring the air nozzle too close to the inlet or the piston may be forced out with excessive force that could cause injury.**

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

Assembly

Coat the new piston seal and dust seal with clean brake fluid and install them in the seal grooves of the caliper.

Lubricate the caliper cylinder and piston with clean brake fluid and install the piston into the caliper cylinder with the closed end of the piston facing the brake pad.



Apply silicone grease to the pivot boots and install them making sure that they are seated in the caliper and bracket grooves properly.

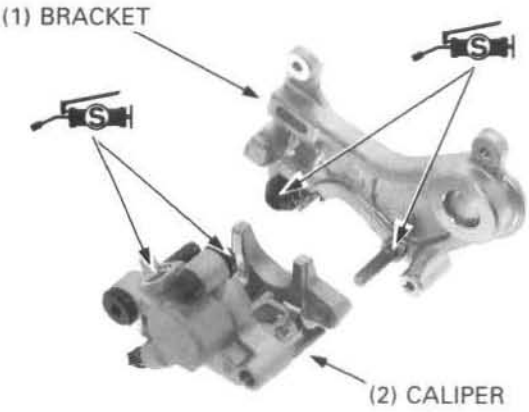
Coat the caliper caliper and bracket pins with silicone grease.

Install the pad retainer on the caliper bracket.
Install the pad spring on the caliper.

Assemble the caliper and bracket.

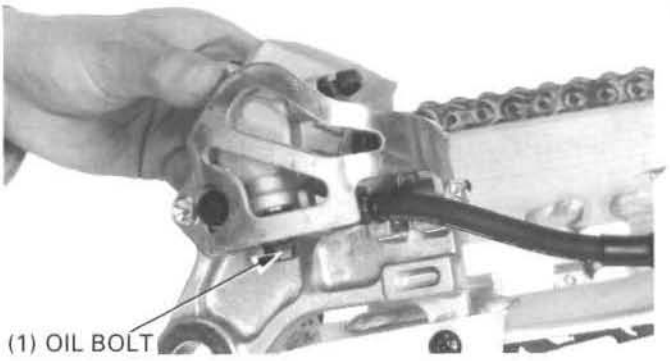
Install the disc guard with two screws and tighten them.

Torque: 7 N·m (0.7 kg-m, 5.1 ft-lb)



Connect the brake hose eyelet joint and two new sealing washers.
Tighten the oil bolt to the specified torque.

Torque: 35 N·m (3.5 kg-m, 25 ft-lb)



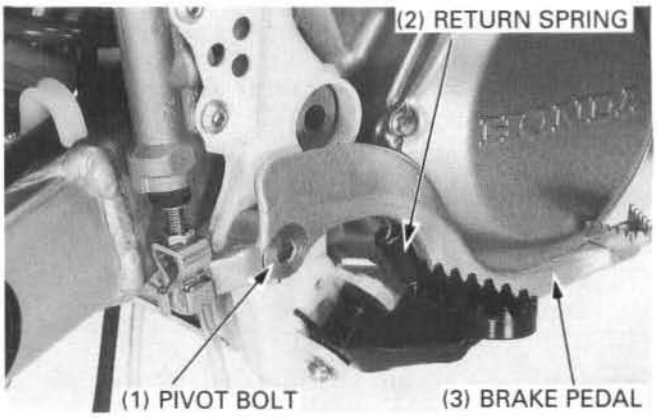
Install the rear brake caliper onto the swingarm slide rail.
Install the following:
- Caliper guard plate
- Rear wheel (page 12-7)
- Rear brake pads (page 13-5)

Fill the master cylinder with DOT 4 brake fluid from a sealed container and bleed any air from the rear brake system (page 13-3).

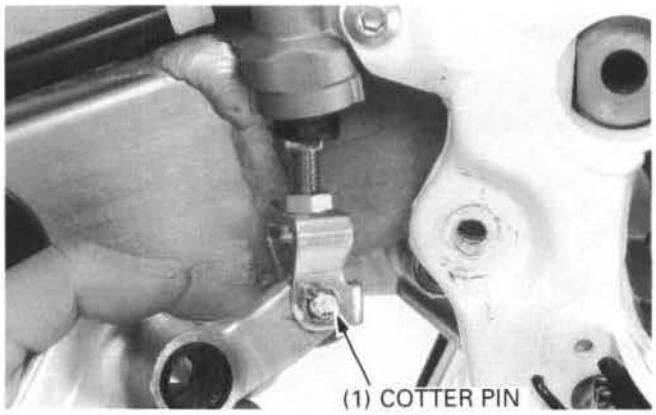
Rear Brake Pedal

Removal

Remove the rear brake pedal pivot bolt and return spring.

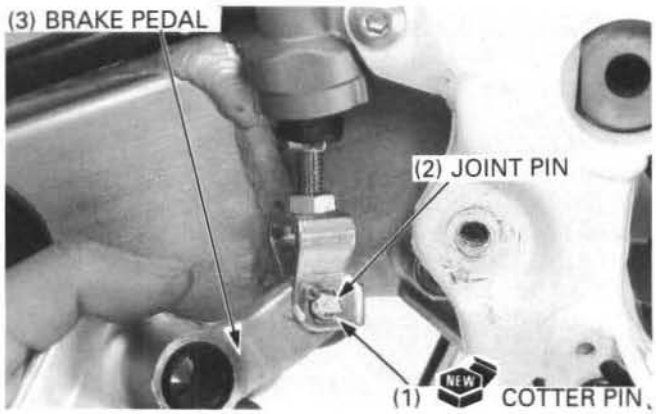


Remove the cotter pin and joint pin.
Remove the brake pedal.



Installation

Install the brake pedal and joint pin and secure them with a new cotter pin.

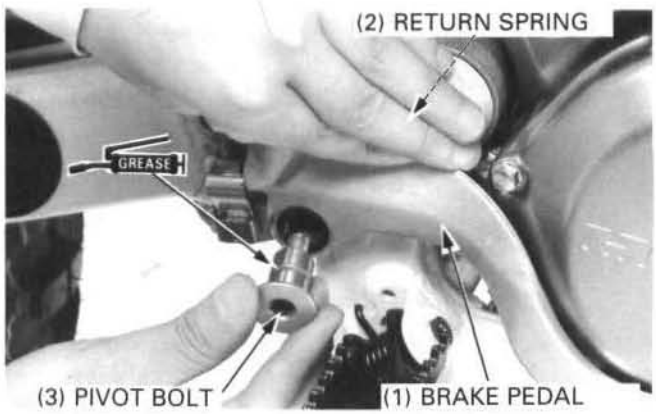


Apply grease to the sliding surface of the pivot bolt and dust seals.
Install the dust seals into the brake pedal pivot.

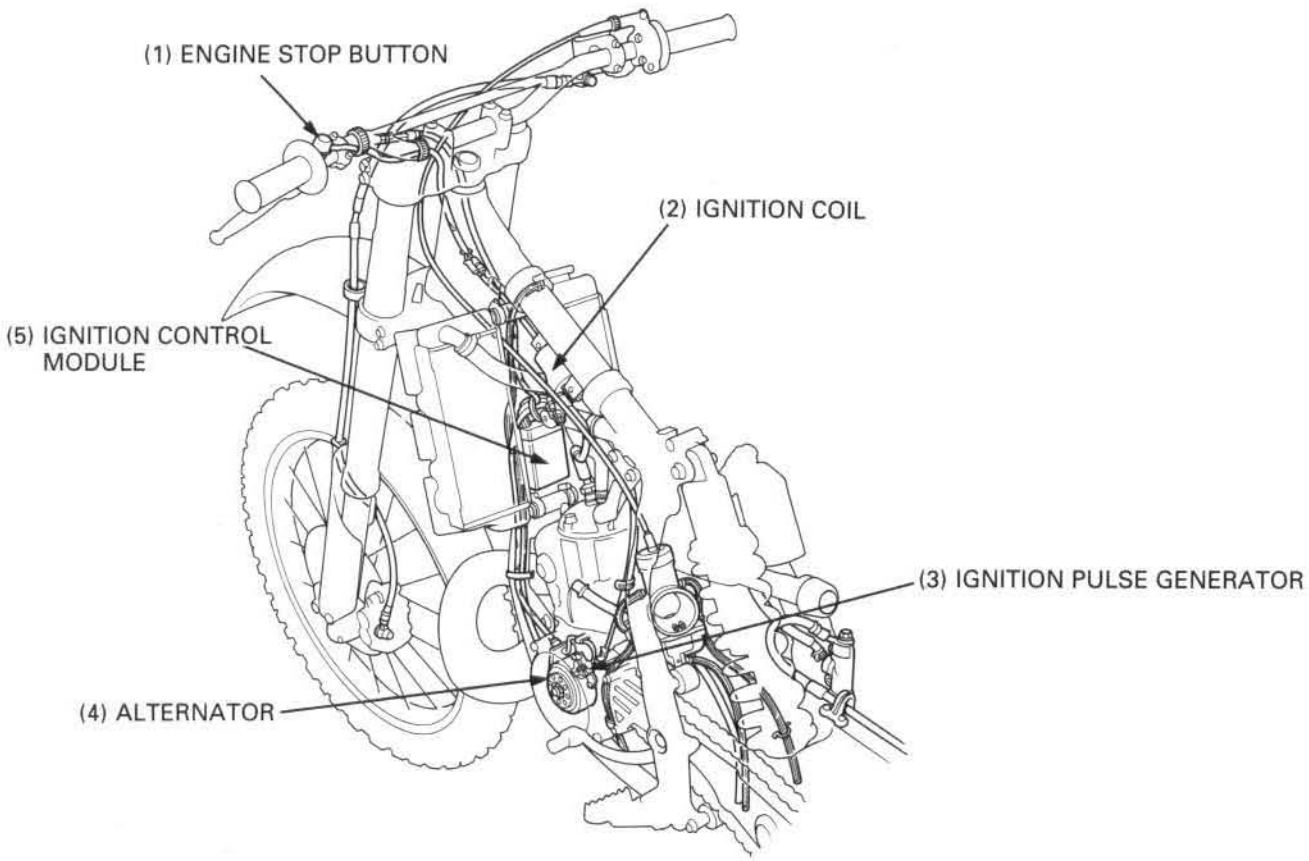
Install and tighten the pivot bolt to the specified torque.

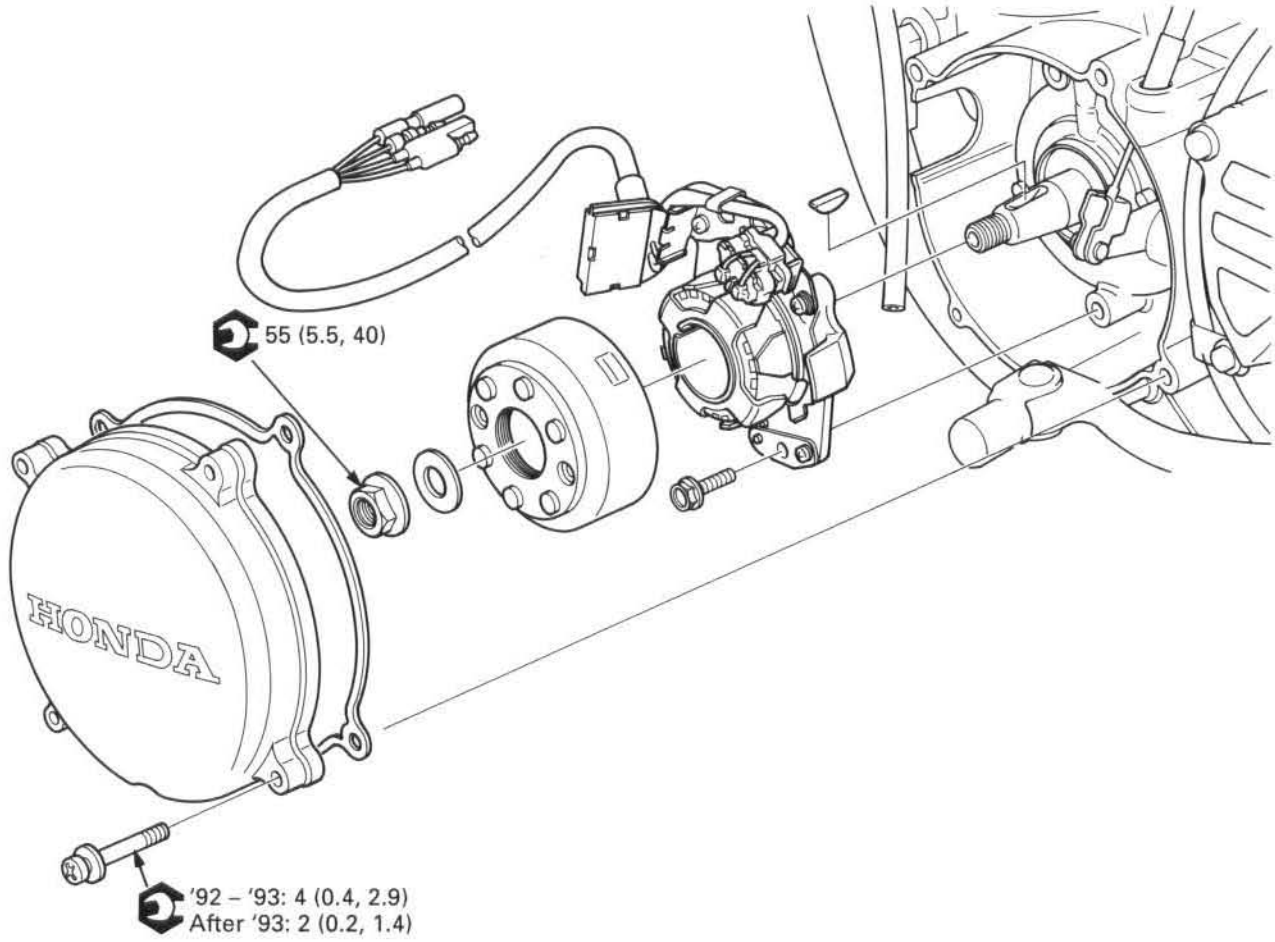
Torque: 26 N·m (2.6 kg-m, 19 ft-lb)

Install the return spring.



MEMO


(1) ENGINE STOP BUTTON
(2) IGNITION COIL
(5) IGNITION CONTROL MODULE
(3) IGNITION PULSE GENERATOR
(4) ALTERNATOR


55 (5.5, 40)
HONDA
'92 – '93: 4 (0.4, 2.9)
After '93: 2 (0.2, 1.4)

14. Ignition System/Alternator

Service Information

General

⚠WARNING

- **If the engine must be runing 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 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 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 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				Specifications
Spark plug	Standard	CHAMPION		QN86
		NGK		BR8EG
		NIPPONDENSO		W24ESR-V
	Optional	CHAMPION		QN2G
		NGK		BR8EV
		NIPPONDENSO		W24ESR-G
Spark plug gap				0.5 – 0.6 (0.020 – 0.024)
Ignition timing "F" mark				15.5°/5,000 rpm
Ignition coil resistance (At 20°C/68°F)	Primary		'92:	0.4 – 0.6 Ω
			After '92:	0.2 – 0.4 Ω
	Secondary	With plug cap	'92:	16 – 23 kΩ
			After '92:	9 – 16 kΩ
		Without plug cap	'92:	10– 16 kΩ
			After '92:	4 – 8 kΩ
Alternator exciter coil resistance (At 20°C/68°F)			'92:	40 – 140 Ω
			After '92:	120 – 220 Ω
Ignition pulse generator resistance (At 20°C/68°F)				180 – 280 Ω

Torque Values

Alternator cover screw	4 N·m (0.4 kg-m, 2.9 ft-lb)
Flywheel nut	55 N·m (5.5 kg-m, 40 ft-lb)

Tools

Common

Flywheel puller	07733 – 0010000
Universal holder	07725 – 0030000 or equivalent commercially available in U.S.A.

Troubleshooting

No spark at spark plug

Replace with known good spark plug. Conduct the spark plug test.
- Spark → • Faulty spark plug
- No spark →

Check for poorly connected or loose spark plug wire. If loose, screw plug cap securely into the spark plug wire.
- Spark → • Loose wire
- No spark →

Check for loose or poorly connected ignition control module. Correct it and conduct spark test again.
- Spark → • Poorly connected ignition control module connector
- No spark →

Disconnect ignition control module connector and check related circuit at the connector. Measure resistance of the secondary coil (page 14-4)
- Normal → • Faulty ignition coil
- Abnormal →

Check components individually. Compare result with the measured value above.
- Abnormal → • Faulty ignition pulse generator
  • Faulty alternator
  • Faulty engine stop and ignition switch
- Normal →

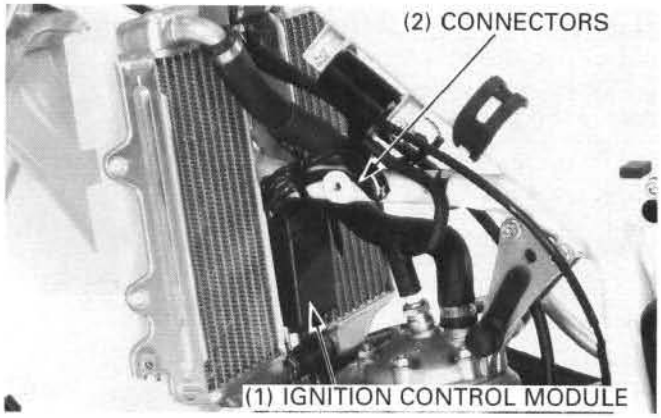
• Poorly connected connectors
• Broken wire harness between unit and component

Ignition Control Module

System Inspection

NOTE

- The ignition control module is semi-conductorized component which includes ignition timing advance, retard system and other calculating circuits. It may be difficult to check the ignition control module by itself.
  Therefore, testing is done by process of eliminating other causes.



Remove the seat and fuel tank (page 2-2).
Disconnect the ignition control module connectors.

In case of the ignition timing is out of specification or poor or no spark at the plug, check the items below.
If all are OK, replace the ignition control module and recheck.

- Spark plug
- Connection of connectors
- Engine stop switch
- Ignition coil
- Alternator excitor coil
- Ignition pulse generator

Measure the data between the connector terminal using the following chart.

'92:

Item	Terminals	Standard (20°C/68°F)
Ignition primary coil	Black/Yellow and Green	0.4 – 0.6 Ω
Ignition pulse generator	Blue/Yellow and Green/White	180 – 280 Ω
Alternator excitor coil	White and Blue	40 – 140 Ω
Engine stop switch	Black/Yellow and Green	• Continuity with the stop button pressed • No continuity with the stop button released

After '92:

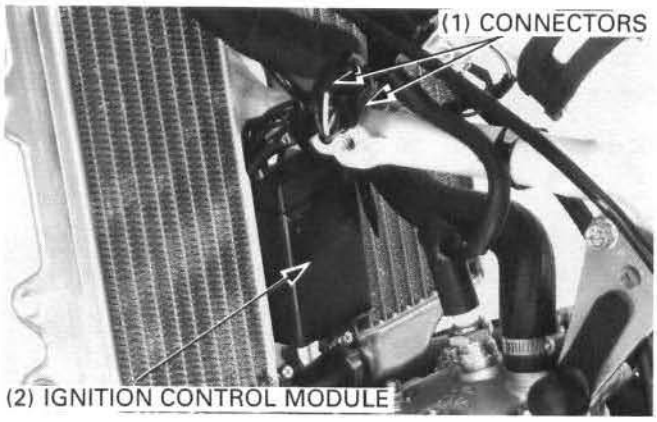
Item	Terminals	Standard (20°C/68°F)
Ignition primary coil	Black/Yellow and Green	0.2 – 0.4 Ω
Ignition pulse generator	Blue/Yellow and Green/White	180 – 280 Ω
Alternator excitor coil	White and Blue	120 – 220 Ω
Engine stop switch	Black/Yellow and Green	• Continuity with the stop button pressed • No continuity with the stop button released

Removal/Installation

Drain the radiator coolant (page 5-3).
Remove the seat and fuel tank (page 2-2, 3).

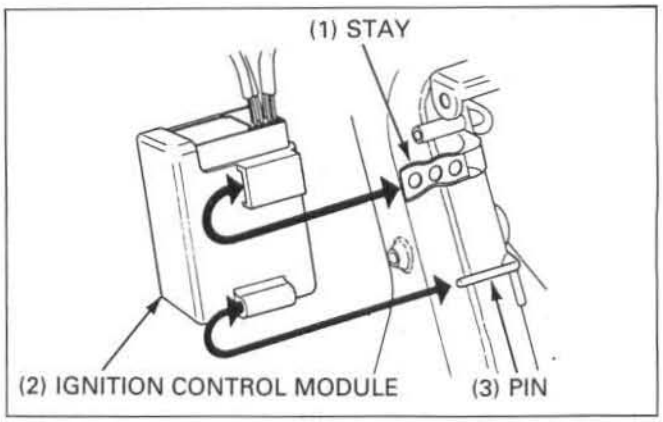
Remove the left radiator (page 5-3).

Disconnect the ignition control module connectors.



Remove the ignition control module, pulling its rubber suspension out of the stay and pin.

Installation is in the reverse order of removal.



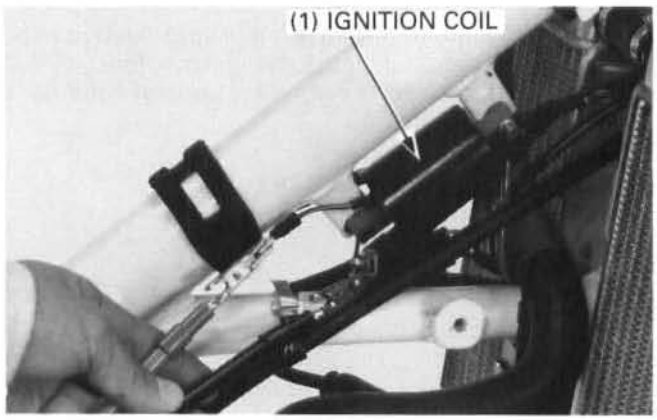
Ignition Coil

Inspection

Remove the seat and fuel tank (page 2-2, 3).

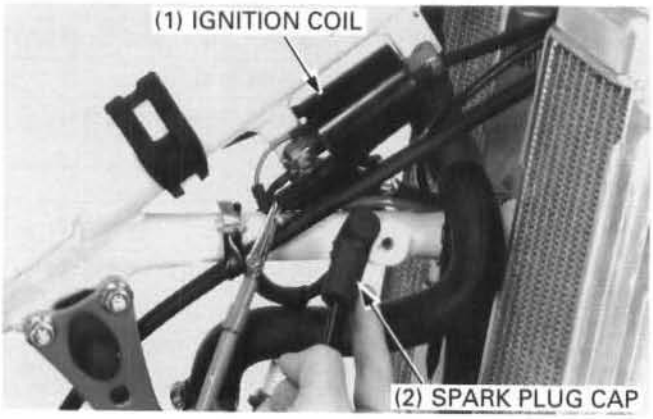
Disconnect the Black/Yellow and Green wires of the ignition coil.
Measure the primary coil resistance of the ignition coil.

Standard '92: 0.4 – 0.6 Ω (20°C/68°F)
After '92: 0.2 – 0.4 Ω (20°C/68°F)



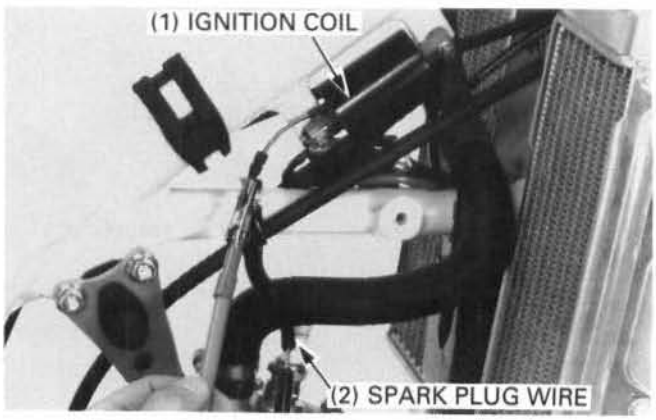
Disconnect the spark plug cap from the plug and measure the secondary resistance between the plug cap and Green terminal.

Standard '92: 14 – 23 kΩ (20°C/68°F)
After '92: 9 – 16 kΩ (20°C/68°F)



If the resistance is out of range, remove the spark plug cap and measure the secondary coil resistance between the spark plug wire and Green terminal.

Standard '92: 10 – 16 kΩ (20°C/68°F)
After '92: 4 – 8 kΩ(20°C/68°F)

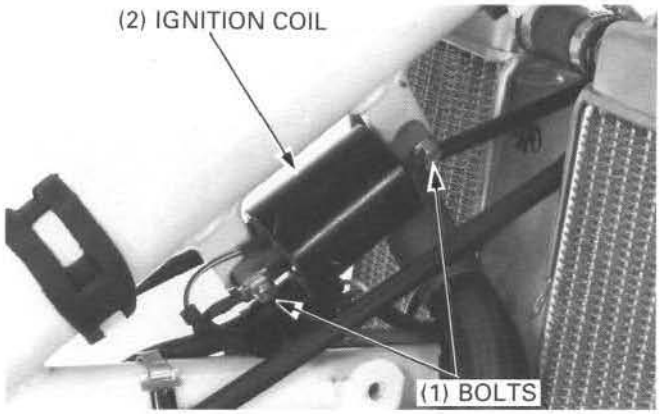


Removal/Installation

Remove the seat and fuel tank (page 2-2).
Remove the spark plug cap from the spark plug.
Disconnect the Black/Yellow and Green wire connector.

Remove the bolt and ignition coil.

Installation is in the reverse order of removal.



Alternator

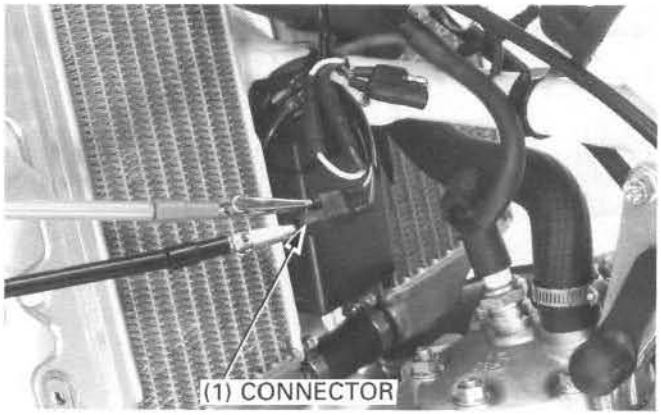
Ignition Pulse Generator Inspection

Remove the seat and fuel tank (page 2-2, 3).
Disconnect the ignition pulse generator 2P connector.

Measure the resistance between the Blue/Yellow and Green/White terminals.

Standard: 180 – 280 Ω (20°C/68°F)

If the resistance out of the specification, replace the stator as an assembly.



Excitor Coil Inspection

Remove the seat and fuel tank (page 2-2).
Disconnect the excitor connector from the ignition control module.

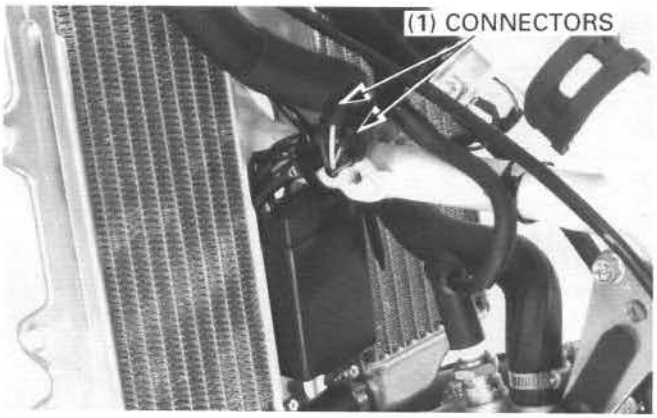
Measure the resistance between the Blue and White terminals.

Standard '92: 40 – 140 Ω (20°C/68°F)
After '92: 120 – 220 Ω (20°C/68°F)

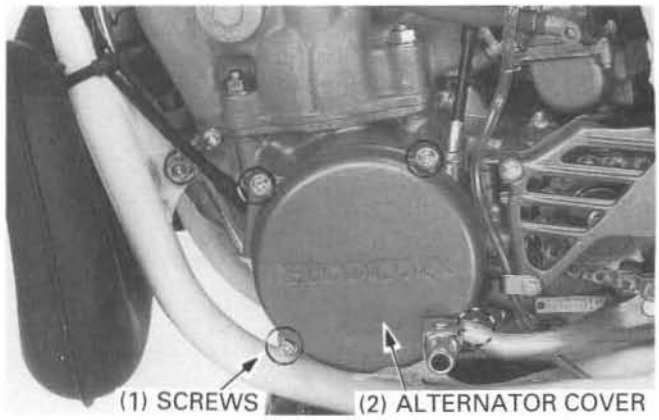
If the resistance out of the specification, replace the stator as an assembly.

Removal

Remove the seat and fuel tank (page 2-2, 3).
Disconnect the ignition pulse generator and alternator connectors and wire clamp.

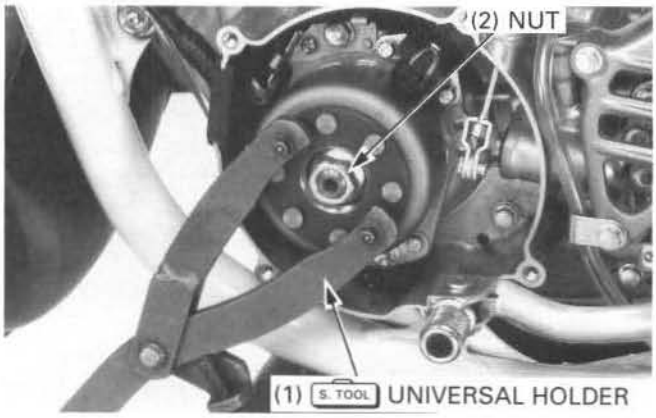


Remove the screws and alternator cover.



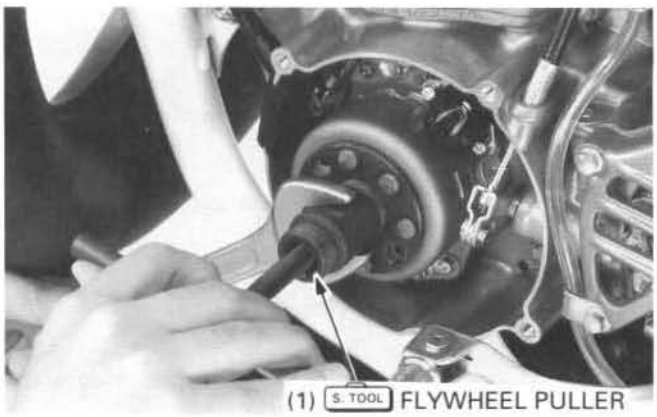
Hold the flywheel with the universal holder and remove the nut.

S. TOOL
Universal holder **07725 – 0030000**

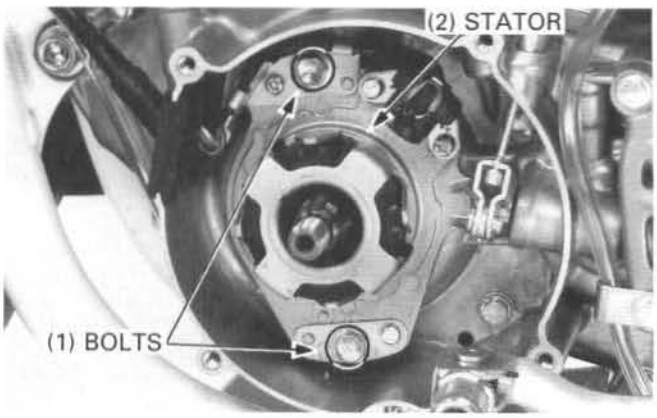


Remove the flywheel using the flywheel puller.

S. TOOL
Flywheel puller **07733 – 0010000 Not available in U.S.A or 07933 – 0010000**



Remove the stator mounting bolts, then remove the stator.



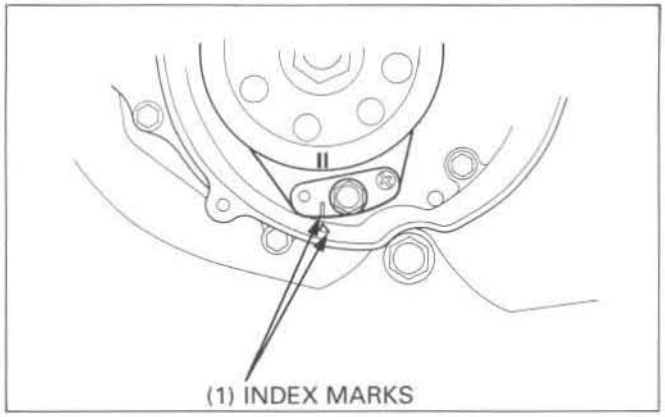
Installation

Install the stator aligning the index mark on the stator with the index mark on the left crankcase.
Install the setting plate.

Install the flywheel and washer.

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 spinning the flywheel by hand after assembled.



Hold the flywheel with the universal holder and tighten the flywheel nut to the specified torque.

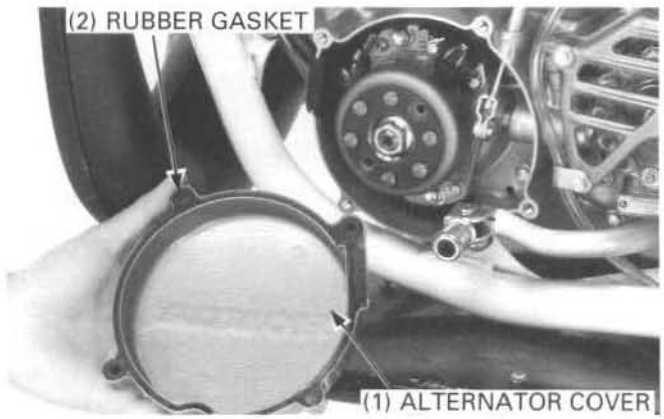
S. TOOL
Universal holder **07725 – 0030000**

Torque: 55 N·m (5.5 kg-m, 40 ft-lb)

Connect the alternator wire connectors.
Install the wire band.

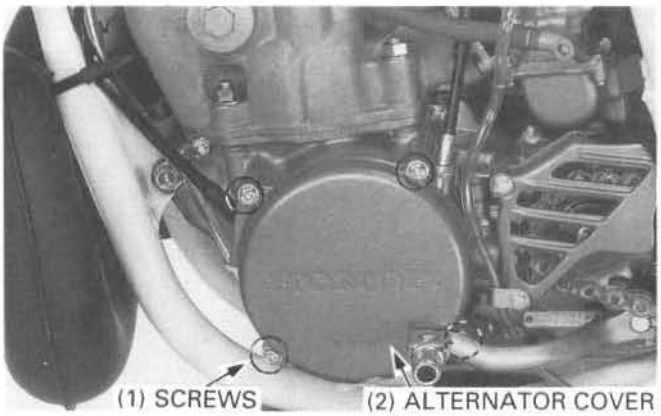
Check the ignition timing.

Check the alternator cover rubber gasket is in good condition.



Install the alterator cover and tighten the screws.

Torque: 4 N·m (0.4 kg-m, 2.9 ft-lb)



Ignition Timing

⚠ WARNING

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

NOTE

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

Remove the alternator cover (page 14-6).
Check that the stator index mark is aligned with the index mark on the crankcase.

Warm up the engine to normal operating temperature.
Attach the timing light and tachometer.

Start the engine and hold it at 5,000 rpm while pointing the timing light towards the index mark.

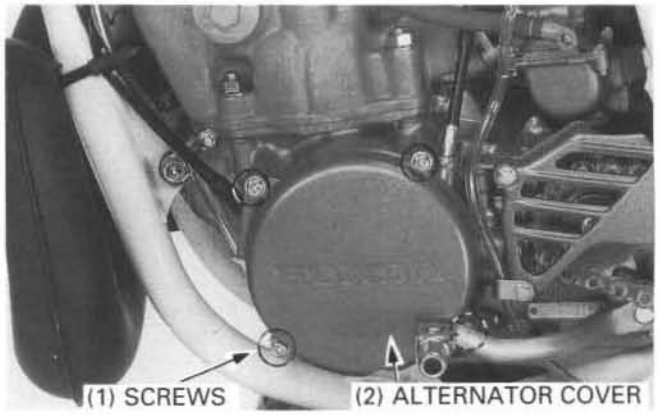
If the stator's original index mark aligns between the "F" marks, the engine is timed correctly.
Remove the testing equipment and reassemble the motorcycle.

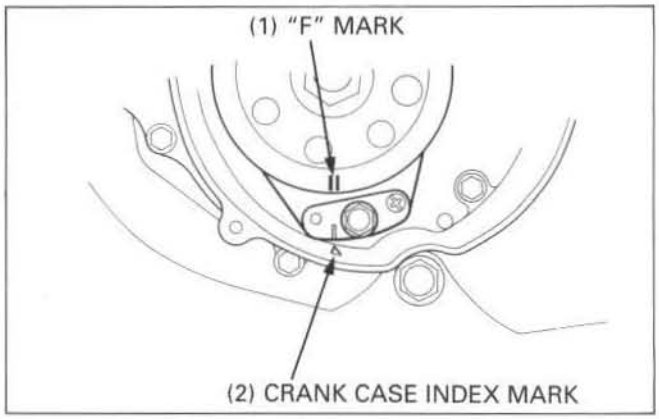
But if the stator's original index mark does not align between the "F" marks, scribe a temporary index mark on the stator setting plate that will align between the "F" marks at 5,000 rpm.
Stop the engine and do the following:

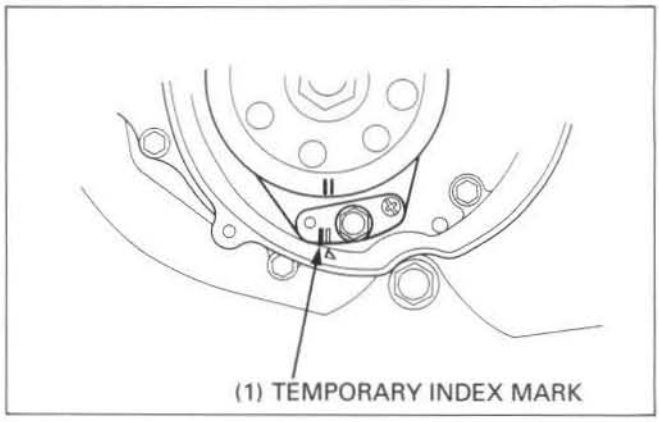
NOTE

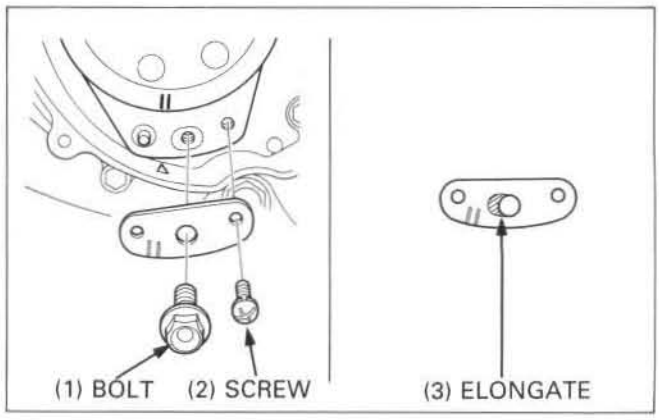
- This procedure is to be done after replacing the CDI unit, pulse generator/stator assembly or flywheel.
- If you have checked the ignition timing as a troubleshooting method and the marks did not align, inspect the CDI unit, pulse generator and stator, before performing this procedure.

Remove the stator mounting bolts, setting plate screw and setting plate.
Elongate the setting plate mounting bolt hole, then reinstall it with its temporary index mark aligned with the index mark on the crankcase.







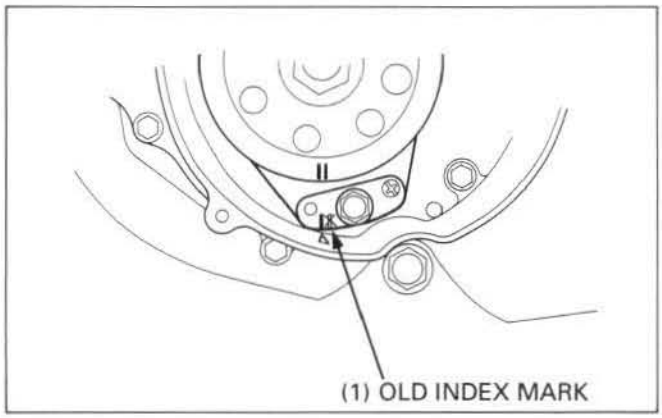


Install and tighten the stator mounting bolts and setting plate screw.

Recheck the ignition timing.
The stator setting plate index mark should now align between the "F" marks on the flywheel.

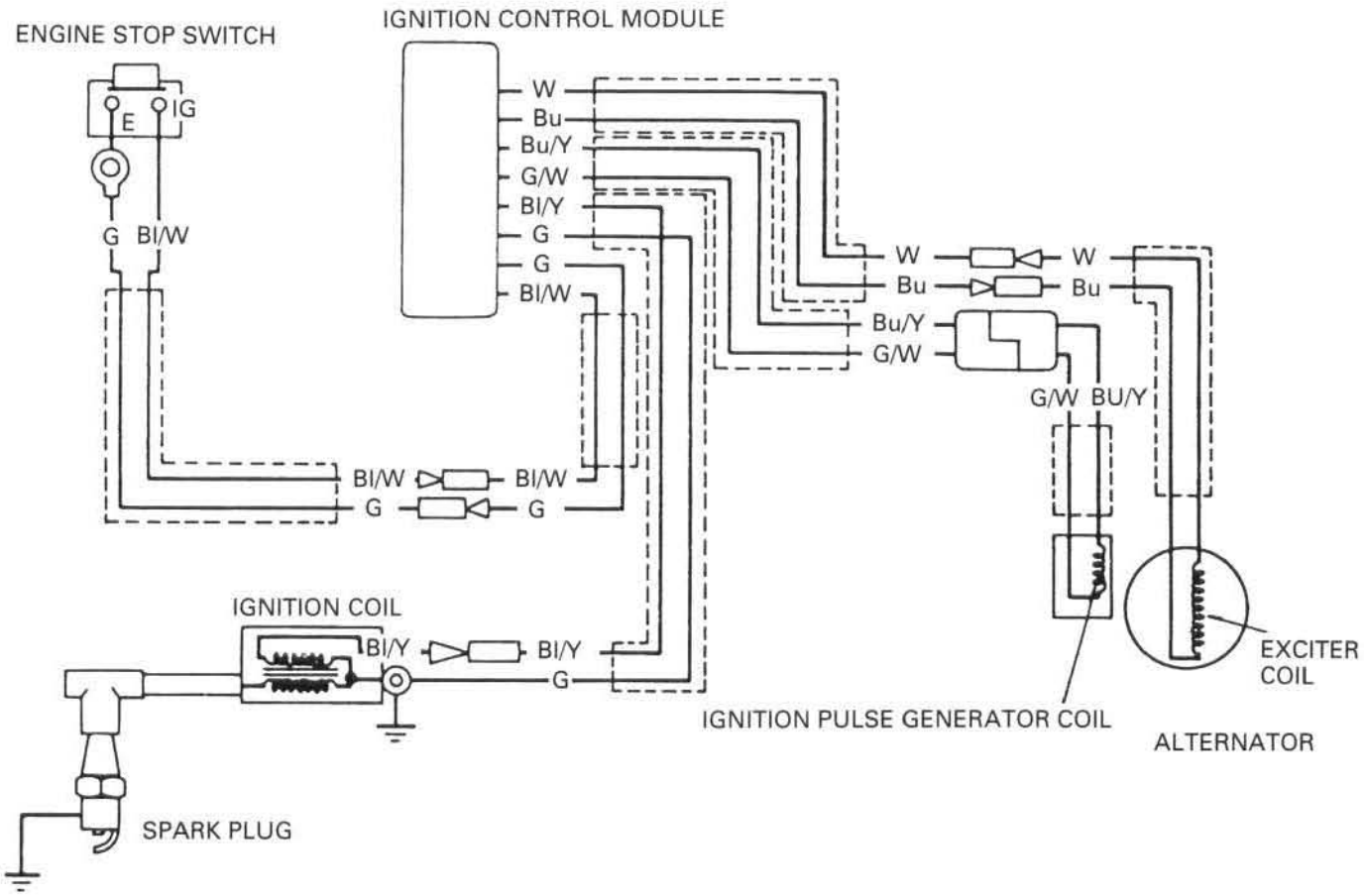
Repeat steps if the ignition timing is not correct.

Grind off the old index mark.



MEMO

15. Wiring Diagram



SWITCH CONTINUITY

ENGINE STOP SWITCH

	IG	E
FREE	—	—
PUSH	○	○
COLOR	Bl/W	G

Bl ..... Black
Y ..... Yellow
Bu .... Blue
G ..... Green
W ..... White

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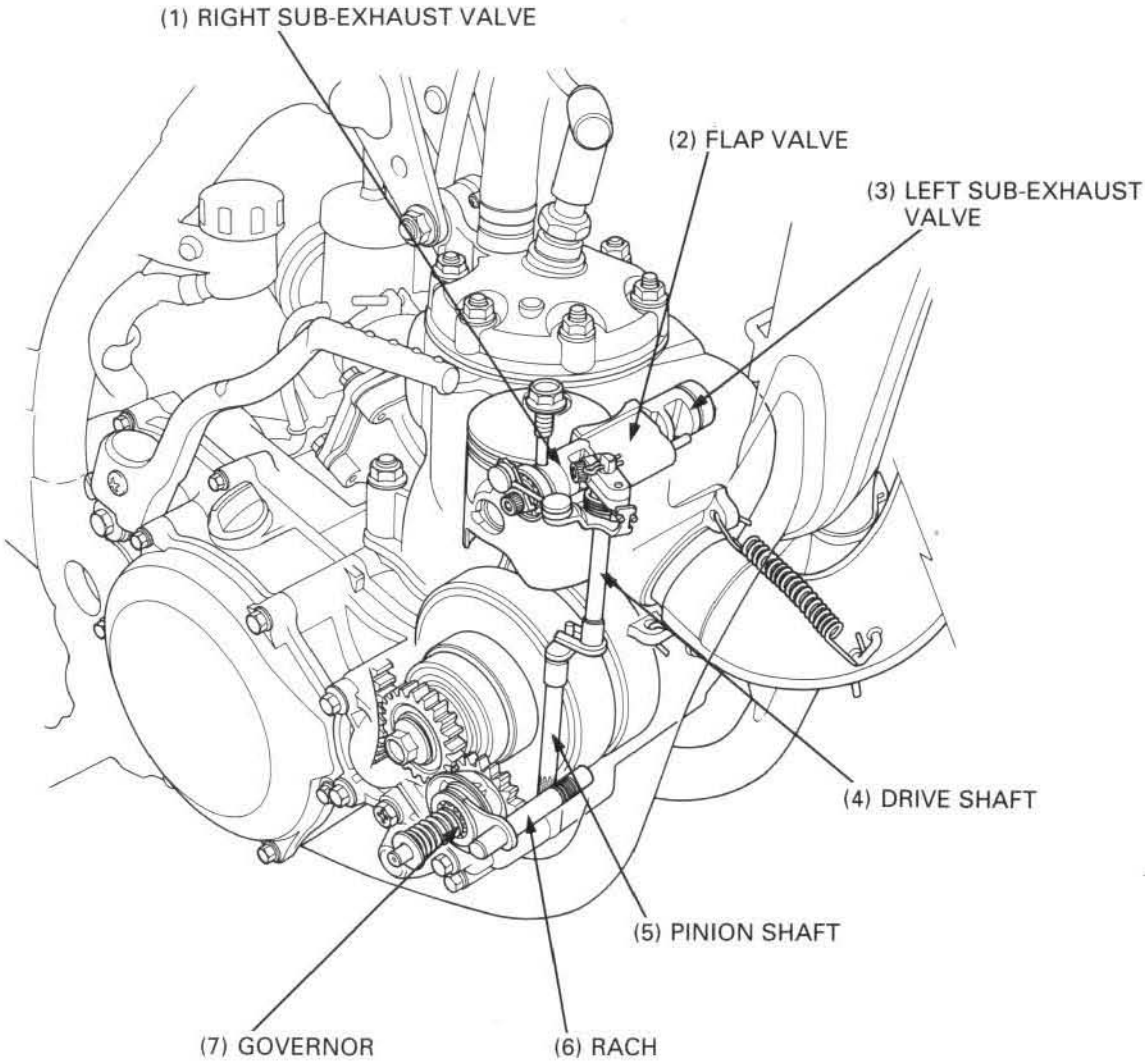
16. Technical Feature

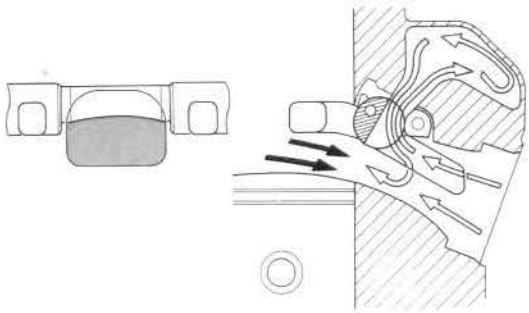
RC Valve

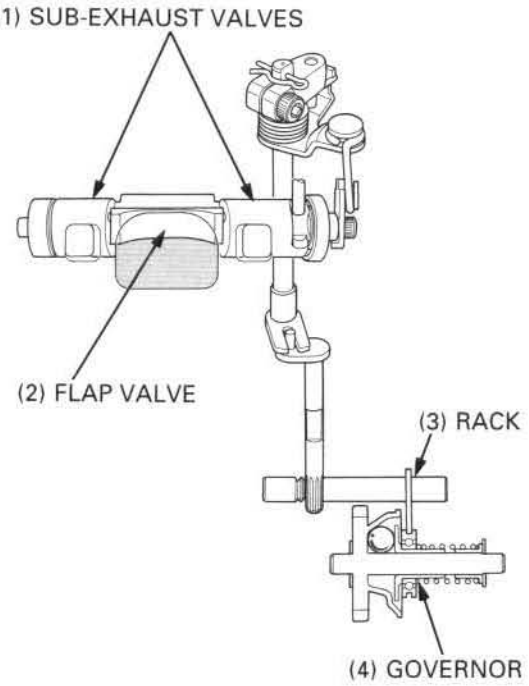
RC valves a carefully turned mechanical system that ensures a dynamic power delivery throughout the powerband. This is accomplished by openning and closing a set of values at the exhaust port, which alters the exhaust timing and the volume of the exhaust chamber.

The values are mechanically linked to the primary drive gear and are activated when the engine speed reaches a certain rpm.
The flap valve located at the cylinder exhaust port controls the exhaust timing, while the sub-exhaust valve working in concert with the flap valve opens and closes the entrance to the sub-exhaust chamber thereby altering the total volume of the exhaust chamber and controlling the exhaust pulses.
The exhaust timing is additionally controlled by one of the sub-exhaust values which directs and shuts out the exhaust pulses through the sub-exhaust port.



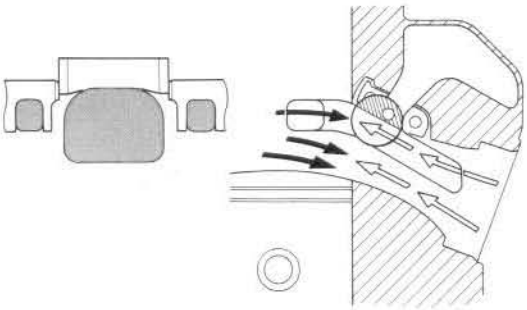
At middle or low speeds, the sub-exhaust valve open the exhaust sub-chamber, and the flap valve fully closed position by pinion spring force the centrifugal weights (steel balls) remain close to the water pump shaft so there is no force applied to the linkage between the governor and rack.

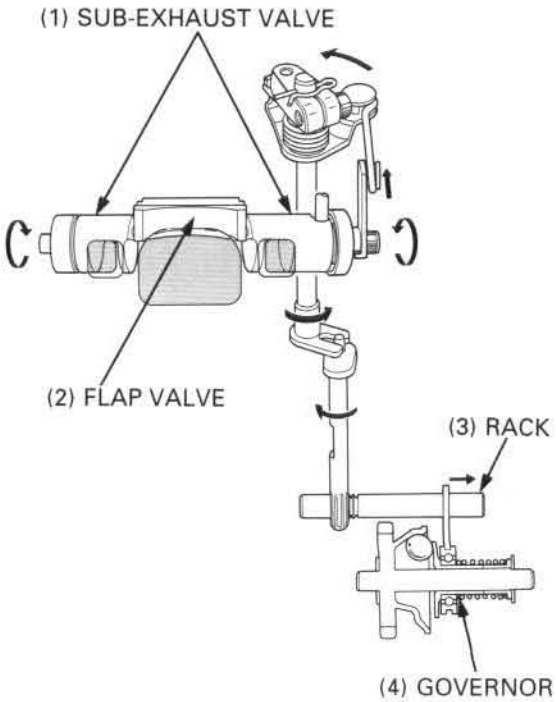




As the engine speed is increase and exceed the some rev, the centrifugal weights are out to their furthest extreme. The lack move out, then turn the pinion shaft, exhaust valve linkage and exhaust valve against the pinion spring.

The sub-exhaust valve close the sub-chamber, and sub-exhaust ports and the flap valve are fully open.





17. Troubleshooting

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 tank cap breather
Reaching Carburetor		
2. Perform a spark test	Weak Or No Spark	• Faulty spark plug • Fouled spark plug • Faulty ignition control module • Broken or shorted spark plug wire • Broken or shorted ignition coil • Faulty ignition pulse generator • Faulty excitor coil • Faulty engine stop swich • 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 starter valve seat • Clogged air cleaner
Dry		
6. Start with choke on		

Engine Lacks Power

		Possible Cause
1. Raise wheels off the ground and spin by hand	Wheels Do Not Spin Freely	• Brake dragging • Worn or damaged wheel bearing • Drive chain too tight
Wheel Spins Freely		
2. Check tire pressure	Pressure Low	• Faulty tire valve
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 • Weak clutch spring
Engine Speed Lowered When Clutch Is Released		
4. Accelerate lightly	Engine Speed Does Not Increase	• Carburetor choke is on • Clogged air cleaner • Restricted fuel flow • Clogged exhaust chamber • Pinched fuel tank cap breather • Excessive carbon build-up on the exhaust valve
Engine Speed Increase		
5. Check ignition timing	Incorrect	• Faulty ignition control module • Faulty ignition pulse generator
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	Clogged	• Carburetor dirty • Dirt getting past air cleaner
Not Clogging		
8. Remove spark plug	Fouled or Discolored	• Plug not serviced frequently enough • Spark plug is incorrect heat range • Incorrect fuel/oil mixture
Not Fouled or Discolored		

9. Check for engine overheating → Overheating →
   - Excessive carbon built-up in combustion chamber
   - Use of poor quality fuel
   - Clutch slipping
   - Lean fuel mixture
   - Wrong type of fuel

   Not Overheating ↓

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)
    - Lean fuel 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) • Faulty alternator
Correct ↓		
2. Check carburetor air screw adjustment	Incorrect →	• See page section 4
Correct ↓		
3. Check for leaking intake pipe	Leaking →	• Loose insulator clamp • Damaged insulator and reed valve gasket
No Leak ↓		
4. Perform spark test	Weak or Intermittent Spark →	• Carbon or wet fouled spark plug • Faulty ignition control module • Faulty ignition coil • Broken or shorted spark plug wire • Faulty engine stop switch • Faulty ignition pulse generator • Faulty alternator
Good Spark ↓		
5. Check H.P.P system	Incorrect →	• Faulty exhaust valve • Excessive carbon build-up on the exhaust valve
Correct		

Poor Performance At High Speed

		Possible Cause
1. Check ignition timing	Incorrect	• Faulty ignition control module • Faulty alternator
Correct ↓		
2. Disconnect fuel tube at carburetor and check for clogging	Fuel Flow Restricted	• Clogged fuel line • Clogged fuel tank cap breather • Clogged fuel valve • Clogged fuel filter
Fuel Flows Freely ↓		
3. Remove the air cleaner and check for dirty	Dirty	• Not cleaned frequently enough
Not Dirty ↓		
4. Remove the carburetor and check for clogged jets	Clogged	• Contaminants in the fuel
Not Clogged ↓		
5. Check H.P.P. system	Incorrect	• Exhaust pipe does not open fully
Correct ↓		
6. Install a large carburetor main jet	Condition Worse	• Jet size wrong, rejet in the opposite direction

Poor Handling

	Possible Cause
1. If steering is heavy	• Steering stem adjusting nut too tight • Damaged steering head bearings
2. If either wheel is wobbling	• Excessive wheel bearing play • Bent rim • Improperly installed wheel hub • Swingarm pivot bearing excessively worn • Bent frame • Loose swingarm pivot bolt
3. If the motorcycle pulls to one side	• Front and rear wheel not aligned • Bent fork • Bent swingarm • Bent axle

NOTE

- For the recommendations 4 through 11, to be most useful, the motorcycle must be adjusted as follows:
  Forks – compression damping at standard position, at standard fork oil quantity and viscosity, and air pressure zero.
  Shock – nitrogen pressure 142 psi, compression and rebound damping standard position, and spring preload adjusted so the bikes sags 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.

	Possible Cause
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 at tight track with with hard ground):	• Lower fork oil level • Use softer fork spring
6. Front end hunts at high speed: it wanders under power:	• Slide forks down 5 mm in fork clamps • 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:	• Change to lighter fork oil • Lower fork oil lever • 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 gets poor traction while accelerating away from a corner	• Decrease shock preload • Decrease shock compression damping

MEMO

18. Index