CONTENTS

HOW TO USE THIS MANUAL

Follow the Maintenance Schedule (Section 3) recommendations to ensure that the motorcycle is in peak operating condition.
Performing the first schedule maintenance is very important. It compensates for the initial wear that occurs during the break-in period.

Sections 1 through 3 apply to the whole unit, while sections 4 through 19 describe parts of the unit, grouped according to location.

Find the section you want on this page, then turn to the table of contents on page 1 of that section.

Most sections start with an assembly or system illustration, service information and troubleshooting for the section. The subsequent pages give detailed procedures.

If you don't know the source of the trouble, go to section 20, TROUBLESHOOTING.

IMPORTANT SAFETY NOTICE

Indicate a strong possibility of severe personal injury or death if instructions are not followed.

CAUTION Indicate a possibility of personal injury or 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 INJURY 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 nor vehicle safety will be jeopardised by the service methods or tools selected.

SYMBOL

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 to the symbols.

	Replace the part (s) with new one (s) before assembly.
	Use recommended engine oil, unless otherwise specified.
	Use molybdenum oil solution (mixture of the engine oil and molybdenum grease in a ratio of 1:1)
	Use multi-purpose grease (lithium based multi-purpose grease NLGI#2 or equivalent).
	Use molybdenum disulfide grease (containing more than 3% molybdenum disulfide, NLGI#2 or equivalent). Example: Molykote ® BR-2 plus manufactured by Dow Corning, U.S.A. Multi-purpose M-2 manufactured by Mitsubishi Oil Japan.
	Use molybdenum disulfide paste (containing more than 40% molybdenum disulfide, NLGI#2 or equivalent). Example: Molykote ® G-n Paste manufactured by Dow Corning, U.S.A. Honda Moly 60 (U.S.A. only) Rocol ASP manufactured by Rocol Limited, U.K. Rocol Paste manufactured by Sumico Lubricant, Japan
	Use Silicone grease.
	Apply a locking agent. Use a middle strength-locking agent unless otherwise specified.
	Apply sealant.
	Use brake fluid, DOT 4. Use the recommended brake fluid, unless otherwise specified.
	Use Fork or Suspension Fluid.

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

Brake Dust

Never use an air hose or dry brush to clean brake assemblies.

Warning

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

Brake Fluid

CAUTION:

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

Coolant

Under some conditions, the ethylene glycol in engine coolant is combustible and its flame is not visible. If the engine 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, 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 absorb. 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.

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

BATTERY HYDROGEN GAS & ELECTROLYTE

Warning

- **The battery gives off explosive gases; keep sparks, flames and cigarettes away. Provide adequate ventilation when charging.**
- **The battery contains sulfuric acid (electrolyte). Contact with skin or eyes may cause severe burns. Wear protective clothing and face Shield.**
- **If electrolyte gets on your skin, flush with water. - If electrolyte gets in your eyes, flush with water for at least 15 minutes and call a physician If swallowed, drink large quantities of water or milk of magnesia or vegetable oil and call a physician. KEEP OUT OF REACH OF CHILDREN.**

SERVICE RULES

1. Use genuine HONDA or HONDA-recommended parts and lubrications or their equivalents. Parts that do not meet HONDA's design specifications may damage the motorcycle.

2. Use the special tools designed for this product.

3. Use only metric tools when servicing this motorcycle. Metric bolts, nets and screws are not interchangeable with English fasteners. The use of incorrect tools and fasteners may damage the motorcycle.

4. Install new gaskets, 0-rings, cotter pins, lock plates, etc. When reassembling.

4. When tightening a series of bolts or nuts, begin with the larger-diameter of inner bolts first, and tighten to specified torque diagonally, in incremental steps unless a particular sequence is specified.

6. Clean parts in cleaning solvent upon disassembly. Lubricate any sliding surfaces before re-assembly.

7. After assembly, check all parts for proper installation and operation.

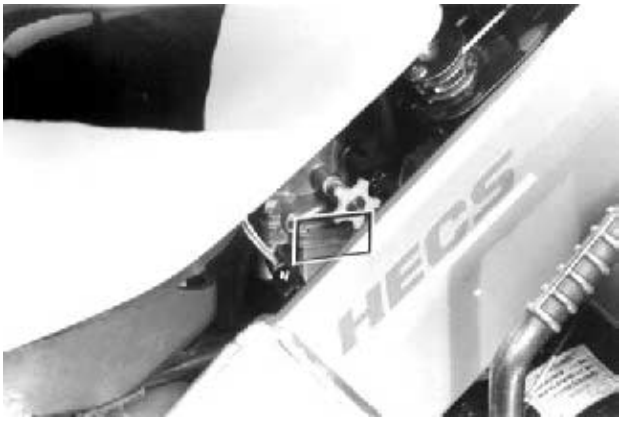
8. Route all electrical wires as shown on pages 1-22 through 1-27, Cable and Harness Routing.

Model Identification

(1) FRAME SERIAL NUMBER
The frame serial number is stamped
On the right side of the steering head.

(2) ENGINE SERIAL NUMBER
The engine serial number is
Stamped on the right crankcase.

(3) CARBURETTOR IDENTIFICATION NUMBER
The carburettor identification number is stamped
carburettor body.



SPECIFICATIONS
General

ITEM		SPECIFICATIONS
DIMENSION	Overall length	1,972mm (77.6 in)
	Overall width	683 mm (26.9 in)
	Overall height	1,062mm (41.8 in)
	Wheel base	1,337 mm (52.6 in)
	Seat height	780 mm (30.7 in)
	Foot peg height	325 mm (12.8 in)
	Ground clearance	142 mm (5.6 in)
	Dry Weight	122.4kg (269.8 lb)
	Curb Weight	131.4kg (289.7 lb)
	Maximum Weight capacity	118kg (260.1 lb)
FRAME	Frame Type	Diamond
	Front Suspension	Telescopic fork
	Fork Inner tube diameter	35 mm (1.4 in)
	Fork fluid capacity (per leg)	322 cm^3 (10.9 US oz, 11.3 Imp oz)
	Front wheel travel	117 mm (4.6 in)
	Steering head bearing	Ball Bearing
	Rear suspension	Swingarm
	Rear wheel travel	125 mm (4.9 in)
	Rear damper	Both side operation tube type
	Damper / reservoir gas pressure	908 kPa (10kgf/cm^2, 142psi)
	Pressurized gas material	Nitrogen
	Front tyre size	90/80-17 46S
	Rear tyre size	120/80-17 61S
	Front brake	Hydraulic single disc
	Rear brake	Hydraulic single disc
	Caster angle	25^O 36’
	Trail	91 mm (3.6 in)
	Fuel Tank capacity	10.5 litre (2.8 US gal, 2.3 Imp gal)
	Fuel Tank reserve capacity	2.7 litre (0.7 US gal, 0.6 Imp gal)
ENGINE	Bore and Stroke	59 mm x 54.5 mm (2.3 in x 2.1 in)
	Displacement	149 cm^3 (9.1 cu-in)
	Compression ratio	108 kPa (11.0kgf cm^2 ,156 psi) at 400min^{-1} (rpm)
	Port timing intake open	Reed valve controlled
	Port timing intake close	Reed valve controlled
	Port timing exhaust open - Hi	97.6^O BBDC
	- Low	73.9^O BBDC
	Port timing exhaust close - Hi	97.7^O ABDC
	Low	74.0^O ABDC
	Port timing scavenge open	62.6^O BBDC
	Port timing scavenge close	62.8^O ABDC
	Lubrication system	Oil automatically mixed with gasoline
	Oil pump type	Plunger type
	Cooling system	Liquid cooled
	Air filtration	Urethane form
	Crankshaft type	Assembly type
	Engine weight	23.9kg (52.7lb)

General (cont..)

ITEM		SPECIFICATIONS
CARBURETTOR	Carburettor type	Piston Valve
	Throttle bore	30 mm (1.2 in)
DRIVE TRAIN	Clutch System	Multi-plate, wet
	Clutch operation system	Cable operating
	Transmission	6 speeds constant mesh
	Primary reduction	2.954 (65/22)
	Final reduction	2.857 (40/14)
	Gear ratio 1st	2.916 (35/12)
	Gear ratio 2nd	1.937 (31/16)
	Gear ratio 3rd	1.470 (25/17)
	Gear ratio 4th	1.210 (23/19)
	Gear ratio 5th	1.043 (24/23)
	Gear ratio 6th	0.916 (22/24)
	Gearshift pattern	Left foot operated return system (1N-2-3-4-5-6)
ELECTRICAL	Ignition system	DC-CDI
	Charging system	Triple phase output alternator
	Alternator /capacity	188 W/5,000 min^{1} (rpm)
	Regulator/rectifier type	Semi conductor type
	Lighting system	Battery

LUBRICATION SYSTEM

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Engine Oil Capacity		0.76 litre (0.83 US qt, 0.67 Imp, qt)	
Recommended engine oil		Honda 2-stroke oil or equivalent	
Transmission oil capacity	At draining	0.7 litre (0.73 US qt, 0.62 Imp, qt)	
	At disassembly	0.8 litre (0.85 US qt, 0.70 Imp, qt)	
Recommended transmission oil		Honda 4-stroke oil or equivalent API Service Classification: SE,SF,or SG Viscosity: SAE 10W – 40	

FUEL SYSTEM

ITEM	STANDARD
Carburettor identification number	PE74A
Choke type	Starting enrichment circuit system
Main jet	#152
Slow jet	#42
Air screw initial opening	2 turns out
Float level	19mm (0.7 in)
Idle speed	1,300 $\pm$ 100 min^{1} (rpm)
Throttle grip free play	2 – 6mm (0.08 – 0.24in)

COOLING SYSTEM

ITEM		STANDARD
Cooling capacity	Radiator and engine	1.2 Litre (1.27US qt, 1.06 Imp qt)
Radiator cap relief pressure		108 – 137 kPa (1.1 – 1.4kgf/cm^2, 16-21 psi)
Standard coolant concentration		50% mixture with soft water

CYLINDER HEAD/CYLINDER/PISTON

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Cylinder compression		108kPa (11.0 kgf/cm^2, 156 psi at 400 min^{-1} (rpm)	
Cylinder head warpage			0.05 (0.002)
Cylinder I.D.	Code A	59.010 – 59.015 (2.3232 – 2.3234)	59.05 (5.325)
	No mark	59.005 – 59.010 (2.3230 – 2.3232)	59.05 (5.325)
	Code C	59.000 – 59.005 (2.3228 – 2.3230)	59.05 (5.325)
Cylinder out of round			0.05 (0.002)
Cylinder warpage			0.05 (0.002)
Piston mark direction		"IN" mark facing toward the intake side	
Piston pin O.D.	Code A	58.965 – 58.970 (2.3215 – 2.3216)	58.92 (5.320)
	Code B	58.960 – 58.965 (2.3213 – 2.3215)	58.92 (5.320)
	Code C	58.955 – 58.960 (2.3211 – 2.3213)	58.92 (5.320)
Piston O.D. measurement point		12mm (0.5in) from the bottom	
Piston pin hole I.D.		16.002 – 16.015 (0.6300 – 0.6305)	16.03 (0.631)
Cylinder-to-piston clearance		0.040 – 0.050 (0.0016 – 0.0019)	0.080 (0.0031)
Piston pin O.D.		15.994 – 16.000 (0.6927 – 0.6299)	15.98 (0.629)
Piston-to-piston pin clearance		0.002 – 0.021 (0.0001 – 0.0008)	0.04 (0.002)
Piston ring-to-ring groove clearance			0.12 (0.05)
Ring end gap	Top	0.38 – 0.53 (0.015 – 0.021)	0.65 (0.026)
	Second	0.38 – 0.53 (0.015 – 0.021)	0.65 (0.026)
Ring mark	Top	3R	
	Second	4R	
Connecting rod small end I.D.		20.002 – 20.014 (0.7875 – 0.7880)	20.03 (0.789)

CLUTCH/GEARSHIFT LINKAGE/KICKSTARTER

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Clutch lever free play		10-20 (0.4-0.8)	-
Clutch outer guide	O.D.	22.930 – 22.950 (0.9028 – 0.9035)	22.80 (0.898)
	I.D.	16.988 – 17.010 (0.6688 – 0.6697)	17.04 (0.671)
Clutch outer I.D.		23.000 – 23.021 (0.9055 – 0.9063)	23.06 (0.908)
Mainshaft O.D. at clutch outer guide		16.966 – 16.984 (0.6680 – 0.6687)	16.95 (0.667)
Clutch spring free length		35.76 (1.408)	33.6 (1 32)
Clutch disc thickness	A	2.9 - 3.08 (0.115 – 0.121)	2.5 (0 0.98)
	B	2.62 – 2.78 (0.103 – 0.109)	2.2 (0 086)
Clutch plate warpage			0.20 (0.01)
Pinion gear I.D.		16.016 – 16.034 (0.6305 – 0.6313)	16.07 (0 633)
Kickstarter spindle O.D.		15.966 – 15.984 (0.6286 – 0.6293)	15.94 (0 628)
Kickstarter idle gear I.D.		20.020 – 20.041 (0.7882 – 0.7890)	20.10 (0 791)
Idle gear bushing	O.D.	19.984 – 19-995 (0.7868 – 0.7872)	19.90 (0 783)
	I.D.	17.010 – 17.035 (0.6697 – 0.6707)	17.10 (0.673)

CRANKSHAFT/TRANSMISSION

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Connecting rod big end	Side clearance	0.3 – 0.7 (0.012 – 0.028)	
	Radial clearance		0.05(0.002)
Crankshaft runout	A		0.05(0.002)
	B		0.03(0.001)
Transmission gear I.D.	M5, M6	22.020–22.041(0.8669–0.8678)	22.10(0.870)
	C1	20.020-20.041(0.7882-0.7890)	20.10(0.791)
	C2, C4	22.020–22.041(0.8669–0.8678)	22.10(0.870)
	C3	25.020-25.041(0.9850-0.9859)	25.10(0.988)
Transmission gear bushing O.D.	M5, M6	21.979-22.000(0.8653-0.8661)	21.90(0.862)
	C1	19.984-19.995(0.7868-0.7872)	19.90(0.783)
	C2	21.984-22.005(0.8655-0.8663)	21.90(0.862)
	C3	24.984-24.993(0.9836-0.9840)	24.90(0.980)
Transmission gear bushing I.D.	M5, M6	20.000-20.021(0.7874-0.7882)	20.01(0.791)
	C1	17.016-17.034(0.6700-0.6706)	17.10(0.673)
	C2	20.020-20.041(0.7882-0.7890)	20.10(0.791)
	C3	22.020–22.041(0.8669–0.8678)	22.10(0.870)
Gear-to-bushing clearance	M5, M6	0.020-0.062(0.0008-0.0024)	0.10(0.004)
	C1	0.025-0.057(0.0010-0.0022)	0.10(0.004)
	C2	0.015-0.057(0.0006-0.0022)	0.10(0.004)
	C3	0.027-0.057(0.0011-0.0022)	0.10(0.004)
Mainshaft O.D.	M5	19.959-19.980(0.7858-0.7866)	19.92(0.784)
	Right Crankcase journal	16.966-16.984(0.6683-0.6687)	16.95(0.667)
Countershaft O.D.	C1	16.975-16.984(0.6683-0.6687)	16.95(0.667)
	C2	19.974-19.984(0.7863-0.7867)	19.94(0.785)
	C3, C4	21.959-21.980(0.8645-0.8653)	21.09(0.830)
Gear-to-shaft clearance	C4	0.040-0.082(0.0016-0.0032)	0.10(0.004)
Gear bushing-to-shaft clearance	M5, M6	0.020-0.062(0.0001-0.0024)	0.10(0.004)
	C1	0.032-0.059(0.0013-0.0023)	0.10(0.004)
	C2	0.033-0.067(0.0013-0.0026)	0.10(0.004)
	C3	0.040-0.082(0.0016-0.0032)	0.10(0.004)
Shift fork claw thickness		4.93-5.00(0.194-0.197)	4.80(0.189)
Shift fork I.D.		12.041-12.056(0.4741-0.4746)	12.65(0.475)
Shift fork shaft O.D		11.983-11.994(0.4718-0.4722)	11.973(0.4714)

FRONT WHEEL / SUSPENSION/STEERING

ITEM		STANDARD	SERVICE LIMIT
Minimum tire tread depth			1.5 (0.06)
Cold tire pressure	Driver only	200kPa (2.00kgf/cm^2, 29psi)	
	Driver & Passenger	200kPa (2.00kgf/cm^2, 29psi)	
Front axle runout			0.2 (0.008)
Front wheel rim run out	Radial		2.0 (0.08)
	Axial		2.0 (0.08)
Wheel balance weight		Max 60g	
Fork spring free length		310.4 (12.22)	304.2 (11.98)
Fork spring installed direction		Tapered side facing down	
Fork tube runout			0.2 (0.008)
Recommended fork oil			
Fork oil level		125 (4.9)	
Fork oil capacity		322 cm^3 (10.9 US oz, 11.3 Imp oz)	
Steering bearing preload		1.0 – 1.5 N.m (0.1 – 0.15 kgf.m)	

REAR WHEEL/SUSPENSION

ITEM		STANDARD	SERVICE LIMIT
Minimum tire tread depth			2.0 (0.08)
Cold tire pressure	Driver only	200kPa (2.00kgf/cm^2, 29psi)	
	Driver & Passenger	200kPa (2.00kgf/cm^2, 29psi)	
Rear wheel rim run out	Radial		2.0 (0.08)
	Axial		2.0 (0.08)
Wheel balance weight		Max 60g	
Drive chain slack		35 mm	
Drive chain link		108	
Drive chain size	DID	525VC5	
	RK	520MOZ9	
Damper/reservoir gas pressure		980 kPa (10 kgf/cm^2, 142psi)	
Pressurize gas material		Nitrogen	
Damper rod compressed force at 10mm (0.4in) compressed		272 kg	
Damper/reservoir gas release drilling point		See page 14-15	

BRAKES

ITEM		STANDARD	SERVICE LIMIT
FRONT	Brake fluid	DOT 3 or 4	
	Brake pad wear indicator		Indicator groove
	Brake disc thickness	3.8 – 4.2 (0.15 – 0.17)	3.0(0.12)
	Brake disc runout		0.3(0.01)
	Master cylinder I.D	10.957-10.984 (0.4314-0.4326)	10.945(0.4309)
	Master cylinder O.D on secondary cup side	10.957-10.984 (0.4314-0.4326)	10.945(0.4309)
	Caliper cylinder I.D.	25.40-25.45(0.999-1.002)	25.46(1.002)
	Caliper piston O.D.	25.335-25.368(0.9974-0.9987)	25.300(0.9960)
REAR	Brake fluid	DOT 3 or 4	
	Brake pad wear indicator		Indicator groove
	Brake disc thickness	3.8-4.2 (0.15-0.17)	3.0(0.12)
	Brake disc runout		0.3(0.01)
	Master cylinder I.D	12.700-12.743(0.5000-0.5017)	12.755(0.5022)
	Master cylinder O.D on secondary cup side	12.657-12.684(0.4983-0.4994)	12.645(0.4978)
	Caliper cylinder I.D.	25.40-250.45(0.999-1.002)	25.46(1.002)
	Caliper piston O.D.	25.335-25.368(0.9974-0.9987)	25.300(0.9960)

BATTERY/CHARGING SYSTEM

ITEM		SPECIFICATIONS
Alternator rated output		180 W/5,000 min^{1} (rpm)
Alternator charging coil resistance (At 20^{O}C / 68^{O}F)		0.1 – 1.0 ⊘
Regulator/rectifier: regulated voltage (At 20^{O}C / 68^{O}F)		14.7 ± 0.5V at 5,000 min^{1} (rpm)
Current leakage		1mA maximum
Battery capacity		12V – 3A
Battery type		YB3L-A
Battery charging rate	Normal	0.3A / 10h
	Quick	3A / 0.5h

IGNITION SYSTEM

ITEM			SPECIFICATIONS
Spark Plug	Standard	NGK	B9ES
		Nippondenso	W27ES-U
	For cold climate riding	NGK	B8ES
		Nippondenso	W24ES-U
Ignition timing *F* mark			BTDC 12 ± 3^{O} / 1,200 ± 200 min^{1} (rpm)
Advance	Start		1,900 ± 200 min^{1} (rpm)
	Stop		3,500 ± 200 min^{1} (rpm)
Full advance			BTDC 35 ± 3^{O}
Ignition cut-out revolution			13,000 ± 200 min^{1} (rpm)
Ignition coil Peak Voltage			100V minimum
Ignition Pulse generator peak voltage			0.7 V minimum

LIGHTS/METERS/SWITCHES

ITEM	SPECIFICATIONS
Main fuse	20 A
Fuse	10 A X 3
Headlight (high/low beam)	12 V – 60/55 W X 2
Tail/Brake Light	12 V – 5/18 W X 2
Front turn signal light	12 V – 10 W X 2
Rear turn signal light	12 V – 10 W X 2
Instruments light	12 V – 1.7 W X 2
Oil pressure warning indicator	LED
High beam indicator	12 V – 1.7 W
Turn signal indicator	12 V – 1.7 W
Neutral indicator	12 V – 3.4 W

TORQUE VALUES

STANDARD

FASTENERS TYPE	TORQUE N.m (kgf.m, lbf.ft)	FASTENERS TYPE	TORQUE N.m (kgf.m, lbf.ft)
5 mm hex bolt and nut	5 (0.5, 3.6)	6 mm screw	9 (0.9, 6.5)
6 mm hex bolt and nut	10 (1.0 , 7)	6 mm flange bolt (8mm head)	9 (0.9, 6.5)
8 mm hex bolt and nut	22 (2.2 , 16)	6 mm flange bolt (10mm head and nut)	
10 mm hex bolt and nut	34 (3.5 , 25)		12 (1.2, 9)
12 mm hex bolt and nut	54 (5.5 , 40)	8 mm flange bolt and nut	26 (2.7, 20)
5 mm screw	4 (0.4 , 2.9)	10mm flange bolt and nut	39 (4.0, 29)

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

NOTES:
1. Apply sealant to the treads
2. Apply a locking agent to the threads
3. Apply molybdenum disulfide oil to the threads and flange surfaces
4. Left hand threads
5. Stake
6. Apply oil to the threads and flange surface
7. Apply clean engine oil to the O-ring
8. UBS bolts
9. U-nut
10. ALOC bolt; Replace with a new one

ENGINE

ITEM	QTY	THREAD DIA (mm)	TORQUE N.m (kgf-m, lbf-ft)	REMARKS
LUBRICANT SYSTEM				
Oil drain bolt	1	8	21 (2.1, 15)	
COOLANT SYSTEM				
Water Pump impeller	1	7	12 (1.2, 9)	
CYLINDER HEAD / CYLINDER /PISTON				
Spark Plug	1	14	20 (2.0, 14)	
Cylinder head nut	6	8	23 (2.3, 17)	
Cylinder nut	4	8	23 (2.3, 17)	
Cylinder stud bolt	4	8	10 (1.0, 7)	
RC VALVE				
RC valve timing pulley nut	1	6	9 (0.9, 6.5)	Note 4
CLUTCH/GEARSHIFT LINKAGE/KICKSTARTER				
Right crankcase cover bolt 6mm	10	8	10 (1.0, 7)	
8mm	1	8	26 (2.7, 20)	
Clutch cable adjuster lock nut	1	8	23 (2.3, 17)	
Primary drive gear nut	1	12	66 (6.7, 48)	Note 6
Clutch lifter plate bolt	4	6	12 (1.2, 9)	
Clutch centre lock nut	1	14	64 (6.5, 47)	Note 6
Shift drum centre pin	1	8	22 (2.2, 16)	
Shift return spring pin	1	8	22 (2.2, 16)	Note 2
Shift drum stopper arm bolt	1	6	12 (1.2, 9)	
ALTERNATOR/BALANCER				
Timing hole cap	1	14	3 (0.3, 2.2)	
Flywheel nut	1	12	64 (6.5, 47)	
Balancer driven gear nut	1	14	54 (5.5, 40)	
Ignition pulse generator socket bolt	2	6	10 (1.0, 7)	Note 2
CRANKCASE/CRANKSHAFT/TRANSMISSION				
Crank case bolt	12	6	10 (1.0, 7)	
Bearing set plate bolt	6	6	10 (1.0, 7)	Note 2
OTHER FASTERNERS				
Neutral Switch	1	10	16 (1.6, 12)	

FRAME

ITEM	QTY	THREAD DIA (mm)	TORQUE N.m (kgf-m, lbf-ft)	REMARKS
FUEL SYSTEM				
Fuel valve nut	1	18	27 (2.8, 20)	
Fuel filler cap socket bolt	7	4	1.5 (0.15, 1.1)	
ENGINE HANGER				
Front engine hanger nut	1	10	55 (5.6, 41)	
Rear upper engine hanger nut	1	10	55 (5.6, 41)	
Rear lower engine hanger nut	1	10	76 (7.8, 56)	
FRONT WHEEL/SUSPENSION/STEERING				
Front axle nut	1	14	59 (6.0, 43)	
Steering stem nut	1	24	88 (9.0, 65)	Note 9
Steering top thread	1	26	1 (0.1, 1.7)	See Pg 13
Top bridge pinch bolt	1	8	22 (2.2, 16)	
Bottom bridge pinch bolt	2	8	27 (2.8, 20)	
Fork cap	2	32	22 (2.2, 16)	
Fork socket bolt	2	8	20 (2.0, 14)	Note 2
REAR WHEEL / SUSPENSION				
Rear wheel nut	1	12	108 (11.0, 80)	
Rear axle nut	1	30	226 (23.0, 166)	Note 6
Driven sprocket nut	5	8	30 (3.1, 22)	Note 9
Bearing holder pinch bolt	1	16	73 (7.4, 54)	
Swingarm pivot nut	1	14	88 (9.0, 65)	
Drive chain slider screw	4	6	5.1 (0.52, 3.8)	
Shock absorber upper mounting bolt	1	10	44 (4.5, 33)	
Shock absorber lower mounting bolt	1	10	44 (4.5, 33)	Note 9
BRAKE SYSTEM				
Front brake disc bolt	6	8	42 (4.3, 31)	Note 2
Rear brake disc bolt	4	8	34 (3.5, 25)	Note 9
Brake oil bolt	4	10	34 (3.5, 25)	
Pad pin	4	10	17 (1.7, 12)	
Pad pin plug	4	10	2.5 (0.25, 1.8)	
Caliper bleeder	2	8	5.4 (0.55, 4.0)	
Brake lever pivot nut	1	6	5.9 (0.60, 4.3)	
Front brake light switch screw	1	4	1.2 (0.12, 0.9)	
Front master cylinder cover screw	2	4	1.5 (0.15, 1.1)	
Front caliper bracket bolt	2	8	30 (3.1, 22)	Note 2
Front caliper pin bolt	1	8	17 (1.7, 12)	
Front caliper torque nut	1	8	22 (2.2, 16)	Note 2
Rear master cylinder cover screw	2	4	1.5 (0.15, 1.1)	
Rear master cylinder joint screw	1	4	1.5 (0.15, 1.1)	
Rear master cylinder lower joint nut	1	8	18 (1.8, 13)	
Rear caliper holder bolt	1	8	26 (2.7, 20)	Note 10
Rear caliper pin bolt	1	8	17 (1.7, 12)	
Rear caliper torque nut	1	8	22 (2.2, 16)	Note 2
Rear caliper hanger pin	2	10	17 (1.7, 12)	
OTHERS				
Side stand pivot nut	1	10	45 (4.6, 33)	
Right and left footpeg holder bolt	4	8	32 (3.3, 24)	
Ignition coil mounting bolt	2	6	12 (1.2, 9)	

TOOLS

Notes: 1. Equivalent commercially available
2. Alternative tools

DESCRIPTION	TOOL NUMBER	APPLICABILITY	REF. SEC
Float level gauge	07401-0010000		5
Universal bearing puller	07631-0010000		12
Wrench, 20 x 24 mm	07716-0020100		10
Extension bar	07716-0020500		10
Gear holder	07724-0010100		10
Flywheel holder	07725-0040000		11
Sliding weight	07741-0010201		12
Attachment 32x35mm	07746-0010100		14
Attachment 37x40mm	07746-0010200		12,14
Attachment 42x47mm	07746-0010300		12,13
Attachment 52x55mm	07746-0010400		12,14
Attachment 62x67mm	07746-0010500		12,14
Attachment 24x26mm	07746-0010700		6
Pilot, 10mm	07746-0040100		6
Pilot, 15mm	07746-0040300		12,13,14
Pilot, 17mm	07746-0040400		12
Pilot, 20mm	07746-0040500		12
Pilot, 25mm	07746-0040600		12
Pilot, 40mm	07746-0040900		14
Pilot, 22mm	07746-0041000		12
Bearing remover shaft	07746-0050100		13
Bearing remover head, 15mm	07746-0050400		13
Fork seal driver	07747-0010100		13
Driver	077490010000		6,12,13,14
Steering stem socket	07916-3710101		13
Clutch center holder	07923KE10000		10
Bearing remover set, 10mm Remover shaft Remover head Sliding weight	07936-GE00000 07936-GE00100 07936-GE00200 07741-0010201		6
Bearing remover head, 16mm	07936MK50100		12
Remover shaft, 15mm	07936KC10100		12
Driver attachment	07946-3290000		13
Steering stem driver	07946-4300001		13
Driver shaft	07946-MJ00100		14
Fork seal driver attachment	07947-KA20200		13
Crank assembly collar	07964MB00200		12
Crank assembly shaft	07965VM00200		12
Flywheel puller	07KMC-HE00100		11
Bearing remover attachment	07LMC-KV30200		14
Mechanical seal driver	07PMD-KBP0100		6
Case puller	07SMC-0010001		12

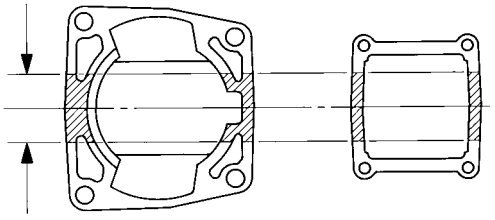
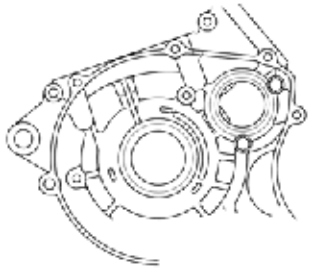
LUBRICATION & SEAL POINTS

ENGINE

LOCATION	MATERIAL	REMARKS
Crankshaft • Connecting rod big end Small end • Right and left journal Cylinder bore inner surface Piston outer surface Piston pin outer surface Piston ring outer surface Right and left crankshaft bearing	Honda-2-stroke oil or equivalent	
Connecting rod big end	Molybdenum disulfide oil solution (Mixture of the engine oil and molybdenum diulfide grease with the ration 1:1)	
Mainshaft • Spline area • Rotating, sliding area and tooth Countershaft • Spline area • Rotating, sliding area and tooth Kickstarter spindle • Spline area • Rotating, sliding area and tooth Water pump shaft rotating, sliding area and tooth Clutch lever sliding surface Primary drive gear nut threads and flange surface Each Bearing • Right and left mainshaft bearing • Right and left countershaft bearing • Shift drum bearing • Water pump shaft bearing • Clutch outer needle bearing • Balancer shaft bearing Each transmission gear tooth	Recommended transmission oil	
Clutch lifter arm sliding surface Each oil seal lip • Right and left crankshaft oil seal • Countershaft oil seal • Water pump shaft oil seal • Flap valve shaft oil seal • Balancer shaft oil seal • Kickstart shaft oil seal • Gearshift spindle oil seal • Clutch lifter arm oil seal Oil pump O-ring	Multipurpose grease; (Litium based grease)	

LUBRICATION & SEAL POINTS

ENGINE

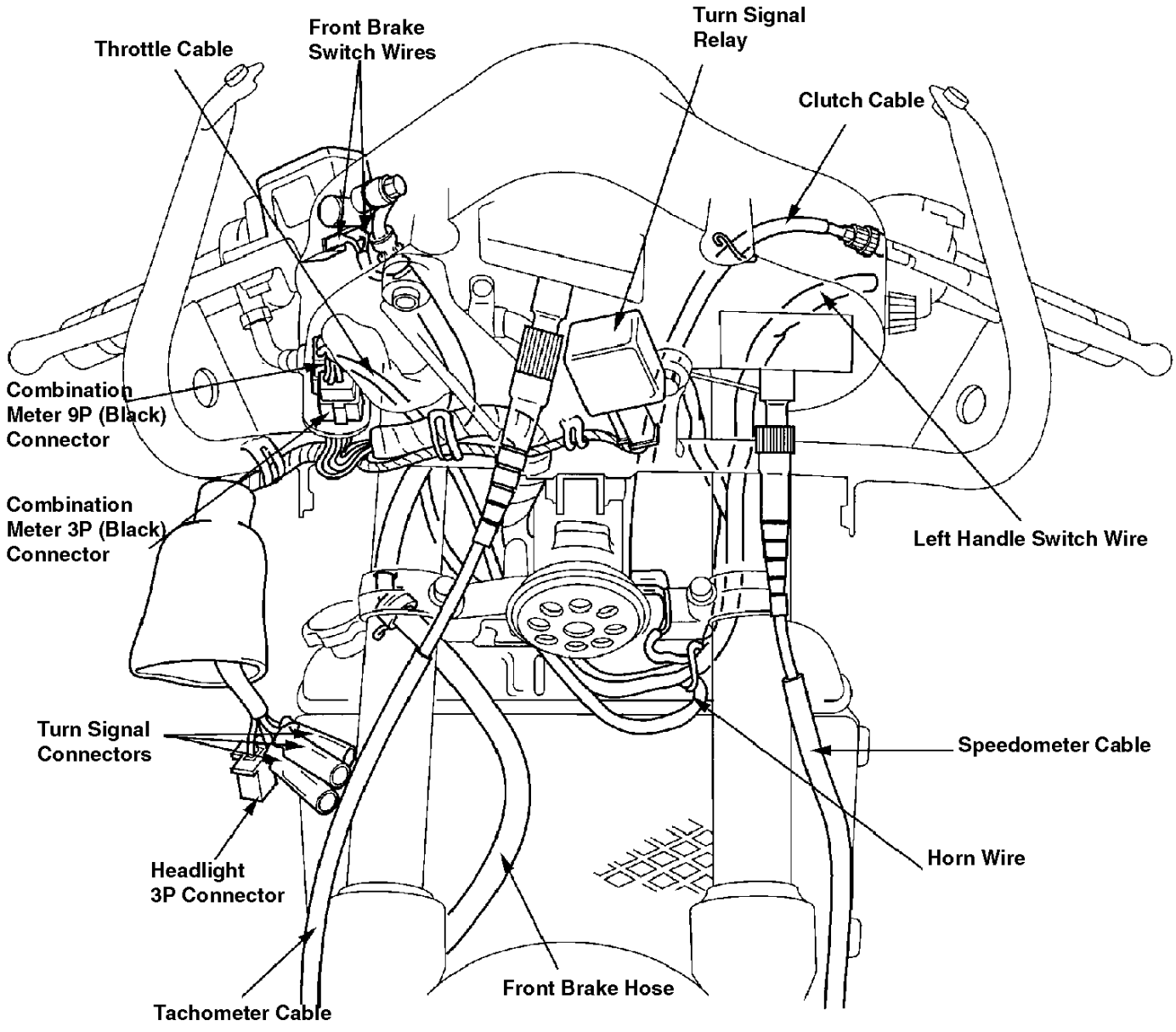
LOCATION	MATERIAL	REMARKS
Thermo unit threads Cylinder Right and left crankcase mating surface Reed valve Right and left crankcase mating surface 	Liquid sealant Example: Three Bond #1207B manufactured by 3M, co, Ltd	4 ± 1 mm
Crankcase bolt threads  Ignition pulse generator socket bolt Kickstarter stopper plate bolt Shaft return spring pin Bearing set plate bolt	Locking agent	6.5 ± 1 mm

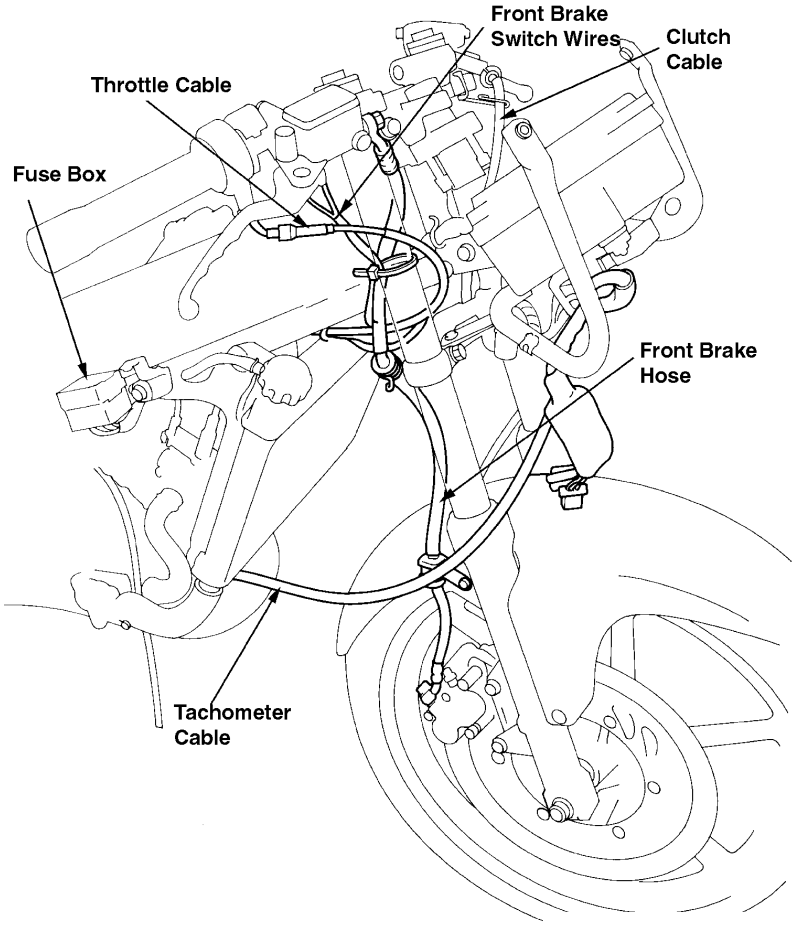
LUBRICATION & SEAL POINTS

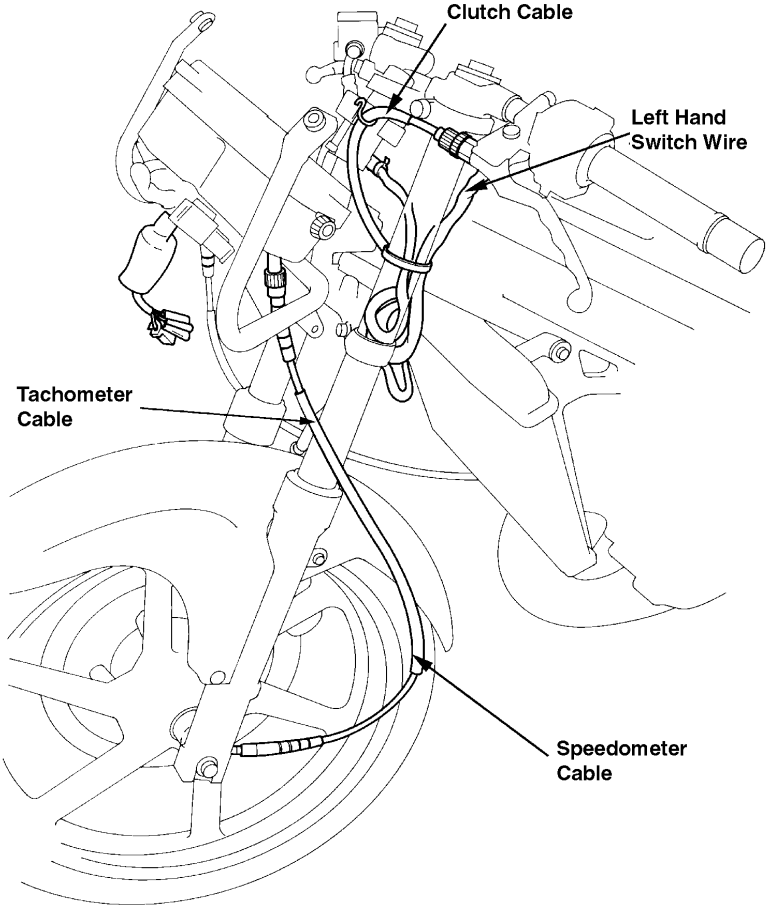
FRAME

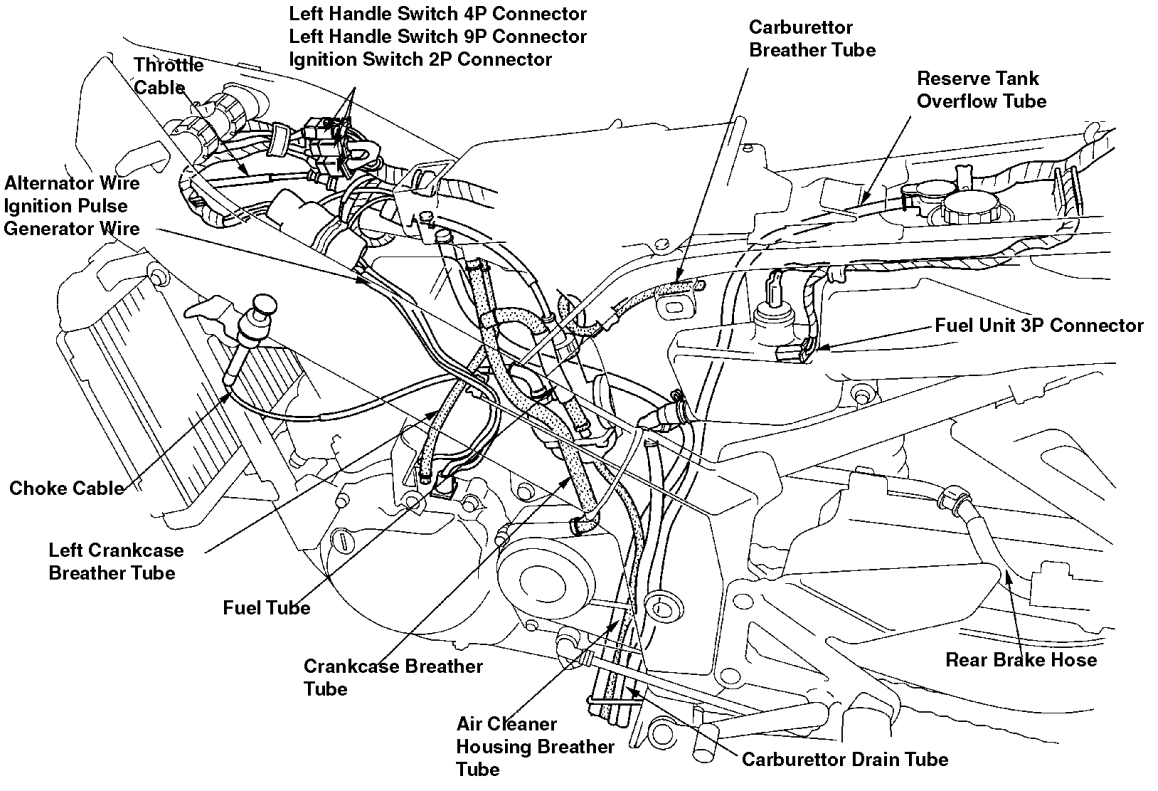
LOCATION	MATERIAL	REMARKS
Rear axle nut threads and flange surface	Recommended engine oil	
Caliper pin bolt sliding surface Master cylinder push rod • Master piston contacting area Brake lever • Master piston contacting area • Pivot bolt sliding surface Junction box and boot inner surface	Silicone grease	0.4g
Rear caliper torque nut threads Fork socket bolt Throttle grip pipe and handle grip matching surface Left handle grip inner surface Air cleaner housing and connecting tube matching surface	Locking agent	
Brake caliper piston sliding surface Master cylinder piston cap Master cylinder piston sliding surface	DOT 4 brake fluid	
Front and rear wheel dust seal lip Speedometer gear box inside Speedometer gear tooth and inner dia Steering head bearing and cone race Swingarm pivot bearing Swingarm dust seal lip Throttle grip pipe sliding surface Rear brake pedal pivot surface Speedometer cable O-ring Change pedal pivot surface Tie rod sliding surface Side stand pivot surface Seat catch and lever sliding surface Kick arm joint sliding surface	Multipurpose grease; (Litium based grease)	
Front fork oil seal lip	Fork fluid	
Clutch lever pivot bolt sliding surface	Brake grease	

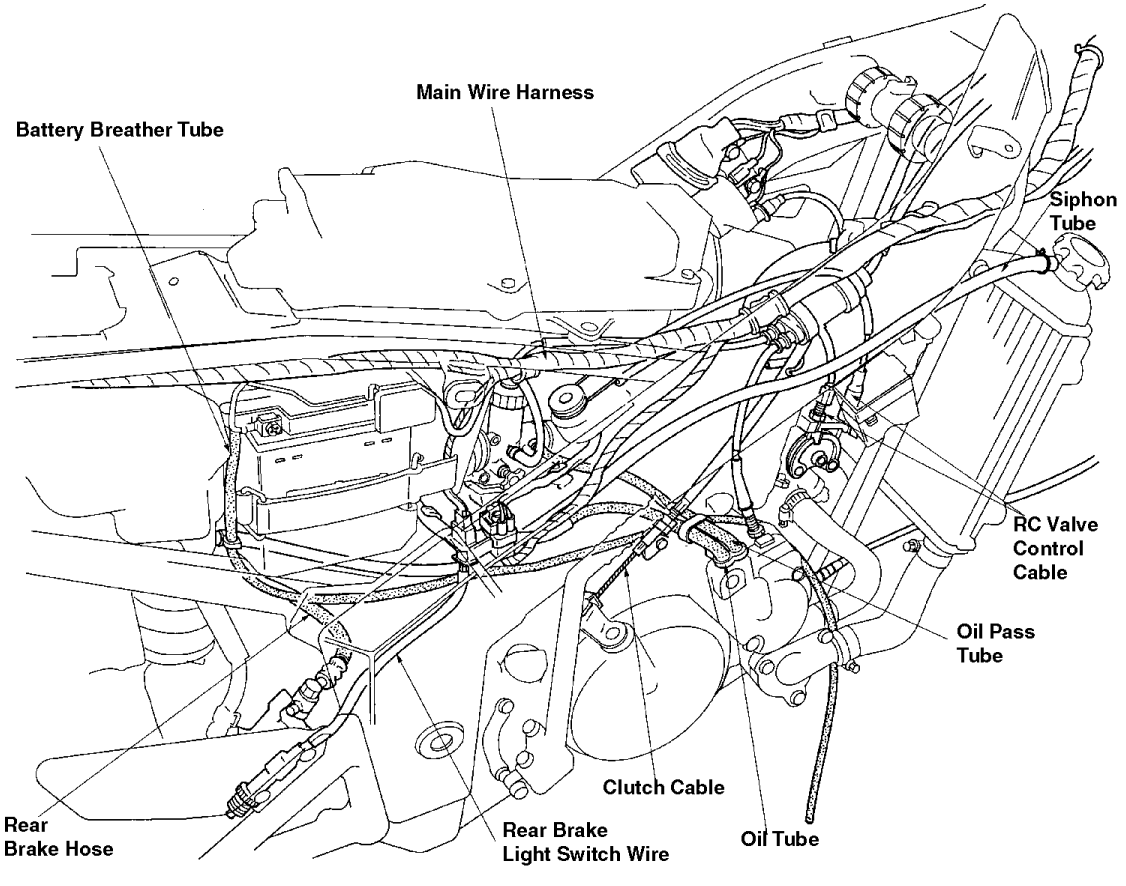
CABLE & HARNESS ROUTING

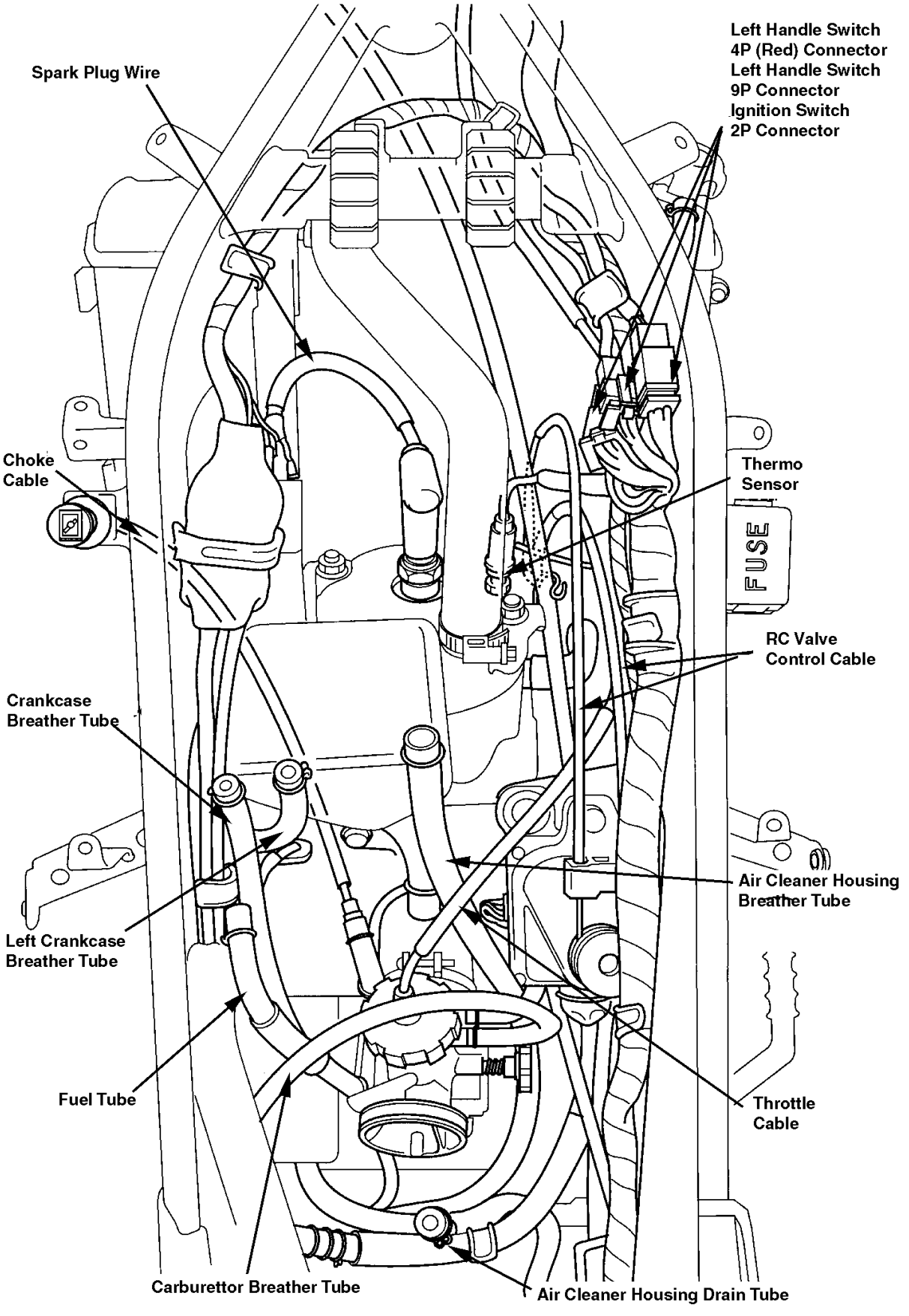


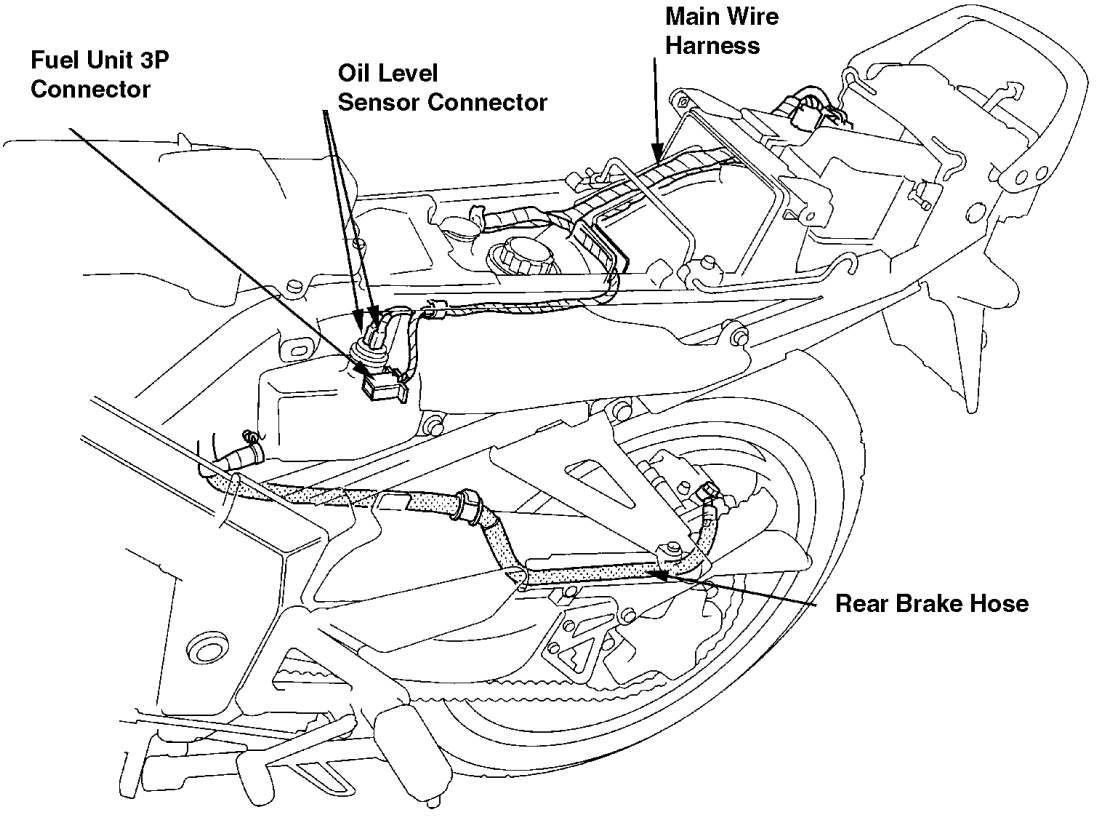

Front Brake
Switch Wires
Clutch
Cable
Throttle Cable
Fuse Box
Front Brake
Hose
Tachometer
Cable

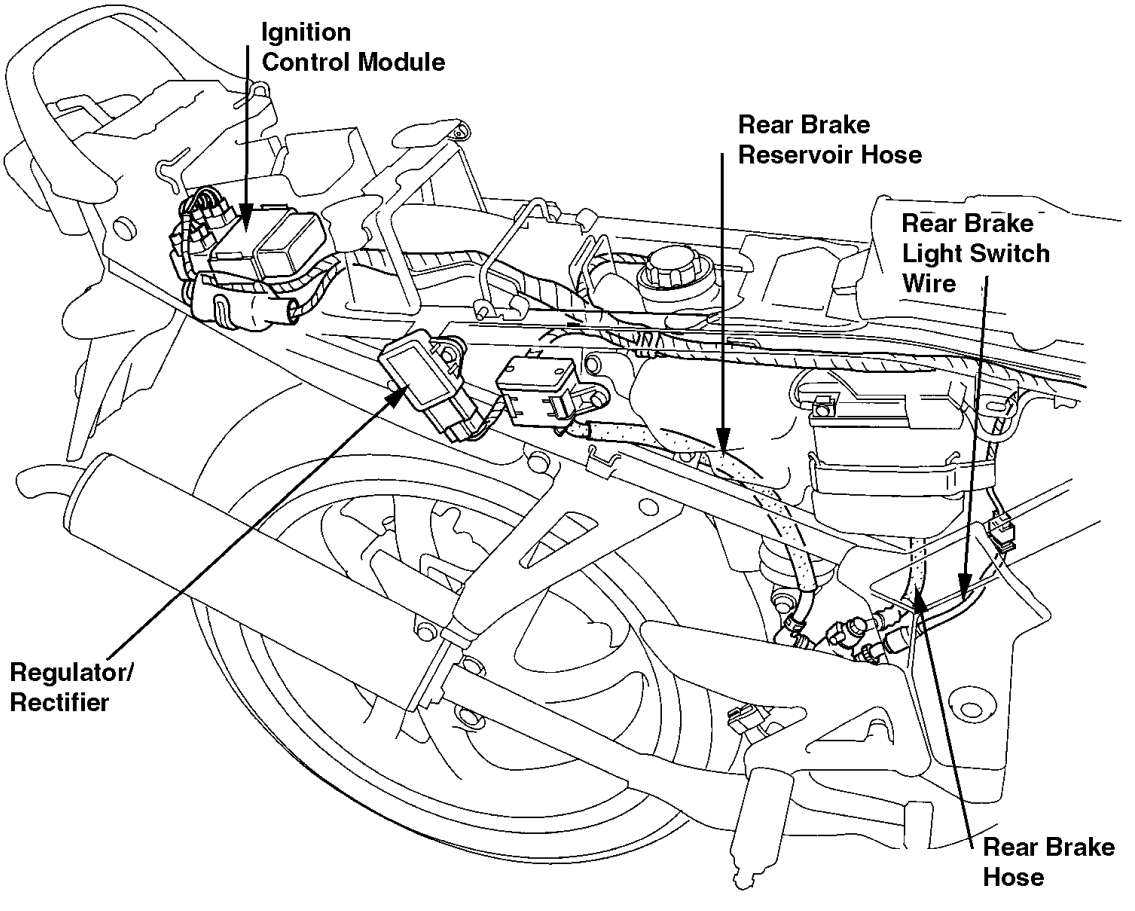

Clutch Cable
Left Hand
Switch Wire
Tachometer
Cable
Speedometer
Cable


Left Handle Switch 4P Connector
Left Handle Switch 9P Connector
Ignition Switch 2P Connector
Carburettor Breather Tube
Throttle Cable
Reserve Tank Overflow Tube
Alternator Wire
Ignition Pulse Generator Wire
Fuel Unit 3P Connector
Choke Cable
Left Crankcase Breather Tube
Fuel Tube
Crankcase Breather Tube
Rear Brake Hose
Air Cleaner Housing Breather Tube
Carburettor Drain Tube


Main Wire Harness
Battery Breather Tube
Siphon Tube
RC Valve Control Cable
Oil Pass Tube
Clutch Cable
Rear Brake Hose
Rear Brake Light Switch Wire
Oil Tube


Spark Plug Wire
Left Handle Switch
4P (Red) Connector
Left Handle Switch
9P Connector
Ignition Switch
2P Connector
Choke
Cable
Thermo
Sensor
FUSE
RC Valve
Control Cable
Crankcase
Breather Tube
Air Cleaner Housing
Breather Tube
Left Crankcase
Breather Tube
Fuel Tube
Throttle
Cable
Carburettor Breather Tube
Air Cleaner Housing Drain Tube


Fuel Unit 3P
Connector
Oil Level
Sensor Connector
Main Wire
Harness
Rear Brake Hose


Ignition
Control Module
Rear Brake
Reservoir Hose
Rear Brake
Light Switch
Wire
Regulator/
Rectifier
Rear Brake
Hose

SERVICE INFORMATION
General

Warning

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

- Work in a well ventilated area. Smoking or allowing flames or sparks in the working area or where gasoline is stored can cause a fire or explosion.
- When installing the exhaust pipe, install the exhaust system and all fasteners loosely. Always tighten the exhaust clamps first, then tighten the mounting fasteners first, the exhaust pipe may not seat properly.
- This section covers removal and installation of the frame body panels, fuel tank and exhaust system.
- Always replace the exhaust pipe gaskets when removing the exhaust pipe from the engine.
- Always inspect the exhaust system for leaks after installation.

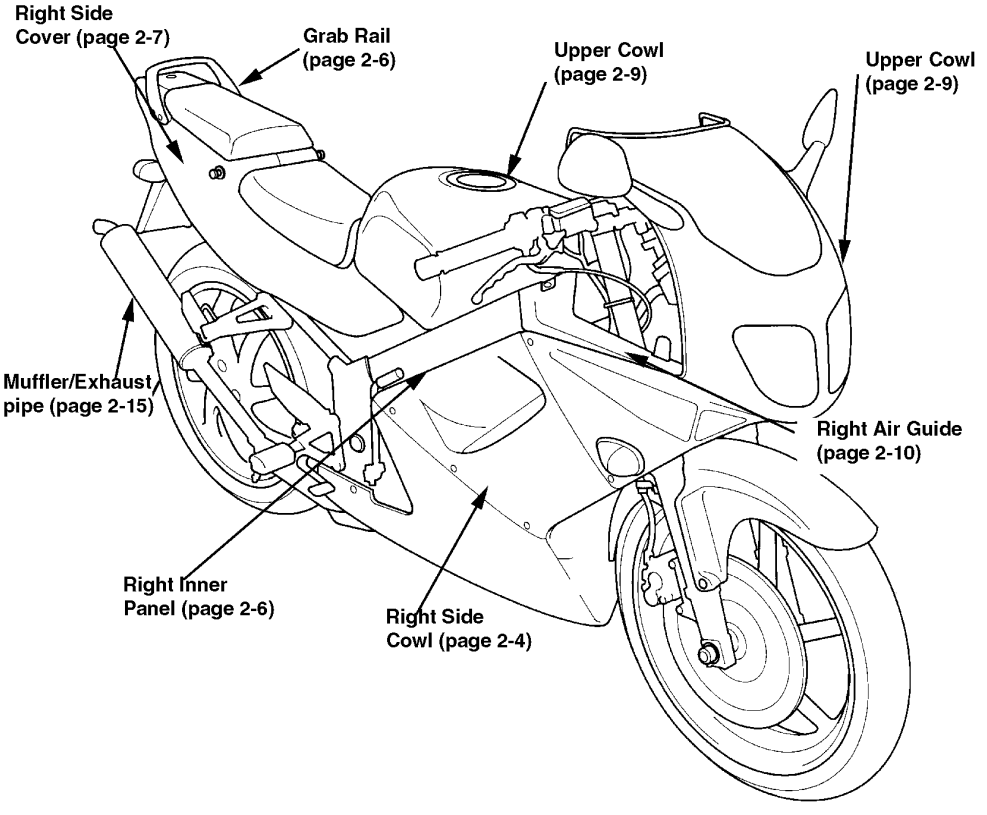
TORQUE VALUES

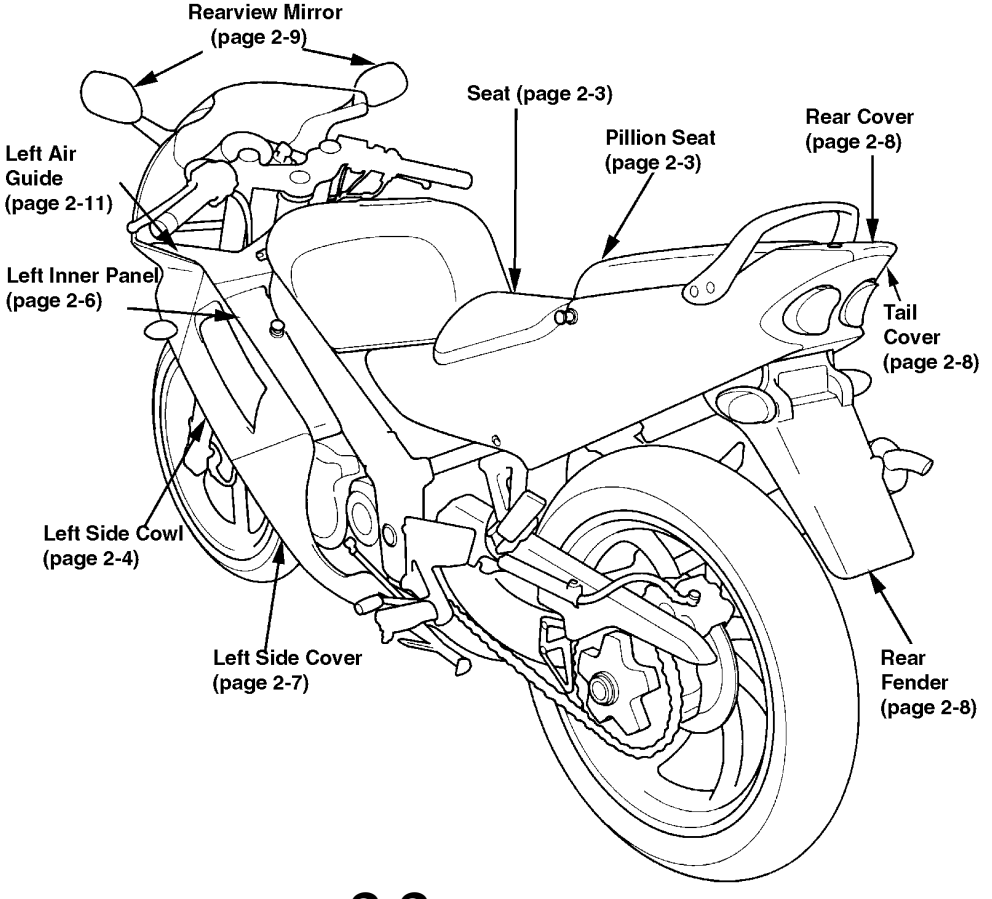
TROUBLESHOOTING

Excessive exhaust noise
- Broken exhaust system
- Exhaust gas leak

Poor Performance
- Deformed exhaust system
- Exhaust gas leak
- Clogged muffler

BODY PANEL LOCATION





SEAT, PILLION SEAT

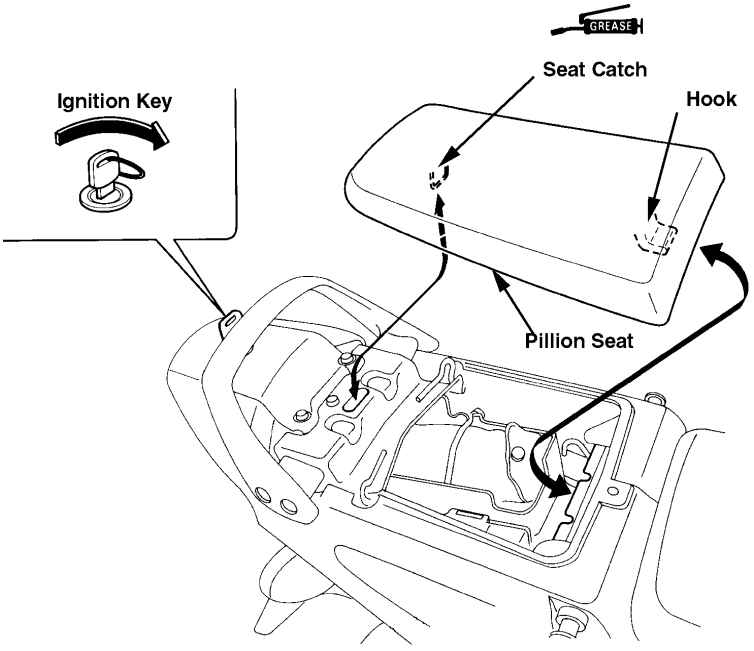
Pillion Seat

Removal
Turn the ignition key and unhook the pillion seat from the set catch.

Remove the pillion seat

Installation
Apply grease to the seat catch.
Install the seat aligning the hooks on the seat with the frame.

Lock the pillion seat securely.



SEAT

Removal
Remove the pillion seat (see above)

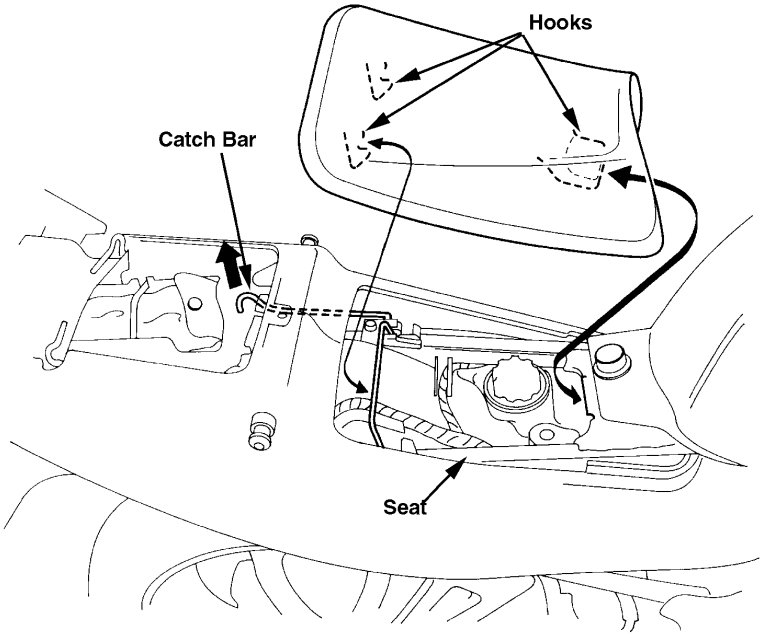
Operate the set lever and unhook the seat from the set catch bar.

Remove the seat.

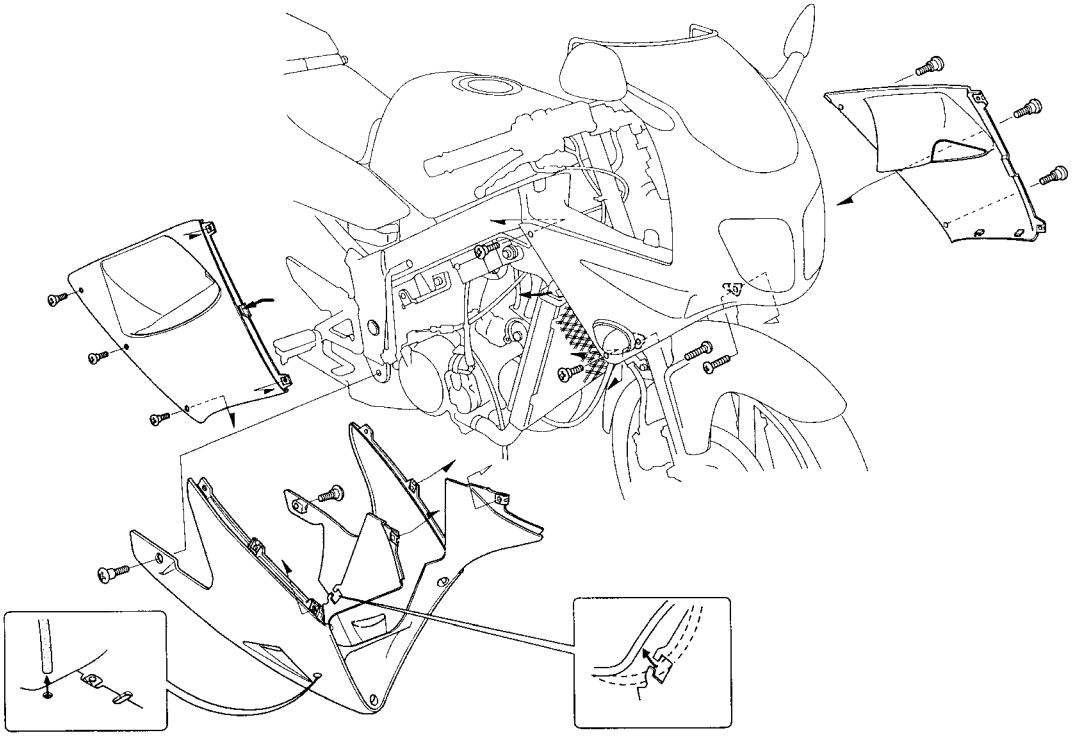
Installation
Apply grease to the seat catch.
Install the seat aligning the hooks on the seat with the frame.

Lock the seat securely.

Install the pillion seat (see above)



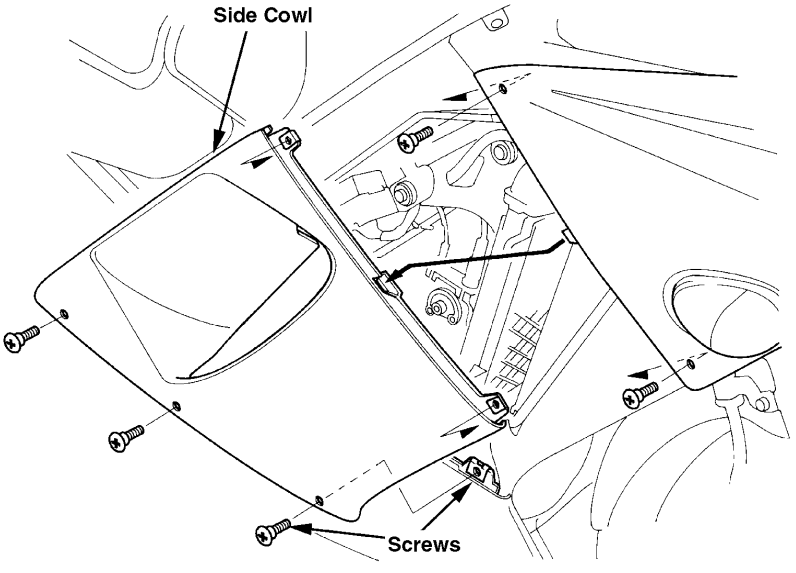
SIDE COWL, LOWER COWL



SIDE COWL

Removal/Installation
Remove the screws and side cowl,

Installation is in the reverse order of removal.



NOTE

- **At installation, align the tabs on the side cowl with the grooves on the lower cowl and upper cowl.**
- **At installation, be careful not to damage the tabs on the side cowl.**

LOWER COWL

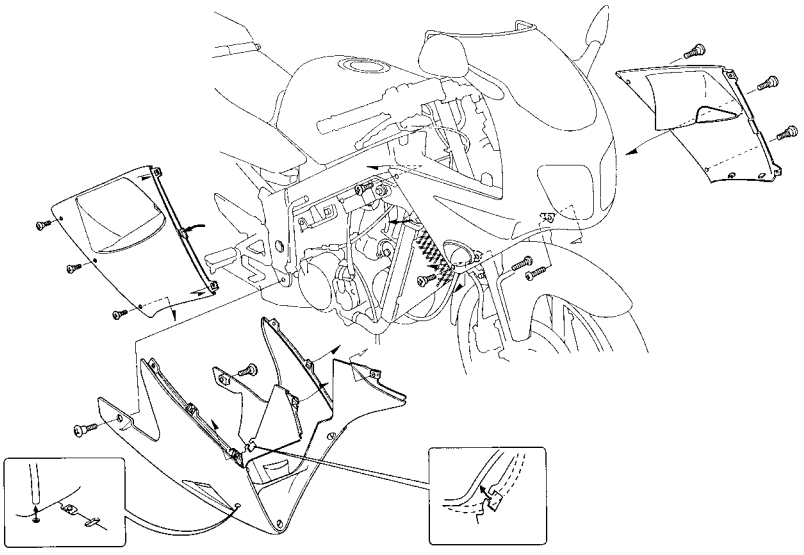
Removal

Remove the screws.
Remove the tachometer cable from the tab on the lower cowl.

NOTE

- **At tachometer cable removal, be careful not to damage the tab on the lower cowl.**

Remove the tube from the hole on the lower cowl and remove the lower cowl.



Disassembly

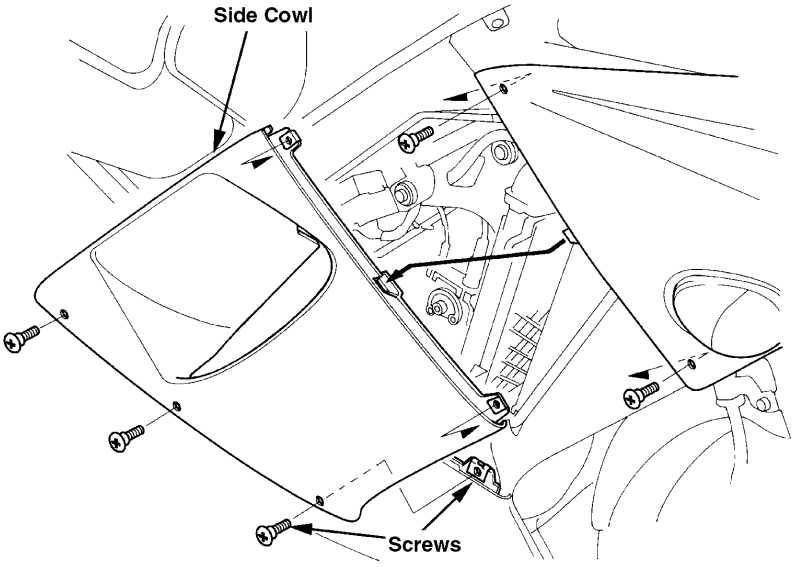
Remove the screws, left lower cowl, right lower cowl and centre lower cowl.

Assembly

Assembly is in the reverse order of removal.

NOTE

- **At assembly, be careful not to damage the tabs on the cowls.**

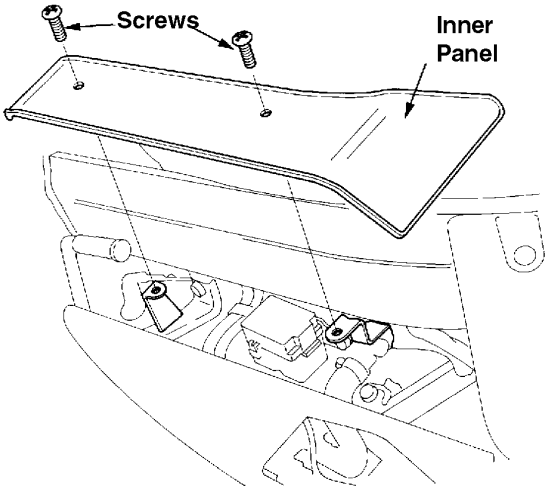


Installation

NOTE

- **Route the tubes and cables properly.**
- **At tachometer cable installation, be careful not to damage the tab on the lower cowl.**
- **At installation, align the grooves on the lower cowl with the tabs on the side cowl.**

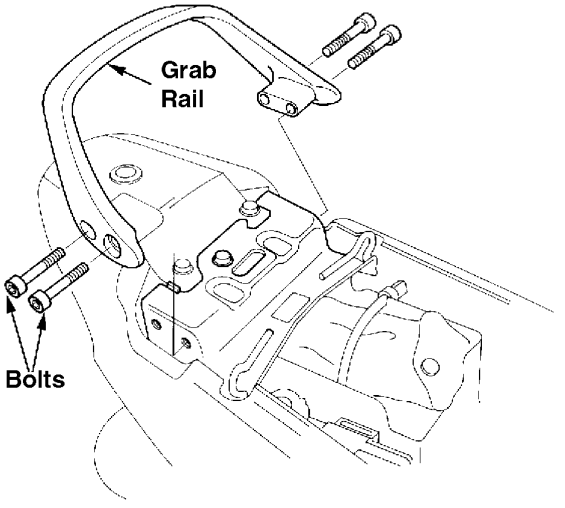
INNER PANEL



Removal / Installation
Remove the screws and inner panel.

Installation is in the reverse order of removal.

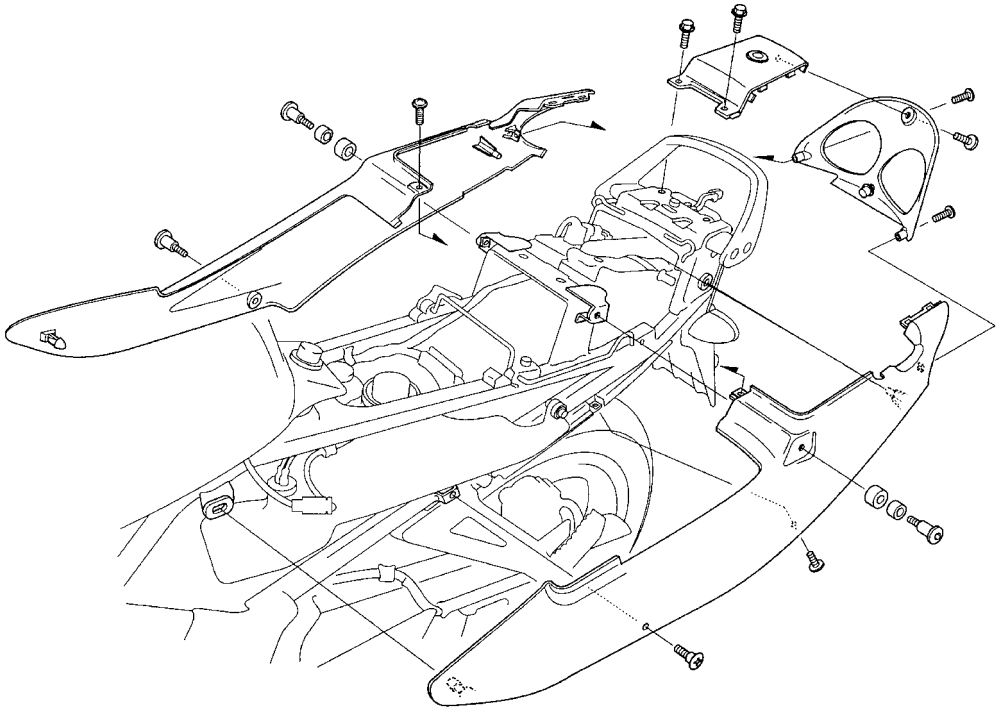
GRAB RAIL



Removal / Installation
Remove the socket bolts and grab rail.

Installation is in the reverse order of removal.

SIDE COVER / REAR COVER / TAIL COVER



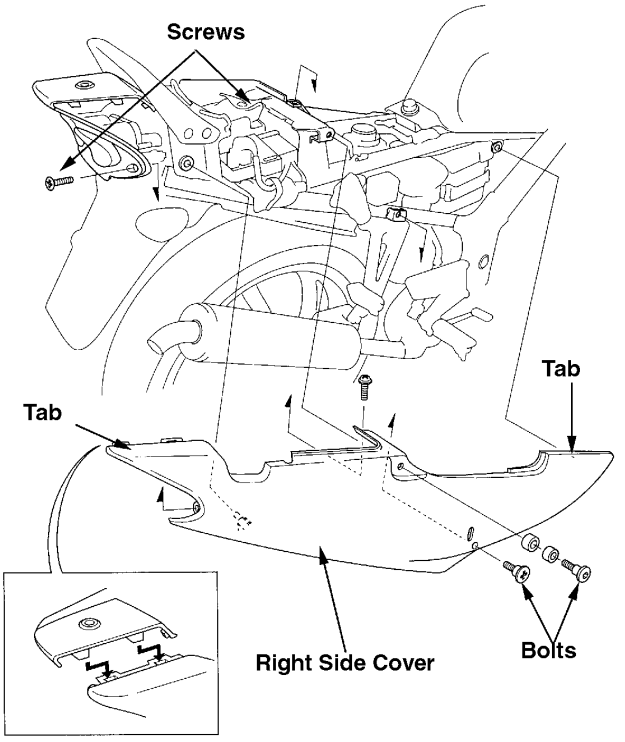
RIGHT SIDE COVER

Removal / Installation
Remove the seat. (page 2-3)

Loosen the bolt.
Remove the screws, special bolt, collar and right side cover.

Installation is in the reverse order of removal.

NOTE:
- **At installation, align the tabs on the right side cover with the grooves on the rear cover.**
- **At installation, align the tabs on the right side cover with the grommets on the frame.**
- **At installation, be careful not to damage the tabs on the right side cover.**



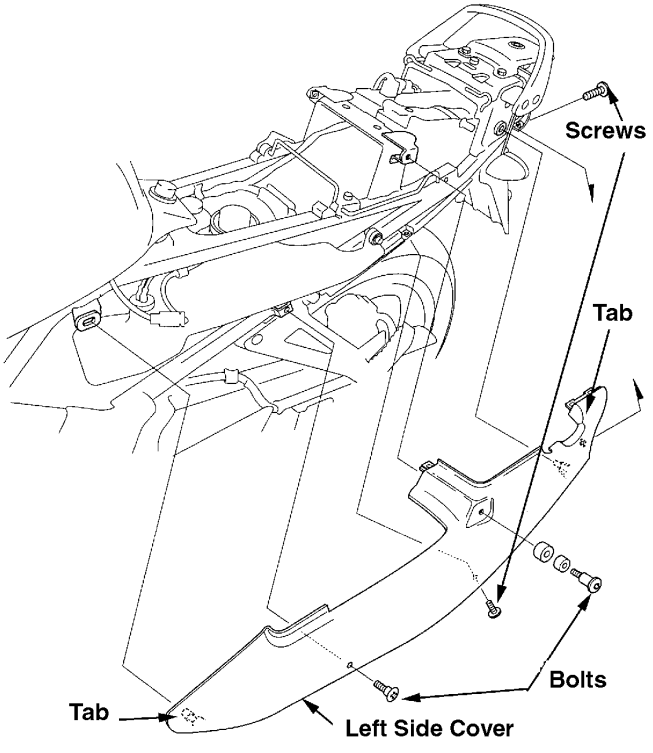
LEFT SIDE COVER

Removal / Installation
Remove the seat. (page 2-3)

Loosen the bolt.
Remove the screws, special bolt, collar and left side cover.

Installation is in the reverse order of removal.

NOTE:
- **At installation, align the tabs on the left side cover with the grooves on the rear cover.**
- **At installation, align the tabs on the left side cover with the grommets on the frame.**
- **At installation, be careful not to damage the tabs on the side cover.**



TAIL COVER

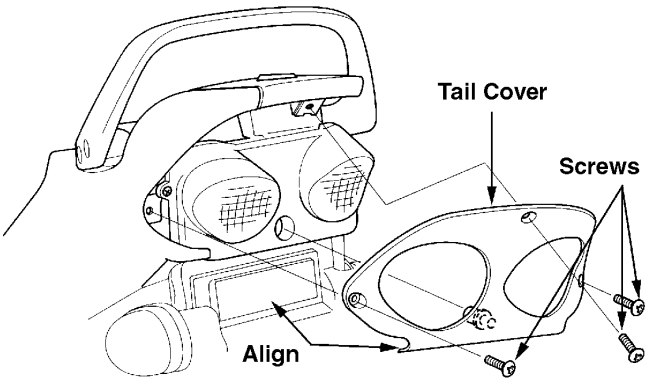
Removal/Installation

Remove the left or right side cover. (page 2-7)

Remove the screws and tail cover.

Installation is in the reverse order of removal.

- **NOTE: At installation, align the tab on the tail cover with the hole on the tail light lens.**



REAR COVER

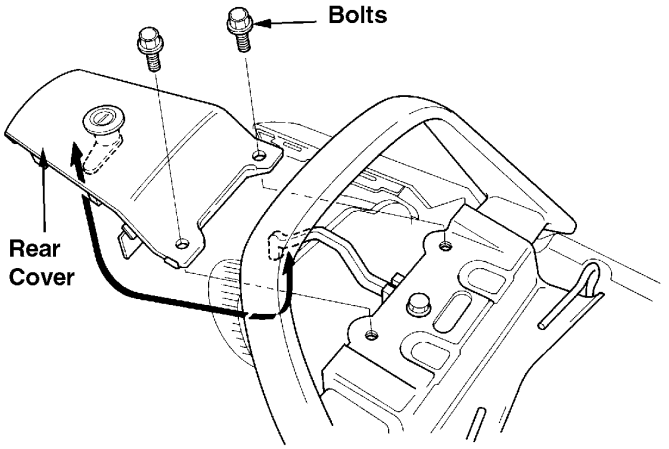
Removal/Installation

Remove the right and left side cover. (page 2-7)

Remove the bolts.
Unhook the key cylinder hook from the seat catch hook and remove the rear cover.

Installation is in the reverse order of removal.

After installation, check the seat lock operation using the ignition key.



REAR FENDER

Removal/Installation

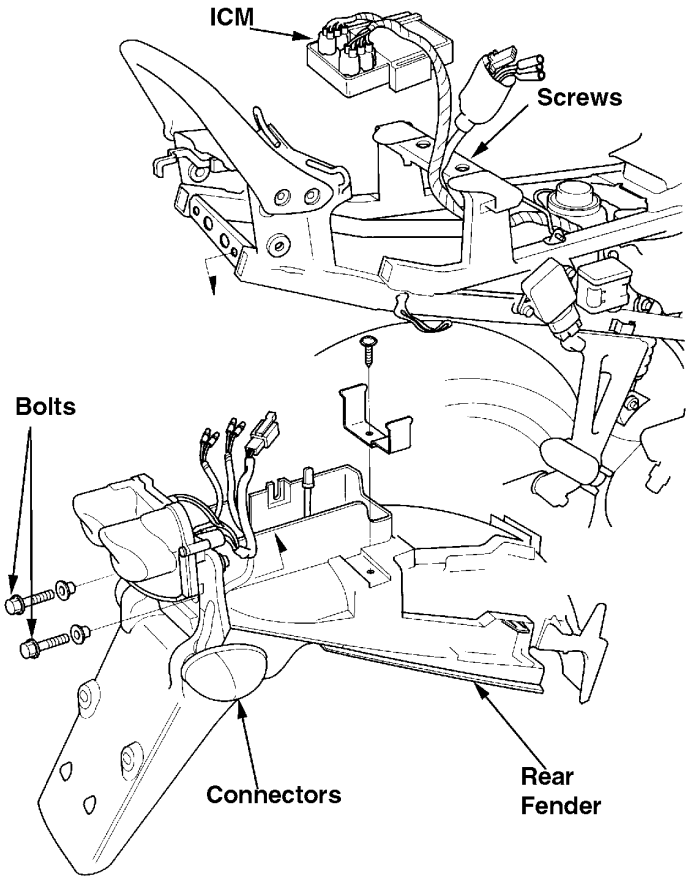
Remove the side cover, rear cover and tail cover. (page 2-8)
Remove the ICM. (page 17-1)

Remove the screw and ICM bracket.
Disconnect the tail light 3P (black) connector and rear turn signal connectors.
Remove the wire harnesses from the clamps on the rear fender.

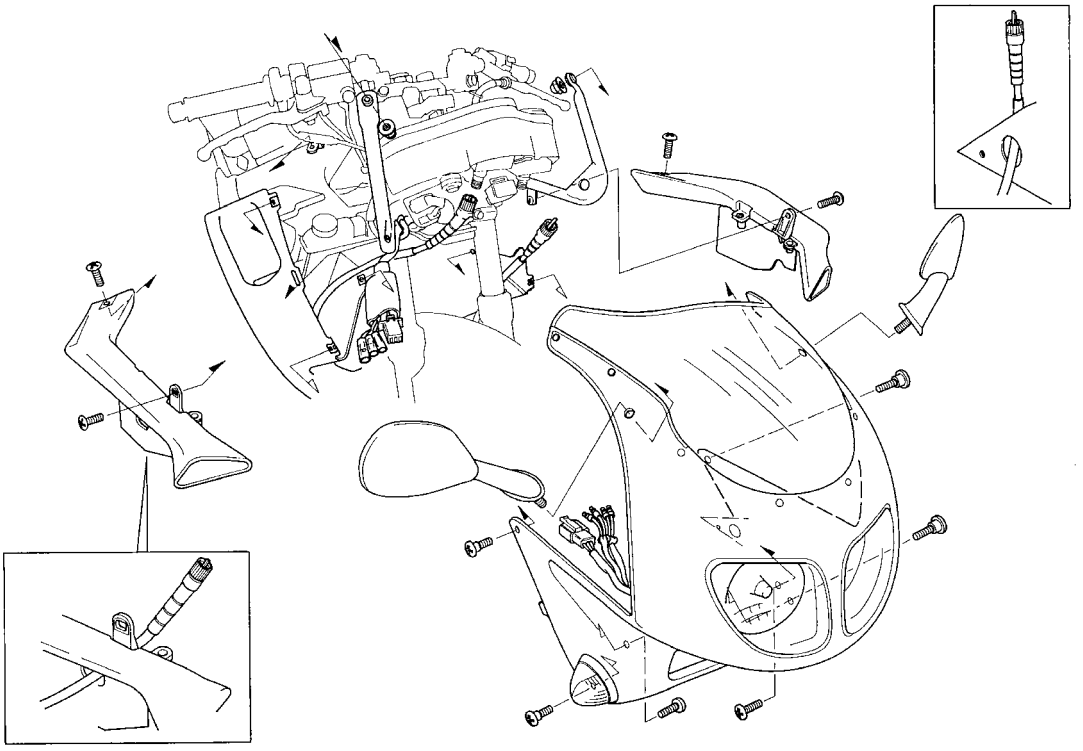
- **NOTE: Be careful not to damage the rear fender, tubes, cables and wire harnesses.**

Installation is in the reverse order of removal.

- **NOTE: Route the tubes, cables and harnesses properly. (page1-18)**
- **Be careful not to damage the rear fender, tubes, cables and wire harnesses.**



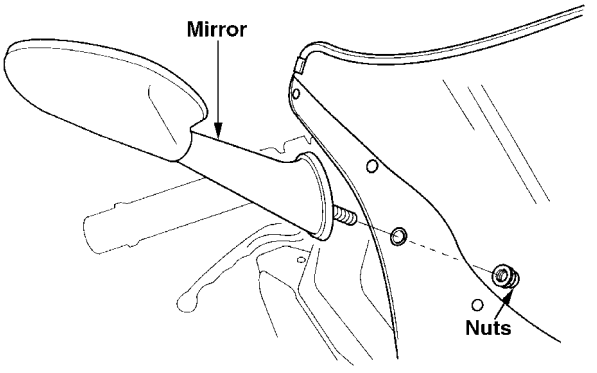
UPPER COWL, REARVIEW MIRROR, AIR GUIDE



REARVIEW MIRROR

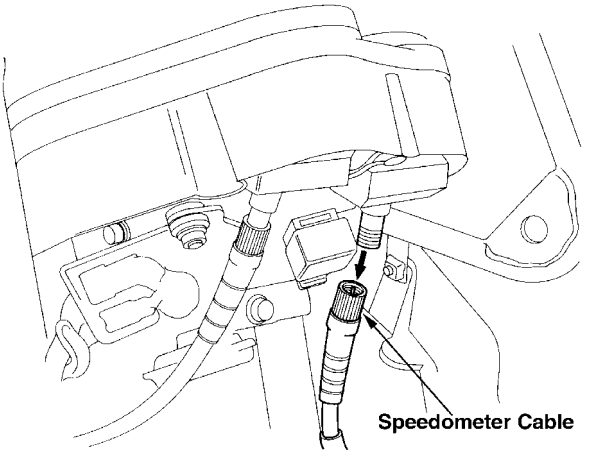
Removal/Installation
Remove the cap nut and rearview mirror.

Installation is in the reverse order of removal.



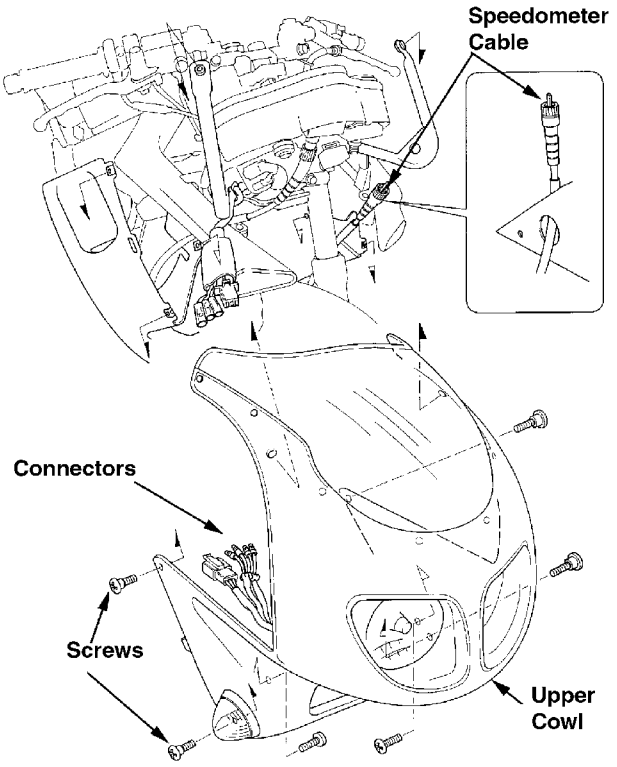
UPPER COWL

Removal
Disconnect the speedometer cable from the speedometer.



Disconnect the headlight 3P connector and front turn signal connectors.
Remove the speedometer cable form the hole on the upper cowl.
Remove the screws and upper cowl.

- **NOTE: At removal, be careful not to damage the tabs on the cowls. (page 1-18)**

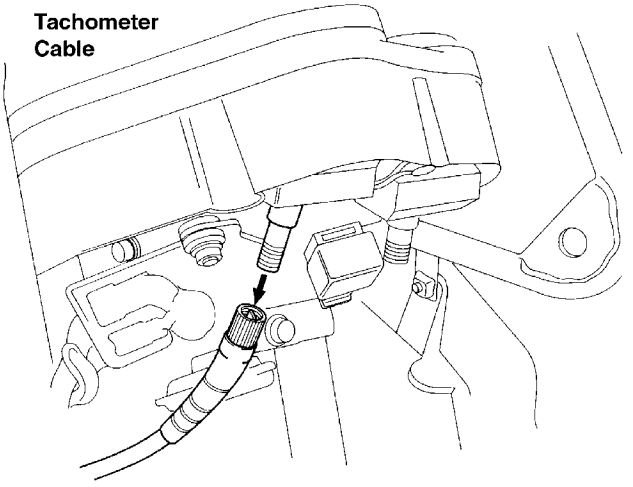


Installation

NOTE:
- **Route the cables and wires properly.**
- **At installation, be careful not to damage the tabs on the cowls.**

Install the upper cowl aligning the holes on the upper cowl with the tabs on the frame.
Install the speedometer cable to the hole on the upper cowl.
Connect the headlight 3P connector and front turn signal connectors.

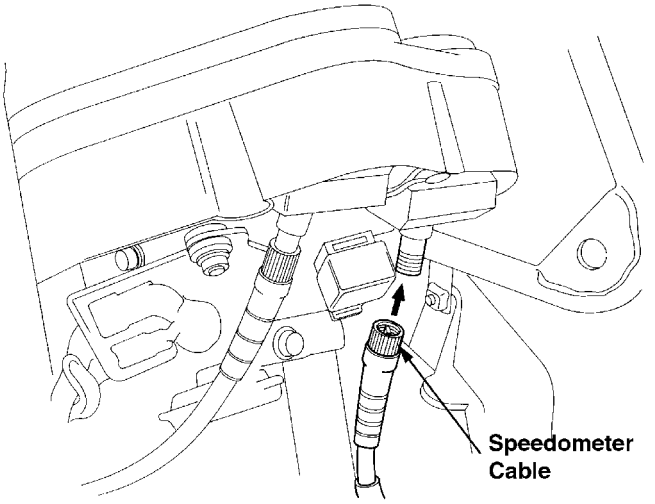
Connect the speedometer cable to the speedometer.



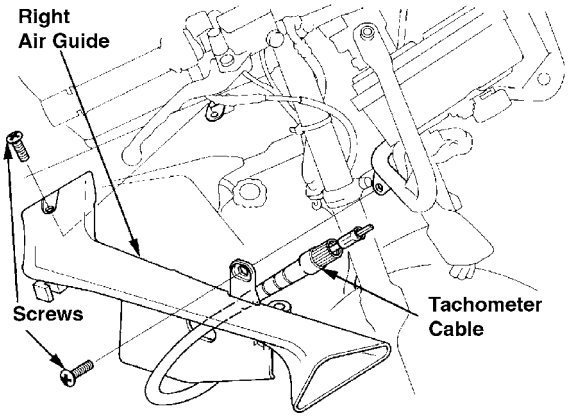
AIR GUIDE

Right Air Guide
Remove the upper cowl. (page 2-9)

Disconnect the tachometer cable from the tachometer.

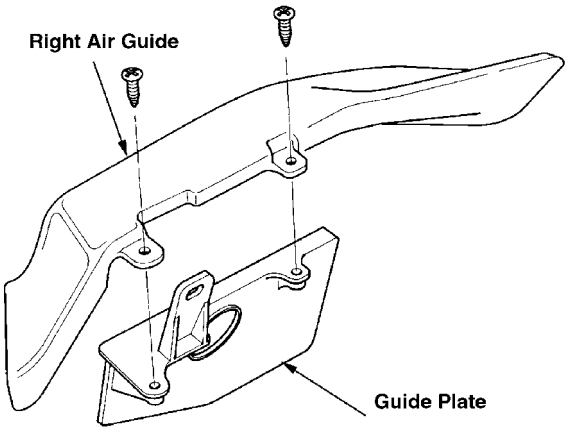


Remove the tachometer cable from the hole on the right side air guide.
Remove the bolts and right air guide.



Remove the screws, right air guide and right air guide plate.

Installation is in the reverse order of removal.

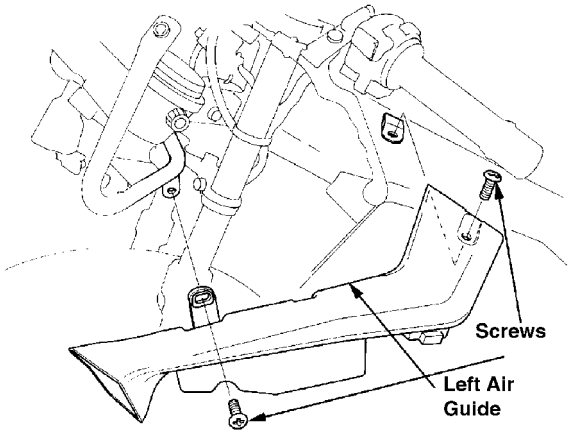


LEFT AIR GUIDE

NOTE:

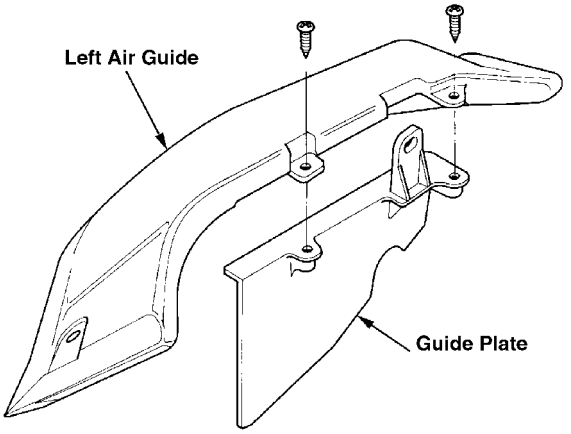
- **The left air guide removal / installation can be done without upper cowl removal.**

Remove the bolts and left air guide.



Remove the screws, left air guide and left air guide plate.

Installation is in the reverse order of removal.



FUEL TANK

Removal

Remove the seat. (page 2-3)

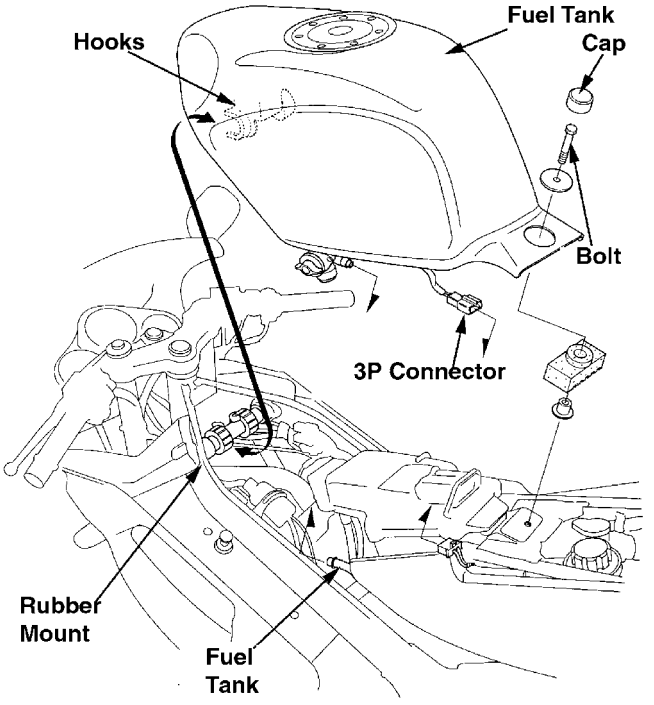
Warning

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

Disconnect the fuel unit 3P connector.

NOTE:

- **Before disconnecting the fuel tube, turn fuel valve OFF.**



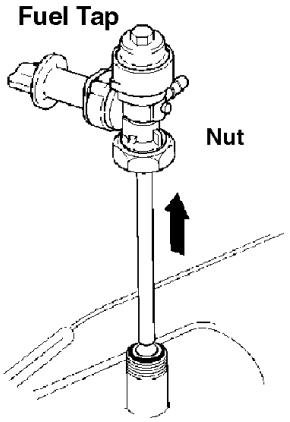
Disconnect the fuel tube from the fuel valve.

Remove the bolt cap, fuel tank mounting bolt and washer.

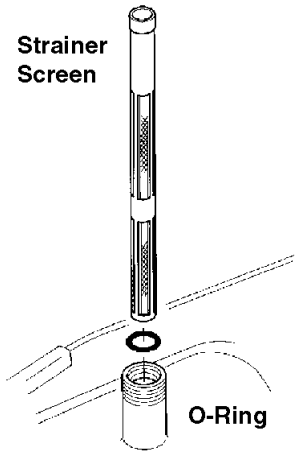
Remove the fuel tank hooks from the rubber mounts.
Remove the fuel tank.

DISASSEMBLY

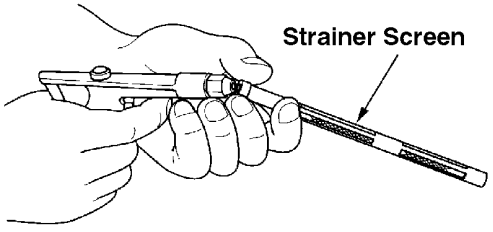
Loosen the fuel tap nut and remove the fuel tap.



Remove the fuel strainer screen and O-ring.

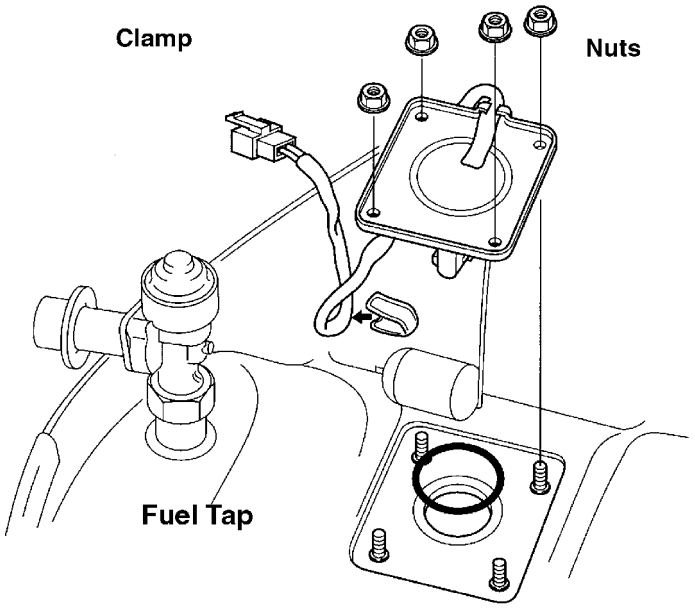


Clean the fuel strainer screen.

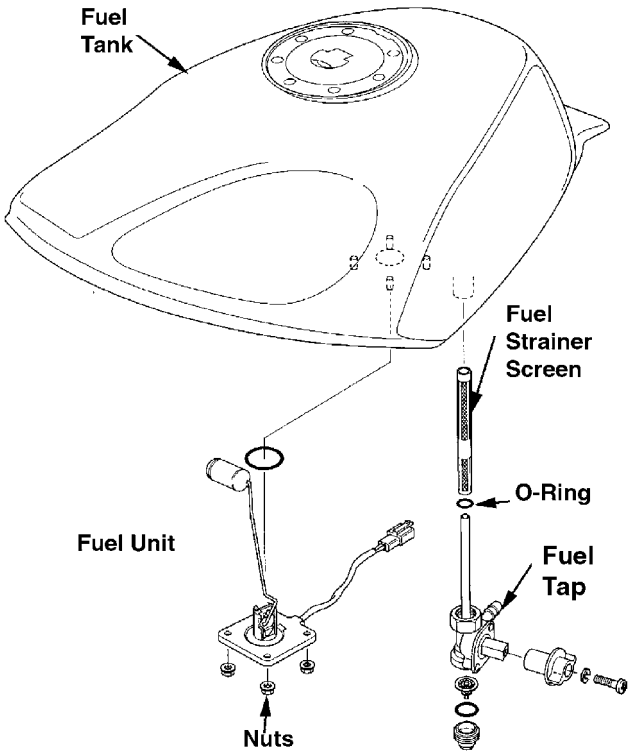


Remove the fuel unit wire from the clamp.
Remove the nuts and remove the fuel unit.

CAUTION
- **Be careful not to damage the fuel unit.**



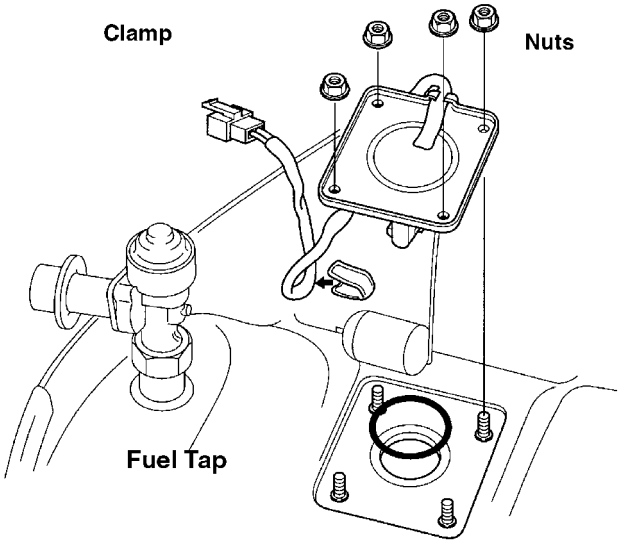
ASSEMBLY



Install the fuel unit to the fuel tank.

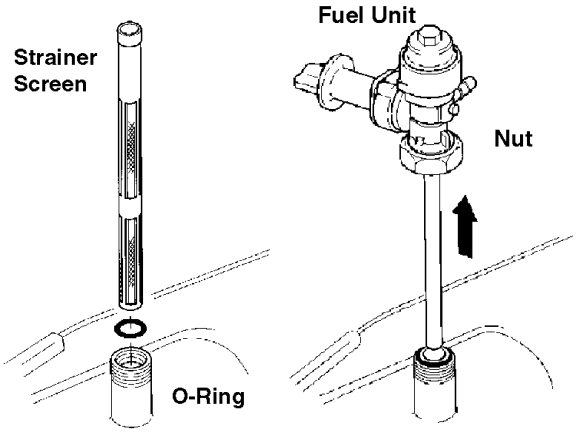
CAUTION
- **Be careful not to damage the fuel unit.**

Install and tighten the nuts securely.
Install the fuel unit wire to the clamp.



Install the new O-ring and fuel strainer screen to the fuel tank.
Install the fuel tap into the fuel tank.
Tighten the fuel tap nut to the specified torque.

TORQUE:
27N.m (28 kgf-m, 20 lbf-ft)



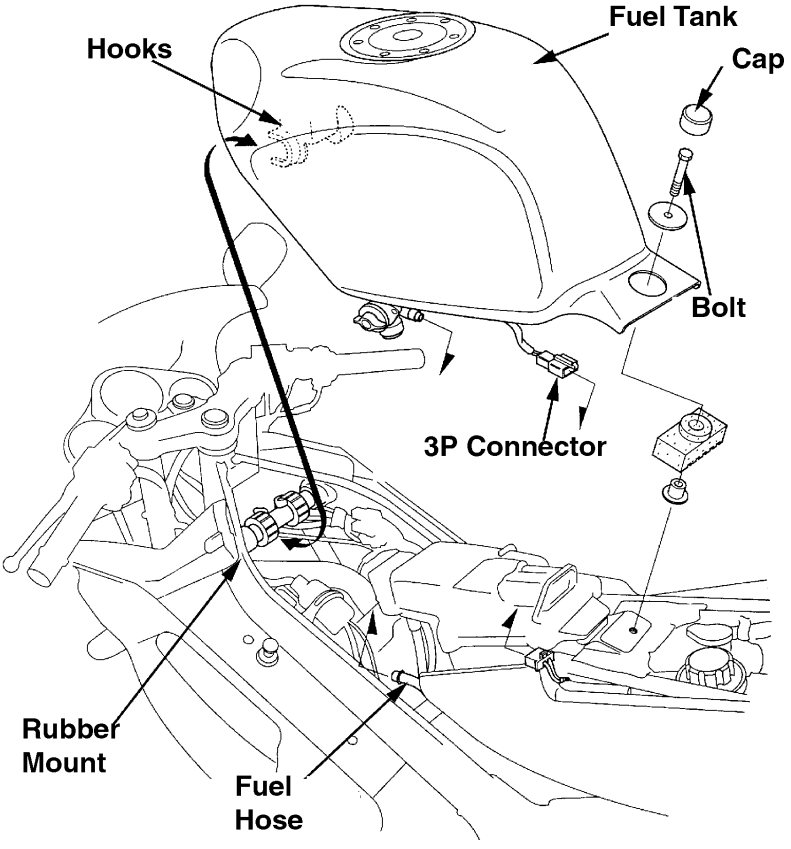
INSTALLATION

Install the fuel tank aligning its hooks to the rubber mounts on the frame.

Install the fuel tank mounting bolt and washer.
Install and tighten the fuel tank mounting bolt to the specified torque.
Install the bolt cap.
Connect the fuel unit 3P connector.

Install the seat. (page 2-3)

After installation, turn the fuel tap ON and check the fuel line for leakage.



EXHAUST PIPE/MUFFLER

Removal/Installation

Warning

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

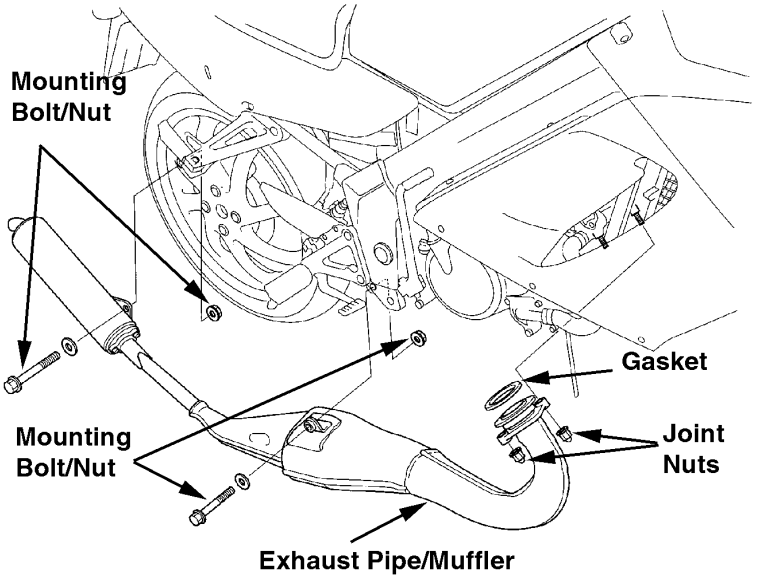
Remove the lower cowl. (page 2-5)

Remove the exhaust pipe joint nuts.
Remove the muffler mounting bolt, washer and nut.
Remove the exhaust pipe mounting bolt and washer.
Remove the gasket and muffler/exhaust pipe assembly.

Install the new gasket.
Install the muffler/exhaust pipe assembly.
Temporarily install the all bolts and nuts.
Tighten the exhaust pipe joint nuts securely.

Tighten the exhaust pipe mounting bolt securely.
Tighten the muffler mounting bolt securely.

Install the lower cowl.



SERVICE INFORMATION

Specification

ITEM			SPECIFICATION	
Throttle grip free play			2 – 6mm (0.08 – 0.24)	
Spark Plug	Standard		NGK	NIPPONDENSO
			B9ES	W27ES-U
	For Cold climate riding		B8ES	W24ES-U
Spark Plug gap			0.7 – 0.8 mm (0.028 – 0.031in)	
Engine oil capacity			0.76 litre (0.83 US qt, 0.67 Imp, qt)	
Engine oil capacity	At draining		0.7 litre (0.73 US qt, 0.62 Imp, qt)	
	At disassembly		0.8 litre (0.85 US qt, 0.70 Imp, qt)	
Carburettor idle speed			1,300 $\pm$ 100 min^{1} (rpm)	
Drive chain slack			35mm	
Drive chain size	DID		525VC5	
	RK		525MOZ9	
Drive chain link			108	
Clutch lever free play			10-20mm	
Cold tire pressure	Driver only	Front	200kPa (2.00 kgf/cm^2, 29psi)	
		Rear	200kPa (2.00 kgf/cm^2, 29psi)	
	Driver and passenger	Front	200kPa (2.00 kgf/cm^2, 29psi)	
		Rear	200kPa (2.00 kgf/cm^2, 29psi)	

ITEM			SPECIFICATIONS
Minimum tire depth		Front	1.5mm
		Rear	2.0mm
Tire Size		Front	90/80 – 17 46S
		Rear	120/80 – 17 61S
Tire Band	IRC	Front	NF46
		Rear	NR57

TORQUE VALUES

Oil drain bolt	21N.m (2.1 kgf-m, 15 lbf-ft)
Spark Plug	20N.m (2.0 kgf-m, 14 lbf-ft)

TOOLS

Drive chain tool set	07HMH-MR10103

Maintenance Schedule – NSP150SP

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 **A**: Adjust **L**: Lubricate

The following items require some mechanical knowledge. Certain items (particularly those marked * and **) may require more technical information and tools. Consult your authorised Honda Dealer.

		Whichever		Odometer Reading - (Note 1)			
FREQUENCY		**Comes**	**x 1000km**	**1**	**4**	**8**	**12**
		First	**x 1000mi**	**0.6**	**2.5**	**5**	**7.5**
ITEM		⇩	**MONTH**		**6**	**12**	**18**
*	Fuel Line				I	I	I
*	Fuel Strainer Screen				C	C	C
*	Throttle Operation				I	I	I
*	Oil Pump and Oil Line				I	I	I
*	Air Cleaner	Note 2			C	C	C
	Spark Plug				I	R	I
**	Decarbonizing					C	
*	Engine Idle Speed			I	I	I	I
	Radiator Coolant	Note 3				I	
	Cooling System					I	
	Transmission Oil						R
	Drive Chain			I, L: Every 1,000km (600ml)			
	Drive Chain Slider				I	I	I
	Battery				I	I	I
	Brake Fluid	Note 3			I	I	I
	Brake Pad Wear				I	I	I
	Brake System			I	I	I	I
*	Brake Light Switch				I	I	I
*	Headlight Aim				I	I	I
	Clutch System			I	I	I	I
	Side Stand				I	I	I
*	Suspension				I	I	I
*	Nut, Bolt, Fastener			I		I	
**	Wheel / Tyres				I	I	I
**	Steering Head Bearing			I			I

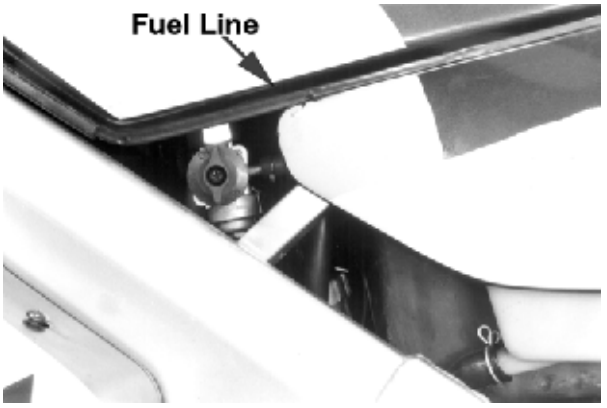
* Should be serviced by your authorized Honda dealer, unless the owner has proper tools and service data and is mechanically qualified.
** In the interest of safety, we recommend these items be serviced only by your authorized Honda dealer.

NOTES: 1. At higher odometer reading, repeat at the frequency interval established here.
2. Service more frequently when riding in unusually wet or dusty areas.
3. Refer to Common Service Manual.

FUEL LINE

Check the fuel lines for deterioration, damage or leakage.
Replace the fuel lines if necessary.

Route the tubes properly. (page 1-18)



FUEL STRAINER SCREEN

NOTE

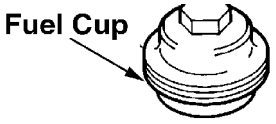
- **Fuel strainer screen cleaning.**

FUEL CUP STRAINER

Remove the fuel tank. (page 2-12)

Warning

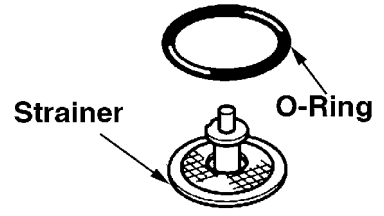
- **Gasoline is extremely flammable and is explosive under certain condition.**

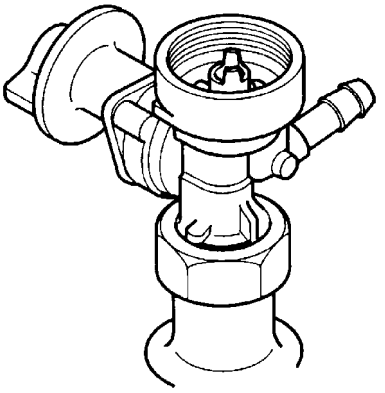


Remove the fuel cup, 0-ring and fuel cup strainer.

Wash the cup strainer and cup in clean non-flammable high flash point solvent.
Reinstall the cup strainer, 0-ring and cup in the fuel tap, making sure that the 0-ring is in place.
Tighten the fuel cup securely.

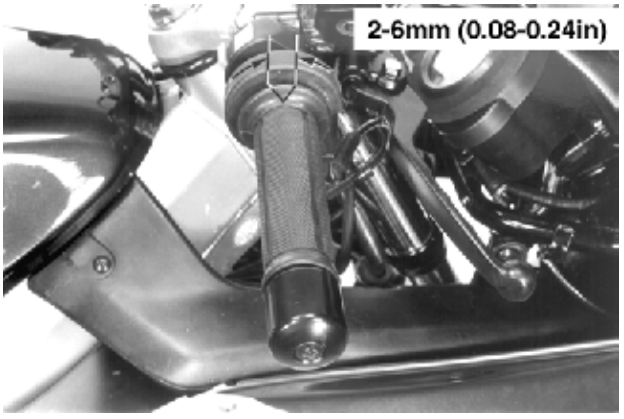
Install the fuel tank. (page 2-4)





THROTTLE OPERATION

Check for any deterioration or damage to the throttle cables. Check the throttle grip for smooth operation. Check that the throttle grip returns from the full open to the full closed position smoothly and automatically in all steering positions.



If the throttle grip does not return properly, lubricate the throttle cable, overhaul and lubricate the throttle grip housing.

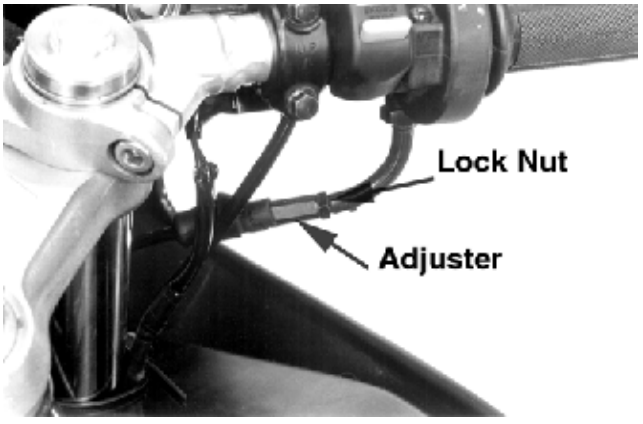
For cable lubrication: Disconnect the throttle cables at their upper ends Thoroughly lubricate the cables and their pivot points with a commercially available cable lubricant or a light weight oil.

If the throttle grip still does not return properly, replace the throttle cables.

Warning

Reusing a damaged or abnormally bent or kinked throttle cable can prevent proper throttle side operation and may lead to a loss of throttle control while riding.

With the engine idling, turn the handlebar all the way to the right and left to ensure that idle speed does not change.
If idle speed increases, check the throttle grip free play and the throttle cable connection.



Measure the throttle grip free play at the throttle grip flange.

FREE PLAY: 2 - 6 mm (0.08 - 0.24 in)

Throttle grip free play can be adjusted at the upper adjuster of the throttle cable.

Loosen the lock nut and turn the adjuster to obtain the free play.
After adjustment, tighten the lock nut securely and reposition the boot securely.

OIL PUMP AND OIL LINE

Check the engine oil lines for deterioration, damage or leakage. Replace the fuel lines if necessary.

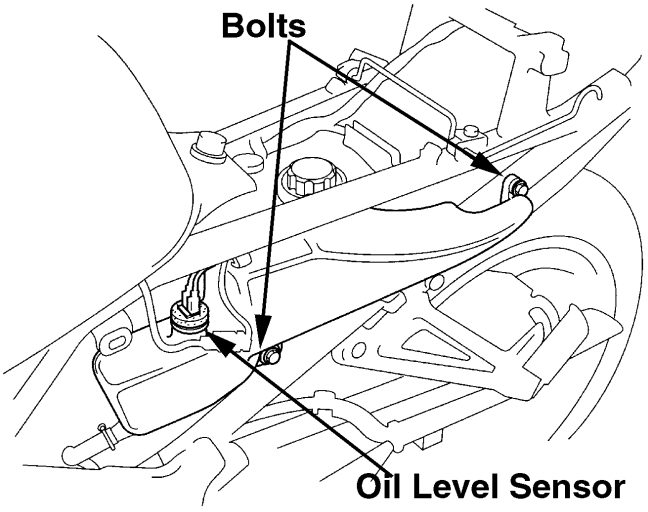
Bleed the oil pump and oil line if they have air bubbles in them (page 4-6). Route the tubes properly

ENGINE OIL STRAINER SCREEN

Remove the left side cover.

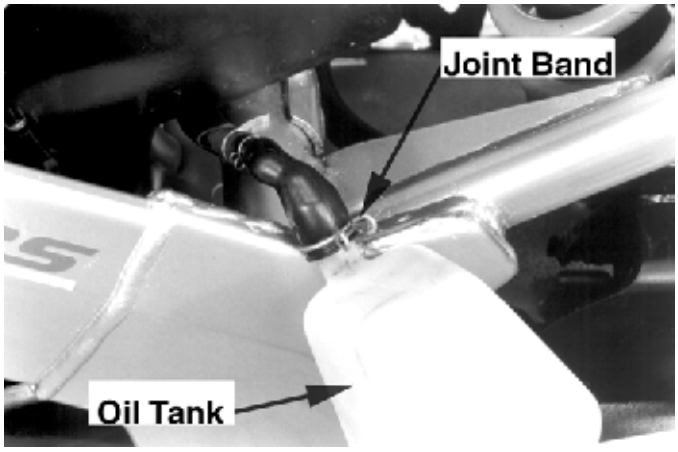
Remove the bolts and disconnect the oil level sensor connector.

Drain the engine oil.

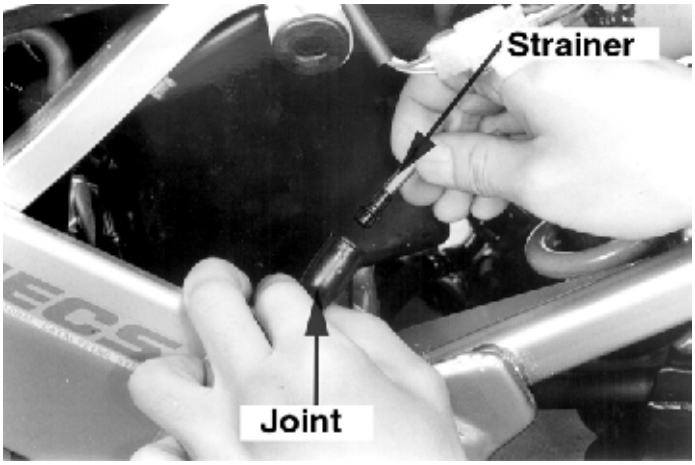


Remove the joint band.

Remove the strainer joint from the oil tank.

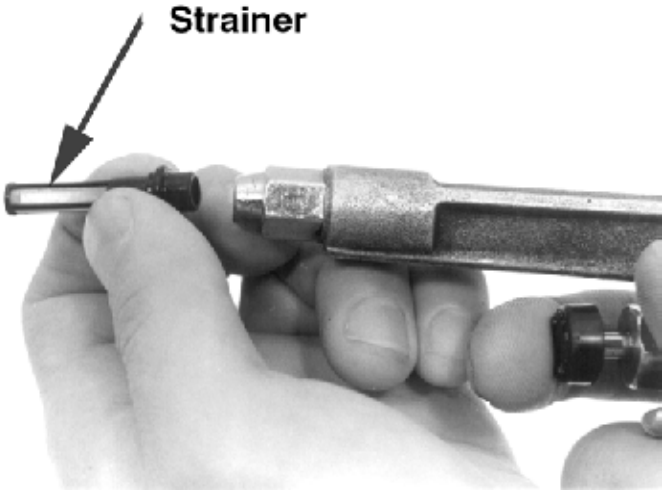


Remove the oil strainer from the strainer joint.



Clean the oil strainer with compressed air.
Install the oil strainer to the strainer joint.
Install the strainer joint to the oil tank.

Fill the oil tank with the recommended engine oil and bleed the air from the oil pump and oil line. (page 4-6)



OIL-TANK CAPACITY: 0.76 litres (0.83 us qt, 0.67 Imp gl)
RECOMMENDED ENGINE OIL: Honda 2-stroke oil or equivalent

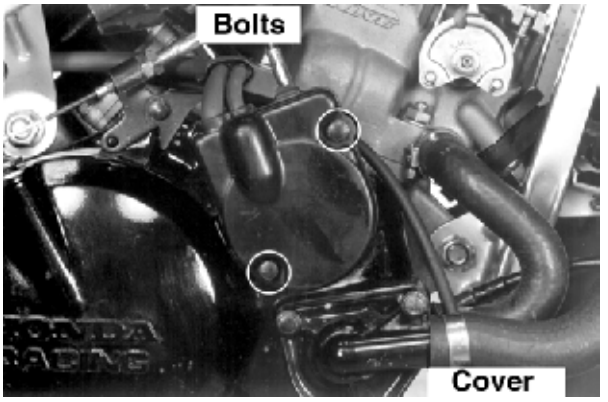
Make sure that there are no oil leaks.

OIL PUMP CONTROL CABLE ADJUSTMENT

NOTE
The oil pump control cable should be adjusted after the throttle grip free play adjustment.

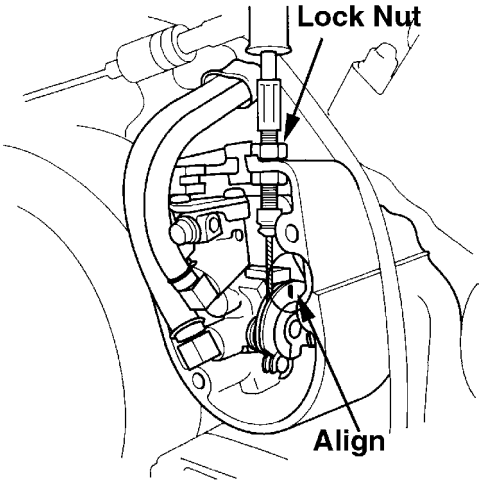
Remove the right under cowl.

Remove the bolts and oil pump cover.



Loosen the oil control cable lock nut and open the throttle fully.

Check that the aligning mark on the oil pump drum is aligned with the index mark projection on the oil pump body. Adjust if necessary by turning the adjusting nut.

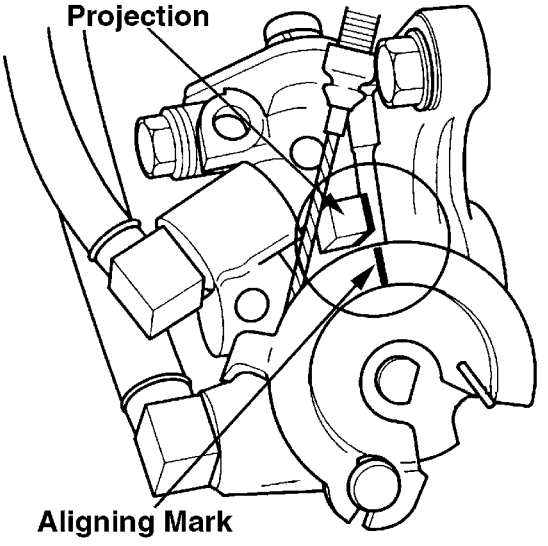


CAUTION

- ***An adjustment within 1 mm (0.04 in) of index mark on the open side is acceptable. However, the aligning mark must never be on the closed side on the index mark, otherwise engine damage will occur because of insufficient lubrication.***

Tighten the control cable lock nut and install the oil pump cover.

Install and tighten the bolts securely.

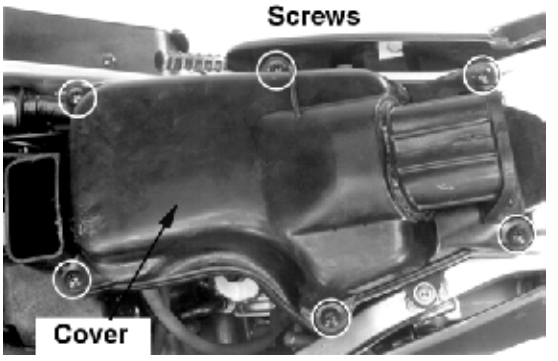


AIR CLEANER

NOTE

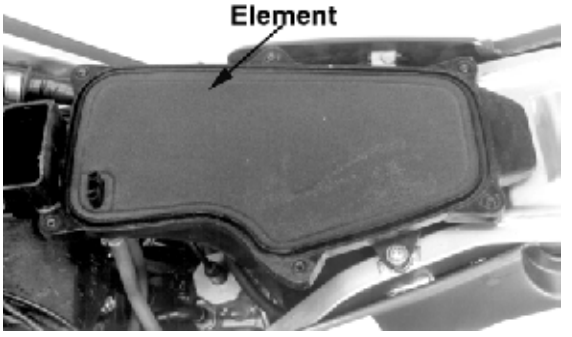
- **The viscous paper element type air cleaner cannot be cleaned because the element contains a dust adhesive. If the motorcycle is used in wet or dusty areas, more frequent inspections are required.**

Remove the fuel tank. (page 2-12)

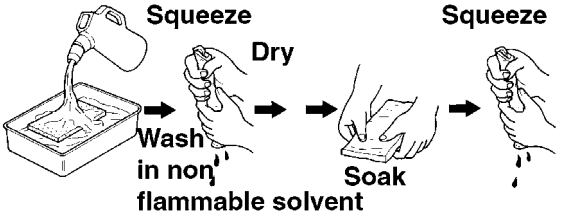


Remove the screws and air cleaner housing cover.

Remove the element from the air cleaner housing.



Wash the element in non-flammable or high flash point cleaning solvent. Squeeze out the solvent thoroughly, and allow to dry.

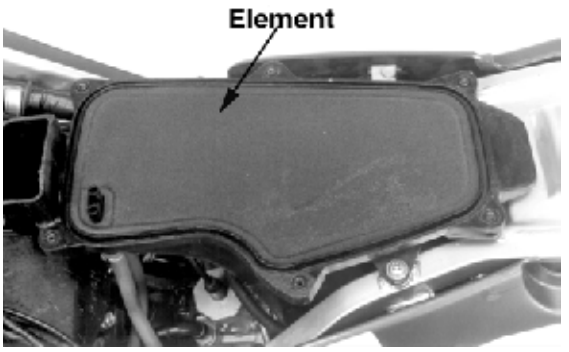


Warning

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

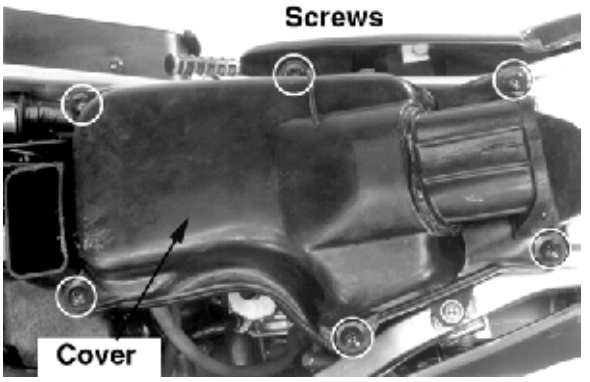
Soak the element in gear oil (SAE #30 - 40) and squeeze out oil.

Install the element to the air cleaner housing.



Install the air cleaner housing cover and screws.
Tighten the screws securely.

Install the fuel tank. (page 2-14)



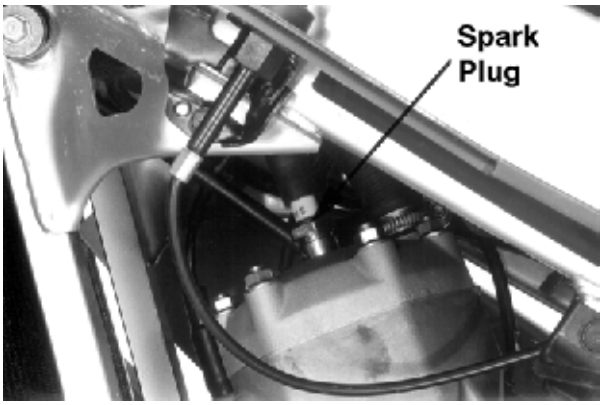
SPARK PLUG

Remove the side cowl

Disconnect the spark plug cap and clean around the spark plug bases.

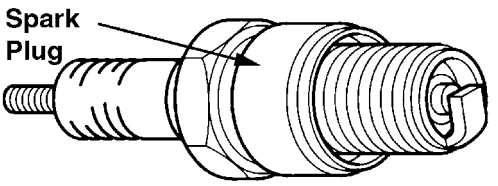
NOTE

- **Clean around the spark plug base with compressed air before removing, and be sure that no debris is allowed to enter the combustion chamber.**



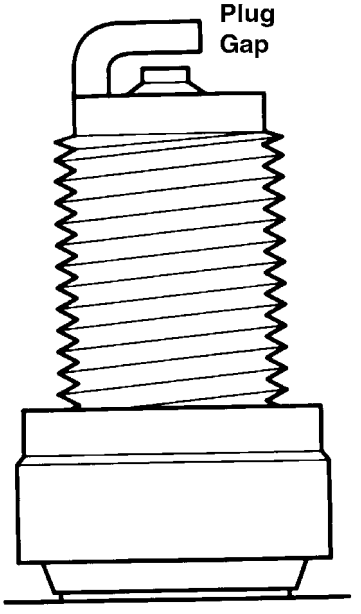
Remove the spark plug using the spark plug wrench. Inspect or replace as described in the maintenance schedule.

INSPECTION



Check the following and replace if necessary (recommended spark plugs: (page 3-1)

- Insulator for damage
- Electrodes for wear
- Burning condition, coloration;
  - dark to light brown indicates good condition.
  - excessive lightness indicates malfunctioning ignition system or learn mixture.
  - wet or black sooty deposit indicates over-rich mixture.



REUSING A SPARK PLUG

Clean the spark plug electrodes with a wire brush or spark plug cleaner.
Check the gap between the center and side electrodes with a wire-type feeler gauge. If necessary, adjust the gap by bending the side electrodes carefully.

SPARK PLUG GAP: 0.7-0.8mm (0.028-0.031in)

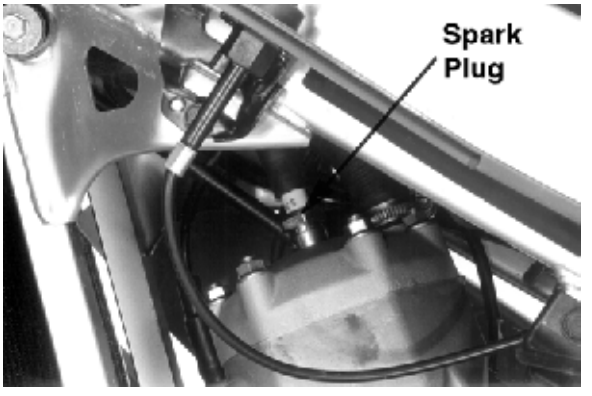
CAUTION

- **To prevent damage to the cylinder head, hand-tighten the spark plug before using a wrench to tighten to the special torque**

Reinstall the spark plug in the cylinder head and hand tighten, then torque to specification.

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

Connect the spark plug cap.



REPLACING A SPARK PLUG

Set the plug gap to specification with a wire-type feeler gauge

CAUTION

- **Do not overtighten the spark plug.**

Install and tighten the new spark plug, then tighten it about ¼ of turn after sealing washer contacts the seat of the plug hole.

DECARBONIZING

CYLINDER HEAD

Remove the cylinder head cover.
(page 8-3)

Remove carbon deposits from the combustion chamber and clean off the head gasket surface.

CAUTION
- **Avoid damaging the gasket surface.**

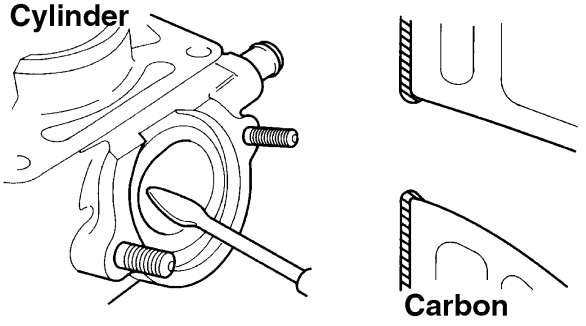
Check the spark plug hole for cracks.

CYLINDER EXHAUST PORT

Remove the cylinder.
Remove the RC valve.

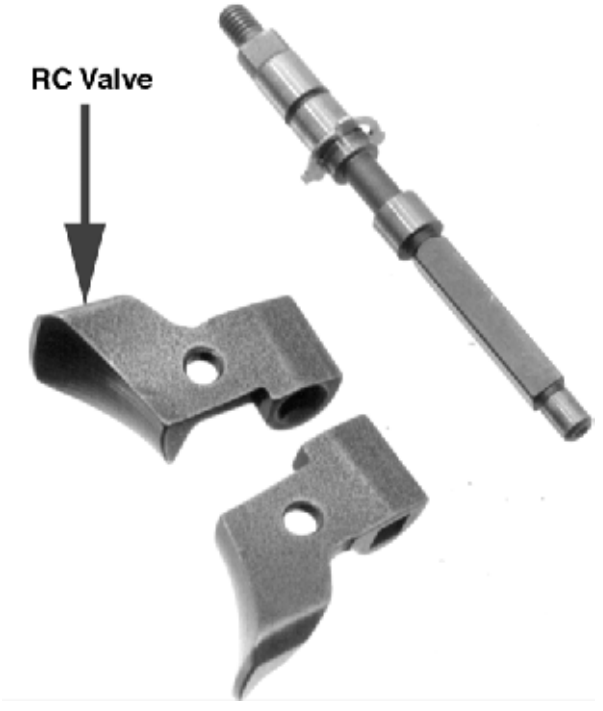
Clean carbon deposits from the exhaust port area.

CAUTION
- **Avoid damaging the cylinder bore.**



Clean carbon deposits from the RC valve.

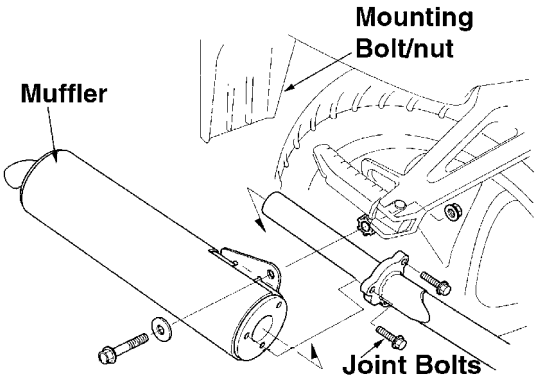
CAUTION
- **Avoid damaging the RC valve.**



MUFFLER

Remove the muffler joint bolts, muffler mounting bolt and nut.

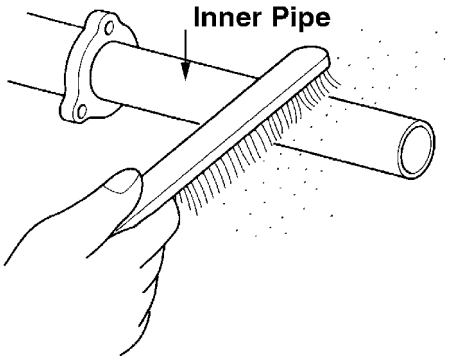
Remove the muffler.



Clean carbon deposits from the inner pipe and muffler.

CAUTION

- **Do not heat or clean with solvent to remove the carbon from the muffler and inner pipe.**



Install the muffler.
Install and tighten the muffler joint bolts and muffler mounting bolt.

ENGINE IDLE SPEED

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.

NOTE

- **Inspect and adjust idle speed after all other engine adjustments are within specification.**
- **Engine must be warm for accurate adjustment. Ten minutes of stop-and-go riding is sufficient.**

Warm up the engine and shift the transmission into neutral.
Place the motorcycle on its side stand.
Check the idle speed and adjust by turning the throttle stop control knob if necessary.

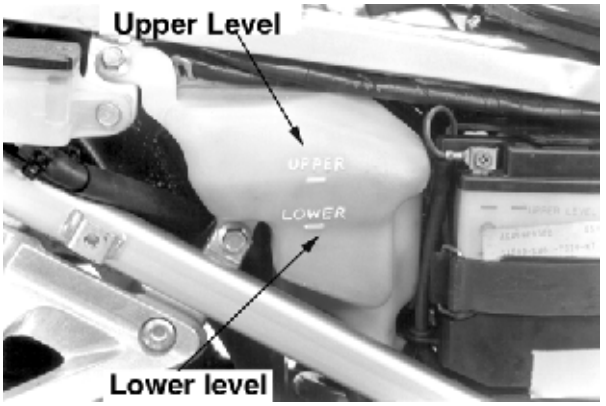
IDLE SPEED: 1,300 ± 100 min-^{1} (rpm)

RADIATOR COOLANT

LEVEL CHECK

Warning

- **Wait until the engine is cool before 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 poisonous. Take care to avoid getting coolant in your eyes, on your skin, or on your clothes.**
- **If coolant gets in your eyes, flush repeatedly with water and contact a doctor immediately.**
- **If coolant is accidentally swallowed, induce vomiting and contact a doctor immediately.**
- **KEEP OUT REACH OF CHILDREN.**



Check the coolant level of the reserve tank with the engine running at normal operating temperature. The level should be between the 'UPPER' and 'LOWER' level lines with the motorcycle in a vertical position on a flat, level surface.

It necessary, remove the seat and reserve tank cap and fill to the 'UPPER' level line with a 50-50 mixture of distilled water and antifreeze / coolant mixture preparation.

CAUTION

- **Be sure to use the proper mixture of antifreeze and distilled water to protect the engine.**
- **Using distilled water Tap water may cause the engine to rust or corrode**

Check to see if there are any coolant leaks when the coolant level decreases very rapidly.

If the reserve tank becomes completely empty, there is a possibility of air getting into the cooling system.
Be sure to remove all air from the cooling system as described on page 6-5.

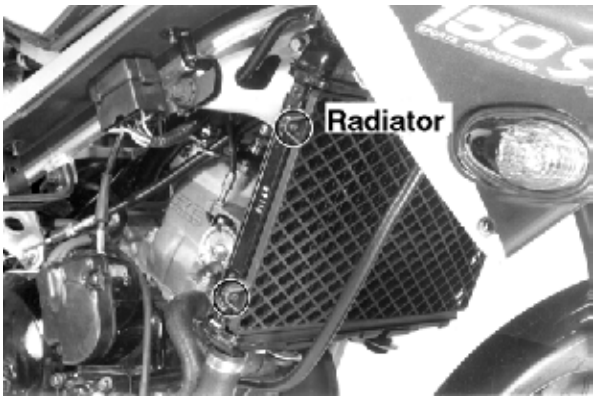
COOLING SYSTEM

Warning

To prevent injury, keep your hands and clothing away from the cooling fan. It may start automatically, without warning.

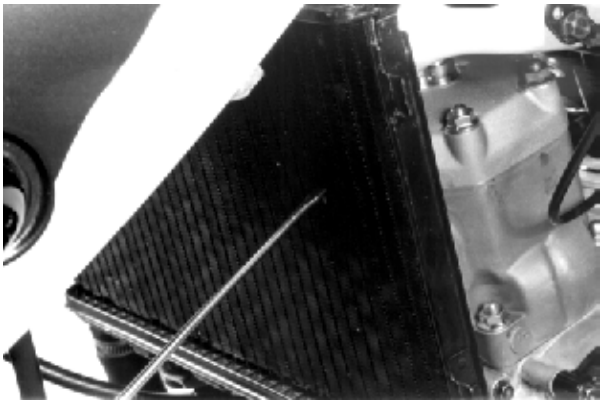
Remove the radiator grill.

Check the radiator air passage for clogging or damage.



Straighten bent fins with a small, flat blade screwdriver and remove insects, mud or other obstructions with compressed air or low pressure water.

Replace the radiator if the air flow is restricted over more than 20% of the radiating surface.
For radiator replacement, refer to (page 6-8).



Remove the side cowl. (page 2-4)
Remove the fuel tank. (page 2-12)

Check for any coolant leakage from the water pump and water hoses.
Make sure the hoses are in good condition; they should not show any sings of deterioration.
Replace any hose that shows any sign of deterioration.
Check that all hose clamps are tight.

TRANSMISSION OIL

OIL LEVEL INSPECTION

Warning

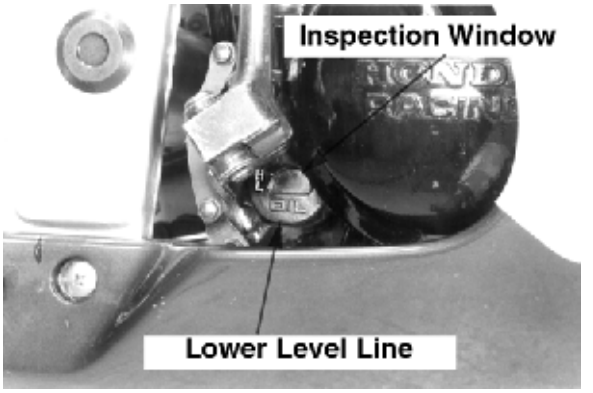
If the engine must be running to do some work, make sure the area is well ventilated. Never run the engine in an enclosed area.

NOTE

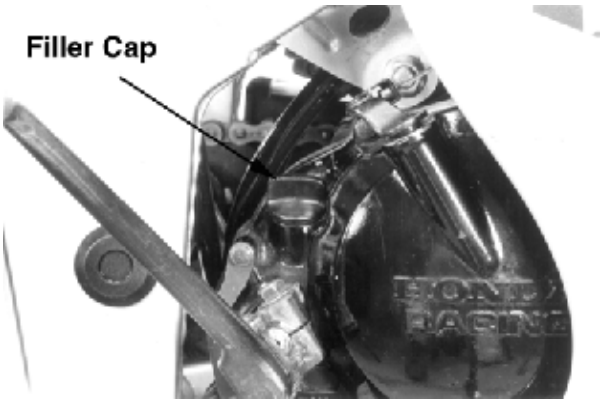
- **The oil level cannot be correctly measured if the motorcycle is not supported perfectly upright on a level surface.**
- **As the oil is gradually consumed, it is necessary to periodically check the oil level and replenish the oil volume to its proper level.**
- **If the oil level is too high, overall engine performance and the actuation of the clutch may be effected. Too little oil may cause engine overheating as well as premature wear to various parts.**
- **If a different brand or grade of oil or low quality oil is mixed when adding oil, the lubricating function deteriorates.**

Start the engine and let it idle for a several minutes.
Stop the engine and wait 2 - 3 minutes.

With the motorcycle upright on the level ground, check the oil level through the inspection window.



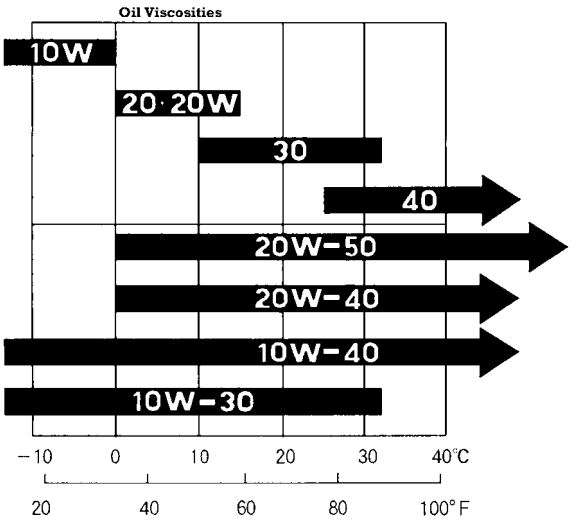
If the level is below or near the lower level line, remove the oil tiller cap and add the recommended oil up to the upper level line.



RECOMMENDED TRANSMISSION OIL:
Honda 4-stroke oil or equivalent motor oil certified to meet APE service classification SE, SF or SG Viscosity: SAE 10W-40.

NOTE

- **Other viscosities shown in the chart may be used when the average temperature in your riding area is within the indicated range.**



Reinstall the oil filler cap.

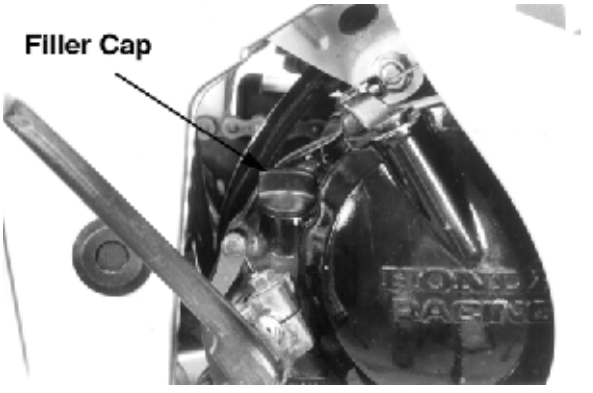
For engine oil change, see below.

OIL CHANGE

NOTE

- **Change the engine oil with the engine warm and the motorcycle on its side stand to assure complete and rapid draining.**

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



Remove the lower cowl.

Warm up the engine.
Place an oil drain pan under the engine to catch the oil, then remove the oil drain bolt and oil filler cap.

After draining the oil completely, check that the sealing washer on the drain bolt is in good condition and replace if necessary. Tighten the drain bolt to the specified torque.

TORQUE: 21 N.m (2.1 kgf.m, 15 lbf-ft)

Fill the crankcase with the recommended engine oil.

CAPACITY:
0.7 Litres (0.73 US qt, 0.62 Imp qt)

Install the oil filler cap.

Start the engine and re-check the oil level. Make sure that there are no oil leaks. Install the lower cowl.

DRIVE CHAIN

Warning

- **Inspecting the drive chain while the engine is running can result in serious hand or finger injury.**

DRIVE CHAIN SLACK INSPECTION

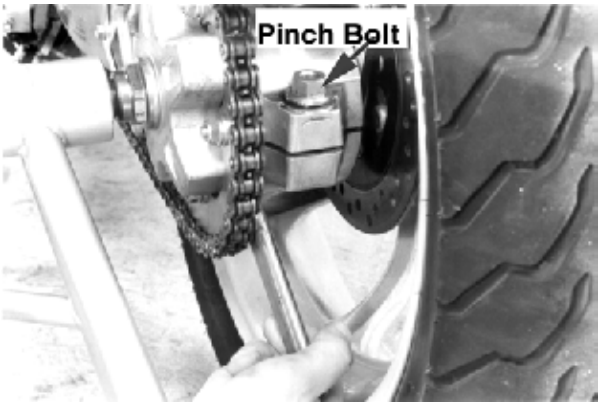
Turn the ignition switch OFF, place the motorcycle on its side stand and shift the transmission in neutral.
Check the slack in the drive chain lower run midway between the sprockets.

DRIVE CHAIN SLACK:
35mm

Lubricate the drive chain

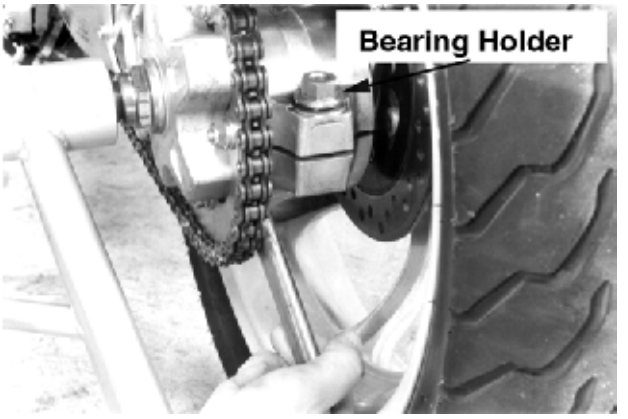
ADJUSTMENT

Loosen the bearing holder pinch bolt.



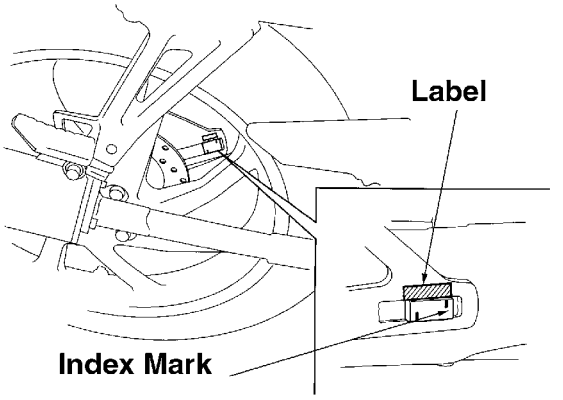
Raise the rear wheel off the ground by placing a support under the engine.

Turn the bearing holder with the pin spanner provided in the tool kit until the correct drive chain slack is obtained.



After adjustment, check the chain wear label on the rear caliper bracket.

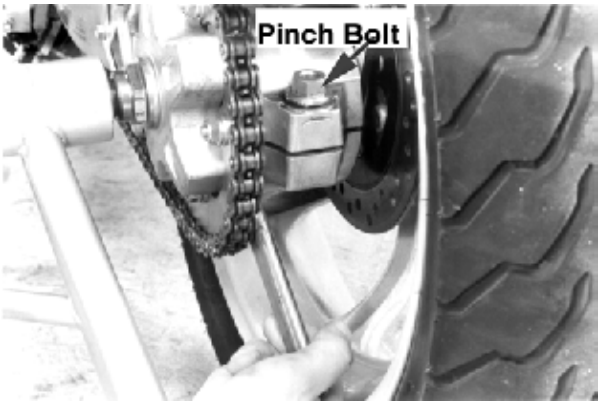
If the red zone on the label reaches the outside index mark of the swingarm, replace the drive chain with the new one.



Tighten the bearing holder pinch bolt to the specified torque.

TORQUE: 73 N.m (7.4 kgf.m, 54 lbf-ft)

Re-check chain slack and free wheel rotation.
Lubricate the drive chain with #80 - 90 gear oil.
Wipe off the excess chain oil.

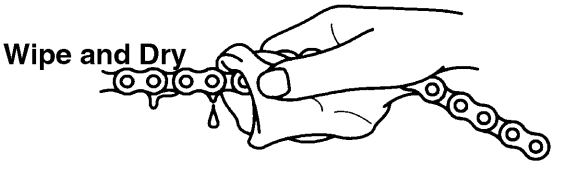


CLEANING, INSPECTION AND LUBRICATION DRIVE CHAIN

CAUTION

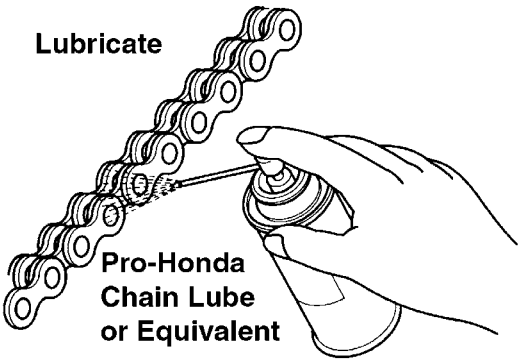
- **Chains with 0-rings should not be treated to the following cleaning and oiling procedure. This treatment will cause degradation of the 0-rings and loss of grease, thus shortening chain life not use steam or high pressure water washing. Use a chain spray containing a cleaning agent or use gasoline to clean the chain.**

Clean the chain with suitable detergent and wipe it dry.
Be sure the chain has dried completely before lubricating.



Inspect the drive chain for possible damage or wear. Replace any chain that has damaged rollers, loose fitting links, or other wise appears unserviceable. Installing a new chain on badly worn sprockets will cause the new chain to wear quickly. Inspect and replace sprockets as necessary.

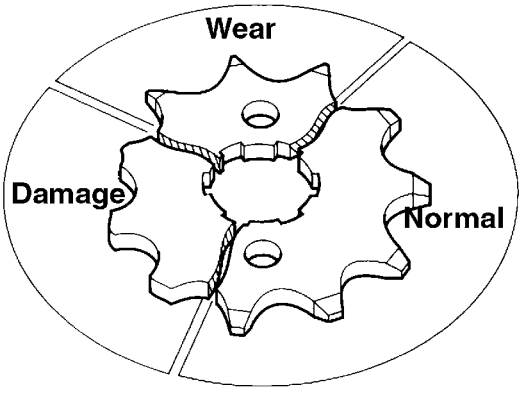
Lubricate the drive chain with #80 - 90 gear oil. Wipe off the excess chain oil.



SPROCKET

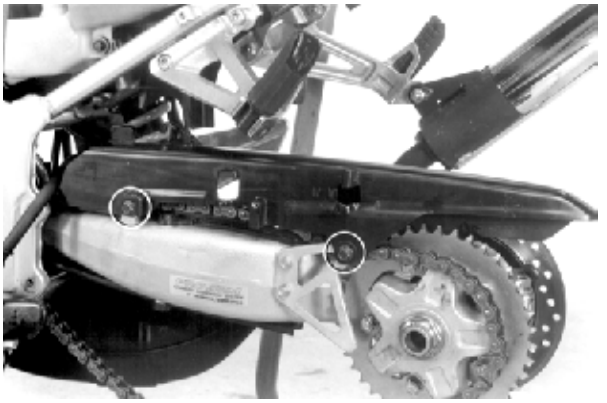
Inspect the drive and driven sprocket teeth for damage or wear.
Replace if necessary.
Never use a new drive chain on worn sprockets. Both chain and sprockets must be in good condition or the new replacement chain wilt wear rapidly.

Check the attachment bolt and nuts on the drive and driven sprockets. If any are loose, torque them.



REPLACEMENT

Remove the swingarm and replace the drive chain.

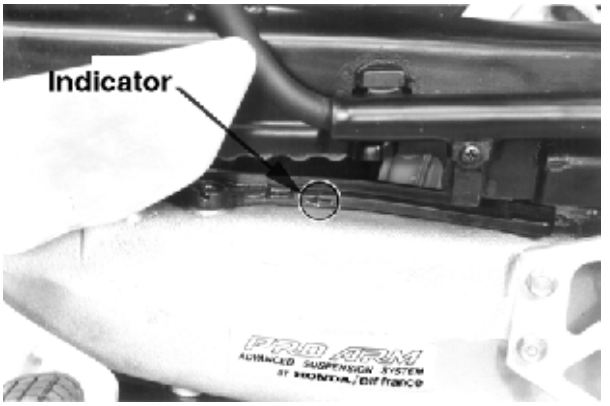


DRIVE CHAIN SLIDER

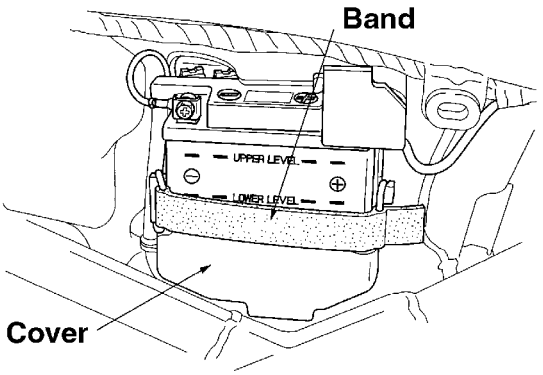
Check the drive chain slider for wear or damage.
Replace the drive chain slider if it is worn to the indicator.

CAUTION

- **If the chain slider becomes worn through to the swingarm, the chain will begin to wear against the swingarm.**



BATTERY



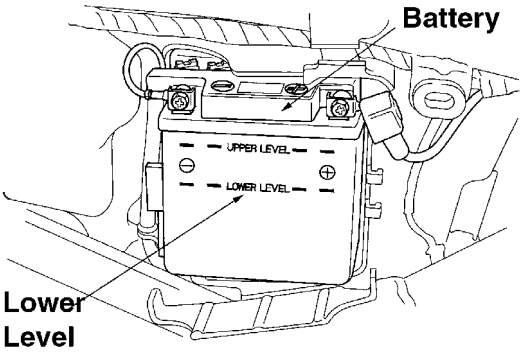
Warning

The battery electrolyte contains sulfuric acid. Protect your eyes, skins and clothing. If electrolyte gets in your eyes; flush them thoroughly with water and get prompt medical attention.

Remove the battery from the battery compartment (page 16-5).

NOTE

- **Add only distilled water. Tap water will shorten the service life of the battery.**
- **Inspect the battery fluid level in each cell.**

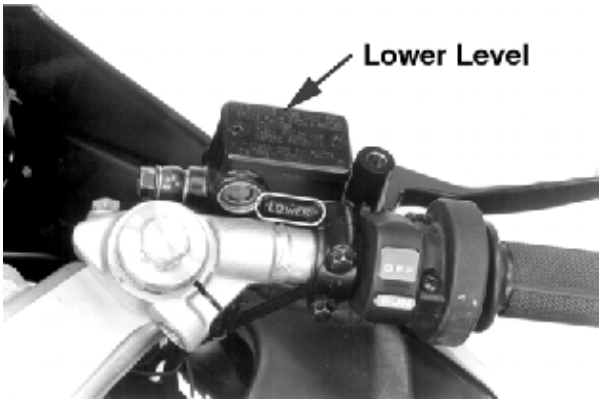


When the fluid level near the lower level, refill with distilled water to the upper level.

BRAKE FLUID

CAUTION

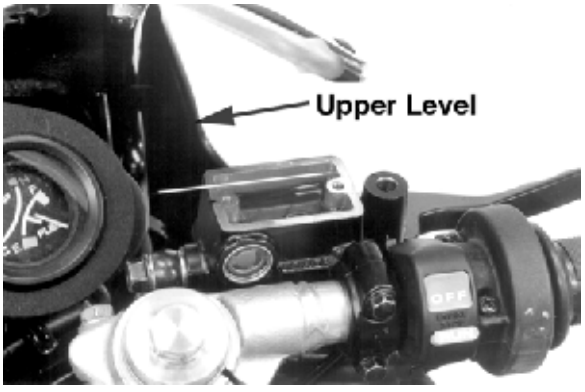
- **Do not remove the cover or cap unless the reservoir is level because fluid may spilt out.**
- **Do not mix different types of fluid, as they are not compatible with each other.**
- **Do not allow foreign material to enter the system when filling the reservoir.**
- **Avoid spilling fluid on painted, plastic or rubber parts. Place a rug over these parts whenever the system is serviced.**



NOTE

- **When the fluid level is low, check the brake pads for wear (see below). A low fluid level may be due to wear of the brake pads. If the brake pads are worn, the caliper piston is pushed out, and this accounts for a low reservoir level. If the brake pads are not worn and the fluid level is low, check entire system for leaks**
- **Do not remove the level float from the reservoir when filling with brake fluid.**

FRONT BRAKE
Turn the handlebar to the left side so that the reservoir is level and check the front brake reservoir level through the sight glass. If the level (float edge) is near the lower level mark, remove the screws, cover, set plate and diaphragm and fill the reservoir to the casting ledge with DOT 3 or 4 brake fluid from a sealed container.

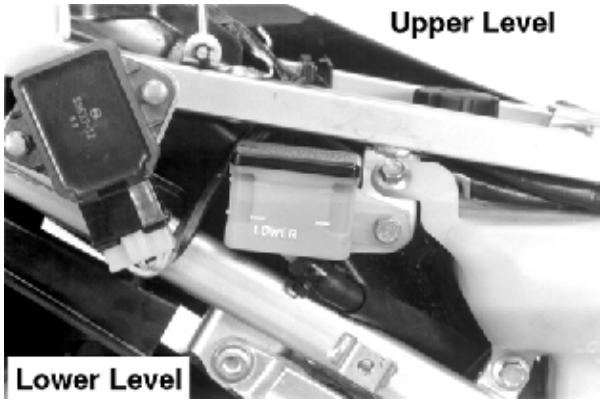


REAR BRAKE

Remove the right side cover.
(page 2-7)

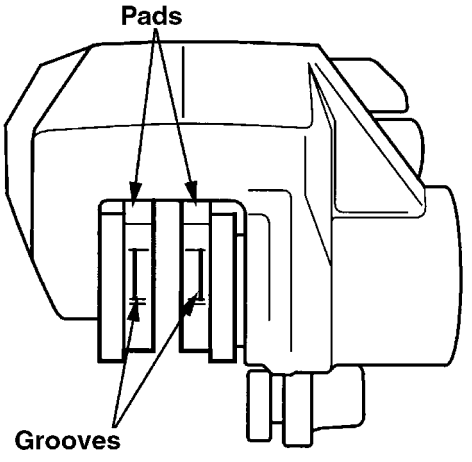
Place the motorcycle on a level surface, and support it upright. Check the rear brake fluid reservoir level.
If the level is near the lower level mark, remove the screws, cover, set plate and diaphragm and fill the reservoir to the upper level mark with DOT 3 or 4 brake fluid from a sealed container.

Refer to page 15-5 for brake fluid replacement/bleeding procedures.

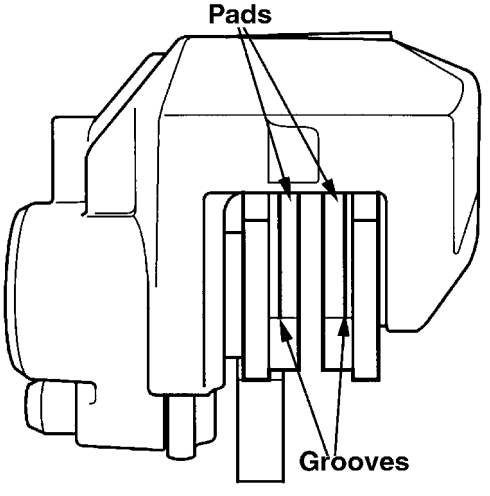


BRAKE PAD WEAR

FRONT:
Check the brake pad for wear.
Replace the brake pads if either pad is worn to the bottom of wear limit groove.
Refer to page 15-6 for brake pad replacement.

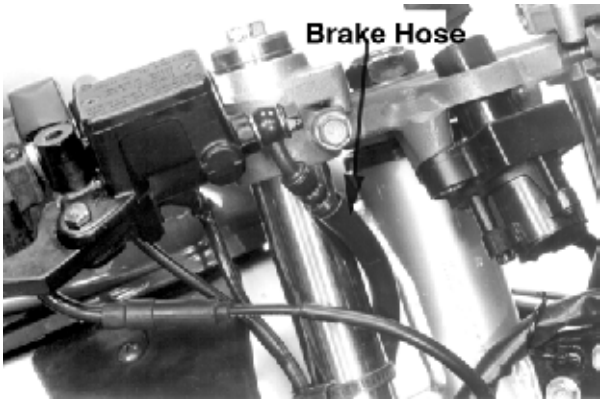


REAR:
Check the brake pad for wear.
Replace the brake pads if either pad is worn to the bottom of wear limit groove.
Refer to page 15-9 for brake pad replacement.

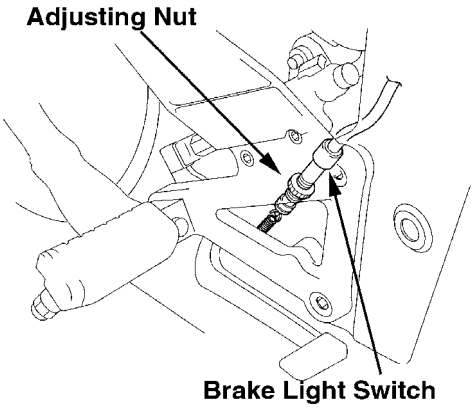


BRAKE SYSTEM
Firmly apply the brake lever or pedal, and check that no air has entered the system. If the lever or pedal feels soft or spongy when operated, bleed air from the system.

Inspect the brake hoses and fittings for deterioration, cracks and signs of leakage. Tighten any loose fittings. Replace hoses and fittings as required. Refer to page 15-5 for brake bleeding procedures.



BRAKE LIGHT SWITCH



CAUTION

- **Allowing the switch body to turn during adjustment can break the wires in the switch.**

NOTE

- **The brake light switch on the front brake lever cannot be adjusted. If the front brake light switch actuation and brake engagement are off, either replace the switch unit or the malfunctioning parts of the system.**
- **Make all rear brake light switch adjustments after the height adjustment and the brake pedal free play adjustment have been made.**

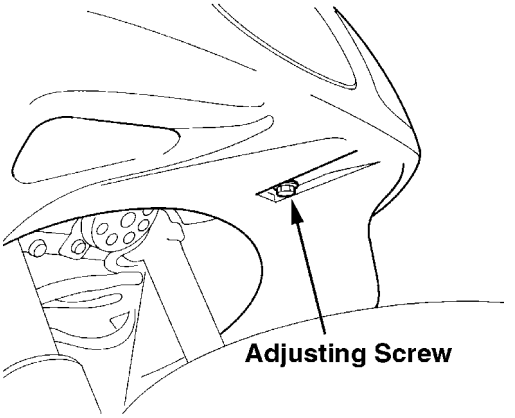
Check the brake light switch operation and adjustment by applying the brakes. Visually inspect for any damage and make sure the reflector plate is clean within the light.
Adjust the rear brake light switch so that the brake light comes on just prior to the brake actually being engaged. If the light fails to come on, adjust the switch so that the light comes on at the proper time.

Turn the adjusting nut on the brake light switch and not the switch body and wires to make switch actuation adjustments.
Be sure to hold the switch body firmly while turning the adjusting nut.

After adjustment, recheck to be sure the brake light comes on at the proper time.

HEADLIGHT AIM

An improperly adjusted headlight may blind oncoming drivers, or it may fail to light the road for a safe distance.



NOTE

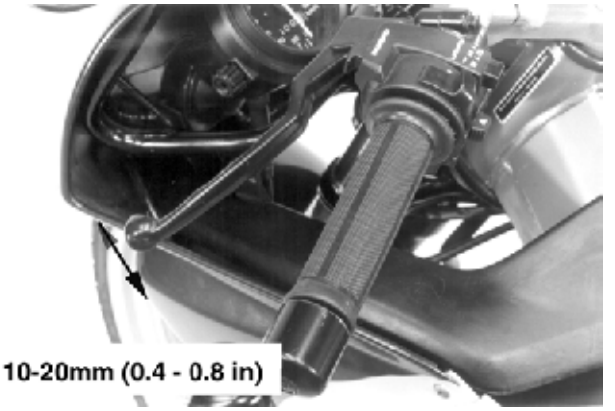
- **Adjust the headlight beam as specified by local laws and regulation.**

Adjust the headlight beam by turning the screw at the under of the upper cowl.

CLUTCH SYSTEM

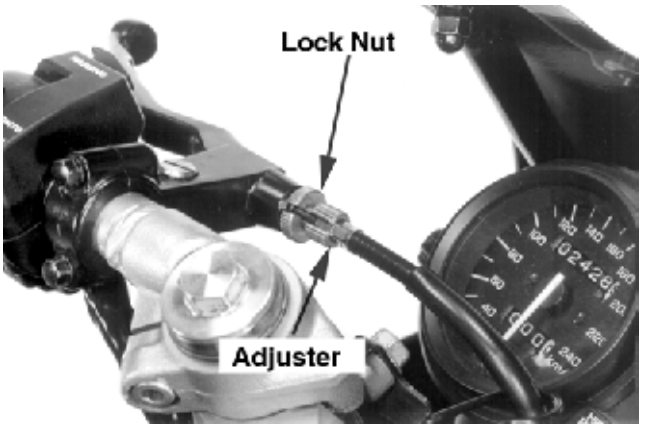
Measure the clutch free play at the end of the clutch lever.

FREE PLAY: 10 - 20 mm 0.4 - 0.8 in)



Adjust as follows:

Minor adjustments are made at the adjuster near the lever. Loosen the lock nut and turn the adjuster. Tighten the lock nut.



CAUTION

- **The adjuster may be damaged if it is positioned too far out, leaving minimal thread engagement.**

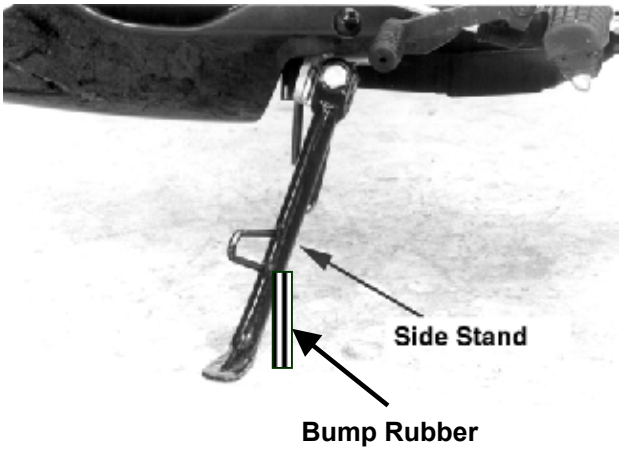
If the adjuster is threaded out near its limit and the correct free play cannot be obtained, turn the adjuster all the way in and back out one turn. Tighten the lock nut and make a major adjustment as described below.

Remove the side cowl and lower cowl.

Major adjustment is performed at the clutch arm.
Loosen the lock nut and turn the adjusting nut to adjust free play. Hold the adjusting nut securely while tightening the lock nut.
If proper free play cannot be obtained, or the clutch slips during the test ride, disassemble and inspect the clutch.

SIDE STAND
Support the motorcycle on a level surface.

Check the side stand spring for damage or loss of tension. Check the side stand assembly for freedom of movement and lubricate the side stand pivot if necessary.
Make sure that the side stand is not bent.



Ensure that the “bump” rubber is attached and in good condition.

SUSPENSION

Warning

Loose, worn, or damaged suspension parts impair motorcycle stability and control. Repair or replace any damaged components before riding. Riding a motorcycle with faulty suspension increases your risk of an accident and possible injury.

FRONT

Check the action of the forks by operating the front brakes and compressing the front suspension several times.
Check the entire fork assembly for signs of leaks, damage or loose fasteners.
Replace damaged components which cannot be repaired.
Tighten all nuts and bolts.

Refer to section 13 for front fork service.

REAR

Support the motorcycle securely using safety stand or hoist and raise the rear wheel off the ground.
Check for worn swingarm bearings by grabbing the rear wheel and attempting to move the wheel side to side. Replace the bearings if any looseness is noted.

Check the action of the shock absorbers by compressing them several times.
Check the entire shock absorber assembly for signs of leaks, damage or loose fasteners.
Replace damaged components which cannot be repaired. Tighten all nuts and bolts.

Refer to section 14 for shock absorber service.

NUTS, BOLTS, FASTENERS

Check that all chassis nuts, bolts and screws are tightened to their correct torque values at the interval shown in the Maintenance Schedule.
Check that all cotter pins, slip clips, hose clamps and cable stays are in place and properly secured.

WHEELS / TYRES

Making sure the fork is not allowed to move, raise the front wheel and check for play. Turn the wheel and check that it rotates smoothly with no usual noises.

If faults are found inspect the wheel bearings.

Support the motorcycle securely and raise the rear wheel off the ground. Check for play in either the wheel or the swingarm pivot. Turn the wheel and check that it rotates smoothly with no unusual noises.

If abnormal conditions are suspected, check the rear wheel bearings.

NOTE

- **As the swingarrn pivot is included in this check, be sure to confirm the location of the play; i.e. from the wheel bearings or the swingarm pivot.**

NOTE

- **Tire pressure should be checked when tires are COLD.**

Check the pressure of each tire with a pressure gauge.

Recommended tire pressure and tire size

Unit: kPa (kgf/cm^2, psi)

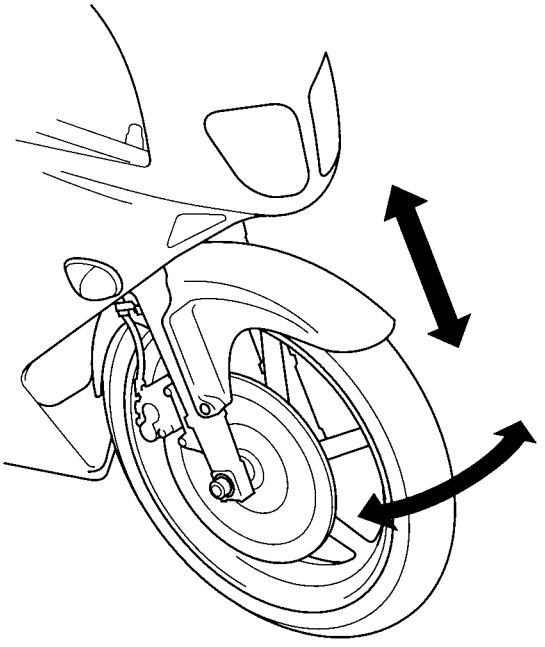
		Front	Rear
Cold tire pressure	Driver Only	200 (2.00, 29)	200 (2.00, 29)
	Driver and passenger	200 (2.00, 29)	200 (2.00, 29)
Tire Size		90/80-17 46S	120/80-17 61S

Check the tires for cuts, embedded nails, or other damage.
Check the front and rear wheels for trueness. (Section 11-12)

Measure the tread depth at the center of the tires. Replace the tires when the tread depth reaches the following limits.

MINIMUM TREAD DEPTH: Front: 1.5 mm (0.06 in)
Rear: 2.0 mm (0.08 in)

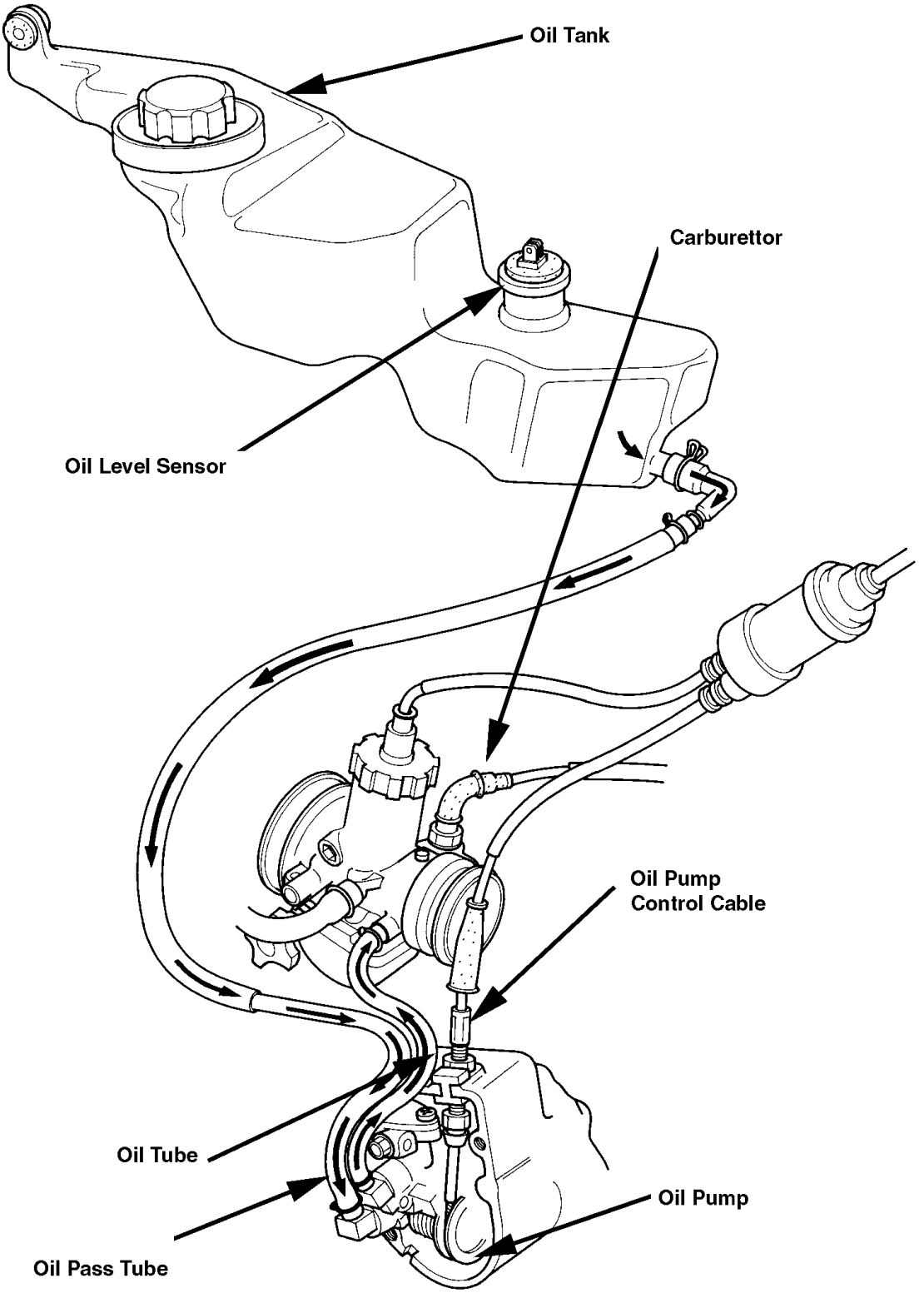
STEERING HEAD BEARINGS



NOTE

- **Check that the control cables do not interfere with handlebar rotation.**

Support the motorcycle securely and raise the front wheel off ground check that the handlebar moves freely from side to side. If the handlebar moves unevenly, binds, or has vertical movement, inspect the steering head bearings.


Oil Tank
Carburettor
Oil Level Sensor
Oil Pump
Control Cable
Oil Tube
Oil Pump
Oil Pass Tube

SERVICE INFORMATION

GENERAL

Warning

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

CAUTION

- **Air in oil system will block or restrict oil flow and may result in severe engine damage.**
- **Bleed air from the oil lines whenever the oil lines or pump have been removed or there is air in the oil lines.**
- **Bleed air from the oil inlet line first, then bleed air from oil outlet line.**

- The engine must be removed from the frame before servicing the oil pump.
- When removing and installing the oil pump use care not to allow dust or dirt to enter the engine.
- Do not attempt to disassemble the oil pump.
- Fill the oil outlet line with oil whenever the oil outlet line is disconnected.
- When disconnecting the oil outlet line tube, clamp or plug the tube to prevent oil from flowing out.
- The oil pump control cable should be adjusted after the throttle grip free play is adjusted.
- For oil indicator inspection, refer to section 18 of this manual.
- For engine oil strainer cleaning, refer to page 3-5.

SPECIFICATIONS

Unit: mm (in)

ITEM	STANDARD	SERVICE LIMIT
Engine oil capacity	0.76 litre (0.83 US qt, 0.67 Imp qt)	
Recommended engine oil	Used Honda 2-stroke oil or equivalent	
Transmission oil capacity	0.7 litre (0.73 US qt, 0.62 Imp qt)	
	0.8 litre (0.85 US qt, 0.70 Imp qt)	
Recommended transmission oil	Used Honda 4-stroke oil or equivalent API Service Classification: SE, SF or SG Viscosity: SAE 10W-40	

TORQUE VALUES

Oil drain bolt 21 N.m (2.1 kgf, 15 lbf-ft)

TROUBLESHOOTING

Excessive smoke and/or carbon on spark plug

- Faulty oil pump (too much oil flow)
- Low quality engine oil

Overheating or seized piston

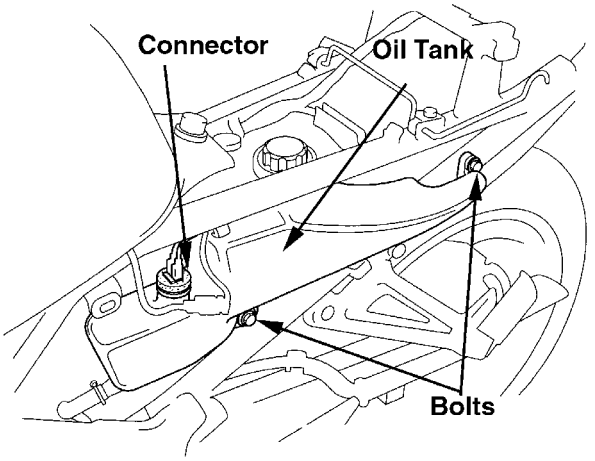
- No oil in tank or clogged oil line
- Air in oil lines or oil pump
- Faulty oil pump (too little oil flow)
- Clogged oil strainer
- Clogged oil tank cap breather hole

ENGINE OIL

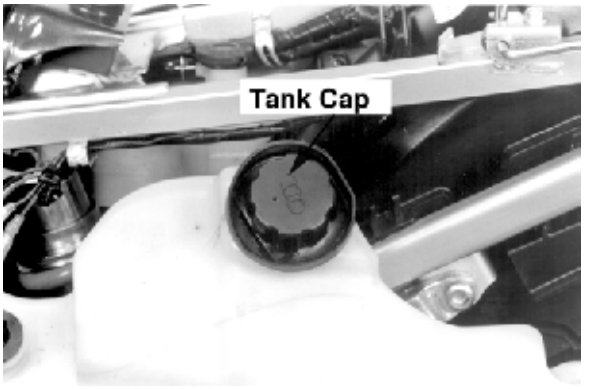
ENGINE OIL DRAINING AND OIL TANK REMOVAL

Remove the left side cover. (Page 2-6)

Disconnect the oil level sensor connectors.
Remove the bolts and oil tank.

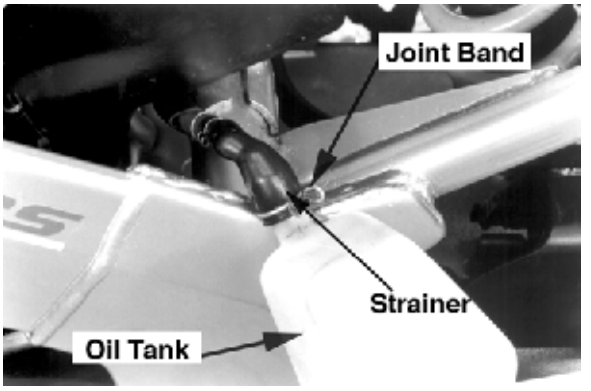


Remove the oil tank cap and drain the engine oil.



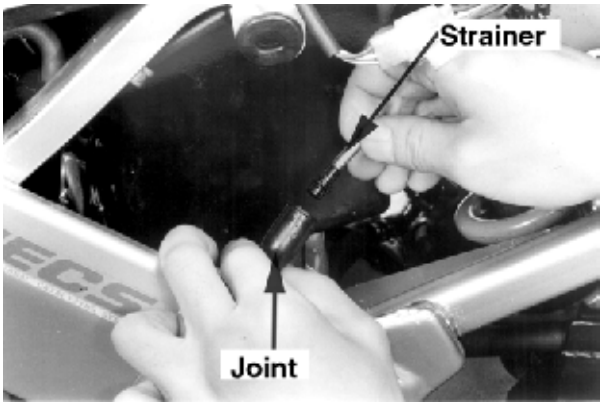
Remove the joint band and oil strainer from the oil tank.
Remove the oil tank.

Clean the oil strainer. (Page 3-5)

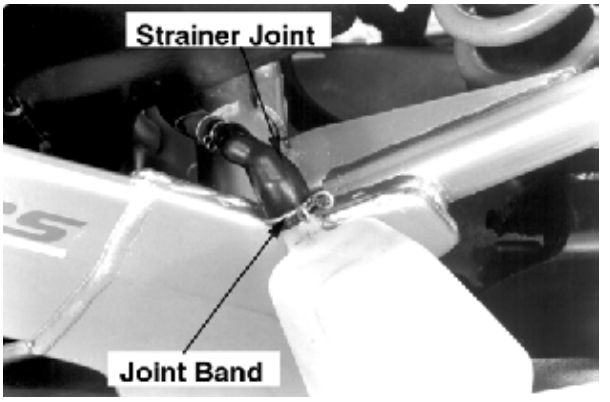


ENGINE OIL REFILLING AND OIL TANK INSTALLATION

Install the oil strainer to the strainer joint.



Install the strainer joint to the oil tank.
Install the joint band.

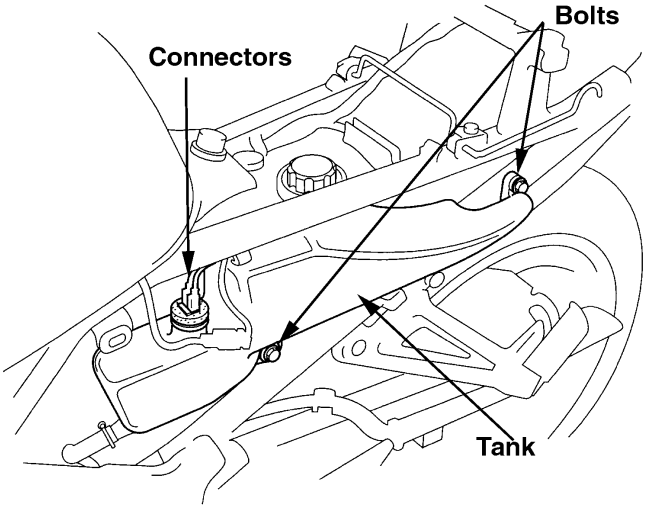


Install the oil tank.
Install and tighten the bolts securely.
Connect the oil level sensor connectors.

Fill the oil tank with the recommended engine oil and bleed the air from the oil pump and oil line.

OIL TANK CAPACITY.
0.76 litre (0.83 US qt, 0.67imp qt)
RECOMMENDED ENGINE OIL:
Honda 2-stroke oil or equivalent

Make sure that there are no oil leaks.

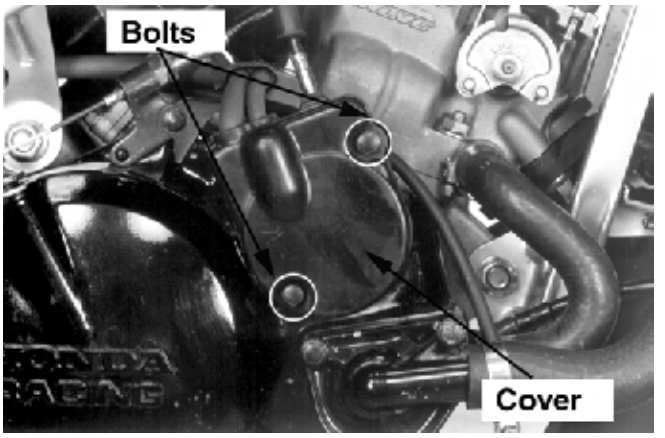


OIL PUMP

CAUTION

- **Air in oil system will block or restrict oil flow and may result in severe engine damage.**
- **Bleed air from the oil lines whenever the oil lines, pump have been removed or there is air in the oil line Bleed air from the oil inlet line first, then bleed air from oil outlet line.**

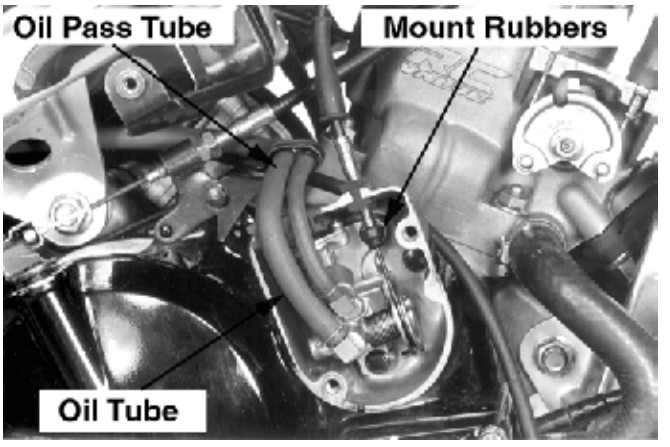
NOTE
When removing and installing the oil pump, use care not to allow dust or dirt to enter the engine.



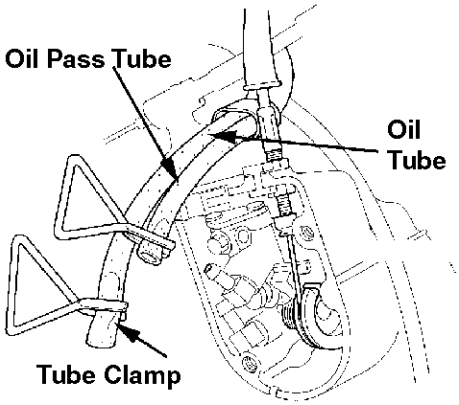
REMOVAL

Remove the right side cowl and lower cowl. (Page 2-4)

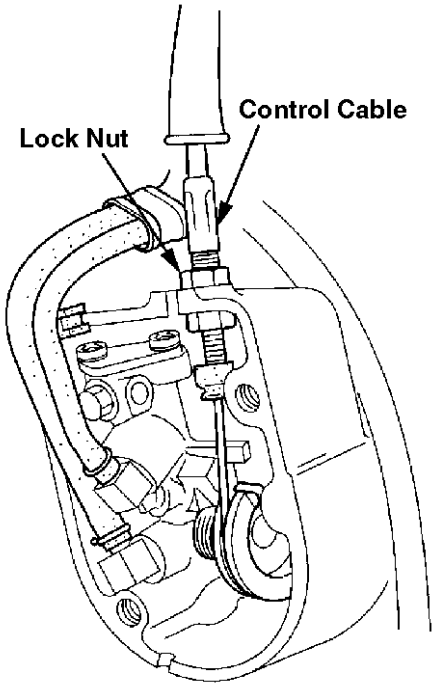
Drain the transmission oil.
Remove the bolts and oil pump cover. (Page 3-14)
Remove the mount rubbers.
Disconnect the oil tube and oil pass tube from the oil pump.



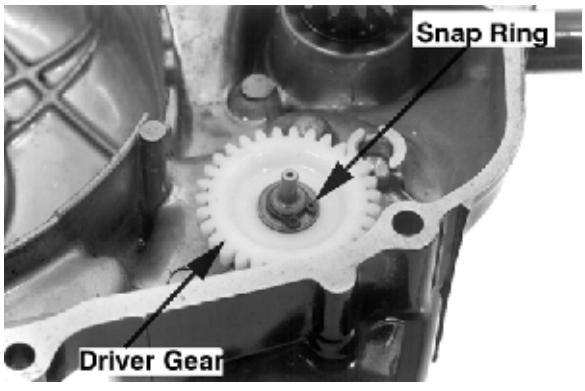
Clamp the oil tube and oil pass tube to prevent oil from flowing out.



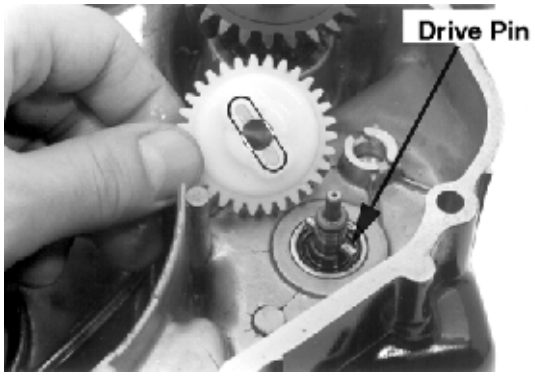
Loosen the lock nut and disconnect the oil control cable from the oil pump drum.
Remove the right crank case cover. (Page 10-3)



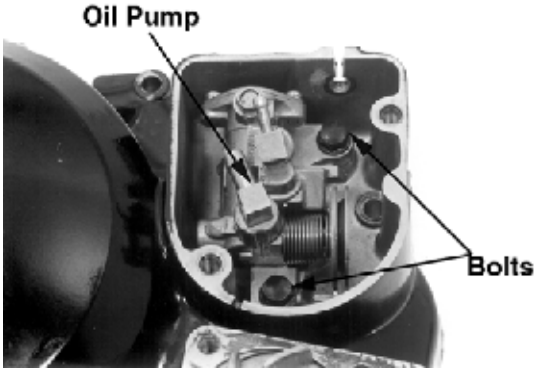
Remove the snap ring and washer.
Remove the oil pump drive gear from the oil pump shaft.



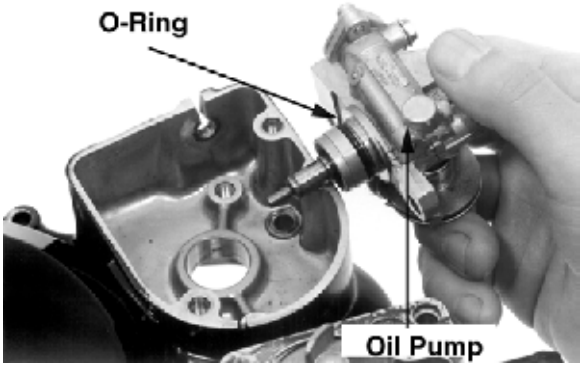
Remove the drive pin from the oil pump shaft.



Remove the bolts and oil pump from the right crank case cover.



Remove the 0-ring from the oil pump.

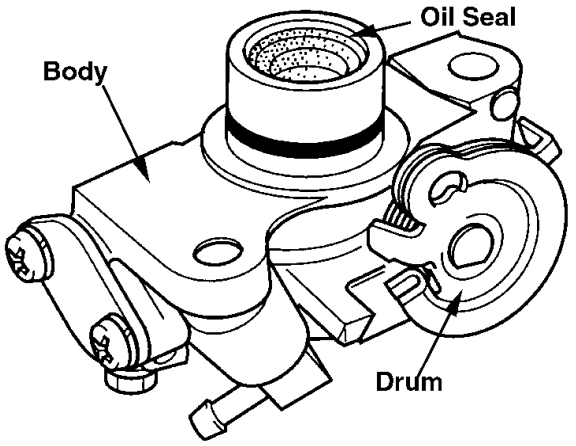


INSPECTION

CAUTION

- **Do not attempt to disassemble the oil pump.**

Check the oil pump body for damage.
Check the oil pump oil seal for wear or damage.
Check the oil pump drum for smooth operation.



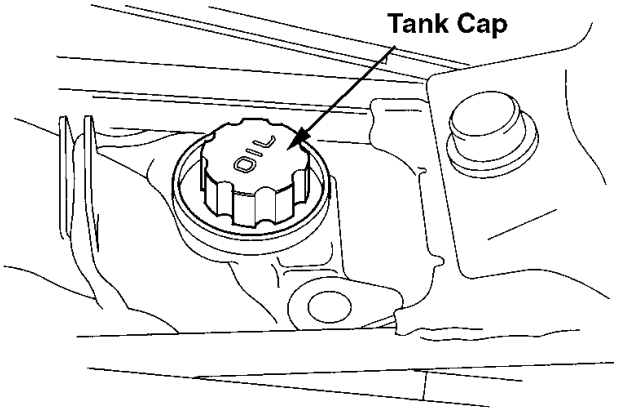
AIR BLEEDING / INSTALLATION

OIL TUBE AND OIL PUMP BLEEDING

Remove the seat. (Page 2-3)

Remove the oil tank cap and fill the tank with the recommended engine oil.

RECOMMENDED ENGINE OIL:
Honda 2-stroke oil or equivalent

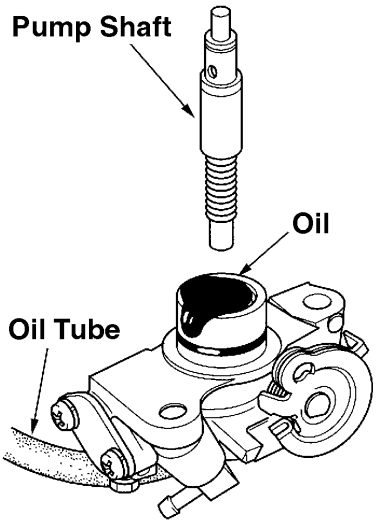


Place the shop towel around the oil pump.
Let oil drip from the oil tube to expel any air that may be in the tube, and then connect the oil tube to the pump inlet.

Remove the oil pump shaft while holding the oil pump its install surface facing up.

Check that the oil flows out of the outlet.

Wait until there are no air bubbles in the oil coming out of the oil pump shaft hole then reinstall the oil pump shaft.

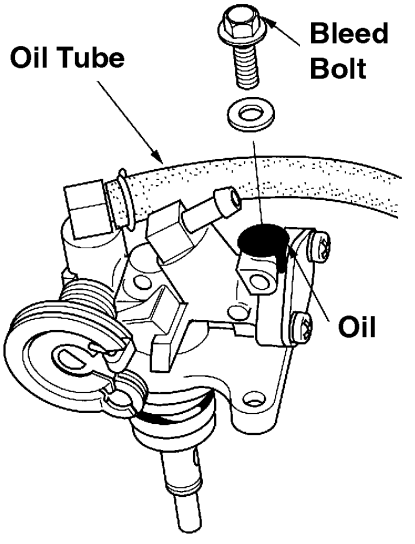


NOTE
When installing the oil pump shaft use care not to allow dust or dirt to enter the oil pump

Turn the oil pump with its installing surface on level ground.

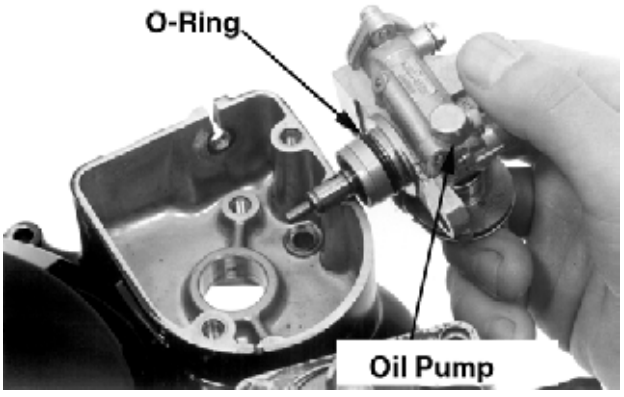
Remove the bleed bolt ' and refill the oil from the bleed bolt hole until the oil flows out of the bleed bolt hole.

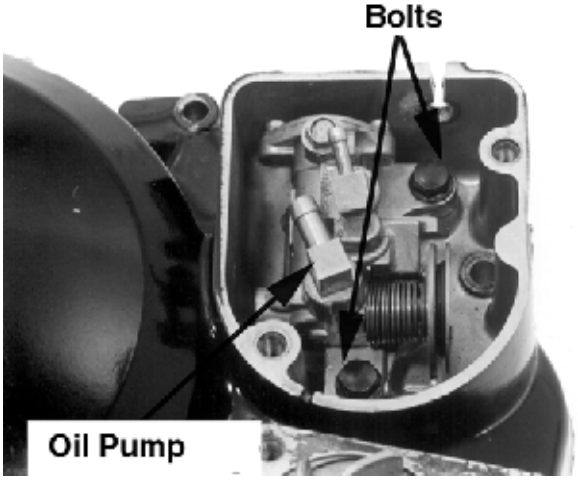
Check that oil flows out of the outlet.
Wait until there are no air bubbles in the oil coming out of the oil hole, then retighten the bleed bolt.



OIL PUMP INSTALLING

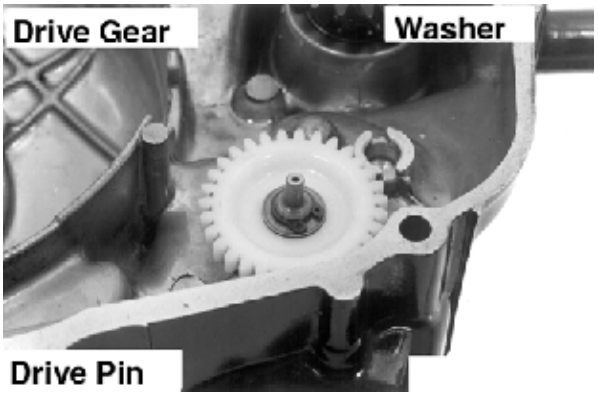
Clean the oil pump mating surface of the right crankcase cover.
Install the new 0-ring to the oil pump groove.
Apply transmission oil to the new 0-ring and then, install the oil pump/O-ring to the right crankcase cover.
Install and tighten the bolts securely.

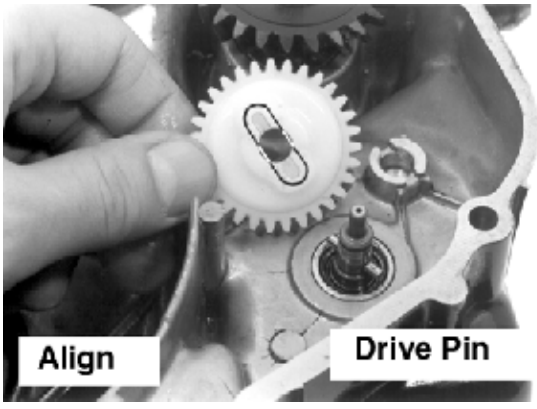




Install the drive pin to the oil pump shaft.
Install the oil pump drive gear to the oil pump shaft.
Install the washer and snap ring.

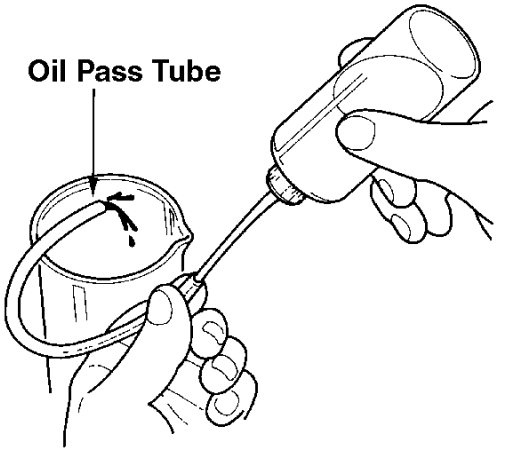
Install the right crankcase cover.





OIL PASS TUBE BLEEDING

Disconnect the oil pass tube from the carburettor.
Bend the oil pass tube into a 'U' from with both the ends parallel, and fill the oil pass tube with clean engine oil.



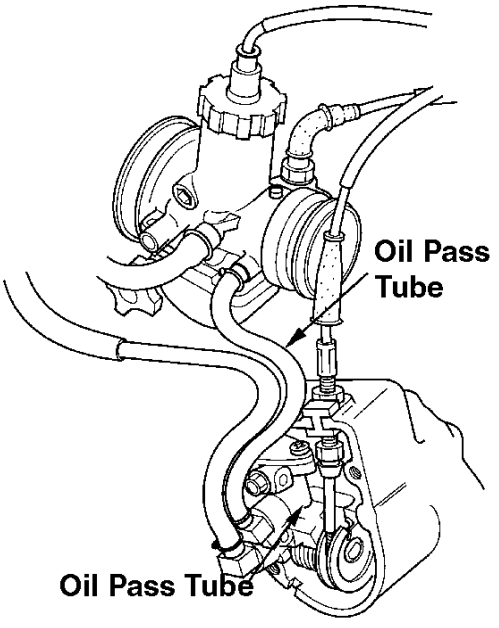
Connect the oil pass tube to the oil pump.

Drain the fuel from the carburettor.

Turn the fuel valve off and disconnect the fuel tube from the fuel valve.

Connect the fuel tube to the container filled with fuel-oil mixture
(25-50 parts fuel to 1 part oil).

Start the engine and allow it to idle with the oil control lever in the fully open position, making sure that oil is flowing out of the oil pass tube.



Warning

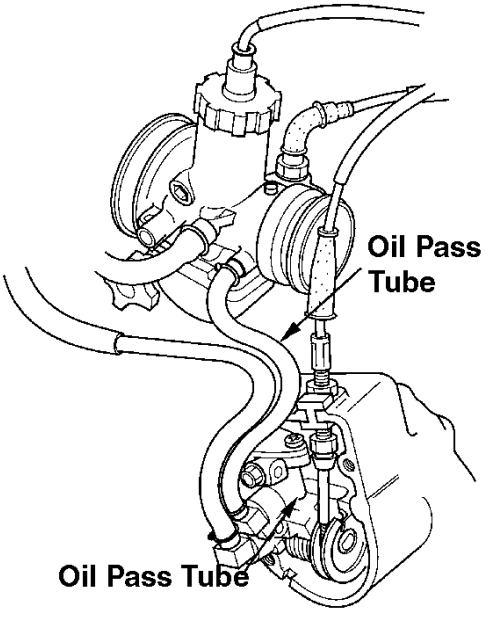
Perform this operation in a well ventilated area. Exhaust contains poisonous carbon monoxide gas that can cause loss of conscious and may lead to death.

CAUTION

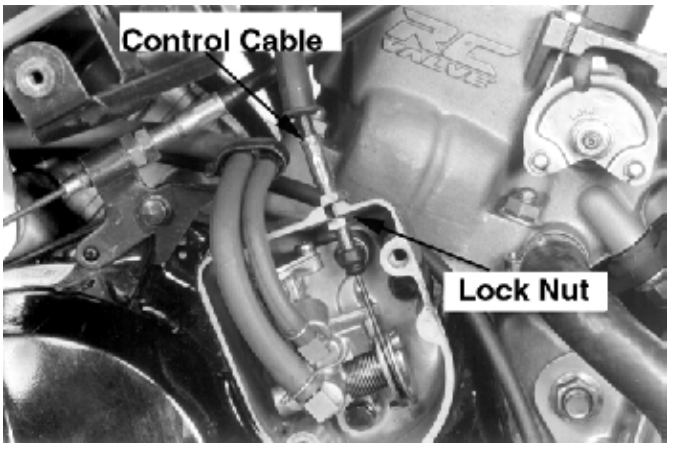
- **Run the engine at lowest necessary rpm level to avoid possible engine damage if oil flow is restricted.**

Stop the engine and again bleed air from the oil tube and oil pump if oil does not flow out within one minute.
Then recheck oil flow.

Connect the oil pass tube to the carburettor.

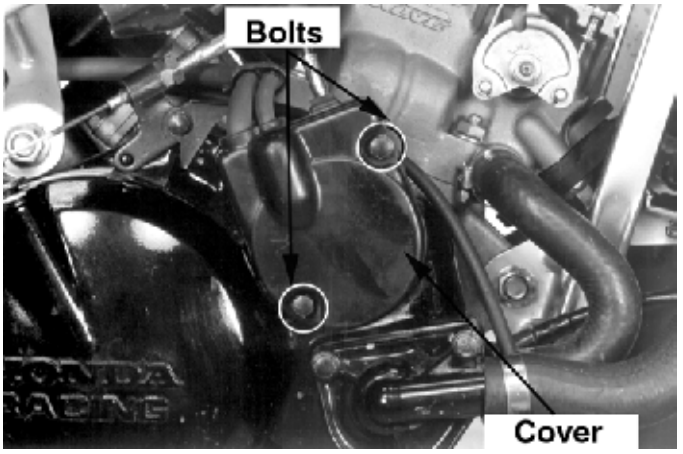


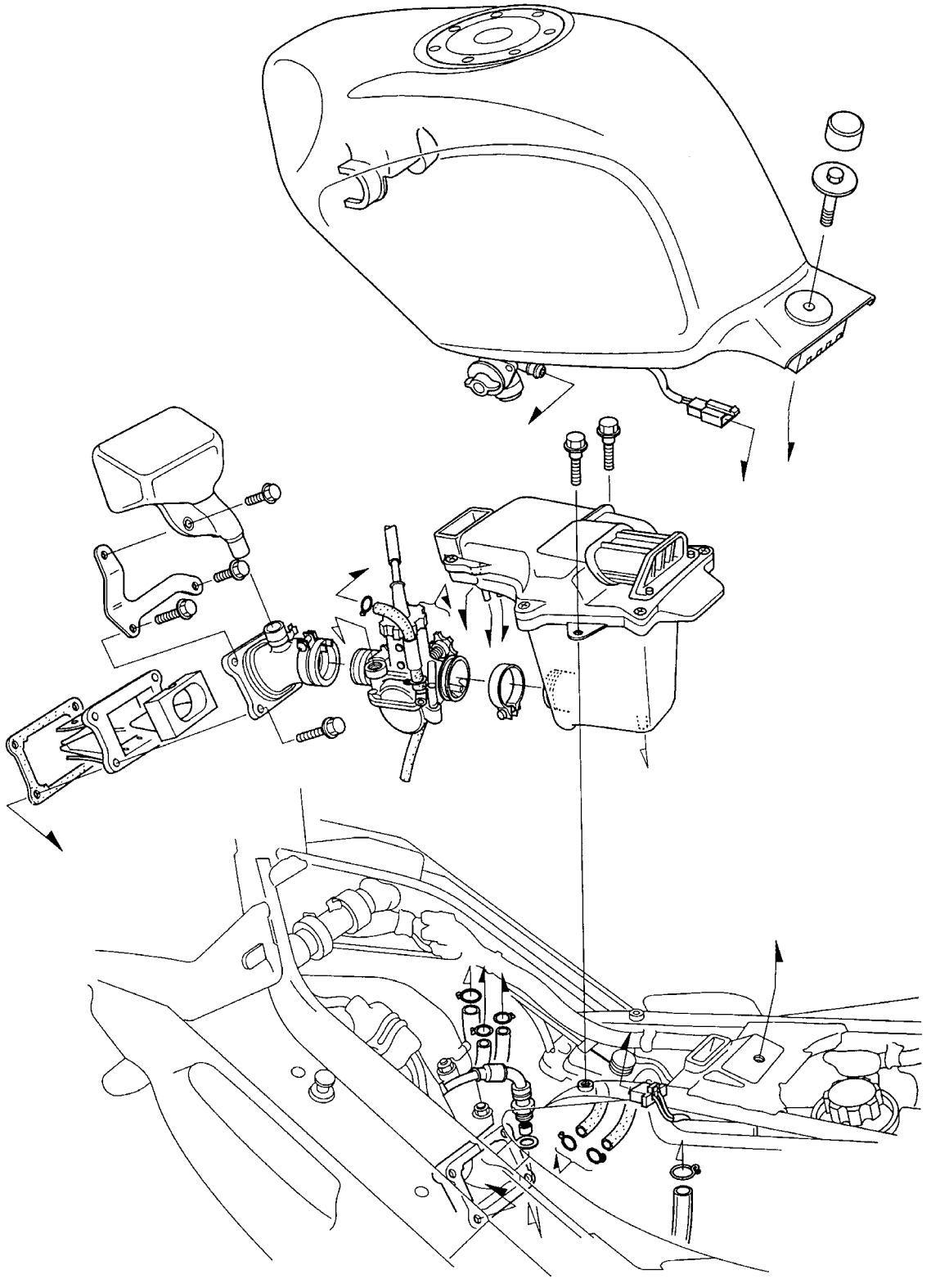
Connect the oil pump control cables to the oil pump drum.
Adjust the oil pump control cables.
(Page 3-6)



Install the oil pump cover.
Install and tighten the bolts securely.

Install the right side cowl and lower cowl.
(Page 2-4, 2-5)





SERVICE INFORMATION

GENERAL

Warning

Gasoline is extremely flammable and is explosive under certain conditions. KEEP OUT OF REACH OF CHILDREN. If the engine must be running to do some work, make sure the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and may lead to death. Run the engine in an open area or with an exhaust evacuation system in an enclosed area. Bending or twisting the control cables will impair smooth operation and could cause the cable to stick or bind, resulting in loss of vehicle control.

- Work in a well ventilated area. Smoking or allowing flames or sparks in the work area or where gasoline is stored can cause a fire or explosion.

CAUTION
- **Be sure to remove the diaphragms before cleaning air and fuel passages with compressed air. The diaphragms might be damaged.**

- For fuel tank removal and installation, refer to Section 2.
- Before disassembling the carburettor, place an approved gasoline container under the carburettor drain tube, loosen the carburettor drain screw and drain the carburettor.
- When disassembling the fuel system parts, note the locations of the 0-rings, Replace them with new ones on re-assembly.
- After removing the carburettor, wrap the intake ports of the engine with a shop towel or cover them with a piece of tape to prevent any foreign material from dropping into the engine. Be sure to remove the cover when reinstalling the carburettor.
- When disconnecting the oil outlet line tube, clamp or plug the tube to prevent oil from flowing out.
- The oil pump control cable should be adjusted after the throttle grip free play is adjusted.

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

SPECIFICATIONS

ITEM	STANDARD
Carburettor identification number	PE 74A
Choke type	Starting enrichment circuit system
Main jet	# 152
Slow jet	# 42
Air screw initial opening	2 turns out
Float level	19 mm (0.7 in)
Idle speed	1,300 + 100 min –1 (rpm)
Throttle grip free play	2 – 6 mm (0.08 – 0.24 in)

TORQUE VALUES

Fuel valve nut	27 N.m (2.8 kgf.m, 20 ibf.ft)
Fuel filter cap socket bolt	1.5 N.m (0.15 kgf.m, 1.1 lbf.ft)

TOOLS

Float level gauge	07401-0010000

TROUBLESHOOTING

Engine won't start
- No fuel in tank
- No fuel to carburettor
- Fuel strainer clogged
- Fuel valve stuck
- Fuel line clogged
- Fuel tank breather clogged
- Float level faulty
- Too much fuel getting to the engine
- Air cleaner clogged
- Flooded carburettor
- Intake air leak
- Fuel contaminated/deteriorated
- Jet clogged
- Improper starting enrichment valve operation
- Clogged fuel filter
- Slow circuit or starting enrichment valve circuit clogged
- Improper throttle operation
- No spark at plug (ignition system faulty)

Lean mixture
- Fuel jets clogged
- Float valve faulty
- Float level too low
- Fuel line restricted
- Intake air leak
- Throttle valve faulty

Rich mixture
- Starting enrichment valve ON
- Float valve faulty
- Float level too high
- Air jets clogged
- Air cleaner element contaminated
- Flooded carburettor

Engine stalls, hard to start, rough idling
- Fuel line restricted
- Ignition system malfunction
- Fuel mixture too lean/rich
- Fuel contaminated/deteriorated
- Jetclogged
- Intake air leak
- Idle speed misadjusted
- Float level misadjusted
- Fuel tank breather clogged
- Air screw misadjusted
- Slow circuit or starting enrichment valve circuit clogged

Afterburn when engine braking is used
- Lean mixture in slow circuit

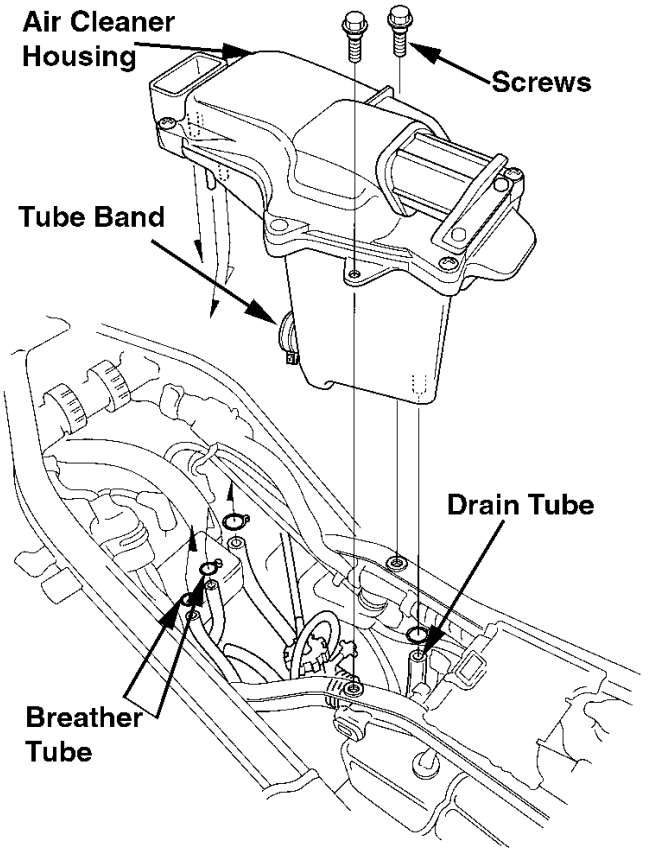
Backfiring or misfiring during acceleration
- Ignition system malfunction (Section 17)
- Fuel mixture too lean

Poor performance (driveability) and poor fuel economy
- Fuel system clogged
  - Ignition system malfunction (Section 17)

AIR CLEANER HOUSING

Remove the fuel tank (page 2-12)

Remove the screws and air cleaner housing.
Loosen the screw and connecting tube band.
Disconnect the drain tubes, and crankcase breather tubes.
Installation is in the reverse order of removal.



THROTTLE VALVE

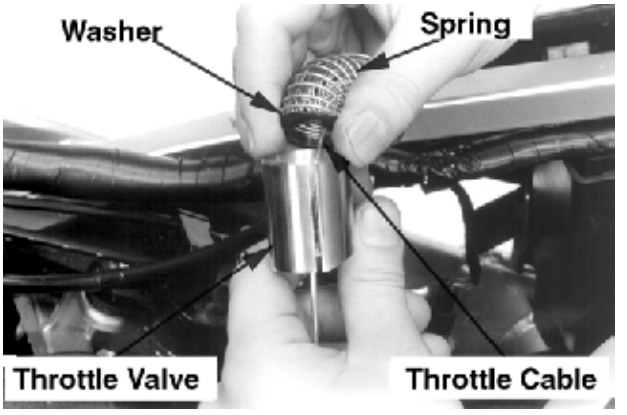
REMOVAL

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

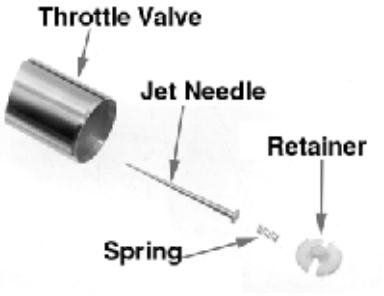
Remove the carburettor top and pull out the throttle valve from the carburettor.

Compress the throttle valve spring against the carburettor top, slide the throttle cable end side ways remove the throttle valve.

Remove the washer.



Remove the retainer, spring and jet needle from the throttle valve.



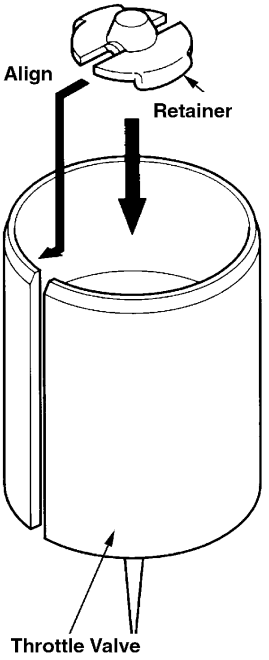
INSPECTION

Check the jet needle for stepped wear or damage.
Check the throttle valve for wear or damage.

Replace these parts if necessary.

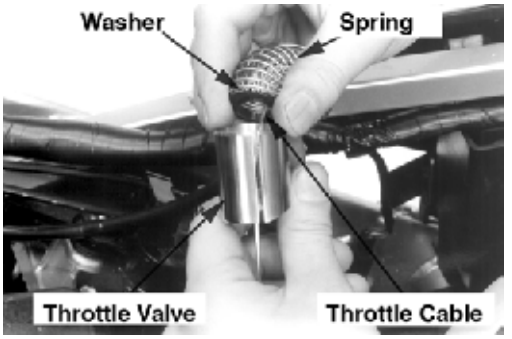
INSTALLATION

Install the jet needle and spring to the throttle valve.
Install the retainer to the throttle valve aligning the grooves on the retainer and throttle valve.

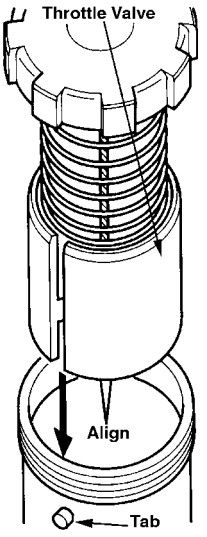


Install the throttle valve spring and washer to the carburettor top.
Compress the throttle valve spring against the carburettor top.

Insert the throttle cable end into the throttle valve and slide it sideways.



Install the throttle valve aligning the groove on the throttle valve with the tab on the carburettor body.



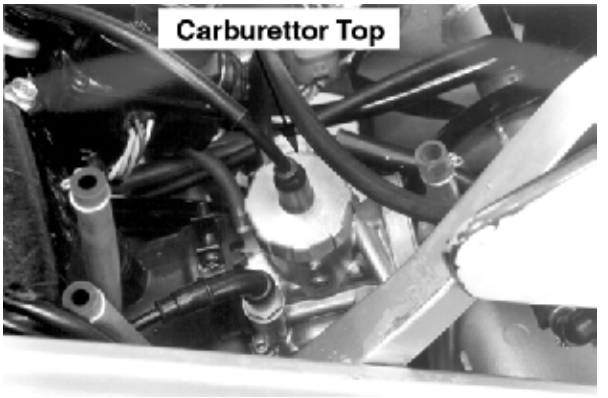
NOTE

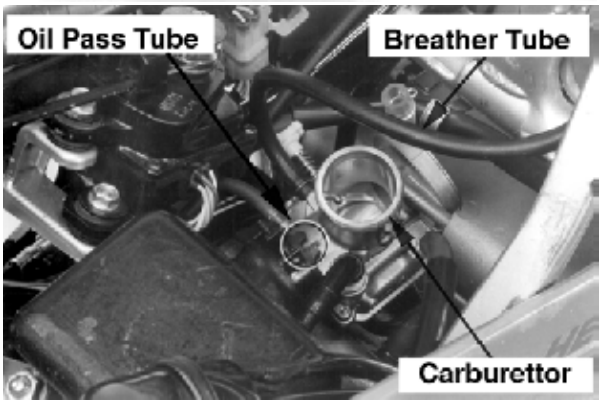
- **Be sure that the throttle valve cutaway is toward the air cleaner housing side as it determines the volume of air for fuel mixture.**

Install the carburettor top and tighten it securely.

Check the throttle valve for smooth operation. Check the throttle lever free play. (page 3-4)

Install the air cleaner housing.
Install the fuel tank. (page 2-14)





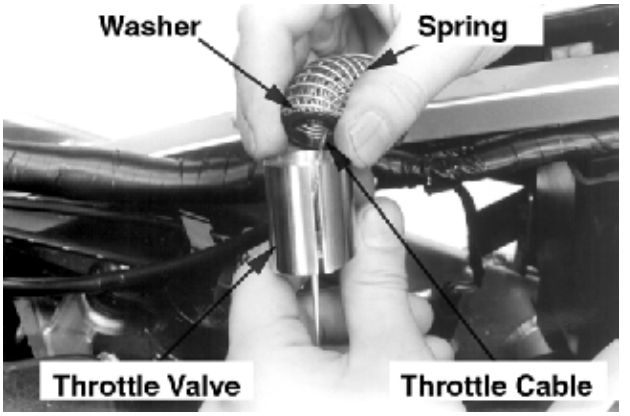
CARBURETTOR

REMOVAL

Warning

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

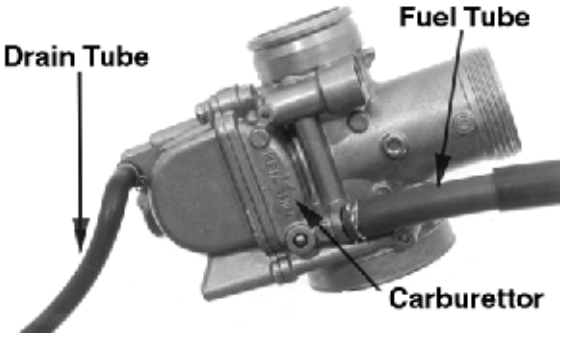
Remove the fuel tank. (page 2-12)
Remove the air cleaner housing.
Remove the throttle valve. (page 5-4)



Disconnect the oil pass tube from the carburettor.
Clamp the oil pass tube to prevent oil from flowing out.
Disconnect the carburettor breather tube from the carburettor.

Loosen the screw and insulator tube band.
Remove the carburettor.

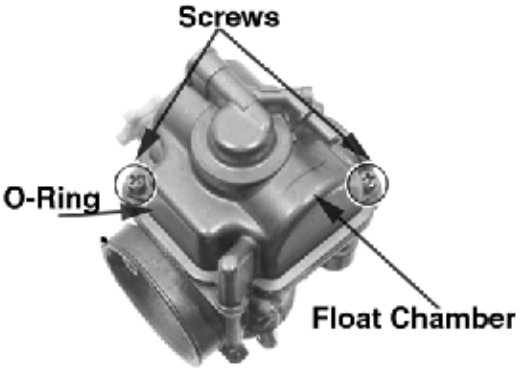
Loosen the SE valve nut and remove it from the carburettor.



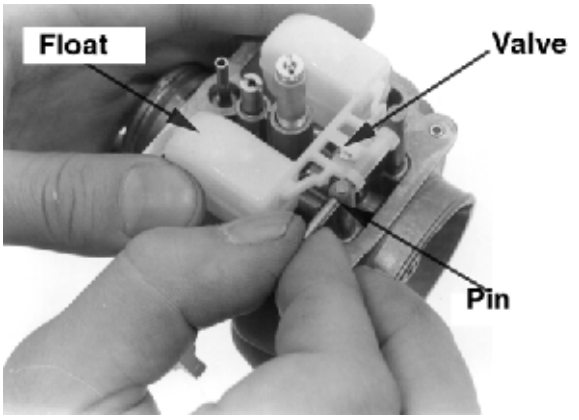
DISASSEMBLY

Disconnect the drain tube and fuel tube from the carburettor.

Remove the screws, float chamber and 0-ring.



Remove the float pin, float.
Remove the float valve.

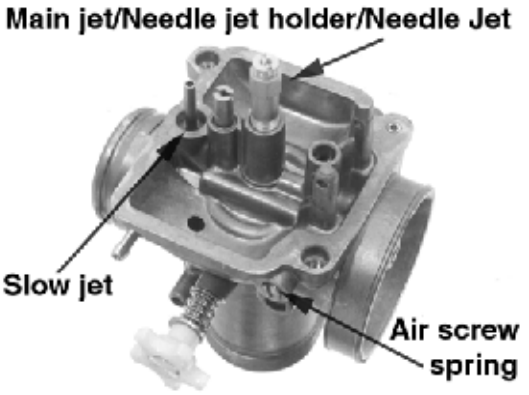


CAUTION
- **Handle all jets with care.**
- **Keep clean, thy can easily be blocked..**

Remove the main jet, needle jet holder, needle jet and slow jet.

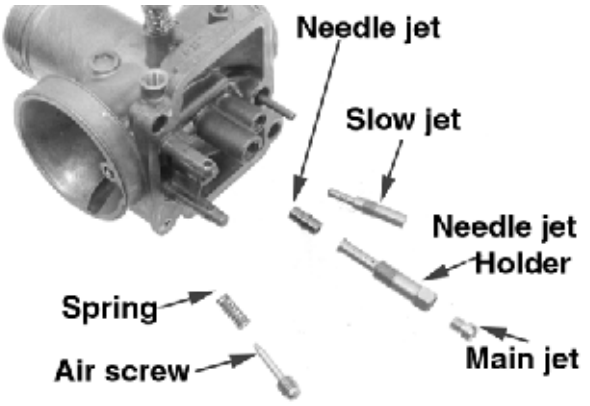
- **NOTE**

The air screw is factory pre-set and should not be removed unless the carburettor is overhauled.



CAUTION
- **Damage to the air screw seat will occur if the air screw is tightened against the seat.**

Turn the air screw in and record the number of the turns it takes before it seats lightly.
Remove the air screw and spring.



Remove the throttle stop screw control knob, spring and washer.

INSPECTION

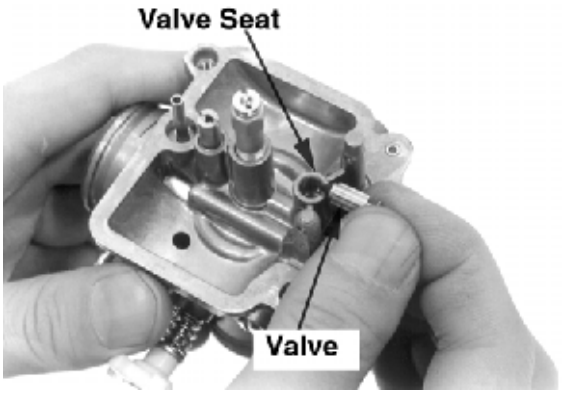
FLOAT VALVE AND VALVE SEAT

Check the float valve and valve seat for scoring, scratches, clogging or damage.

Check the tip of the float valve where it contacts the valve seat, for stepped wear or contamination.

NOTE

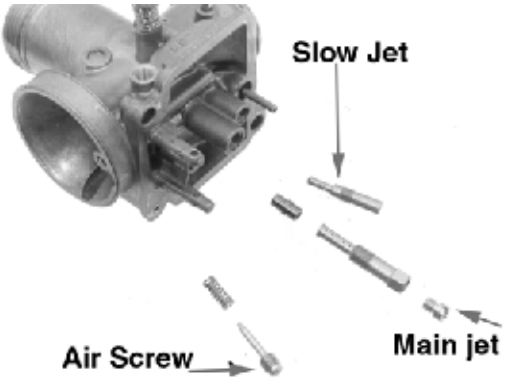
- **A worn or contaminated valve does not seat properly and will eventually flood the carburettor.**



JETS

Check each jets for wear or blockage.

Clean the jets with non-flammable or high flash solvent and blow open with compressed air.



AIR PILOT SCREW

Check the air screw for stepped wear or damage.

Check the spring for damage.

Replace these parts if necessary.

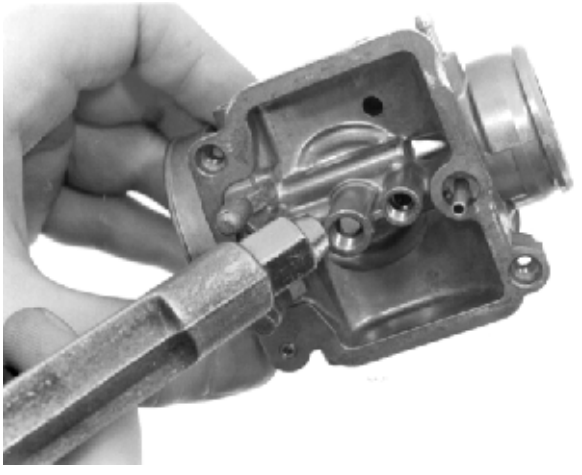
CARBURETOR BODY CLEANING

CAUTION

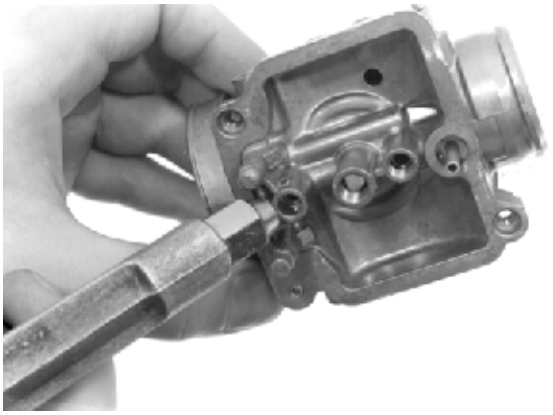
- **Cleaning the air and fuel passages with a piece of wire will damage the carburettor body.**

Disassembled the carburettor (page 5-7).

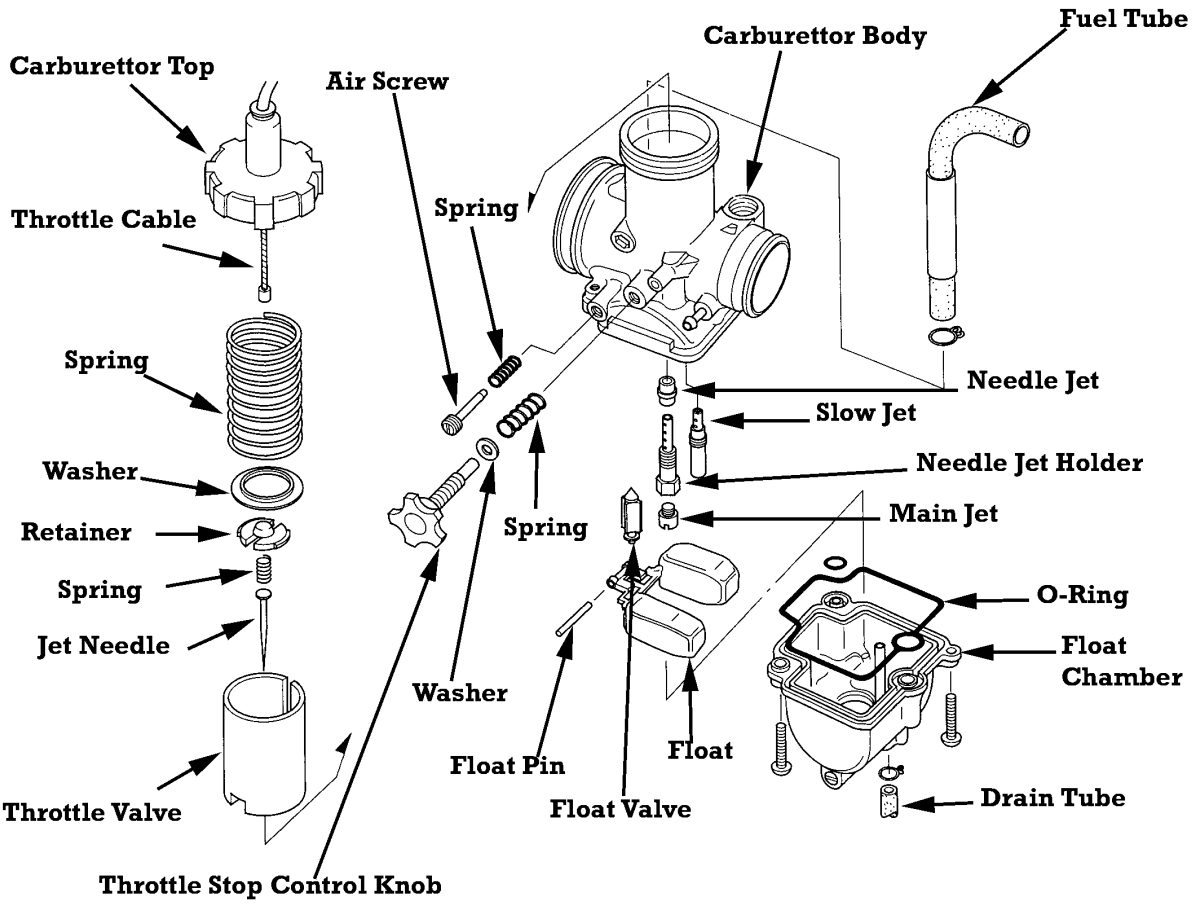
Blow open all air and fuel passages in the carburettor body with compressed air.



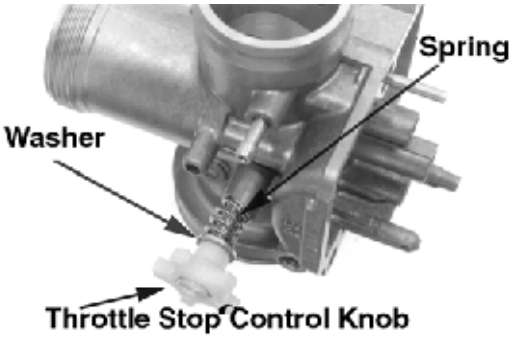
Clean the fuel strainer in the float valve using compressed air from the float valve seat side.



ASSEMBLY



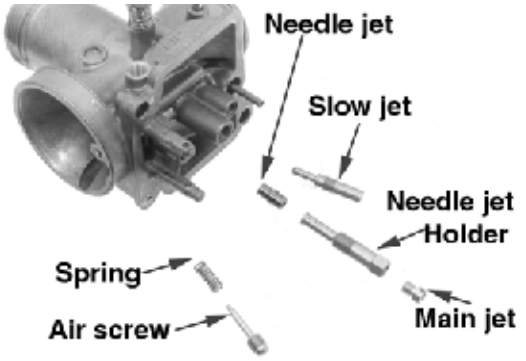
Install the spring, washer and throttle stop screw.



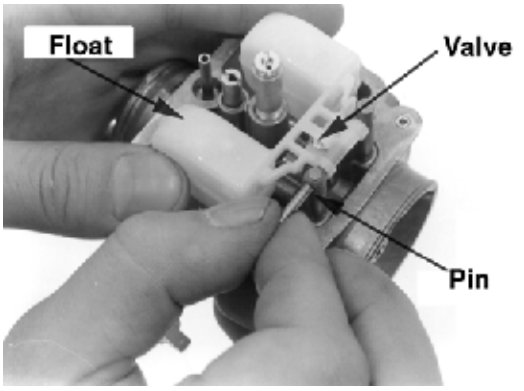
Install the needle jet, needle jet holder, main jet and slow jet.
Install the spring and air screw.

- **NOTE**

Install the air screw and return it to its original position as noted during removal.
Perform air screw adjustment if new air screw is installed. (Page 5-12)



Fit the float valve onto the float arm lip.
Install the float valve with the float in the carburettor body, then install the float pin through the body and float.

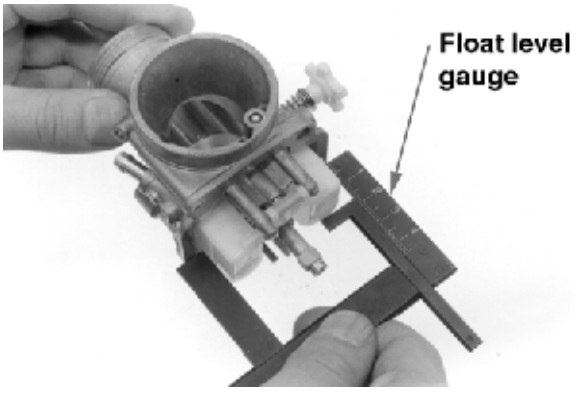


FLOAT LEVEL

Set the carburettor so that the float valve just contacts the float arm lip. Be sure that the float valve tip is securely in contact with the valve seat.

NOTE
Check the float level after checking the float valve and float..
Set the float level gauge so that it is perpendicular to the float chamber face and in line with the main jet.

Make sure the float level with the float level gauge.

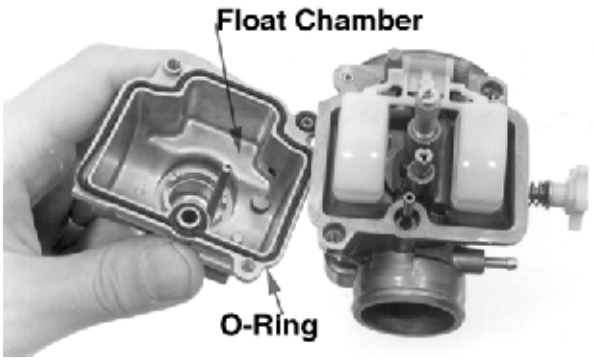


TOOL: Float level gauge 07401-0010000

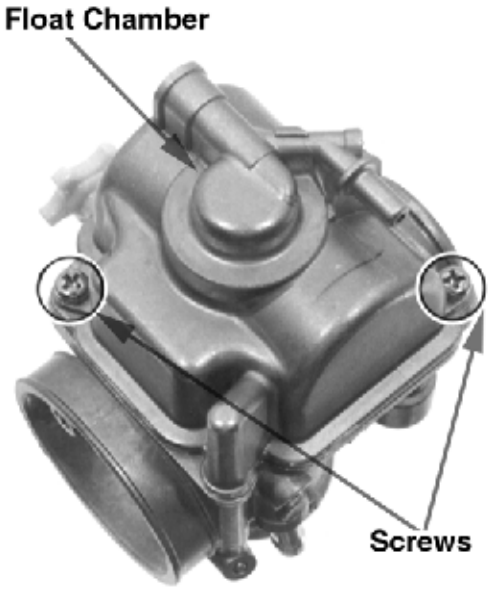
FLOAT LEVEL: 19 mm (0.7 in)

If the level is out of specification, replace the float.

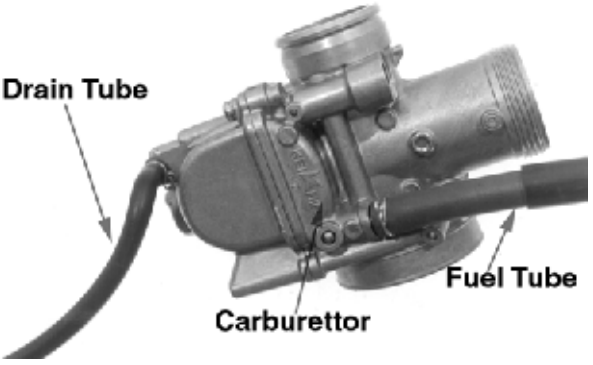
Install the new 0-ring into the float chamber groove.



Install the float chamber.
Install and tighten the screw securely.



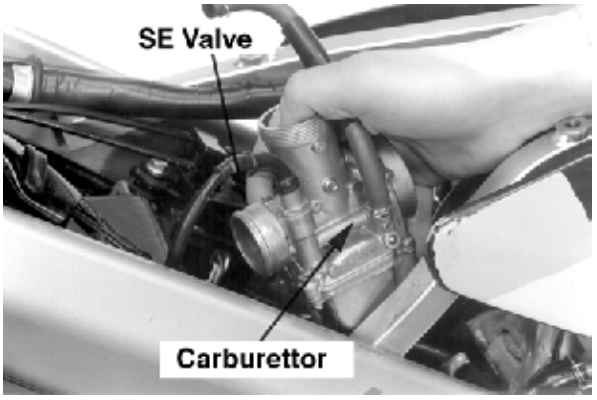
Connect the drain tube and fuel tube to the carburettor.



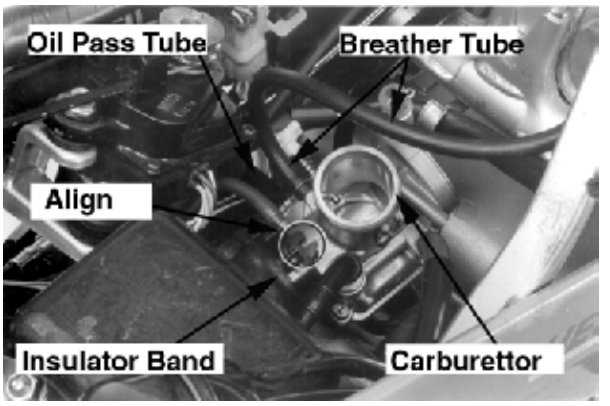
INSTALLATION

NOTE
Route the wires and tubes properly (page 1-18)

Install the SE valve to the carburettor and tighten the SE valve nut securely.



Install the carburettor aligning its lug with the groove on the insulator.



Bleed the air from the oil pass tube.

Connect the oil pass tube and carburettor breather tube to the carburettor.

Tighten the insulator band screw securely.

Install the throttle valve (page 5-6)

Install the air cleaner housing.
Install the fuel tank

Perform the following inspections and adjustment. –

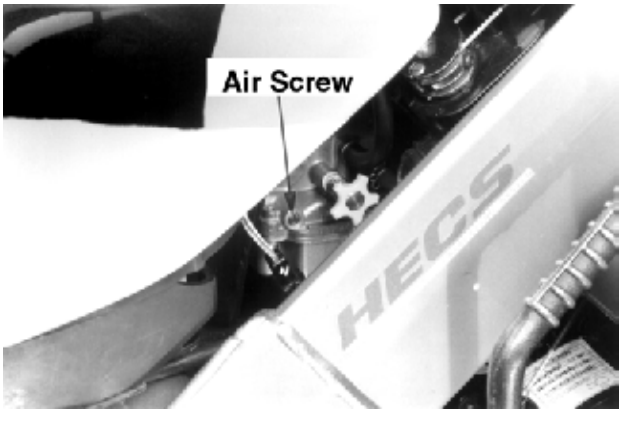
- Throttle operation (page 3-4)
- Carburettor choke (page 3-)
- Engine idle speed (page 3-11)
- Air screw adjustment
- Oil pump control cable adjustment

After installation, turn the fuel valve ON and check the fuel line for leakage.

AIR SCREW ADJUSTMENT

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 the consciousness and may lead to death. Run the engine in an open area or with an exhaust evacuation system in an enclosed area.



CAUTION

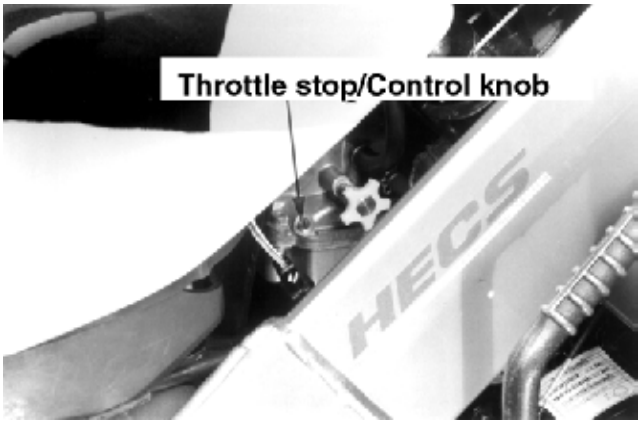
- **Damage to the air screw seat will occur if the air screw is tightened against the seat.**

NOTE
The air screw is factory pre-set and should not be removed unless the carburettor is overhauled.

Warm the engine up to operating temperature.
Turn the air screw clockwise until it seats tightly, then back it out to the specification given.

AIR SCREW OPENING: 2 turns out

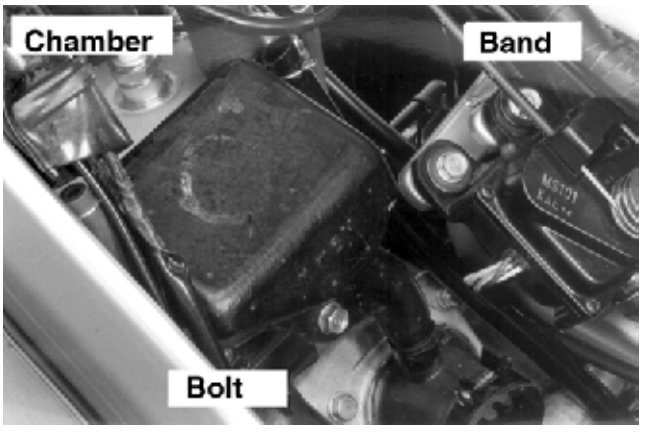
Adjust the idle speed with the throttle stop control knob.



IDLE SPEED: 1,300 ± 100 (rpm)

Rev the engine up slightly from the idle speed and make sure that engine speed rises smoothly.

Adjust the air screw by turning it in or out a 1/4 of a turn. If the engine cannot be adjusted by turning the air screw within a 1/4 turn, check for other engine problems.



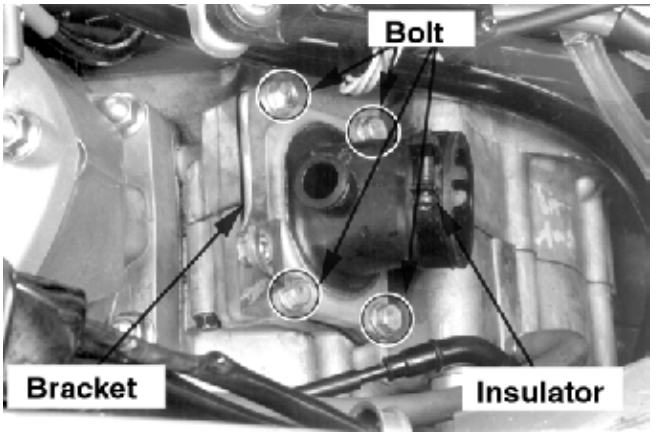
REED VALVE, AIR CHAMBER

REMOVAL

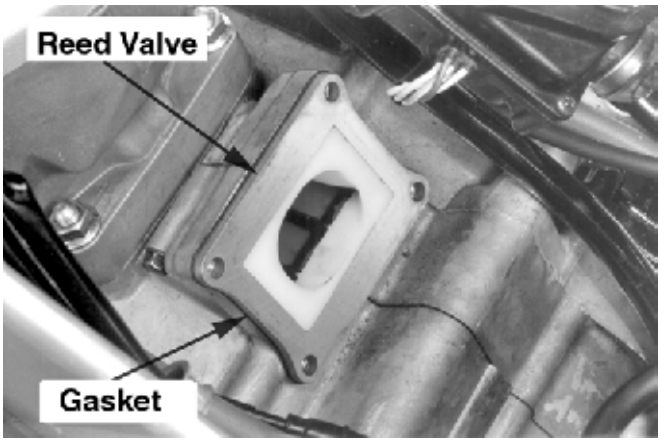
Remove the carburettor (page 5-7)

Remove the bolt and tube band.
Remove the air chamber.

Remove the bolts and air chamber bracket.
Remove the carburettor insulator from the crankcase.



Remove the reed valve from the crankcase.
Remove the gasket from the crankcase.



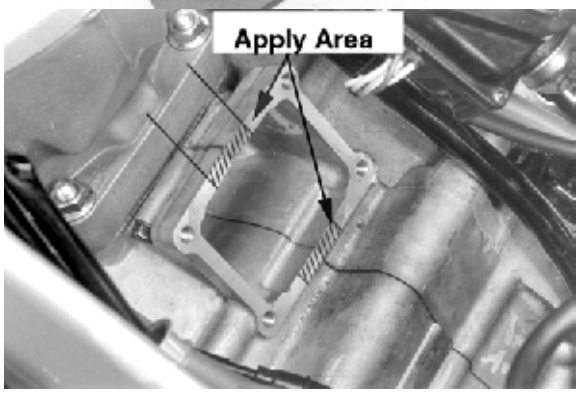
INSPECTION

Check the carburettor insulator for damage or deterioration.

Replace it if necessary.
Check the reed valve for fatigue or damage.
Check the reed valve seat for cracks or damage.

Replace it as an assembly if necessary.

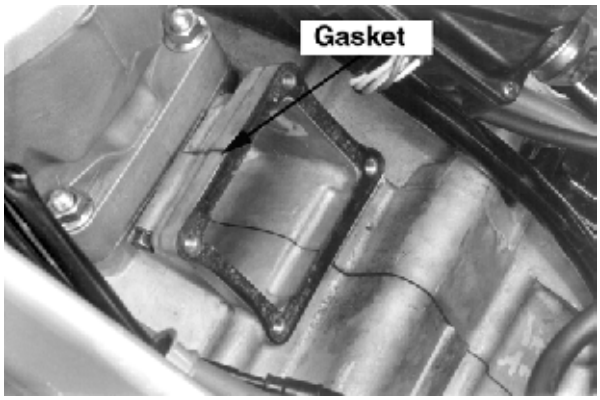
NOTE
Be sure to replace the reed valve as an assembly. Disassembling or bending the reed stopper will cause engine trouble.



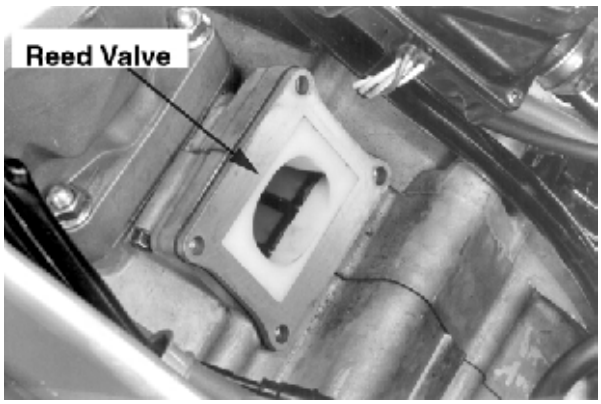
INSTALLATION

Apply a light coating of sealant to the crankcase as shown.

Install the new gasket to the crankcase.



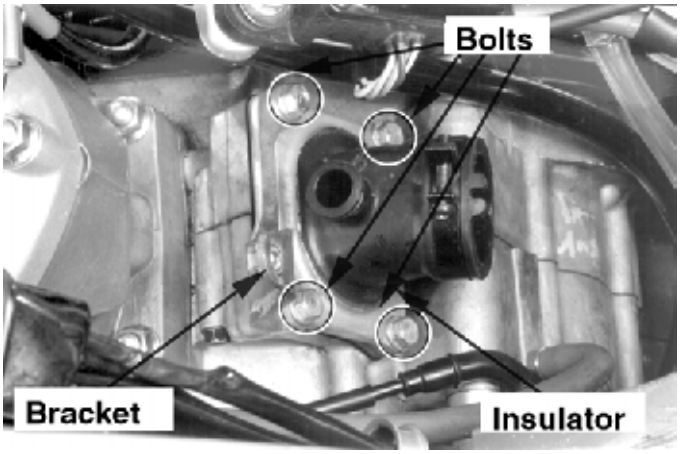
Install the reed valve to the crankcase.



Install the carburettor insulator to the crankcase.

Install the air chamber bracket.

Install and tighten the bolts securely.

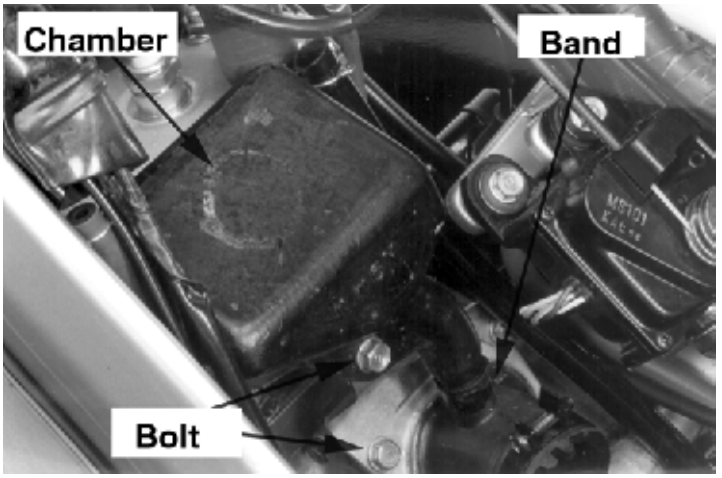


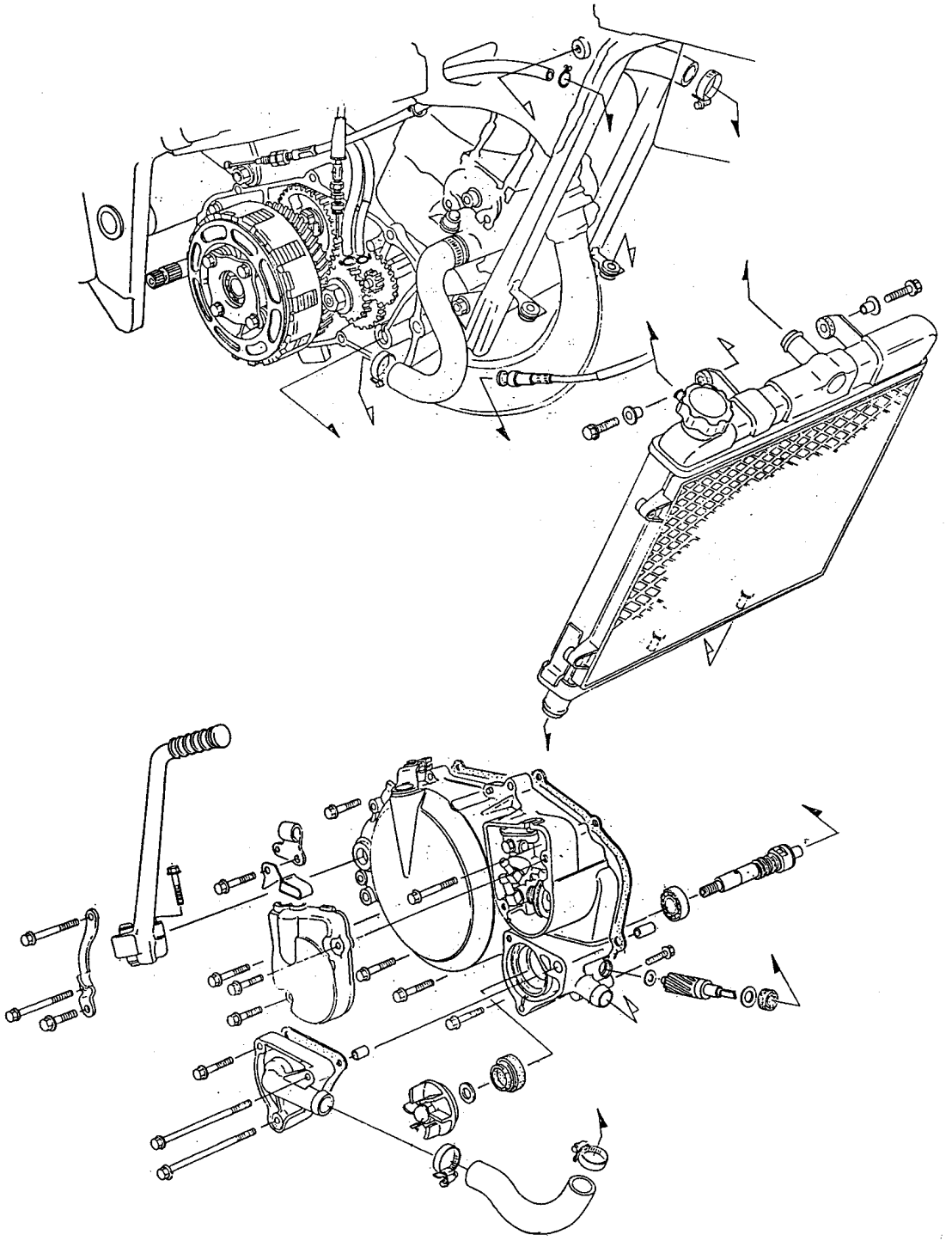
Install the air chamber.

Install the tube band.

Install and tighten the bolt securely.

Install the carburettor. (page 5-11)





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 with water and consult a doctor immediately.**
- **If any coolant is swallowed induce vomiting rinse 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**

- Use only distilled water and ethylene glycol in the cooling system. A 50-50 mixture is recommended for maximum corrosion protection. Do not use alcohol-based antifreeze or an anti-freeze with self sealing properties.
- Add coolant at the reserve tank. Do not remove the radiator cap except to refill or drain the system.
- All cooling system services can be done with the engine in the frame.
- Avoid spilling coolant on painted surfaces.
- After servicing the system, check for leaks with a cooling system tester.
- Refer to Section 18 for thermo sensor inspection.

SPECIFICATIONS

ITEM		STANDARD
Cooling capacity	Radiator and engine	1.2 litre (1.27 US qt,1.06 Imp qt)
Radiator cap relief pressure		108 - 137 kPa (1.1 - 1.4 kgf/cm2, 16-21 psi)
Standard coolant concentration		50 % mixture with soft water

TORQUE VALUES

Water pump impeller 12 N.m (1.2 kgf.m, 9 lbf.ft)

TOOLS

Pressure pump	Equivalent commercially available
Attachment, 24 X 26 mm	07746-0010700
Pilot, 10 mm	07746-0040100
Driver	07749-0010000
Bearing remover set, 10 mm	07936-GE00000
- Remover shaft	07936-GE00100
- Remover head	07936-GE00200
- Sliding weight	07741-0010201
Mechanical seal driver	07PMD-KBP0100

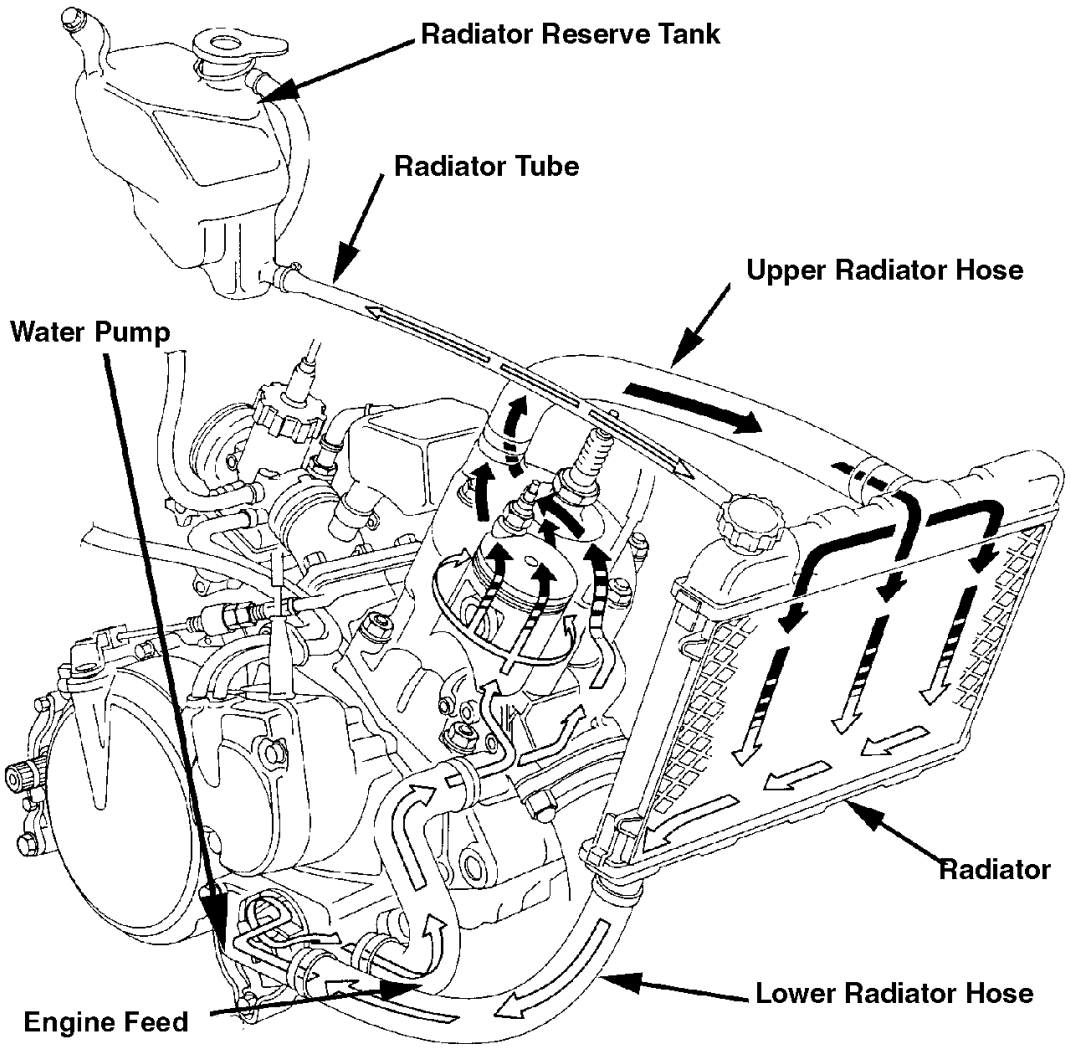
TROUBLESHOOTING

Engine temperature too high
- Faulty temperature gauge or thermo sensor (Section 18)
- Faulty radiator cap
- Insufficient coolant
- Passages blocked in radiator, hoses or water jacket
- Air in system
- Faulty water pump
- Thermostat stuck closed

Engine temperature too low
- Faulty temperature gauge or thermo sensor (Section 18)
- Thermostat stuck open

Coolant leaks
- Faulty water pump mechanical seal
- Deteriorated 0-ring
- Loose hose connection or clamp
- Damaged or deteriorated hose
- Faulty radiator cap

SYSTEM FLOW PATTERN

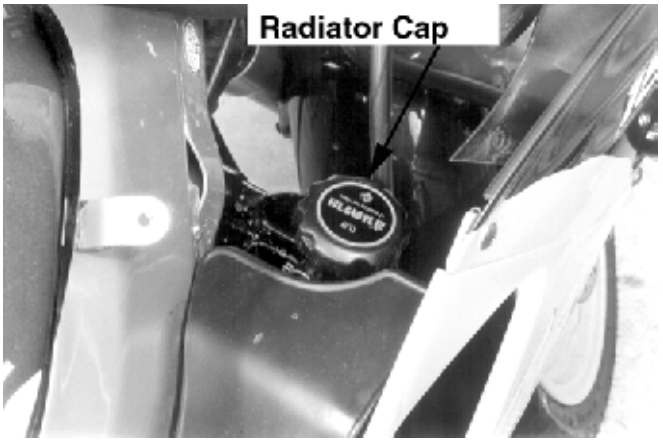


SYSTEM TESTING

COOLANT (HYDROMETER TEST)

Remove the seat. (page 2-3)

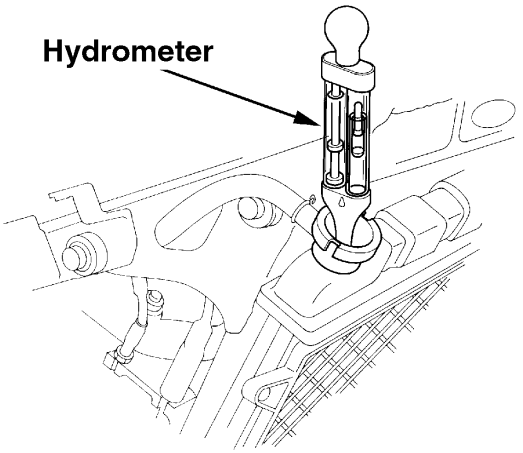
Remove the radiator tank cap.



Check the coolant gravity using a hydrometer.

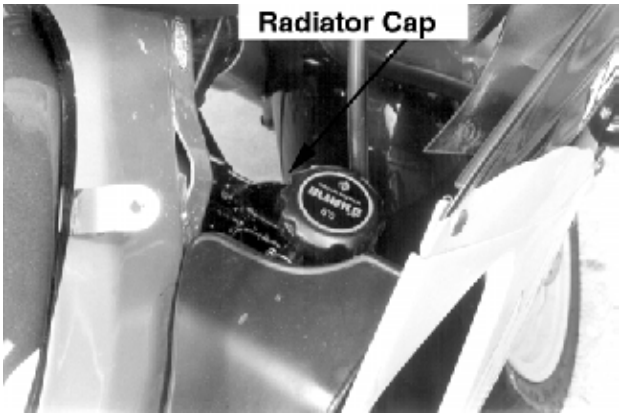
Standard Coolant Concentration: 50%

Look for contamination and replace the coolant if necessary.



Coolant temp Coolant ratio	0 (32)	5 (41)	10 (50)	15 (59)	20 (68)	25 (77)	30 (86)	35 (95)	40 (104)	45 (113)	50 (122)
5	1.009	1.009	1.008	1.008	1.007	1.006	1.005	1.003	1.001	0.999	0.997
10	1.018	1.017	1.017	1.016	1.015	1.014	1.013	1.011	1.009	1.007	1.005
15	1.025	1.027	1.026	1.025	1.024	1.022	1.020	1.018	1.016	1.014	1.012
20	10.36	1.035	1.034	1.033	1.031	1.029	1.027	1.025	1.023	1.021	1.019
25	1.045	1.044	1.043	1.042	1.040	1.038	1.036	1.034	1.031	1.028	1.025
30	1.053	1.052	1.051	1.049	1.047	1.045	1.043	1.041	1.038	1.035	1.032
35	1.063	1.062	1.060	1.058	1.056	1.054	1.052	1.049	1.046	1.043	1.040
40	1.072	1.070	1.068	1.066	1.064	1.062	1.059	1.056	1.053	1.050	1.047
45	1.080	1.078	1.076	1.074	1.072	1.069	1.066	1.063	1.060	1.057	1.054
50	1.086	1.084	1.082	1.080	1.077	1.074	1.071	1.068	1.065	1.062	1.059
55	1.095	1.093	1.091	1.088	1.085	1.082	1.079	1.075	1.073	1.070	1.067
60	1.100	1.098	1.095	1.092	1.089	1.086	1.083	1.080	1.077	1.074	1.071

RADIATOR CAP/SYSTEM PRESSURE INSPECTION



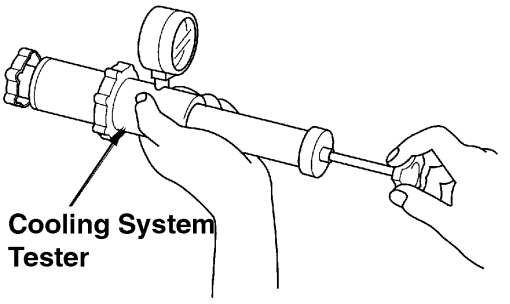
Warning

- **The engine must be cool before removing the radiator cap or sever scalding may result.**

Remove the right air guide.
Remove the radiator cap.

- **NOTE**

Before installing the cap in the tester, wet the sealing surface.



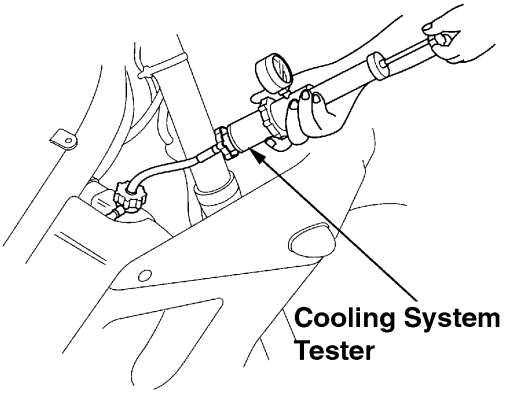
Pressure test the radiator cap. Replace the radiator cap if does not hold pressure, or if relief pressure is too high or too low. It must hold specified pressure for at least 6 seconds.

RADIATOR CAP RELIEF PRESSURE:
108 - 137 kPa (1.1 - 1.4 kgf/ml^2,15.6 - 19.9 psi)

Pressurise the radiator, engine and hoses, and check for leaks.

CAUTION

- **Excessive pressure can damage the cooling system components. Do not exceed 137 kPa (1.4 kgf/cm^2 19.9 psi).**



Check the following components if the system will not hold specified pressure for at least 6 seconds.

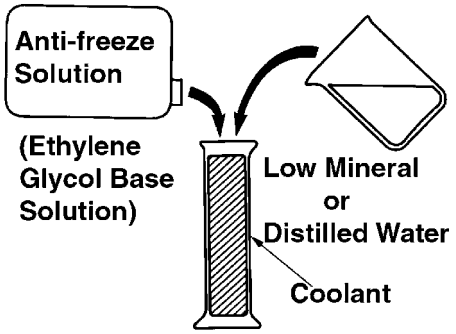
- All hoses and connections
- Water pump cover installation
- Water pump cover gasket (for leakage)
- Water pump seal (for leakage)
- Deformed radiator filler neck

COOLANT

REPLACEMENT

Warning

Radiator coolant is toxic. Keep it away from eyes, mouth, skin and clothes.
- **If any coolant gets in your eyes, rinse them with water and consult a doctor immediately.**
- **If any coolant is swallowed, induce vomiting, rinse 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**



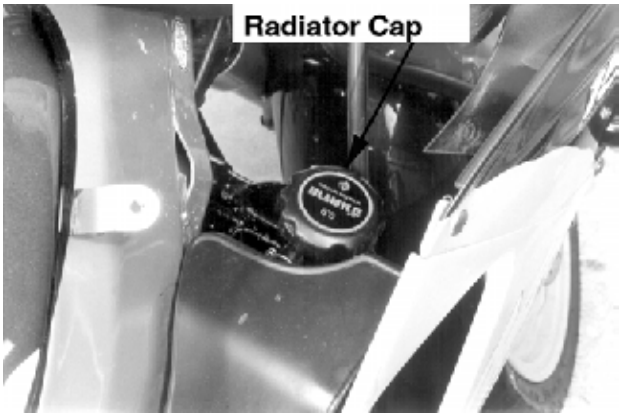
NOTE
- **The effectiveness of coolant decreases with the accumulation of rust or if there is a change in the mixing proportion during usage. Therefore, for best performance change the coolant regularly as specified in the maintenance schedule.**
- **Mix only distilled, low mineral water with the anti-freeze.**

RECOMMENDED MIXTURE:
50-50 (Distilled water and anti-freeze)

REPLACEMENT/AIR BLEEDING

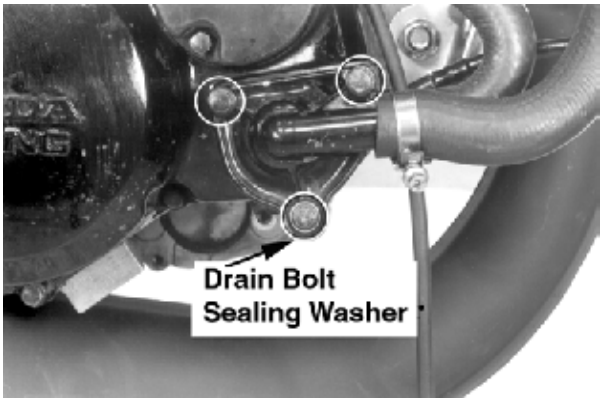
Warning

The engine must be cool before removing the radiator cap, or severe scalding may result.



NOTE
- **When filling the system or reserve tank with a coolant (checking the coolant level), place the motorcycle in a vertical position on a flat, level surface.**

Remove the right air guide (page 2-11)
Remove the radiator cap.
Remove the lower cowl (page 2-5)
Remove the drain bolt and seating washer.
Drain the coolant.

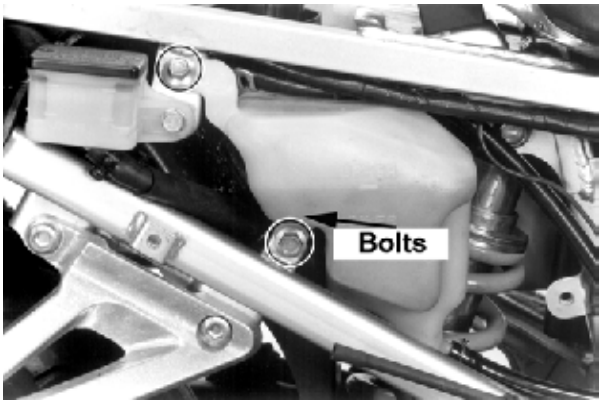


Reinstall and tighten the drain bolt securely with a new sealing washer.

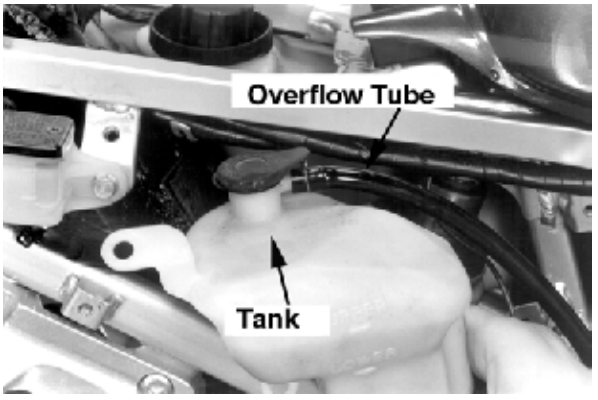
Remove the right side cover. (page 2-7)

Remove the battery case. (page 16-6)

Remove the bolts.



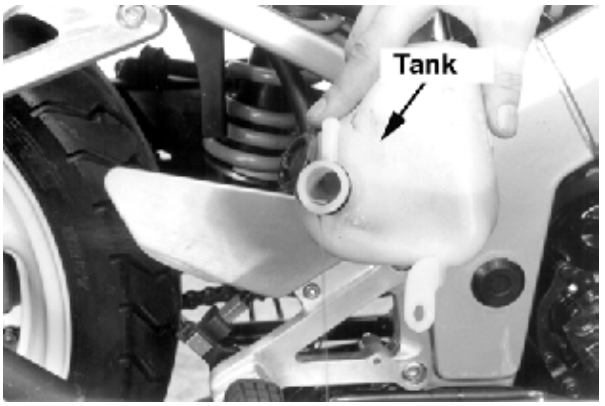
Disconnect the reserve tank overflow tube.



Place a suitable container under the reserve tank.
Remove the reserve tank cap from the reserve tank and drain the reserve coolant.

Empty the coolant and rinse the inside of the reserve tank with water.

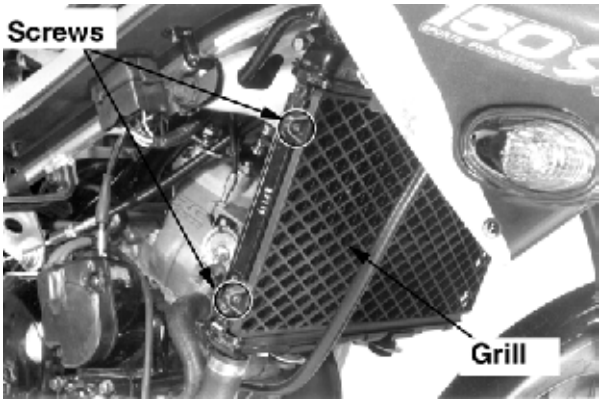
Reconnect the reserve tank overflow tube.
Install the reserve tank.
Install and tighten the bolts securely.
Completely fill the system with the recommended coolant through the filler neck.
Remove the reserve tank cap and fill the reserve tank to the upper level line.



Bleed air from the system as follows:

- **NOTE: Remove the filler cap before starting.**

1. Shift the transmission into neutral. Start the engine and let it idle for 2 - 3 minutes.
2. Snap the throttle 3 - 4 times to bleed air from the system.
3. Stop the engine and add coolant up to the filler neck. Reinstall the radiator cap.
4. Check the level of coolant in the reserve tank and fill to the upper level if it is low.



RADIATOR

CAUTION

- **Be careful not to damage the radiator grills.**

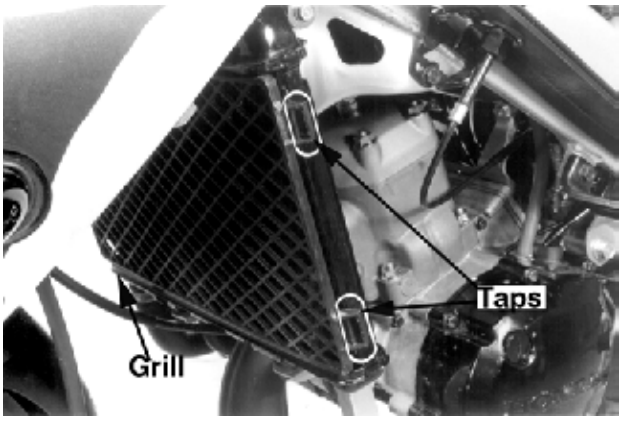
RADIATOR GRILL REMOVAL/INSTALLATION

Remove the side cowl and lower cowl. (page 2-4).

Remove the screws.

Remove the tabs on the radiator grill from the holes on the radiator.
Remove the radiator grill.

Installation is in the reverse order of removal.

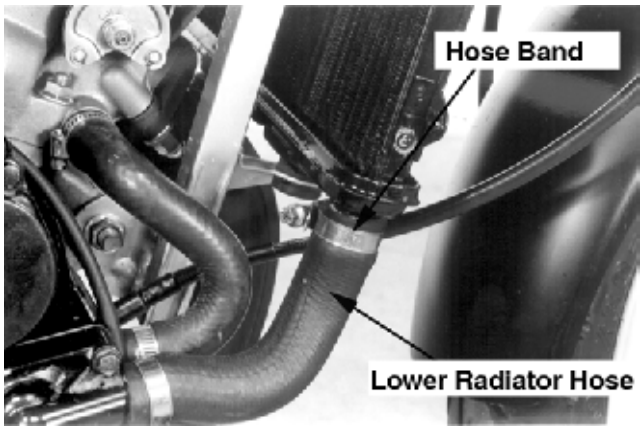


RADIATOR REMOVAL/INSTALLATION

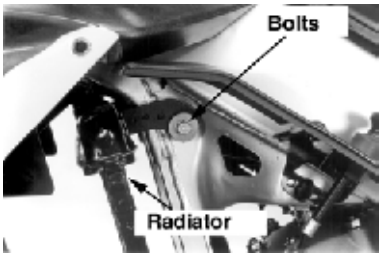
Remove the side cowl and lower cowl (page 2-4.)

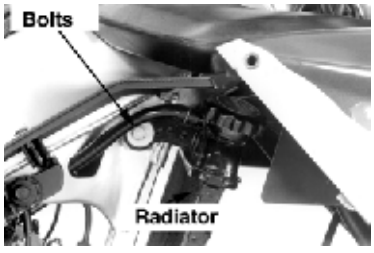
Drain the coolant (page 6-6)

Loosen the screw and hose band.
Disconnect the lower radiator hose.



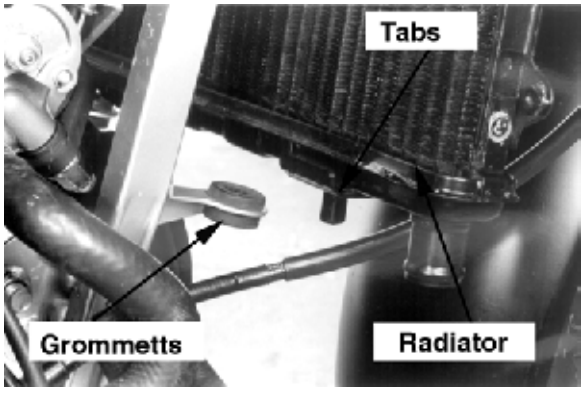
Remove the bolts.
Disconnect the radiator breather tube.





Remove the tabs on the radiator from the grommets on the frame.

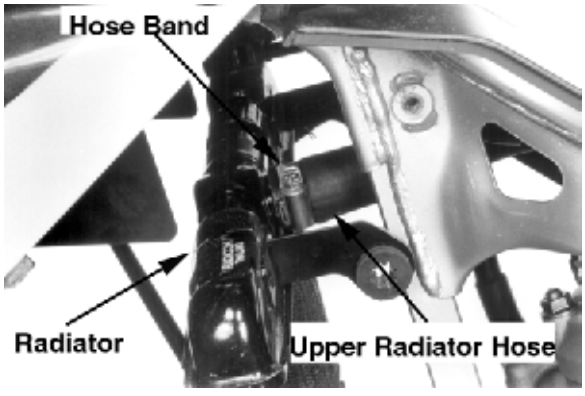
Loosen the screw and hose band.
Disconnect the upper radiator hose.
Remove the radiator.



Installation is in the reverse order of removal.

NOTE
At installation, align the tabs on the radiator with the grommets on the frame.

Fill and bleed the cooling system. (page 6-6).



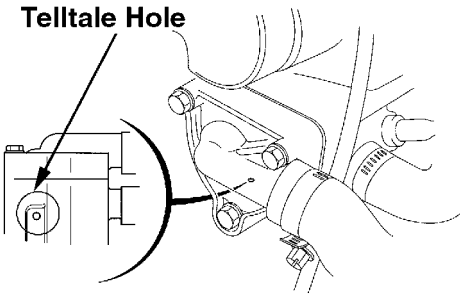
WATER PUMP

MECHANICAL SEAL INSPECTION

Remove the lower cowl (page 2-5)

Inspect the telltale hole for signs of coolant leakage.

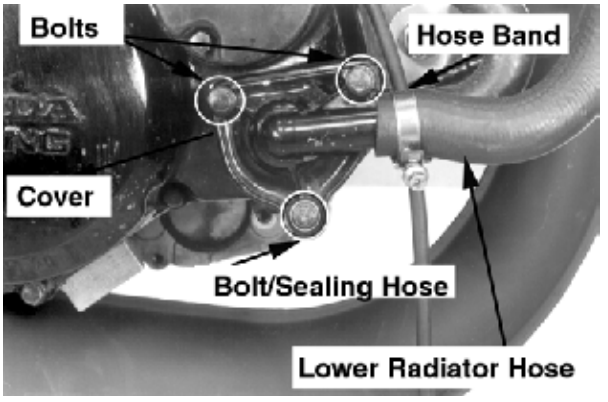
If there is leakage, the mechanical seal is defective and must be replaced (page 6-1)



REMOVAL

Remove the side cowl and lower cowl.
Drain the coolant.

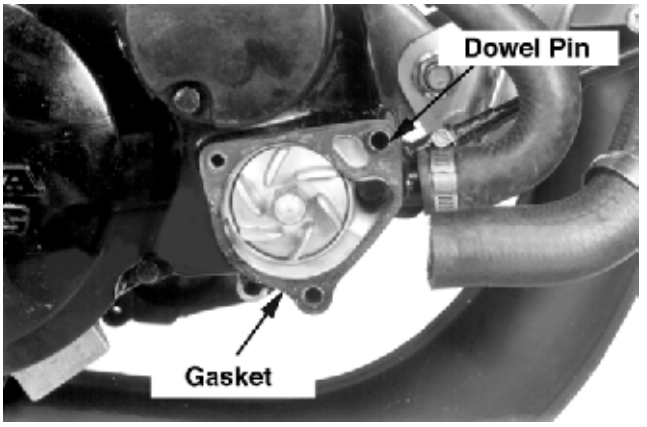
Loosen the screw and hose band.
Disconnect the lower radiator hose.
Remove the bolts and water pump cover.



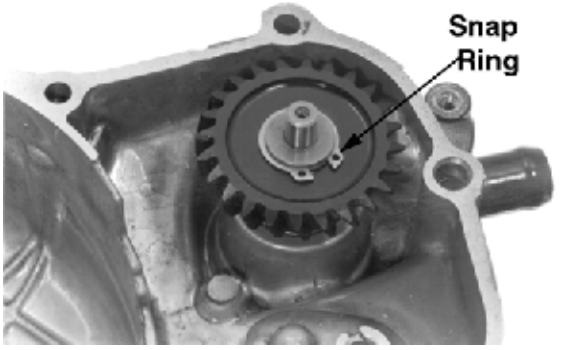
Remove the dowel pin.

Remove the gasket.

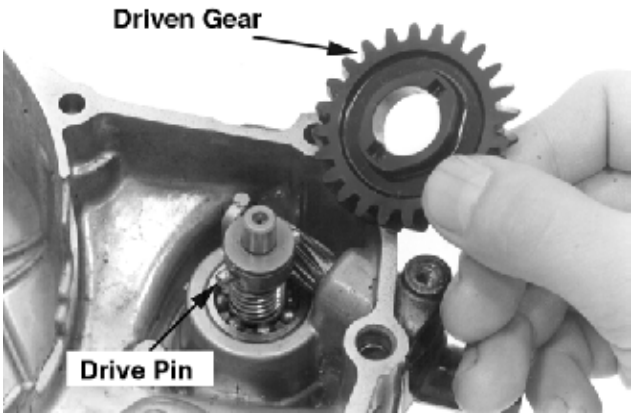
Remove the right crankcase cover (page 10-3)



Remove the snap ring.

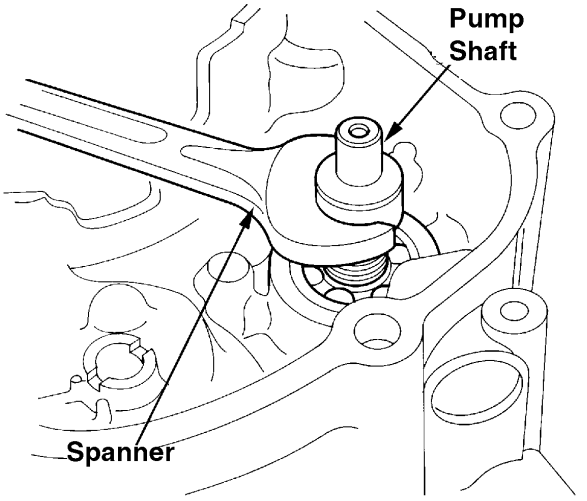


Remove the water pump driven gear and drive pin.



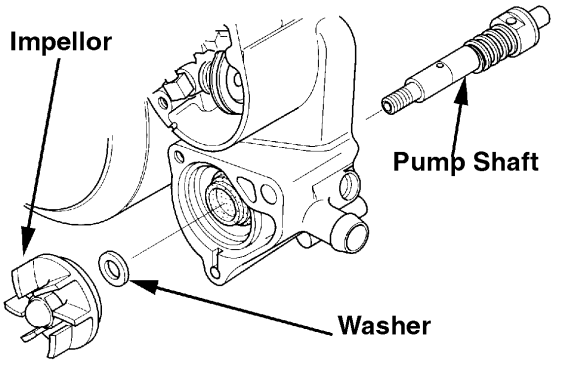
Hold the water pump shaft using the spanner.

CAUTION
- **To prevent the water pump gear for damage, hold the water pump shaft securely.**



Remove the water pump impeller by turning it counterclockwise.
Remove the washer and water pump shaft.

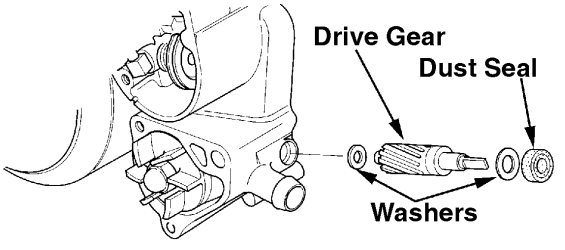
Check the water pump shaft bushing in the right crankcase for wear or damage.



MECHANICAL SEAL REPLACEMENT

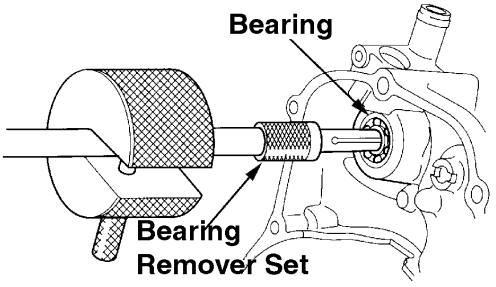
Remove the right crankcase cover (page 10-3)
Remove the oil pump (page 4-3)
Remove the water pump shaft (page 6-9)

Remove the dust seal, washers and tachometer drive gear.

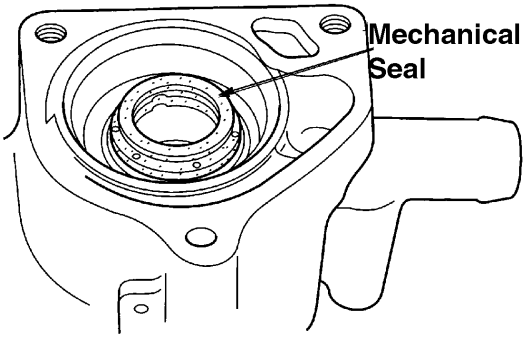


Remove the water pump bearing from the right crankcase cover.

TOOLS:
- **Bearing remover set, 10 mm 07936-GE00000**
- **Remover shaft 07936-GE00100**
- **Remover head 07936-GE00200**
- **Sliding weight 07741-0010201**

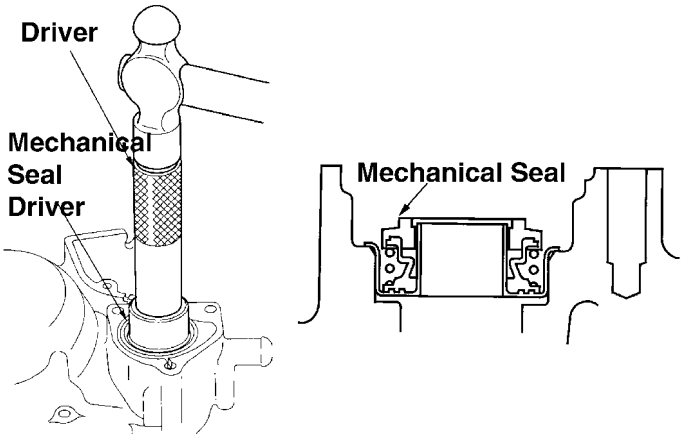


Remove the water pump mechanical seal from the right crankcase cover.



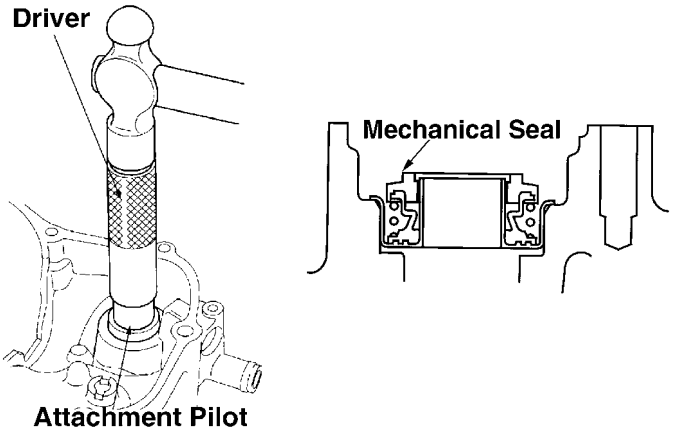
Install the new water pump mechanical seal to the right crankcase cover using the following tools.

TOOLS:
- **Mechanical seal driver 07PMD-KBP0100**
- **Driver 07749-0010000**



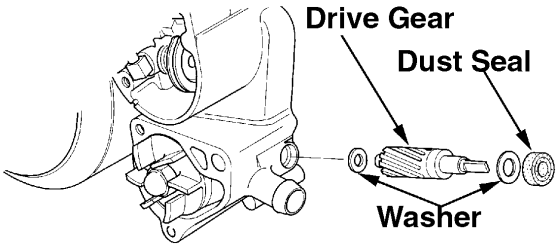
Install the new water pump bearing to the right crankcase cover using the following tools.

TOOLS:
- **Driver 07749-0010000**
- **Attachment. 24 x 26 mm 07746-0010700**
- **Pilot, 10 mm 07746-0040100**



Check the tachometer drive gear for wear or damage.

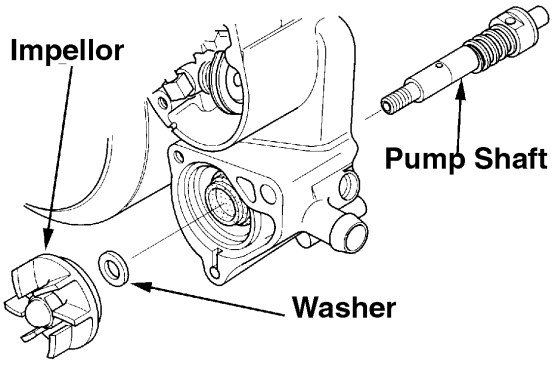
Install the tachometer drive gear, washers and new dust seal.



INSTALLATION

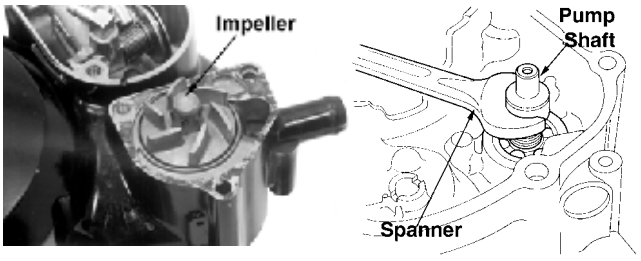
Check the water pump shaft for wear or damage.

Install the water pump shaft to the right crankcase cover.
Install the washer and water pump impeller.



Hold the water pump shaft using the spanner.
Tighten the water pump impeller to the specified torque.

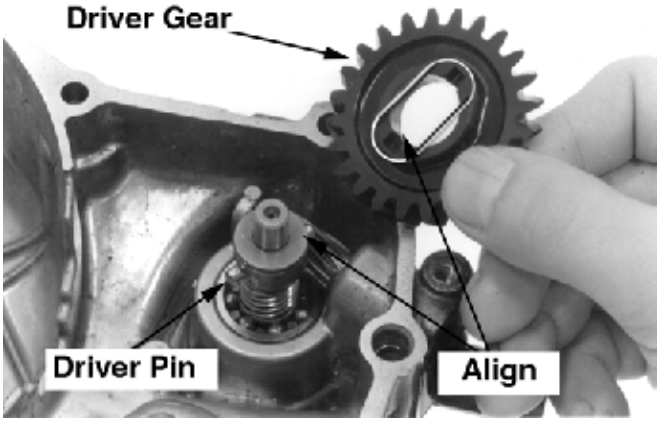
TORQUE: 12 N.m (1.2 kgf-m, 9 lbf.ft)



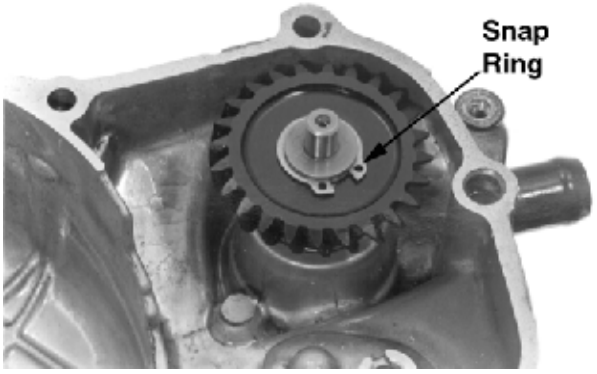
Check the water pump driven gear for wear or damage.

Install the drive pin to the water pump shaft hole.

Install the water pump driven gear to the pump shaft aligning the groove on the pump gear with the drive pin.

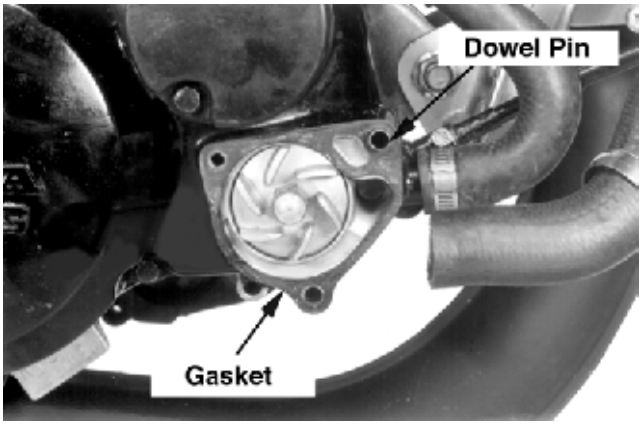


Install the snap ring.

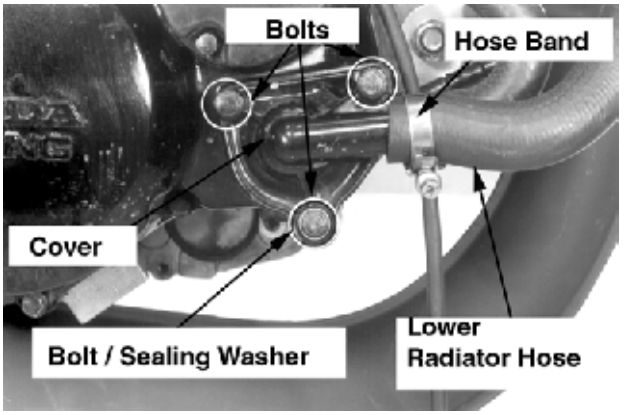


Install the oil pump (page 4-6)
Install the right crankcase cover
(page 10-23)

Install the dowel pin and new gasket.



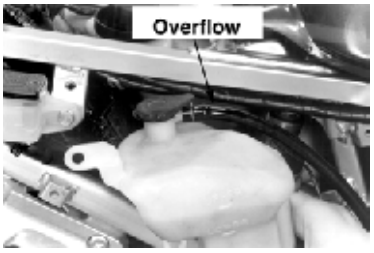
Install the water pump cover and bolts.
Tighten the bolts securely.
Connect the lower radiator hose to the water pump cover.
Tighten the hose band screw securely.

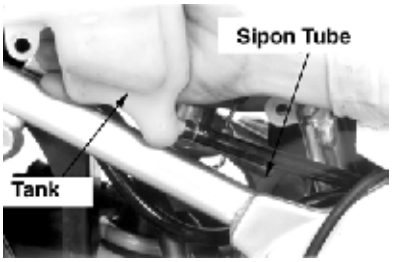


Fill and bleed the cooling system
(page 6-6)

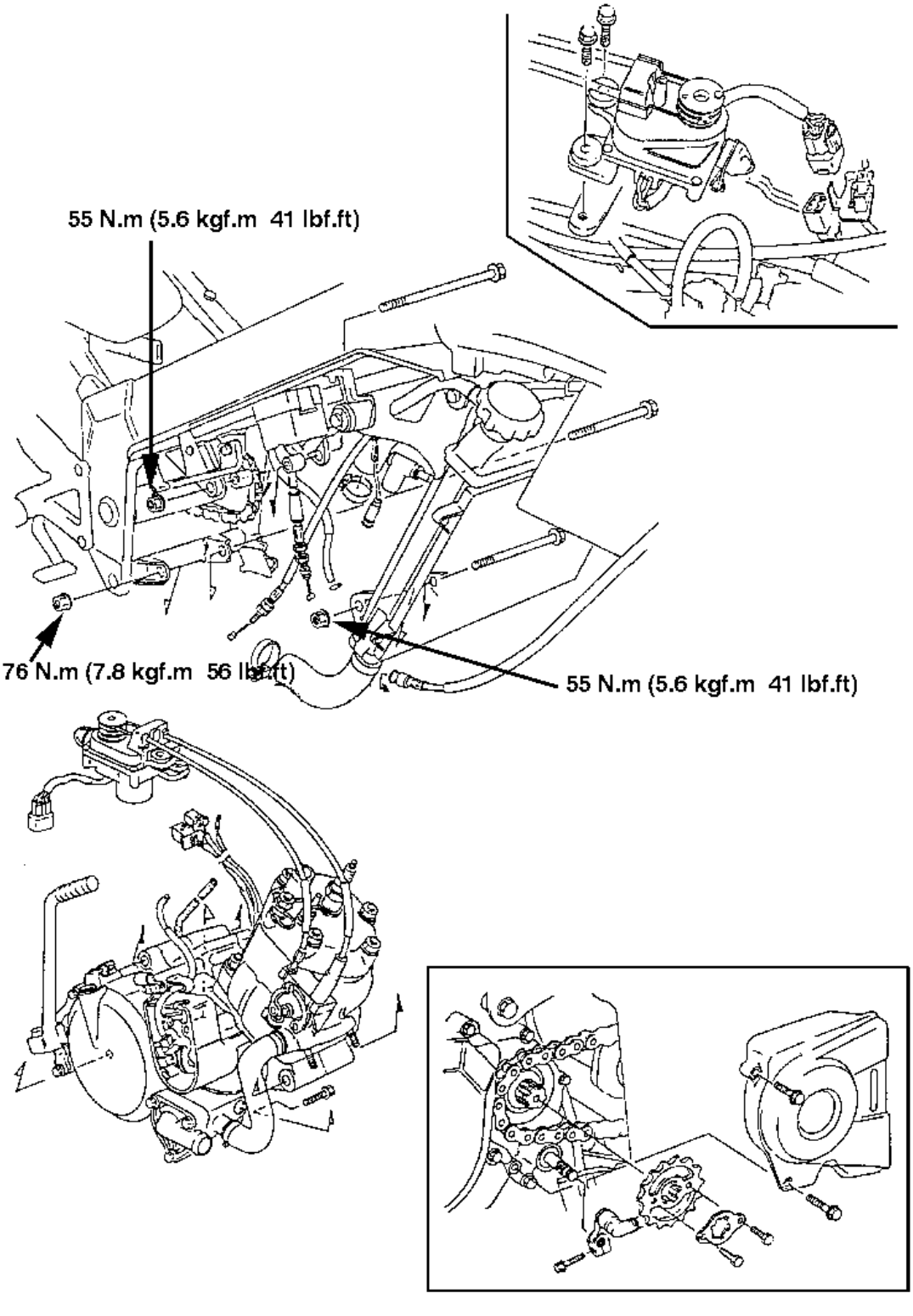
Install the side cowl and lower cowl
(page 2-4, 2-5)

RADIATOR RESERVE TANK





Remove the side cover
(page 2-6)
Remove the battery case
(page 16-6)
Drain the coolant
(page 16-6)
Disconnect the reserve tank overflow tube and siphon tube.
Installation is in the reverse order of removal.


55 N.m (5.6 kgf.m 41 lbf.ft)
76 N.m (7.8 kgf.m 56 lbf.ft)
55 N.m (5.6 kgf.m 41 lbf.ft)

SERVICE INFORMATION

GENERAL

- During removal and installation, support the motorcycle using a safety stand or hoist.
- A floor jack or other adjustable support is required to support and manoeuvre the engine.
- When removing/installing the engine, tape the frame about the engine beforehand to protect the frame.
- The following components can be serviced with the engine installed in the frame.

- Alternator/balancer	(Section 11)
- Ignition pulse generator	(Section 11, 17)
- Carburettor	(Section 5)
- Oil pump	(Section 4)
- Clutch/gearshift linkage/kickstarter	(Section 10)
- RC valve/servo motor	(Section 9)
- Cylinder head/cylinder/piston	(Section 8)
- Water pump	(Section 6)

The following components require engine removal for service.

- Crankshaft	(Section 12)
- Shift fork, shift drum and shift spindle	(Section 12)
- Transmission	(Section 12)

After engine installation. adjust the followings.

- Clutch cable	(page 3-22)
- Drive chain	(page 3-15)
- Throttle cable	(page 3-4)

SPECIFICATIONS

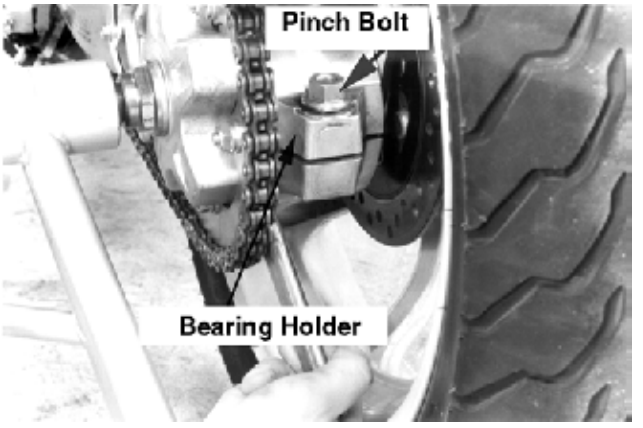
ITEM	SPECIFICATIONS
Engine dry weight	23.9 kg (52.7 lb)
Transmission oil capacity at disassembly	0.8 litre (0.85 US oz, 0..70 lmp oz)
Coolant capacity (radiator and engine)	Litre)US oz, lmp oz)

TORQUE VALUES

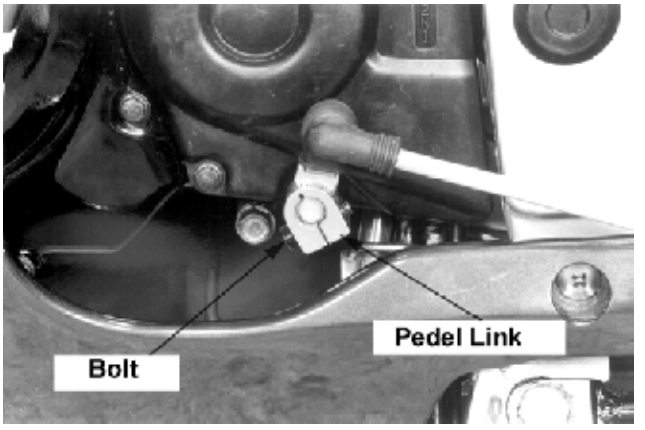
Front engine hanger nut	55 N.m (5.6 kgf.m, 41 lbf-ft)
Rear upper engine hanger nut	55 N.m (5.6 kgfm, 41 lbf.ft)
Rear lower engine hanger nut	76 N.m (7.8 kgfm, 56 lbf-ft)

DRIVE SPROCKET REMOVAL

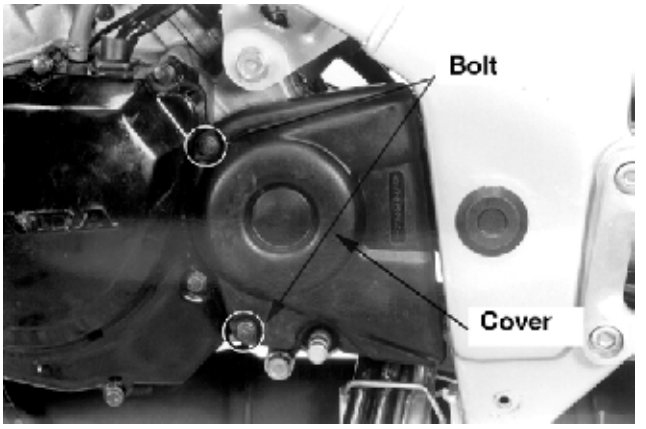
Loosen the bearing holder pinch bolt.
Raise the rear wheel off the ground by placing a support under the engine.
Turn the bearing holder with the pin spanner, slacken the drive chain fully.



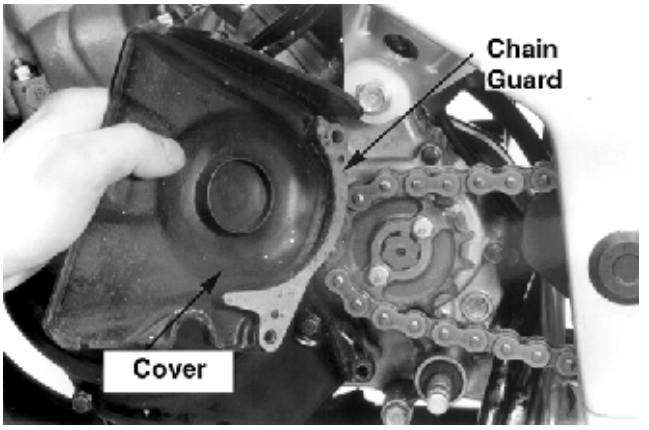
Remove the gearshift pedal link pinch bolt and gearshift pedal link.



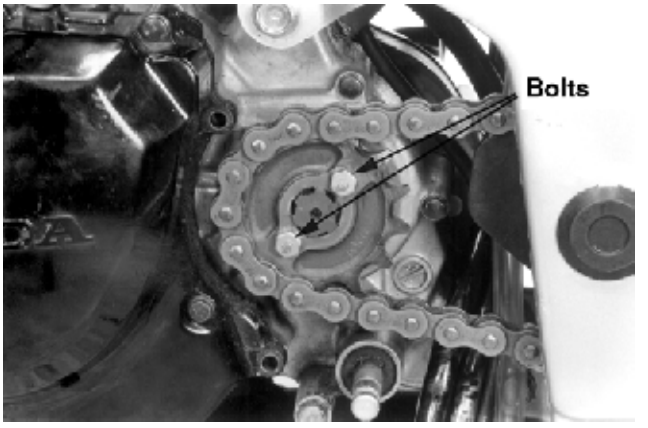
Remove the bolts and drive sprocket cover.



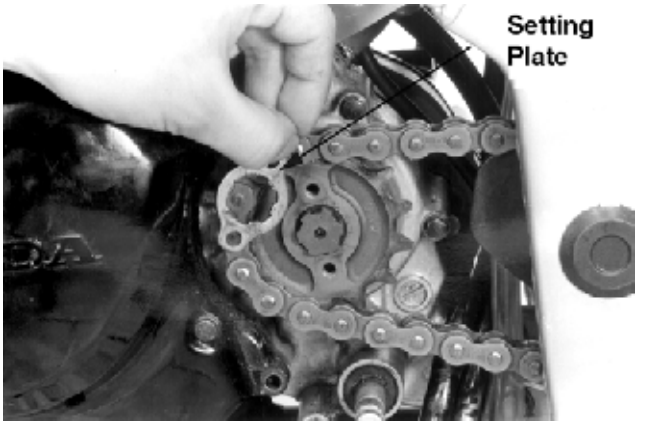
Remove the drive chain guard from the drive sprocket cover.
Check the drive chain guard for wear or damage.
If the drive chain guard is excessively worn or damaged, replace the drive sprocket cover with a new one.



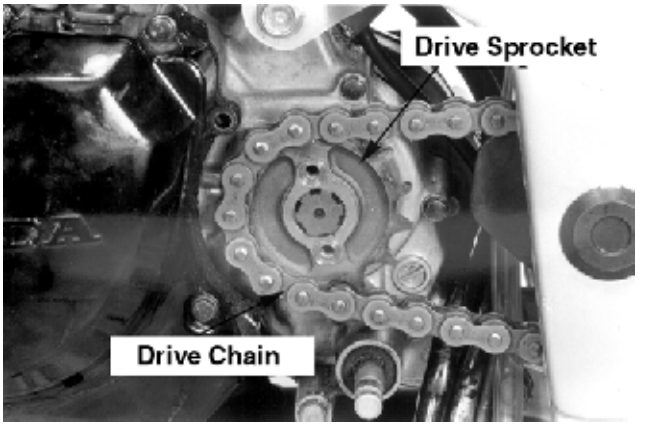
Remove the drive sprocket setting plate bolts.



Align the drive sprocket setting plate teeth and countershaft teeth, then remove the drive sprocket setting plate.



Remove the drive sprocket.

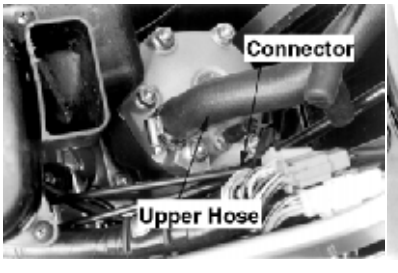


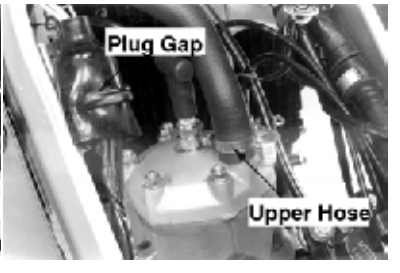
ENGINE REMOVAL

NOTE

Support the motorcycle using safety stand or a hoist. Turn the ignition switch OFF and disconnect the battery ground (-) cable.
A floor jack or other adjustable support is required to support and manoeuvre the engine. The jack height must be continually adjusted to relieve stress for ease of bolt removal.

Drain the coolant

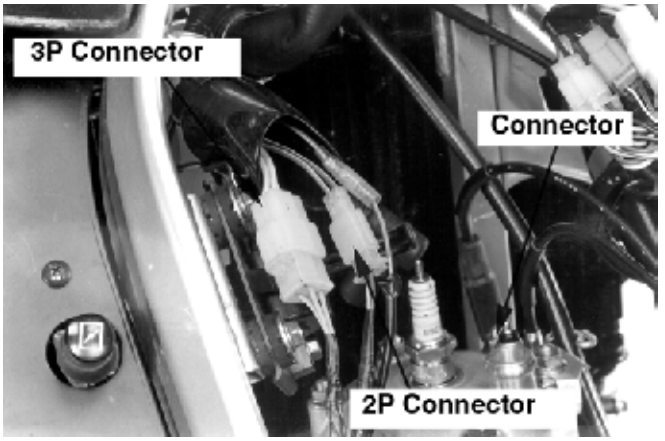




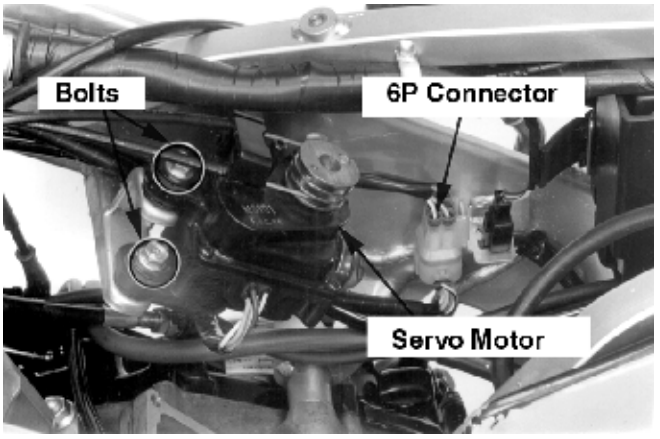
Remove the following:
-Side cowl (page 2-4)
-Lower cowl (page 2-5)
-Exhaust pipe/muffler (page 2-15)
-Drive sprocket (page 7-3)
-Fuel tank (page 2-12)
-Carburettor (page 5-6)
-Reed valve (page 5-13)

Disconnect the radiator upper hose, spark plug cap and thermo sensor connector.

Disconnect the alternator 3P connector, ignition pulse generator 2P connector and neutral switch connector.



Disconnect the servo motor 6P connector.
Remove the bolts and servo motor.

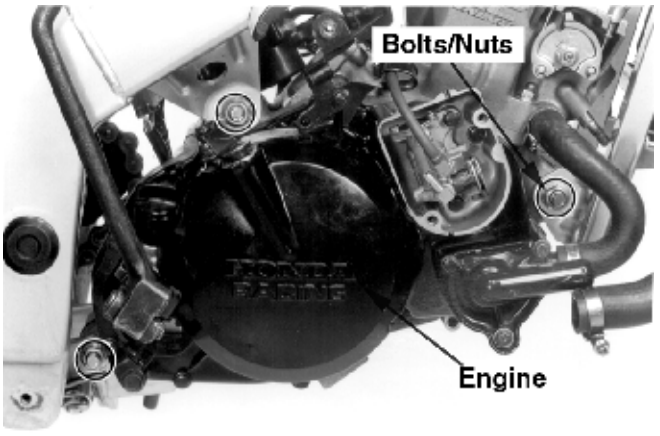


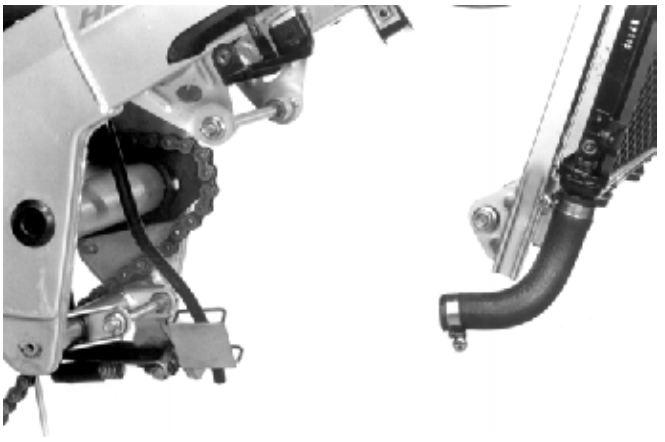
Disconnect the clutch cable, oil tube, radiator lower hose and tachometer cable (page 10-3).

CAUTION

- **During engine removal, hold the engine securely and be careful not to damage the frame and engine.**

Remove the engine hanger bolts and nuts.
Remove the engine.





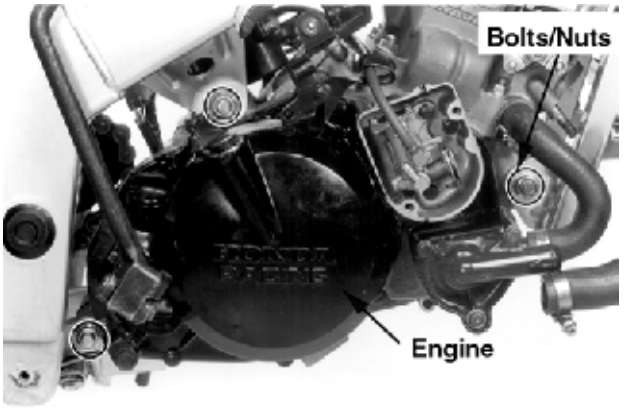
ENGINE INSTALLATION

CAUTION

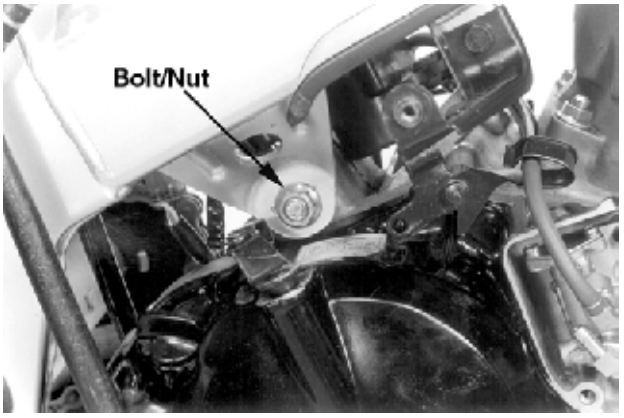
- **Carefully align the mounting points with the jack to prevent damage to engine, frame, wires and cables.**

NOTE

All the engine mounting bolts and nuts should be loosely install, then tighten the bolts and nuts to the specified torque.
At engine installation, temporarily install the drive chain over the gearshift spindle.



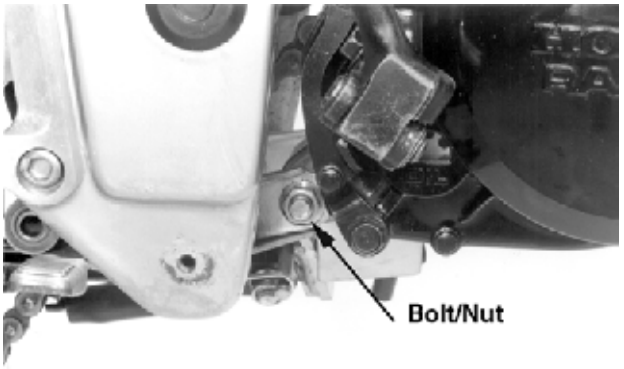
Use a floor jack or other adjustable support to carefully manoeuvre the engine into place.
Carefully align the bolt holes in the frame and engine.



Temporally install all engine hanger bolts and nuts.

Tighten the rear upper engine hanger nut to the specified torque.

TORQUE: 55 N.m 5.6 kgf-m, 41 lbf.ft)

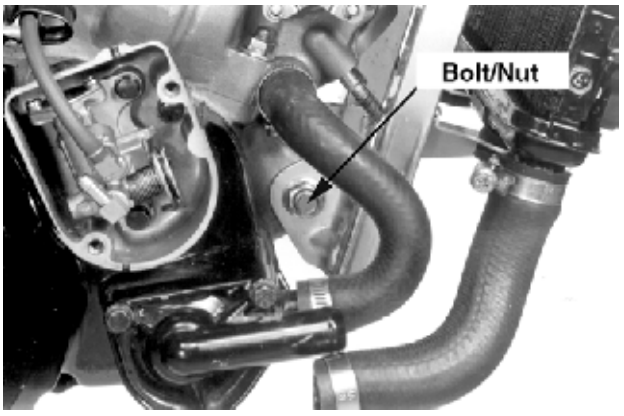


Tighten the rear lower engine hanger nut to the specified torque.

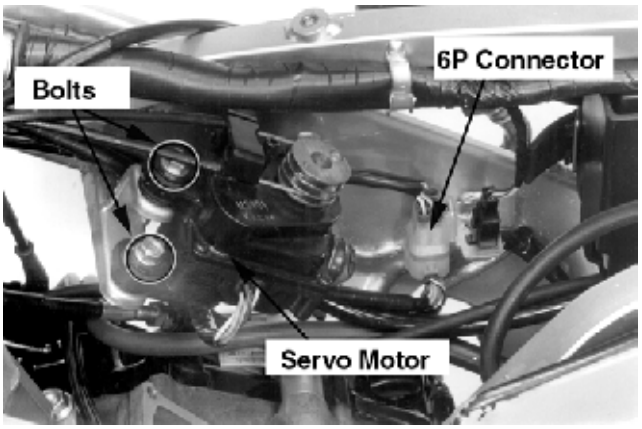
TORQUE: 76 N.m (7.8 kgf-m, 56 lbf-ft)

Tighten the front engine hanger nut to the specified torque.

TORQUE: 55 N.m 5.6 kgf.m, 41 lbf-ft)

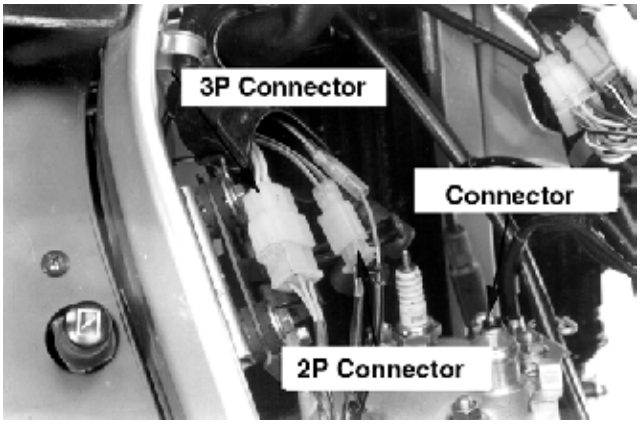


Install the servo motor.
Install and tighten the bolts securely.
Connect the servo motor 6P connector.

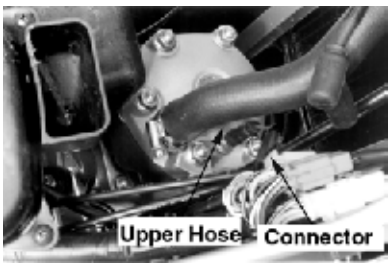


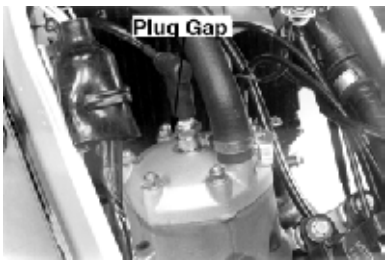
Connect the clutch cable, oil tube, radiator lower hose and tachometer cable.

Connect the alternator 3P connector, ignition pulse generator 2P connector and neutral switch connector.



Connect the radiator upper hose, spark plug cap and thermo sensor connector.



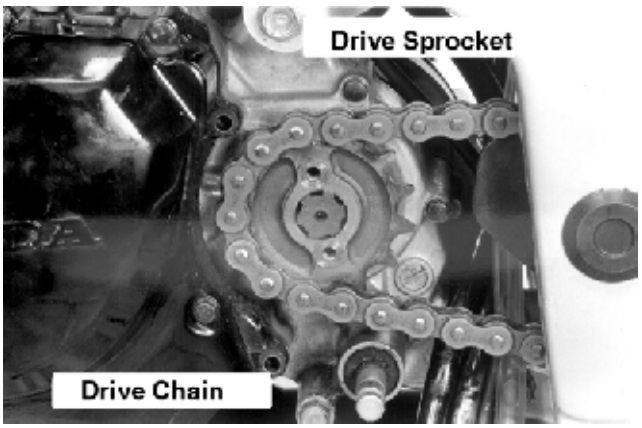


Install the followings:

-Reed valve	(page 5-14)
-Carburettor	(page 5-1 1)
-Fuel tank	(page 2-12)
-Drive sprocket	(page 7-3)
-Exhaust pipe/muffler	(page 2-15)
-Lower cowl	(page 2-5)
-Side cowl	(page 2-4)

Fill and bleed the cooling system (page 6-6).
Fill and bleed the engine oil line (page 4-6).

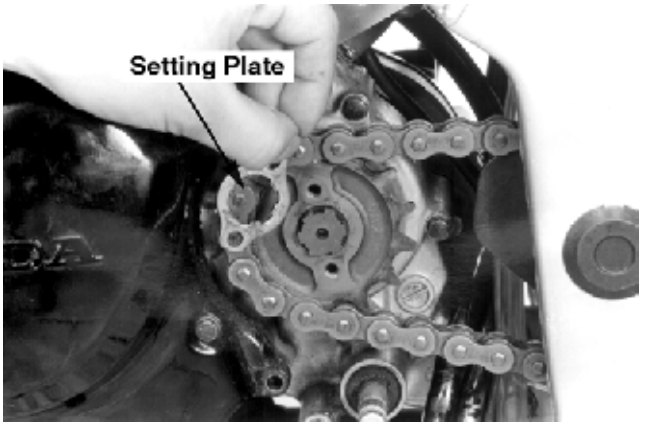
Connect the battery ground cable.



DRIVE SPROCKET INSTALLATION

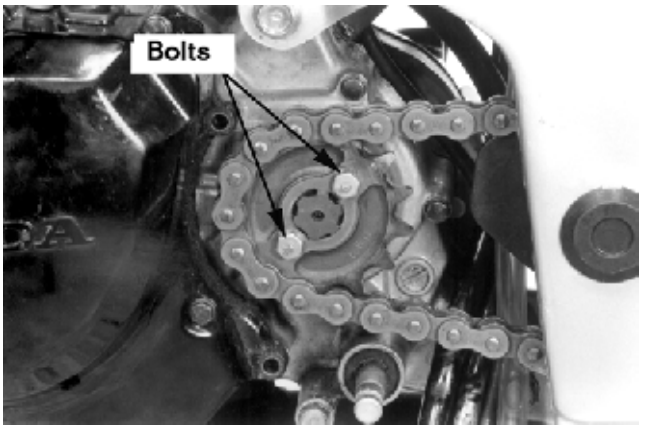
Install the drive chain to the drive sprocket.
Install the drive sprocket to the countershaft with its marking side facing out.

Install the drive sprocket setting plate onto the counter shaft and align the bolt holes on the plate with the holes of the sprocket.

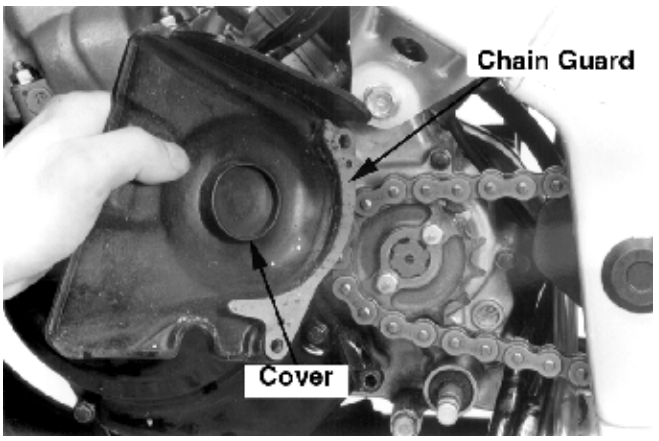


Install and tighten the new drive sprocket setting plate bolts to the specified torque.

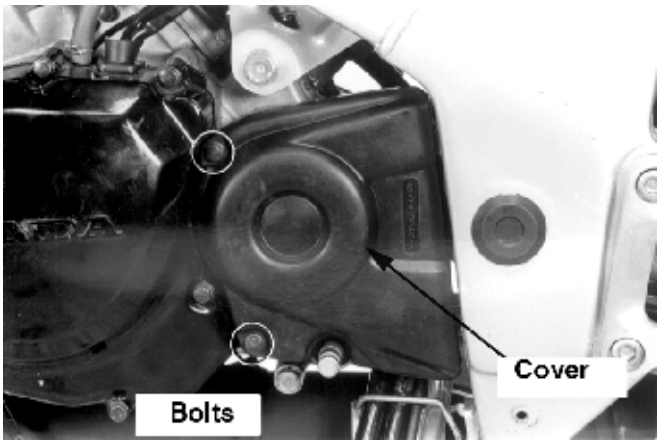
TORQUE: 10 N.m (1.0 kgf.m, 7 lbf.ft)



Install the drive chain guard to the drive sprocket cover.



Install the drive-sprocket-cover and tighten the bolts securely.

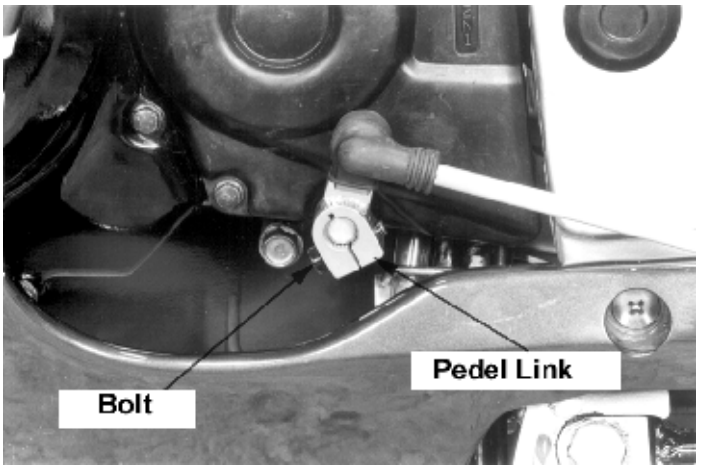


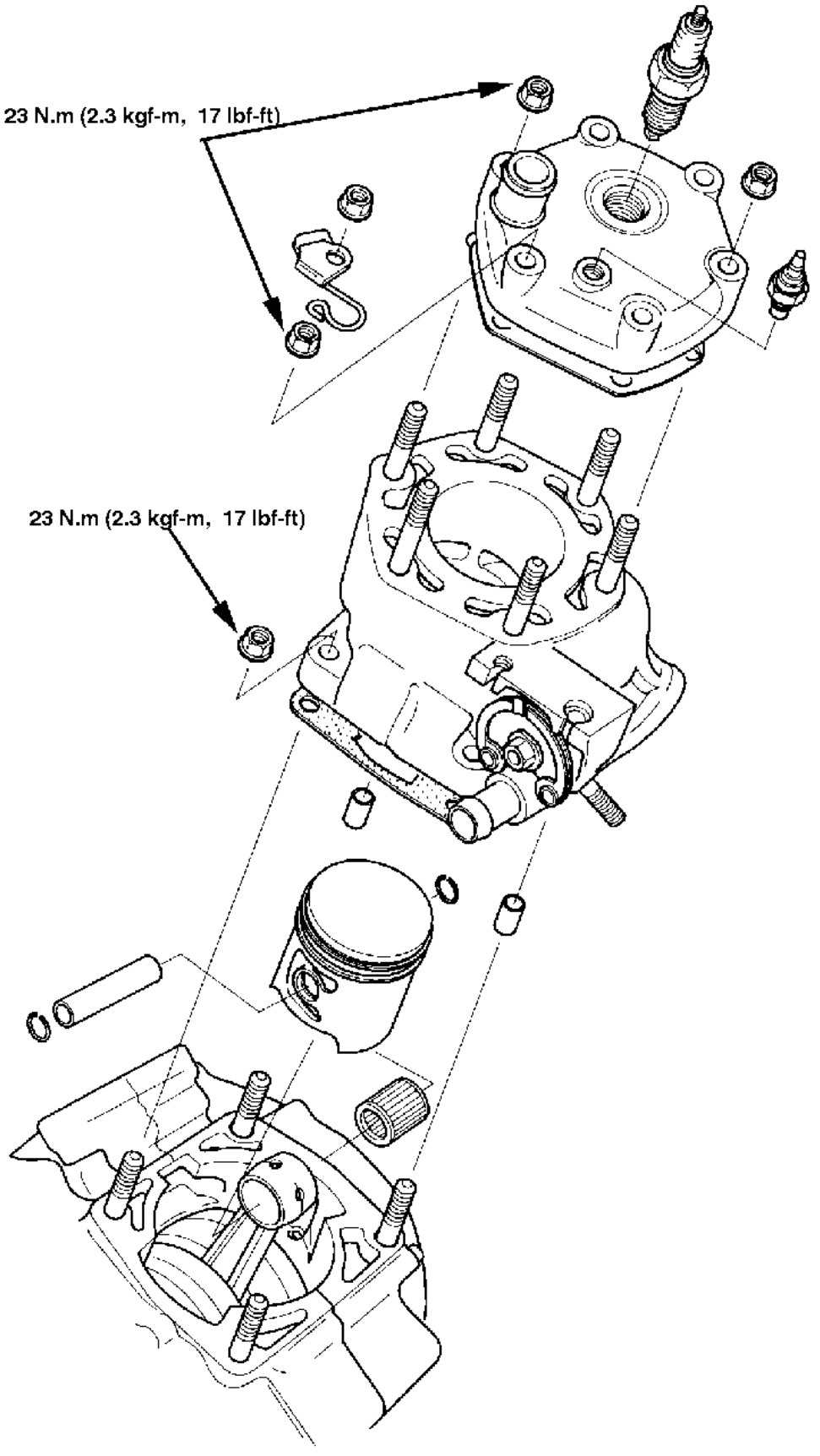
Install the gearshift pedal link to the gearshift pedal.

Install and tighten the gearshift pedal link pinch bolt securely Specified torque.

TORQUE: N.m (-kgf-m lbf-ft)

Adjust the drive chain slack.




23 N.m (2.3 kgf-m, 17 lbf-ft)
23 N.m (2.3 kgf-m, 17 lbf-ft)

SERVICE INFORMATION

GENERAL

- The cylinder head, cylinder and piston can be serviced with the engine in the frame.
- Be careful not to damage the mating surfaces by using a screwdriver when removing the cylinder head and cylinder.
- Take care not to damage the cylinder wall and piston.
- Clean all disassembled parts with clean solvent and dry them using compressed air before inspection.
- Coat all sliding surfaces with clean 2-stroke oil before assembly.
- Refer to Section 9 for RC valve information.

SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Cylinder compression		108 kPa (1 1.0 kgf/cm^2, 156 psi) at 400 min^{-1} (rpm)	-
Cylinder head warpage		-	0.05 (0.002)
Cylinder I.D.	Code A	59.010 - 59.015 (2.3232 - 2.3234)	59.05 (2.325)
	No mark	59.005 - 59.010 (2.3230 - 2.3232)	59.05 (2.325)
	Code C	59.000 - 59.005 (2.3228 - 2.3230)	59.05 (2.325)
Cylinder out of round		-	0.05 (0.002)
Cylinder warpage		-	0.05 (0.002)
Piston mark direction		'IN' mark facing toward the intake side	-
Piston O.D.	Code A	58.965 - 58.970 (2.3215 - 2.3216)	58.92 (2.320)
	Code B	58.960 - 58.965 (2.3213 - 2.3215)	58.92 (2.320)
	Code C	58.955 - 58.960 (2.3211 - 2.3213)	58.92 (2.320)
Piston O.D. measurement point		12 mm (0.5 in) from the bottom	
Piston pin hole I.D		16.002 - 16.015 (0.6300 - 0.6305)	16.03 (0.631)
Cylinder-to-piston clearance		0.040 - 0.050 (0.0016 - 0.0019)	0.080 (0.0031)
Piston pin O.D.		15.994 - 16.000 (0.6927 - 0.6299)	15.98 (0.629)
Piston-to-piston pin clearance		0.002 - 0.021 (0.0001 - 0.0008)	0.04 (0.002)
Piston ring~to-ring groove clearance			0.12 (0.05)
Ring end gap	Top	0.38 - 0.53 (0.015 - 0.021)	0.65 (0.026)
	Second	0.38 - 0.53 (0.015 - 0.021	0.65 (0.026)
Ring mark	Top	3R	
	Second	4R	
Connecting rod small end I.D.		20.002 - 20.014 (0.7875 - 0.7880	20.03 (0.789)

TORQUE VALUES

Spark plug	20 N.m (2.0 kgf.m, 14 lbf-ft)
Cylinder head nut	23 N.m (2.3 kgf.m, 17]bf-ft)
Cylinder nut	23 N.m (2.3 kgf.m, 17 lbf-ft)
Cylinder stud bolt	10 N.m (1.0 kgf.m, 7 lbf-ft)

TROUBLESHOOTING

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

- Cylinder head
  - Leaking or damaged cylinder head gasket
  - Warped or cracked cylinder head
- Loose spark plug
- Leaking cylinder head gasket
- Worn, stuck or broken piston rings
- Worn or damaged cylinder and piston
- Leaking crankcase primary compression
  - Blown crankcase gasket
  - Damaged crankshaft oil seal

Compression too high, overheating or knocking

- Excessive carbon build-upon piston or combustion chamber

Excessive noise

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

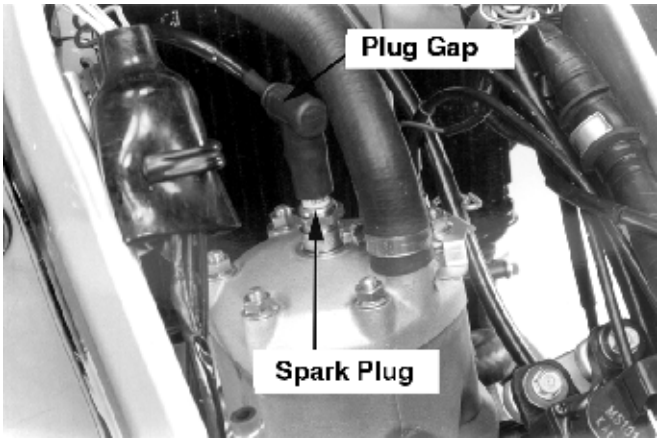
Rough idle

- Low cylinder compression

Cylinder Compression

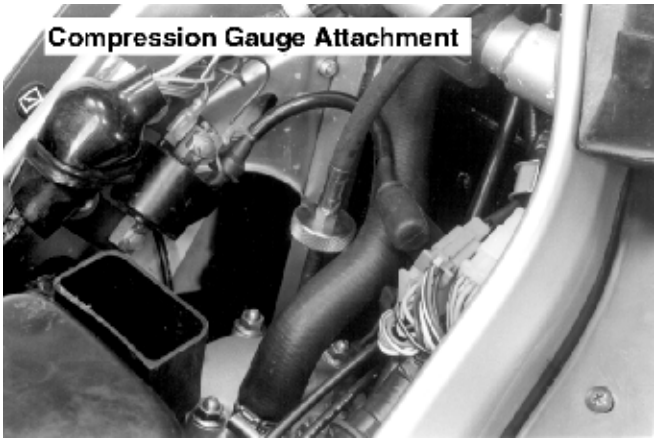
Warning

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.



Warm up the engine to normal operating temperature. Stop the engine and remove the fuel tank (Page 2-12)

Disconnect the spark plug cap and spark plug.



Shift the transmission into neutral. Install a the commercially available compression gauge attachment in the spark plug hole.

Connect the compression gauge to the attachment.
Open the throttle all the way and crank the engine with the kickstarter.

NOTE

- **Crank the engine until the gauge reading stops rising. The maximum reading is usually reached within 4 - 7 seconds.**

STANDARD:
108 kPa (11.0 kgf/cm^2 156 psi) at 400 min^{-1} (rpm)

If compression is high, it indicates that carbon deposits have accumulated on the combustion chamber and/or the piston crown.

If compression is low, pour 3 - 5 cc (0.1 - 0.2 oz) of clean engine oil into the cylinder through the spark plug hole and recheck the compression.

If the compression increases from the previous value, check the cylinder, piston and piston rings.

- Leaking cylinder head gasket
- Worn piston ring
- Worn cylinder and piston

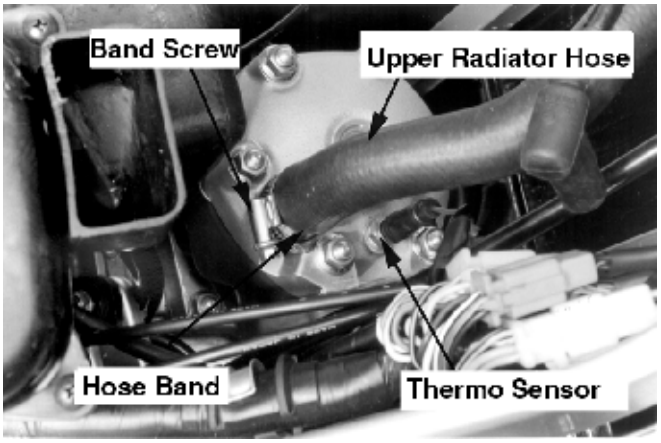
If the compression is the same as the previous value, check the values for leakage.

CYLINDER HEAD REMOVAL

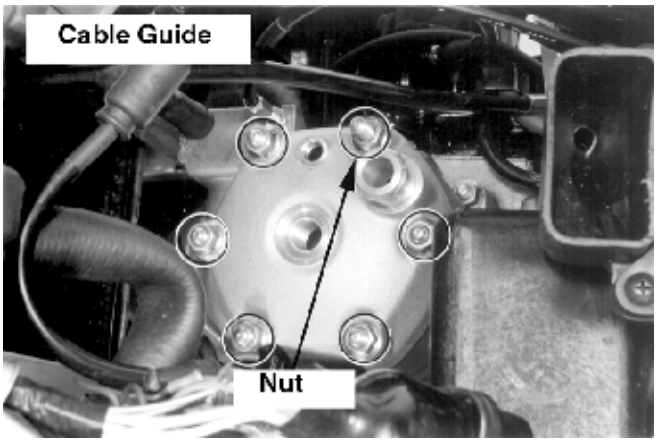
REMOVAL

Remove the side cowl (Page 2-4).
Remove the fuel tank (Page 2-4).
Drain the coolant (Page 2-4).

Remove the spark plug cap and spark plug.
Remove the thermo sensor.
Loosen the band screw and disconnect the upper radiator hose.



Remove the nut and clutch cable guide.

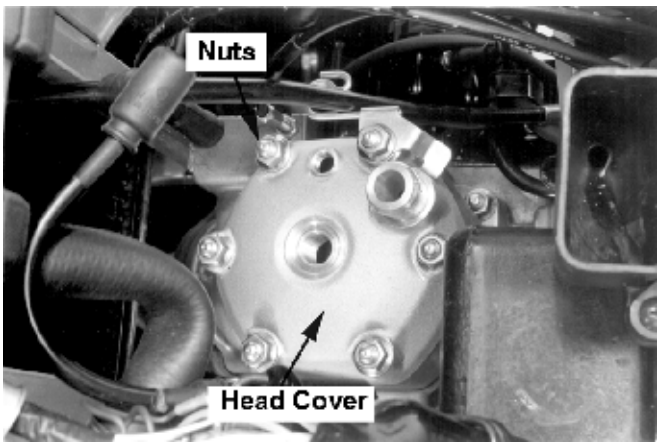


Remove the cylinder head nuts.

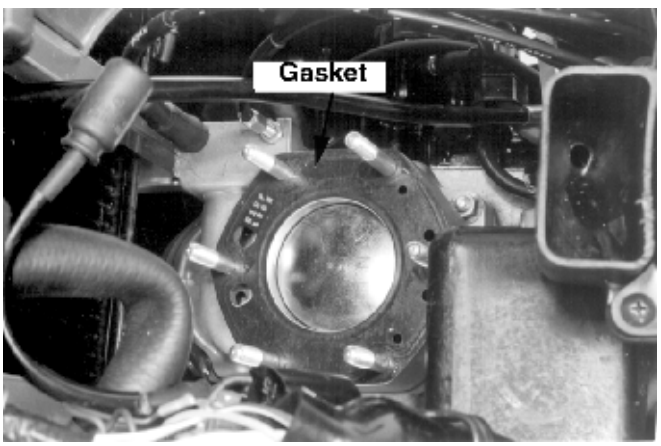
NOTE:
- **Loosen the nuts in a crisscross pattern in several steps.**

Remove the cylinder head.

CAUTION:
- **Be careful not to damage the mating surface when removing the cylinder head.**

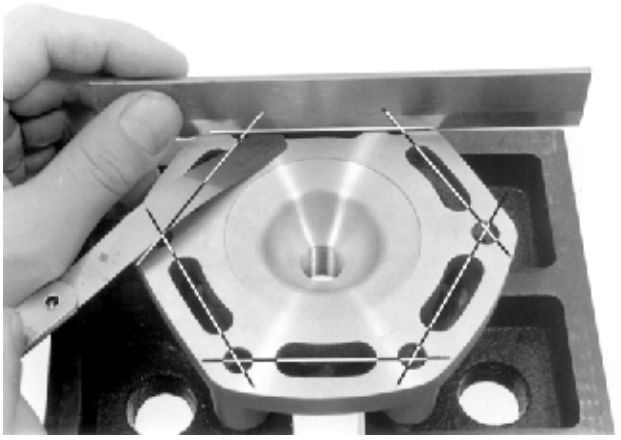


Remove the gasket.



INSPECTION

Remove the carbon deposits from the combustion chamber and clean off the head gasket surface.



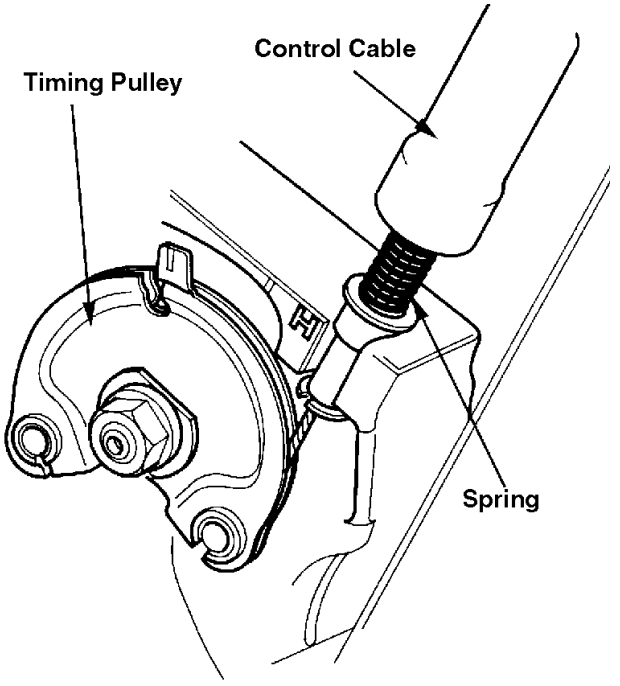
Clean the head gasket surface off any gasket material.

CAUTION

- **Avoid damaging the gasket surface.**

Check for cracks around the spark plug and stud bolt holes. Check the cylinder head for warpage with a straight edge and a feeler gauge.

SERVICE LIMIT: 0.05mm - (0.002 in)



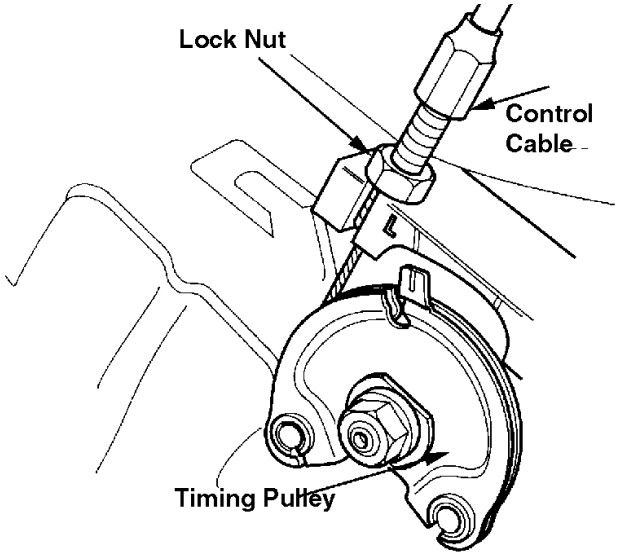
CYLINDER/PISTON REMOVAL

CYLINDER REMOVAL

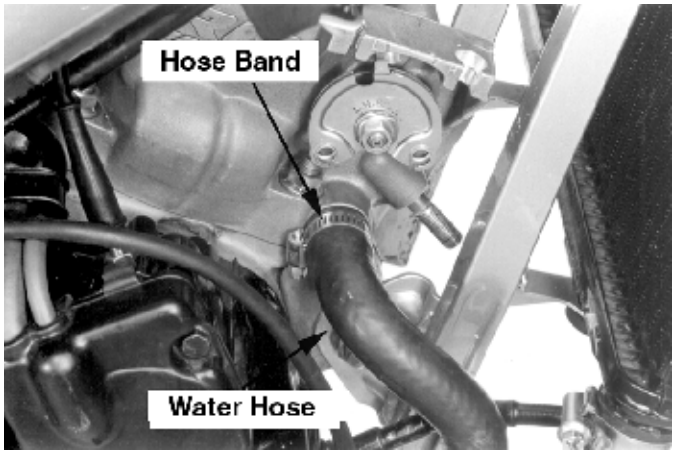
Remove the exhaust pipe (Page 2-15).
Remove the cylinder head (Page 8-14).

Disconnect the front RC valve control cable from the RC valve timing pulley by compressing the control cable spring.

Loosen the lock nut and disconnect the rear RC valve control cable from the RC valve timing pulley.



Loosen the screw and hose band.
Disconnect the water hose.

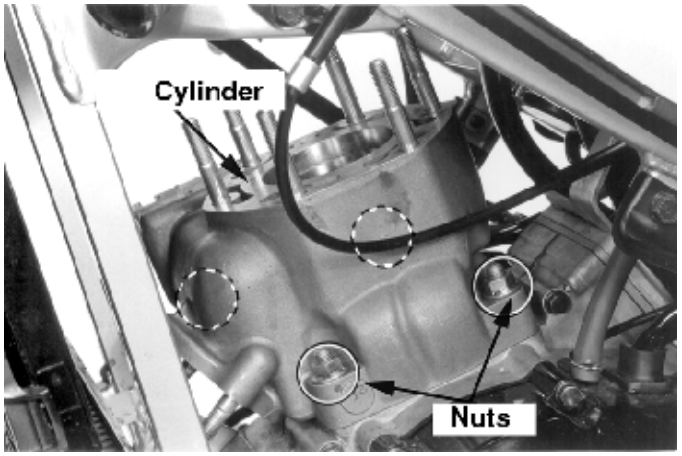


Remove the cylinder nuts.

NOTE
- **Loosen the nuts in a crisscross pattern in several steps.**

Remove the cylinder.

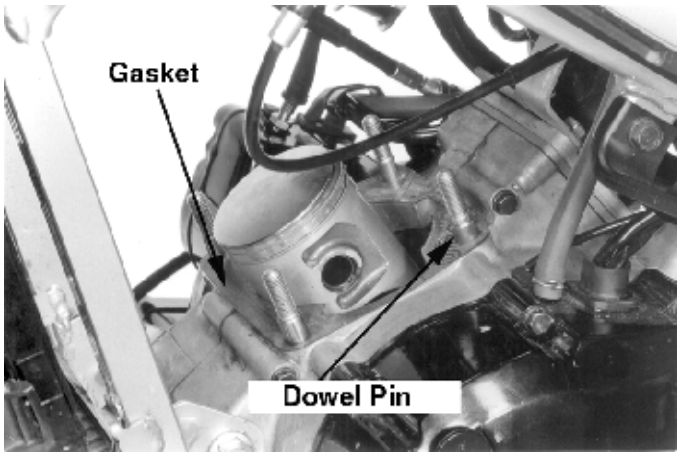
CAUTION
- **Be careful not to damage the mating surface when the removing the cylinder.**



Remove the gasket and dowel pins.

Clean off any gasket material from the cylinder lower surface.

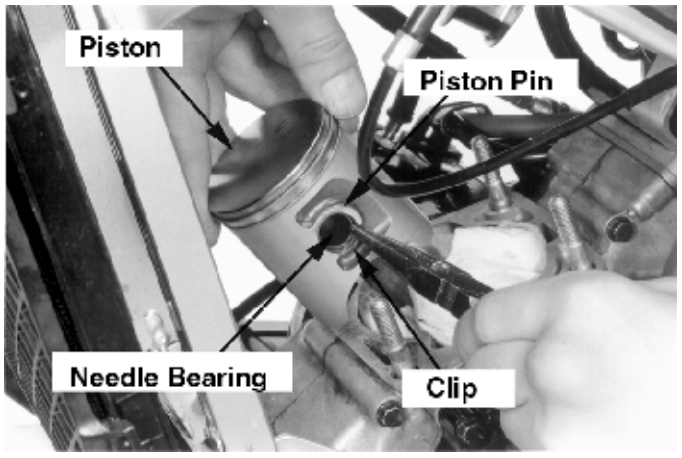
CAUTION
- **Be careful not to damage the gasket surface.**



PISTON REMOVAL

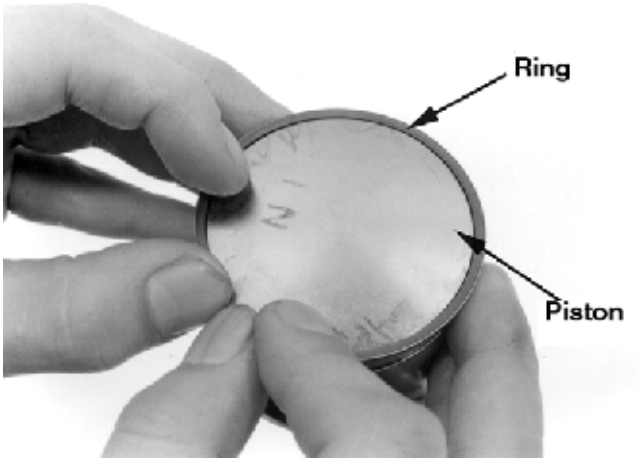
NOTE
- **Place a shop towel over the crankcase opening to prevent the piston pin clip from failing into the crankcase.**

Remove the piston pin clip, piston pin, needle bearing and piston.



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

CAUTION
- **Do not damage the piston ring by spreading the ends too far. He careful not to damage the piston during piston ring removal**



Remove the expander.

Clean carbon deposits from the piston.

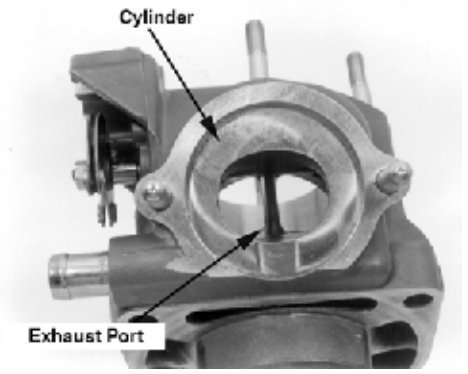
NOTE
- **Clean carbon deposits from the piston ring grooves with a ring that will be discarded. Never use a wire brush; it will scratch the groove.**

INSPECTION

CYLINDER

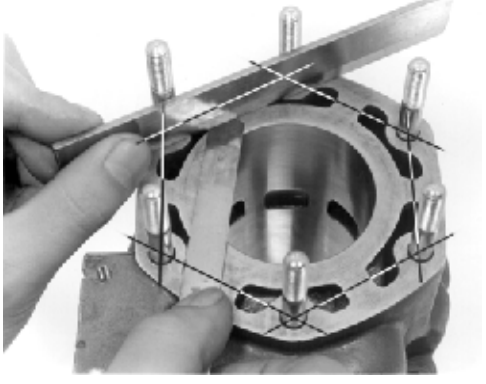
Inspect the cylinder bore for wear or damage.
Remove the carbon deposits from the exhaust port.

CAUTION
- **Be careful not to damage the plating on the cylinder wall.**



Check the cylinder for warpage by placing a straight edge and a feeler gauge.

SERVICE LIMIT: 0.05 mm (0.002.in)

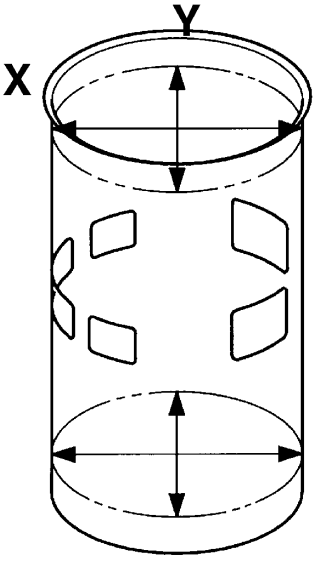


Inspect the cylinder wall for scratches and wear. Measure and record the cylinder I.D. at three levels in both the X and Y axis. The maximum reading determines the cylinder wear.

SERVICE LIMITS:
Code A: 59.02 mm (2.325 in)
No mark: 59.02 mm (2.325 in)
Code C: 59.02 mm (2.325 in)

Measure the cylinder for out of round at the upper and lower levels in an X and Y axis. Take the maximum reading to determine the out of round.

SERVICE LIMIT: 0.05 mm (0.002.in)

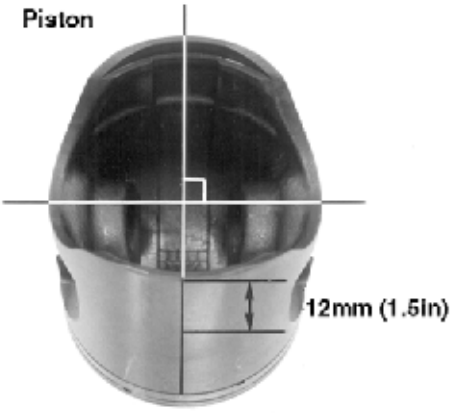


Measure the cylinder for taper at three levels in an X and Y axis. Take the maximum reading to determine the taper.

SERVICE LIMIT: 0.05 mm (0.002.in)

PISTON

Inspect the piston for cracks or other damage.
Inspect the ring grooves for excessive wear and carbon build-up.
Measure the piston O.D..

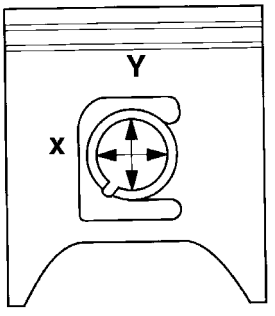


NOTE
- **Take measurements 12 mm (0.5 in) from the bottom, and 90^{o} to the piston pin hole.**

SERVICE LIMITS:
Code A: 58.92 mm (2.320 in)
Code B: 58.92 mm (2.320 in)
Code C: 58.92 mm (2.320 in)

Calculate the piston-to-cylinder clearance. Take the maximum reading to determine the clearance.

SERVICE LIMIT: 0.080 mm (0.0031 in)

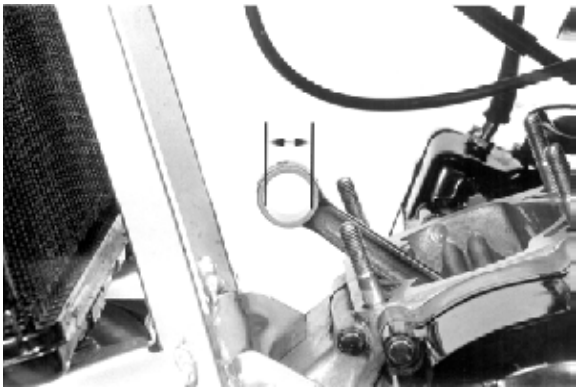


Measure the piston pin hole I.D. in an X and Y axis. Take the maximum reading to determine I.D..
SERVICE LIMIT: 16.08 mm (0.83 in)

Measure the I.D. of the connecting rod small end.

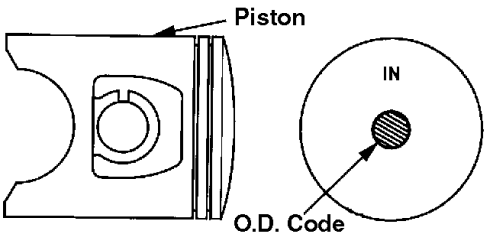
SERVICE LIMIT: 20.03 mm (0.789 in)

If the connecting rod I.D. is over the service limit, the crankshaft must be replaced.

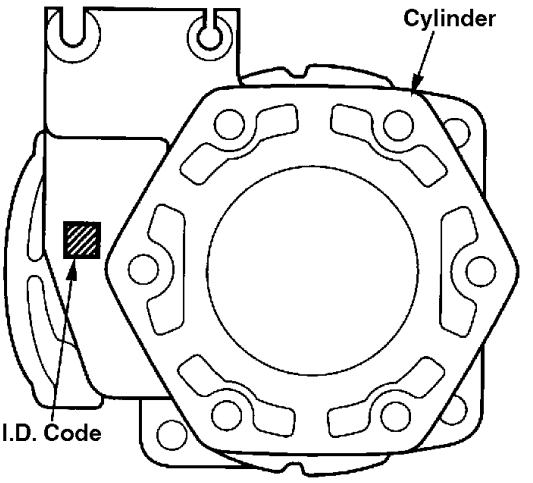


CYLINDER/PISTON SELECTION

Record the piston O.D. code letter (A, C or no mark).



Record the cylinder I.D. code letter (A, C or no mark) .
Use the cylinder and piston with the same I.D. and O.D. codes when the replacing the cylinder and piston as a set.

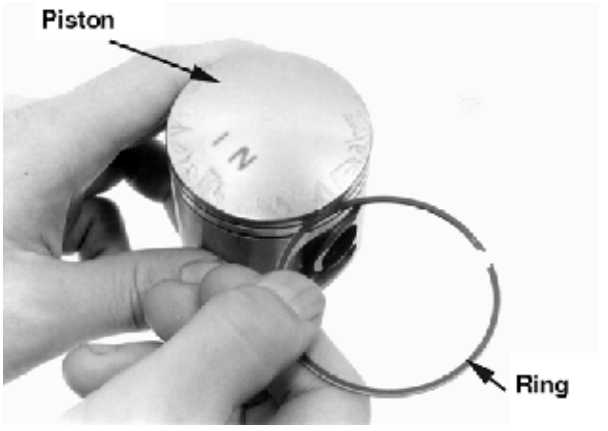


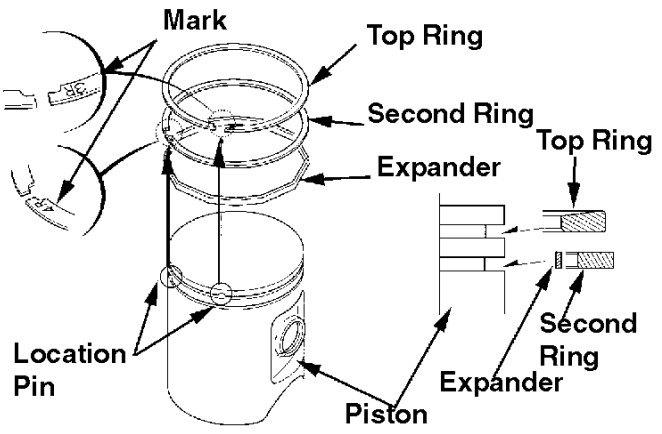
Cylinder I.D. code Piston O.D. code	A	No mark	C
A	O		
No mark		O	
C			O

CYLINDER/PISTON INSTALLATION

PISTON INSTALLATION

Clean the piston ring grooves.

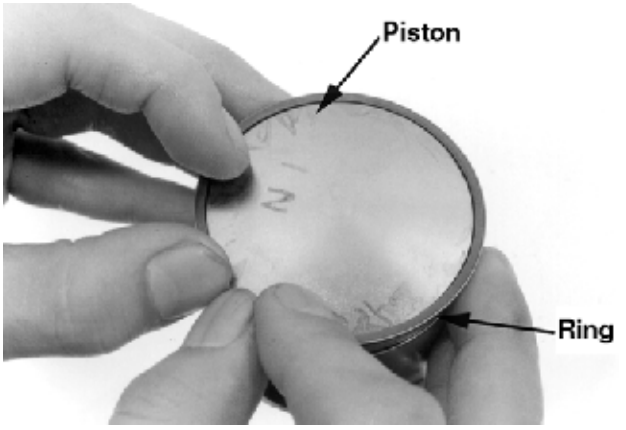




Lubricate the piston rings and ring grooves with clean 2-stroke oil.
Install the expander on the piston.
Install the top and second piston rings on the piston with the marks facing up.

NOTE

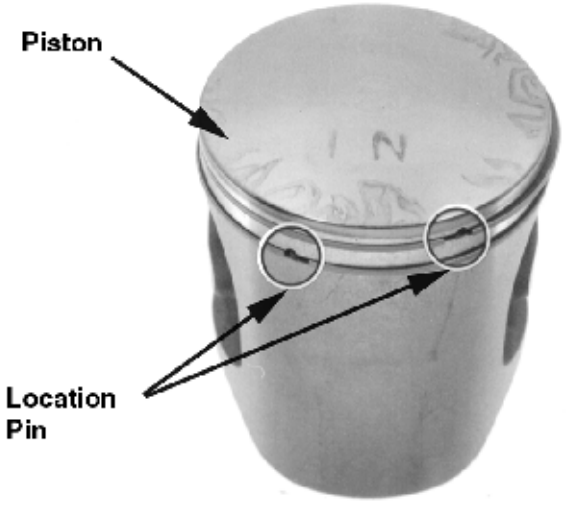
- **Do not confuse the top and second rings. Be sure to install them in the proper grooves.**



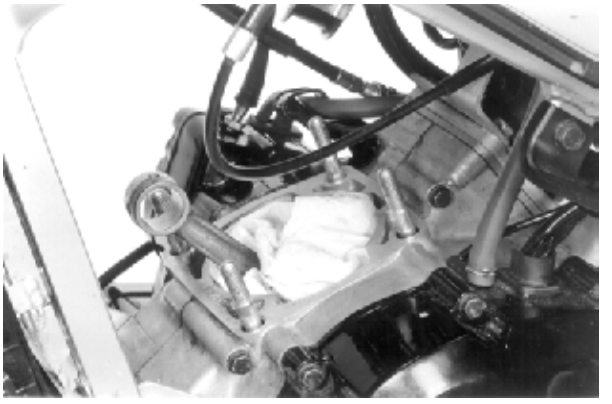
Align the piston ring end gaps with the location pins on the piston.

Check the fit of each ring in its groove by pressing the ring into the groove. Make sure that it is flush with the piston at several points around the ring.

Align each piston ring end gap with the location pins on the piston.



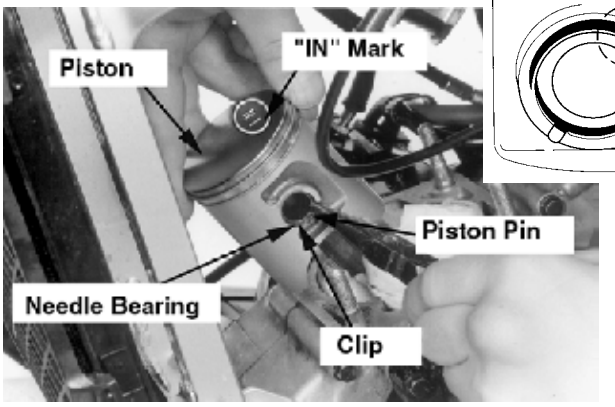
Clean off any gasket material from the engine case surface (Page 8-5).



NOTE

- **Place a shop towel over the crankcase opening to prevent the piston pin clip from failing into the crankcase.**

Apply 2-stroke oil to the needle bearing and connecting rod small end.
Install the needle bearing to the connecting rod small end.
Install the piston with the 'IN' mark facing the intake side.
Apply 2-stroke oil to the piston pin and install it to the piston pin hole.
Install the new piston pin clips.



CAUTION

- **Always use new piston pin clips. Reinstalling used piston pin clips may lead to serious engine damage.**

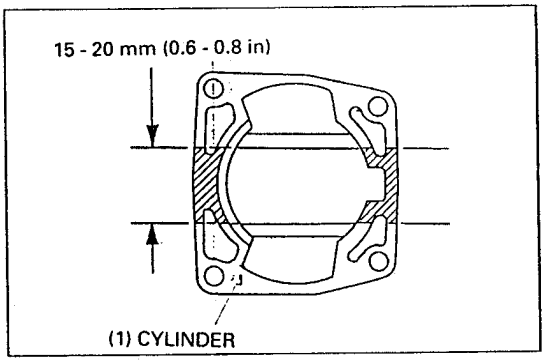
NOTE

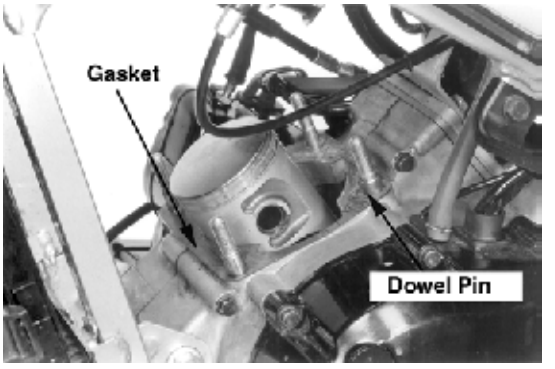
- **Set the piston pin clip in the groove properly.**
- **Do not align the clips end gap with the piston cut-out.**

CYLINDER INSTALLATION

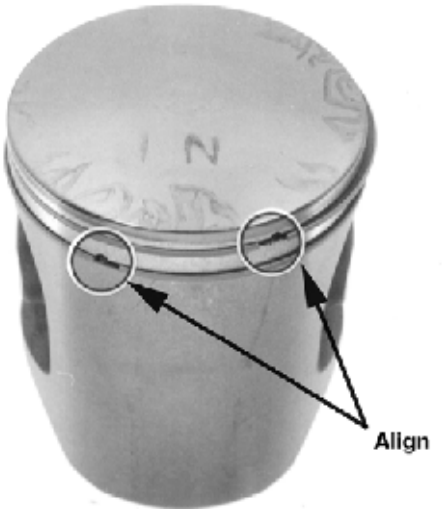
Apply a light but through coating of sealant to crankcase as shown.

Install the dowel pins and new gasket.





Recheck and align each piston ring and gap with the location pins on the piston.

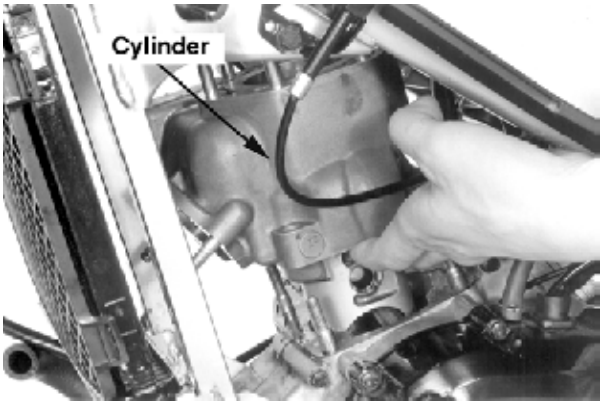


Install the RC valve (Page 9-5).

Apply 2-stroke oil to the cylinder wall, piston outer surface and piston rings.

CAUTION

- **Be careful not to damage the piston rings and-cylinder wall.**
- **When installing the cylinder do not rotate the cylinder, since this may cause the piston rings to snag a cylinder port and break.**



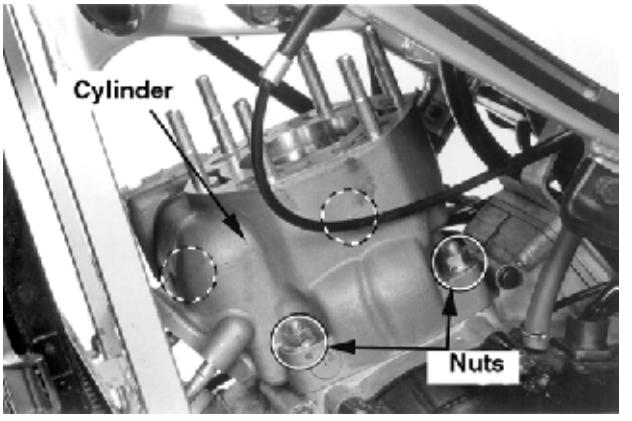
Install the cylinder over the piston rings by hand while compressing the piston rings.

Install and tighten the cylinder nuts to the specified torque.

NOTE

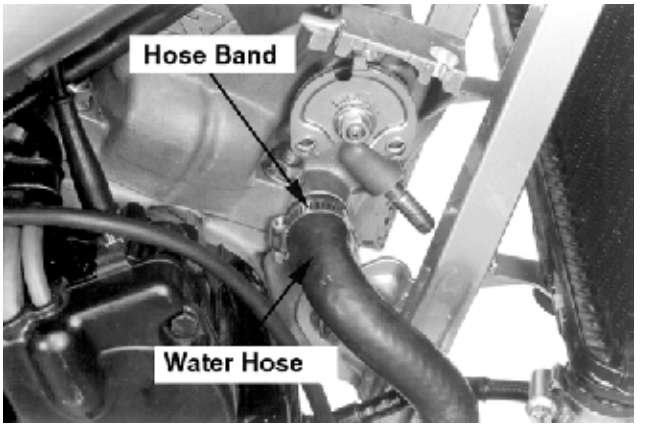
- **Tighten the nuts in a crisscross pattern in several steps.**

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

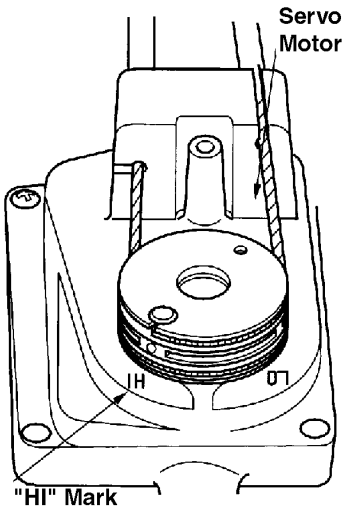


Connect the lower water hose.

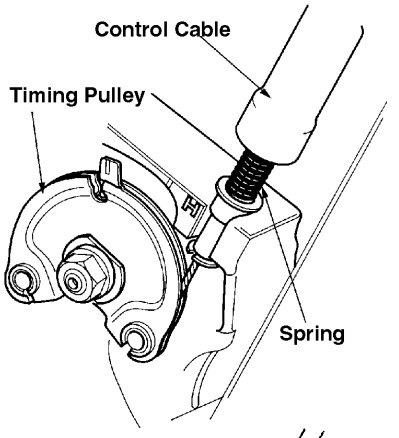
Tighten the screw and hose band.



Align the tab on the servo motor pulley with the 'Hi' mark on the servo motor.

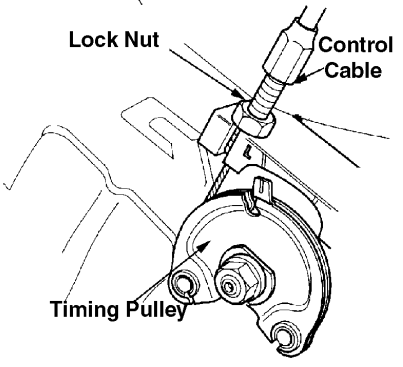


Connect the front RC valve control cable to the RC valve timing pulley by compressing the control cable spring.



Connect the rear RC valve control cable to the RC valve timing pulley.

Align the notch on the RC valve timing pulley and 'H' mark on the cylinder by turning the adjuster, hold the outer tube to prevent it from being twisted.
Tighten the lock nut securely.

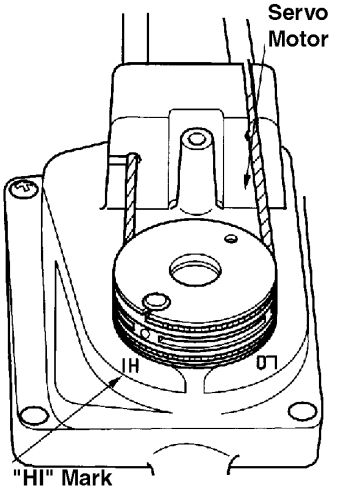


Recheck that the tab on the servo motor pulley is aligned with the 'H' mark on the servo motor.

Turn the RC valve timing pulley 5^{O} to 10^{O} in several steps.

When the tab on the servo motor pulley aligns with the 'Hi' mark on the servo motor, the notch on the RC valve timing pulley should align with the 'H' mark on the cylinder.

If not adjust again.



Check the RC valve control cable (Page 9-3).
Install the expansion chamber (Page 1-15).
Install the cylinder head.(Page 8-15).

CYLINDER HEAD INSTALLATION

Install the new gasket with the 'EX UP' mark facing the exhaust side and up.

Install the cylinder head.
Install and tighten the cylinder head nuts to the specified torque.

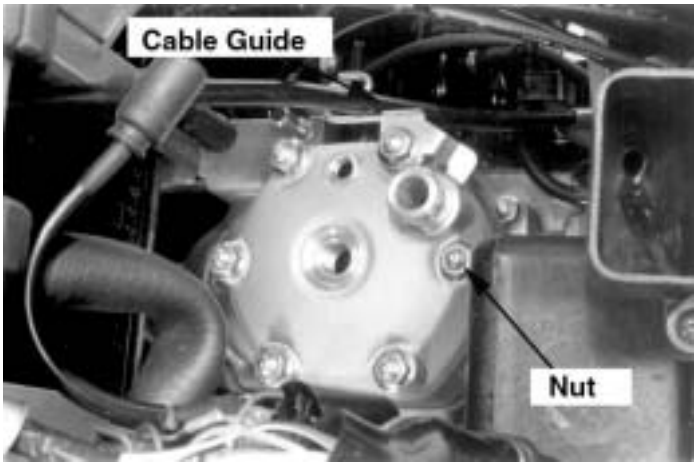
NOTE

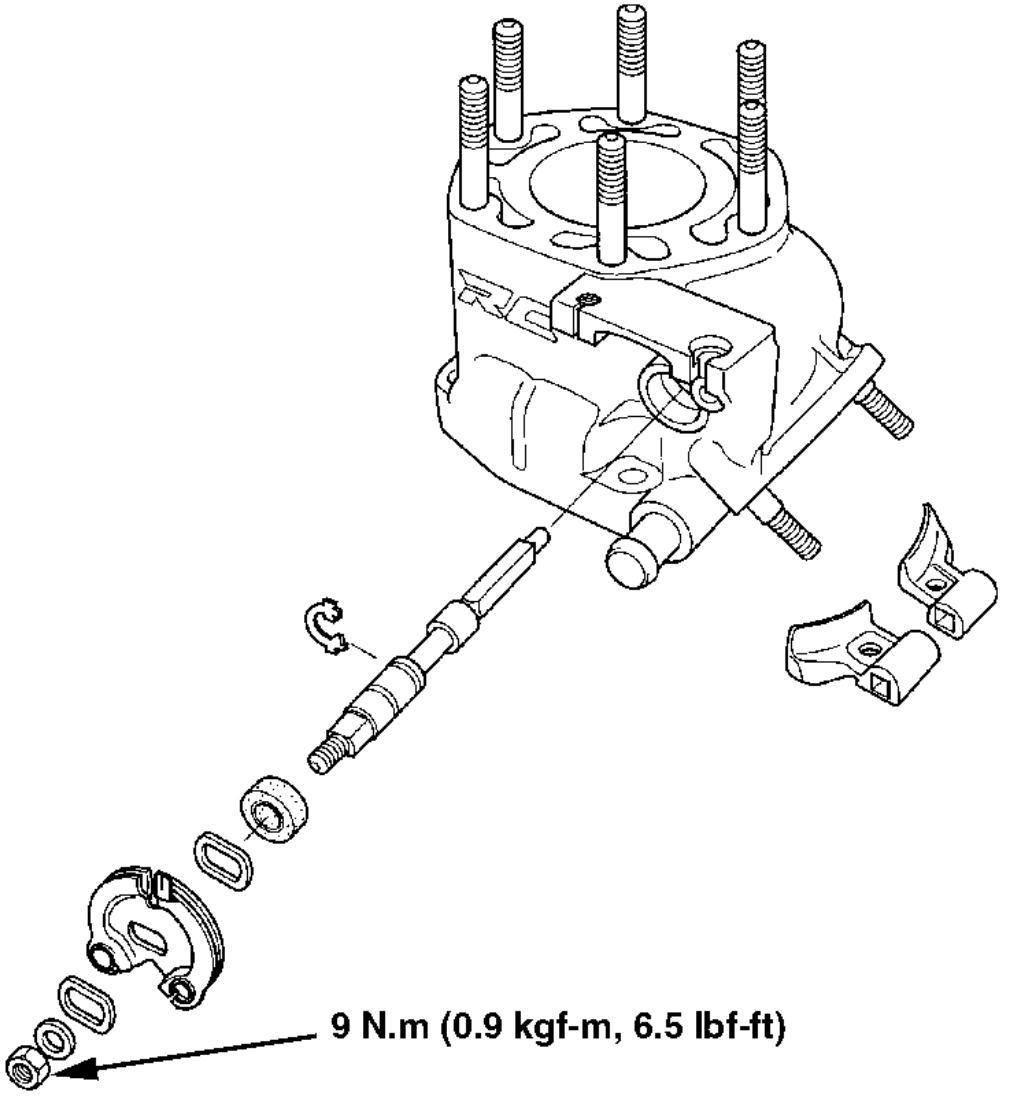
- **Tighten the nuts in a crisscross pattern in several steps.**

TOROUE: 23 N.m (2.3 kgf.m, 17 lbf-ft)

Install the clutch cable guide.
Install and tighten the nut securely.
Connect the upper radiator hose and tighten the band screw securely.
Connect the thermo sensor connector.
Install the spark plug cap.

Fill and bleed the cooling system (Page 6-6).
Install the fuel tank (Page 2-14).
Install the side cowl (Page 2-4).




9 N.m (0.9 kgf-m, 6.5 lbf-ft)

SERVICE INFORMATION

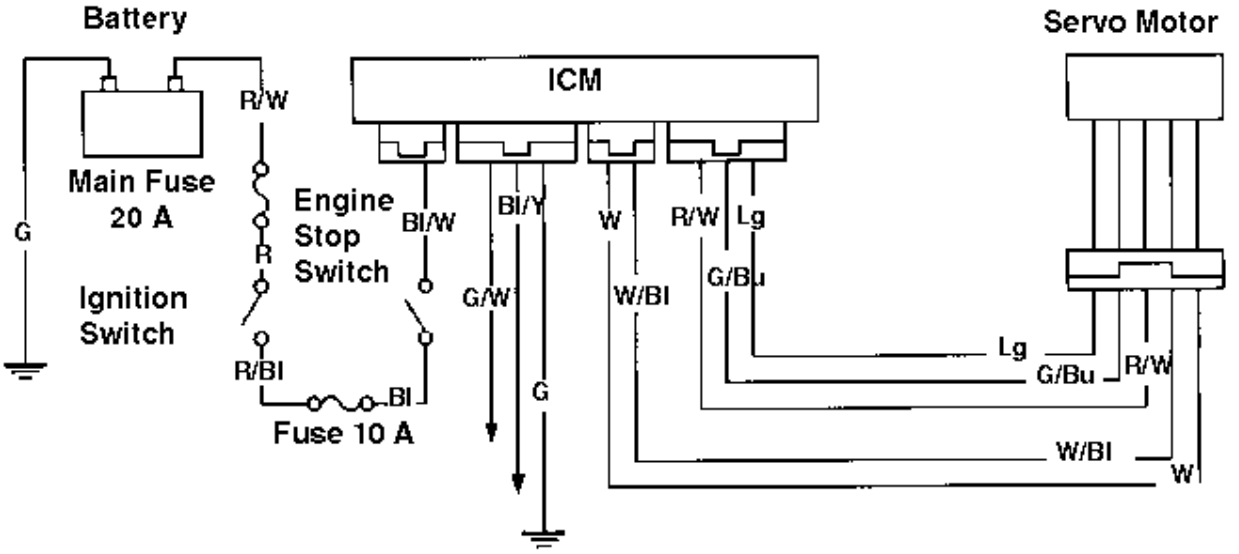
GENERAL

- The RC valve and servo motor can be serviced with the engine in the frame.
- Take care not to damage the cylinder wall and piston.
- Clean all disassembled parts with clean solvent and dry them using compressed air before inspection.
- Coat all sliding surfaces with clean 2-stroke oil before assembly.
- For engine control module (ICM) inspection and removal/installation see section 17.
- Adjust the RC valve system only when
  - The valves don't operate properly
  - The linkage is removed
  - Related parts are removed or replaced.

TORQUE VALUES

RC valve timing pulley nut

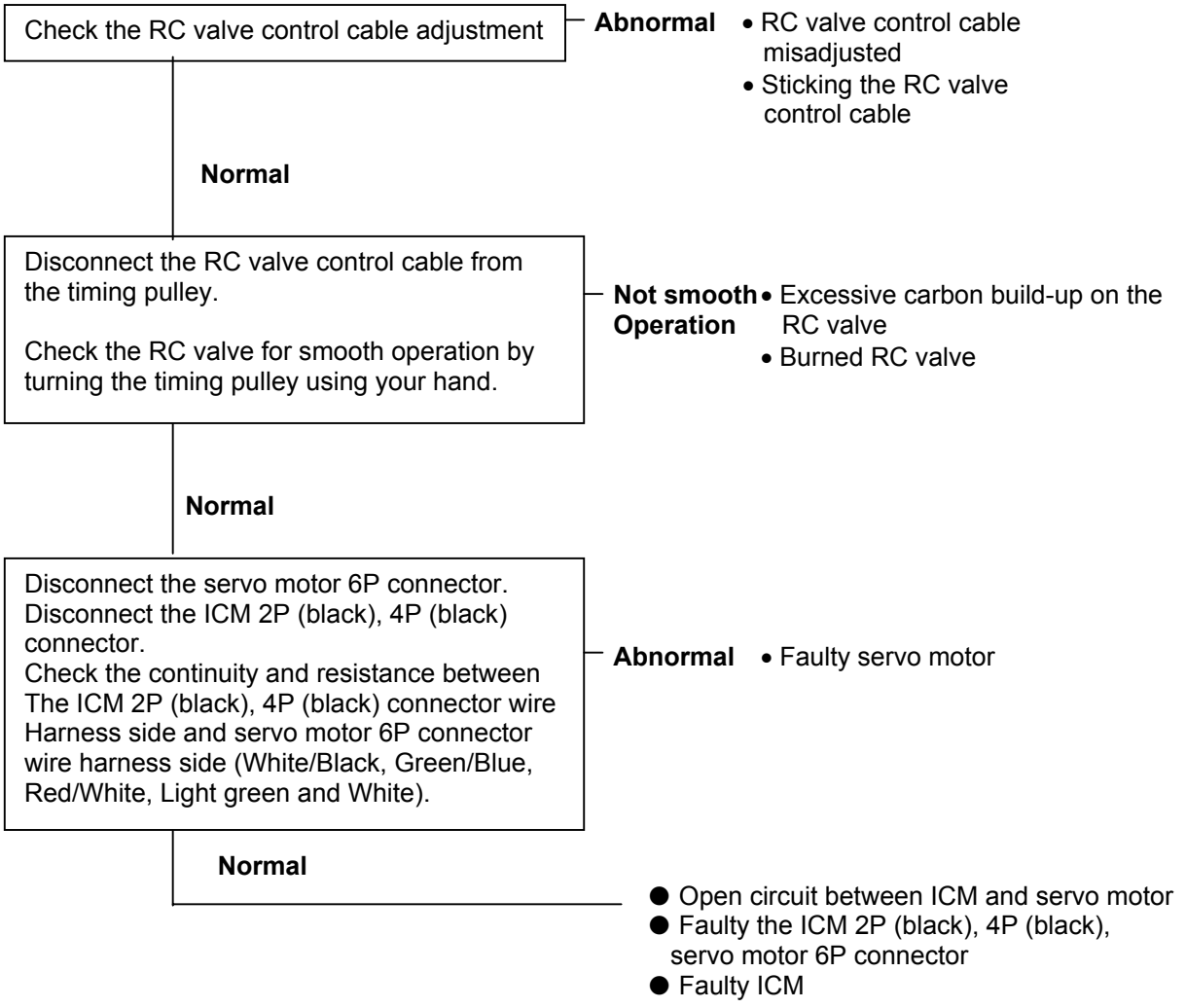
9 N.m (0.9 kgf m, 6.5 lbf ft)



G:	Green	Y:	Yellow
R:	Red	Bu:	Blue
W:	White	Lg:	Light Green
Bl:	Black		

TROUBLESHOOTING

Engine starts, but RC valve does not operate



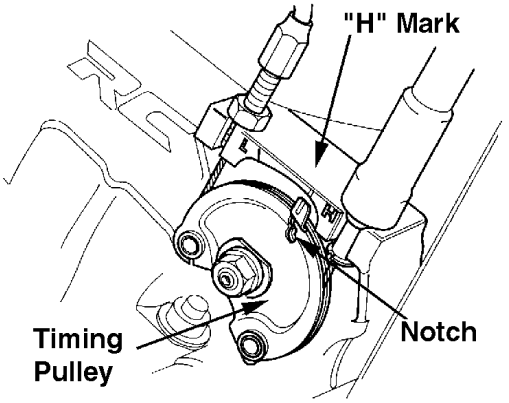
Poor performance at low speed

- Exhaust valve do not close fully
  - Improper adjustment
  - Faulty servo motor
  - Bent valve shaft
- Excessive carbon build-up on the RC valve
- Damaged RC valve

Poor performance at high speed

- Exhaust valve do not open fully
  - Improper installation
  - Faulty servo motor
- Excessive carbon build-up on the RC valve
- Damaged RC valve

RC VALVE CONTROL CABLE ADJUSTMENT

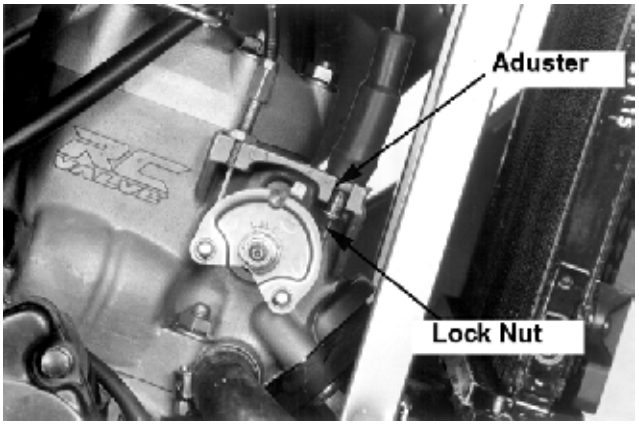


Remove the side cowl.

Start the engine and let it idle.

Check that the gap between the notch on the RC valve timing pulley and 'H' mark on the cylinder is within 0.3 mm (0.01 in).

If the gap exceeds 0.3 mm (0.01 in), adjust the valve timing as followings:



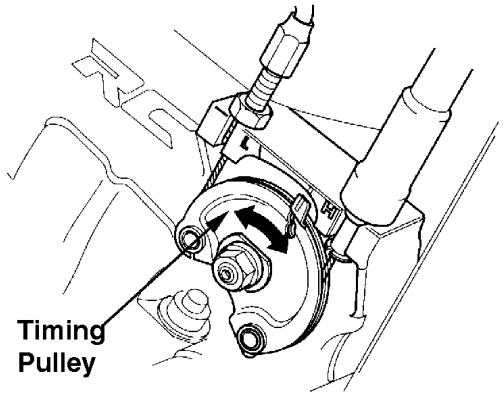
Loosen the lock nut and adjust the gap by turning the adjuster.

NOTE
- **While turning the adjuster, hold the cable tube to prevent the tube from being twisted.**

Tighten the lock nut securely.

After adjustment, start the engine and make sure that the gap is within
0.3 mm (0.01 in).

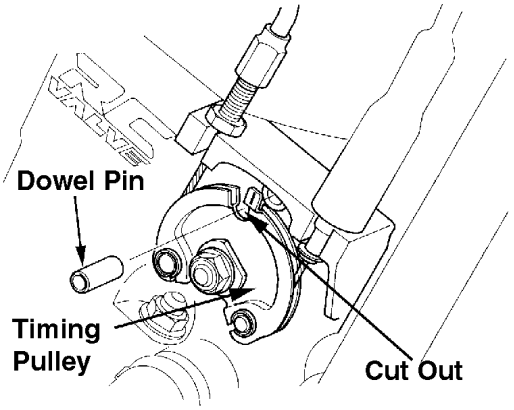
RC VALVE



Check the RC valve for smooth operation by turning the timing pulley using your hand.

If RC valve operation is not smooth, remove the cylinder head and RC valve and inspect them.

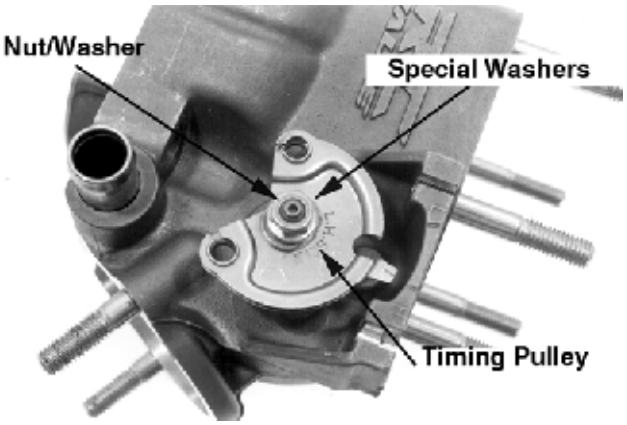
REMOVAL



Remove the cylinder.

Align the hole in the cylinder with the cut out on the timing pulley with the dowel pin (0 6 mm).

Remove the nut, washer, special washers and RC valve timing pulley.

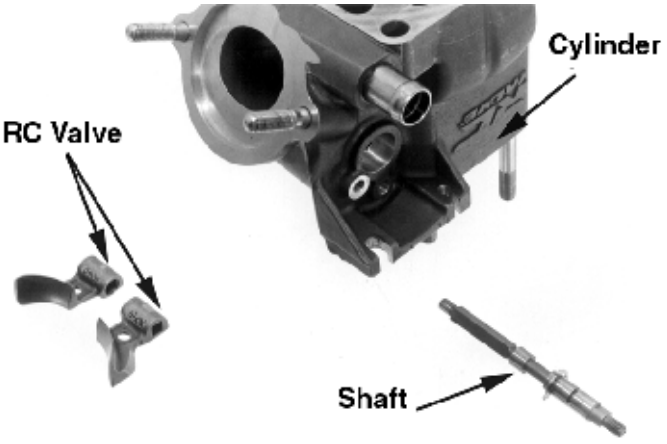


NOTE

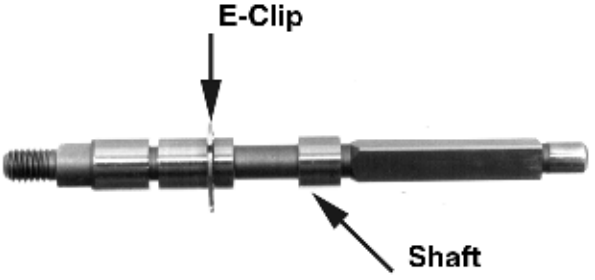
- **The timing pulley nut has a left hand threads.**

Remove the dust seal.

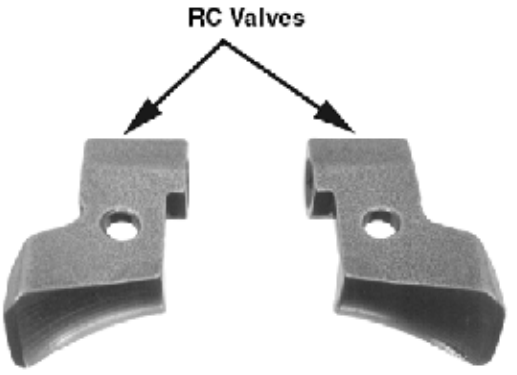
Remove the RC valve shaft and RC valves from the cylinder.



Remove the E-clip from the RC valve shaft.



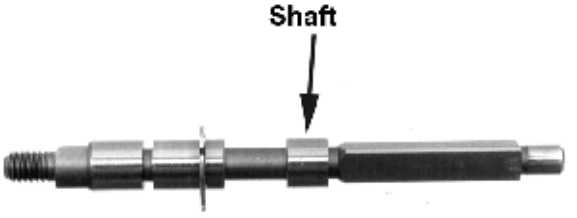
INSPECTION



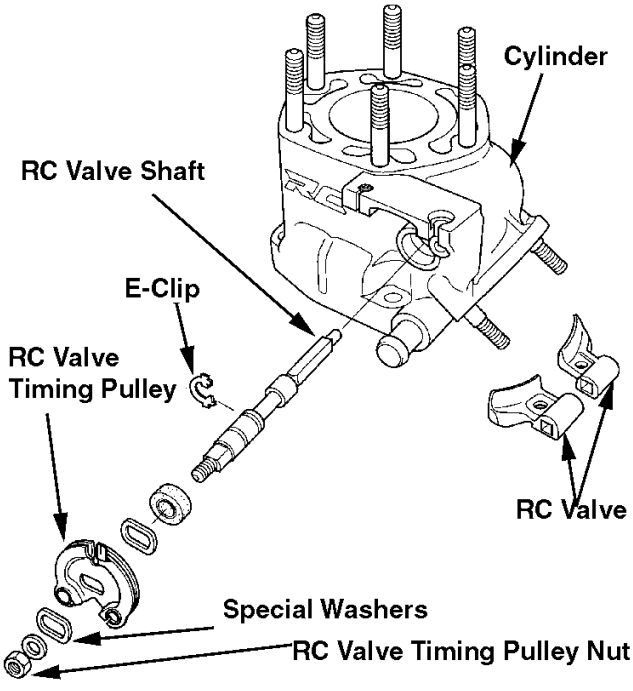
Remove the carbon deposits from the RC valves, shaft and shaft sliding area in the cylinder.

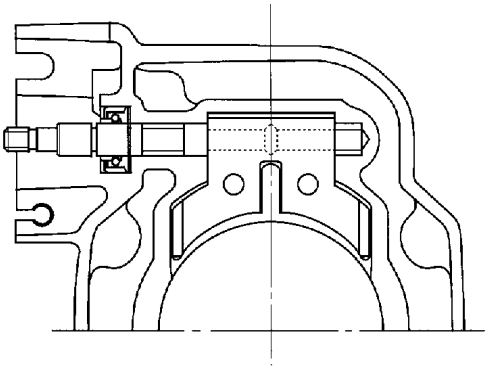
CAUTION
- **Be careful not to damage the RC valve and shaft.**

NOTE
- **If there is carbon on the RC valves and shaft, RC valve will not operate properly.**



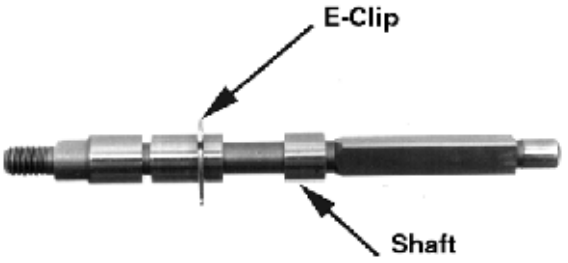
Inspect the RC valves for wear, scores or damage.
Inspect the RC valve shaft for bend or damage.
Install the RC valves to the shaft and check the clearance of the valves and shaft if the clearance is more than 0.3 mm (0.01 in), replace the valves and shaft with a new ones.



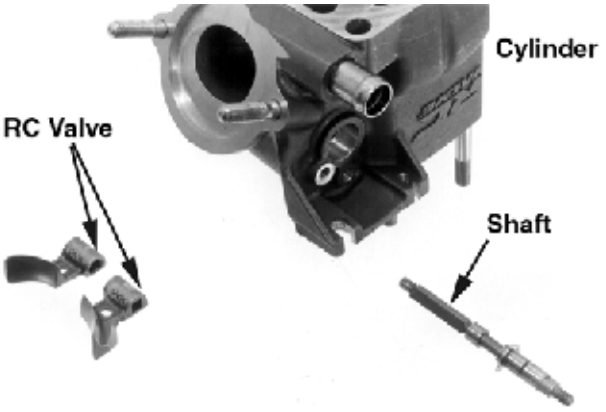


9 N.m (0.9 kgf-m, 6.5 lbf-ft)

Install the E-clip to the RC valve shaft.

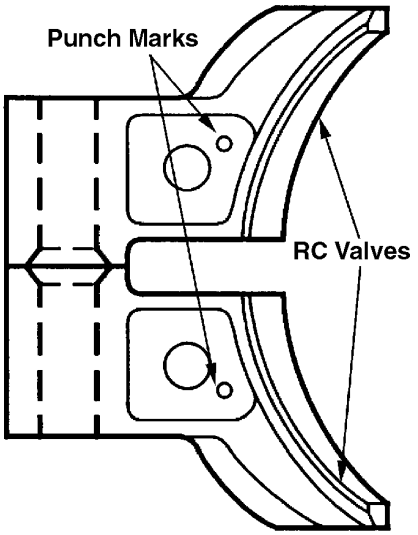


Apply 2-stroke engine oil to the RC valves and shaft.
Install the RC valves to the cylinder.

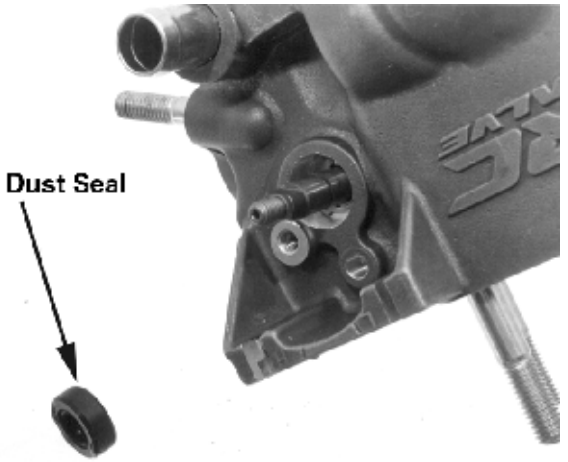


NOTE
- **At installation, align the punch marks as shown.**

Install the RC valve shaft to the cylinder.



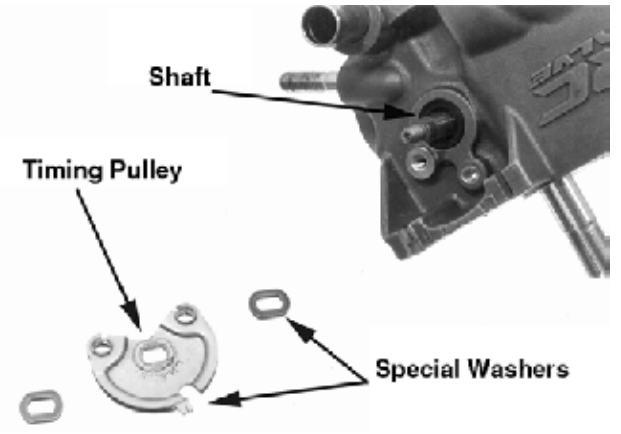
Apply transmission oil to the new oil seal lip.
Install the new oil seal to the cylinder.



Install the special washer to the RC valve shaft aligning the cut outs on the shaft and washer.

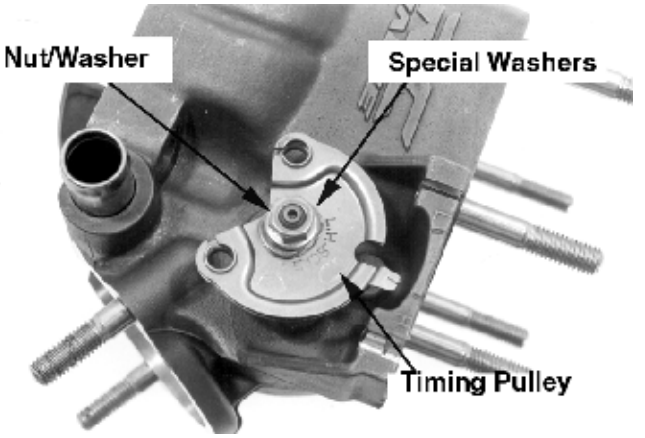
Install the RC valve timing pulley to the RC valve shaft aligning the cut outs on the shaft and washer.

Install the special washer to the RC valve shaft aligning the cut outs on the shaft and washer.



Install the washer and timing pulley nut to the RC valve shaft.

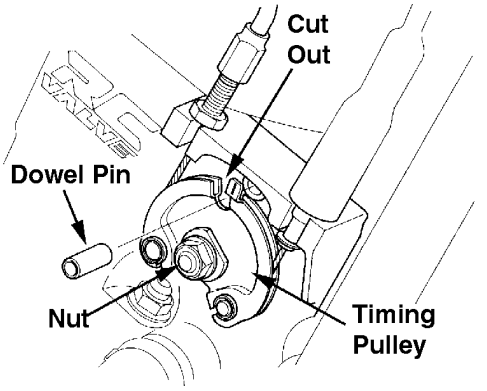
NOTE
- **The timing pulley nut has left hand threads.**



Align the hole in the cylinder with the cut out on the timing pulley with the dowel pin (0 6 mm).

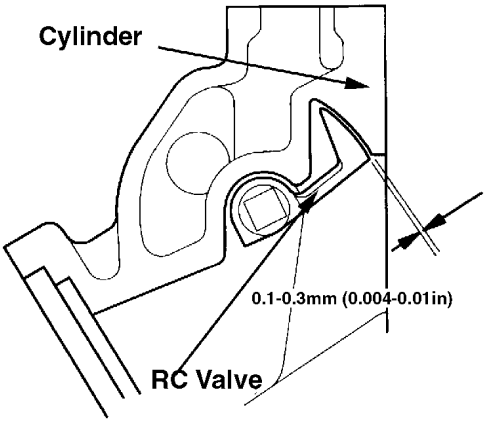
Tighten the RC valve timing pulley nut to the specified torque.

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



Check the clearance between the RC valves and cylinder when the notch on the timing pulley aligns with the 'H' mark on the cylinder.

STANDARD: 0.1 - 0.3 mm (0.004 - 0.01 in)



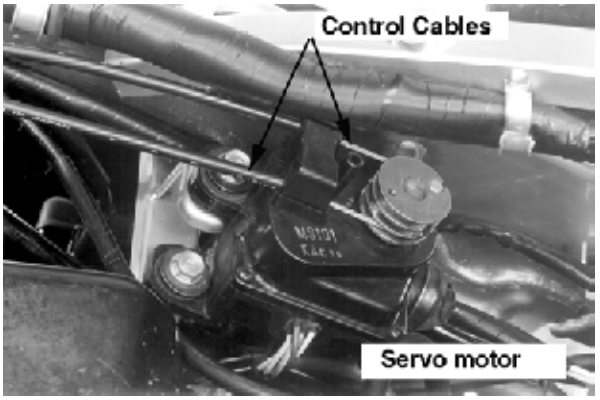
SERVO MOTOR

INSPECTION

Remove the side cowl.
Remove the air cleaner housing.

Check the RC valve control cable for adjustment and sticking.

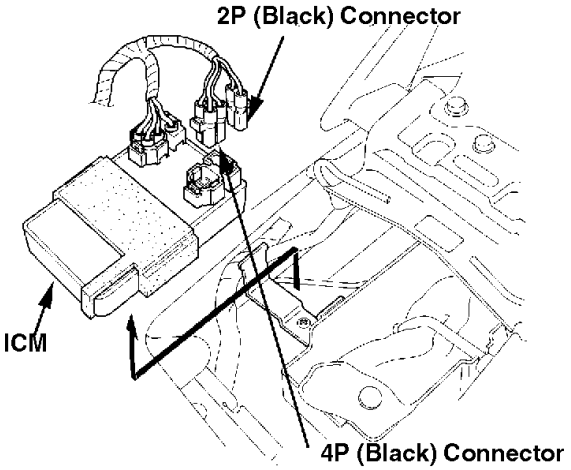
Disconnect the RC valve control cable from the timing pulley and check the RC valve for smooth operation by turning the timing pulley using your hand.



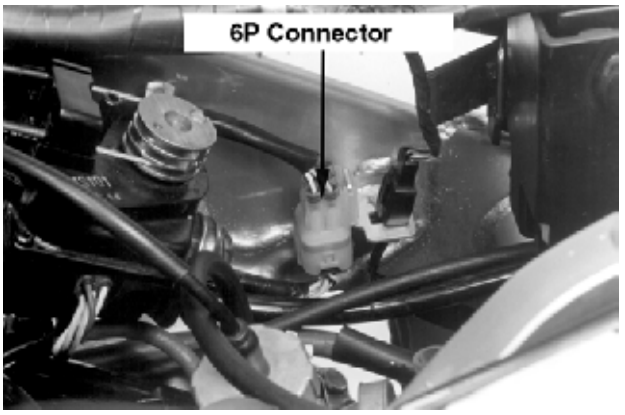
CAUTION

- **Before this inspection, disconnect the ICM 2P (Black), 4P 1Black) connector to prevent the ICM from damage.**

Disconnect the ICM 2P (Black), 4P (Black) connector.

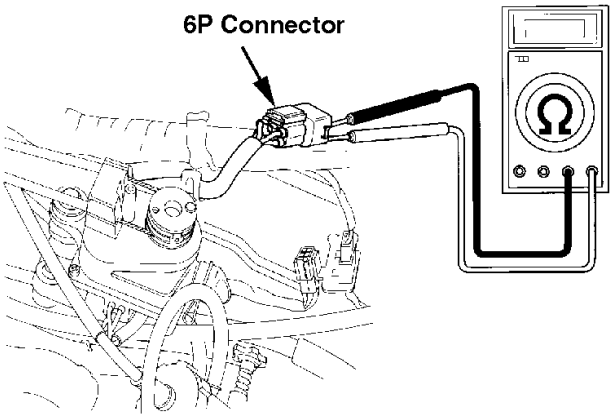


Disconnect the servo motor 6P connector.



Measure the resistance between the servo motor 6P connector terminals of the servo motor side.

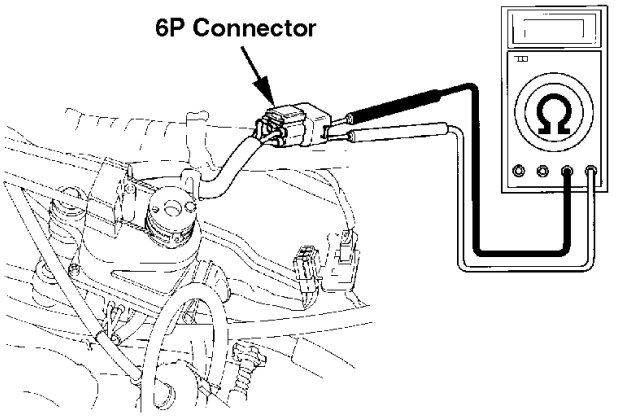
CONNECTION:	**Red/White-Green/Blue**
STANDARD:	**4 - 6 kΩ**
CONNECTION:	**White - White/Black**
STANDARD:	**8 - 15 kΩ**



If out of specification, replace the servo motor assembly.

Measure the resistance between the servo motor 6P connector terminals of the servo motor side.

CONNECTION: Red/White - Light Green
STANDARD: 0 - 6 k⍉
CONNECTION: Green/Blue - Light Green
STANDARD: 0-6k⍉

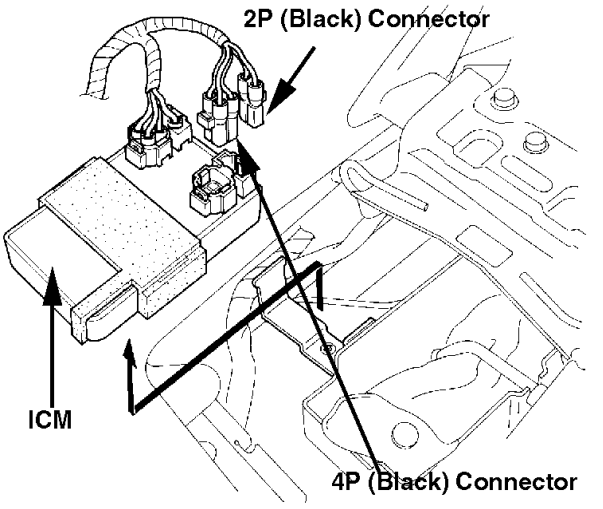


If the resistance is ∞, turn the motor pully by your hand and measure the resistance again.

If out of specification, replace the servo motor assembly.

Check the open circuit between the ICM and servo motor.

If there is open circuit, replace the wire harness.

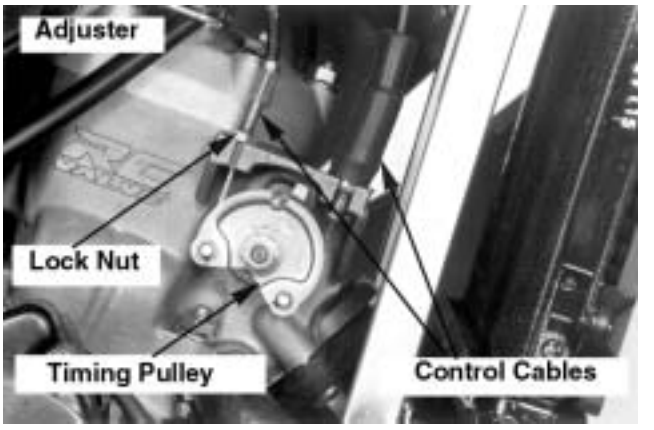


REMOVAL

Remove the side cowl

Loosen the RC valve control cable lock nut.

Turn the adjuster and disconnect the RC valve control cables from the RC valve timing pulley.



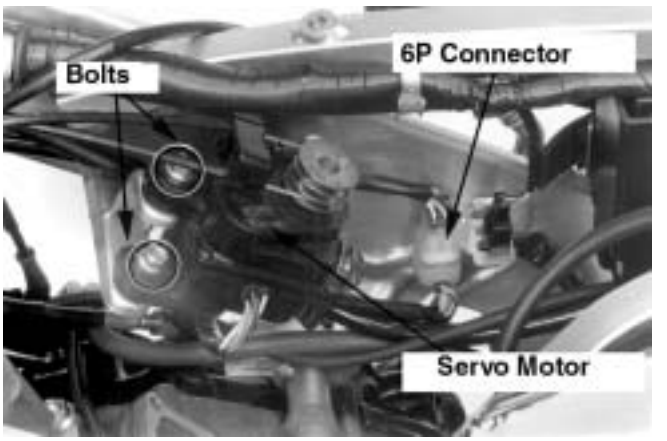
Remove the air cleaner housing.

Disconnect the servo motor 6P connector.
Remove the bolts and servo motor.

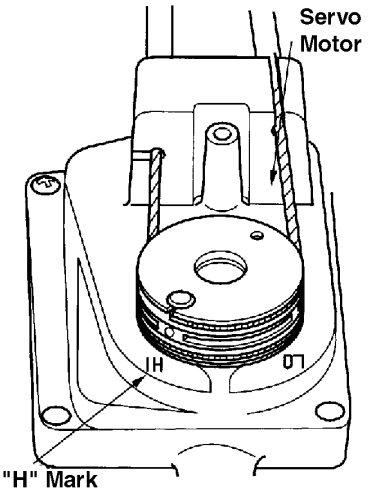
INSTALLATION

NOTE
- **Route the wires and harness properly.**

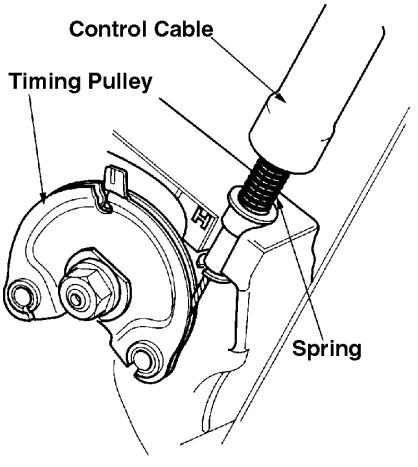
Install the servo motor.
Install and tighten the bolts securely.
Connect the servo motor 6P connector.



Align the tab on the servo motor pulley with the 'Hi' mark on the servo motor.

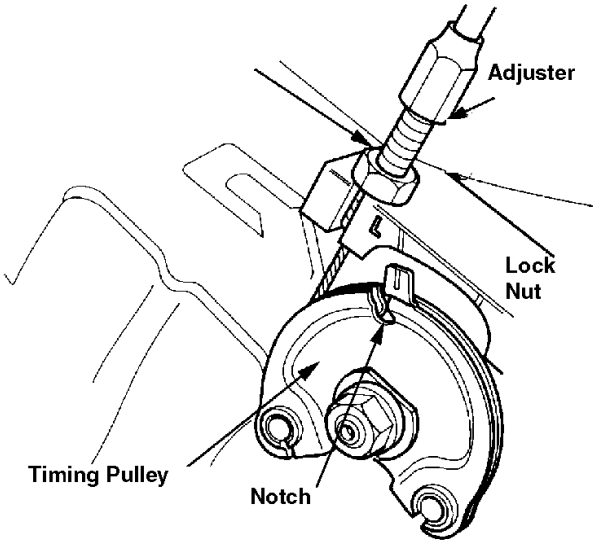


Connect the front RC valve control cable to the RC valve timing pulley by compressing the control cable spring.



Connect the rear RC valve control cable to the RC valve timing pulley.

Align the notch on the RC valve timing pulley and 'H' mark on the cylinder by turning the adjuster holding the outer tube to prevent it from being twisted.
Tighten the lock nut securely.

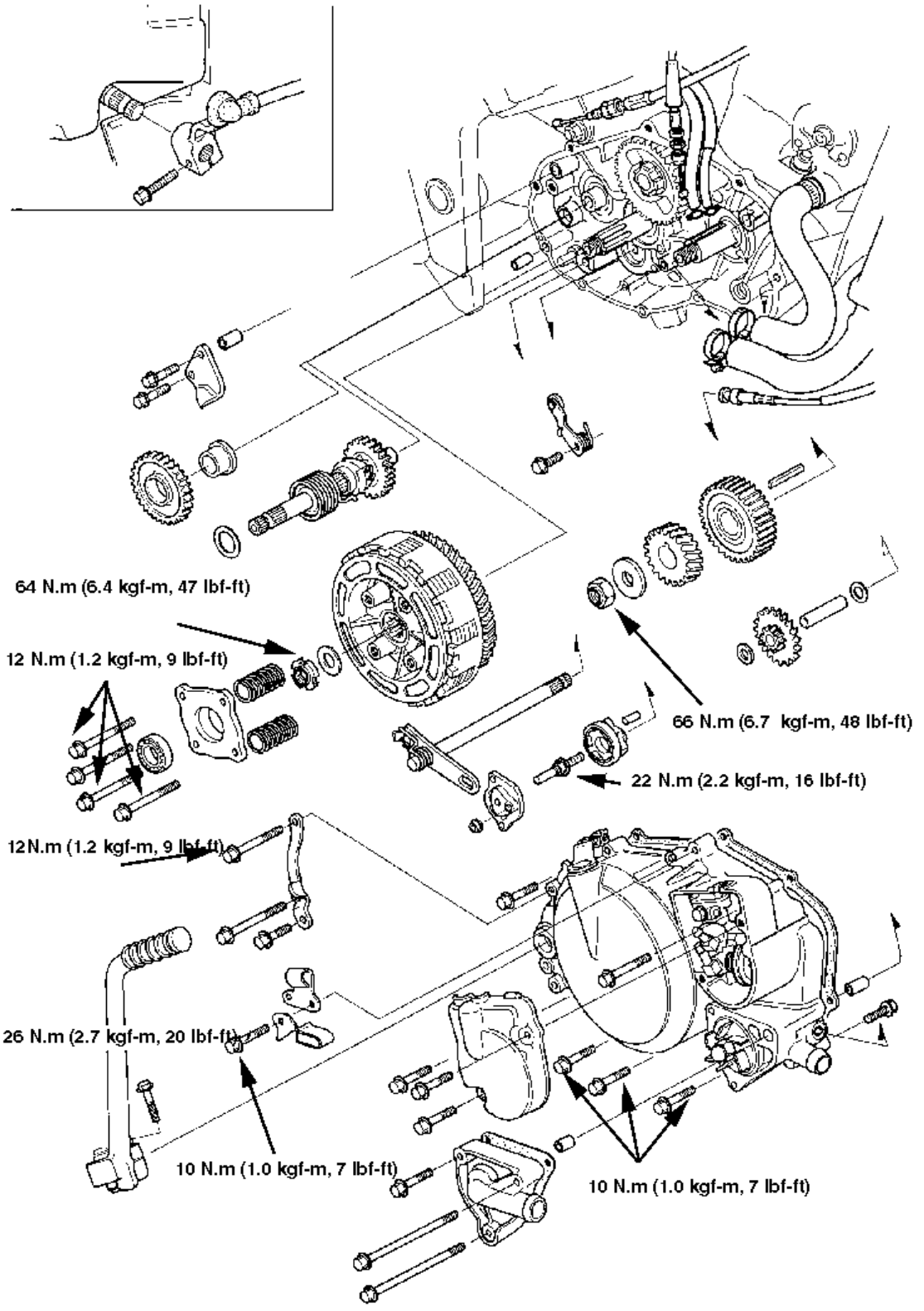


Recheck the tab on the servo motor pulley is aligned with the mark on the servo motor.

Turn the RC valve timing pulley 5^{O} to 10^{O} in several steps.

When the tab on the servo motor pulley aligns with the 'Hi' mark on the servo motor, the notch on the RC valve timing pulley aligns with the 'H' mark on the cylinder.

If not so, reinstall again.
Check the RC valve control cable.


64 N.m (6.4 kgf-m, 47 lbf-ft)
12 N.m (1.2 kgf-m, 9 lbf-ft)
66 N.m (6.7 kgf-m, 48 lbf-ft)
22 N.m (2.2 kgf-m, 16 lbf-ft)
12N.m (1.2 kgf-m, 9 lbf-ft)
26 N.m (2.7 kgf-m, 20 lbf-ft)
10 N.m (1.0 kgf-m, 7 lbf-ft)
10 N.m (1.0 kgf-m, 7 lbf-ft)

SERVICE INFORMATION

GENERAL

- The clutch, gearshift linkage and kickstarter maintenance can be done with the engine in the frame.
- Transmission oil viscosity and level, and the use of oil additives have an effect on clutch disengagement. Oil additives of kind are not recommended. When the clutch does not disengage or the motorcycle creeps with the clutch dis/engaged, inspect the transmission oil viscosity and level before servicing the clutch system.
- Clean off any gasket material from the right crankcase cover surface.
- Be careful not to damage the crankcase cover mating surface when servicing.
- When removing or servicing the clutch, gearshift linkage and kickstarter, use care not to allow dust or dirt to enter the engine.
- The crankcase must be separated when the transmission requires service (Section 12).

SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Clutch lever free play		10 - 20 (0,4 - 0.8)	
Clutch outer guide	O.D.	22.930 - 22.950 (0.9028 - 0.9035)	22.80 (0.898)
	I.D.	16.988 - 17.010 (0.6688 - 0.6697)	17.04 (0.671)
Clutch outer I.D.		23.000 - 23.021 (0.9055 - 0.9063)	(23.06 (0.908)
Mainshaft O.D. at clutch outer guide		16.966 - 16.984 (0.6680 - 0.6687)	16.95 (0.667)
Clutch spring free length		35.76 (1.408)	33.6 (1.32)
Clutch disc thickness	A	2.92 - 3.08 (0.1150 - 0.1213)	2.5 (0.098)
	B	2.62 - 2.78 (0.1031 - 0.1094)	2.2 (0.086)
Clutch plate warpage			0.20 (0.01)
Pinion gear I.D.		16.016 - 16.034 (0.6305 - 0.6313)	16.07 (0.633)
Kickstarter spindle O.D.		15.966 - 15.984 (0.6286 - 0.6293)	15.94 (0.628)
Kickstarter idle gear I.D.		20.020 - 20.041 (0.7882 - 0.7890)	20.10 (0.791)
Idle gear bushing	O.D.	19.984 - 19.995 (0.7868 - 0.7872)	19.92 (0.783)
	I.D.	17.010 - 17.035 (0.6697 - 0.6707)	17.10 (0.673)

TORQUE VALUES

Right crankcase cover bolt, (16 mm)	10 N.m (1.0 kgf.m, 7 lbf.ft)
Right crankcase cover bolt, (8 mm)	26 N.m (2.7 kgf.m, 20 lbf.ft)
Clutch cable adjuster lock nut	23 N.m (2.7 kgf.m, 20 lbf ft)
Primary drive gear nut	66 N.m (6.7 kgf m, 48 lbf.ft) Apply oil to the threads and flange surface
Clutch lifter plate bolt	12 N.m (1.2 kgf.m, 9 lbf.ft)
Clutch centre lock nut	64 N.m (6.5 kgf-m, 47 lbfft)
Shift drum centre pin	22 N.m (2.2 kgf.m, 16 lbfft)
Shift return spring pin	22 N.m (2.2 kgf.m, 16 fbf.ft) Apply a locking agent to the threads
Shift drum stopper arm bolt	12 N.m (1.2 kgfm, 9 lbfft)

TOOLS

Wrench, 20 X 24 mm	07716-0020100
Extension bar	07716-0020500
Gear holder	07724-0010100
Clutch centre holder	07923-KE10000

TROUBLESHOOTING

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

Clutch will not disengage or motorcycle creeps with clutch disengaged
- Too much clutch ever freeplay
- Warped clutch plates
- Loose clutch centre lock nut
- Engine oil too high, improper oil viscosity

Clutch slips
- Clutch lifter sticking
- Worn clutch discs
- Weak clutch springs
- No clutch lever free play

Hard to shift
- Improper clutch operation or incorrect clutch adjustment
- Bent or damaged shift forks (Section 12)
- Bent shift fork shaft (Section 12)
- Bent or damaged gearshift spindle
- Damaged shift drum cam grooves

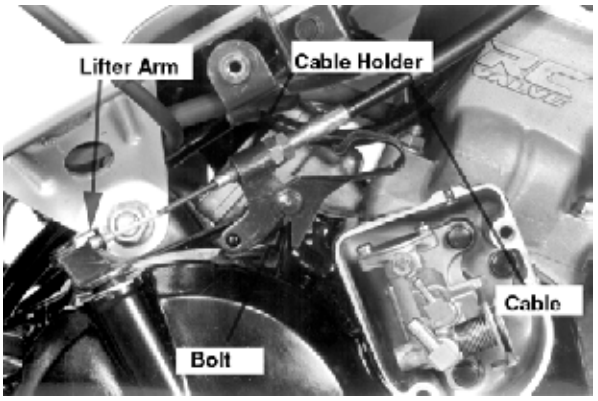
Transmission jumps out of gear
- Worn gear dogs or slots
- Bent shift fork shaft (Section 12)
- Broken shift drum stopper arm
- Worn or bent shift forks (Section 12)
- Broken shift linkage return spring

Kickstarter slips
- Worn or damaged rachet teeth of the starter rachet and/or starter pinion
- Broken rachet spring

Kickstarter pedal does not return
- Weak or damaged kickstarter return spring
- Return spring hook out of place

RIGHT CRANKCASE COVER REMOVAL

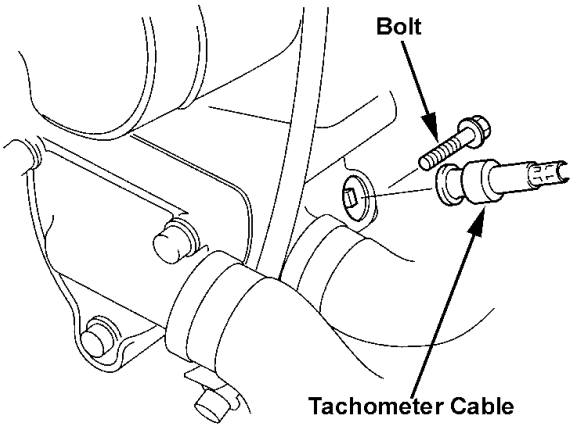
Remove the side cowl and lower cowl.
Remove the oil pump cover.
Disconnect the oil tube and oil pass tube.
Disconnect the oil control cable from the oil pump drum.
Drain the transmission oil.
Drain the coolant.



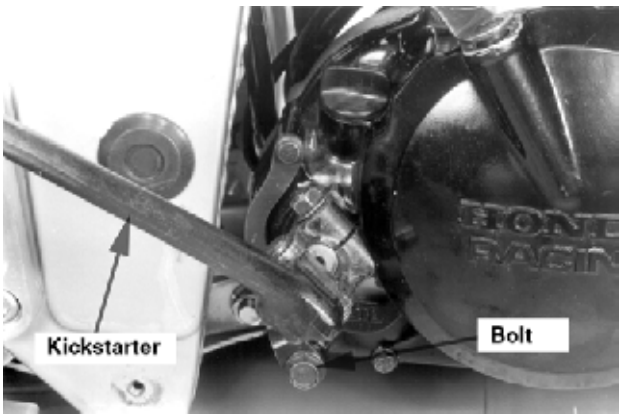
Remove the water pump cover.

Remove the bolt and cable holder.
Disconnect the clutch cable from the clutch lifter arm.

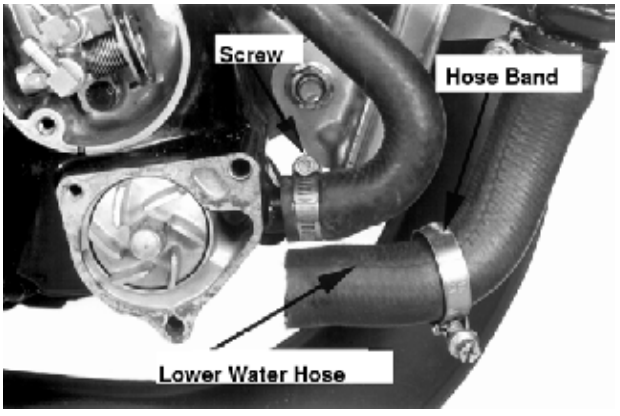
Remove the bolt and tachometer cable from the right crankcase.



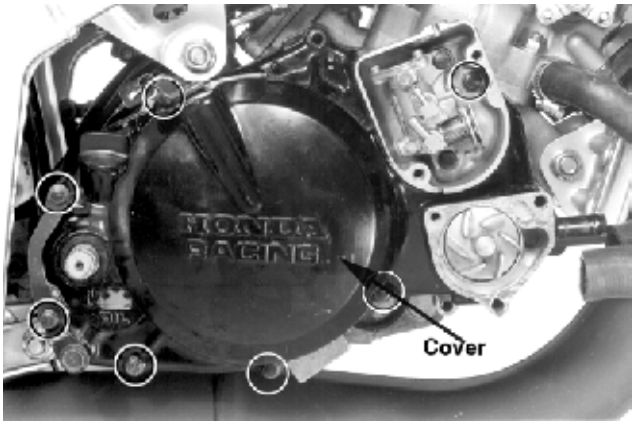
Remove the bolt and kickstarter.



Loosen the screw and hose band.
Disconnect the lower water hose.



Remove the bolts and right crankcase cover.

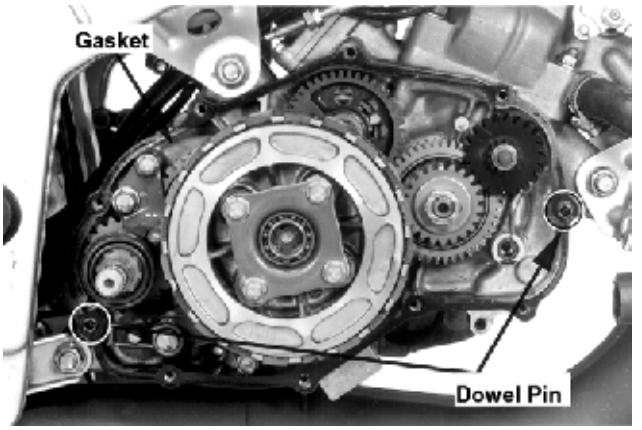


Remove the gasket and dowel pins.

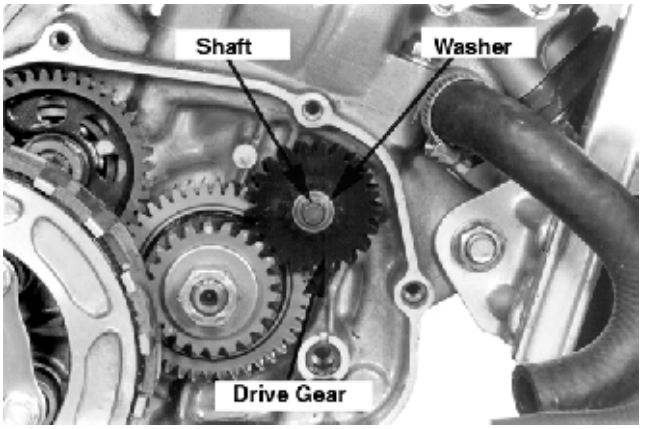
Clean off any gasket material from the right crankcase cover mating surface.

CAUTION

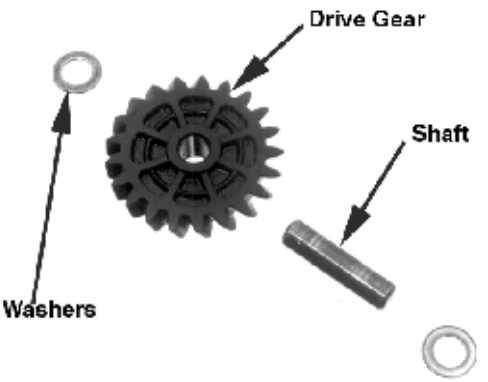
- **Be careful not to damage the right crankcase cover mating surface.**



Remove the washer, water pump/oil pump drive gear, shaft and washer.



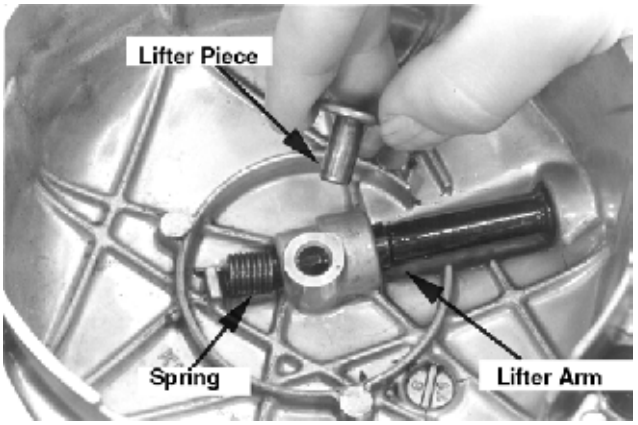
Check the teeth of the water pump/oil pump drive gear for wear or damage.



DISASSEMBLY

Remove the oil pump.
Remove the water pump shaft.
Remove the tachometer drive gear.

Remove the clutch lifter piece by turning the clutch lifter arm clockwise.
Remove the clutch lifter arm and spring.

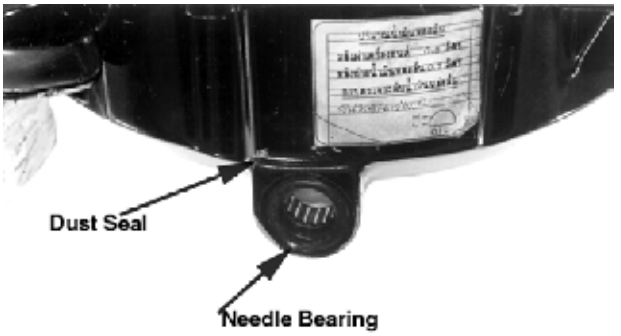


INSPECTION

Check the dust seal fatigue or damage or deterioration. Replace dust seal if necessary.
Check the needle bearings for wear, damage or loose fit. Replace needle bearing if necessary.

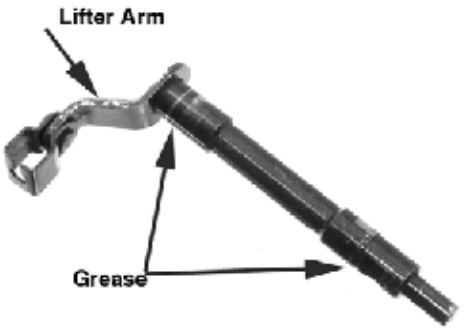
NOTE

- **If the dust seal replacement is required, press the dust seal to the case surface.**



Check the clutch lifter arm for damage or bending.
Check the spring for fatigue or damage.
Replace these parts if necessary.

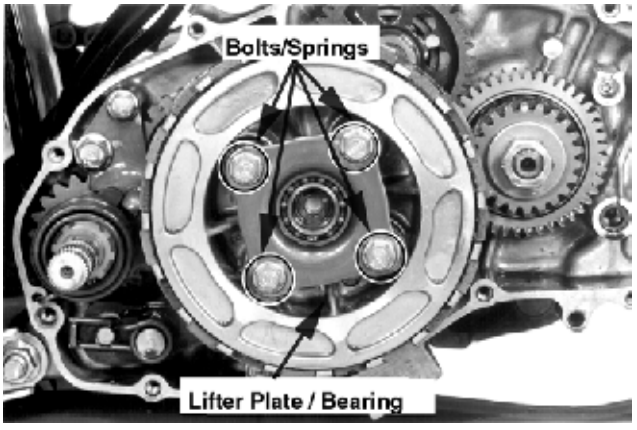
Apply grease to the clutch lifter arm sliding surface.
Apply grease to the dust seal lips and needle bearing.



CLUTCH REMOVAL

Remove the right crankcase cover.

Loosen the clutch lifter plate bolts in a crisscross pattern in 2 or 3 steps.
Remove the lifter plate/bearing and clutch springs.



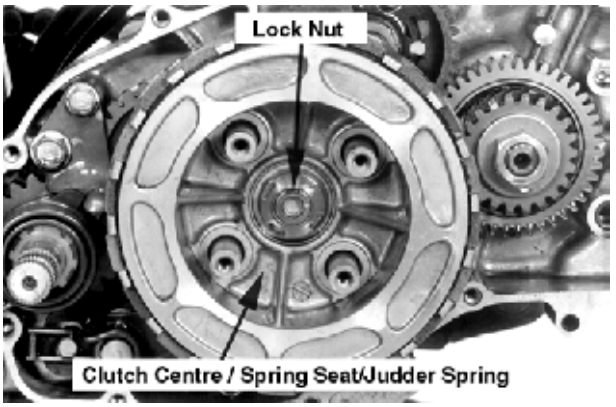
Hold the pressure plate with theclutch centre holder loosen the clutch centre lock nut.

TOOLS:

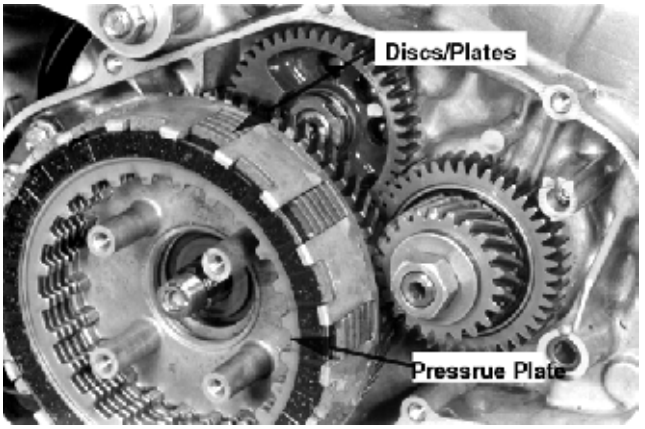
Wrench, 20 X 24 mm	**07716-0020100**
Extension bar	**07716-0020500**
Clutch centre holder	**07923-KE10000**

Remove the clutch centre lock nut and washer,

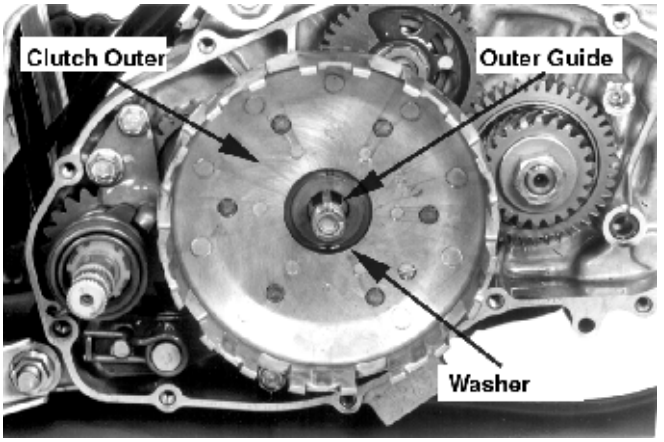
Remove the clutch centre, spring seat and judder spring.



Remove the seven clutch discs and six clutch plates.
Remove the pressure plate.



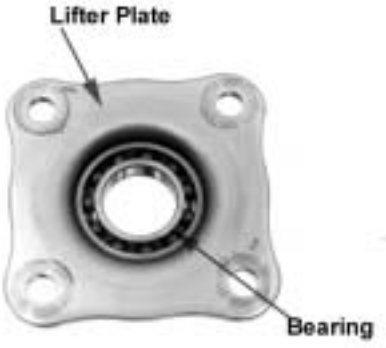
Remove the clutch outer guide and clutch outer.
Remove the washer.



INSPECTION

LIFTER PLATE BEARING

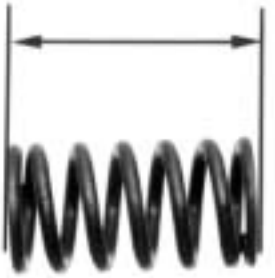
Check the lifter plate bearing for damage.
Turn the bearing inner race with your finger. The bearing should turn smoothly and quietly without play.
Also check that the bearing outer race fits in the plate. Replace the bearing if necessary.



CLUTCH SPRING

Measure the clutch spring free length.

SERVICE LIMIT: 33.6 mm (1.32 in)



NOTE

- **Replace the clutch springs as a set.**

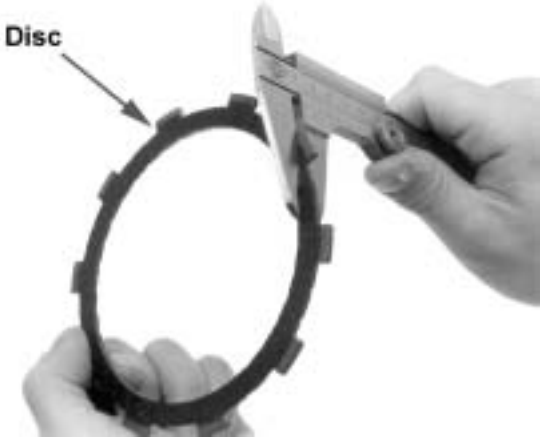
CLUTCH DISC

Check the clutch discs for signs of scoring or discoloration.

Measure the thickness of the discs.

SERVICE LIMITS:

A: 2.5 mm (0.098 in)
B: 2.2 mm (0.086 in)



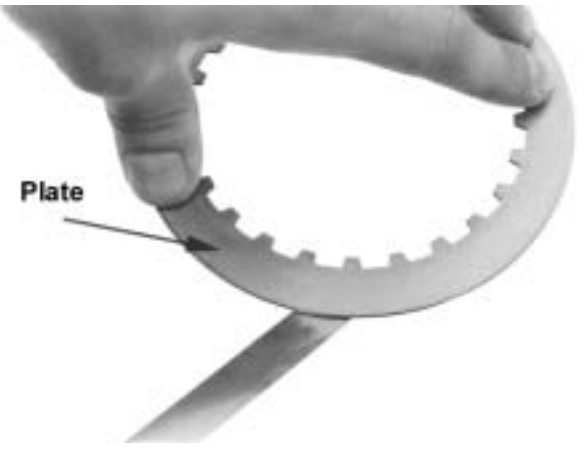
NOTE

- **Replace the discs and plates as a set.**

CLUTCH PLATE

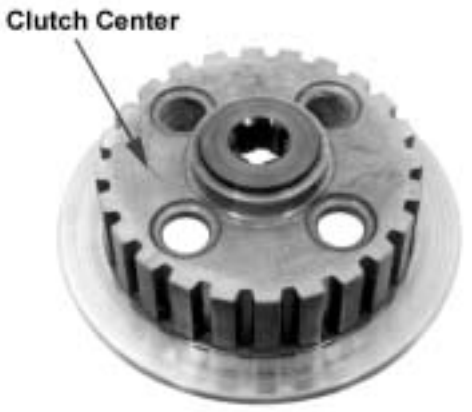
Check the plate for excessive warpage or discoloration. Check the plate warpage on a surface plate using a feeler gauge.

SERVICE LIMIT: 0.20 mm (0.?? in)



NOTE

- **Replace the discs and plates as a set.**



CLUTCH CENTER
Cheek the clutch centre for nicks, indentations or abnormal wear made by the clutch plates.

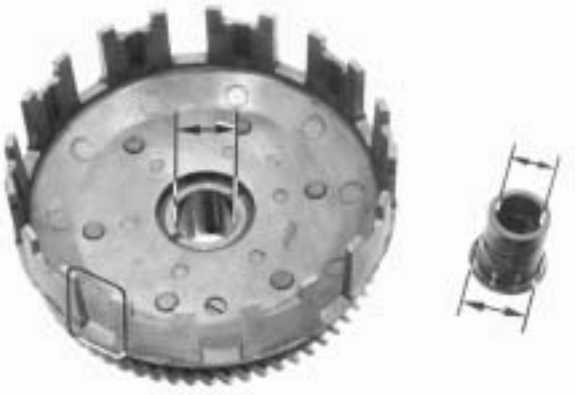
CLUTCH OUTER, CLUTCH OUTER GUIDE
Check the clutch outer for nicks, indentations or abnormal wear made by the clutch discs. Check the serrated teeth of the primary driven gear for wear or damage.

Measure the clutch outer I.D..

SERVICE LIMIT: 23.06 mm (0.908 in)

Measure the clutch outer guide.

SERVICE LIMITS:
O.D.: 22.80 mm (0.8??)
I.D.: 17.04 mm (0.671 in)



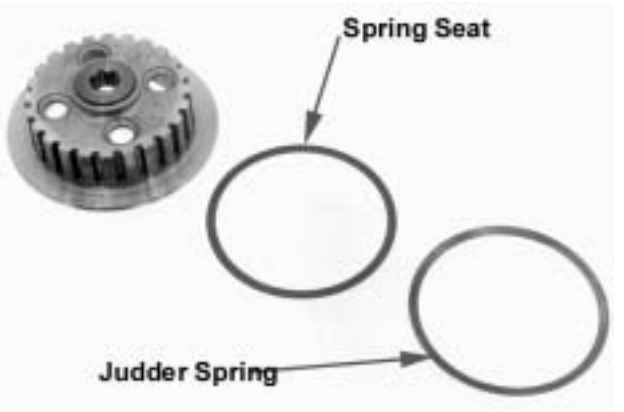
MAINSHAFT

Measure the mainshaft O.D. at the clutch

outer guide.

SERVICE LIMIT: 16.45 mm (0.667 in)

JUDDER SPRING, SPRING SEAT
Check the spring seat and judder spring for distortion, wear or damage.

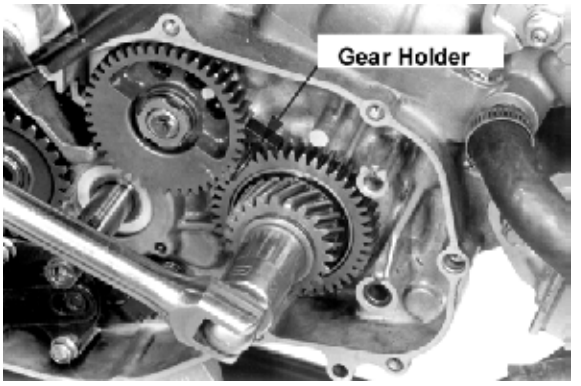


PRIMARY DRIVE GEAR

REMOVAL

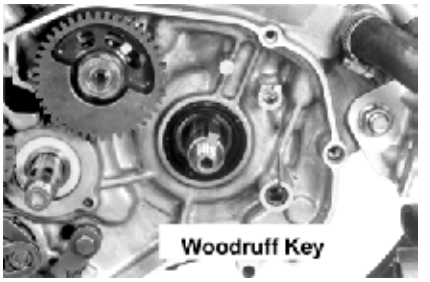
Remove the clutch.

Hold the primary drive gear with the gear holder and remove the primary drive gear nut and washer.



TOOL:
Gear holder
07724-0010100

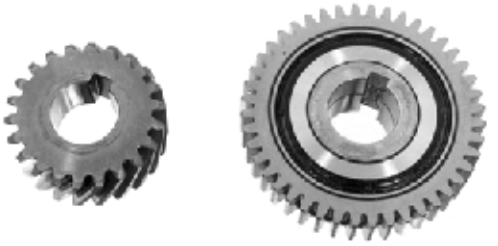
Remove the primary drive gear, balancer drive gear and woodruff key from the crankshaft.



NOTE

- **When woodruff key removal. be careful not to damage the key groove or crankshaft.**
- **Do not loose the woodruff key.**

Primary Drive Gear



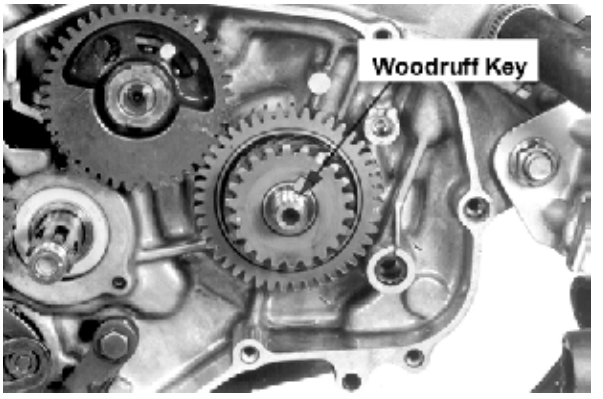
Balance Drive Gear

INSPECTION

Check the teeth of the primary drive gear for wear or damage.
Check the teeth of the balancer drive gear for wear or damage.

INSTALLATION

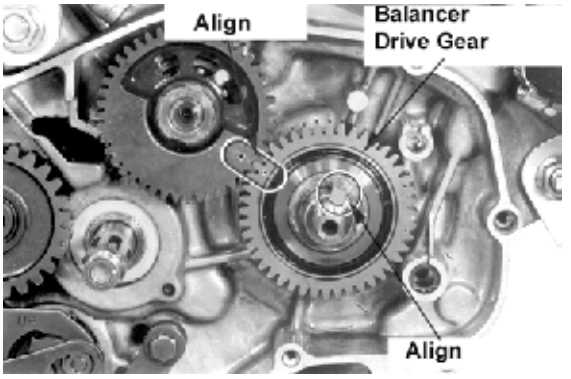
Install the woodruff key to the cut out on the crankshaft.



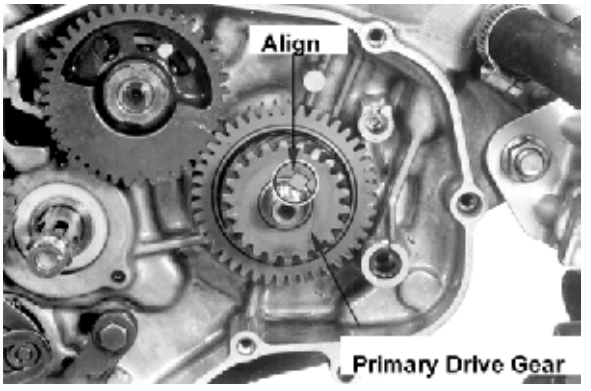
NOTE

- **When woodruff key installation, be careful not to damage the key groove or crankshaft.**

Install the primary drive gear to the crankshaft aligning the cut out on the primary drive gear with the woodruff key and aligning the punch marks on the balancer drive gear and driven gear.



Install the balancer drive gear to the crankshaft aligning the cut out on the balancer drive gear with the woodruff key.



Apply oil to the primary drive gear nut threads and flange surface.
Install the washer and primary drive gear nut.

Hold the primary drive gear with the gear holder and remove the primary drive gear nut and washer.

TOOL:
Gear holder 07724-0010100

Tighten the primary drive gear nut to the specified torque.

TORQUE: 66 N.m (6.7 kgf-m, 48 lbf ft)

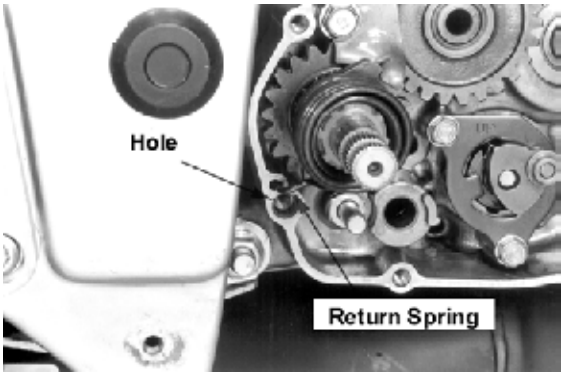
Install the clutch.

KICKSTARTER

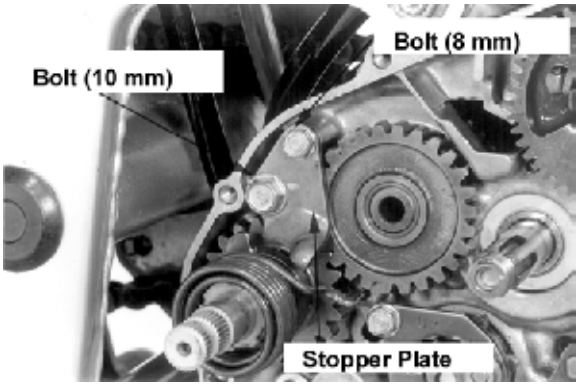
REMOVAL

Remove the gear shift spindle.

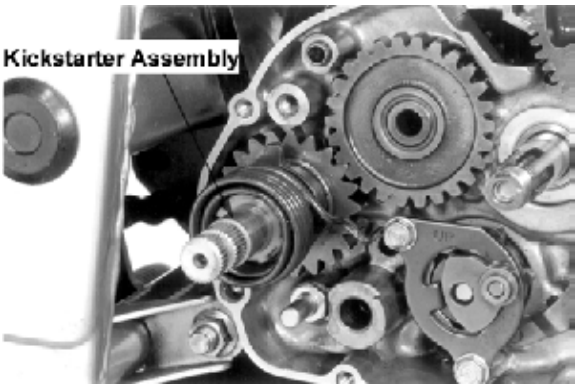
Unhook the kickstarter return spring from the hole on the crankcase.



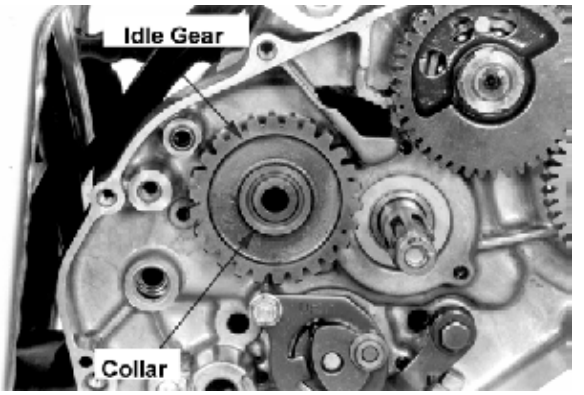
Remove the stopper plate bolt (10 mm). Remove the stopper plate bolt (8 mm) and stopper plate.



Remove the kickstarter assembly.

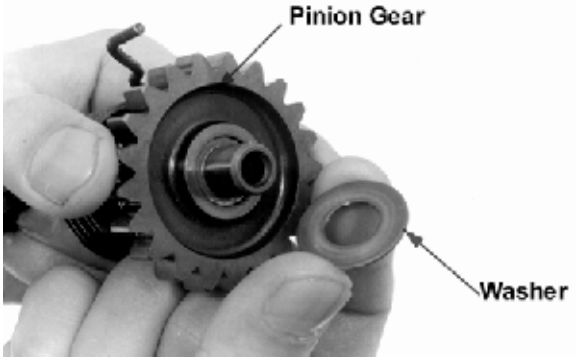


Remove the kickstarter idle gear and collar.

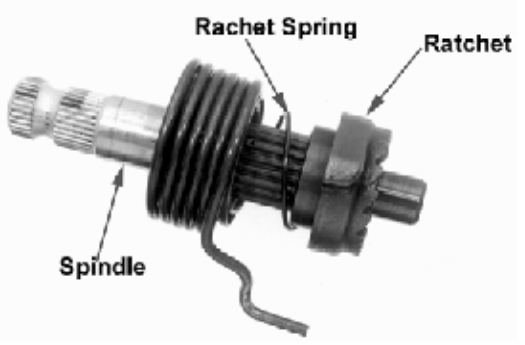


DISASSEMBLY

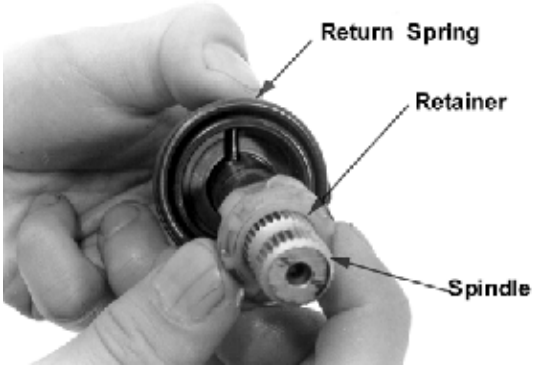
Remove the washer and pinion gear from the kickstarter spindle.



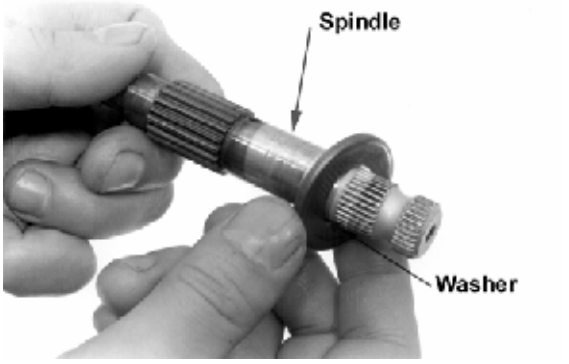
Remove the rachet and rachet spring from the kickstarter spindle.



Remove the spring retainer from the kickstarter spindle. Remove the return spring from the kickstarter spindle.



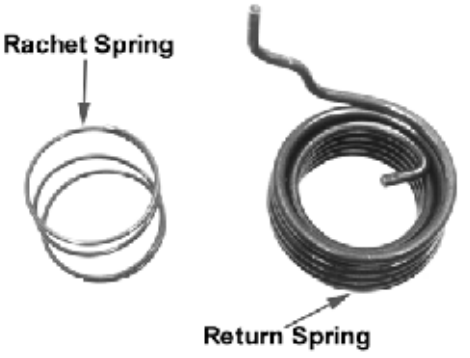
Remove the washer from the kickstarter spindle.



INSPECTION

KICKSTARTER

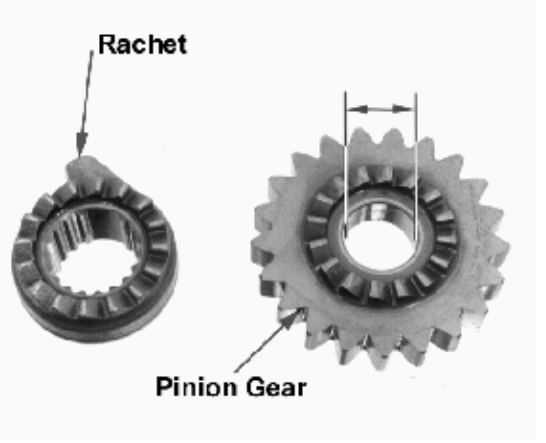
Check the rachet spring and return spring for wear or damage.



Check the teeth of the rachet and pinion gear for wear or damage.

Measure the pinion gear I.D..

SERVICE LIMIT: ????? mm (in)



Check the spindle on the kickstarter spindle for wear or damage.
Measure the kickstarter spindle O.D..

SERVICE LIMIT: ??????mm (in)

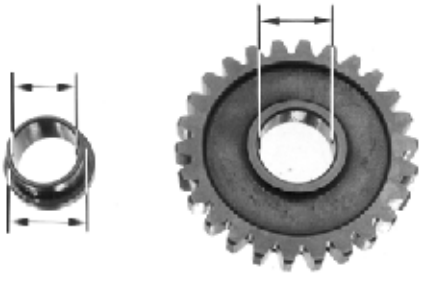
KICKSTARTER IDLE GEAR

Check the teeth of the kickstarter idle gear for wear or damage.
Measure the kickstarter idle gear I.D.

SERVICE LIMIT: ????mm (in)

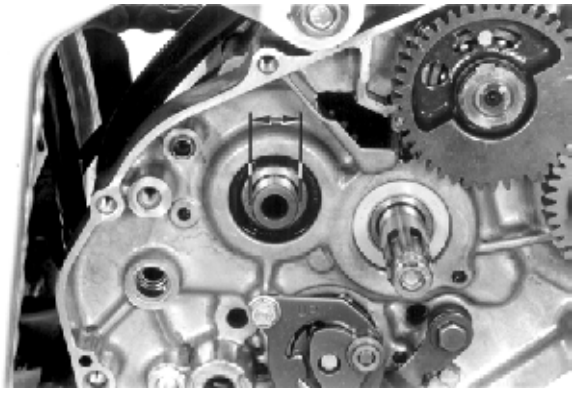
Measure the kickstarter idle gear collar.

SERVICE LIMITS: O.D.: mm (in)
I.D.: mm (in)

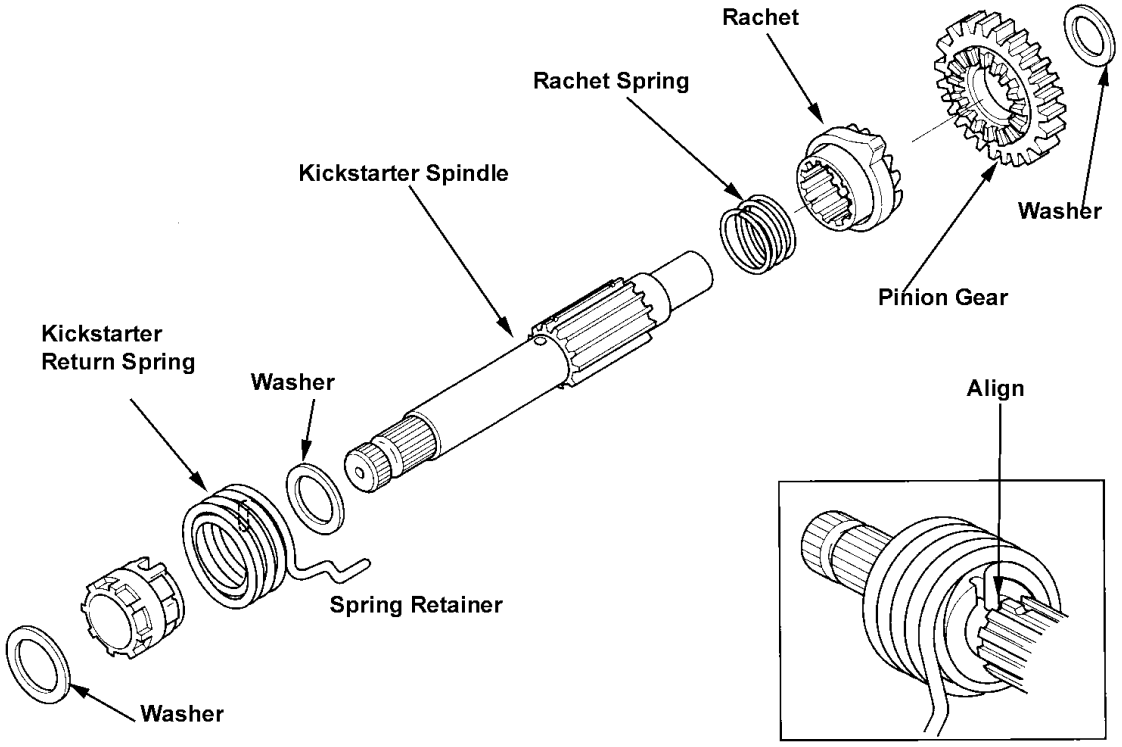


COUNTERSHAFT

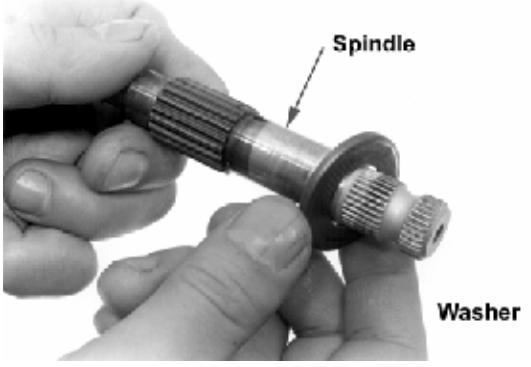
Measure the countershaft O.D. at the kickstarter idle gear collar.



SERVICE LIMIT: 16.96mm (in)

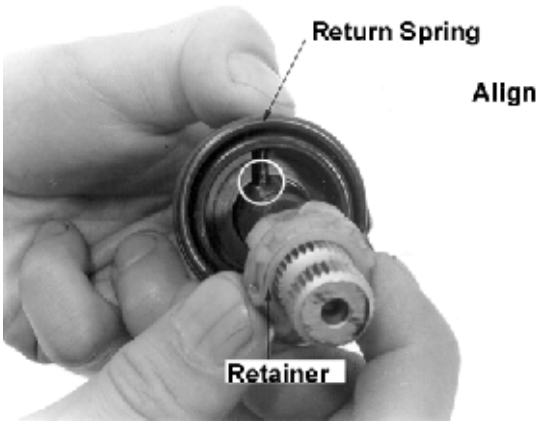


Install the washer and return to the kickstarter spindle.

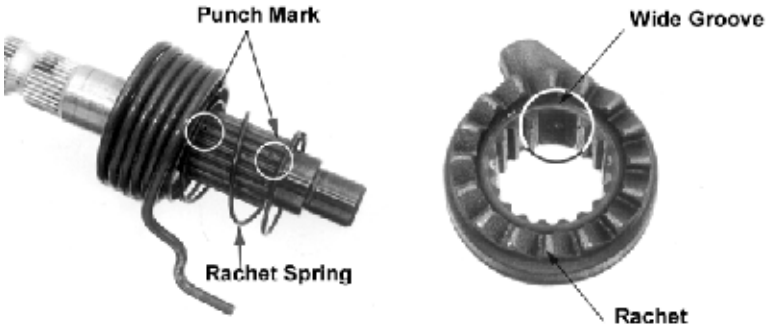


Install the return spring, aligning the spring end to the hole on the kickstarter spindle.

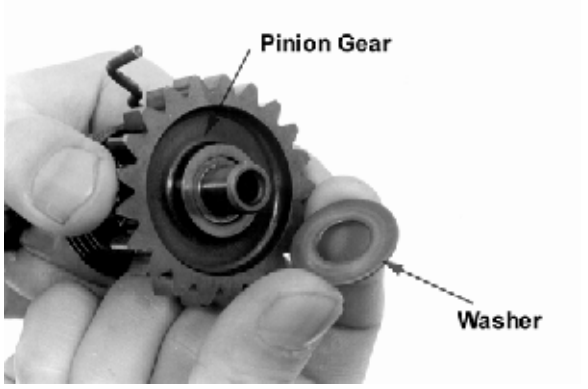
Install the retainer, aligning the cut out in the retainer with the spring end.



Install the washer.
Install the rachet spring to the kickstarter spindle.
Install the rachet to the kickstarter spindle, aligning the wide groove in the rachet with the punch mark on the spindle.

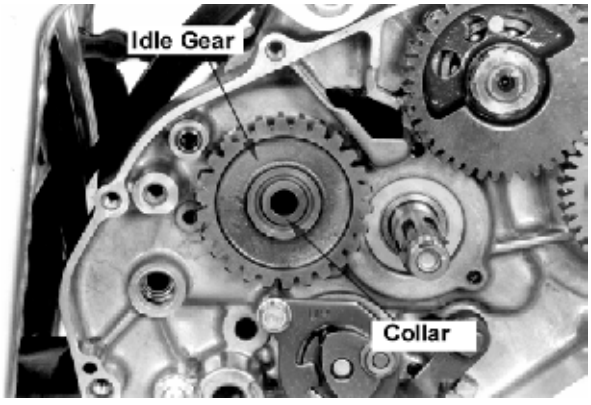


Install the pinion gear and washer to the kickstarter spindle.



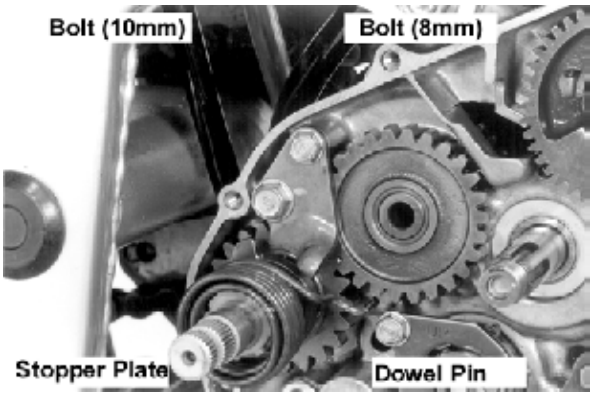
INSTALLATION

Apply transmission oil to the kickstarter idle gear and collar.
Install the idle gear collar to the countershaft.
Install the idle gear to the countershaft.



Install the kickstarter assembly.

Install the dowel pin and stopper plate. Install and tighten the stopper plate bolts (8 mm and 10 mm) securely.



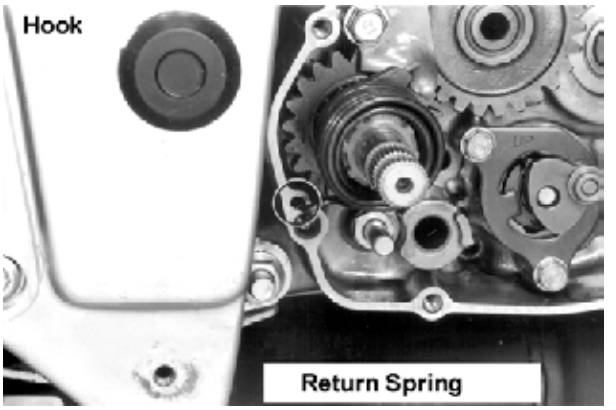
Hook the return spring end to the crankcase.

Install the gear shift spindle.

Temporally install the kickstarter pedal onto the kickstatter spindle and check the kickstarter operation.

Remove the kickstarter pedal.

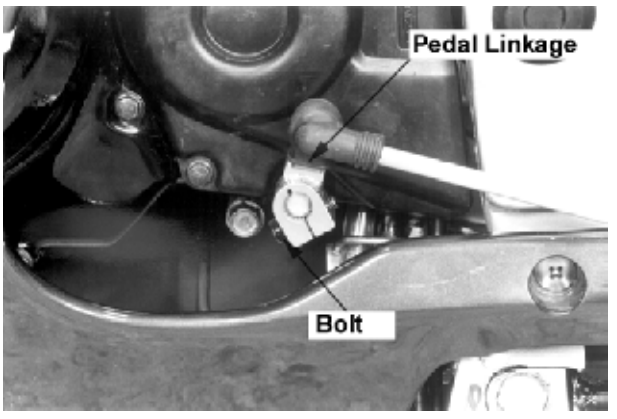
Install the clutch.



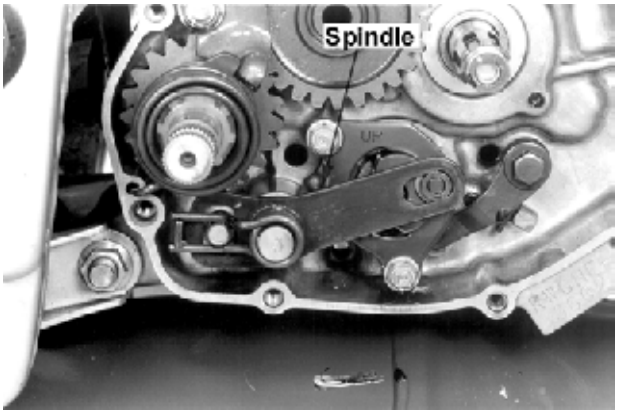
GEARSHIFT LINKAGE

REMOVAL

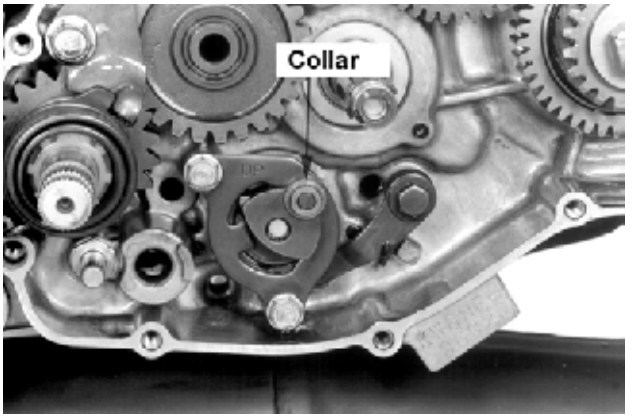
Remove the lower cowl ????????
Remove the clutch.
Remove the bolt and gearshift pedal linkage.



Remove the gearshift spindle from the crankcase.



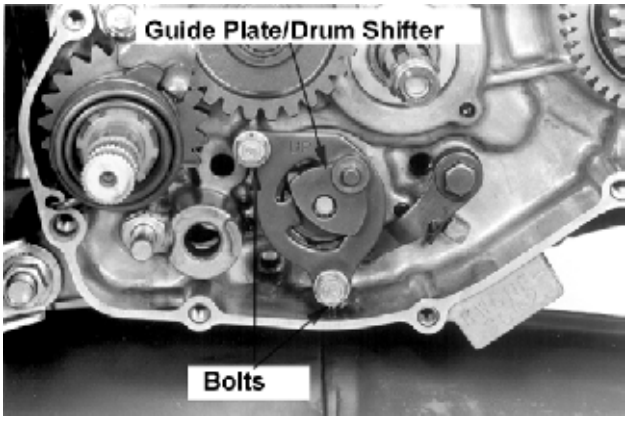
Remove the shifter collar from the guide plate.



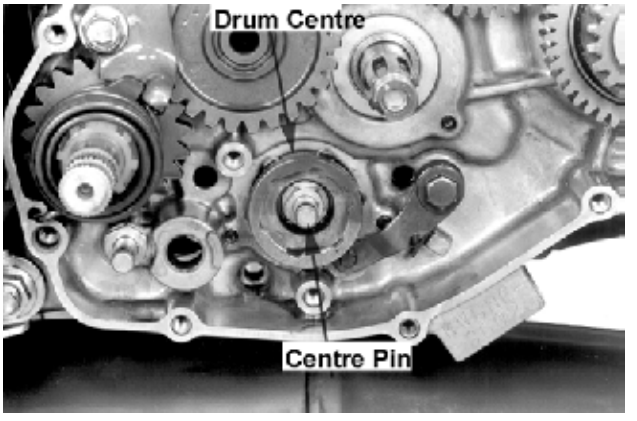
Remove the bolts.
Remove the guide plate and drum shifter as an assembly.

NOTE

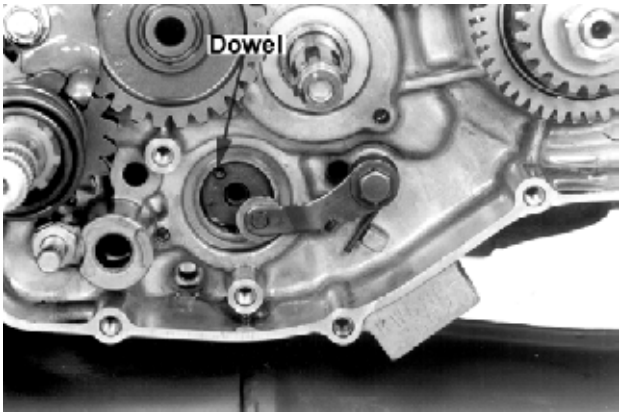
- **Do not let the rachet pawls fall when removing the guide plate and drum shifter.**



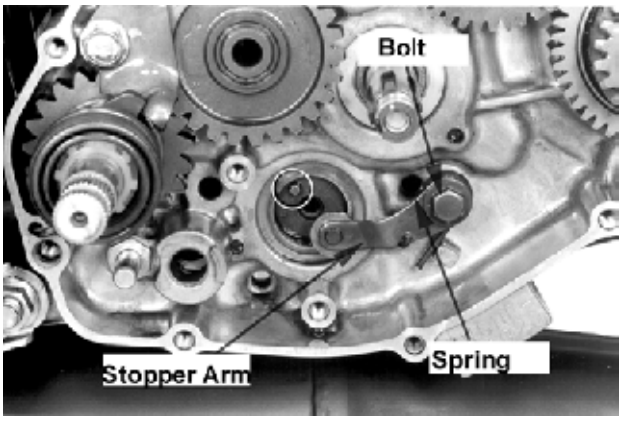
Remove the shift drum centre pin and shift drum centre.



Remove the dowel pin.

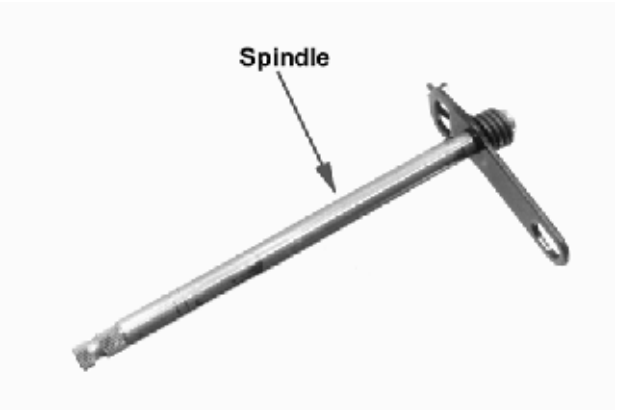


Remove the bolt, shift drum stopper arm and return spring.



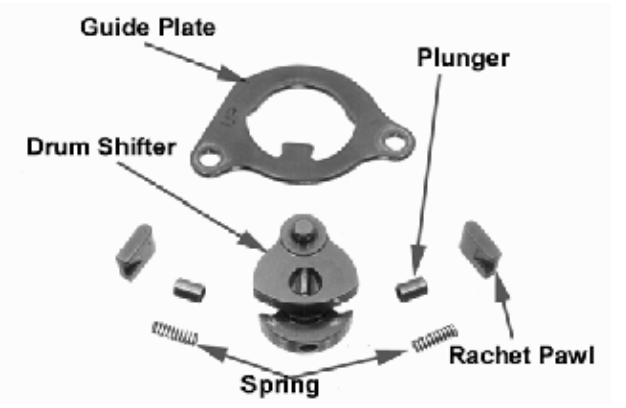
INSPECTION

Check the gearshift spindle for wear or damage.
Check the return spring for fatigue or damage.



Check the each parts for wear or damage.

Replace the damaged parts with a new one, if necessary.



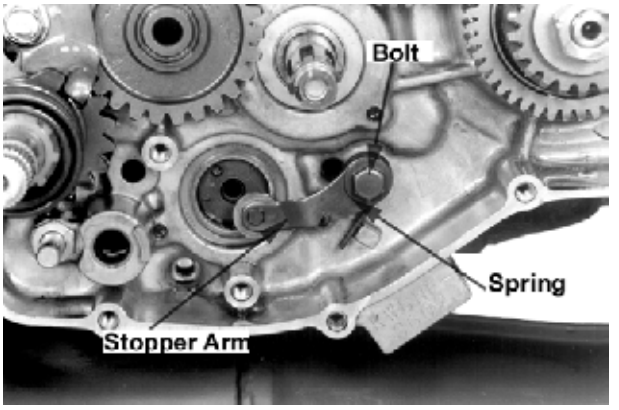
INSTALLATION
Apply clean transmission oil to the rachet pawls, springs and plungers.

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

Install the return spring and shift drum stopper arm.
Install and tighten the shift drum stopper arm bolt to the specified torque.

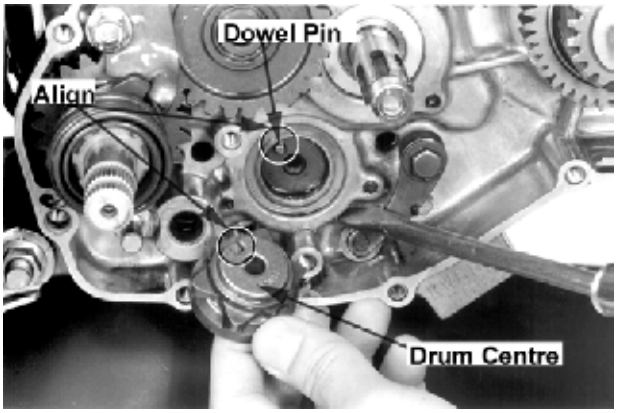
TORQUE: 12 N. m (1.2 kgf.m, 9 lbf ft)

Check the stopper arm for proper operation.



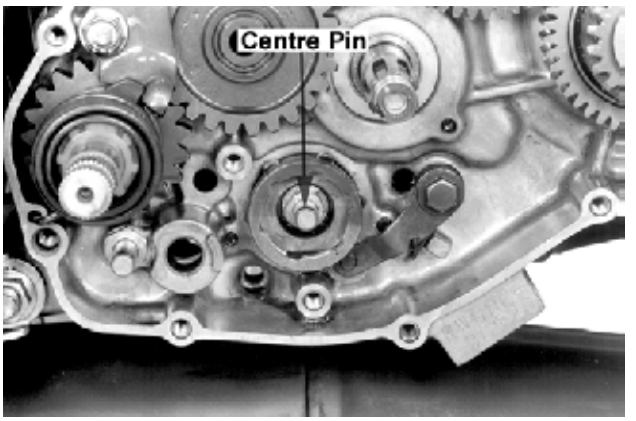
Install the dowel pin into the shift drum.

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



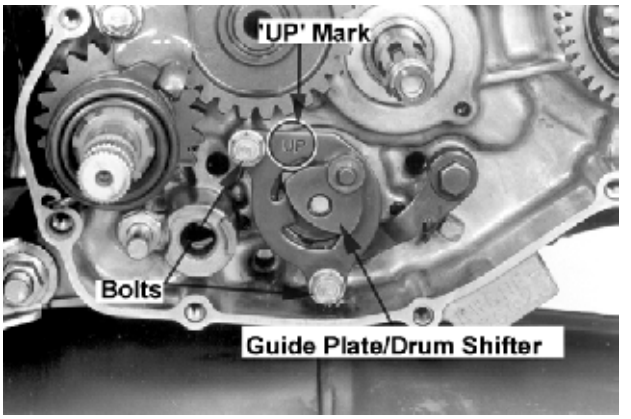
Install and tighten the shift drum center pin to the specified torque.

TORQUE: 22 N. m (2.2 kgf m, 16 lbf.ft)

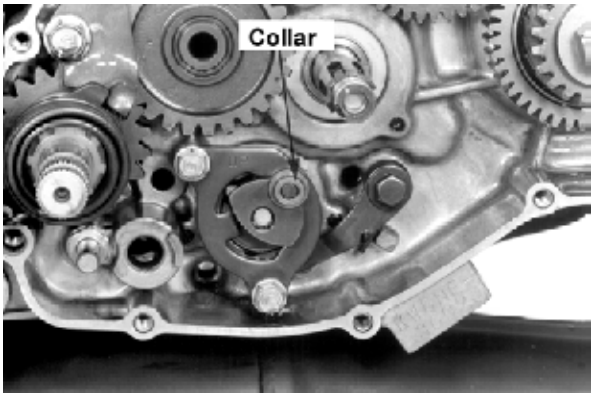


Position the drum centre in a gear other than neutral.
Holding the rachet pawls in place in the guide plate, and drum shifter, install the assembly onto the shift drum centre pin.

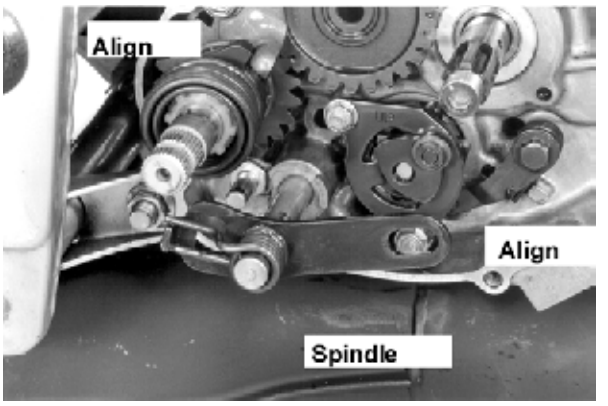
Install and tighten the bolts securely.



Install the collar to the guide plate.



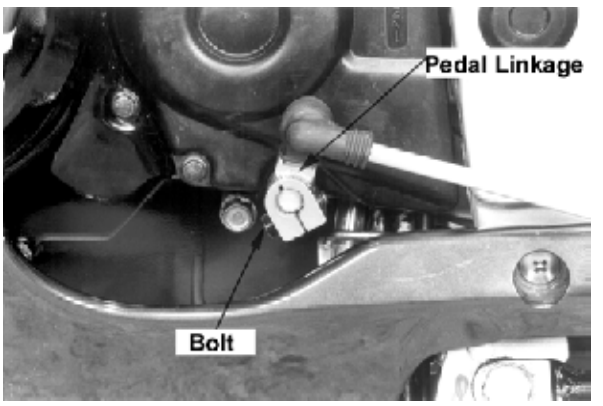
Install the gearshift spindle to the crankcase while aligning the spindle return spring ends with the shift return spring pin.



Install the gearshift pedal link to the gearshift pedal.
Install and tighten the bolt securely.

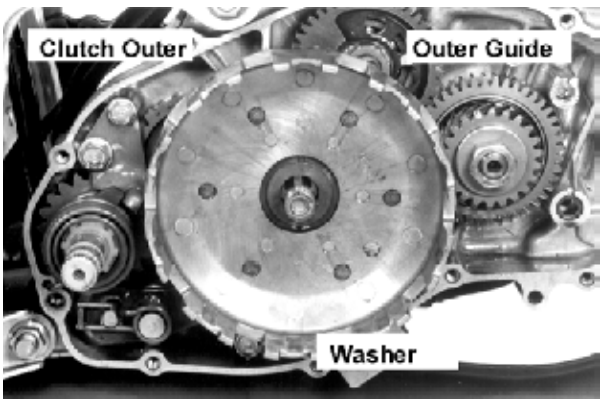
Move the gearshift pedal and check the shift mechanism for smooth operation.

Install the clutch (see below)

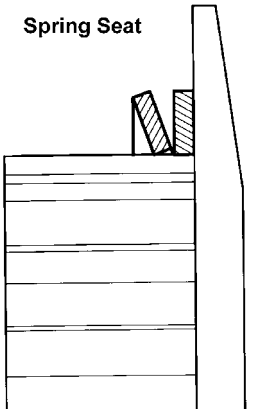


CLUTCH INSTALLATION

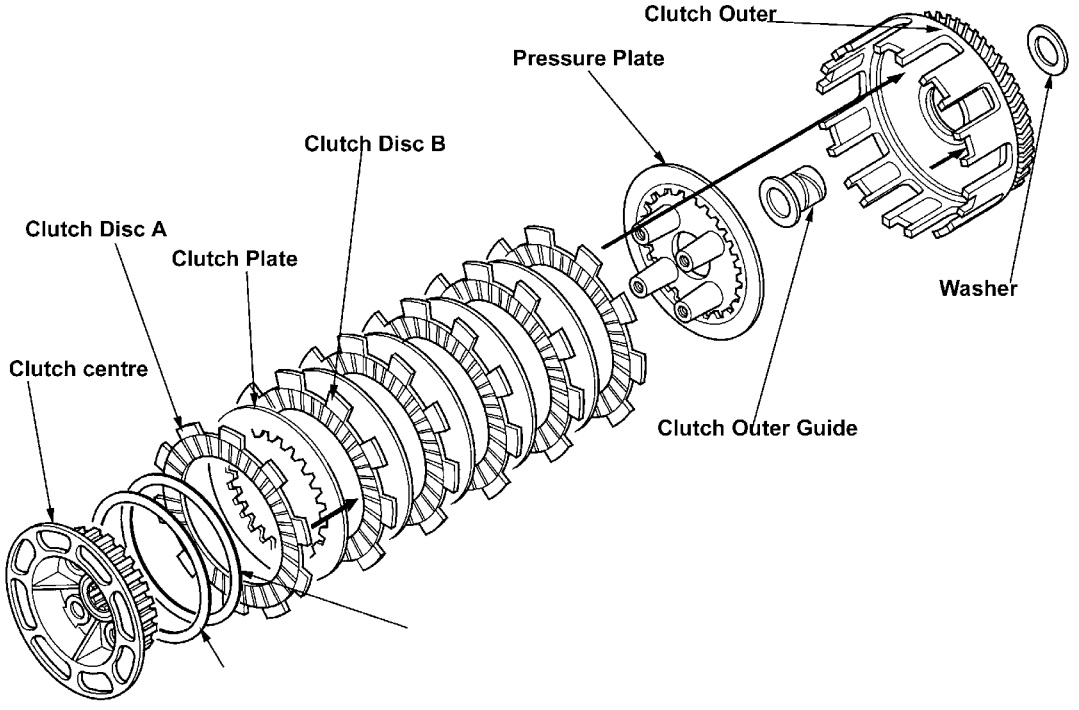
Apply molybdenum oil solution to the clutch outer guide outer surface.
Install the clutch outer guide and clutch outer to the mainshaft.



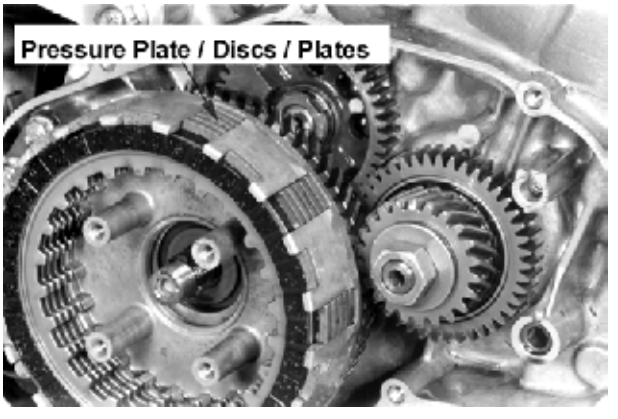
Install the spring seat and judder spring on the clutch centre as shown.



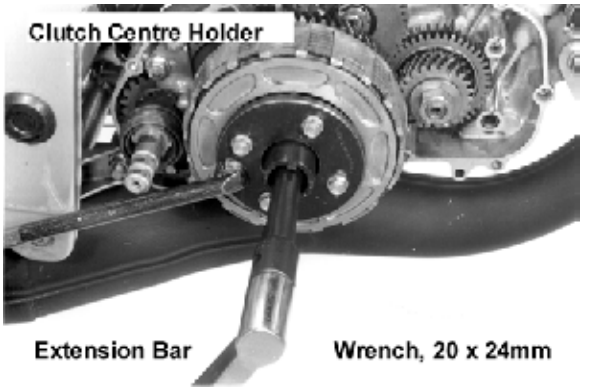
Coat the clutch discs and clutch plates with clean engine oil. Install the five clutch discs and four clutch plates alternately, starting with a clutch disc.
When installing the outside clutch disc, align the end grooves in the clutch outer with the tabs of the disc.
Install the pressure plate/judder spring/spring seat to the clutch centre.



Install the washer pressure plate, clutch discs, clutch plates, judder spring, spring seat and clutch centre as a set to the clutch outer.



Apply transmission oil to the new clutch centre lock nut threads and flange surface.
Install the washer and new clutch centre lock nut.
Hold the pressure plate with the clutch centre holder.
Tighten the clutch centre lock nut to the specified torque.

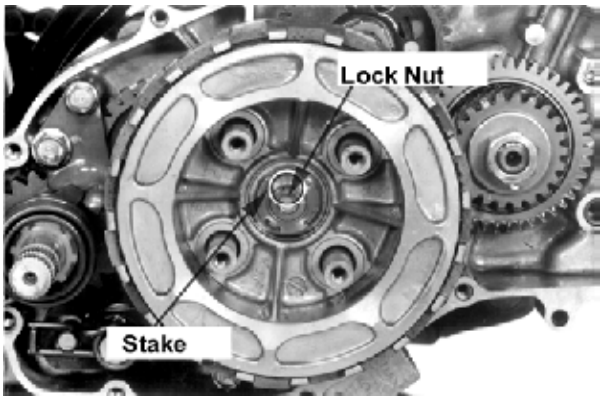


TOOLS:

Clutch centre holder	**07923-KE10000**
Wrench, 20 X 24 mm	**07716-0020100**
Extension bar	**07716-0020500**

TORQUE: 64 N.m (6.5 kgf.m, 47 lbf ft)

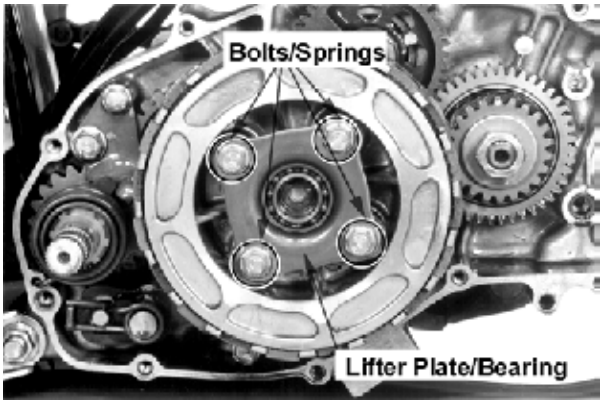
Remove the clutch centre holder and stake the lock nut into the mainshaft groove.



CAUTION

- **Be careful not to damage the mainshaft threads.**

Install the clutch springs and lifter plate/bearing.
Install and tighten the clutch lifter plate bolts in a crisscross pattern in several steps.



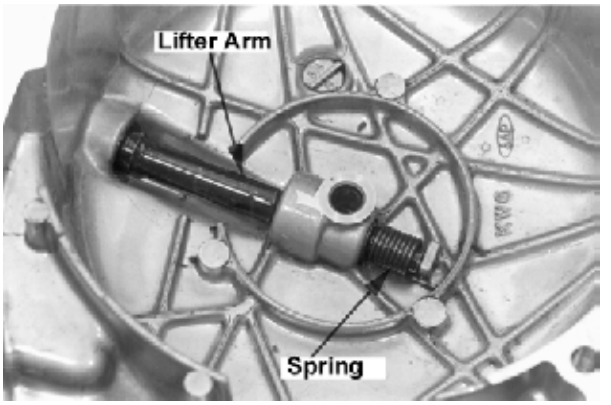
TORQUE: 12 N.m (1.2 kgf.m, 9 lbf.ft)

Install the right crankcase cover (see below).

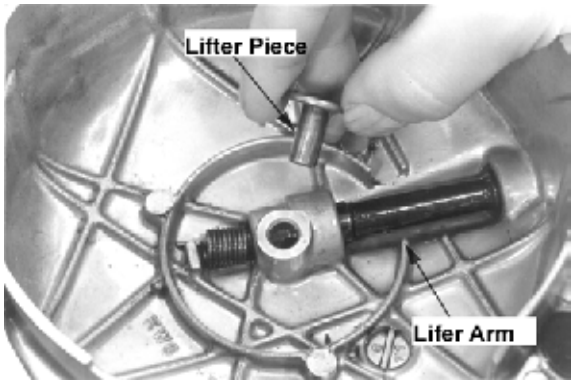
RIGHT CRANKCASE COVER INSTALLATION

ASSEMBLY

Apply grease to the needle bearing.
Apply grease to the clutch lifter arm sliding surfaces and slit.
Install the clutch lifter arm and spring.



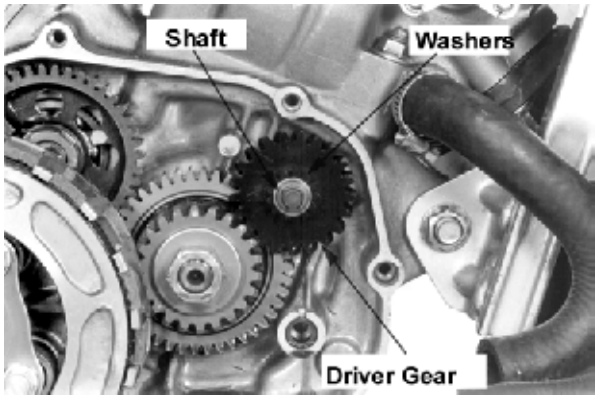
Align the clutch lifter arm slit and hole on the right crankcase cover by turning the clutch lifter arm clockwise.
Apply grease to the clutch lifter piece.
Install the clutch lifter piece.



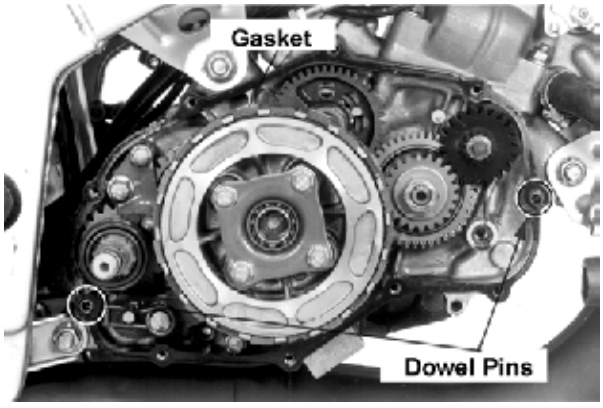
Install the water pump shaft.
Install the oil pump and bleed the oil pump, tube and pass tube.

INSTALLATION

Install the washer, water pump/oil pump drive gear, shaft and washer.

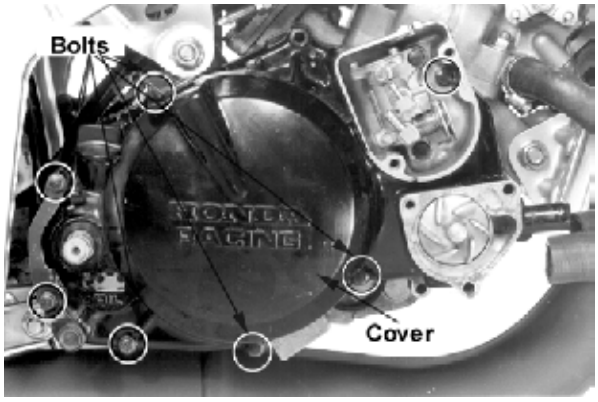


Install the dowel pins and new gasket.
Install the right crankcase cover.

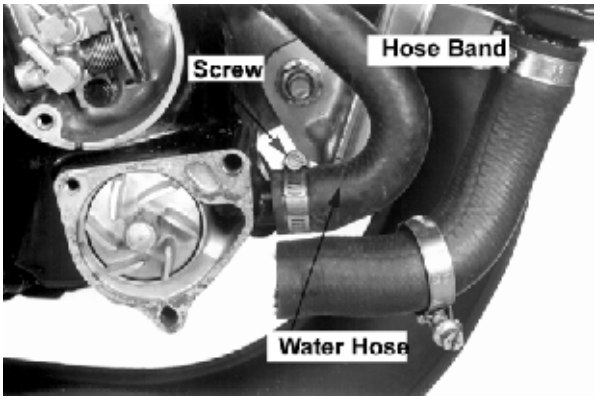


Install and tighten the right crankcase cover bolts in a crisscross pattern in several steps.

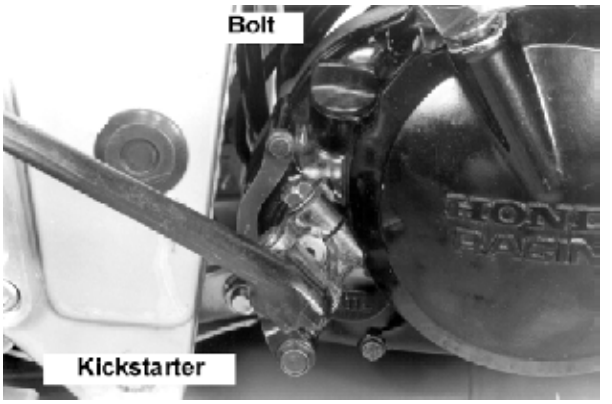
TORQUE:
6 mm: 10 N.m (1.0 kgfm, 7 lbf ft)
8mm: 26 N.m (2.7 kgfm, 20 lbf ft)



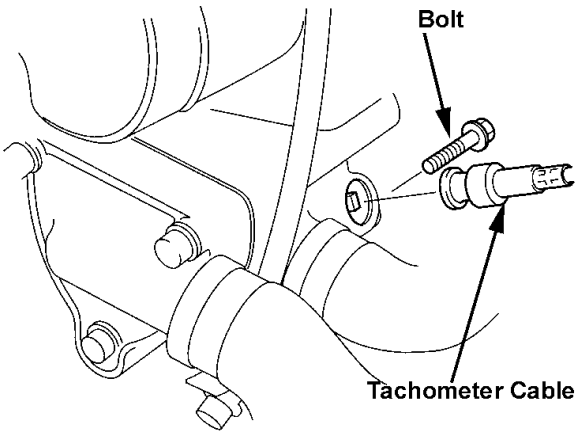
Connect the lower water hose.
Tighten the screw and hose band securely.



Install the kickstarter and bolt.
Tighten the bolt securely.



Install the tachometer cable to the right crankcase.
Install and tighten the bolt securely.



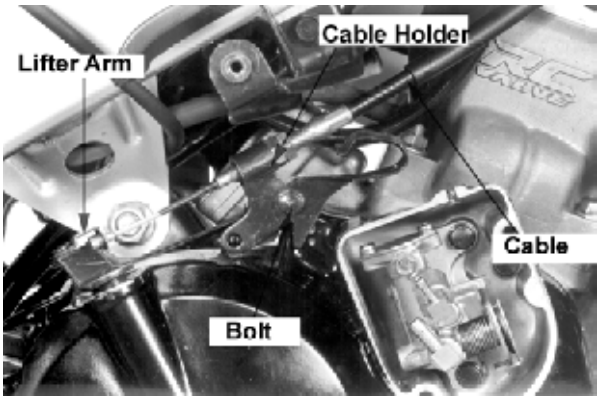
Connect the clutch cable and install the cable holder and bolt.

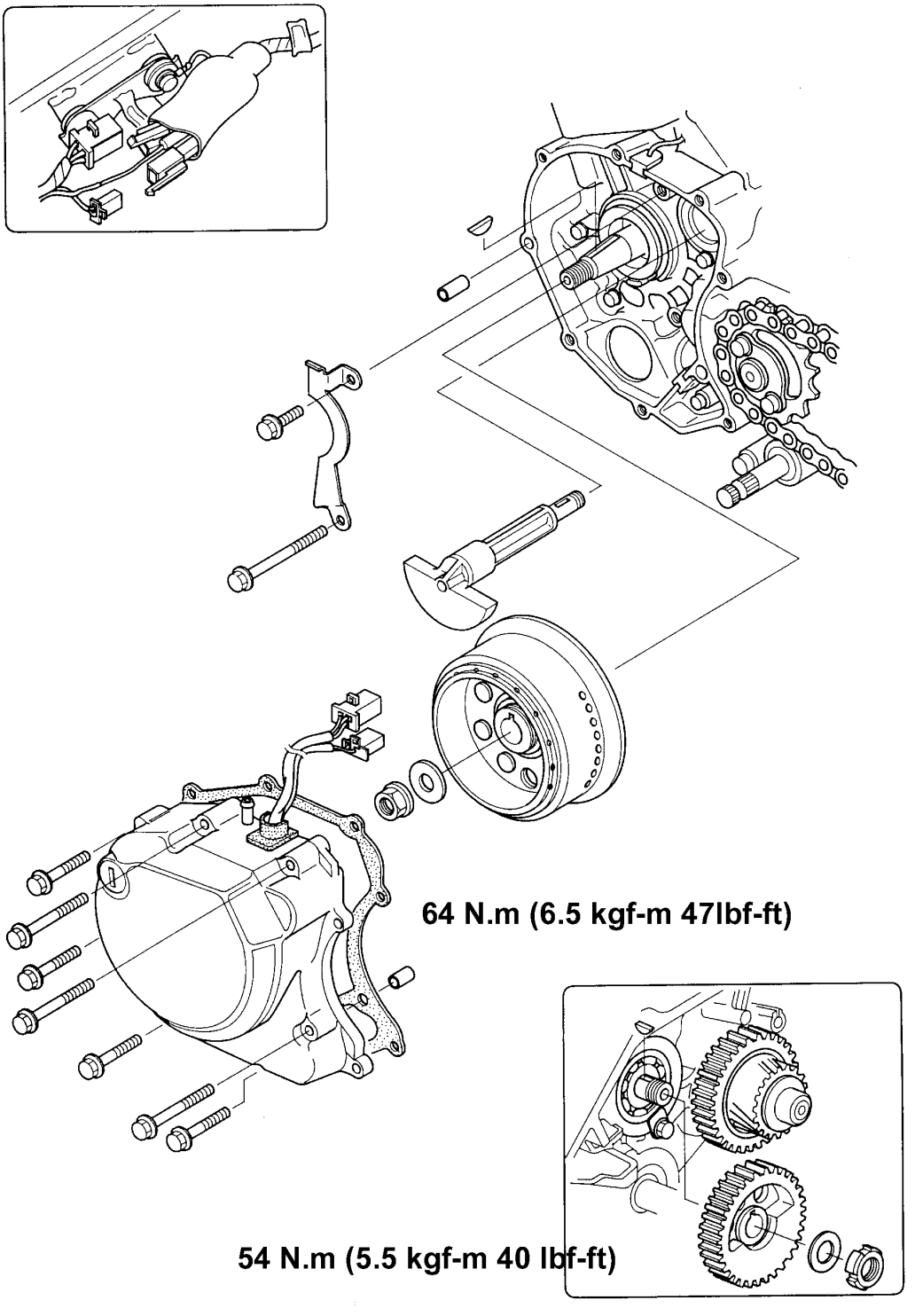
TORQUE: 10 N.m 1 0 kgf-m, 7 lbf.ft)

Install the water pump cover.
Fill and bleed the cooling system.
Fill the transmission oil.
Connect the oil tube and oil pass tube to the oil pump.

Bleed the air from the oil line.
Connect the oil control cable to the oil pump drum.

Adjust the oil pump control cable
Install the oil pump cover.
Install the side cowl and lower cowl.




64 N.m (6.5 kgf-m 47lbf-ft)
54 N.m (5.5 kgf-m 40 lbf-ft)

SERVICE INFORMATION

GENERAL

The alternator and balancer maintenance can be done with the engine in the frame.
Refer to section 16 for alternator inspection, and to section 17 for ignition pulse generator inspection.

TORQUE VALUES

Timing hole cap	3 N.m (0.3 kgf.m, 2.2 lbf-ft)
Flywheel nut	64 N.m (6.5 kgf.m, 47 lbf-ft)
Balancer driven gear nut	54 N.m (5.5 kgf.m, 40 lbf-ft)
Starter socket bolt	12 N.m (1.2 kgf.m, 9 lbf-ft)
Ignition pulse generator socket bolt	10 N.m (1.0 kgf.m, 7 lbf-ft)

Apply a locking agent to the threads

TOOLS

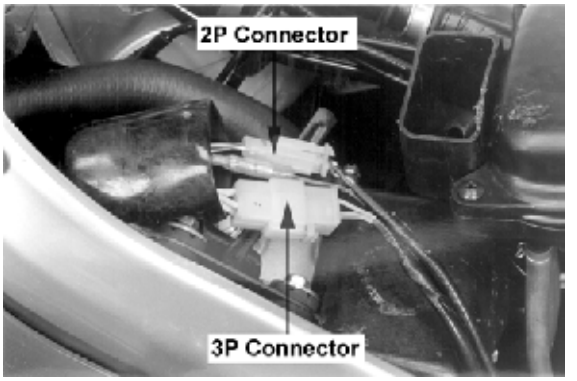
Flywheel holder	07725-0040000
Flywheel puller	07KMC-HE01000
Gear holder	07724-0010100

STATOR REMOVAL

NOTE
Refer to page 10 for alternator (charging coil) inspection.

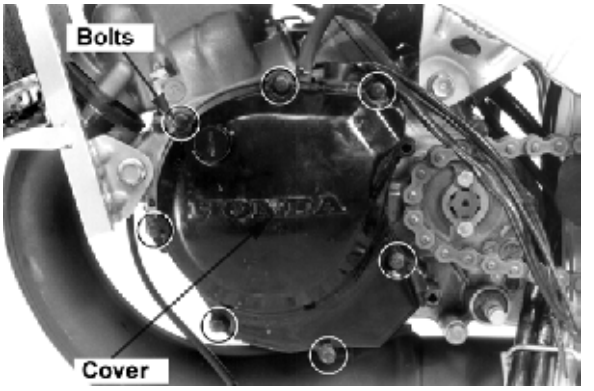
Remove the drive sprocket cover.
Remove the fuel tank

Disconnect the alternator 3P connector and ignition pulse generator 2P connector.

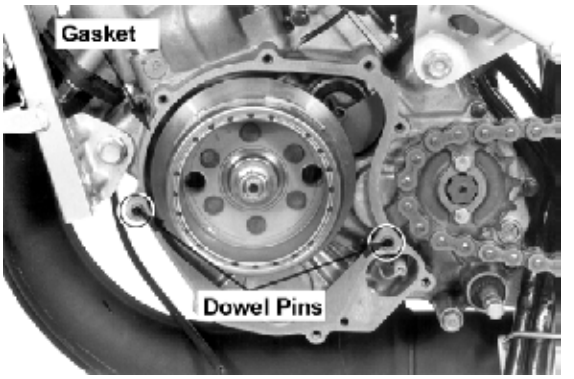


Remove the left crankcase cover bolts and left crankcase cover.

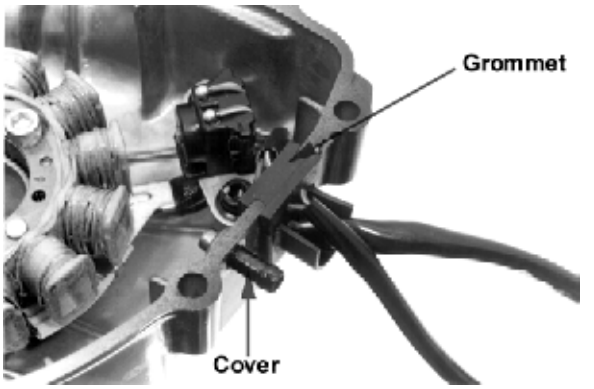
NOTE
- **Loosen the left crankcase cover bolts in a crisscross pattern in several steps.**
- **The left crankcase cover (stator) is magnetically attached to the flywheel, be careful to removal.**



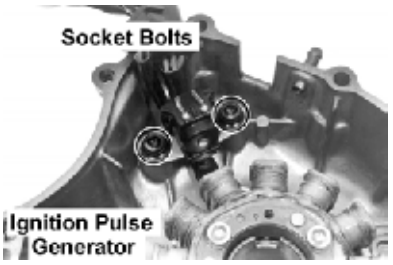
Remove the gasket and dowel pins.

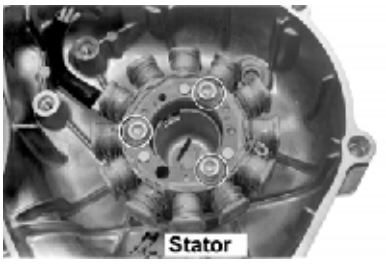


Remove the grommet from the left crankcase cover.



Remove the socket bolts and ignition pulse generator.
Remove the bolts and stator.



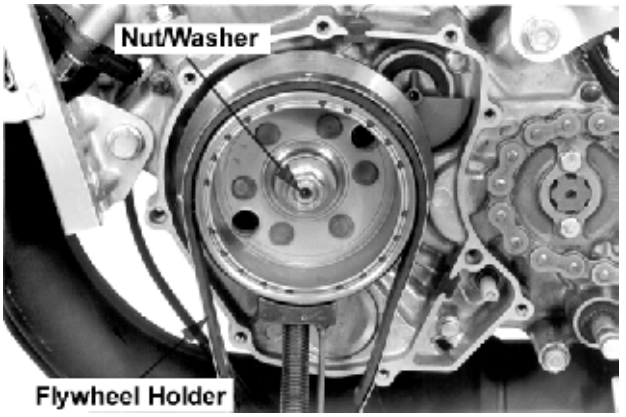


FLYWHEEL REMOVAL

Remove the left crankcase cover.

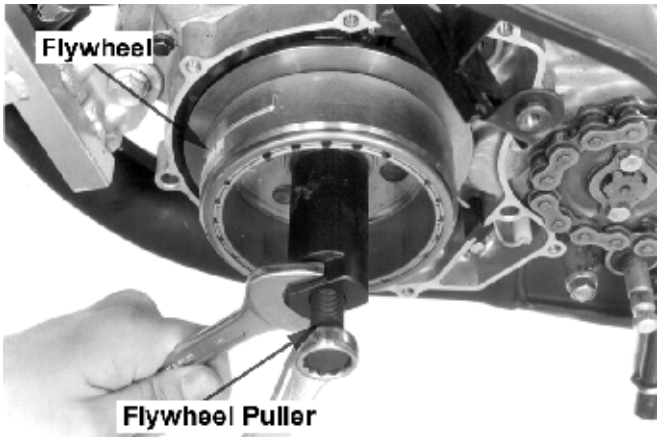
Remove the flywheel nut and washer while holding the flywheel with a flywheel holder.

TOOL:
Flywheel holder 07725-0040000



Remove the flywheel using the flywheel puller.

TOOL:
Flywheel puller 07KMC-HE01000



Remove the woodruff key.

NOTE
- **When woodruff key removal, be careful not to damage the key groove or crankshaft.**
- **Do not loose the woodruff key.**

BALANCER REMOVAL

REMOVAL

Remove the clutch.
Remove the flywheel.

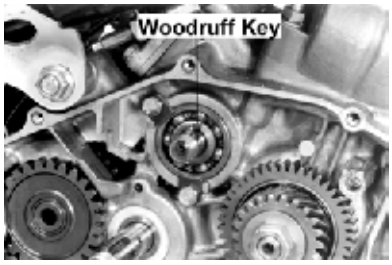
Remove the set plate.

Hold the balancer drive gear with the gear holder and remove the balancer drive gear nut and washer.

TOOLS:

Gear holder	**07724-0010100**
Wrench	**20 X 24 mm**
	07716-0020100

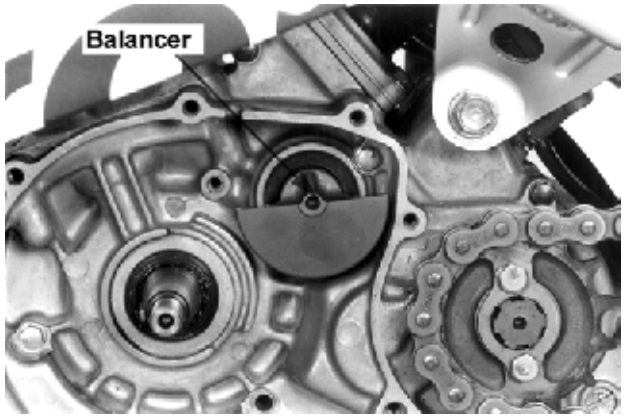
Remove the balancer driven gear and woodruff key.



NOTE

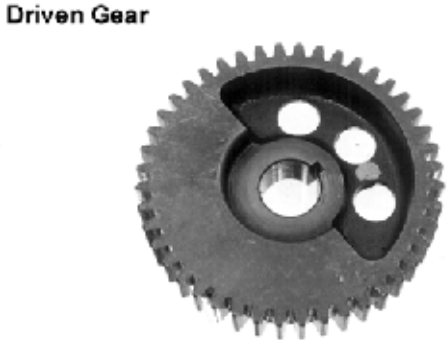
- **When woodruff key removal, be careful not to damage the key groove or balancer.**
- **Do not loose the woodruff key.**

Remove the balancer from the left crankcase.

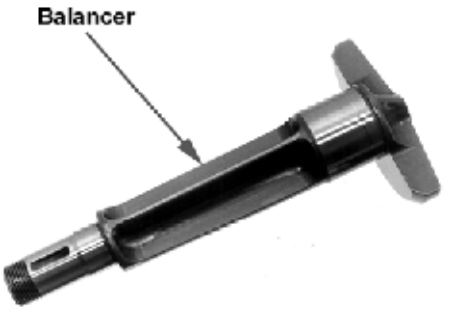


INSPECTION

Check the balancer driven gear for wear or damage.
Replace the balancer driven gear if necessary.

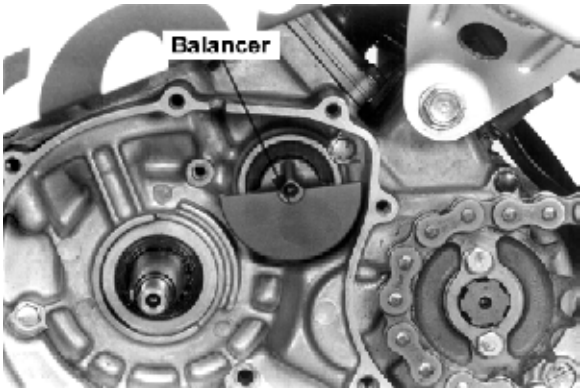


Check the balancer for bend, wear or damage.
Replace the balancer driven if necessary.



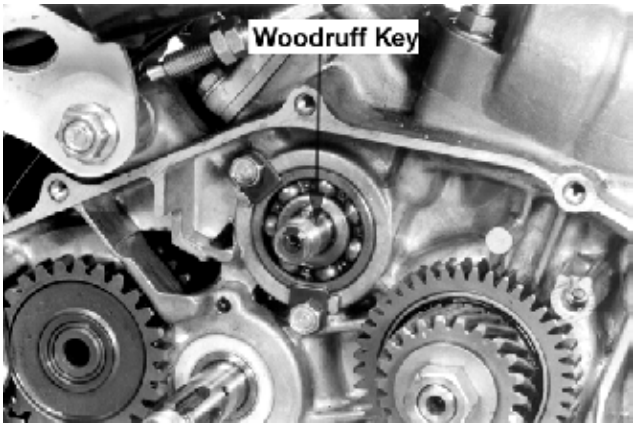
BALANCER INSTALLATION

Apply transmission oil to the balancer sliding surfaces.
Install the balancer to the left crankcase.

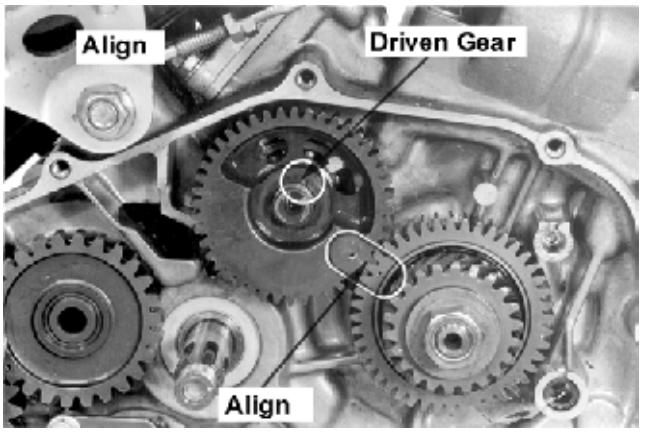


Install the woodruff key to the groove on the balancer.

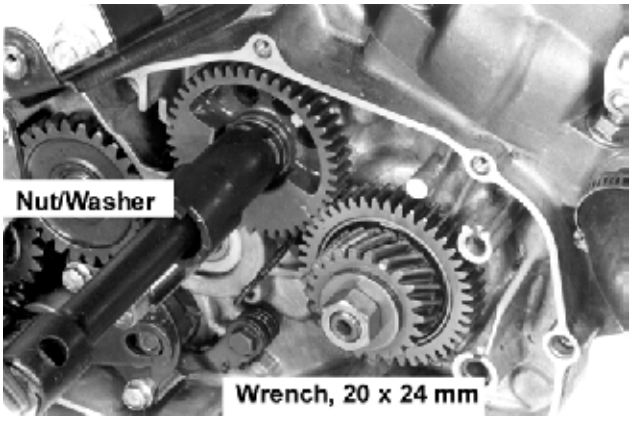
NOTE
- **When woodruff key installation, be careful not to damage the key groove or balancer.**



Install the balancer driven gear to the balancer aligning the punch marks on the balancer drive gear and driven gear.
Align the cut out on the balancer driven gear with the woodruff key in the balancer.



Hold the balancer drive gear with the gear holder and remove the balancer drive gear nut and washer.



TOOL
Gear holder 07724-0010100
Wrench 07716-0020100

Tighten the balancer drive gear nut to the specified torque.

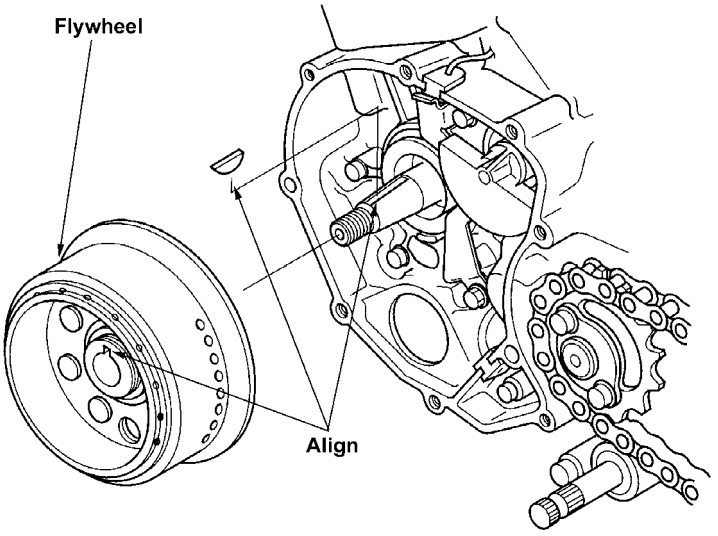
TORQUE: 54 N.m (5.5 kgf.m 40 lbf-ft)

Install the flywheel (see below).
Install the clutch.

FLYWHEEL INSTALLATION

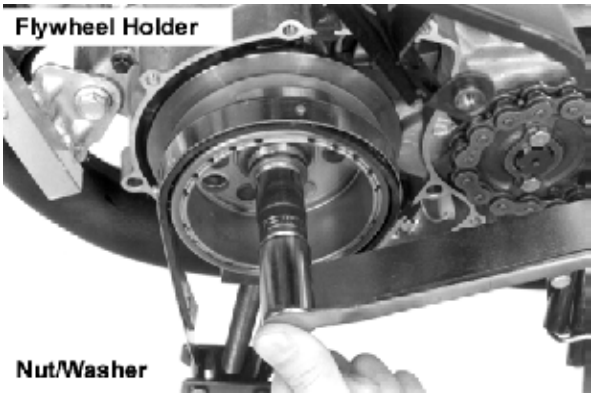
Wipe any oil off the mating surface of the crankshaft. Install the woodruff key to the groove on the crankshaft.

NOTE
- **When woodruff key installation, be careful not to damage the key groove or crankshaft.**



Wipe any oil off the mating surface of the flywheel.
Install the flywheel to the crankshaft aligning the key groove of the flywheel with the woodruff key on the crankshaft.

Hold the flywheel with a flywheel holder.

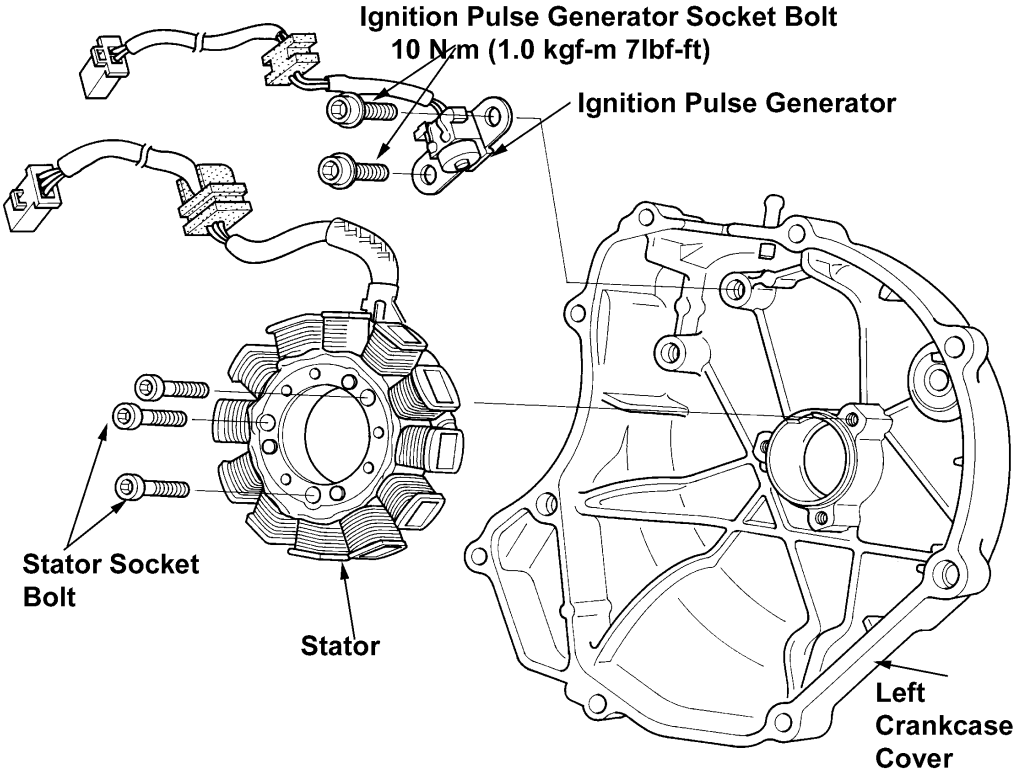


TOOL:
Flywheel holder 07725-0040000

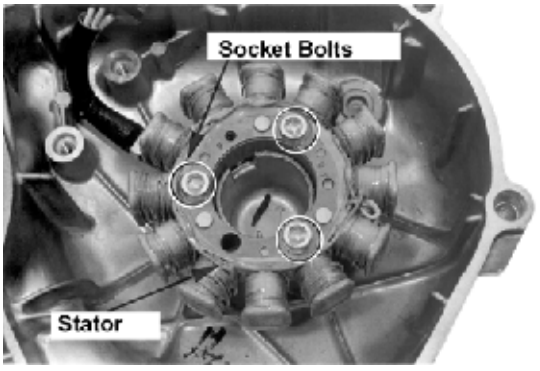
Install the washer.
Install and tighten the flywheel nut to the specified torque.

TORQUE: 64 N.m (6.5 kgf.m 47 lbf.ft)

STATOR INSTALLATION

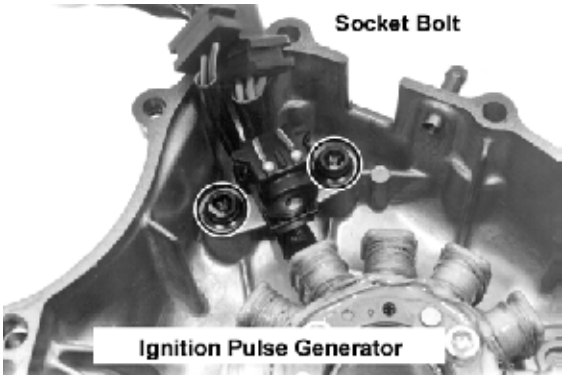


Install the stator to the left crankcase cover.
Install and tighten the stator bolts securely.

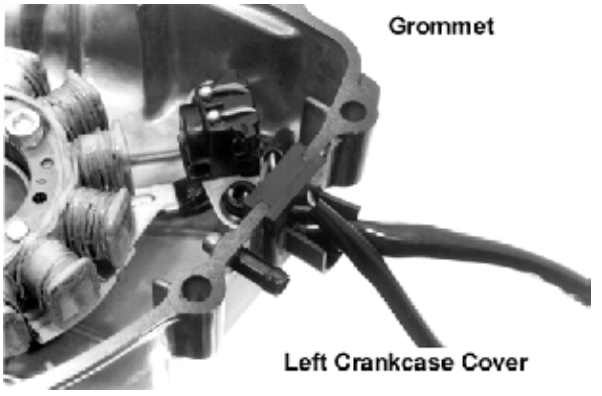


Install the ignition pulse generator to the left crankcase cover.
Clean and apply a locking agent to the ignition pulse generator socket bolt threads.
Install and tighten the ignition pulse generator socket bolts to the specified torque.

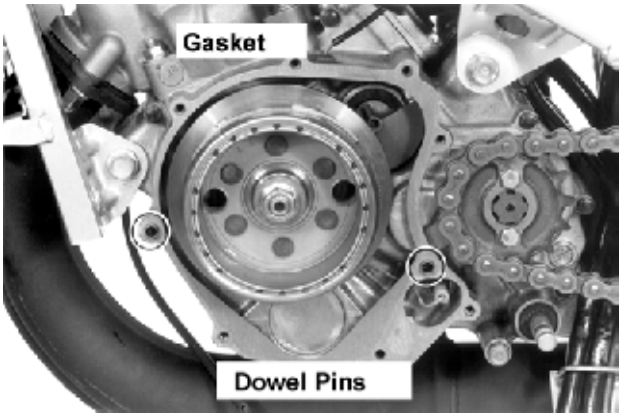
TORQUE: 10 N.m (1.0 kgf.m 7 lbf.ft)



Clean and apply sealant to the wire grommets seating surface and install the grommets into the grooves in the left crankcase cover.



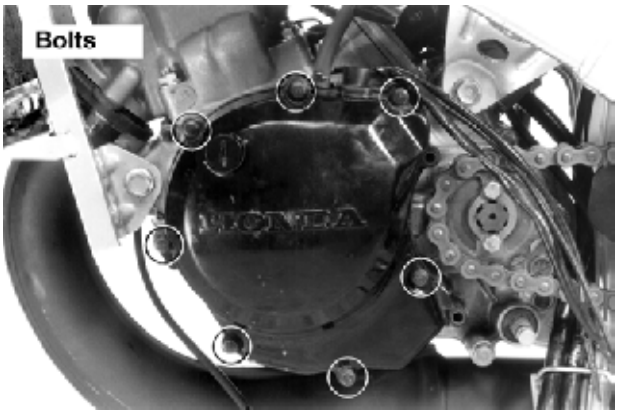
Install the dowel pins and new gasket.



Install the left crankcase cover.

NOTE
- **The left crankcase cover (stator) is magnetically attached to the flywheel, be careful to installation.**

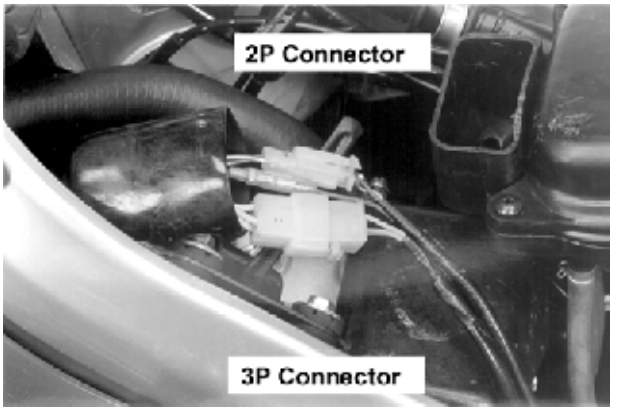
Install and tighten the left crankcase cover bolts securely in a crisscross pattern in several steps.

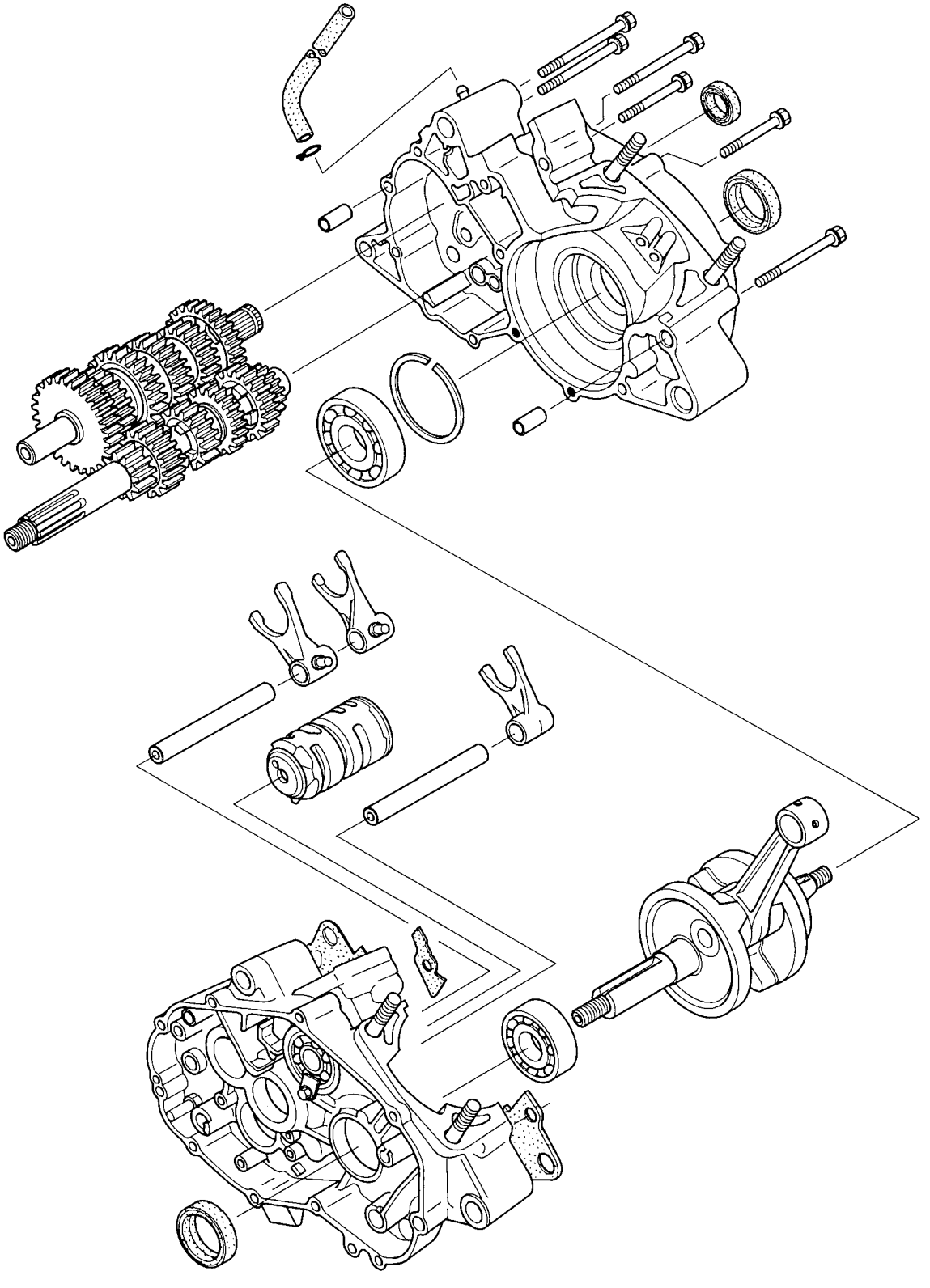


NOTE
- **Route the wire harness properly.**

Connect the alternator 3P connector and ignition pulse generator 2P connector.

Install the fuel tank.
Install the drive sprocket cover.





SERVICE INFORMATION

GENERAL

- The crankcase halves must be separated to service the crankshaft, connecting rod and transmission (including the shift fork and shift drum). To service these parts, the engine must be removed from the engine (Section 7).
- The following parts must be removed before separating the crankcase:
  - Oil pump (Section 4)
  - Water pump (Section 6)
  - Cylinder head, Cylinder, piston (Section 8)
  - Clutch, gearshift linkage,and kickstarter (Section 10)
  - Alternator, flywheel (Section 1 1)
  - Neutral switch (Section 18)
- Be careful not to damage the crankcase mating surface.
- When disassembling, mark and store the disassembled parts to ensure that they are reinstalled in their original locations.

SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Connecting rod big end	Side clearance	0.3 - 0.7 (0.012 - 0.028)	
	Radial clearance		0.05 (0.002)
Crankshaft runout	A		0.05 (0.002)
	B		0.03 (0.001)
Transmission gear I.D.	M5, M6	22.020 - 22.041 (0.8669 - 0.8678)	22.10 (0.870)
		20.020 - 20.041 (0.7882 - 0.7890)	20.10 (0.791)
	C2, C4	22.020 - 22.041 (0.8669 - 0.8678)	22.10 (0.870)
	C3	25.020 - 25.041 (0.9850 - 0.9859)	25.10 (0.988)
Transmission gear bushing O.D.	M5, M6	21.979 - 22.000 (0.8653 - 0.8661)	21.90 (0.862)
	C1	19.984 - 19.995 (0.7868 - 0.7872)	19.90 (0.783)
	C2	21.984 - 22.005 (0.8655 - 0.8663)	21.90 (0.862)
	C3	24.984 - 24.993 (0.9836 - 0.9840)	24.90 (0.980)
Transmission gear bushing I.D.	M5, M6	20.000 - 20.021 (0.7874 - 0.7882)	20.10 (0.791)
	C1	17.016 - 17.034 (0.6700 - 0.6706)	17.10 (0.673)
	C2	20.020 - 20.041 (0.7882 - 0.7890)	20.10 (0.791)
	C3	22.020 - 22.041 (0.8669 - 0.8678)	22.10 (0.870)

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Gear-to-bushing clearance	M5, M6	0.020 - 0.062 (0.0008 - 0.0024)	0.10 (0.004)
	C1	0.025 - 0.057 (0.0010 - 0.0022)	0.10 (0.004)
	C2	0.0 15 - 0.057 (0.0006 - 0.0022)	0.10 (0.004)
	C3	0.027 - 0.057 (0.0011 - 0.0022)	0.10 (0.004)
Mainshaft O.D.	M5	19.959 - 19.980 (0.7858 - 0.7866)	0.10 (0.004)
	Right crankcase journal	16.966 - 16.984 (0.6679 - 0.6686)	19.92 (0.784)
Countershaft O.D.	C1	16.975 - 16.984 (0.6683 - 0.6687)	16.95 (0.667)
	C2	19.974 - 19.984 (0.7863 - 0.7867)	16.95 (0.667)
	C3, C4	21.959 - 21.980 (0.8645 - 0.8653)	19.94 (0.785)
Gear-to-shaft clearance	C4	0.040 - 0.082 (0.0016 - 0.0032)	21.09 (0.830)
Gear bushing-to-shaft clearance	M5, M6	0.020 - 0.062 (0.0001 - 0.0024)	0.10 (0.004)
	C1	0.032 - 0.059 (0.0013 - 0.0023)	0.10 (0.004)
	C2	0.033 - 0.067 (0.0013 - 0.0026)	0.10 (0.004)
	C3	0.040 - 0.082 (0.0016 - 0.0032)	0.10 (0.004)
Shift fork claw thickness		4.93 - 5.00 (0.194 - 0.197)	4.80 (0.189)
Shift fork I.D		12.041 - 12.056 (0.4741 - 0.4746)	12.65 (0.475)
Shift fork shaft O.D		11.983 - 11.994 (0.4718 - 0.4722)	11.973 (0.4714)

TORQUE VALUES

Crankcase bolt	10 N.m (1.0 kgfm, 7 lb-ft)
Bearing set plate bolt	10 N.m (1.0 kgf.m, 7 lb-ft) Apply a locking agent to the threads

TOOLS

Universal bearing puller	07631-0010000
Sliding weight	07741-0010201
Attachment, 37 X 40 mm	07746-0010200
Attachment, 42 X 47 mm	07746-0010300
Attachment, 52 X 55 mm	07746-0010400
Attachment, 62 X 67 mm	07746-0010500
Pilot, 15 mm	07746-0040300
Pilot, 17 mm	07746-0040400
Pilot, 20 mm	07746-0040500
Pilot, 25 mm	07746-0040600
Pilot, 22 mm	07746-0041000
Driver	07749-0010000
Bearing remover head, 16 mm	07936-MK50100
Remover shaft, 15 mm	07936-KClOlOO
Crank assembly collar	07964-MB00200
Crank assembly shaft	07965-VMOO200
Case puller	07SMC-0010001

TROUBLESHOOTING

Excessive noise
- Worn connecting rod big end bearing
- Bent connecting rod
- Worn crankshaft main bearing
- Worn transmission gear

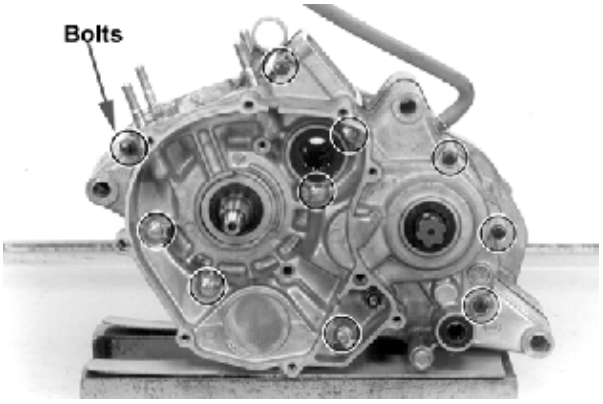
Hard to shift
- Improper clutch adjustment
- Improper clutch operation
- Bent shift fork
- Bent shift fork shaft
- Bent shift spindle
- Damaged shift drum cam grooves
- Incorrect transmission oil weight

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

CRANKCASE SEPARATION

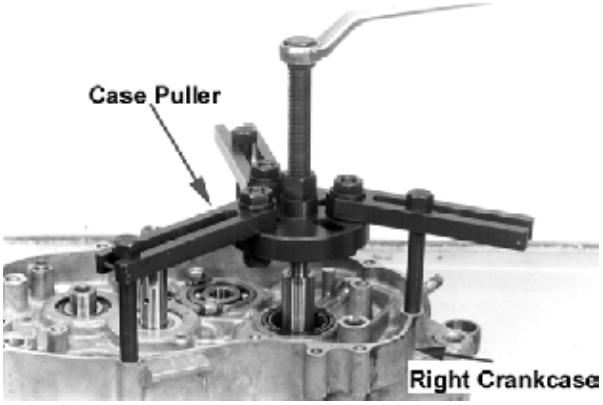
Remove the engine from the frame (Section 7).

Refer to Service Information (page 12-1) for removal of necessary parts before disassembling the crankcase.
Remove the crankcase bolts.



NOTE
- **Loosen the left crankcase bolts in a crisscross pattern in several steps.**

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

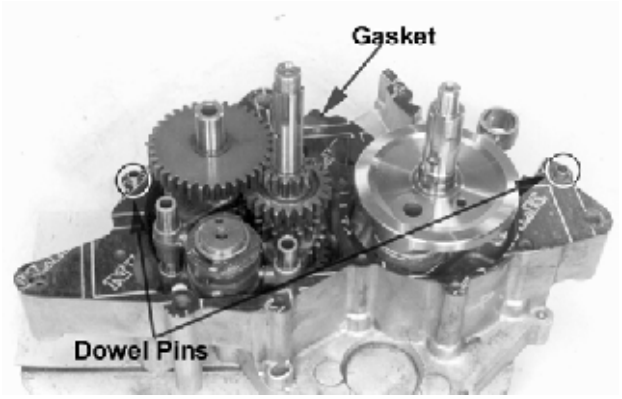


NOTE
- **Separate the right and left crankcase from each other while tapping them at several locations with a soft hammer.**

CAUTION
Do not pry the crankcase halves apart with a screwdriver.

TOOL:
Case puller 07SMC-0010001

Remove the gasket and dowel pins.



Clean off any gasket material from the crankcase mating surface.

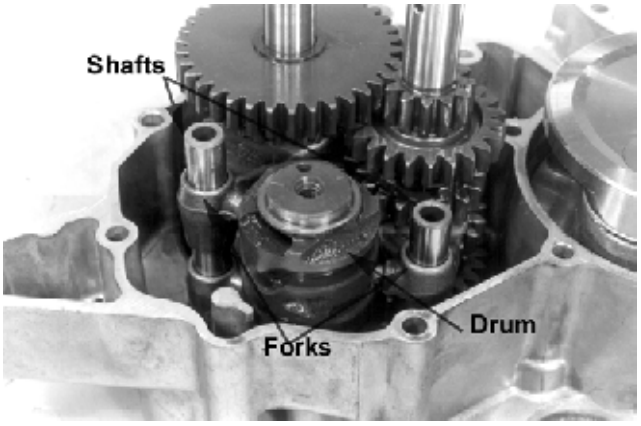
CAUTION
Be careful not to damage the crankcase mating surface.

TRANSMISSION

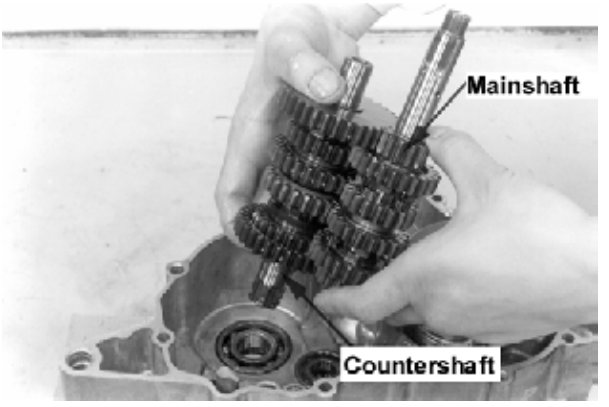
REMOVAL

Separate the crankcase (see above).

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



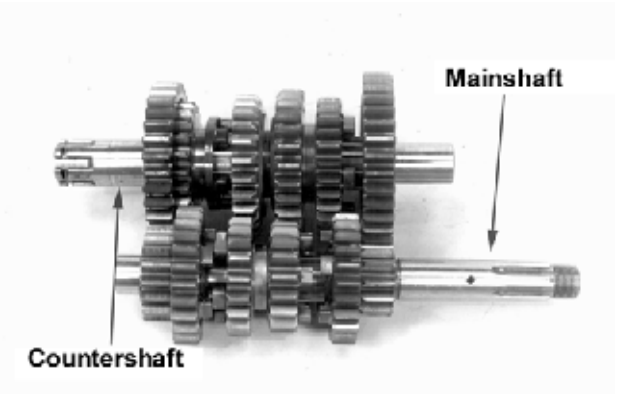
Remove the main shaft and countershaft from the right crankcase.



NOTE
- **Do not forget to install the transmission end washer.**

DISASSEMBLY

NOTE
- **Keep track of the disassembled parts (gears, bushings, washers and snap rings) by staking them on a toot or slipping them onto a piece of wire.**
- **Do not expand the snap ring more than necessary for removal. To remove a snap ring, expand the soap ring and pull it off using the gear behind it.**

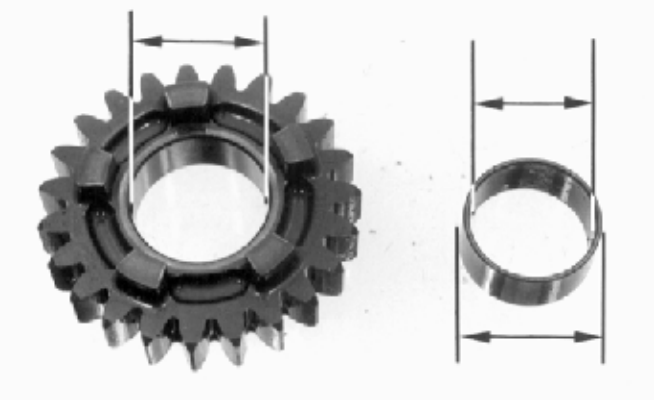


Disassemble the main shaft and countershaft.

INSPECTION

GEAR

Check the gear dogs, dog holders and teeth for damage or excessive wear.
Measure the I.D. of each gear.



SERVICE LIMITS:
M5, M6: 22.10 mm (0.870 in)
C1:
C2, C4: 22.10 mm (0.870 in)
C3: 25.10 mm (0.988 in)

BUSHING

Check the bushings for damage or excessive wear.
Measure the O.D. of each bushing.

SERVICE LIMITS:
M5, M6: mm in)
C1: 19.90 mm (in)
C2: (in)
C3: 24.90 mm (in),,

SERVICE LIMITS:
M5, M6: mm in)
C1: 19.10 mm (in)
C2: 20.40 mm (in)
C3: 22.10 mm (in),,

Measure the I.D. of each bushing.

MAINSHAFT / COUNTERSHAFT
Check the spline grooves and sliding surfaces for damage or abnormal wear.
Measure the O.D. of the mainshaft and countershaft at the gear and bushing sliding areas.

SERVICE LIMITS:
Mainshaft: M5 gear bushing: > mm in)
Case journal:
Countershaft: C1 gear bushing: mm (in)
C2 gear bushing: mm (in)
C3 gear bushing: mm (in)
C4 gear bushing: mm (in)

Calculate the clearance by subtracting mainshaft/countershaft O.D. from gear bushing I.D..

SERVICE LIMITS:
M5: mm (in)
C1: mm (in)
C2: mm (in)
C3: mm (in)

Calculate the clearance by subtracting gear bushing O.D. from gear I.D..

SERVICE LIMITS:
M5,M6: mm (in)
C1: mm (in)
C2: mm (in)
C3: mm (in)

SHIFT DRUM
Inspect the shift drum for scoring, scratches or evidence of insufficient lubrication.
Check the shift drum grooves for abnormal wear or damage.

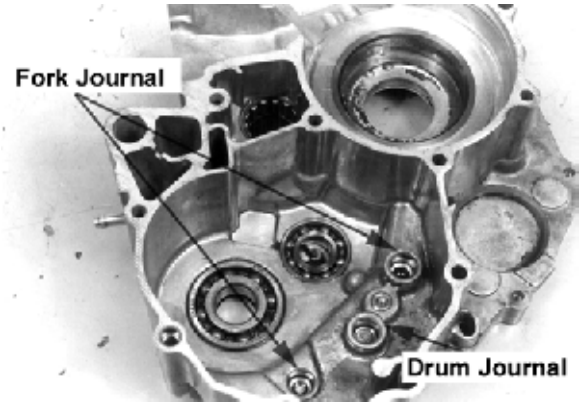
SHIFT FORK, SHIFT FORK SHAFT
Check the shift fork for abnormal wear or deformation.
Measure the shift fork I.D. and claw thickness.

SERVICE LIMITS:
I.D.:12.65 mm (in),
Claw thickness: 4.20 mm in)

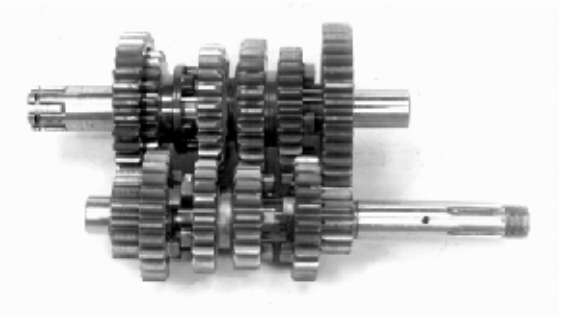
Check the shift fork shaft for abnormal wear, damage or straightens.
Measure the shift fork O.D.

SERVICE LIMIT: 11.995 mm(in)

SHIFT DRUM JOURNAL, SHIFT FORK JOURNAL
Check the left and right crankcase shift fork journal for wear or damage.
Check the left crankcase shift drum journal for wear or damage.



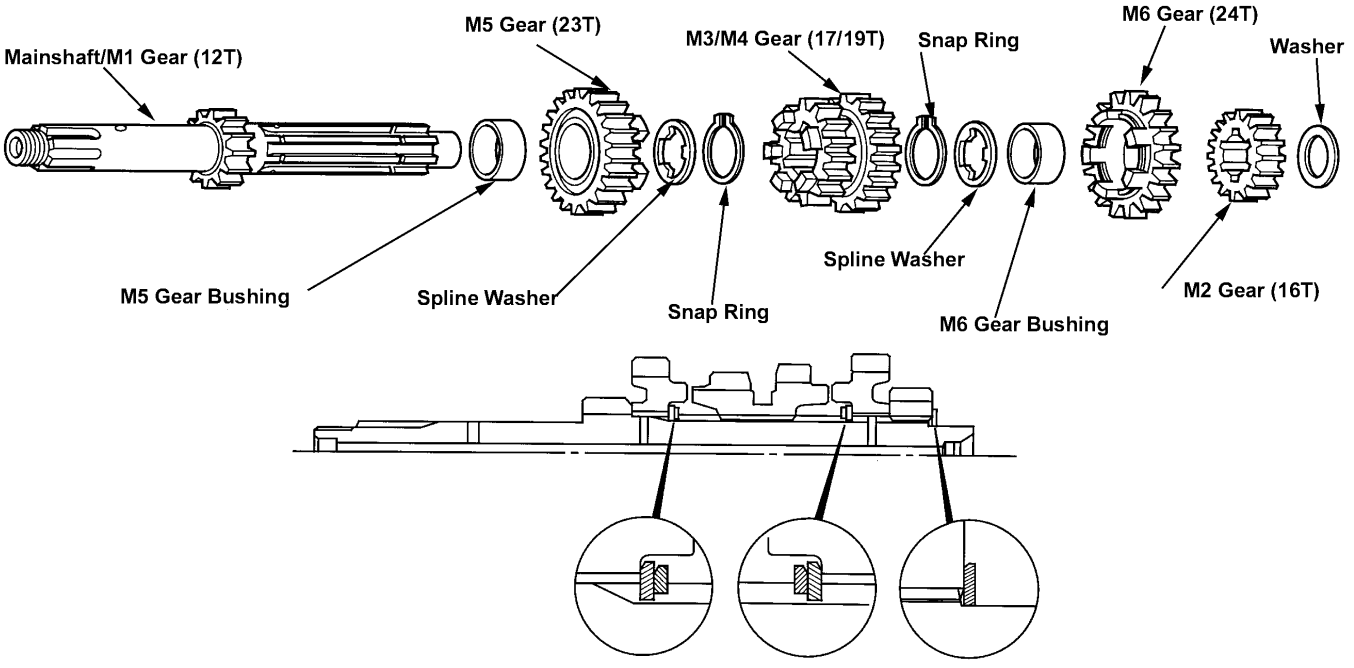
ASSEMBLY
Clean all parts in solvent.
Apply transmission oil to the gear and bushing sliding su face and shift fork grooves to ensure initial lubrication. Assemble all parts into their original positions.



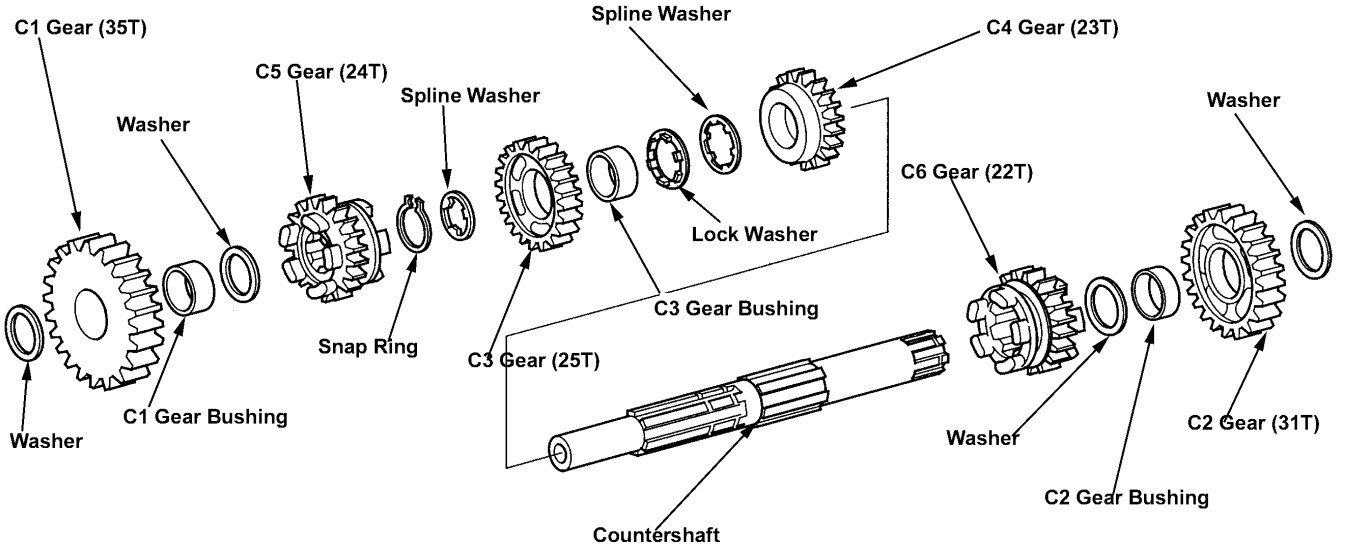
NOTE

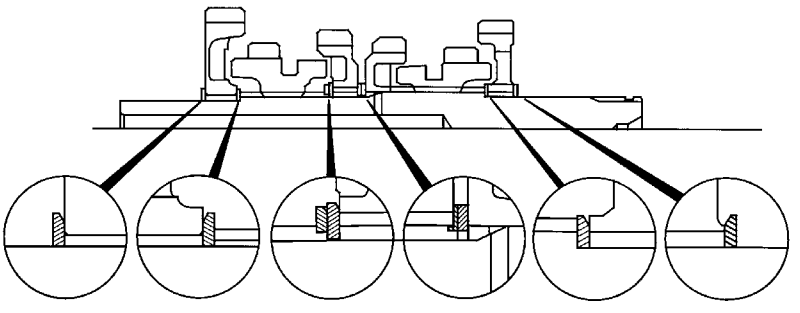
- **Check the gears for freedom of movement or rotation on the shaft.**
- **Install the washers and snap rings with the chamfered edges facing the thrust load side.**
- **Do not reuse worn snap rings which could easily spin in the grooves.**
- **Check that the snap rings are seated in the grooves. Align their end gaps with the grooves of the spline.**
- **Install the lock washer aligning its tabs with the grooves in the spline washer.**

MAINSHAFT



COUNTERSHAFT

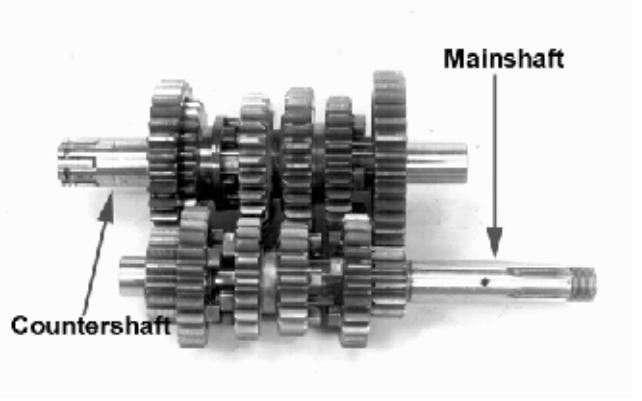




INSTALLATION

Apply transmission oil to the following parts.

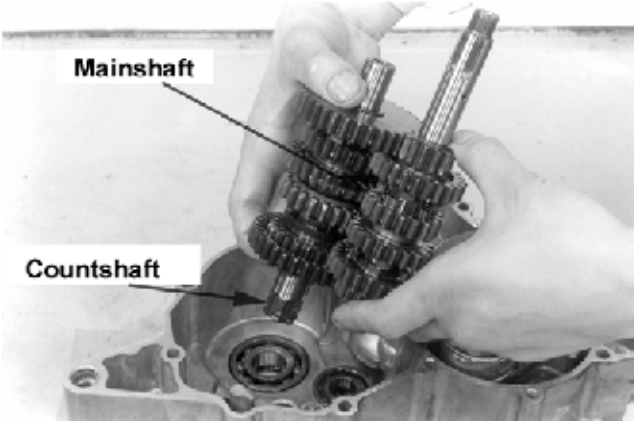
- Mainshaft
- Countershaft
- Each gear
- Mainshaft bearing
- Countershaft bearing
- Shift drum bearing



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

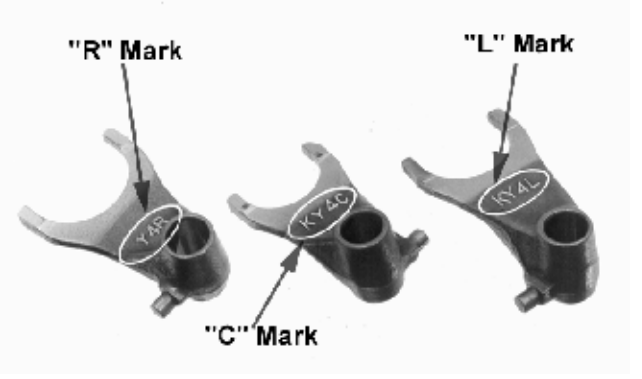
NOTE

- **Do not forget to install the transmission end washer.**
- **When mainshaft and countershaft installation, be careful not to damage the countershaft oil seal**

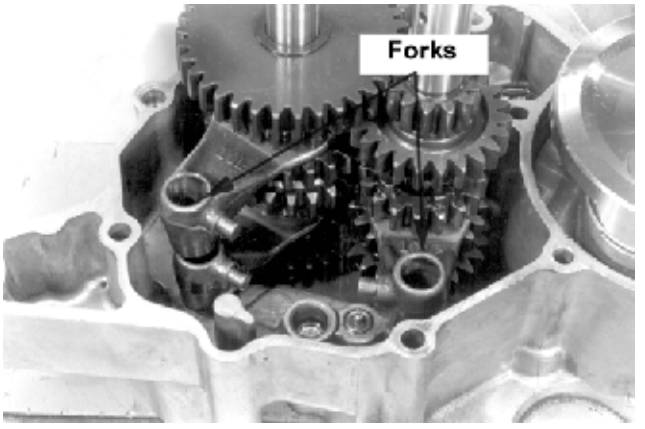


NOTE

- **Each shift fork has an identification mark; 'R' is for the right shift fork, 'L' is for the left shift fork and 'C' is for the center shift fork.**



Install the shift forks to the grooves of the shifter gear with their marks facing up (right crankcase side).



Install the shift drum aligning the guide pins on the shift fork with the guide grooves of the shift drum.

Apply transmission oil to the shift fork shaft.
Install the shift fork shaft to the right crankcase.

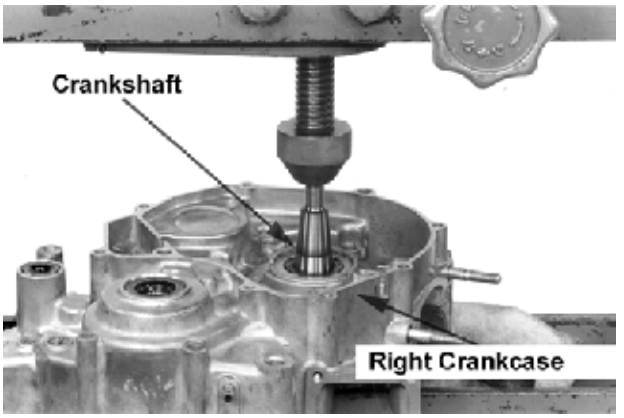
After installing, check for smooth transmission operation.
Assemble the crankcase (page 12-17).

CRANKSHAFT

REMOVAL

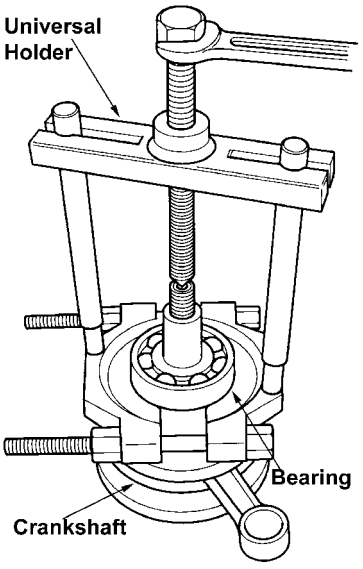
Separate the crankcase (page 12-4).
Remove the transmission (page 12-4).

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



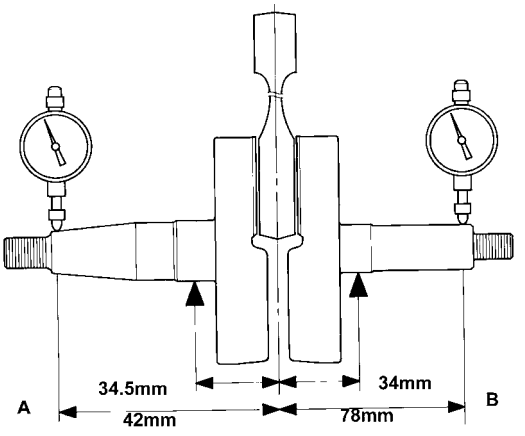
If the crankshaft bearing is removed with the crankshaft, remove the bearing using the bearing puller and discard the bearing.

TOOL:
Universal bearing puller 07631-0010000



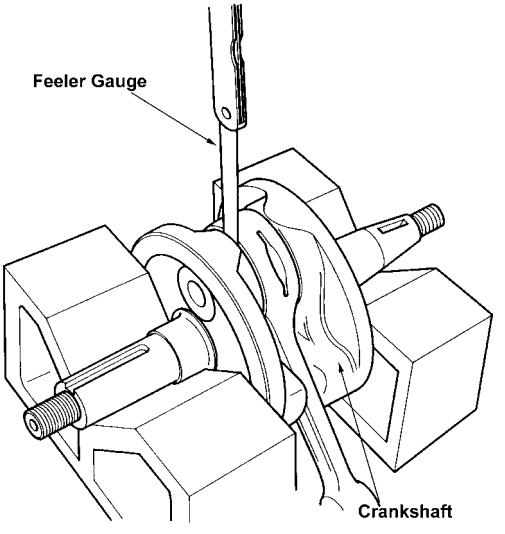
INSPECTION

Place the crankshaft on a stand or V-brocks. Set the indicator on the crankshaft as shown.
Rotate the crankshaft two revolutions and read the runout.



SERVICE LIMITS:
A: 0.05 mm (0.002 in)
B: 0.03 mm (0.001 in)

Measure the side clearance between the connecting rod big end and crank weight using a feeler gauge.



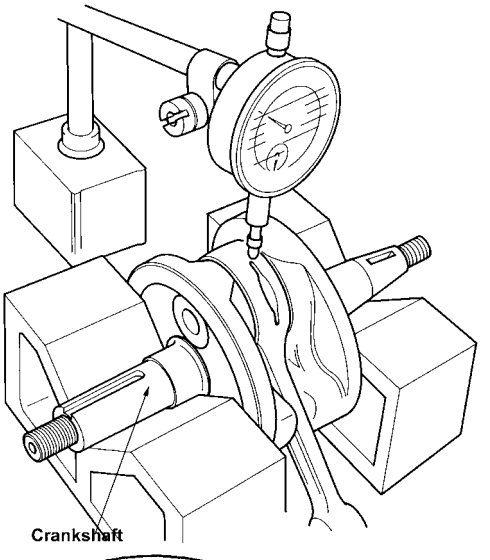
STANDARD: 0.3 - 0.7 mm (0.012 - 0.028 in)

Measure the radial clearance in both X and Y directions.

SERVICE LIMIT: mm (in)

INSTALLATION

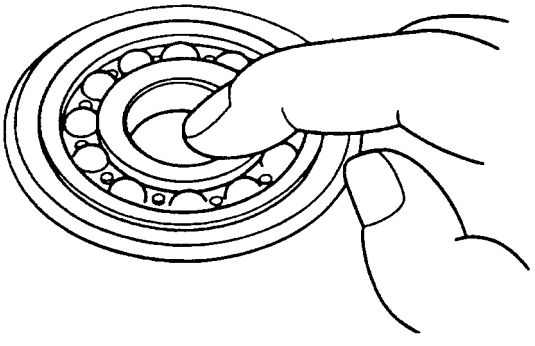
Install the crankshaft (page 12-17).



CRANKCASE BEARING REPLACEMENT

Remove the followings:
- Crankshaft (page 12-10)
- Transmission (page 12-4)

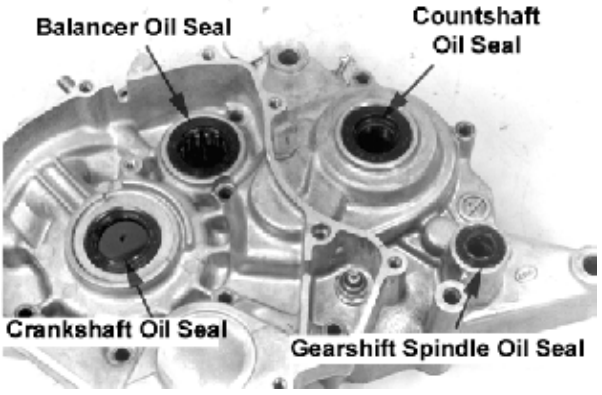
Turn the inner race of each bearing with your finger. The bearings should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the crankcase.



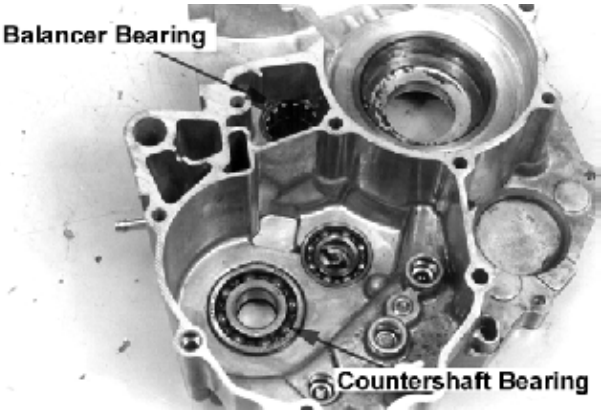
Replace the bearings if the races does not turn smoothly and quietly, or if they fit loosely in the crankcase.

LEFT CRANKCASE BEARING REPLACEMENT

Remove the crankshaft oil seal, balancer oil seal, gearshift spindle oil seal and countershaft oil seal.

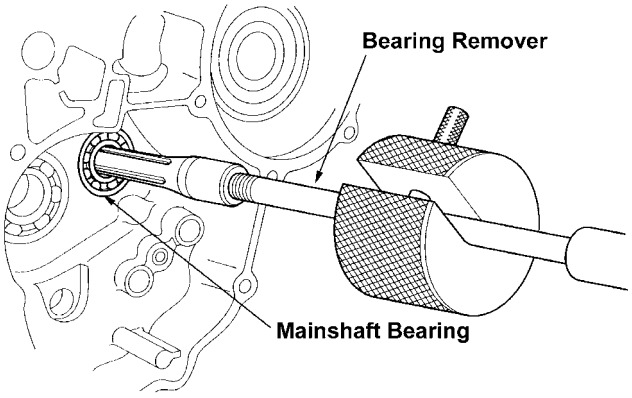


Remove the balancer bearing and countershaft bearing out of the left crankcase.



Remove the mainshaft bearing out of the left crankcase using special tools.

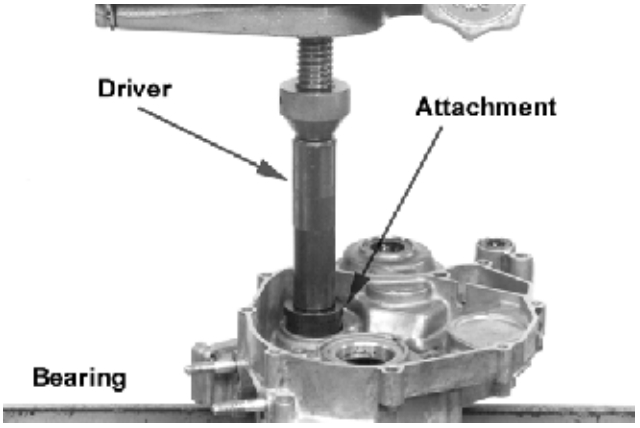
TOOLS..
Remover head, 16 mm
07936-MK50100
Remover shaft, 15 mm
07936-KC10100
Sliding weight
07741-0010201



Clean the crankcase with high flash point solvent and check for crack or damage.

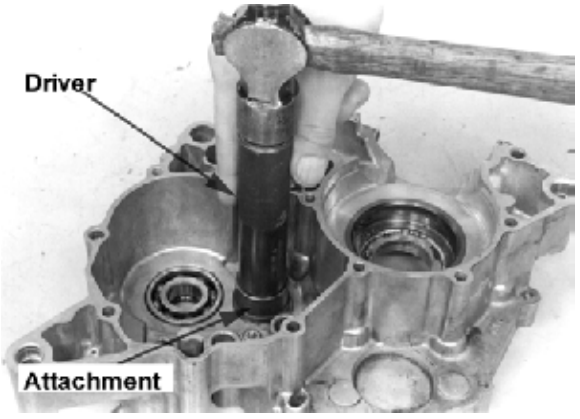
BALANCER BEARING
Apply transmission oil to the new needle bearing.
Press the new needle bearing into the left crankcase using the following special tools.

TOOLS:
Driver
07749-0010000
Attachment 35 X 40 mm
07746-0010200



NOTE
- **Install in the new needle bearing squarely with the marking side facing up.**

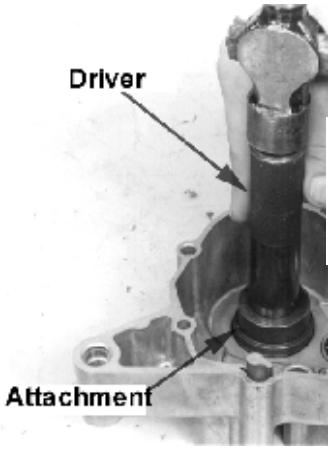
MAINSHAFT BEARING
Apply transmission oil to the new bearing.
Install the new bearing to the left crankcase using the following special tools.

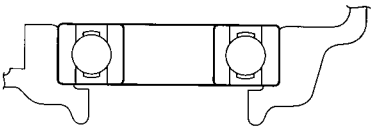


TOOLS:
Driver
07749-0010000
Attachment, 42 X 47 mm
07746-0010300

NOTE
- **Drive in the new bearings squarely with the marking side facing up.**

COUNTERSHAFT BEARING
Apply transmission oil to the new bearing.
Install the new bearing to the left crankcase using the following special tools.

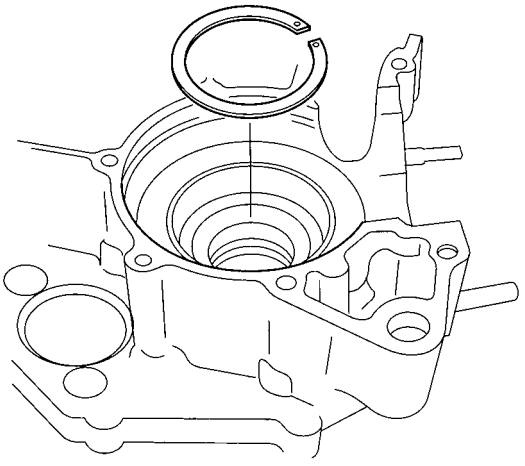




TOOLS:
Driver
07749-0010000
Attachment, 42 X 47 mm
07746-0010300
Pilot, 20 mm
07746-0040500

NOTE
- **Drive in the new bearing squarely with the marking side facing up.**

CRANKSHAFT BEARING



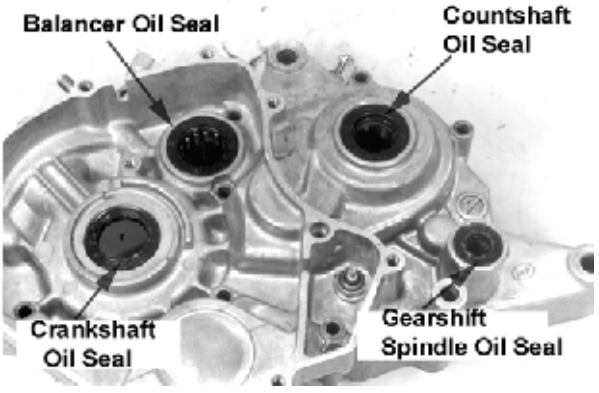
NOTE
- **At crankcase bearing installation, install the bearing to the specified depth from the crankcase mating surface.**
- **Crankshaft bearing must be installed in a parallel manner.**

Install the snap ring into the left crankcase groove.
Apply transmission oil to the new bearing.
Install the new bearing into the left crankcase so that the bearing outer surface is
25.55 – 25.60 mm 1.006-1.008 in) below the mating surface of the left crankcase).

TOOLS:
Driver
07749-0010000
Attachment, 62 X 67 mm
07746-0010500
Pilot, 25 mm
07746-0040600

NOTE
- **Drive in the new bearing squarely with the marking side facing up.**

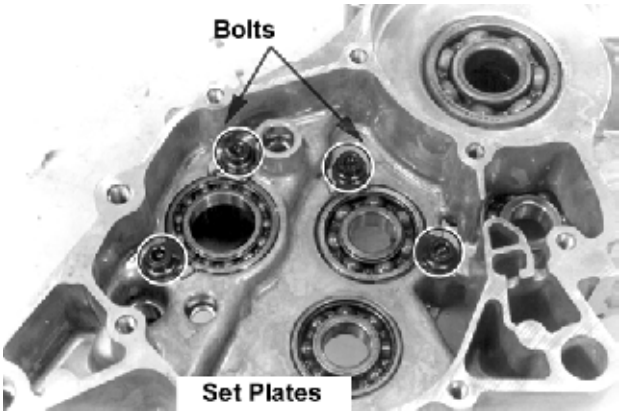
Install the new balancer oil seal, gearshift spindle oil seal and countershaft oil seal.



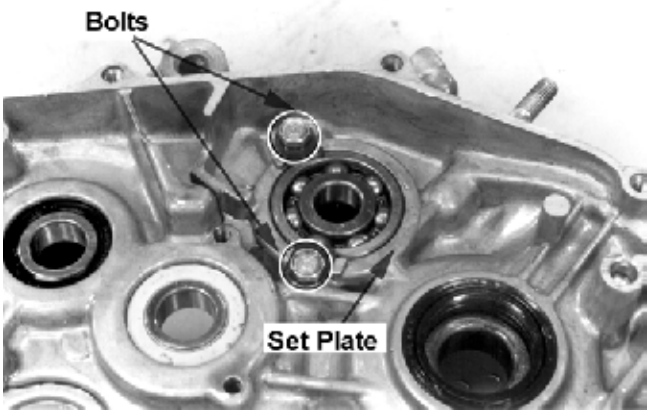
RIGHT CRANKCASE BEARING REPLACEMENT

Remove the crankshaft oil seal.

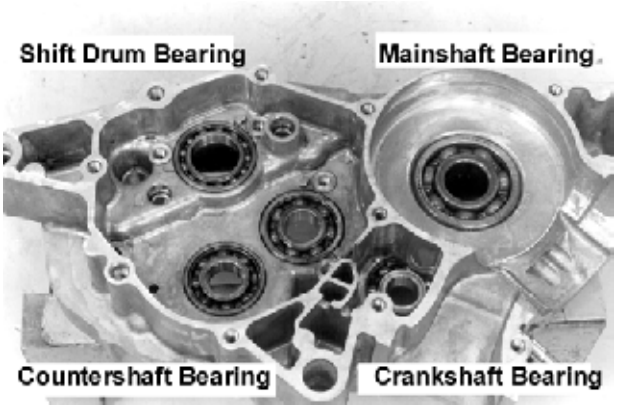
Remove the bolts, shift drum bearing set plate and mainshaft bearing set plate.



Remove the bolts, balancer shaft bearing set plate.



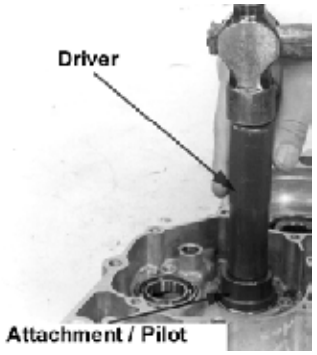
Remove the balancer bearing, mainshaft bearing countershaft bearing, shift drum bearing and crankshaft bearing out of the right crankcase.

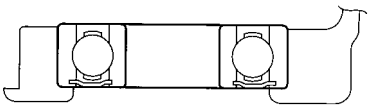


Mainshaft Bearing
Install the new bearing to the right crankcase using the following tools.

TOOLS:
Driver
07749-0010000
Attachment, 42 x 47mm
07746-0010300
Pilot, 17mm
07746-0040400

NOTE:
- **Drive in the new bearing squarely with the marking side facing up.**



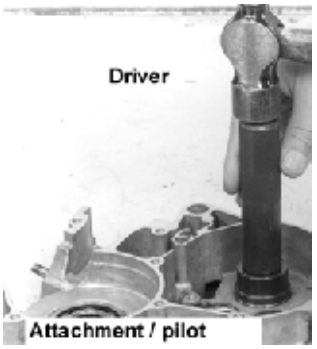


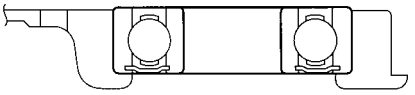
Bearing

Countershaft Bearing
Install the new bearing to the right crankcase using the following special tools.

TOOLS:
Driver
07749-0010000
Attachment, 42 x 47mm
07746-0010300
Pilot, 17mm
07746-0040400

NOTE:
- **Drive in the new bearing squarely with the marking side facing up.**

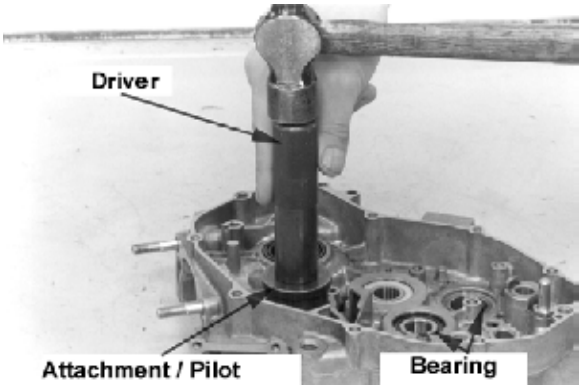




Balancer Bearing
Install the new bearing to the right crankcase using the following special tools.

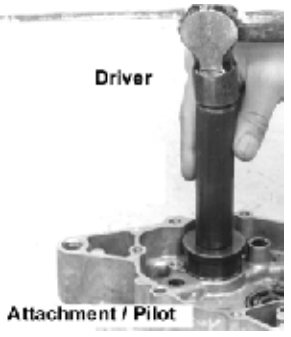
TOOLS:
Driver
07749-0010000
Attachment, 42 x 47mm
07746-0010300
Pilot, 17mm
07746-0040400

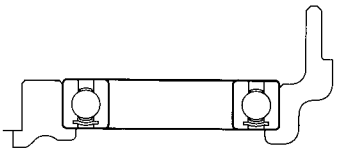
NOTE:
- **Drive in the new bearing squarely with the marking side facing up.**



SHIFT DRUM BEARING

Install the new bearing to the right crankcase using the following special tools.



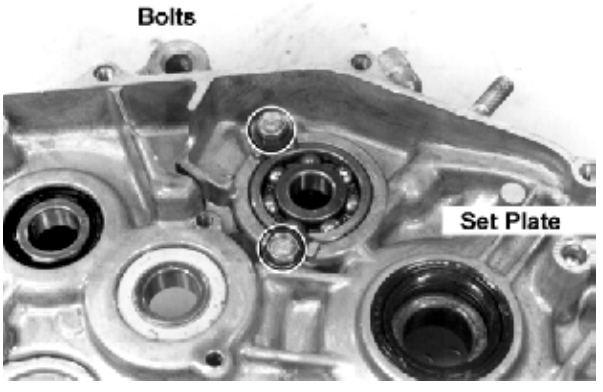


TOOLS:

Driver
07749-0010000
Attachment, 42 X 47 mm
07746-0010300
Pilot, 25 mm
07746-0040600

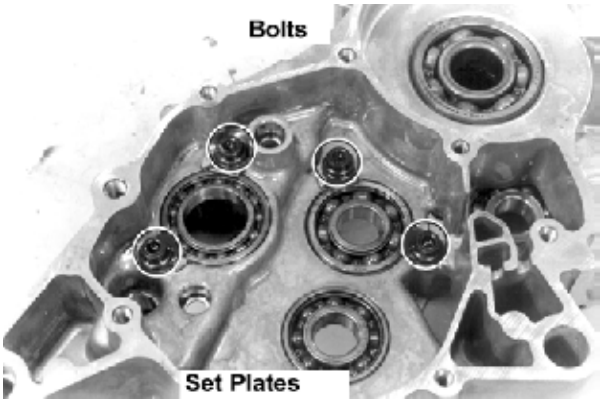
NOTE

- **Drive in the new bearing squarely with the marking side facing up.**



Clean and apply locking agent to the bolt threads. Install the balancer shaft bearing set plate.
Install and tighten the bolts to the specified torque.

TORQUE: 10 N.m (1.0 kgf.m, 7 lbf.ft)



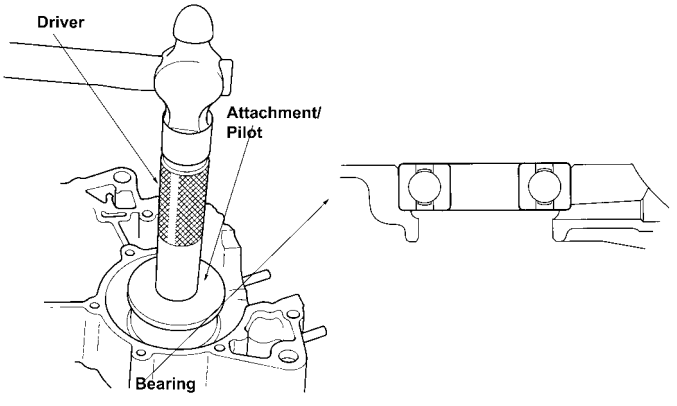
Clean and apply locking agent to the bolt threads.
Install the mainshaft bearing set plate and shift drum bearing set plate.
Install and tighten the bolts to the specified torque.

TORQUE: 10 N.m (1.0 kgf.m, 7 tbfft)

CRANKSHAFT BEARING

NOTE

- **At crankcase bearing installation, install the bearing to the specified depth from the crankcase mating surface.**
- **Crankshaft bearing must be installed in a parallel manner.**



Apply transmission oil to the new bearing.
Install the new bearing into the right crankcase so that the bearing outer surface is 26.00-26.05 mm(1.024-1.026 in)below them at

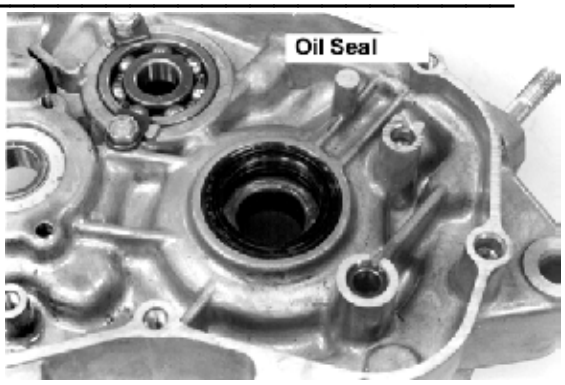
TOOLS:

Driver	07749-0010000
Attachment, 52 X 55 mm	07746-0010400
Pilot, 22 mm	07746-0041000

NOTE

- **Drive in the new beating squarely with the marking side facing up.**

Install the new crankshaft oil seal (page 12-18).

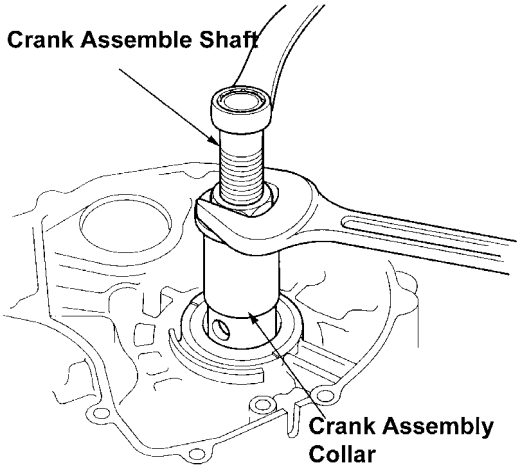


CRANKCASE ASSEMBLY

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

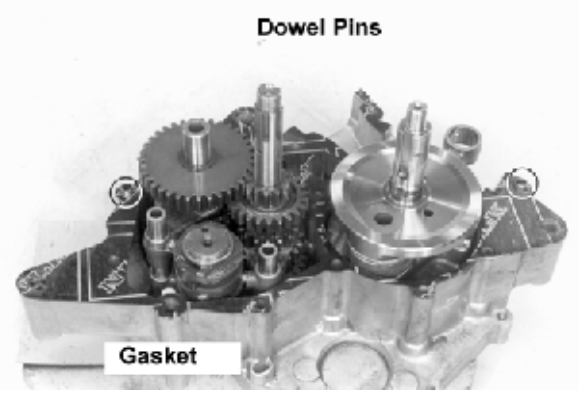
NOTE
If there is minor roughness or irregularities on the crankcase mating surfaces, dress them with an oil stone.
Before assembly, lubricate the transmission bearings with the clean transmission oil.

Install the crankshaft into the left crankcase using the special tools.



TOOLS:
Crank assembly collar 07964-MB00200
Crank assembly shaft 07965-VM00200

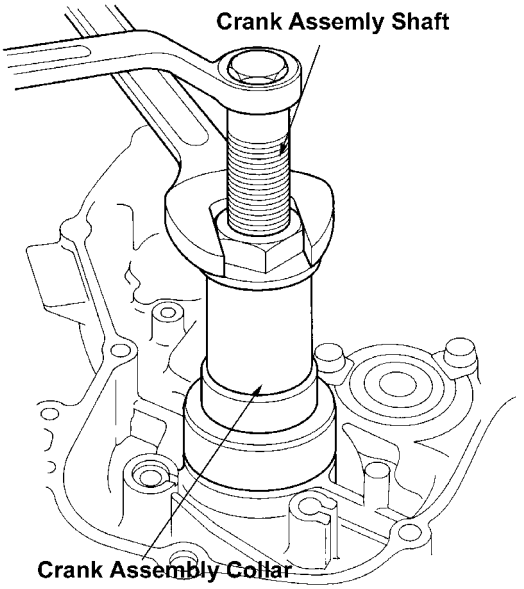
Install the transmission (page 12-9).
Install the dowel pins and new gasket.



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

TOOLS:

Crank assembly collar	**07964-MB00200**
Crank assembly shaft	**07965-VM00200**



Pack grease into the cavity between the left crankshaft oil seal lips.

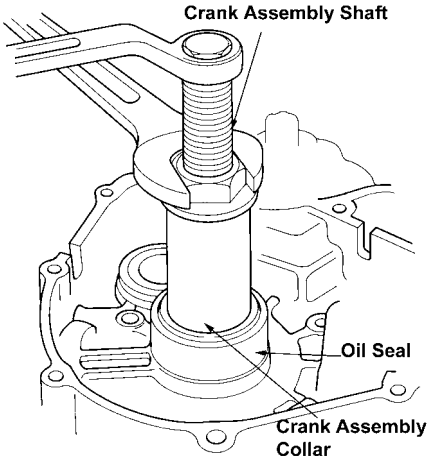
Press the left crankshaft oil seal into the left crankcase using the crank case assembly tool.

TOOLS:

Crank assembly collar	**07964-MB00200**
Crank assembly shaft	**07965-VMOO200**

- **NOTE**

Install the crankshaft oil seal into the left crankcase to ////////////////////// before the surface of the left crankcase.



Pack grease into the cavity between the right crankshaft oil seal lips.

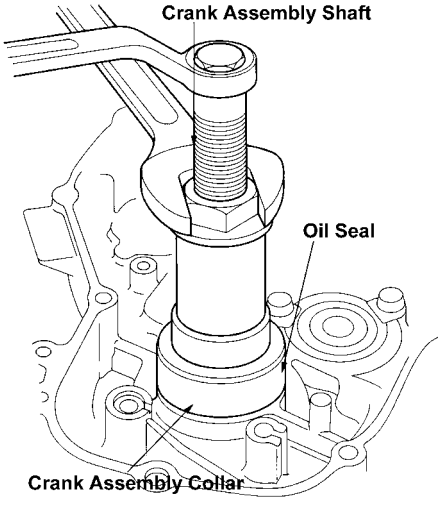
Press the right crankshaft oil seal into the right crankcase using the crank case assembly tool.

TOOLS:

Crank assembly collar	**07964-MB06200**
Crank assembly shaft	**07965-VMOO200**

NOTE

- **Install the crankshaft oil seal into the right crankcase to ?? ?? below the surface of the right crankcase.**

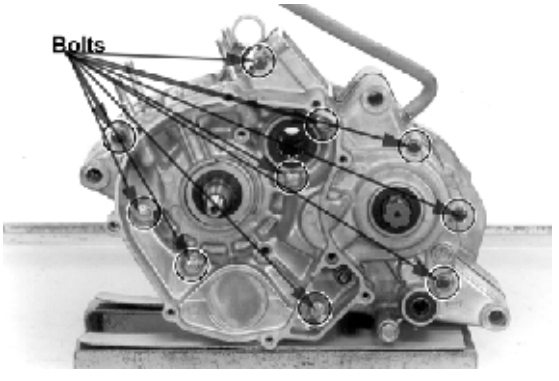


Clean and apply a locking agent to the crankcase bolt threads as shown.

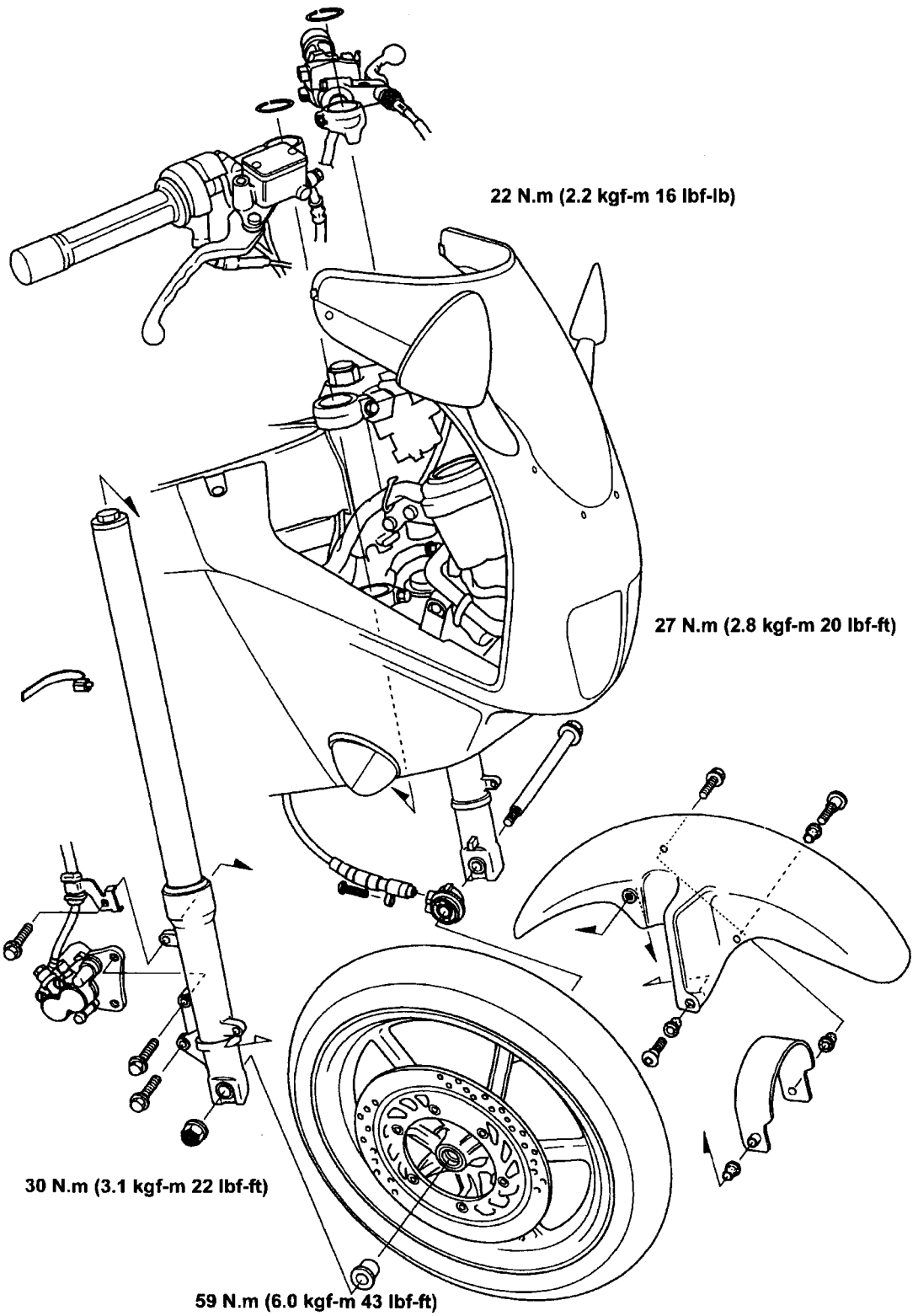
Install and tighten the crankcase bolts in a crisscross pattern in several steps.

TORQUE: 10 N.m (1.0 kgf.m, 7 lbf. ft)

Install the engine to the frame (Section 7).



Front Wheel / Suspension/Steering



SERVICE INFORMATION

GENERAL

Warning

- **A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean contaminated disc with a high quality brake degreasing agent.**
- **Riding on damaged rims or spokes impairs safe operation of the vehicle.**
- **Wheel balance directly affects the stability, handling and overall safety of the motorcycle. Carefully check balance before reinstalling the wheel**

- When servicing the front wheel, support the motorcycle securely using a safety stand or hoist.
- Do not operate the brake lever after removing the caliper and front wheel. To do so will cause difficulty in fitting the brake disc between the brake pads.
- Use only tires marked 'TUBELESS' and tubeless valves on rims marked 'TUBELESS TIRE APPLICABLE'.
- Refer to Section 15 for brake system information.

SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Minimum tire tread depth			1.5 (0.06)
Cold tire pressure	Driver only	200 kPa (2.00 kgf/cm^2, 29 psi)	
	Driver and passenger	200 kPa (2.00 kgf/cm^2, 29 psi)	
Front axle runout			0.2 (0.008)
Front wheel rim run out	Radial		2.0 (0.08)
	Axial		2.0 (0.08)
Wheel balance weight		Max 60 g	
Fork spring free length		310.4 (12.22)	304.2 (11.98)
Fork spring installed direction		Tapered side facing down	
Fork tube runout			0.2 (0.008)
Recommended fork oil		Fork fluid	
Fork oil level		125 (4.9)	
Fork oil capacity		322 cm^3(10.9 US oz, 11.31 Imp oz)	
Steering bearing preload		0 - 1.5 Nm (0.1 – 0.15 kgf.m)	

Front Wheel / Suspension/Steering

TORQUE VALUES

Front axle nut	59 Nm (6.0 kgf*m, 43 lbf*ft)	U-nut
Front brake disc bolt	42 Nm (4.3 kgf*m, 31 lbf*ft)	Apply a locking agent to the threads
Steering stem nut	88 8m (9.0kgf*m, 65 lbf*ft)	
Steering top thread	1 Nm (0.1 kgf*m, 0.7 lbf*ft)	
Top bridge pinch bolt	22 Nm (2.2 kgf*m, 16 lbf*ft)	
Bottom bridge pinch bolt	27 Nm (2.8 kgf*m, 20 lbf*ft)	
Fork cap	22 Nm (2.2 kgf*m, 16 lbf*ft)	
Fork socket bolt	20 Nm (2.0 kgf*m, 14 lbf*ft)	Apply a locking agent to the threads
Front caliper bracket bolt	30 Nm (3.1 kgf*m, 22 lbf*ft)	Apply a locking agent to the threads

TOOLS

Attachment, 42 X 47 mm	07746-0010300
Pilot, 15 mm	07746-0040300
Driver	07749-0010000
Bearing remover shaft	07746-0050100
Bearing remover head, 15 mm	07746-0050400
Fork seal driver	07747-0010100
Fork seal driver attachment	07947-KA20200
Steering stem socket	07916-3710101
Driver attachment	07946-3290000
Steering stem driver	07946-4300001

TROUBLESHOOTING

Hard steering
Steering top thread too tight
Faulty steering head bearings
Damaged steering head bearings
Faulty tire
Insufficient tire pressure

Steers to one side or does not track straight
Bent fork
Faulty steering head bearings
Damaged steering head bearings
Unevenly adjusted right and left forks
Bent frame
Worn wheel bearings
Bent front axle
Worn swingarm pivot component

Front wheel wobbling
Bent rim
Worn wheel bearings
Faulty tire
Unbalanced tire and wheel

Soft Suspension
Weak fork spring
Low fluid level In fork
Insufficient fluid in fork
Low tire pressure

Hard suspension
High tire pressure
Bent fork
High fluid level in fork
Incorrect fluid weight
Clogged fluid passage

Front Suspension Noisy
Loose fork fasteners
Insufficient fluid in fork

Wheel turns hard
Faulty wheel bearings
Bent front axle
Brake drug
Faulty speedometer gear

HANDLEBAR

RIGHT HANDLEBAR REMOVAL

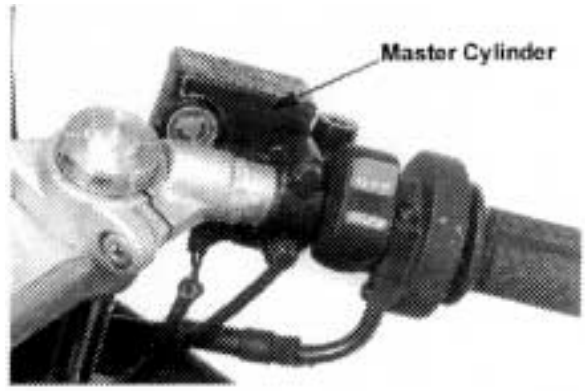
Remove the master cylinder (page 15-11).

CAUTION

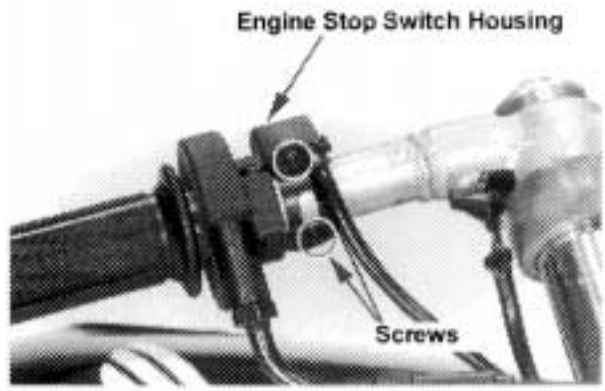
- **Do not disconnect the hydraulic line.**

NOTE

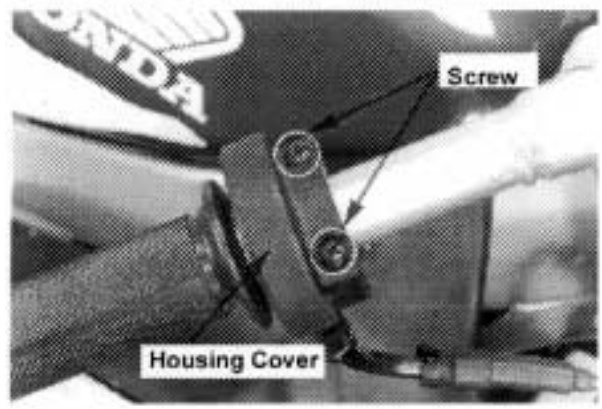
- **The master cylinder upright to prevent air from entering the hydraulic system.**



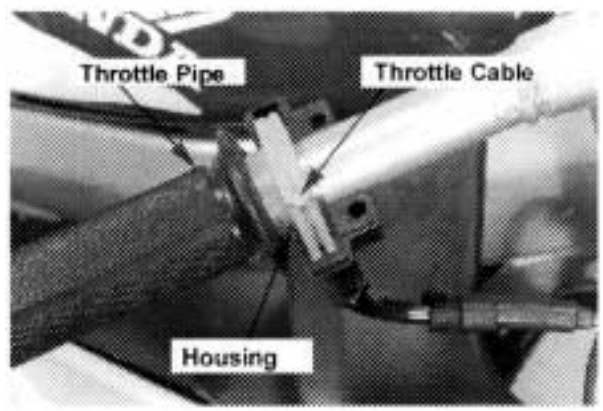
Remove the screws and engine stop switch housing.



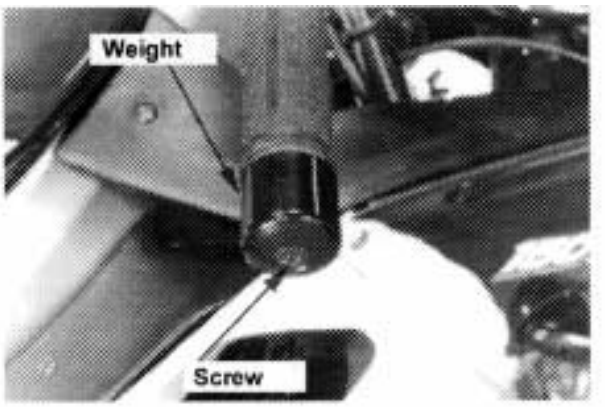
Remove the screws and throttle housing cover from the handlebar.



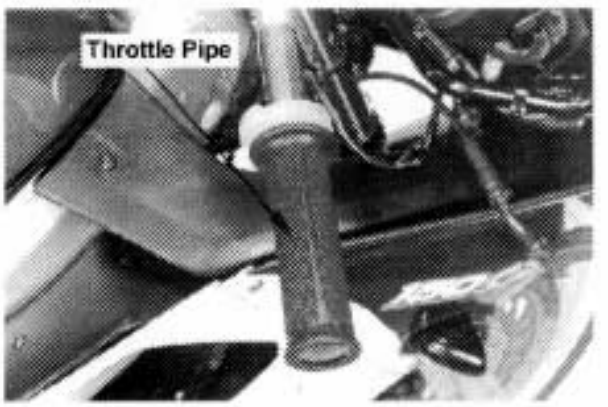
Remove the throttle, cable guide and disconnect the throttle cables from the throttle pipe.
Remove the throttle housing from the handlebar.



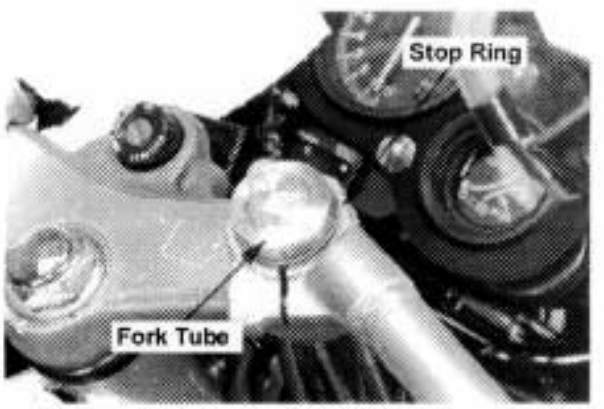
Remove the screw, handlebar weight and throttle grip from the handlebar.



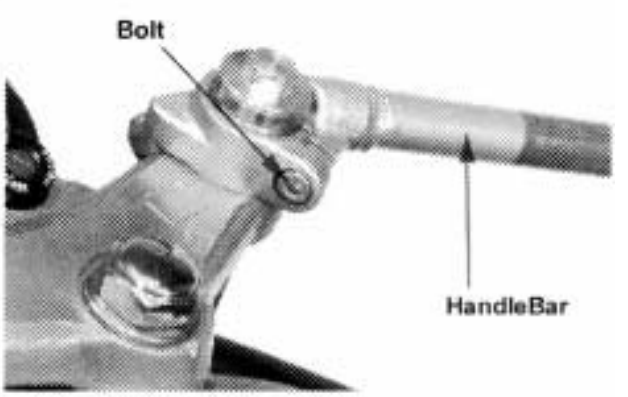
Remove the throttle pipe from the handlebar.



Remove the stop ring from the groove on the fork tube.

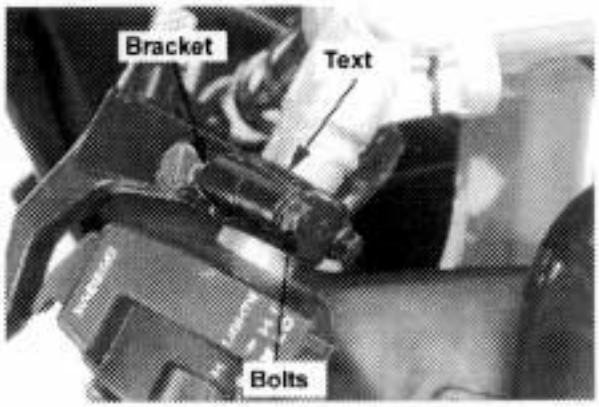


Loosen the handlebar pinch bolt and remove the right handlebar.

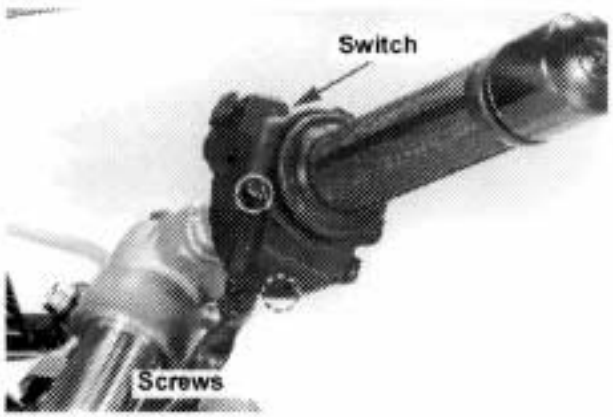


LEFT HANDLEBAR REMOVAL

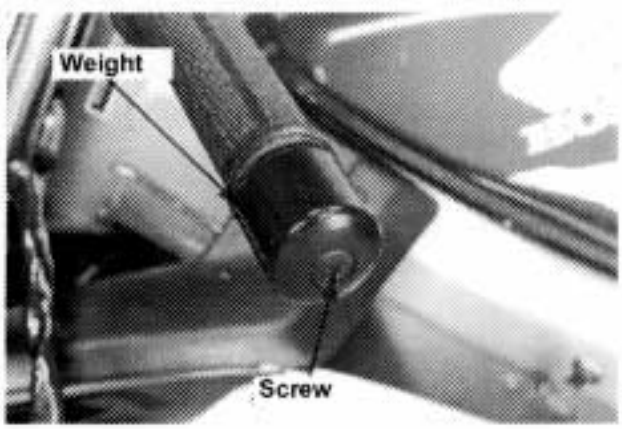
Remove the bolts and clutch lever bracket holder from the left handlebar. Remove the clutch lever bracket from the left handlebar.



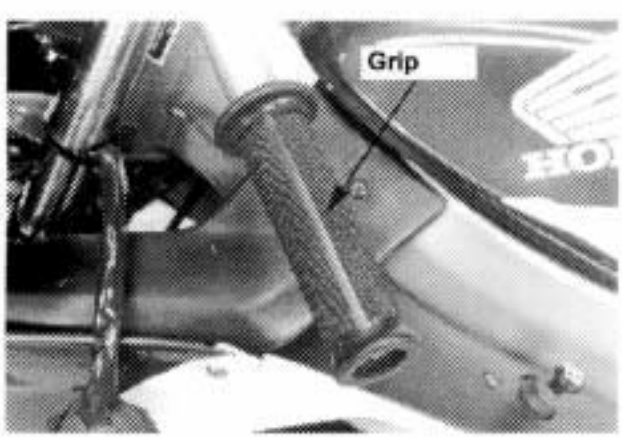
Remove the screws and left handlebar switch from the left handlebar.



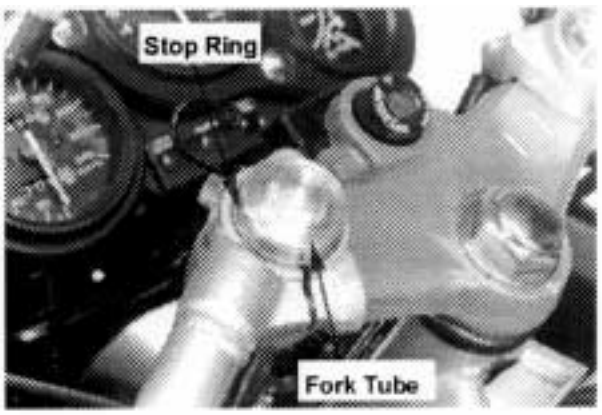
Remove the screw and handlebar weight.



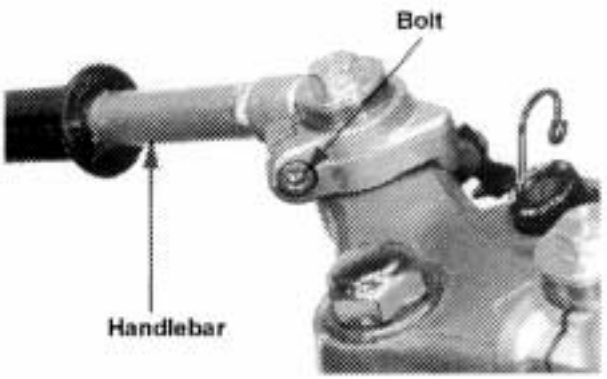
Remove the left handlebar grip from the handlebar.



Remove the stop ring from the groove on the fork tube.

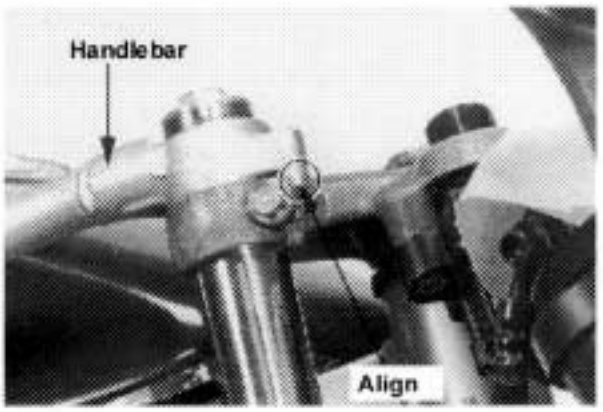


Loosen the handlebar pinch bolt and remove the left handlebar.

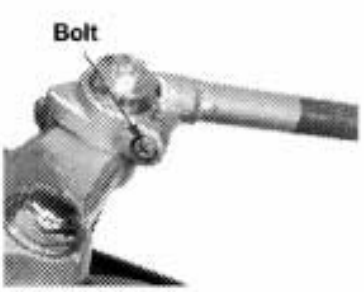


RIGHT HANDLEBAR INSTALLATION

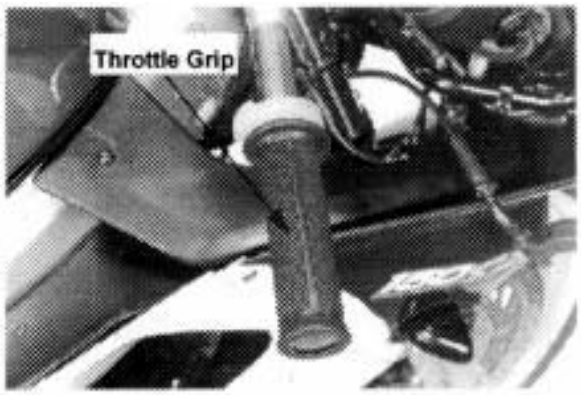
Install the right handlebar onto the fork tube, aligning the stopper on the handlebar with the groove in the top bridge.



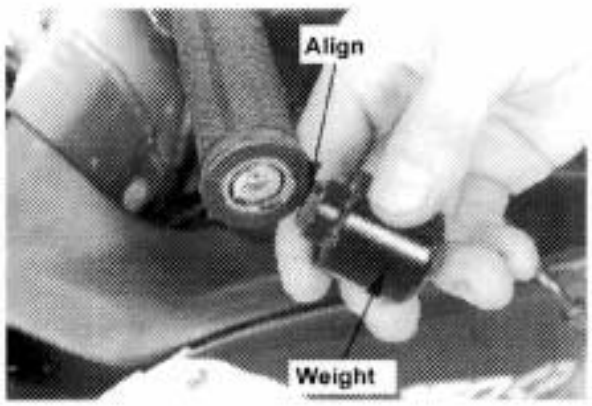
Install the stop ring to the groove on the fork tube.
Tighten the handlebar pinch bolt securely.



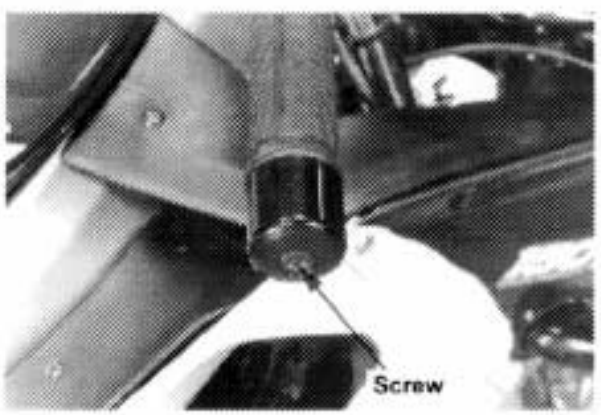
Apply grease to the throttle grip inner surface and right handlebar sliding surface. Install the throttle grip.



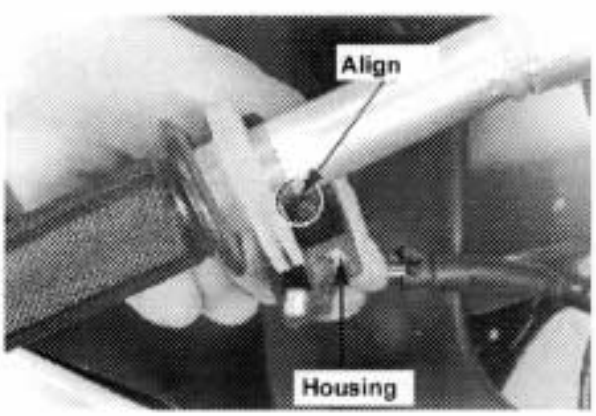
Install the handlebar weight to the handlebar aligning the tab on the handlebar weight with the slit of the handlebar.



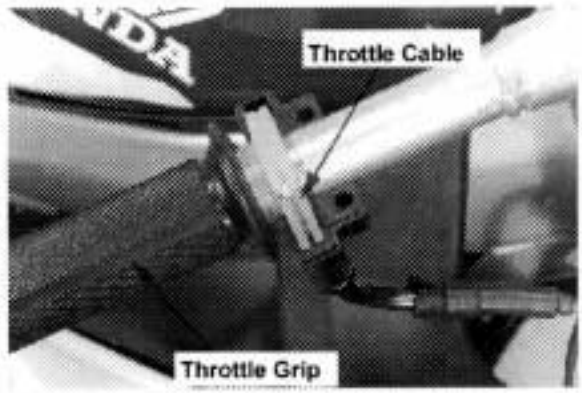
Install and tighten the new screw securely.



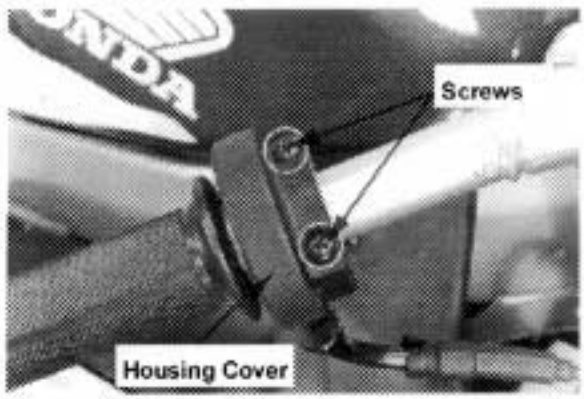
Install the throttle housing, aligning the pin on the housing with the hole in the handlebar.



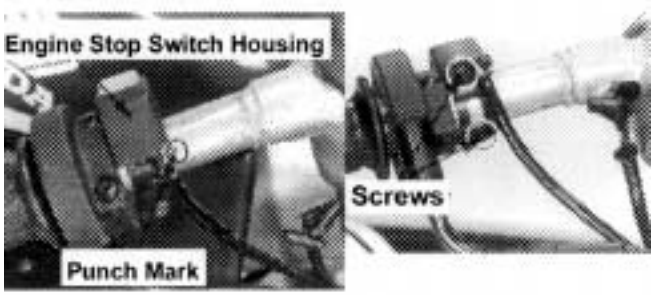
Apply grease to the throttle cable ends and connect them to the throttle grip.



Install the throttle housing cover to the throttle housing.
Install and tighten the forward screw first, then tighten the rear screw securely.

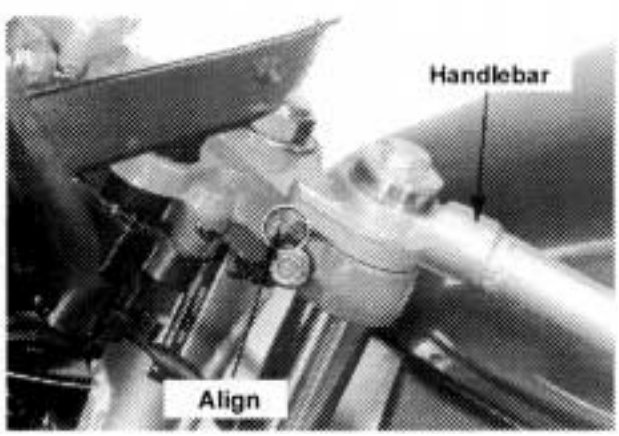


Install the engine stop switch, aligning the its mating surface with the punch mark on the handlebar.
Tighten the forward screw first, then tighten the rear screw securely.

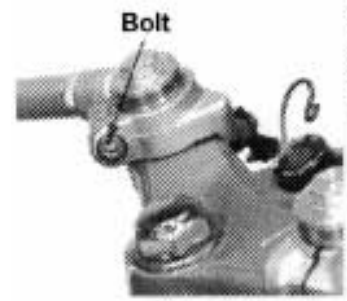


Install the master cylinder (page 15-16).

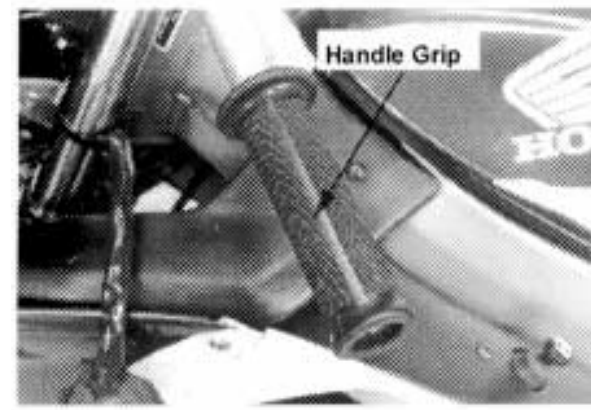
LEFT HANDLEBAR INSTALLATION
Install the right handlebar onto the fork tube, aligning the stopper on the Handlebar with the grove in the top bridge.



Install the stop ring to the groove on the fork tube. Tighten the handlebar pinch bolt securely.

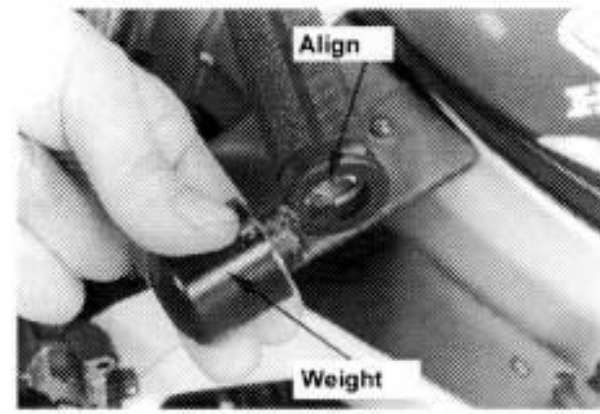


Clean the inside surface of the left handlebar grip and the outside surface of the handlebar.
Apply Honda Bond A or equivalent to the inside surface of the left handlebar grip and outside surface of the handlebar. Wait 3 - 5 minutes and install the grip.
Rotate the grip for even application of adhesive.

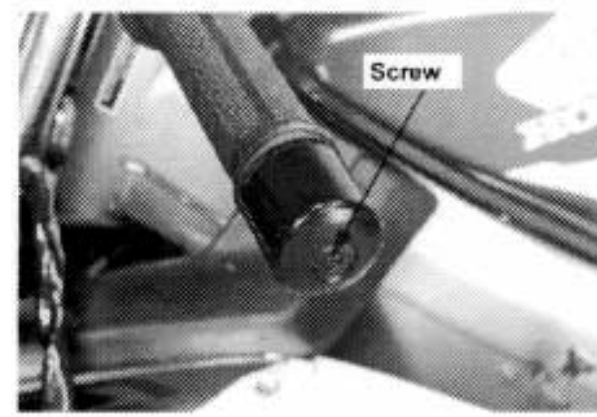


NOTE
- **Allow the adhesive to dry for an hour before using.**

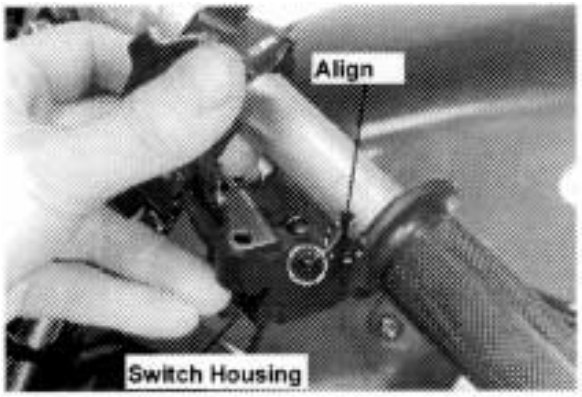
Install the handlebar weight to the handlebar aligning the tab on the handlebar weight with the slit of the handlebar.



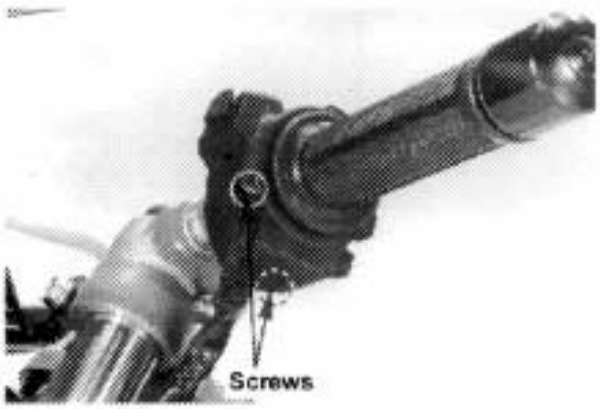
Install and tighten the new screw securely.



Install the left handlebar switch, aligning the pin on the housing with the hole in the handlebar.

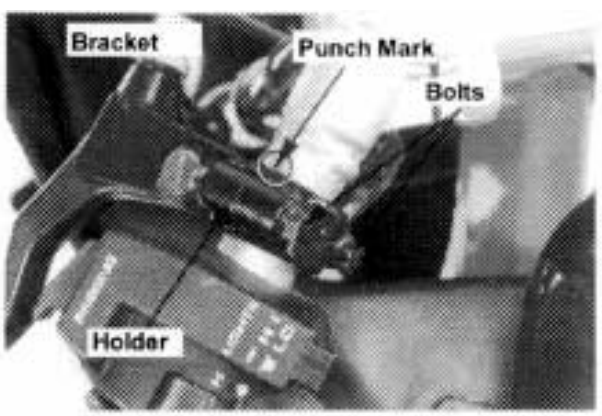


Tighten the forward screw first, then tighten the rear screw.



Install the clutch lever bracket and holder with the "UP" mark facing up.

Align mating surface of the clutch lever bracket holder with the punch mark on the handlebar.
Tighten the upper bolt first, then tighten the lower bolt securely.



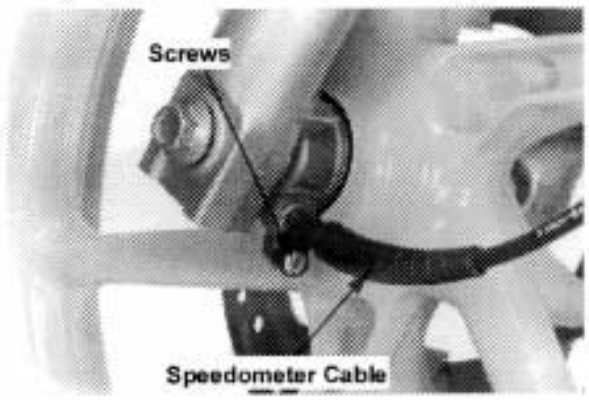
FRONT WHEEL

Warning

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

REMOVAL

Remove the screw and disconnect the speedometer cable.

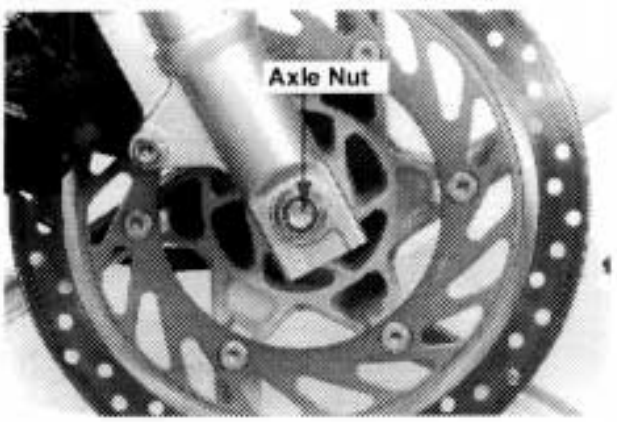


Loosen the front axle nut.

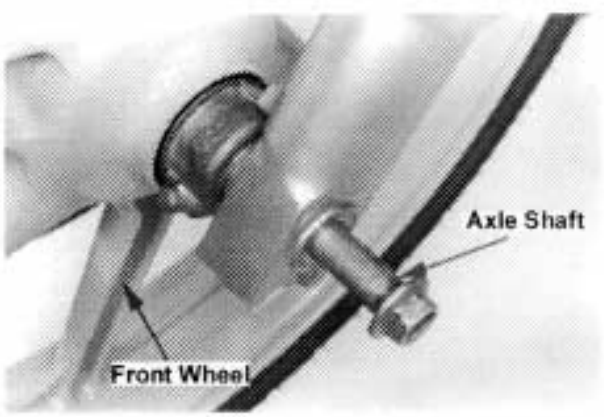
NOTE
- Only loosen the front axle nut.

Support the motorcycle securely using a safety stand or hoist.

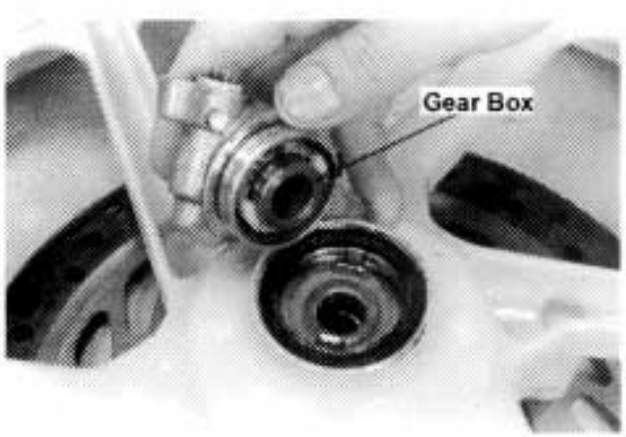
Remove the front axle nut.



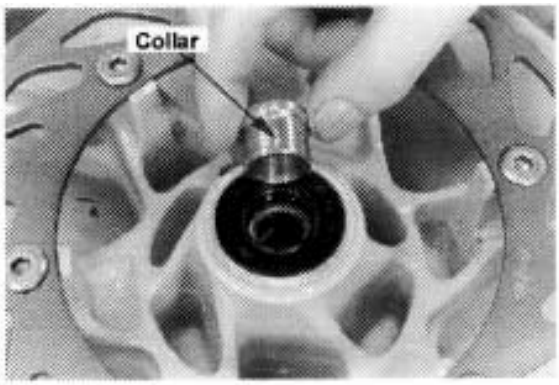
Remove the front axle shaft and front wheel.



Remove the speedometer gear box from the left side of the front wheel.



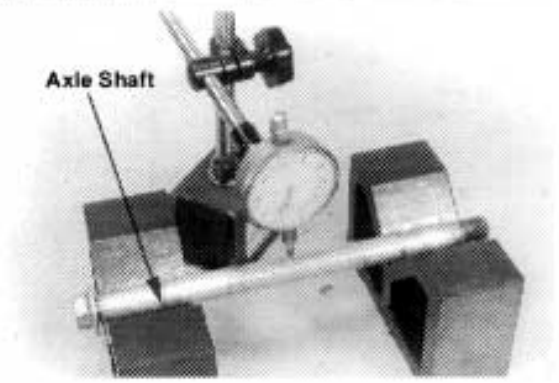
Remove the side collar from the right side of the front wheel.



INSPECTION

AXLE

Set the front axle shaft in V-blocks and *measure the runout.*
Turn the front axle shaft and measure using a dial indicator.
Actual runout is ½ the total indicator reading.

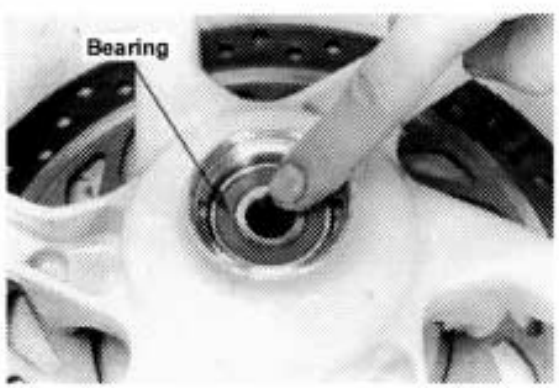


SERVICE LIMIT: 0.2 mm (0.008 in)

WHEEL BEARING

Turn the inner race of each bearing with your 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 and quietly, if they fit loosely in the hub.



NOTE:
- **Replace the wheel bearings in pairs.**

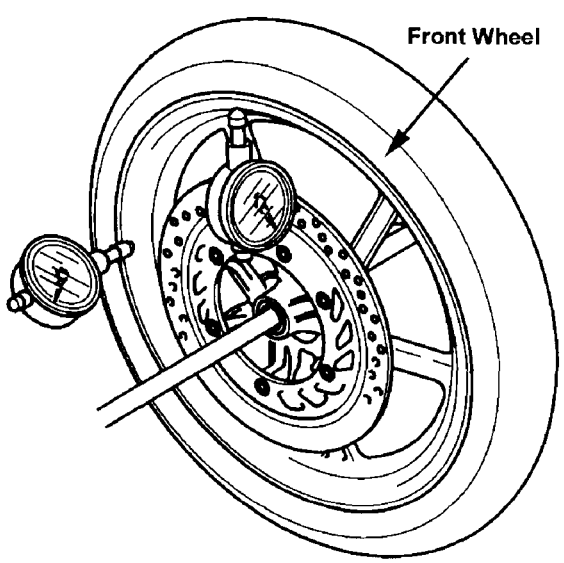
WHEEL RIM

Check the rim runout by placing the wheel in a truing stand.
Spin the wheel slowly and read the runout using a dial indicator.
Actual runout is ½ the total indicator reading.

SERVICE LIMITS:

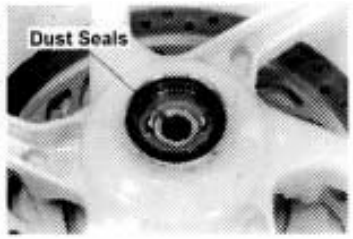
Radial:	**2.0 mm (0.08 in)**
Axial:	**2.0 mm (0.08 in)**

Check the spokes for loose or damage.

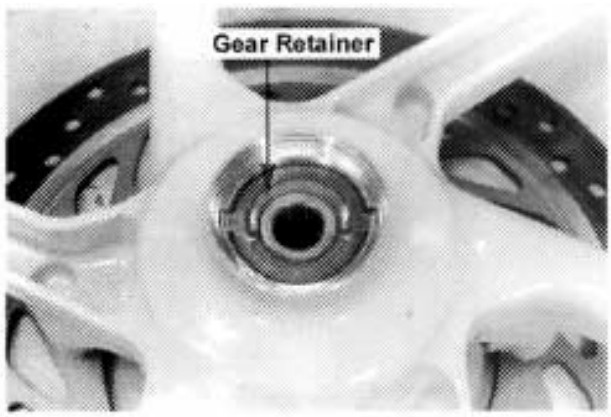


DISASSEMBLY

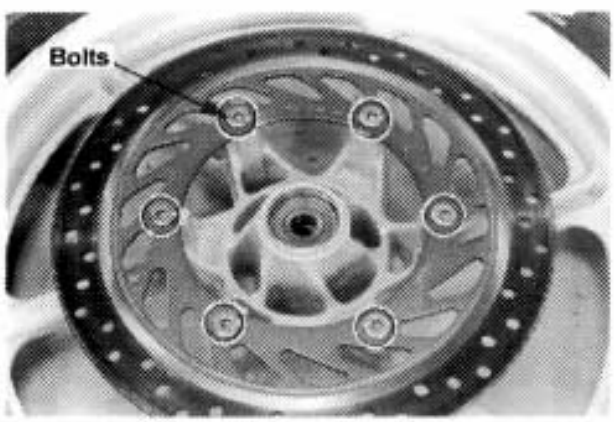
Remove the right and left dust seals from the each side of the front wheel.



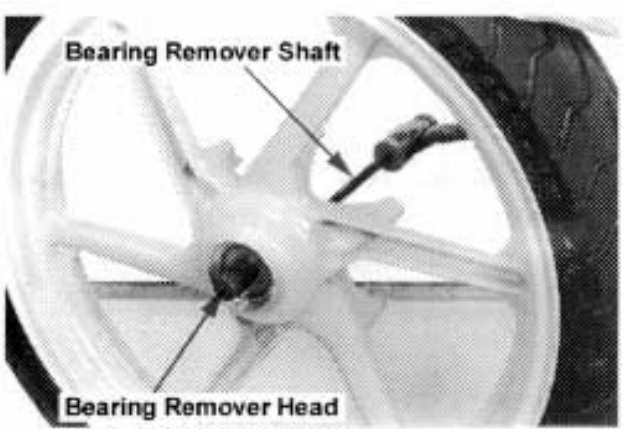
Remove the speedometer gear retainer.



Remove the brake disc mounting bolts and brake disc.



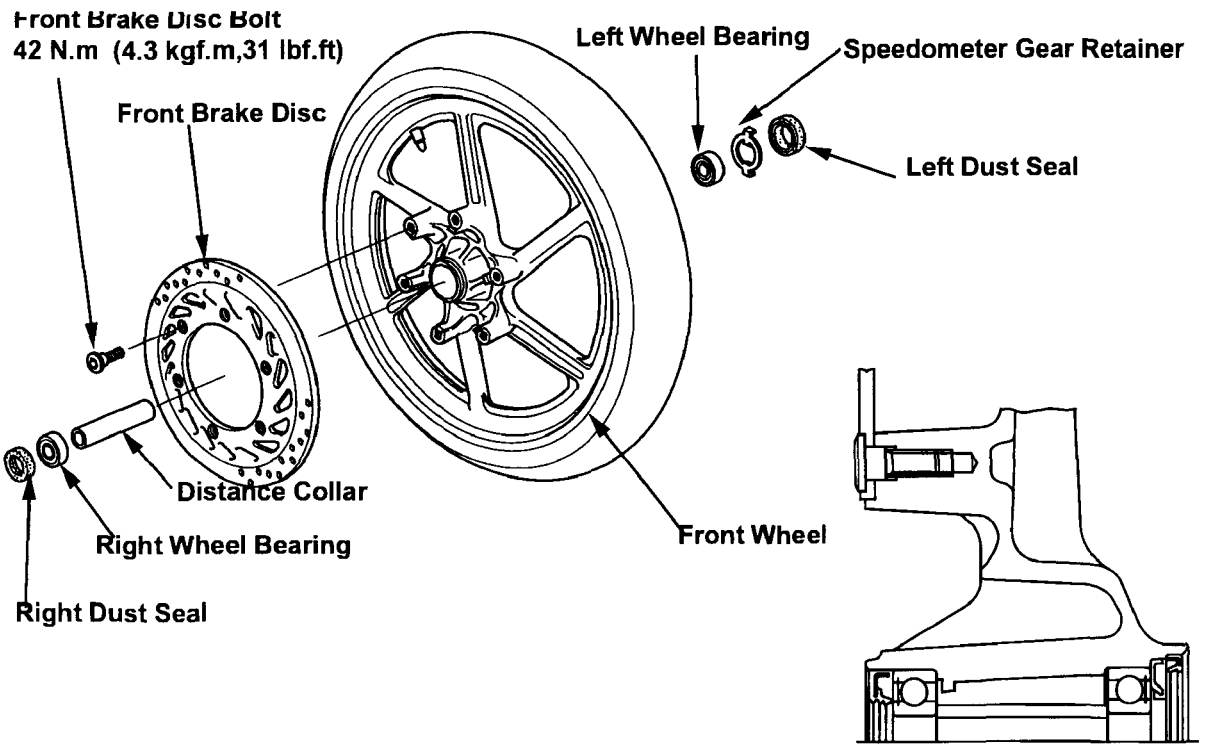
Install the bearing remover head into the bearing.
From opposite side install the bearing remover shaft and
Drive the bearing out of the wheel hub.
Remove the distance collar and drive out the other bearing.



TOOLS:
Bearing remover shaft
07746-0050100
Bearing remover head, 15 mm
07746-0050400

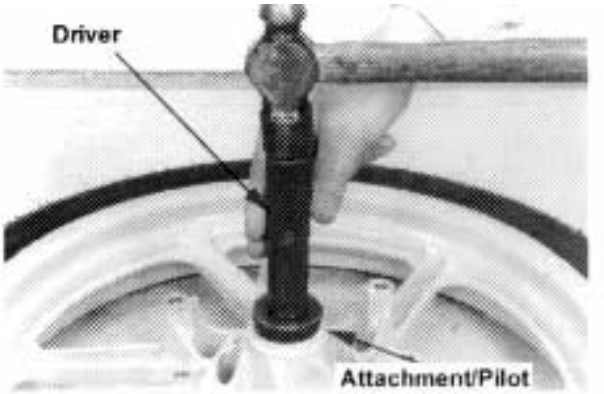
NOTE:
- **Replace the wheel bearing in pairs. Do not re-sue old bearings.**

ASSEMBLY



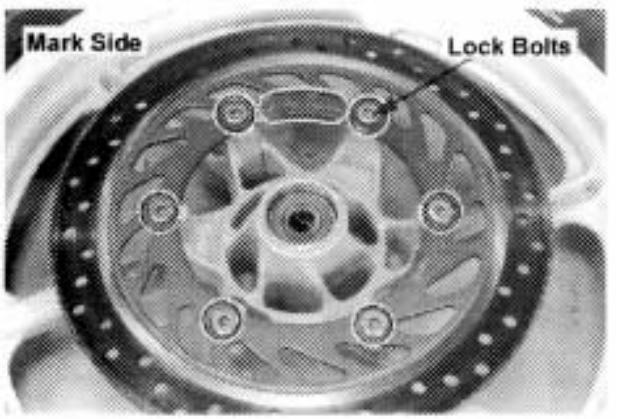
Drive in a new right bearing (6302 U) squarely with the marking
Side facing up until it is fully seated.
Install the distance collar.
Drive in a new left bearing (6302 U) squarely with the marking
Side facing up until it is fully seated.

TOOLS:
Driver
07749-0010000
Attachment, 42 X 47 mm
07746-0010300
Pilot, 15 mm
07746-0040300

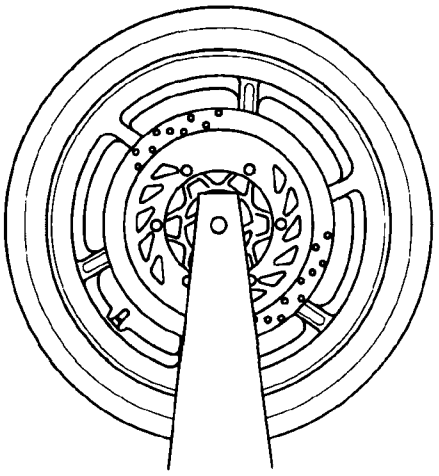


Install the brake disc with the marked side facing out.
Clean and apply a locking agent to the brake disc bolt threads.
Install and tighten the brake disc bolts to the specified torque.

TORQUE: 42 N.m (4.3 kgf-m, 31 lbft)



WHEEL BALANCE



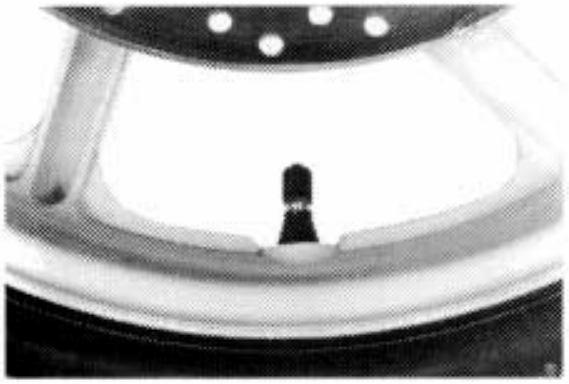
Warning

- **Wheel balance directly affects the stability, handling and overall safety of the motorcycle. Carefully check balance before reinstalling the wheel.**

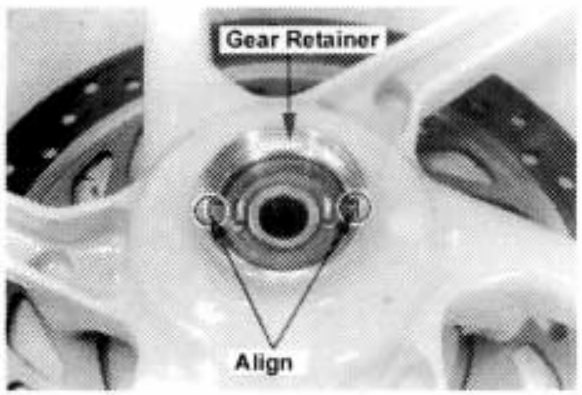
NOTE:

- **The wheel balance must be checked when the tire is**
- **Remounted.**
- **For optimum balance, the tire mark (a paint dot**
- **On the side wall) must be located next to the valve stem.**
- **Remount the tire if necessary.**

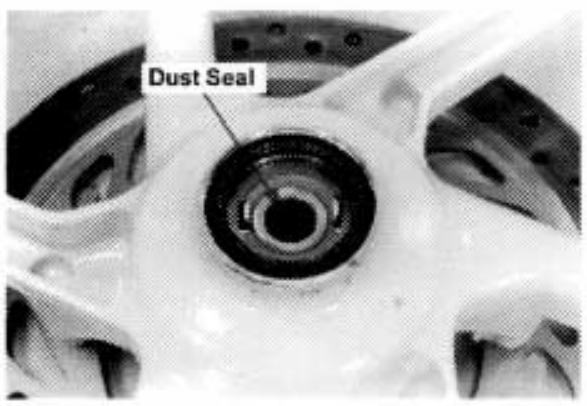
Mount the wheel, tire and brake disc assembly on an inspection stand.
Spin the wheel, allow it to stop, and mark the lowest (heaviest) part of the wheel with chalk. Do this two or three times to verify the heaviest area. If the wheel is balanced, it will not stop consistently in the same position.
To balance the wheel, install balance weights on the lightest side of rim, the side opposite the chalk marks. Add just enough weight so the wheel will no longer stop in the same position when it is spun.
Do not add more than 60 grams (2.1 oz) to the front wheel.



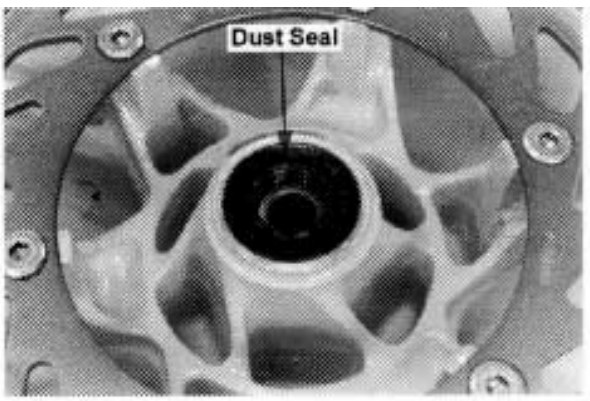
Install the speedometer gear retainer to the wheel hub aligning the tangs on the retainer with the slots on the hub.



Apply grease to the left dust seal lip.
Install the left dust seal on the left wheel.



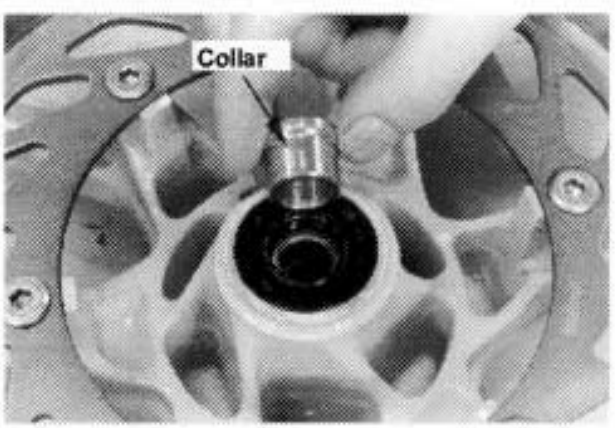
Apply grease to the right dust seal lip
Install the right dust seal to the right wheel.



INSTALLATION
Apply grease to the inside of the speedometer gear box, and install the washer and speedometer gear.

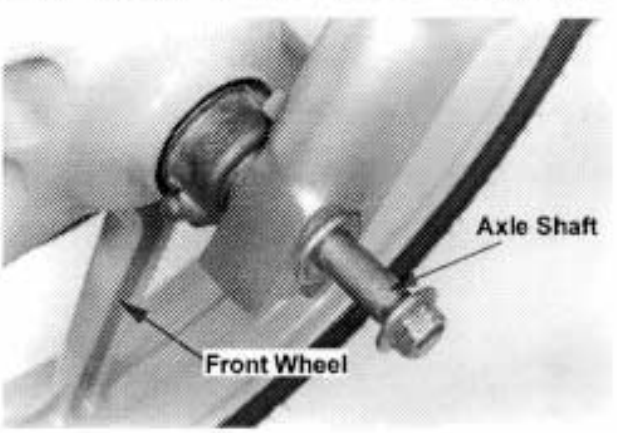
Install the speedometer gear box into the right side of the front wheel.

Install the side collar into the left wheel.

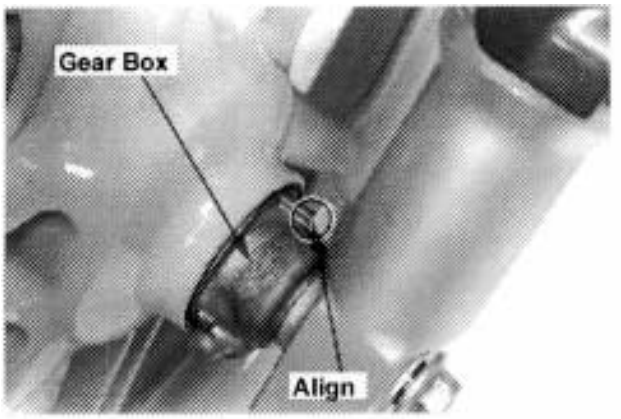


Install the front wheel between the fork legs so that the brake
disc is positioned between the pads, being careful not to
damage the pads.

Apply thin coat of grease to the front axle shaft.
Install the front axle shaft.

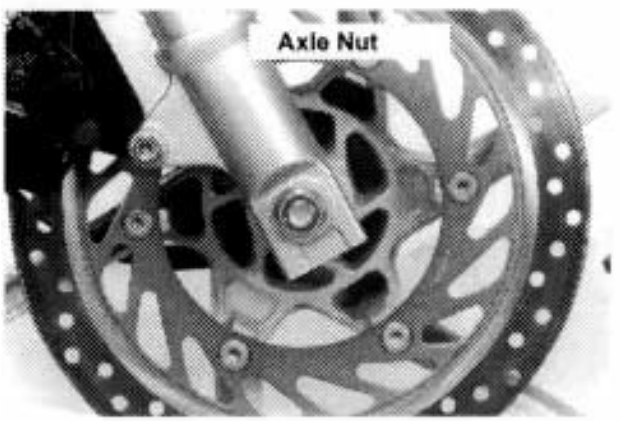


Align the tab on the speedometer gear box with the groove on the fork leg.

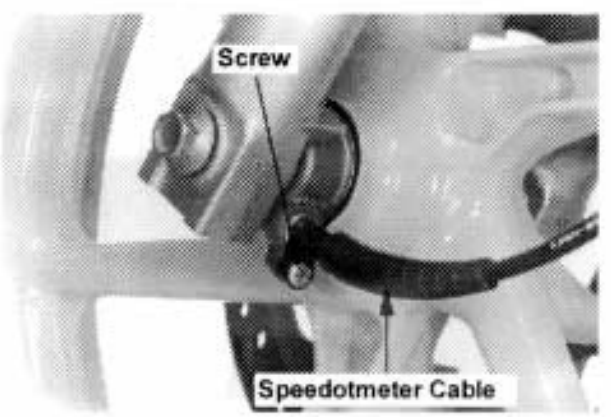


Install and tighten the front axle nut to the specified torque.

TORQUE: 59 N.m (6.0 kgf.m, 43 lbf.ft)



Connect the speedometer cable.
Install and tighten the screw securely.



FORK

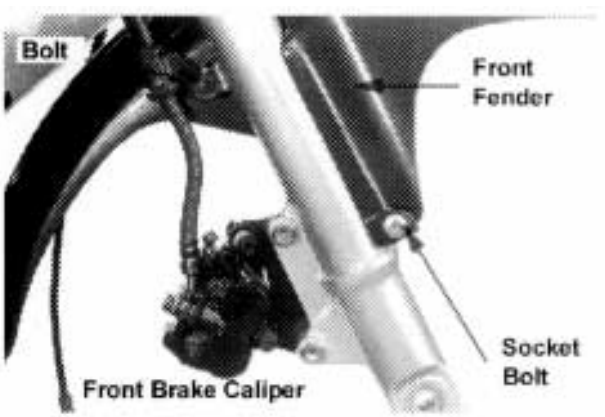
REMOVAL

Remove the front wheel (page 13-11).
Remove the front brake caliper (15-17) (right side only).

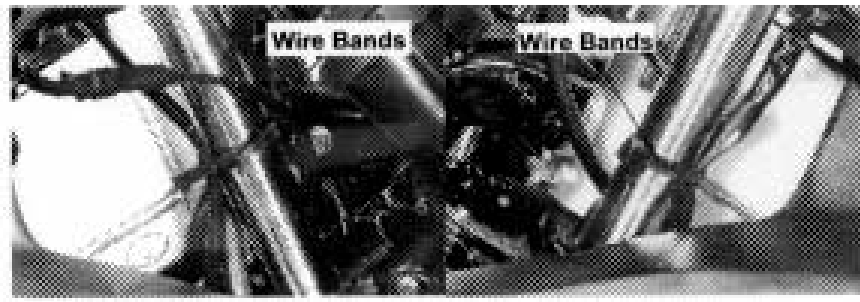
CAUTION

- **Do not suspend the brake caliper from the brake hose.**
- **Do not twist the brake hose.**

Remove the bolts, screw and front fender.



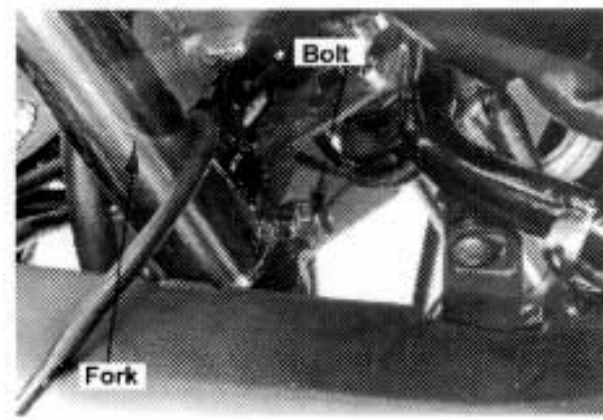
Remove. the wire band.



Remove the handlebar from the fork tube (page 13-3).

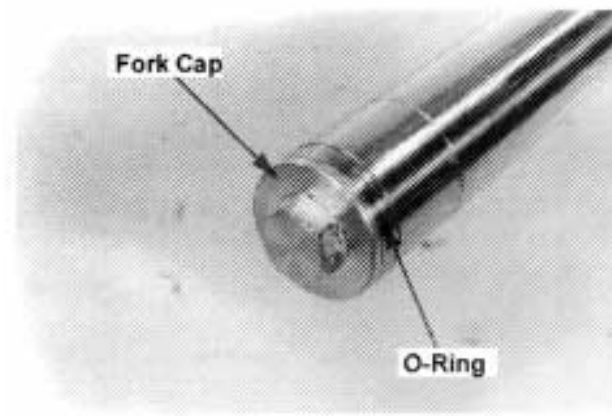
Loosen the top bridge pinch bolt.
When the fork is ready to be disassembled, loosen the fork cap, but do not remove it.

Loosen the bottom bridge pinch bolt while holding the fork.
Remove the fork from the top bridge and steering stem.



DISASSEMBLY

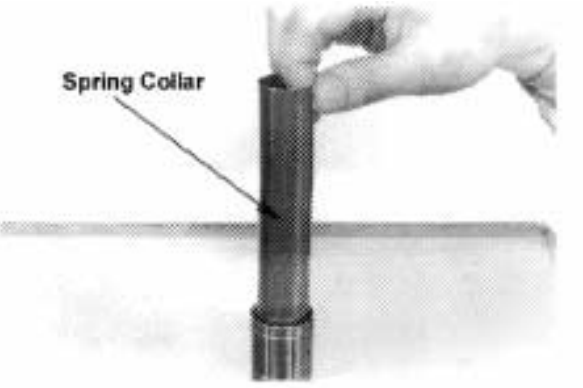
Remove the fork cap and 0-ring from the fork tube.



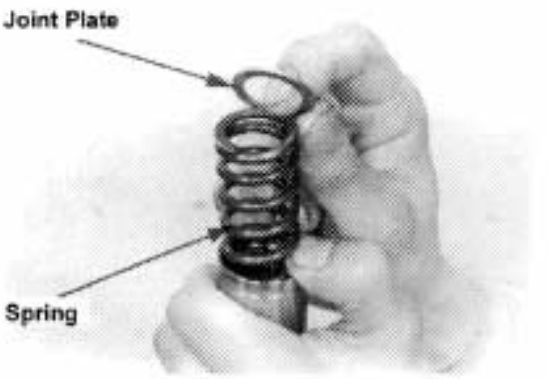
Warning

The fork cap is under spring pressure. Use care when removing it and wear eye and face protection.

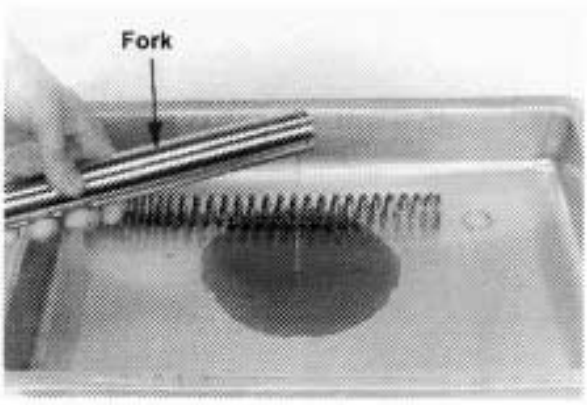
Remove the spring collar.



Remove the spring joint plate and fork spring.



Pour out the fork oil from the fork leg by pumping the fork 8-10 times.



CAUTION

- **Do not over tighten the bracket.**

Hold the brake caliper bracket of the fork slider in a vice with a piece of wood or soft jaws to avoid damage.

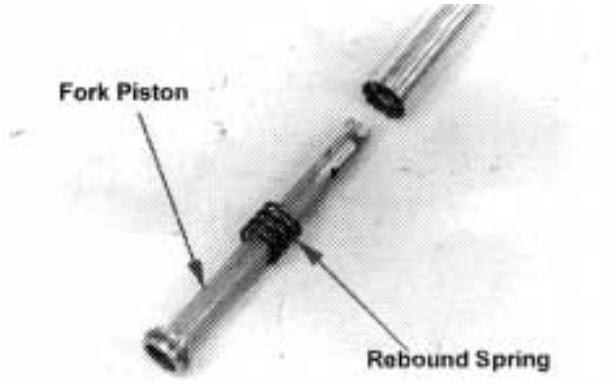
Loosen and remove the fork socket bolt and sealing washer from the fork slider.

If the fork piston turns with the socket bolt, temporarily install the fork spring, spring joint plate, spring collar and fork cap.

Remove the fork piston and rebound spring.

NOTE

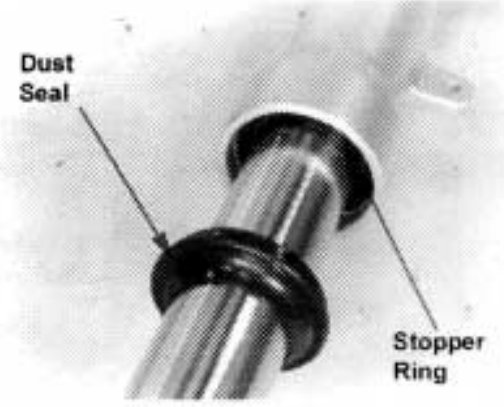
- **Do not remove the fork piston ring, unless it is necessary to replace with a new one.**



Remove the dust seal.
Remove the stopper ring from the groove of the fork slider.

CAUTION

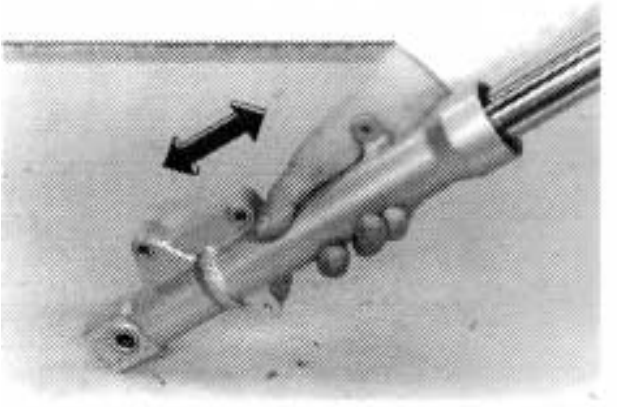
- **Do not scratch the inner fork tube sliding surface.**



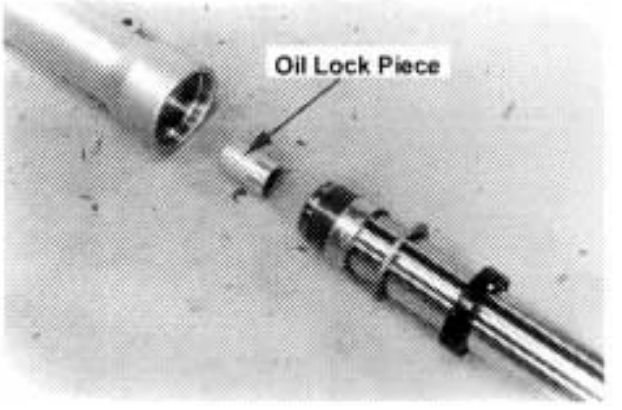
NOTE

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

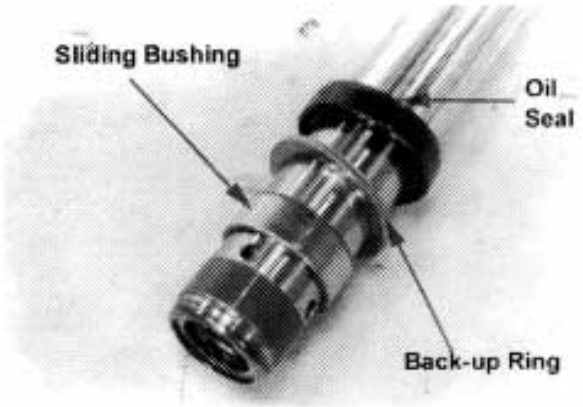
Using quick successive motions, pull the fork tube out of the fork slider.



Remove the oil lock piece from the fork slider.



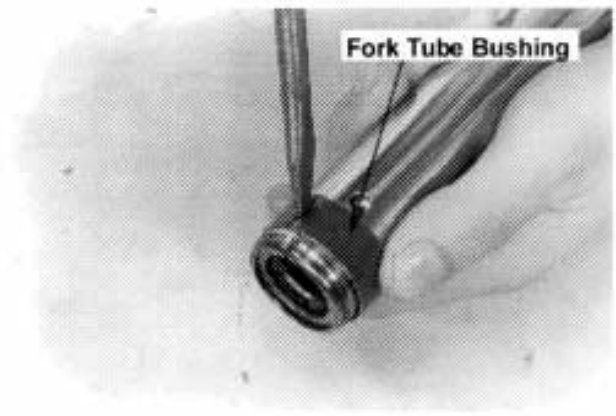
Remove the oil seal, back-up ring and slider bushing from The fork tube.



NOTE

- **Do not remove the fork tube bushing unless it is**
- **Necessary to replace it with a new one.**

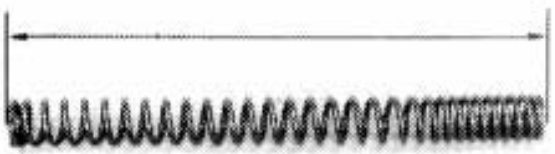
Carefully remove the fork tube bushing by prying the slot with a screwdriver until the bushing can be pulled off by hand.



INSPECTION

FORK SPRING

Measure the fork spring free length by placing the spring on a flat surface.

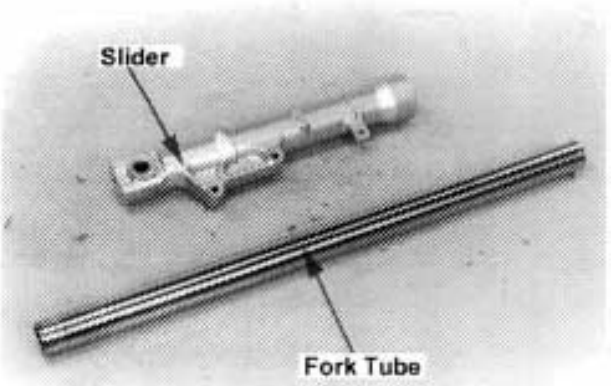


SERVICE LIMIT: 304.2 mm (11.98 in)

FORK TUBE, SLIDER, FORK PISTON

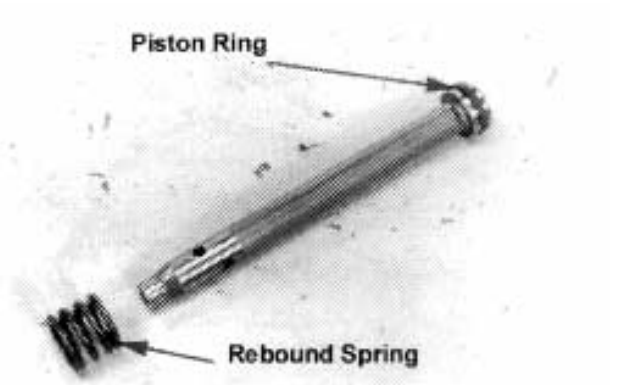
Check the fork tube, slider and fork piston for score marks, and excessive or abnormal wear.

Replace the component if necessary.



Check the fork piston ring for wear or damage.
Check the rebound spring for fatigue or damage.

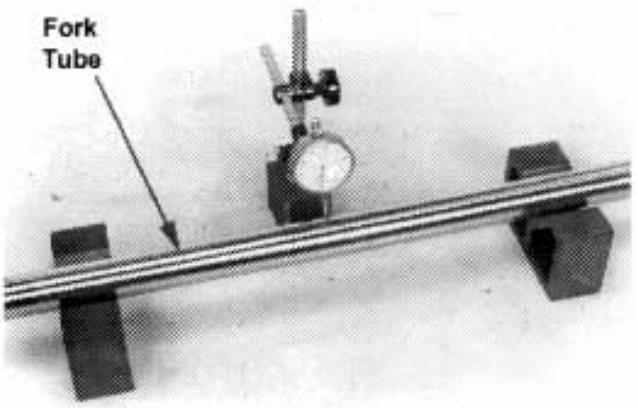
Replace the component if necessary.



Set the fork tube in V-blocks and measure the fork tube runout by rotating it with a dial indicator reading.

SERVICE LIMIT: 0.2 mm(0.008 in)

Replace if the service limit is exceeded, or there are scratches or nicks that will allow fork oil to leak past the seals.



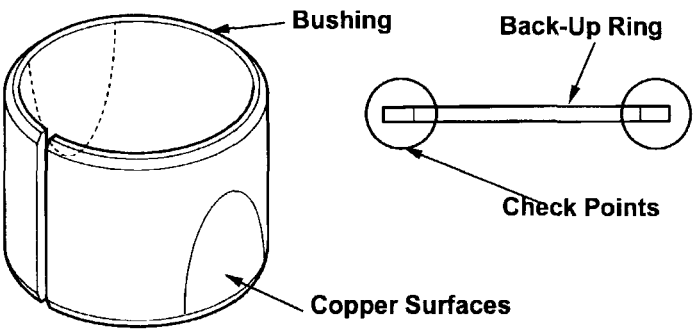
NOTE

- **Do not reuse the fork tube if it cannot be perfectly straightened with minimal effort.**

FORK TUBE BUSHING

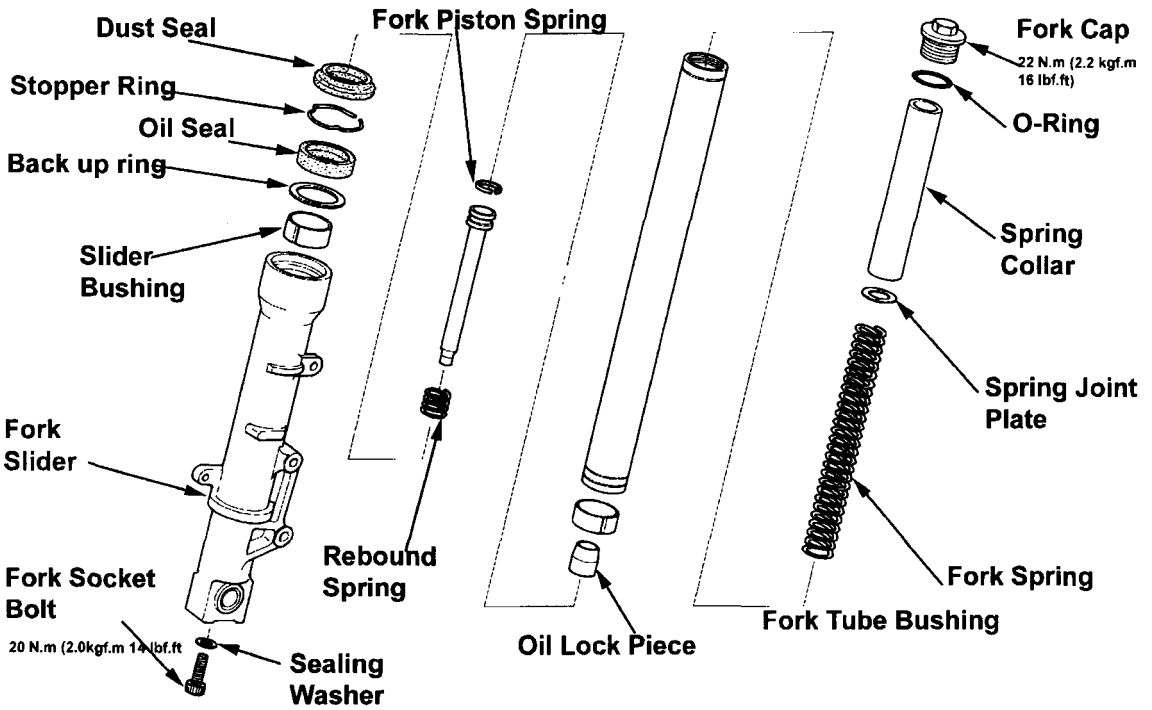
Visually inspect the slider and fork tube bushings.
Replace the bushings if there is excessive scoring or scratching, or if the teflon is worn so that the copper surface appears on more 3/4 of the entire surface.

Check the back-up ring; replace it if there is any distortion at the points shown.

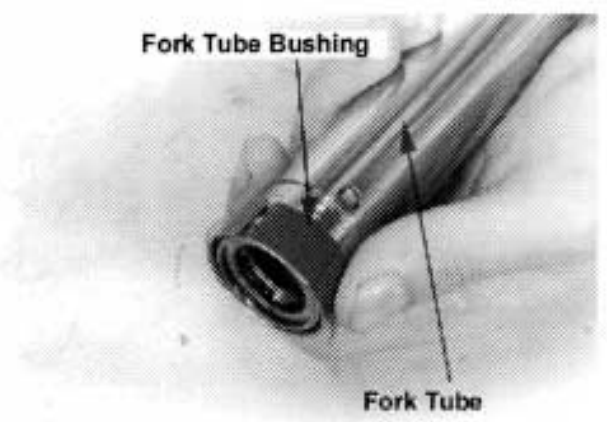


ASSEMBLY

Before assembly, wash all parts with a high flash point or non-flammable solvent and wipe them off completely.



Install a new fork tube bushing if the tube bushing has been Removed.



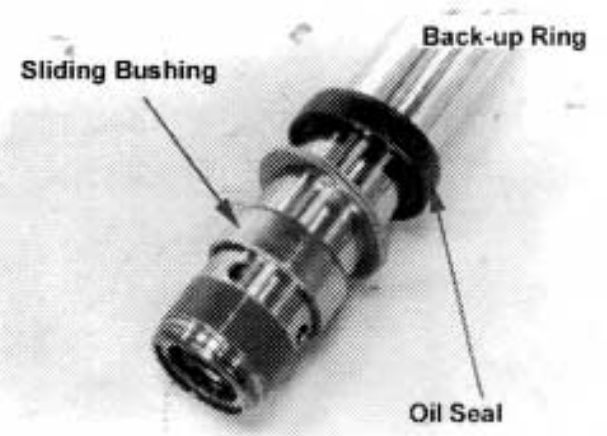
CAUTION

- **Be careful not to damage the fork tube bushing coating.**
- **Do not open the fork tube bushing more than necessary.**

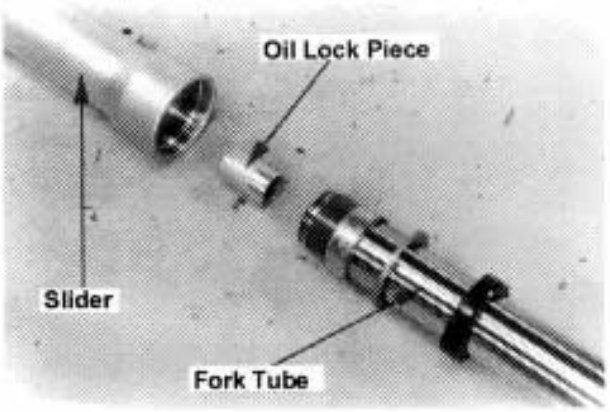
NOTE

- **Remove the burrs from the bushing mating surface.**
- **Being careful not to peel off the coating.**

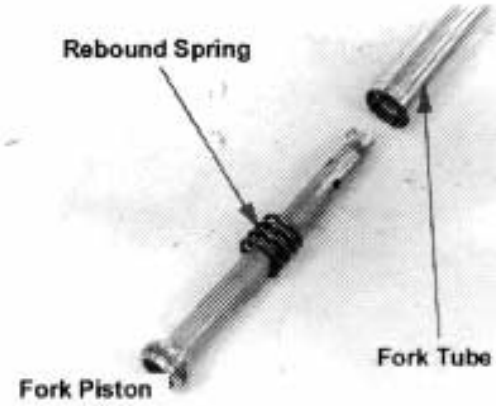
Install the slider bushing and back-up ring to the fork tube.
Apply the oil to the new oil seal lip.
Install the new oil seal to the fork tube with it marking side facing up.



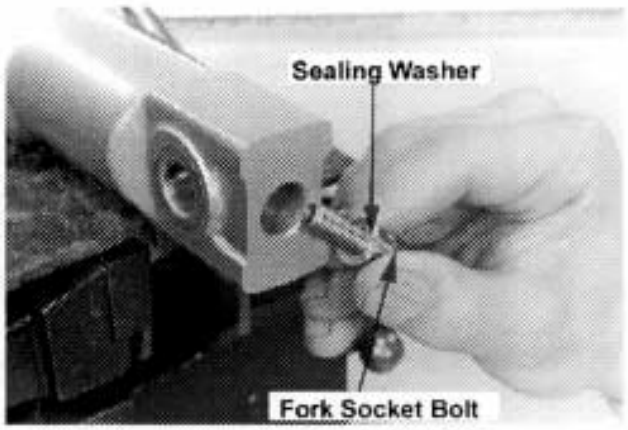
Install the oil lock piece onto the fork tube end.
Coat the fork tube bushing with the fork oil and install the
Fork tube into the fork slider.



Install the rebound spring to the fork piston.
Install the fork piston into the fork tube.



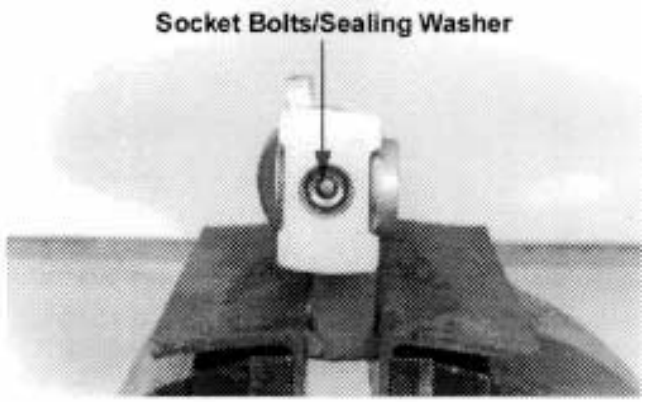
CAUTION
- **Do not over tighten the bracket.**



Hold the brake caliper bracket of the fork slider in a vice with a piece of wood or soft jaws to avoid damage.
Replace the sealing washer with a new one.
Clean and apply a locking agent to the fork socket bolt threads and install the fork socket bolt with the new sealing washer into the fork piston.

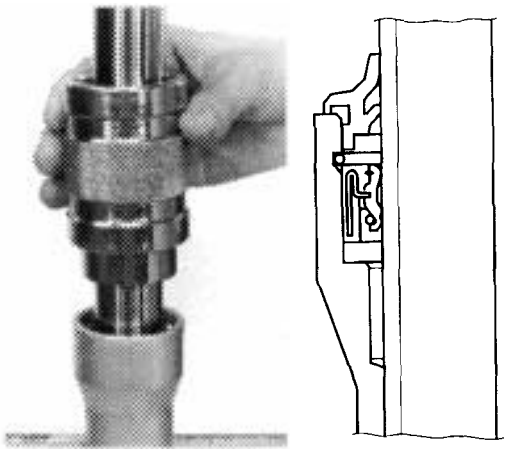
Tighten the fork socket bolt to the specified torque.

TORQUE: 20 N.m (2.0 kgf*m, 14 lbf*ft)
If the fork piston turns with the socket bolt, temporarily install the fork spring, spring joint plate, spring collar and fork cap.



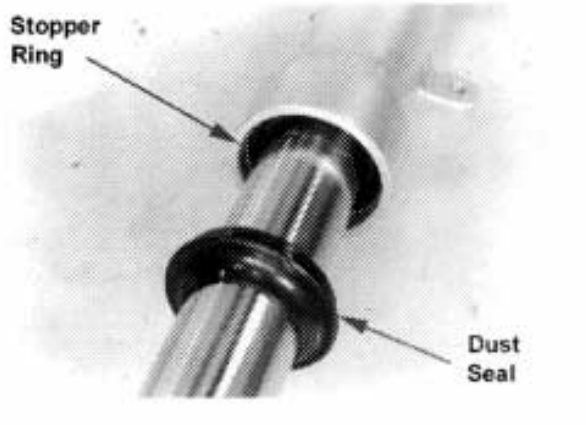
Drive in the new oil seal into the fork tube until stopper ring groove is visible, using the special tools.

TOOLS:
Fork seal driver
07747-0010100
Fork seal driver attachment
07947-KA20200



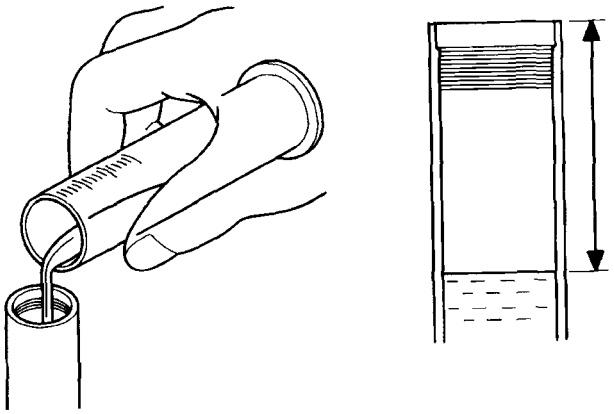
Install the stopper ring in the fork slider.

Apply fork oil to the lip of the new dust seal and install the dust seal to the fork slider.



Pour half the required amount of the recommended fork oil in the fork tube.

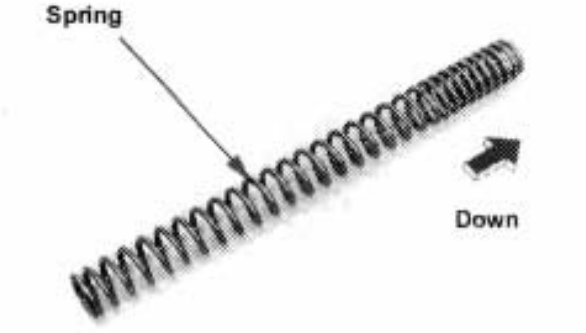
RECOMMENDED FORK OIL:
Fork fluid
OIL CAPACITY:
322 cm³ (10.9 US oz, 11.3 Imp oz)



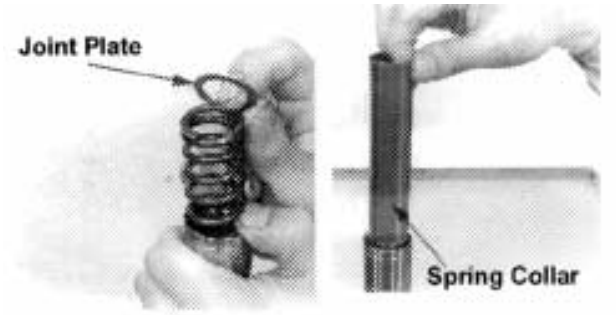
Slowly pump the fork tube several times to remove trapped air.
Pour additional oil up to the specified capacity and repeat the above step.
Compress the fork leg fully.
Measure the oil level from the top of the fork tube.

OIL LEVEL: 125mm (4.9in)

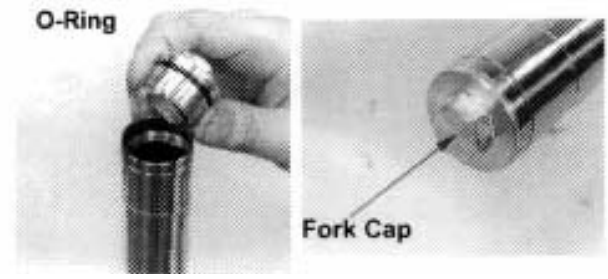
Pull the fork tube and install the fork spring with the tapered side facing down.



Install the spring joint plate and spring collar.



Apply fork oil and install the new O-ring and install the new O-ring to the fork cap.
Install the fork cap into the fork tube.



NOTE

- **Tighten the fork cap after installing the fork tube into the fork bridge.**

INSTALLATION

Install the fork into the bottom and top bridge.
Align the second groove on the fork tube with the upper surface of the top bridge.

Tighten the bottom bridge pinch bolt to the specified torque.

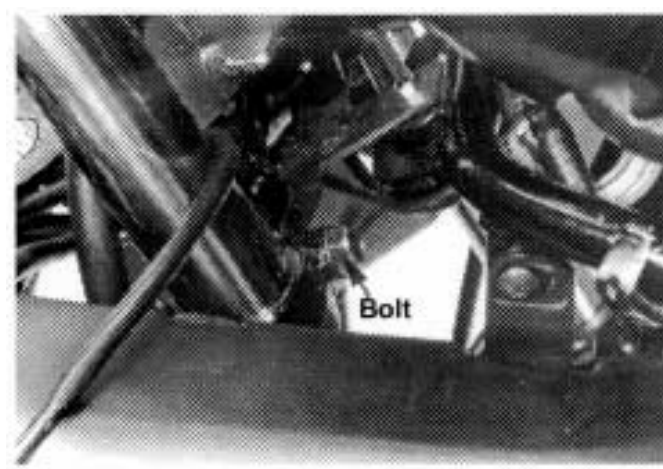
TORQUE: 27 N.m (2.8 kgf.m, 20 lbf.ft)

Tighten the fork cap to the torque.

TORQUE: 22 N.m (2.2 kgf.m, 16 lbf.ft)

Tighten the top bridge pinch bolt to the specified torque.

TORQUE: 27 N.m (2.8 kgf.m, 20 lbf.ft)

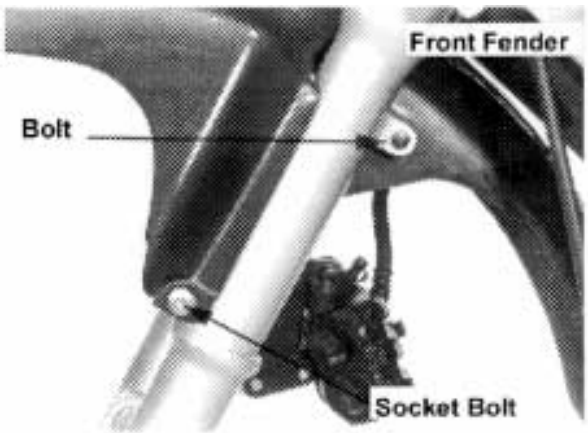


Install the handlebar (right: page 13-6, left 13-8).

Install the wire band.

Install the front fender.
Install and tighten the bolts and screws securely.

Install the front brake caliper (page 15-20) (right side only).
Install the front wheel (page 13-16).

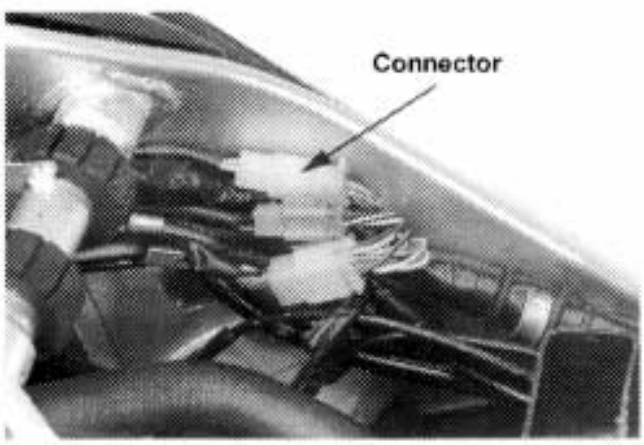


STEERING STEM

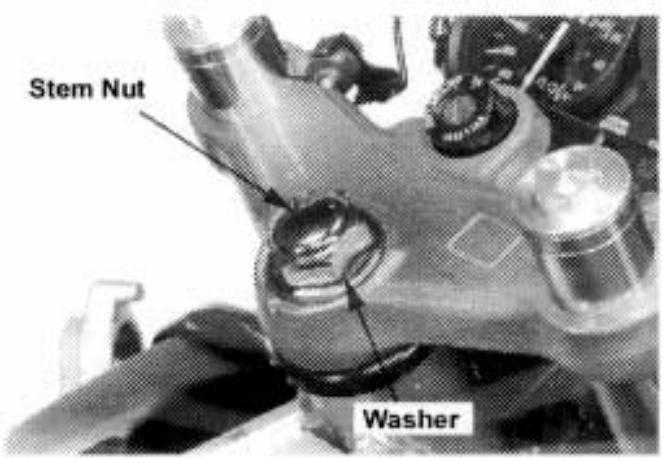
REMOVAL

Remove the fuel tank (page 2-12).
Remove handlebar (page 13-3).
Remove the front wheel (page 13-1 1).
Remove the hom connector (page 18-17)

Disconnect the ignition switch 2P connector.

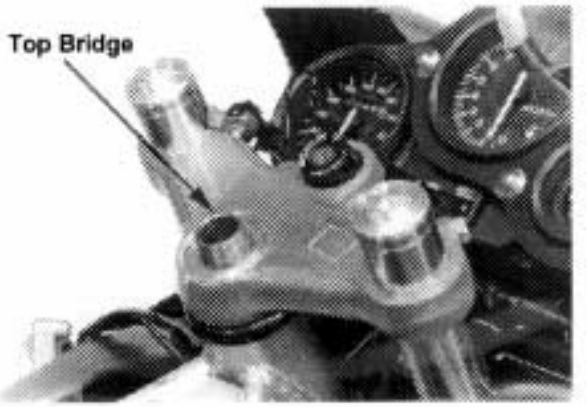


Remove the steering stem nut and washer

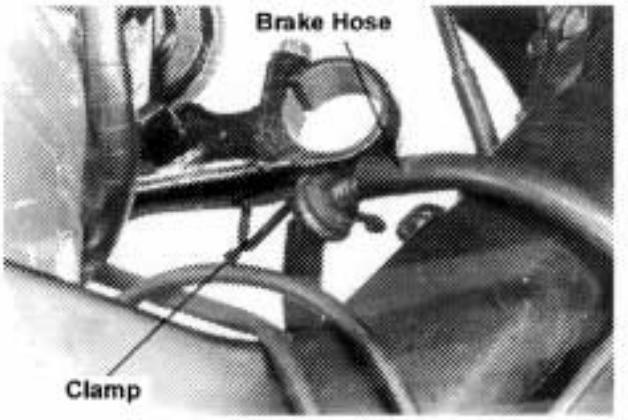


Remove the fork (page 13-17).

Remove the top bridge.

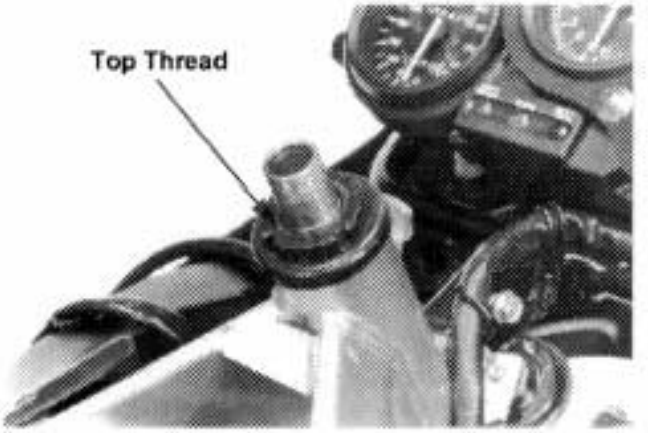


Remove the brake hose from the clamp on the steering stem.



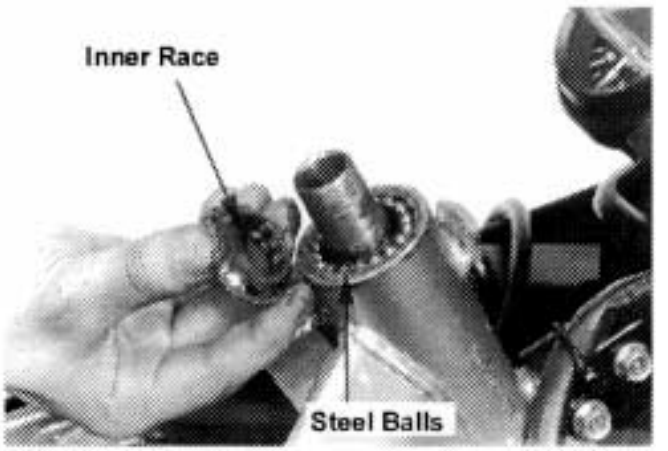
Remove the steering top thread using following tool.

TOOL:
Steering stem socket 07916-3710101

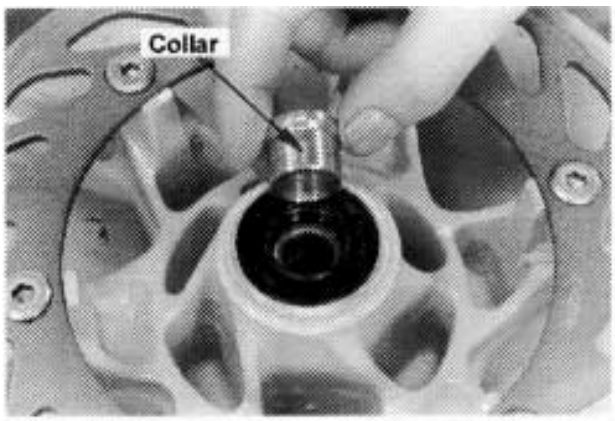


Remove the upper bearing inner race and upper bearing
Steel balls.

NOTE
- **Do not loose the steel balls.**



Re move the steering stem and lower bearing steel balls.



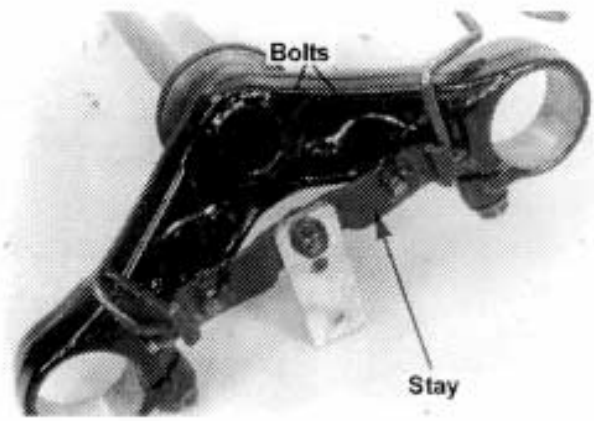
NOTE
- **Do not loose the steel balls.**

Check the steering bearing steel balls, inner and outer races for wear or damage.

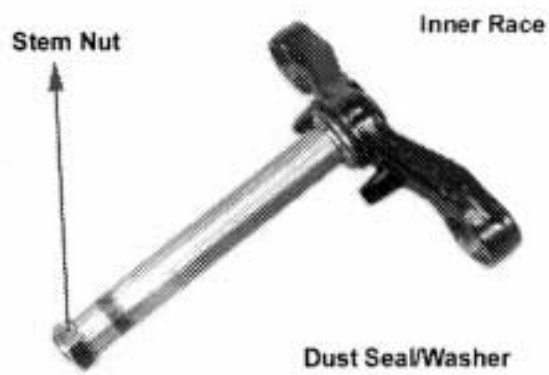
STEERING STEM BEARINGS REPLACEMENT

NOTE
- **Always replace the bearings and races as a set.**

Remove the upper and lower bearing outer races.

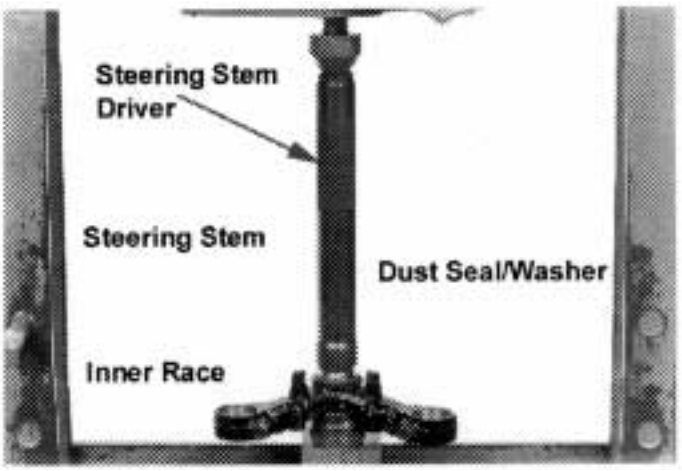


Remove the bolts and horn stay.



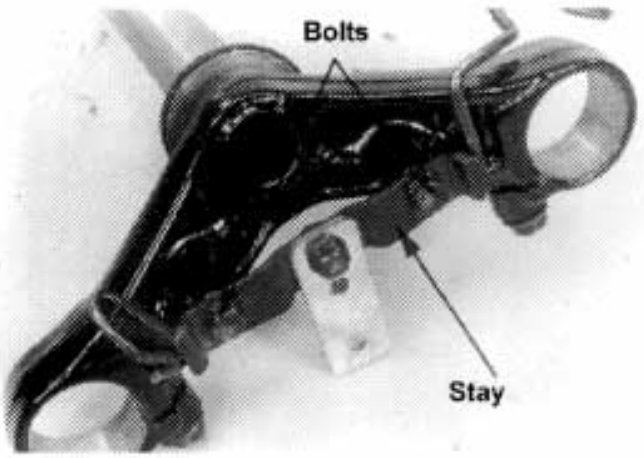
Install the stem nut onto the stem to prevent the threads from being damage when removing the lower bearing inner race from the stem. Remove the lower bearing inner race with a chisel or equivalent tool, being careful not to damage the stem. Remove the dust seal and washer.

Apply grease to the new dust seal lip and install it to the steering stem.
Install the new lower bearing inner race using the following tool and hydraulic press.

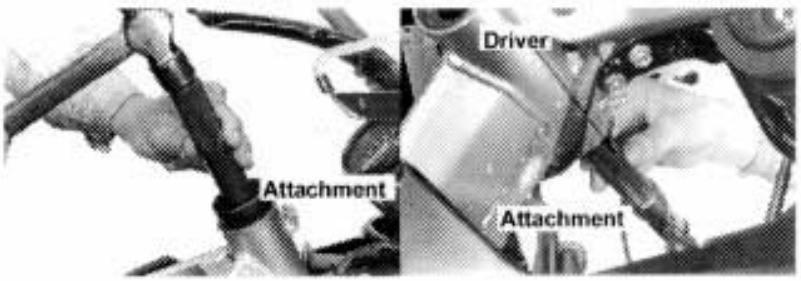


TOOL:
Steering stem driver
07946-4300001

Install the horn stay to the steering stem.
Install and tighten the bolts securely.

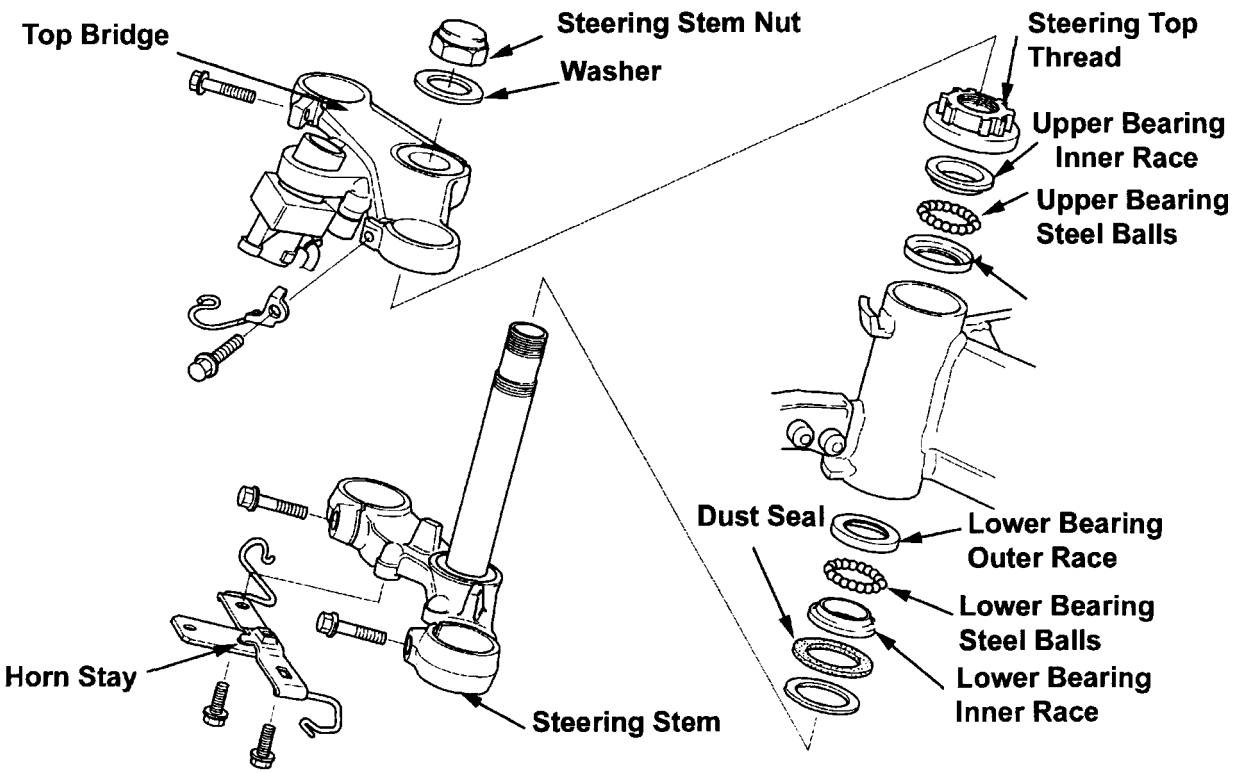


Drive the new upper and lower bearing outer race into the
Head pipe using the following tools.

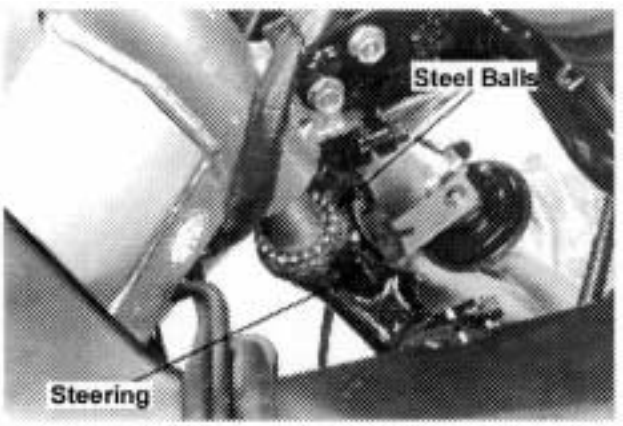


TOOLS:

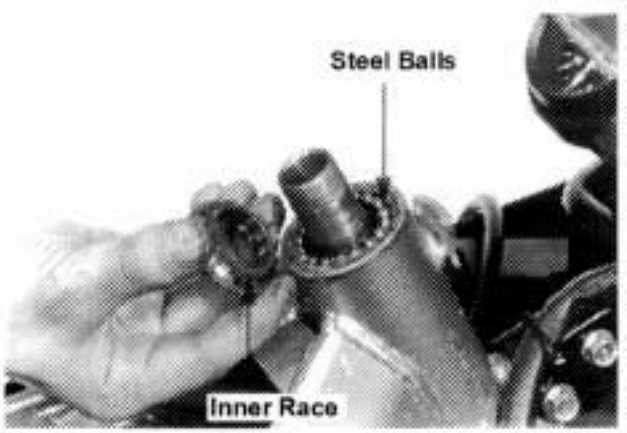
Driver	**07749-0010000**
Driver attachment	**07946-3290000**



NOTE
- Number of head bearing steel balls:
  - Upper: 18
  - Lower: 18



Apply grease to the new lower bearing steel balls.
Install the new steel balls onto the steering stem.
Install the steering stem into the head pipe.



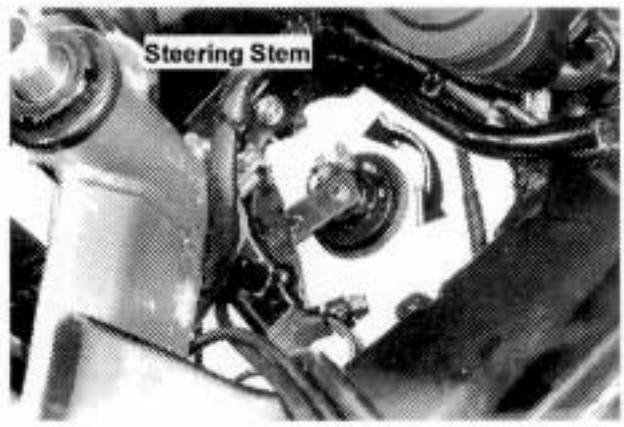
Apply grease to the new upper bearing steel balls and upper inner race.
Install the new steel balls and upper inner race.

Install the steering top thread and tighten it to the specified Torque.

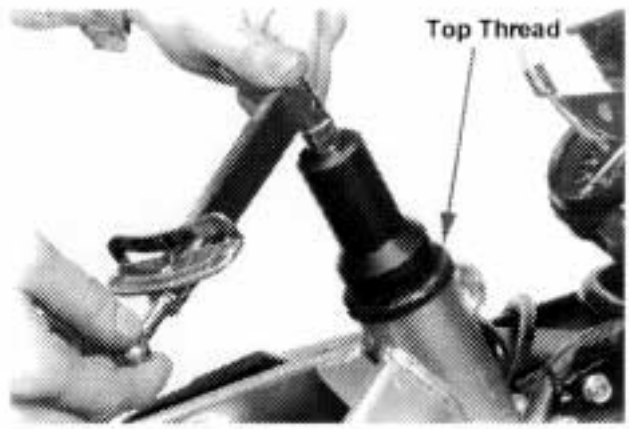
TOOL:
Steering stem socket 07916-3710101

TORQUE: 27 N.m (2.8 kgf.m, 20 lbf.ft)

Turn the steering stem right and left, lock to lock at least five times to seat bearings.
Make sure that the steering stem moves smoothly, without play or binding.



Loosen the steering top thread.

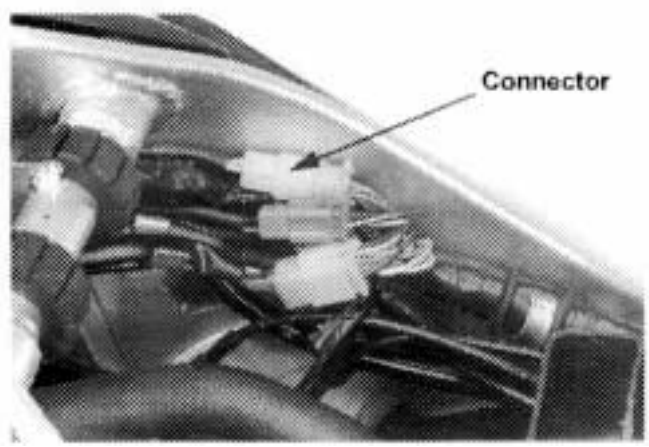


Install the fork (page 13-26).
Install the front wheel (page 13-16).

Tighten the steering top thread to the specified torque while
Front wheel is grounded.

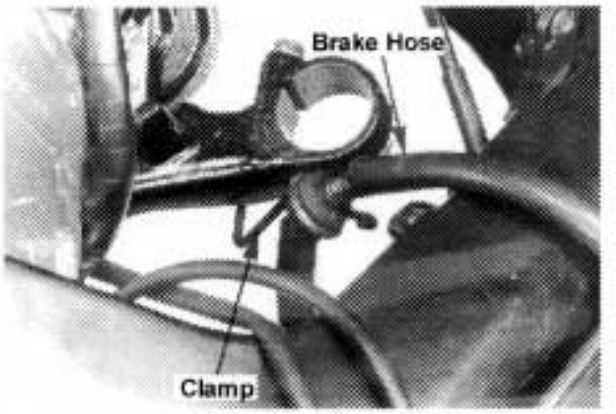
TOOL:
Steering stem socket 07916-3710101

TORQUE: 1 N.m (0.1 kgf.m, 0.7 lbf.ft)



Connect the ignition switch 2P connector.

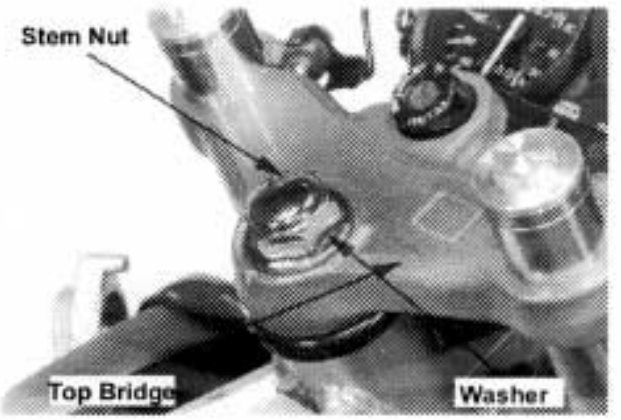
Install the brake hose to the clamp on the steering stem.



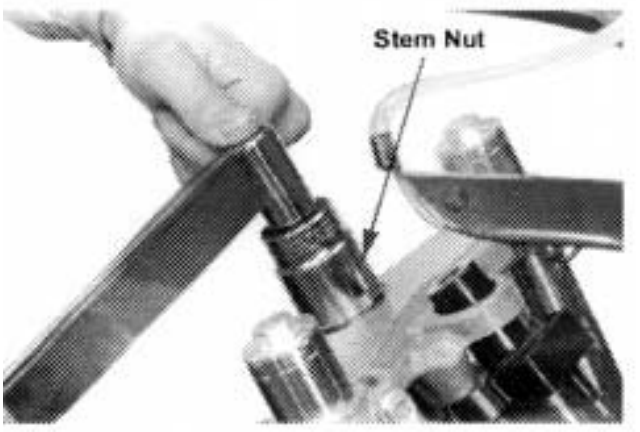
Install the top bridge, washer and steering stem nut.

Tighten the steering stem nut to the specified torque.

TORQUE: 88 N.m (9.0 kgf.m, 65 lbf-ft)



Make sure that the steering stem moves smoothly, without play or binding.
Install the horn connectors (page 18-17).
Install the handlebar (right: page 13-6, left: 13-8).



STEERING BEARING PRELOAD
Raise the front wheel off the ground.
Position the steering stem to straight ahead position.
Hook a spring scale to fork tube between the fork tube between the fork top and bottom bridges.
Make sure that there is no cable or wire harness interference.
Pull the spring scale keeping the scale at a right angle to the steering stem.
Read the scale at the point where the steering stem just starts to move.

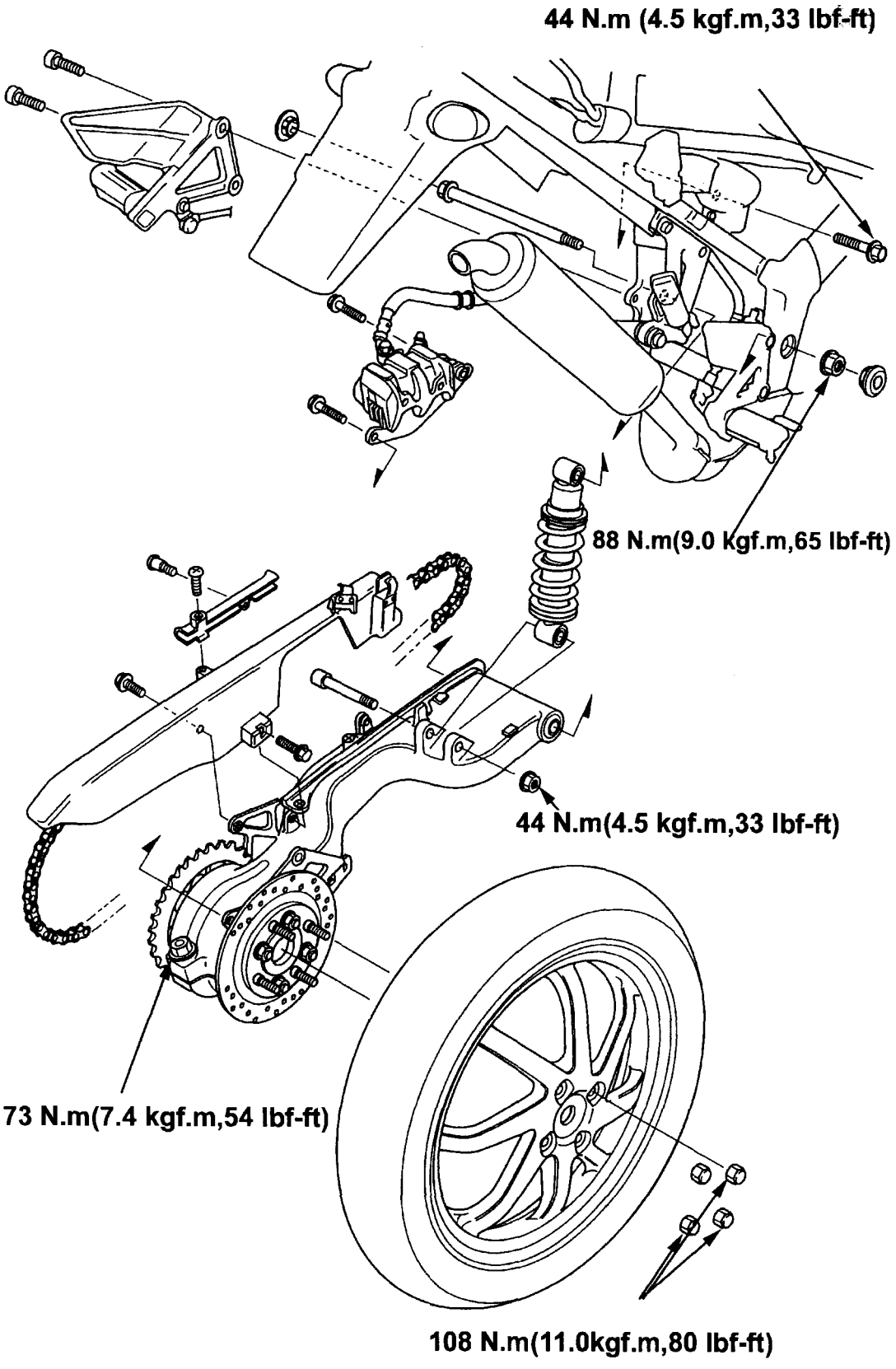
STEERING BEARING PRELOAD:
1.0 - 1.5 N.m (0.1 - 0.15 kgf.m)

If the readings do not fall within the limits, read just the steering top thread.

Install the removed parts in the reverse order of removal.

NOTE :

- **Route the cables and wire harness properly**


44 N.m (4.5 kgf.m,33 lbf-ft)
88 N.m(9.0 kgf.m,65 lbf-ft)
44 N.m(4.5 kgf.m,33 lbf-ft)
73 N.m(7.4 kgf.m,54 lbf-ft)
108 N.m(11.0kgf.m,80 lbf-ft)

SERVICE INFORMATION

GENERAL

Warning

A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean contaminated disc with a high quality brake degreasing agent.
The shock absorber contains nitrogen under high pressure. Do not allow fire or heat near the gas containing shock absorber.
Before disposal of the gas containing shock absorber, release the nitrogen gas (see page 14-5).

CAUTION
- **To avoid damaging the rim when using the tire lever, always use rim protectors.**

- When servicing the rear wheel, suspension linkage, swingarm or shock absorber, support the motorcycle using a safety stand or hoist.
- Do not operate the brake pedal after removing the caliper and rear wheel. To do so will cause difficulty in fitting the brake disc between the brake pads.
- Use only genuine Honda replacement bolts and nuts for all suspension pivot and mounting points.
- Refer to Section 15 for brake system information.

SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Minimum tire tread depth			2.0 (0.08)
Cold tire pressure	Driver only	200 kPa (2.00 kgf/cm^2, 29 psi)	
	Driver and passenger	200 kPa (2.00 kgf/cm^2, 29 psi)	
Rear wheel rim run out	Radial		2.0 (0.08)
	Axial		2.0 (0.08)
Wheel balance weight		Max 60 g	
Drive chain slack		35 (1.4)	
Drive chain link		108	
Drive chain size	DID	525VC5	
	RK	520MOZ9	
Damper/reservoir gas pressure		980 kPa (10 kgf/cm^2, 142 psi)	
Pressurize gas material	Nitrogen		
Damper rod compressed force at 10 mm (0.4 in) compressed		272 kg	
Damper /reservoir gas release drilling point		See page 14-15	

TORQUE VALUES

Rear wheel nut	108 N.m (11.0 kgf.m, 80 lbf.ft)
Rear axle nut	226 N.m (23.0 kgf.m, 166 lbf.ft) Apply oil to the threads and flange surface
Rear brake disc nut	34 N.m 93.5(kgf.m, 25 lbf.ft) U-nut
Driven sprocket nut	30 N.m (3.1 kgf.m, 22 lbf.ft) U-nut
Bearing holder pinch bolt	73 N.m (7.4 kgf.m, 54 lbf.ft)
Swingarm pivot nut	88 N.m (9.0 kgf.m, 65 lbf.ft)
Drive chain slider screw	5.1 N.m (0.52 kgf.m, 3.8 lbf.ft)
Shock absorber upper mounting bolt	44 N.m (4.5 kgf.m, 33 lbf.ft)
Shock absorber lower mounting nut	44 N.m (4.5 kgf.m, 33 lbf.ft) U-nut

TOOLS

Attachment, 32 X 35 mm	07746-0010100
Attachment, 37 X 40 mm	07746-0010200
Attachment, 52 X 55 mm	07746-0010400
Attachment, 62 X 67 mm	07746-0010500
Pilot, 15 mm	07746-0040300
Pilot, 40 mm	07746-0040900
Driver	07749-0010000
Driver shaft	07946-MJ00100
Bearing remover attachment	07LMC-KV30200

TROUBLESHOOTING

Rear wheel wobbles
- Bent rim
- Worn rear axle holder bearings
- Bent rear axle
- Faulty tire
- Unbalanced tire or wheel
- Low tire pressure
- Faulty swingarm pivot bearings

Wheel turns hard
- Faulty rear axle holder bearings
- Bent rear axle
- Brake drug

Rear suspension noisy
- Faulty rear shock absorber
- Loose fasteners

Soft suspension
- Weak spring
- Oil and gas leakage from Damper unit
- Low tire pressure

Hard suspension
- Bent damper rod
- High tire pressure
- Damaged swingarm pivot bearing

REAR WHEEL

Warning

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

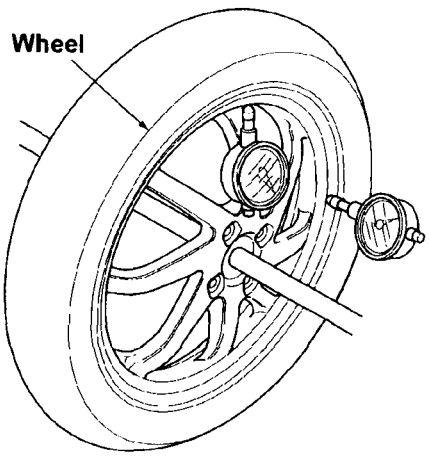
REMOVAL

Loosen the rear wheel nuts.
Raise the rear wheel off the ground using a safety stand or hoist.
Remove the rear wheel nuts.
Remove the rear wheel.

INSPECTION

WHEEL RIM

Check the rim runout by placing the wheel in a turning stand.
Spin the wheel slowly and read the runout using a dial indicator.
Actual runout is ½ the total indicator reading.



SERVICE LIMITS

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

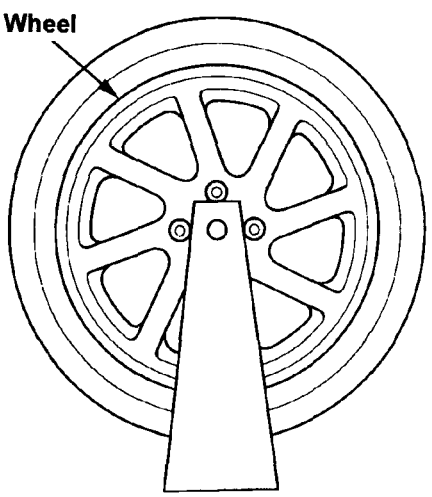
WHEEL BALANCE

Warning

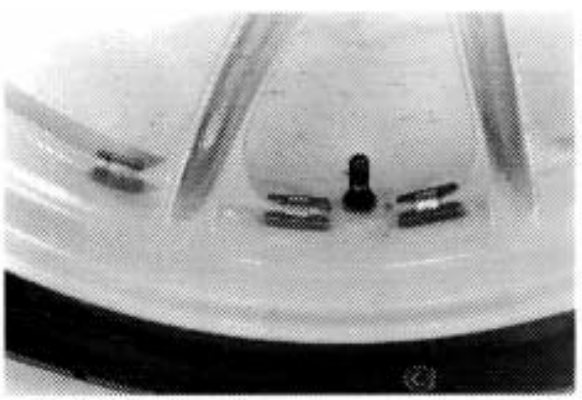
Wheel balance directly affects the stability, handling and overall safety of the motorcycle. Carefully check balance before reinstalling the wheel.

NOTE

- **The wheel balance must be checked when the tire is**
- **Remounted.**
- **For optimum balance, the tire balance mark (a paint dot**
- **On the side wall) must be located next to the valve stem.**
- **Remount the tire if necessary.**



Mount the wheel, tire and brake disc assembly on an inspection stand.
Spin the wheel, allow it to stop, and mark the lowest (heaviest) part of the wheel with chalk.
Do this two or three times to verify the heaviest area. If the wheel is balanced, it will not stop consistently in the same position.
To balance the wheel, install balance weights on the lightest side of rim, the side opposite the chalk marks. Add just enough weight so the wheel will no longer stop in the same position when it is spun.
Do not add more than 60 grams (2.1 oz) to the rear wheel.

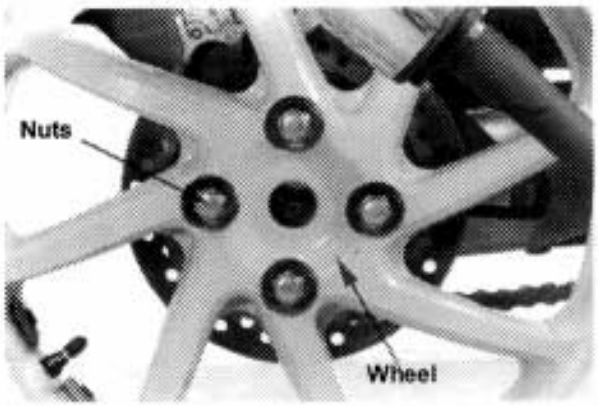


INSTALLATION

Clean and apply grease to the rear axle and wheel mating surface.

Install the rear wheel to the rear axle.
Install the washers and rear wheel nuts.
Tighten the rear wheel nuts to the specified torque.

TORQUE: 108 N.m (11.0 kgf-m, 80 lbf-ft)



BEARING HOLDER/DRIVEN FLANGE

Warning

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

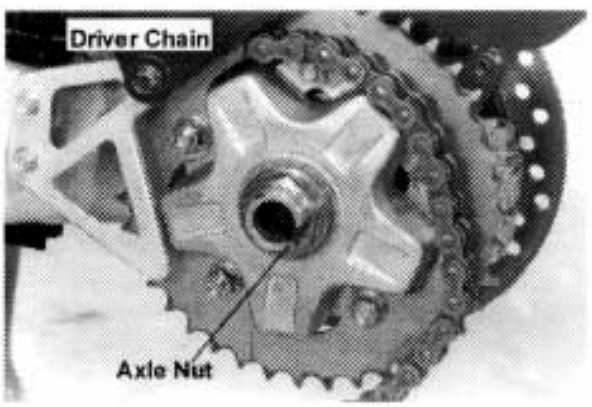
REMOVAL

Loosen the bearing holder pinch bolt and turn the holder to loosen the drive chain.

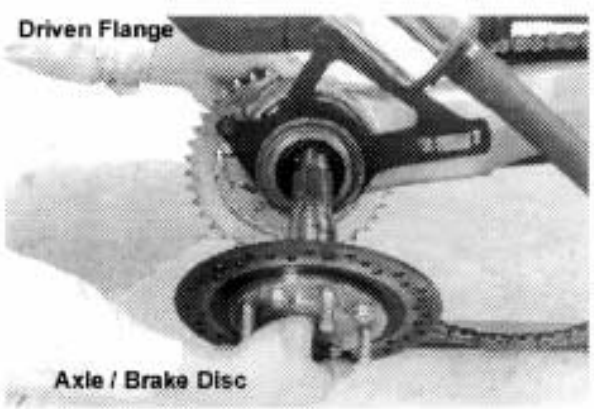
Remove the rear wheel (page 14-3).

Remove the drive chain from the drive sprocket.
When the final driven flange assembly is ready to be disassembled, loosen the driven sprocket nuts, but do not remove them.
Unstake and loosen the rear axle nut.
Remove the rear axle nut and washer.

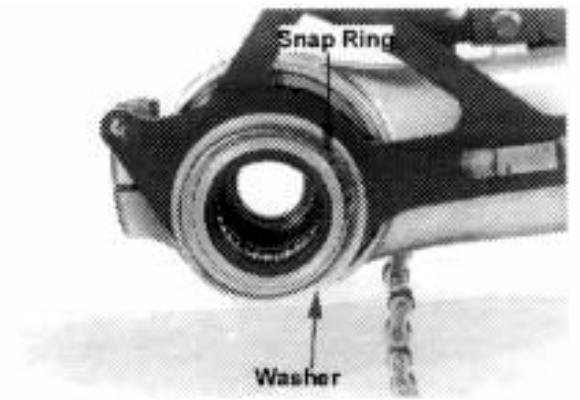
Remove the rear brake caliper (page 15-11).



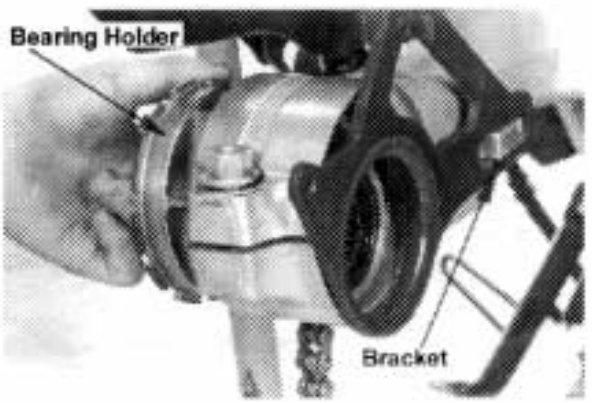
Remove the final driven flange assembly and rear axle/brake disc assembly.



Remove the snap ring and washer.



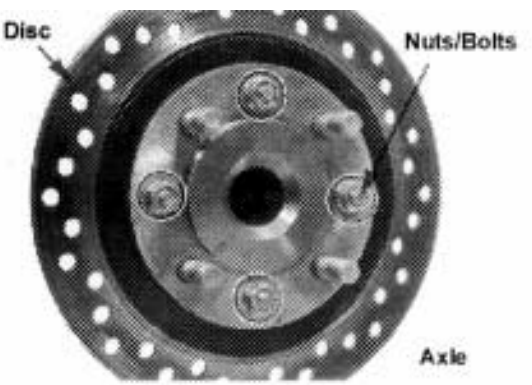
Remove the bearing holder and bracket.



DISASSEMBLY

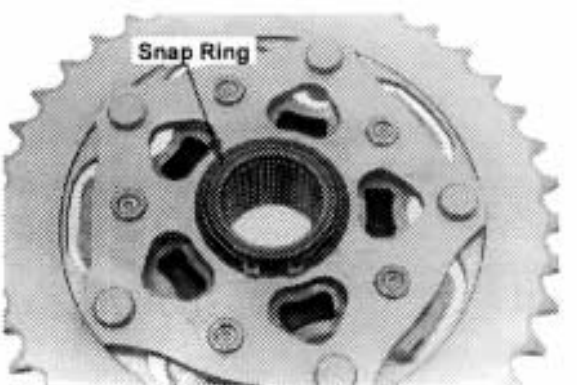
REAR AXLE/BRAKE DISC

Remove the rear brake disc nuts and bolts. Remove the rear brake disc from the rear axle.

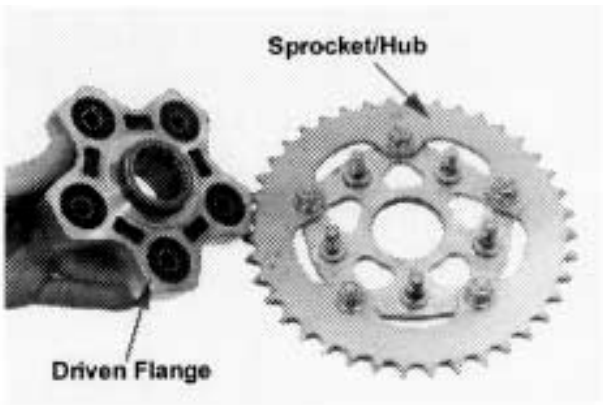


FINAL DRIVEN FLANGE

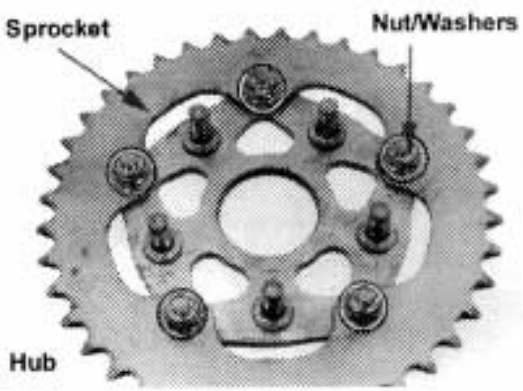
Remove the snap ring from the groove on the final driven flange.



Remove the driven sprocket and final driven hub from the final driven flange.

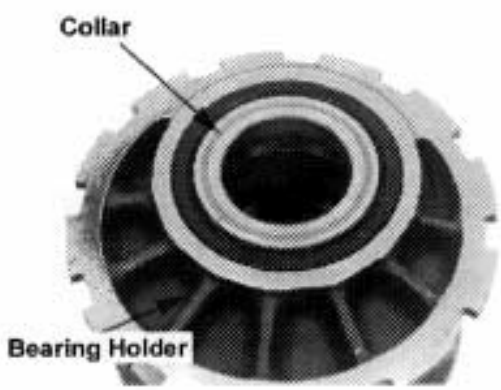


Remove the nuts, washers and driven sprocket from the final driven hub.

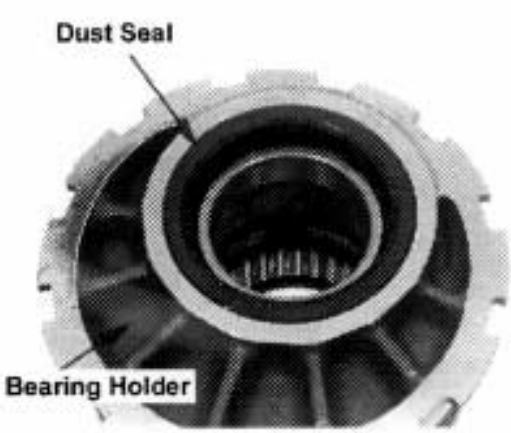


BEARING HOLDER

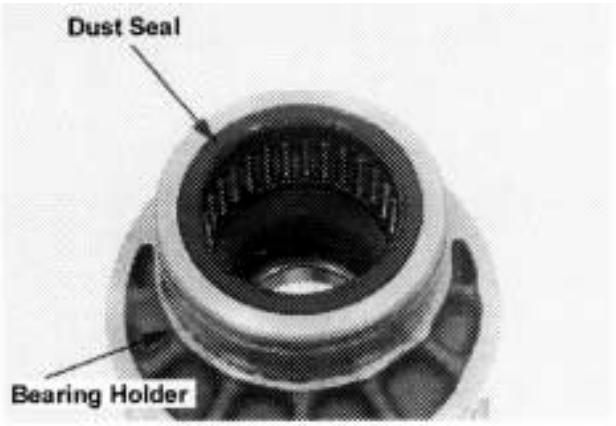
Remove the collar from the left side of the bearing holder.



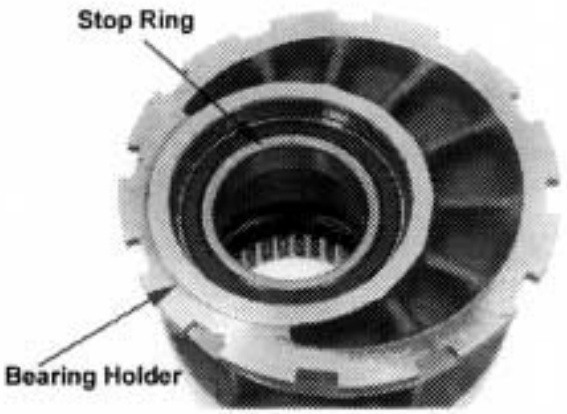
Remove the dust seal from the left side of the bearing holder.



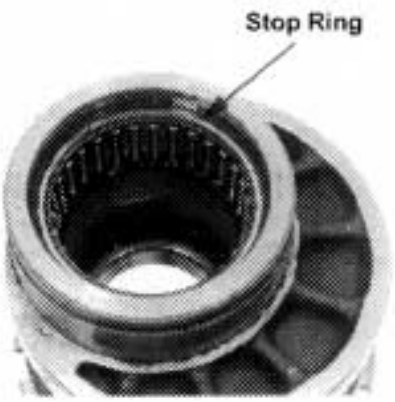
Remove the dust seal from the right side of the bearing holder.



Remove the stop ring from the left side of the bearing holder.



Remove the stop ring from the right side of the bearing holder.

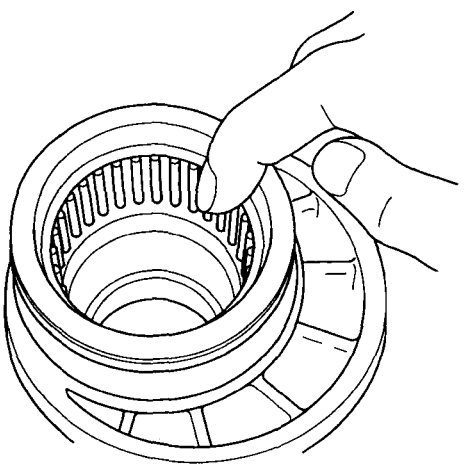


Bearing replacement (page 14-8).

INSPECTION

BEARING HOLDER

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



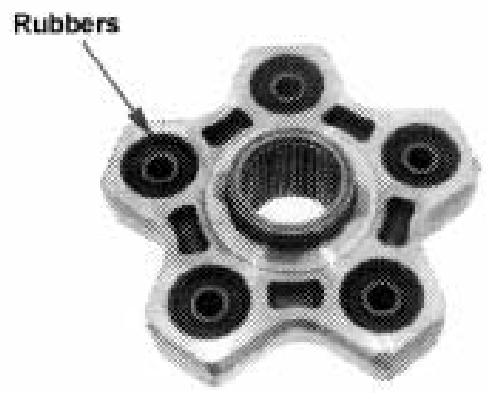
Remove and discard the bearings if the races do not turn smoothly and quietly, if they fit loosely in the bearing holder.

NOTE

- **Replace the holder bearings in pairs.**

FINAL DRIVEN FLANGE

Check the damper rubber for wear or damage. Replace if necessary.



NOTE

- **Replace the damper rubber as a set.**

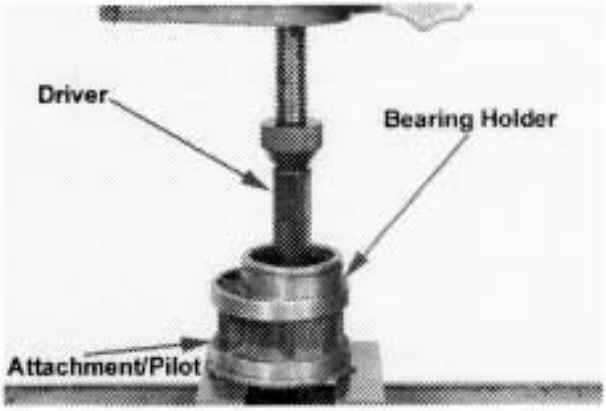
HOLDER BEARING REPLACEMENT

REMOVAL

Remove the ball bearing from the left side of the bearing holder using the special tools.

TOOLS:

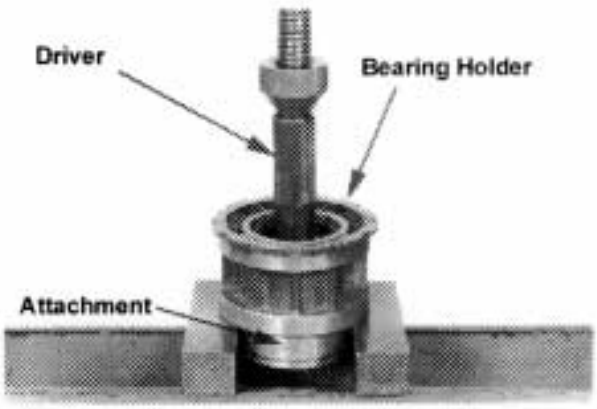
Driver	**07749-0010000**
Attachment, 37 X 40 mm	**07746-0010200**
Pilot, 40 mm	**07746-0040900**



Remove the needle bearing from the right side of the bearing holder using the special tools.

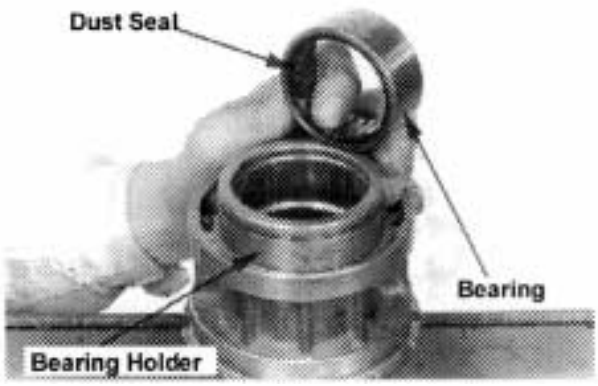
TOOLS:

Driver	**07749-0010000**
Attachment, 52 X 55 mm	**07746-0010400**



INSTALLATION

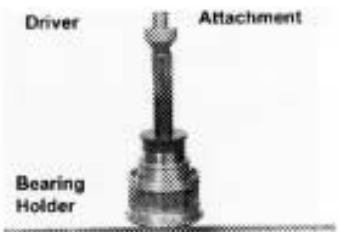
Apply grease to the new dust seal lips. Install the new dust seal to the needle bearing groove. Install the new needle bearing with its dust seal end facing inside.

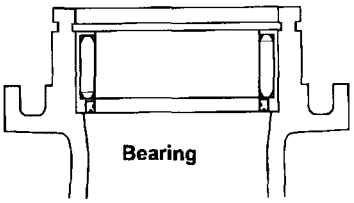


Press the new needle bearing in the right side of the bearing holder using the special tools.

TOOLS:

Driver	**07749-0010000**
Attachment, 62 X 67 mm	**07746-0010500**

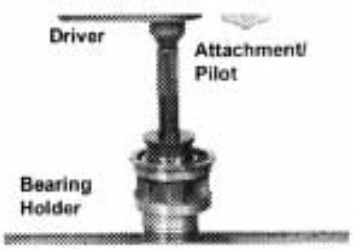


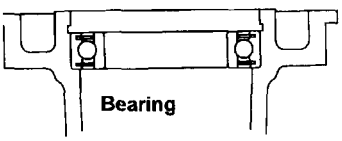


Install the new ball bearing to the left side of the bearing holder using the special tools.

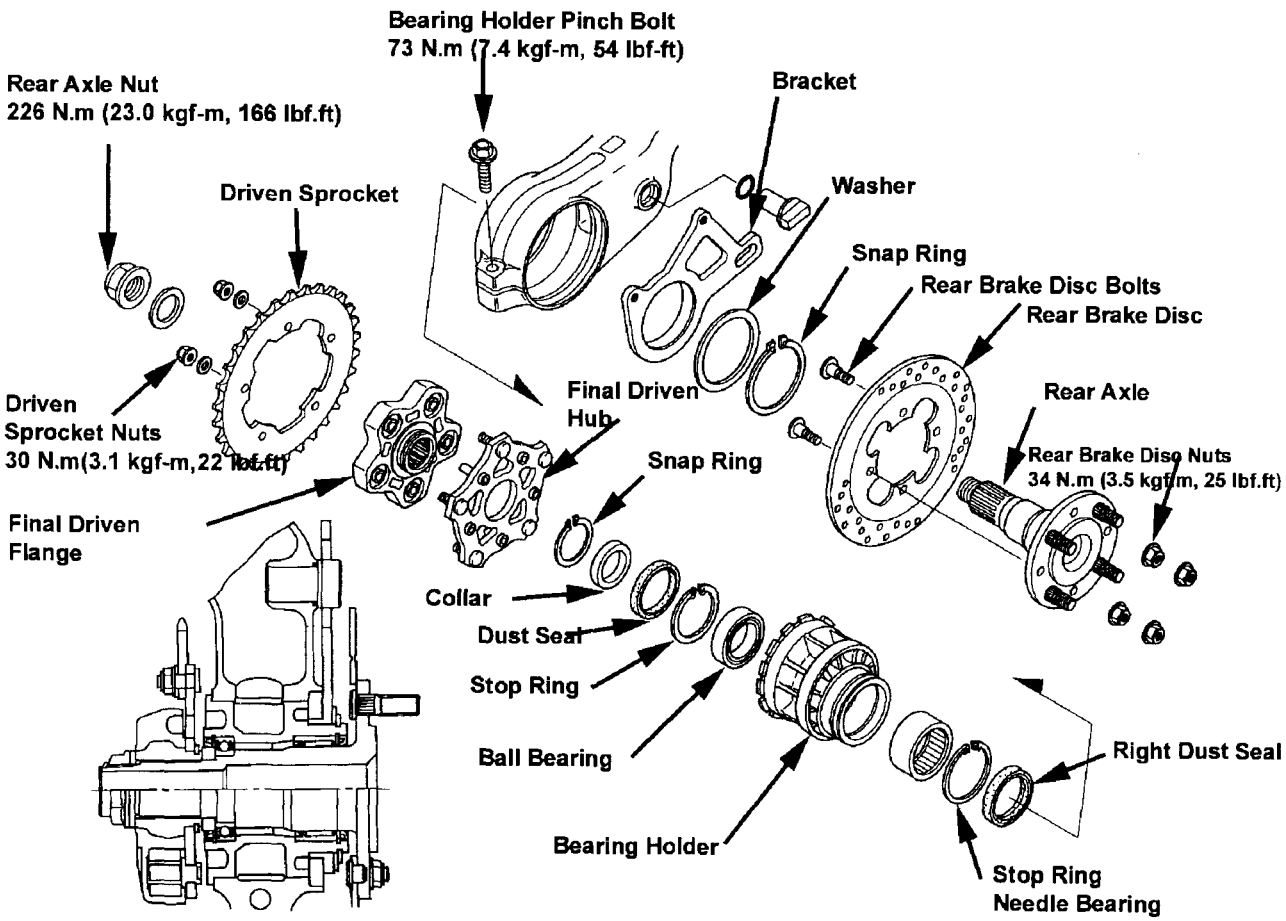
TOOLS:

Driver	**07749-0010000**
Attachment, 62 X 67 mm	**07746-0010500**
Pilot, 40 mm	**07746-0040900**



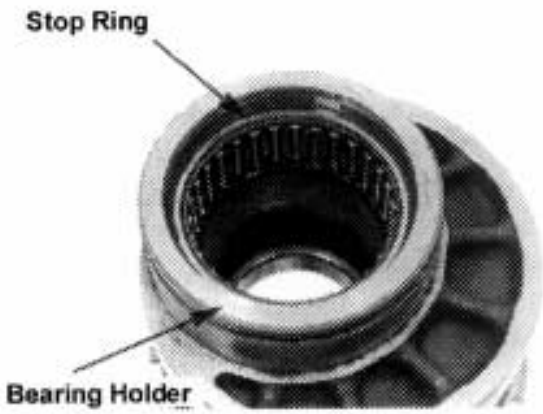


ASSEMBLY

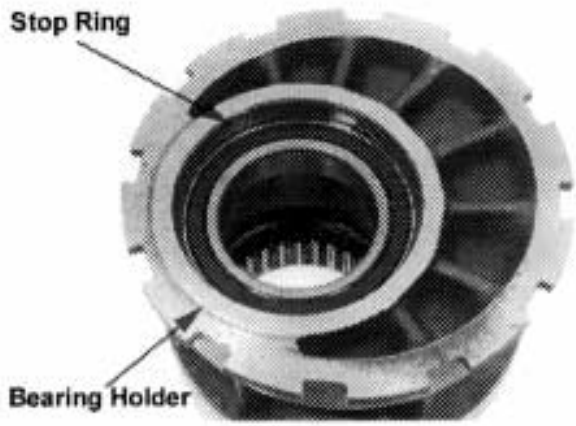


BEARING HOLDER

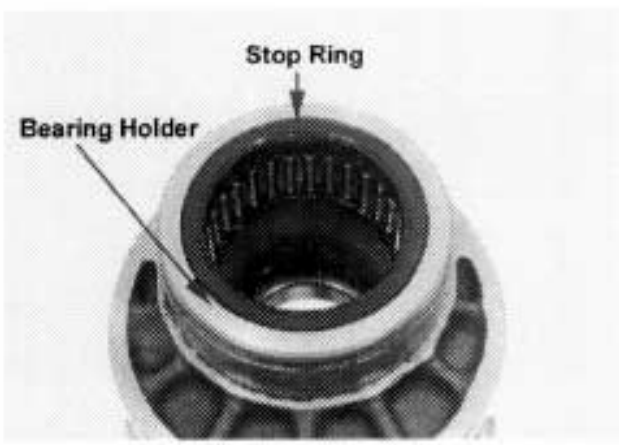
Install the stop ring to the right side of the bearing holder.



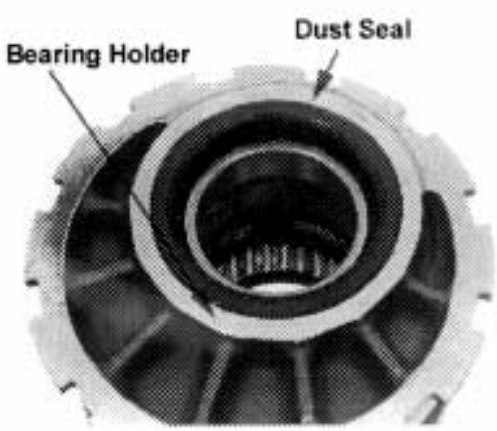
Install the stop ring to the left side of the bearing holder.



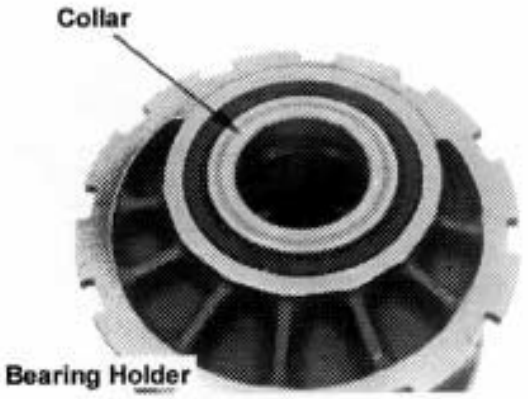
Apply grease to the new dust seal lip. Install the new dust seal to the left side of the bearing holder.



Apply grease to the new dust seal lip. Install the new dust seal to the right side of the bearing holder.

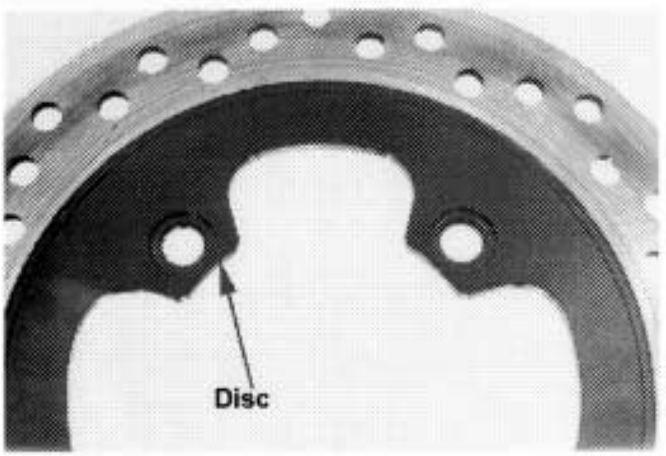


Install the collar to the left side of the bearing holder.



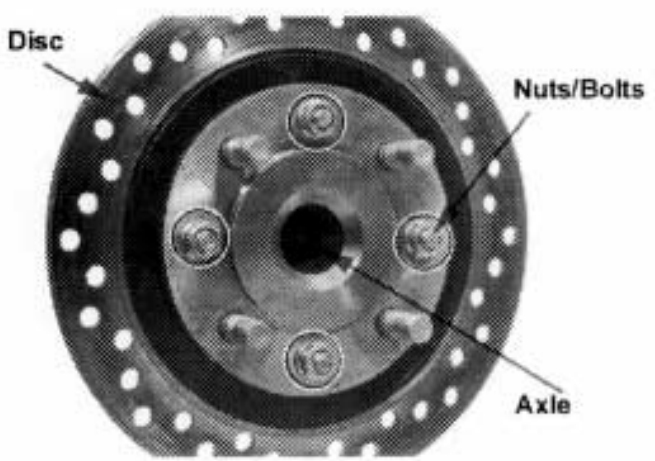
REAR AXLE/BRAKE DISC

Install the rear brake disc with its marking side facing the right side.



Install the rear brake disc bolts and nuts.
Install and tighten the rear brake disc nuts to the specified torque.

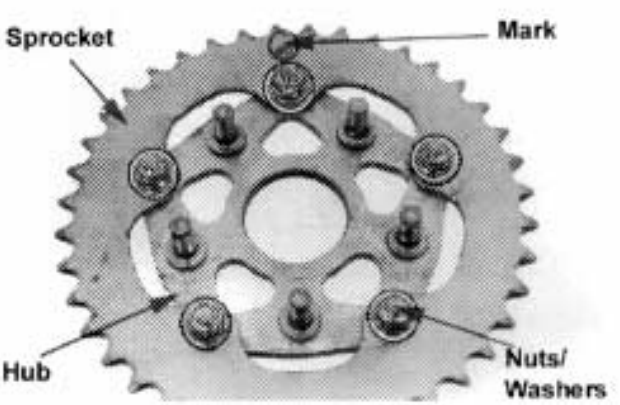
TORQUE: 34 N-m -
(3.5 kgf.m, 25 lbf.ft)



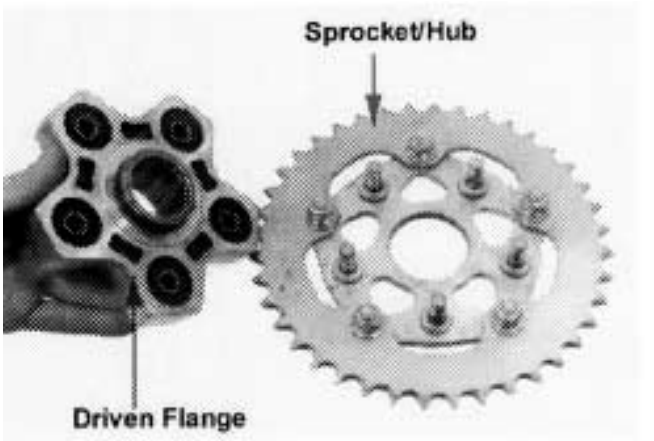
FINAL DRIVEN FLANGE

Install the driven sprocket to the final driven hub with its marking side facing out.
Install the washers and driven sprocket nuts.

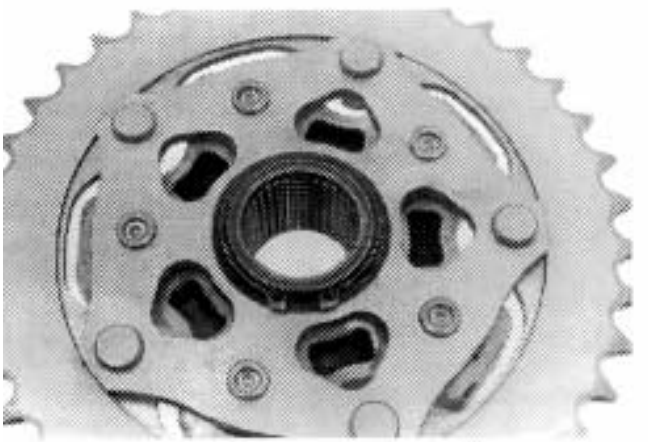
NOTE
- **Tighten the driven sprocket nuts after installing the driven flange to the frame.**

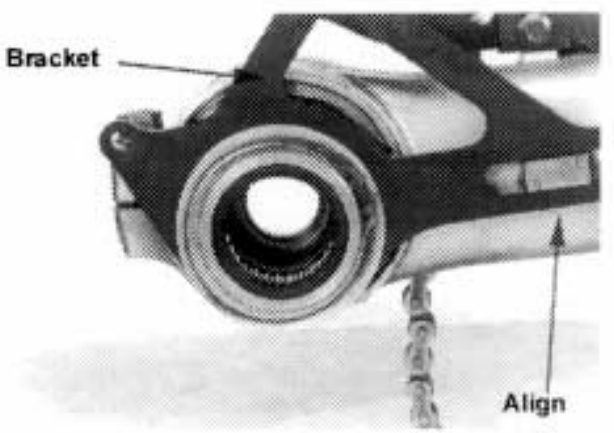


Install the driven sprocket and final drive hub to the final driven flange.



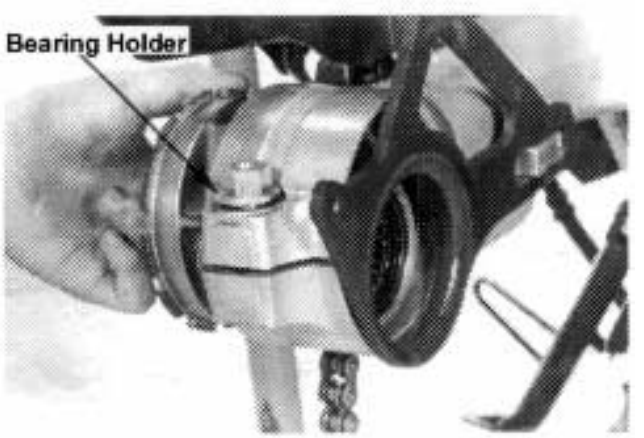
Install the snap ring to the groove on the final driven flange.





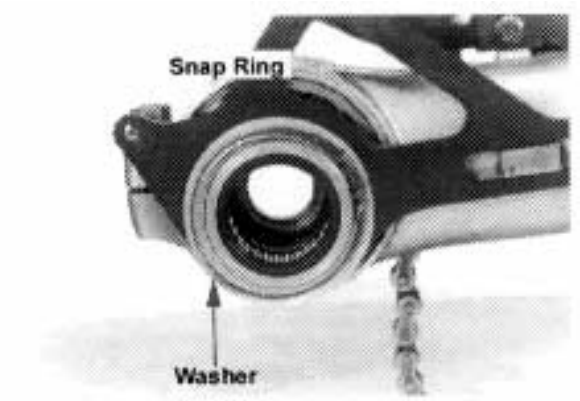
INSTALLATION

Install the bracket to the swingarm aligning the groove onto brackets to the tab on the swingarm.

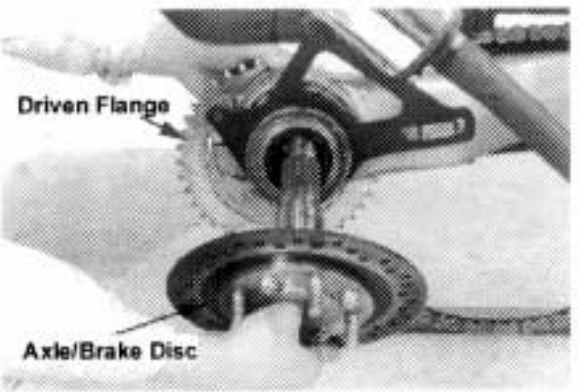


Install the bearing holder to the swingarm.

Install the washer and snap ring.

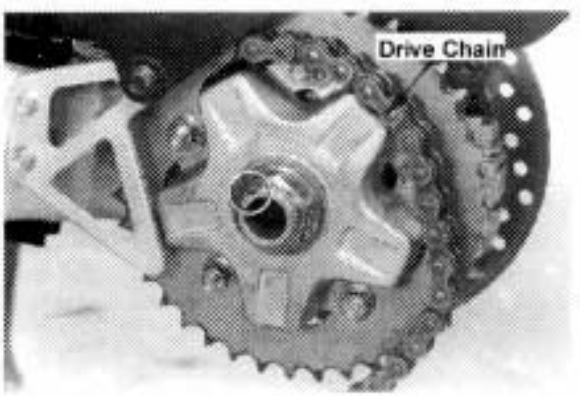


Install the rear axle/brake disc assembly and final driven flange assembly to the bearing holder.



Install the rear brake caliper (page 15-20).

Apply oil to the new rear axle nut threads and flange surface.
Install the washer and new rear axle nut.
Tighten the rear axle nut to the specified torque.



TORQUE:
226 N.m (23.0 kgf.m, 166 lbf.ft)

Stake the rear axle nut.
Install the final driven flange assembly to the rear axle.
If driven sprocket is removed from the final driven hub, tighten the driven sprocket nuts to the specified torque.

TORQUE:
30 N.m (3.1 kgf.rn, -22 lbf-ft)

Install the rear wheel (page 14-4).
Adjust the drive chain slack (page 3-17).

Tighten the bearing holder pinch bolt to the specified torque.

TORQUE:
73 N.rn (7.4 kgf-m, 54 lbf-ft)

SHOCK ABSORBER

Warning

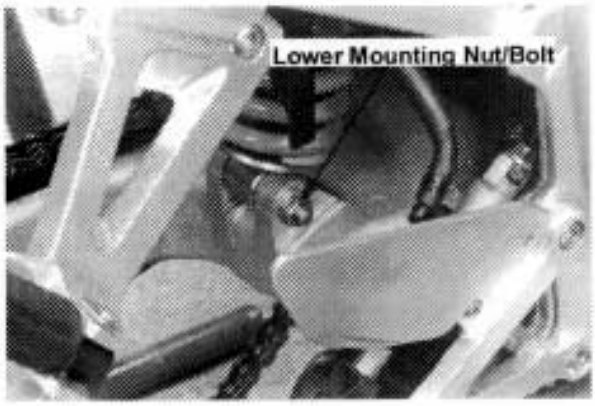
The shock absorber contains nitrogen under high pressure. Do not allow fire or heat near the gas containing shock absorber.

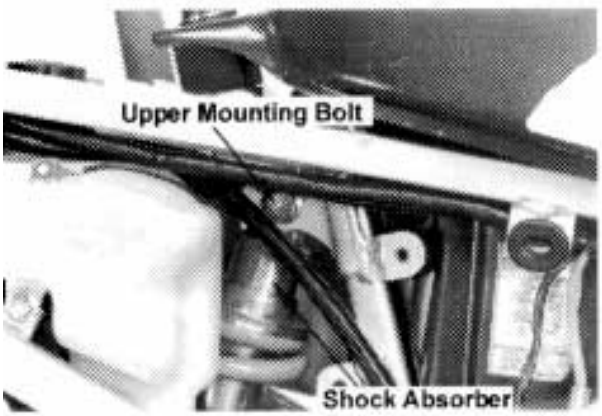
REMOVAL

Remove the side cover (page 2-6).
Remove the battery case (page 16-6).

Raise the rear wheel off the ground using a safety stand or hoist.

Remove the shock absorber lower mounting nut/bolt.
Remove the shock absorber upper mounting bolt.
Remove the shock absorber.



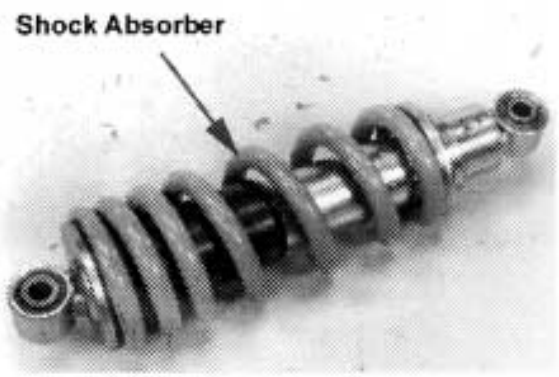


Warning

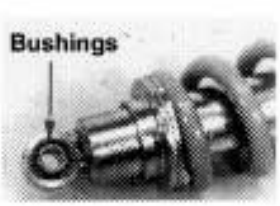
Do not try to disassemble the shock absorber or more.

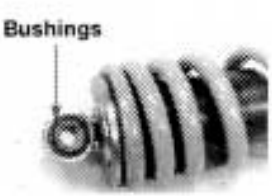
INSPECTION

Check the damper unit for deformation or oil leakage and replace if necessary.
Check the damper rod for straightens.
Also check for stepped wear and replace if necessary.



Check the bushing for wear or damage and replace if necessary.





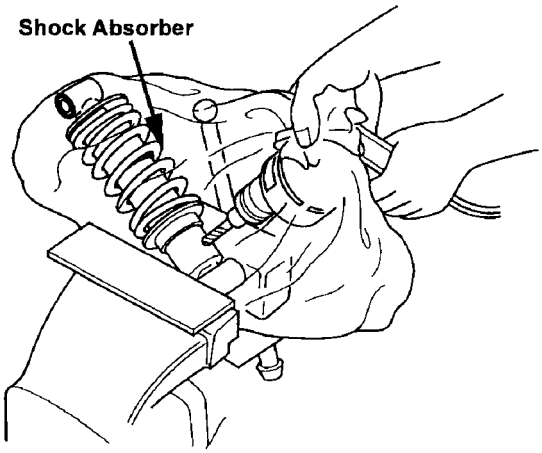
SHOCK ABSORBER - DISPOSAL PROCEDURE

Center punch the shock absorber to mark the drilling point.

Place the shock absorber inside a plastic bag and it upright in a visa.

Through the open end of the bag, insert a drill motor with a sharp 2 - 3 mm (5/64 - 1/8 in) drill bit. Warp the bag around the drill and hold it closed.

Use a sharp drill bit to minimize heat. Build up.

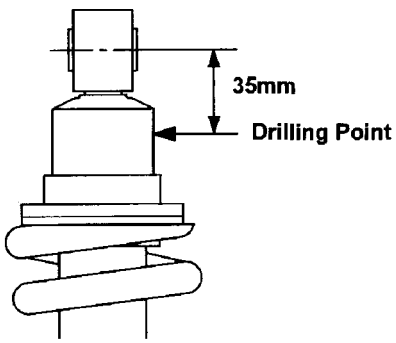


Warning

- **Using a dull drill bit allows a build-up of excessive heat and pressure inside the damper which may cause an explosion.**
- **The shock absorber contains nitrogen gas and under high pressure. Drilling farther into the damper case than specified can puncture the oil chamber. Oil escaping under high pressure may cause serious injury.**
- **Always wear eye protection to avoid getting metal *shaving in your eyes when gas pressure is released.***

NOTE

- The plastic bag is only intended to shield you from the escaping gas.

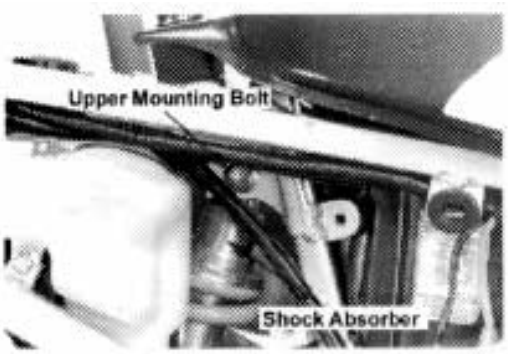


Briefly run the drill motor inside the bag; this will inflate the bag with air from the motor and help keep the bag from getting caught in the bit when you start.

INSTALLATION

Install the shock absorber.

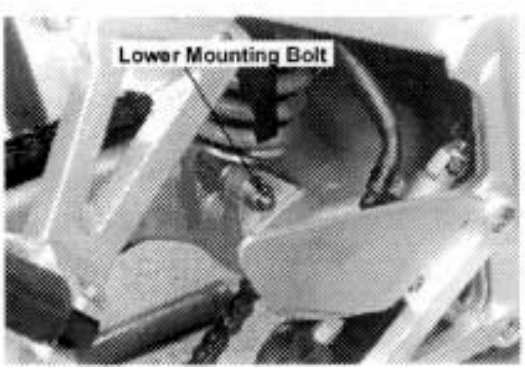
Install and tighten the shock absorber upper mounting bolt
to the specified torque.



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

Install the shock absorber lower mounting bolt and nut.

Tighten the lower mounting bolt to the specified torque.



TORQUE: 44 N.m (4.5 kgf-m, 33 lbfft)

Install the battery case (page 16-6).

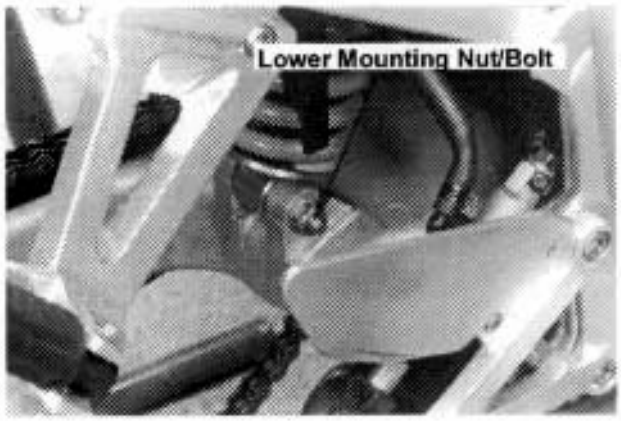
Install the side cover (page 2-7).

SWINGARM

REMOVAL

Remove the rear wheel (page 14-3).
Remove the rear brake caliper (page 15-10).

Remove the drive chain from the driven sprocket.

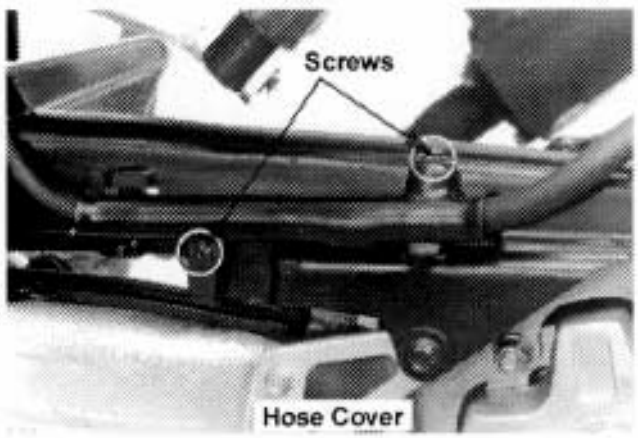


CAUTION

- **Do not suspend the brake caliper from the brake hose.Do not twist the brake hose.**

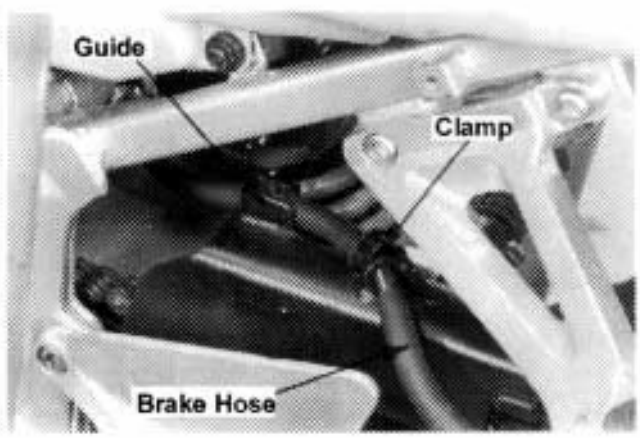
NOTE
Do not operate the brake pedal after removing the caliper and rear wheel. To do so will cause difficulty in fitting the brake disc between the brake pads.

Remove the shock absorber lower mounting nut/bolt.
Remove the screws and brake hose cover.

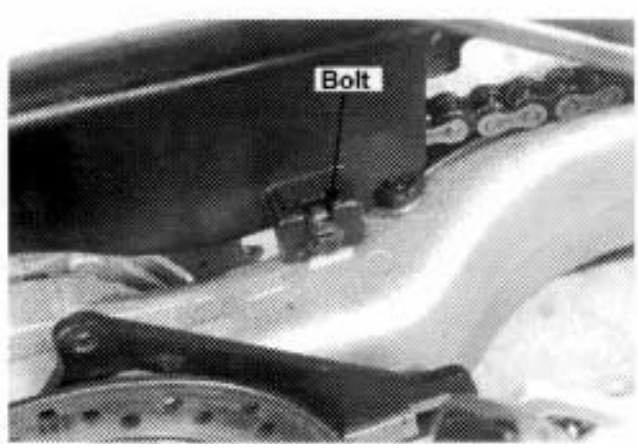


NOTE
Be careful not to damage the tabs on the brake hose cover and grooves on the drive chain cover.

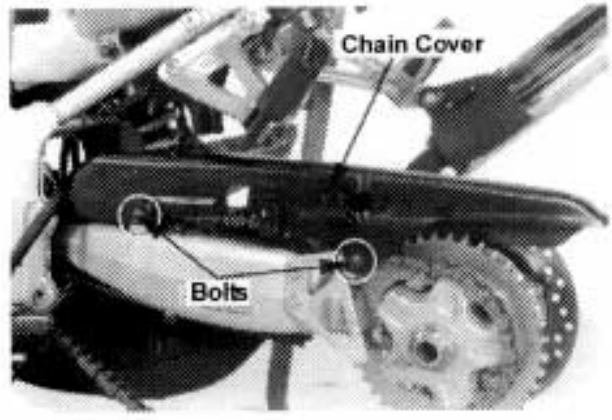
Remove the brake hose from the guide and clamp.



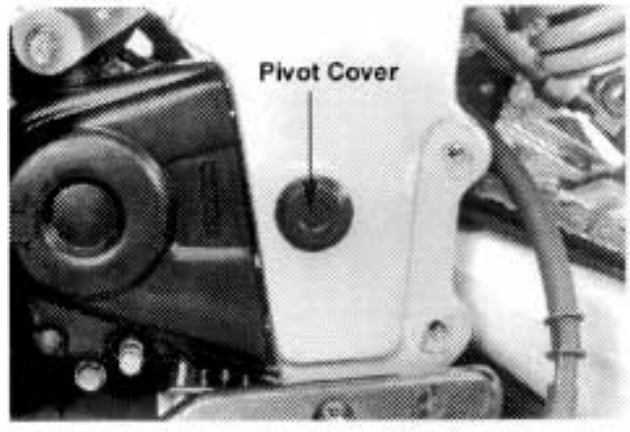
Remove the bolt.



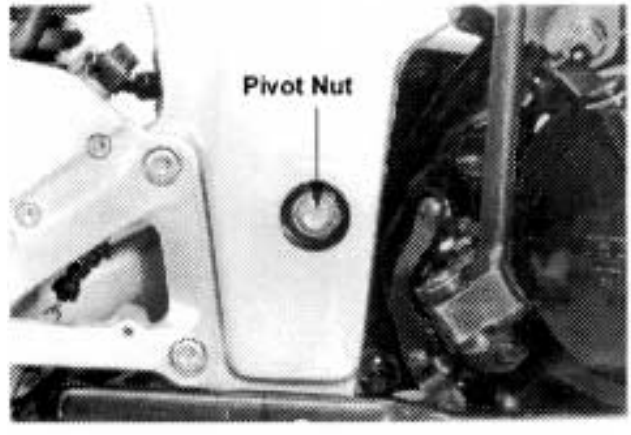
Remove the bolts and drive chain cover.



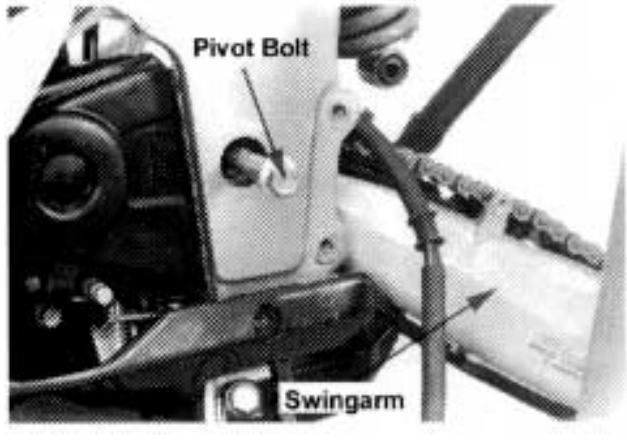
Remove the swingarm pivot covers.



Remove the swingarm pivot nut.

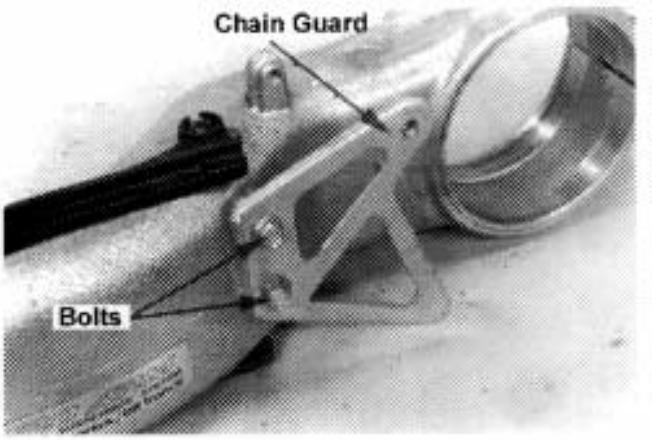


Remove the swingarm pivot bolt and swingarm.

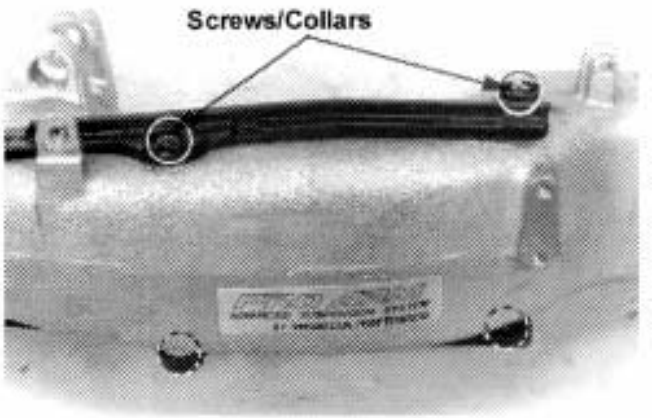


DISASSEMBLY

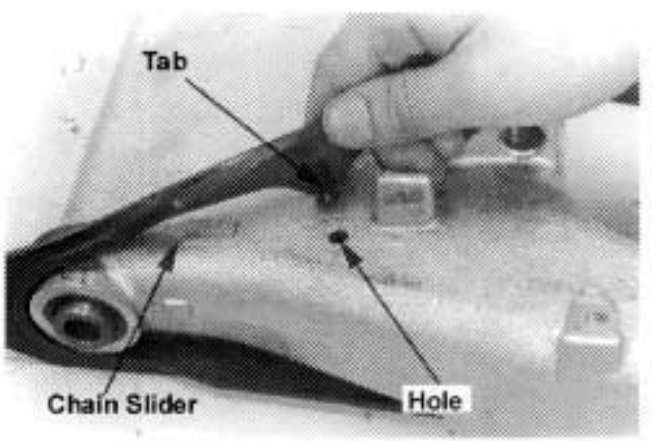
Remove the bearing holder and driven flange (page 14-5).
Remove the bolts and chain guard.



Remove the screws and collars.

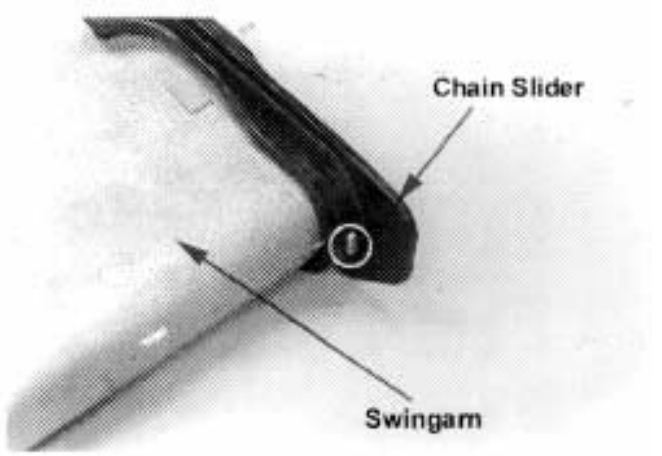


Remove the tabs on the drive chain slider from the holes on the swingarm.

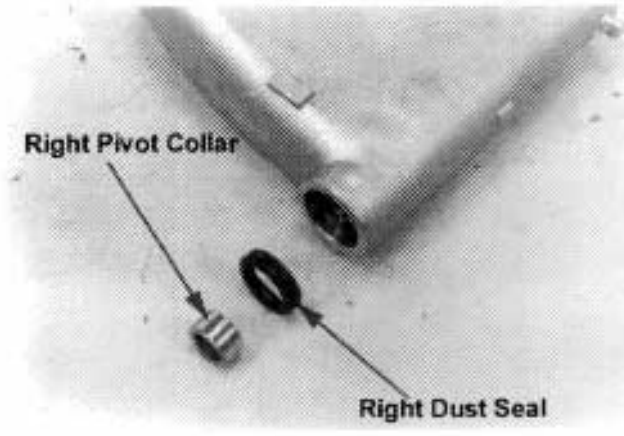


Remove the hole on the drive chain slider from the tab on the swingarm.
Remove the drive chain slider.

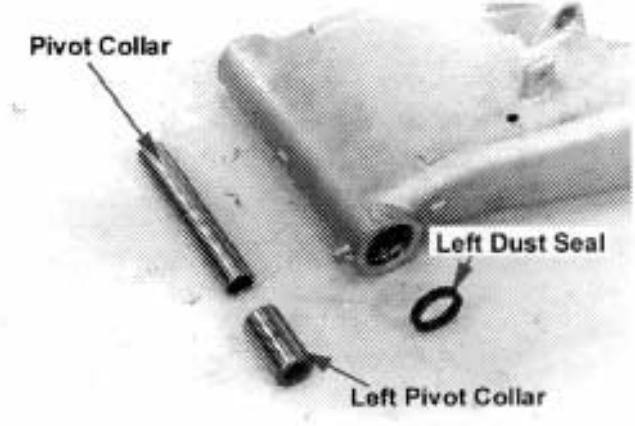
Inspect the drive chain slider for excessive wear.
Replace the drive chain slider if it is worn to wear indicator (page 3- 19).



Remove the right pivot collar and dust seal.

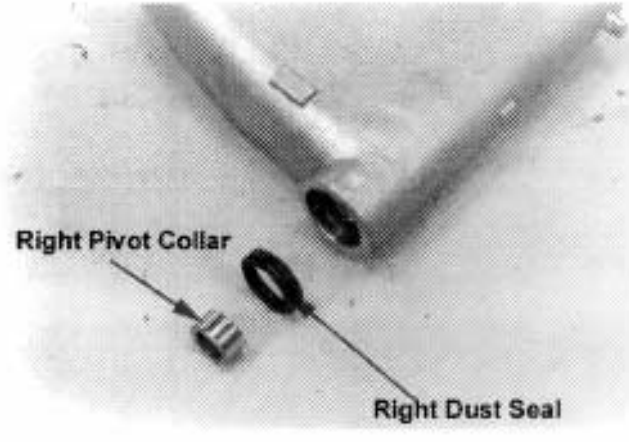


Remove the dust seal, left pivot collar and swingarm pivot collar.

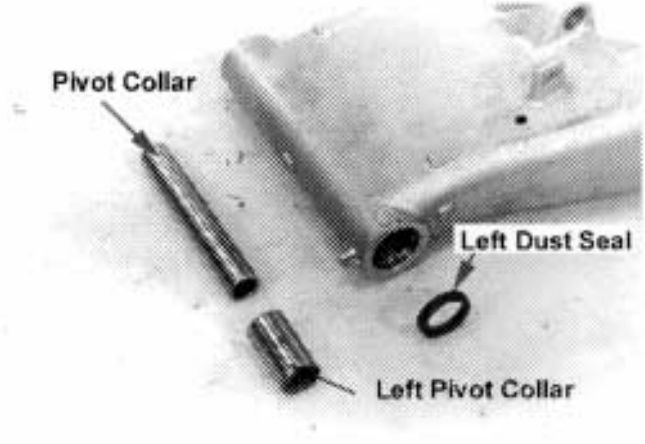


INSPECTION

Check the pivot collars for wear or damage and replace if necessary. Cheek the dust seals for wear or damage and replace if necessary.



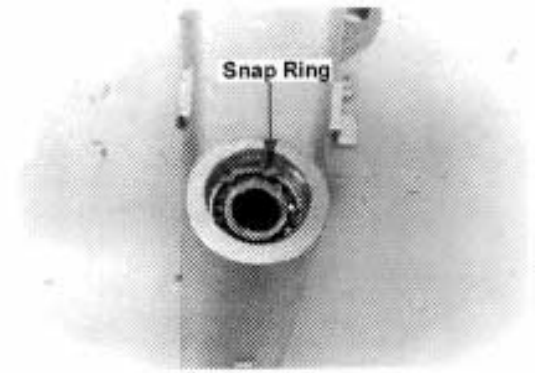
Check the needle and ball bearings for damage or loose fit and replace if necessary. Check the swingarm for deformation, cracks or other damage and replace if necessary.



BEARING REPLACEMENT

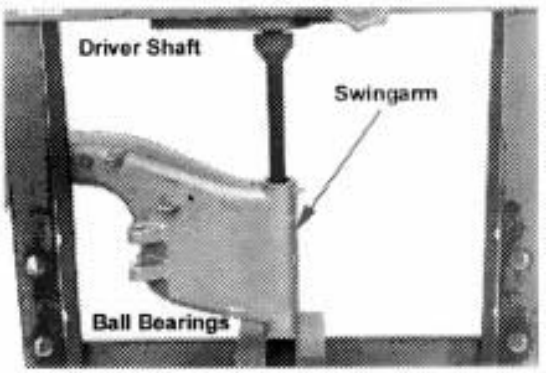
REMOVAL

Remove the snap ring from the pivot groove of the swingarm.



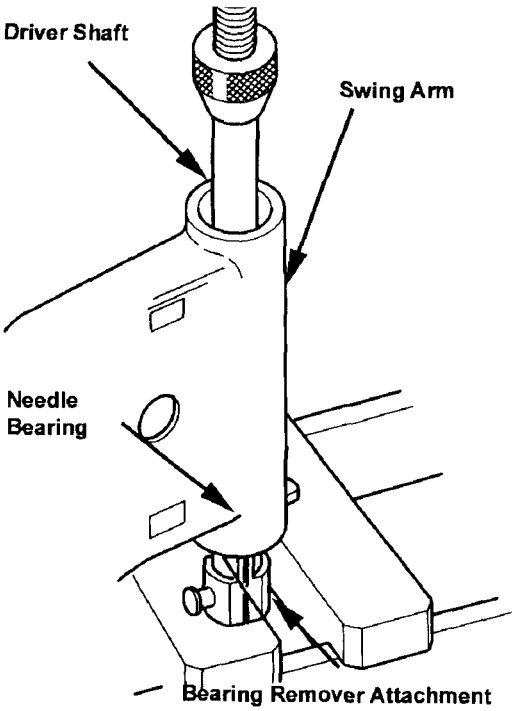
Remove the right pivot ball bearings using the special tools.

TOOLS:
Driver shaft 07946-MJ00100



Remove the left pivot needle bearing using the special tools.

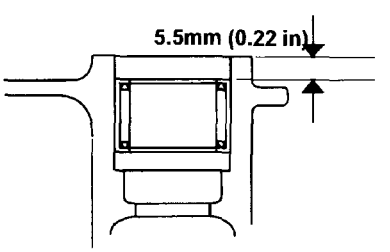
TOOLS:
Driver shaft 07946-MJ00100
Bearing remover attachment 07LMC-KV30200



INSTALLATION

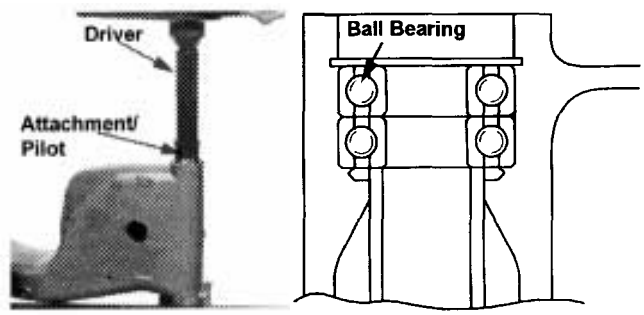
Apply grease to the new left pivot needle bearing.
Press the new left pivot needle bearing into the swingarm so
that the needle bearing outer surface is 5.5 mm (0.22 in)
below the outer edge of the swingarm pivot bearing cavity.

TOOLS:
Driver 07749-0010000
Attachment, 32 X 35 mm 07746-0010100



NOTE
Press the needle bearing in with the stamped side facing out.

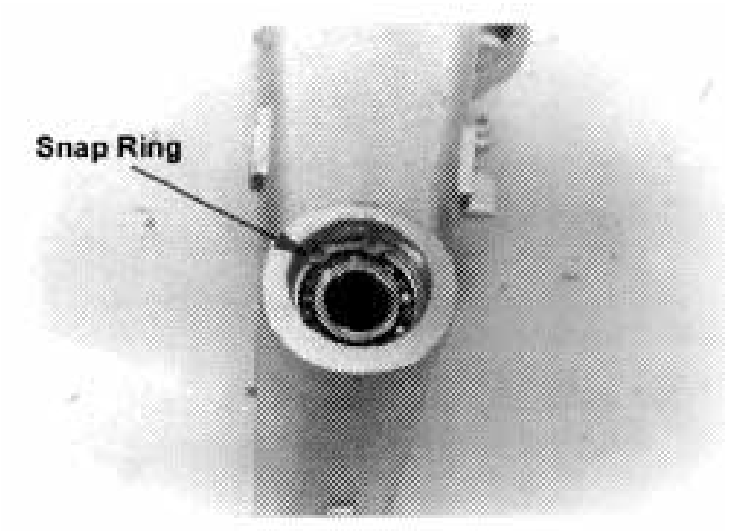
Apply grease to the new right pivot ball bearings.
Press the new right pivot ball bearings into the swingarm one at a time until they are fully seated.

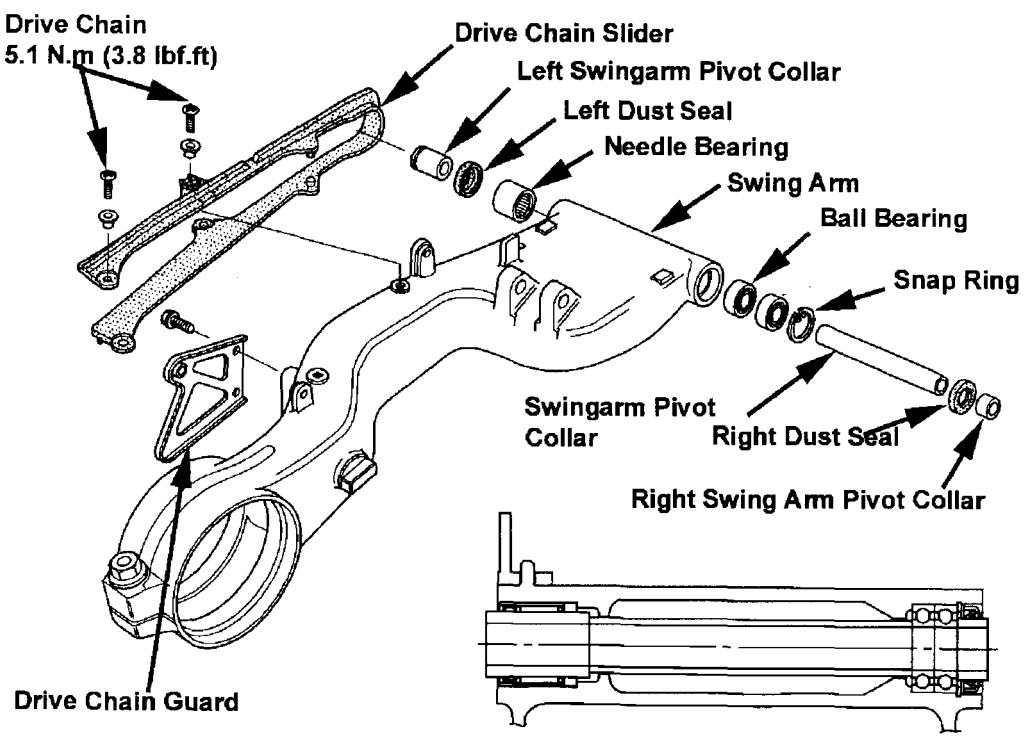


TOOLS:
Driver 07749-0010000
Attachment, 32 X 35mm 07746-0010100
Pilot, 15mm 07746-0040300

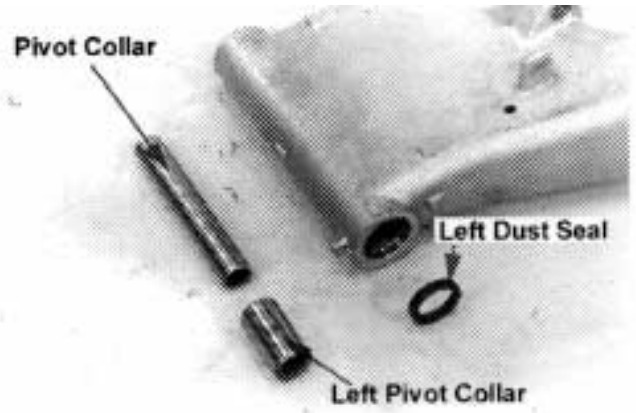
NOTE
- **Press the ball bearings in with the stamped side facing out.**

Install the snap ring to the pivot grooves of the swingarm.

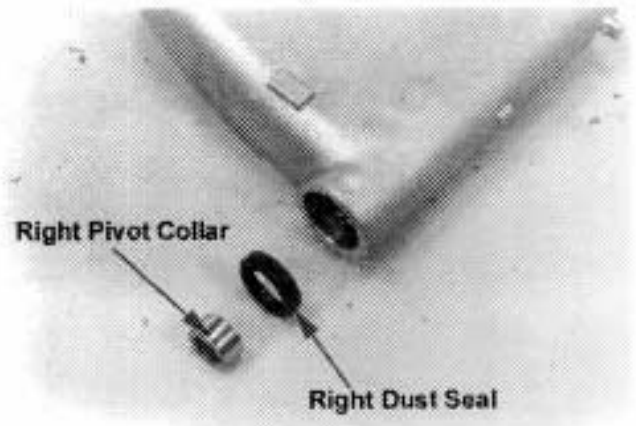




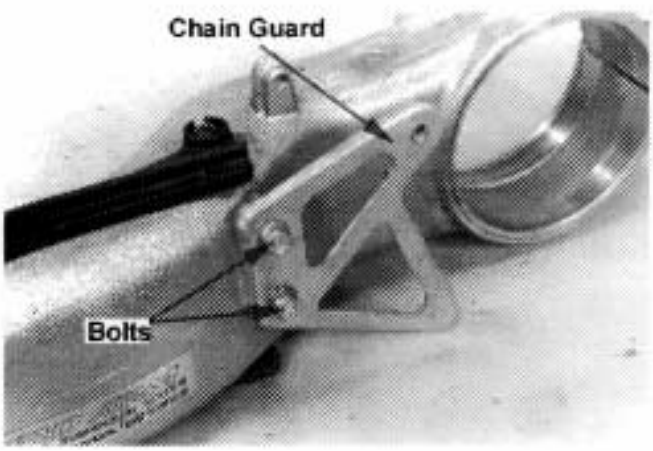
Install the swingarm pivot collar, left pivot collar and dust seal.



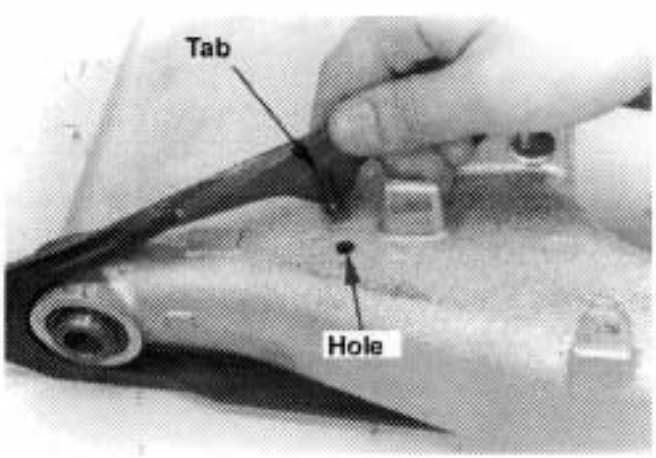
Install the dust seal and tight pivot collar.



Install the drive chain slider aligning the hole on the chain slider with the tab on the swingarm.

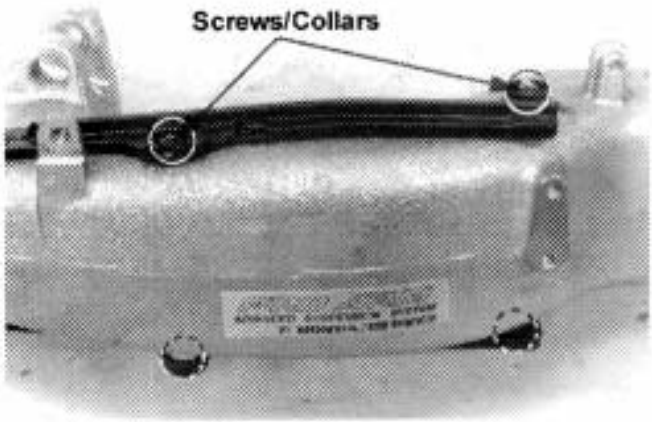


Install the tabs on the chain slider to the holes on the swingarm.



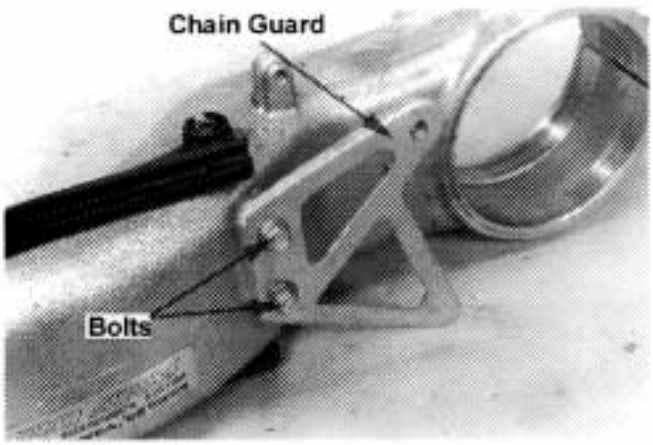
Install the collars and drive chain slider screws.
Tighten the drive chain slider screws to the specified torque.

TORQUE: 5.1 N.m (0.52 kgf.m, 3.8 lbf.ft)



Install the chain guard.
Install and tighten the bolts securely.

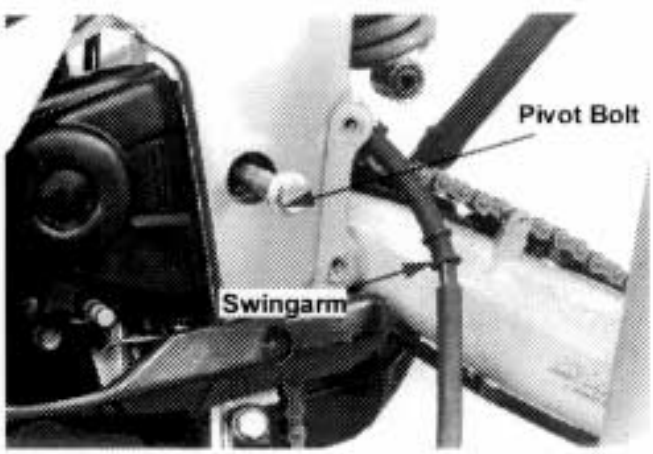
Install the bearing holder (page 14-12).



INSTALLATION

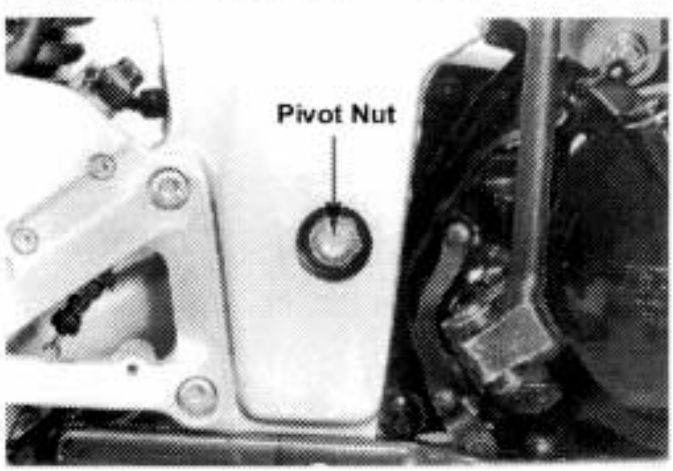
NOTE
- **Route the tubes and wires properly (page 1-18).**

Install the swingarm.
Apply thin coat of grease to the swingarm pivot bolt.
Install the swingarm pivot bolt.

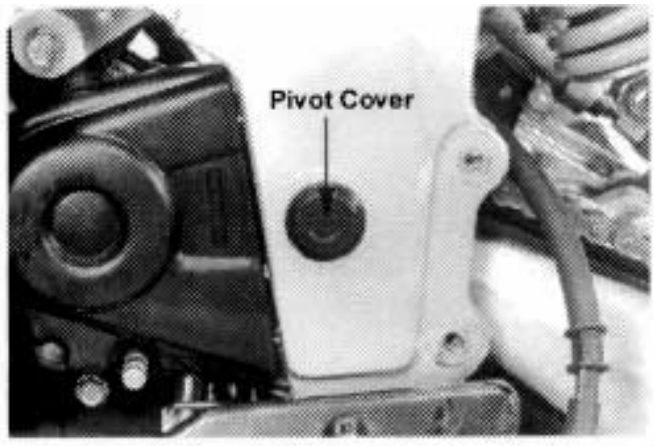


Install and tighten the swingarm pivot nut to the specified torque.

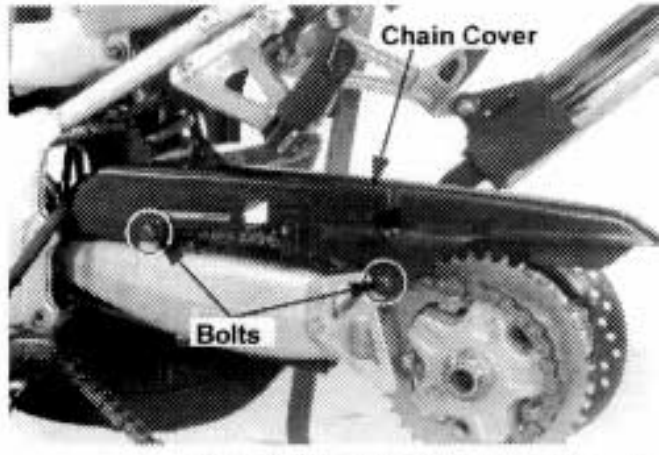
TORQUE: 88 N.m (9.0 kgfm, 65 lbf-ft)



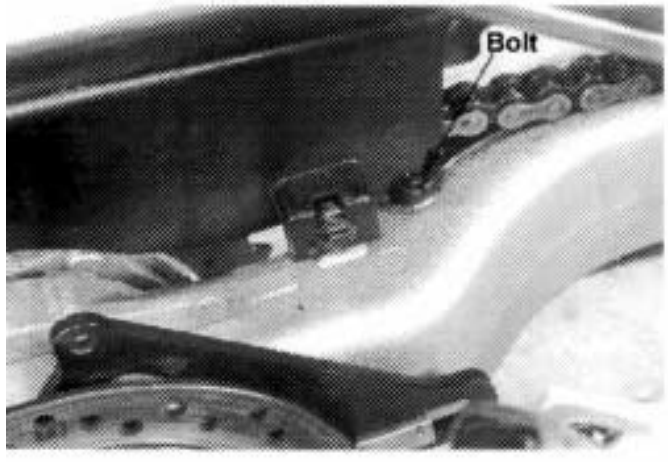
Install the swingarm pivot covers.



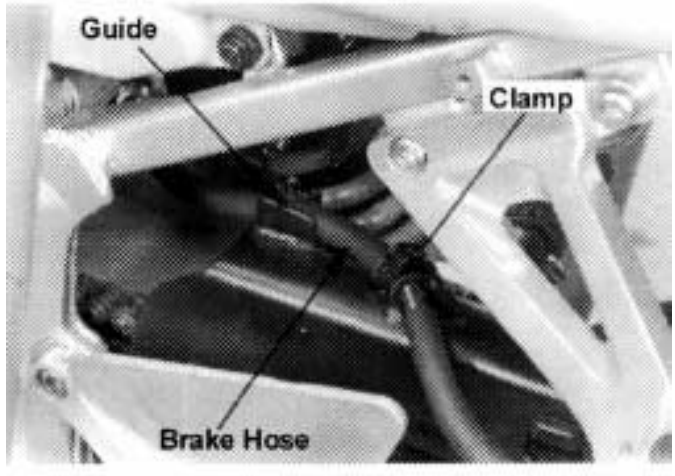
Install the drive chain cover.
Install and tighten the bolts securely.



Install and tighten the bolt securely.



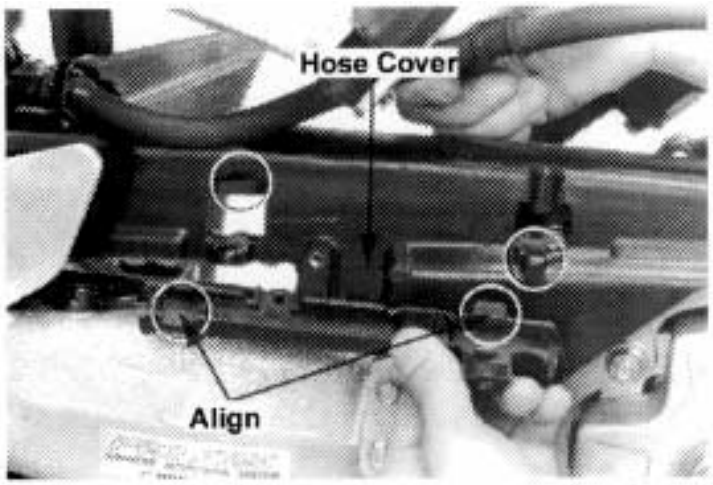
Install the brake hose to the guide and clamp.



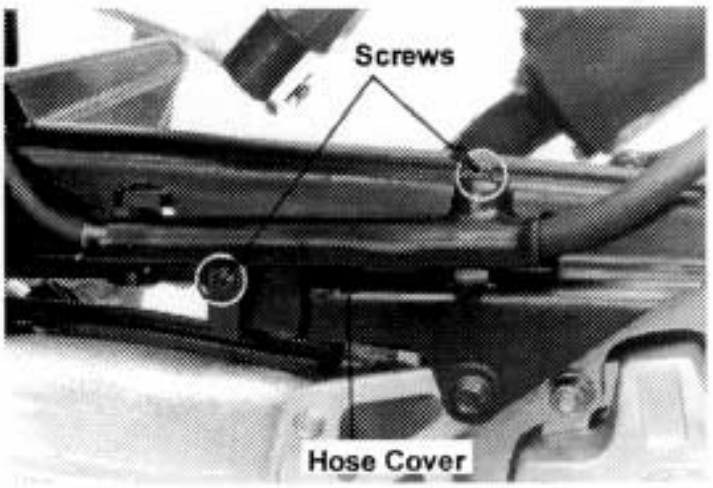
Install the brake hose cover aligning the its tabs to the grooves on the drive chain cover.

NOTE

- **Be careful not to damage the tabs *on the brake hose cover and* grooves on the drive chain cover.**

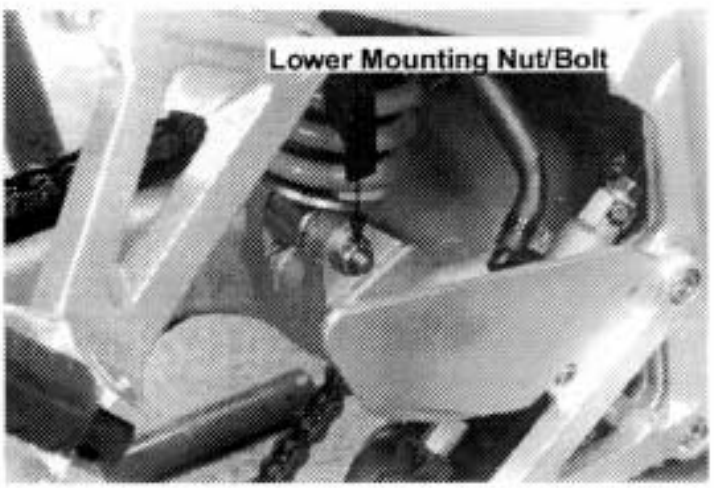


Install and tighten the screws securely.



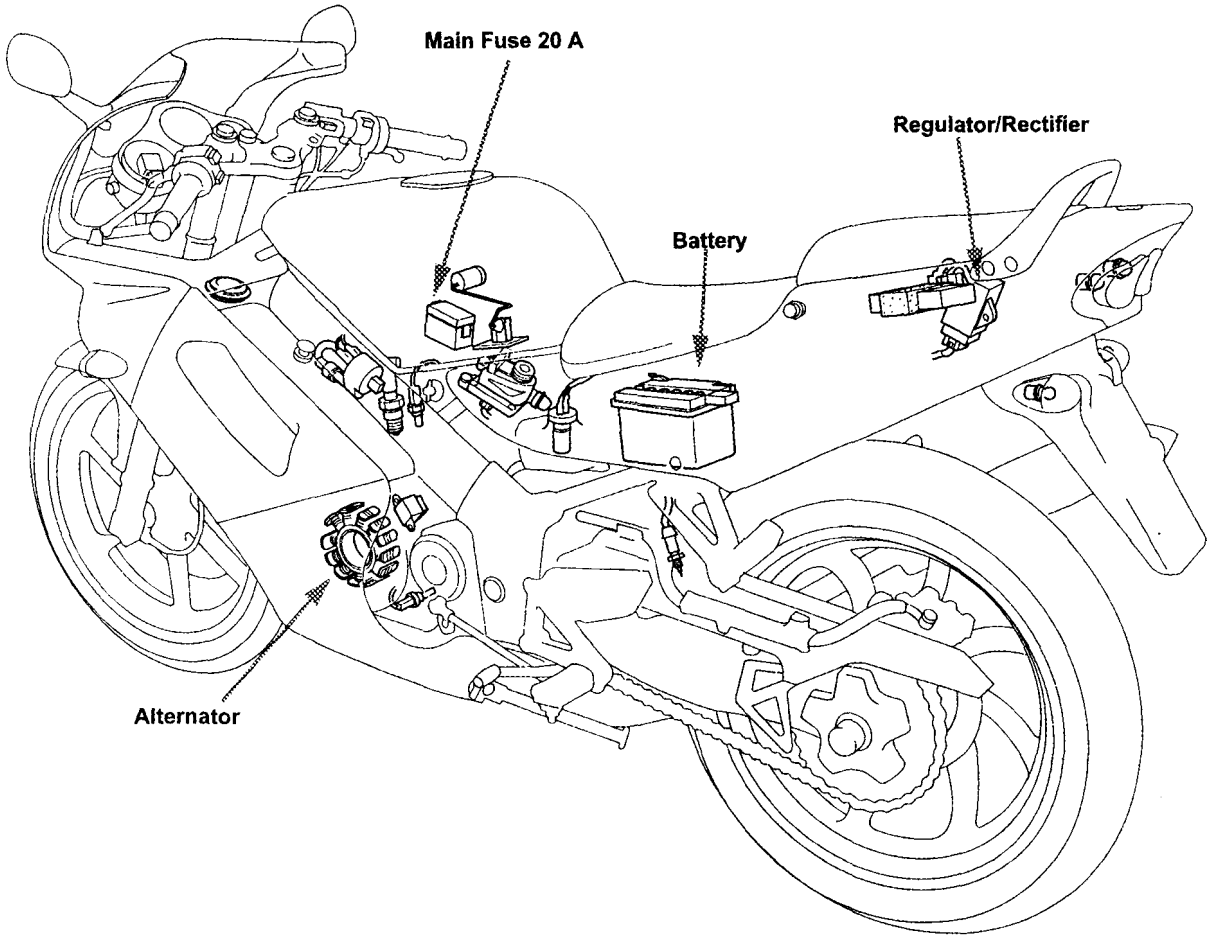
Install the shock absorber lower mounting nut/bolt.
Tighten the lower mounting bolt to the specified torque.

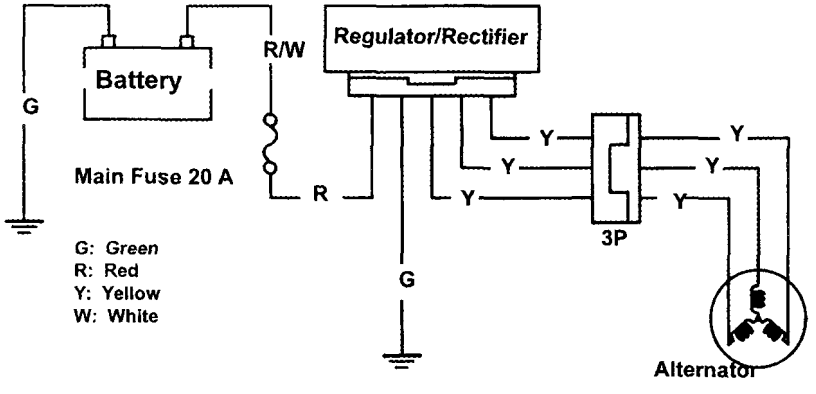
TORQUE: 44 N.m
(4.5 kgf.ni, 33 lbf.ft)



Install the rear brake caliper (page 15-20).
Install the rear wheel (page 14-4).

SYSTEM DIAGRAM





SERVICE INFORMATION

GENERAL

Warning

- The battery gives off explosive gases; keep sparks, flames and cigarettes away. Provide adequate ventilation when charging or using the battery in an enclosed space.
- The battery contains sulfuric acid (electrolyte). Contact with skin or eyes may cause severe burns. Wear protective clothing and a face shield.
  - If electrolyte gets o your skin, flush with water.
  - If electrolyte gets on your eyes, flush with water for at least 15 minutes and call a physician immediately.
- Electrolyte is poisonous.
  - If swallowed, drink large quantities of water or milk and follow with milk of magnesia or vegetable oil and call a physician.
- KEEP OUT OF REACH OF CHILDREN

- Always turn off the ignition switch before disconnecting any electrical component.

CAUTION

- *Some electrical components may be damaged if terminals or connectors are connected or disconnect while the ignition switch is ON and a current is present.*

- For extended storage, remove the battery, give it a full charge and store it in a cool, dry space.
- For battery remaining in a stored motorcycle, disconnect the negative battery cable from the battery terminal.

CAUTION

- *Tap water will shorten the service life of the battery.*

- Immediately wash off any spilled electrolyte using a mixture baking soda and water.

CAUTION

- *Avoid filling the battery above the UPPER LEVEL line to prevent an electrolyte overflow which could corrode the engine or nearby parts.*

- The battery can be damaged if overcharged or undercharges, or if left to discharge for long periods. These same conditions contribute to shortening the life-span of the battery. Even under normal use, the performance of the battery deteriorates after 2-3 years.
- Battery voltage may recover after battery charging, but under a heavy load, battery voltage will drop quickly and eventually the battery will be completely discharged. For this reason, the charging system is often suspected to be the problem. Battery overcharge often results in problems in the battery itself, which may appear to be an overcharge symptom. If one of the battery cells is shorted and the battery voltage does not increase, the regulator/rectifier supplies excess voltage to the battery. Under these conditions, the electrolyte level drops quickly.
- Before troubleshooting the charging system, check for proper use and maintenance of the battery. Check if the battery is frequently under a heavy load, such as having the headlight and tail light ON for long periods of time without riding the motorcycle.

BATTERY/CHARGING SYSTEM

Battery Charging System

- The battery will self-discharge when the motorcycle is not use. For this reason, charge the battery every two weeks to prevent sulfation from forming.
- Filling a new battery with electrolyte will produce some voltage, but in order to achieve maximum performance, always charge the battery. Also, the battery life is lengthened when it is initial-charges.
- When checking the charge system, always follow the steps in the troubleshooting flow chart (page 16-3).
- Alternator servicing may be done with the engine in the frame.

SPECIFICATIONS

ITEM		SPECIFICATIONS
Alternator rated output		180 W/5,000 min-1 (rpm)
Alternator charging coil resistance (At 20 °C/68 °F)		0.1–1.0Ω
Regulator/rectifier: regulated voltage (At 20 °C/68 °F)		14.7±0.5V at 5,000 min-1 (rpm)
Current leakage		1 mA maximum
Battery capacity		12 V -3A
Battery type		YB3L-A
Battery charging rate	Normal	0.3A/10h
	Quick	3A/0.5h

TROUBLESHOOTING

BATTERY UNDERCHARGING (VOLTAGE NOT RAISED TO REGULATED VOLTAGE).

Measure the charging voltage with the battery fully charged and in good condition (page 16-5).

Correct

Check the battery current leakage (leak test, page 16-8)

Correct

Incorrect

Faulty Battery

Standard regulated voltage is not reached when the engine speed increase.

Disconnect the regulator/rectifier 4P connector and recheck the battery current leakage.

Correct

Incorrect

Shorted wire harness
Faulty ignition switch

Faulty regulator/ rectifier

Check the voltage between the battery line and ground line of the regulator/rectifier 4P connector (page 16-8)

Incorrect

Shorted wire harness
Poorly connected connectors

Correct

Check the resistance of the charging coil at the charging coil line of the regulator/rectifier 3P connector (page 16-9)

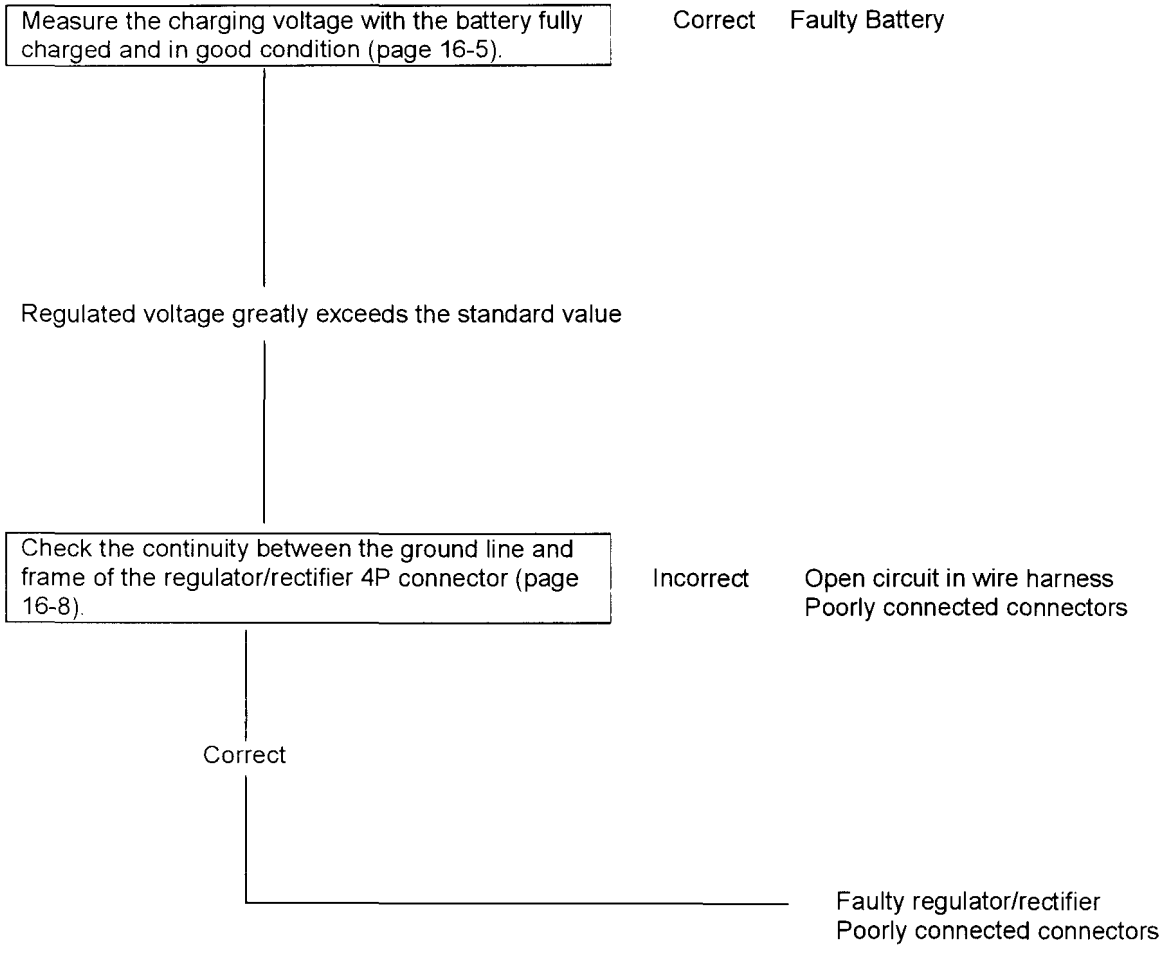
Incorrect

Shorted wire harness
Faulty charging coil

Correct

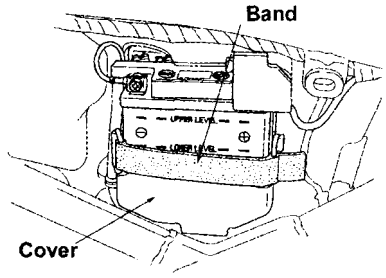
Faulty regulator/rectifier

BATTERY OVERCHARGING (REGULATED VOLTAGE TOO HIGH).



BATTERY

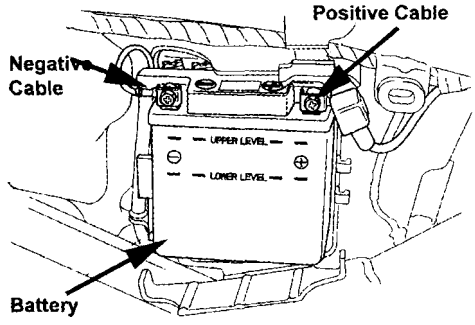
REMOVAL



NOTE
- Always turn the ignition switch OFF before removing or installing the battery.
- If you disconnect the battery terminal, all memories of the trip meter are erased.

Remove the right side cover (page 2-6).

Remove the band and battery cover.



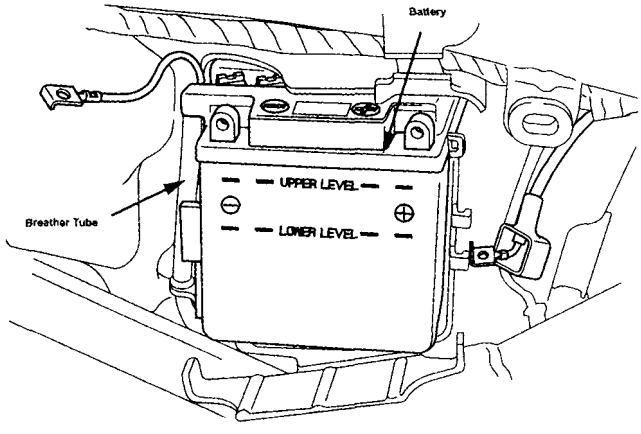
NOTE
- Disconnect the battery negative cable first, then positive cable from the battery.

Remove the bolt and battery negative cable.
Remove the positive cable cover.
Remove the bolt and battery positive cable.

Disconnect the battery breather tube.
Remove the battery.

INSTALLATION

Installation is in the reverse order of removal.

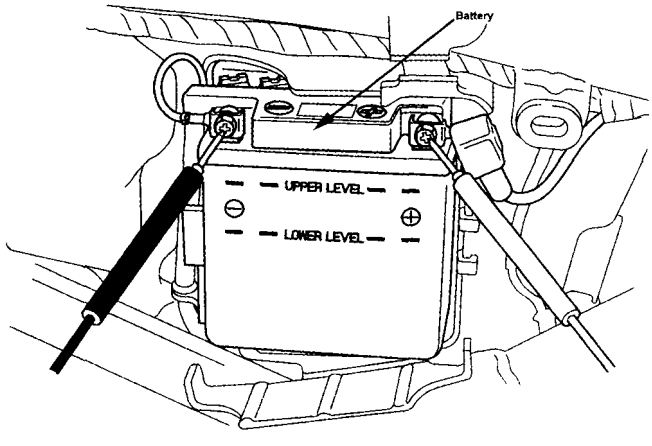


NOTE
- Apply clean grease to the battery terminals.
- Pull the cover over the positive terminal.

INSPECTION

Measure the battery voltage using a commercially available
Digital multimeter

Voltage: Fully charged: 11-13V
Under charged: Below 10V



BATTERY CHARGING

Warning

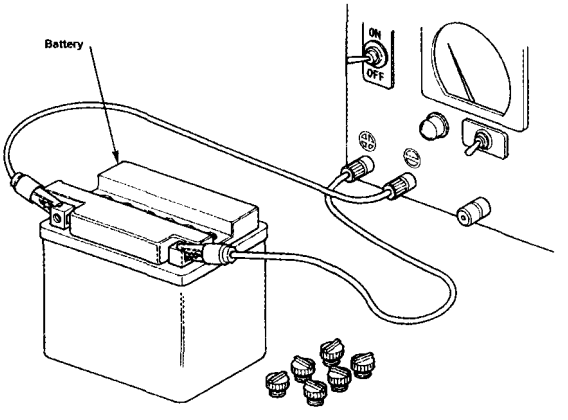
- *The battery gives off explosive gases; keep sparks, flames, and cigarettes away. Provide adequate ventilation when charging.*
- *The battery contains sulfuric acid (electrolyte). Contact with skin or eyes ma cause severe burns. Wear protective clothing and a face shield.*
  - *If electrolyte gets on your skin, flush with water*
  - *If electrolyte gets on your eyes, flush with water for at least 15 minutes and call a physician.*
- *Electrolyte is poisonous. If swallowed, drink large quantities of water or milk and follow with milk of magnesia or vegetable oil and call a physician.*
- *Turn power ON/OFF at the charger, not at the battery terminals.*

Remove the battery (page 16-5)

Connect the charger positive (+) cable to the battery positive (+) terminal.

Connect the charger negative (+) cable to the battery negative (+) terminal.

Charging current/time
Standard: 0.3A/10h
Quick: 3A/0.5h



CAUTION

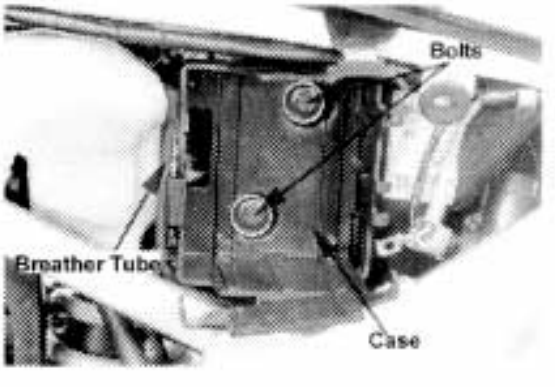
- *Quick-charging should only be done in an emergency; slow charging is preferred.*
- *For battery charging, do not exceed the charging current and time specified on the battery. Using excessive current or extending the charging time may damage the battery.*

BATTERY CASE REMOVAL/INSTALLATION

Remove the battery (page 16-5).

Remove the bolts and battery case.
Remove the battery breather tube from the clamp on the battery case.

Installation is in the reverse order of removal.



NOTE

- Route the tubes and wire harnesses properly (page 1-18).

CHARGING SYSTEM INSPECTION

NOTE

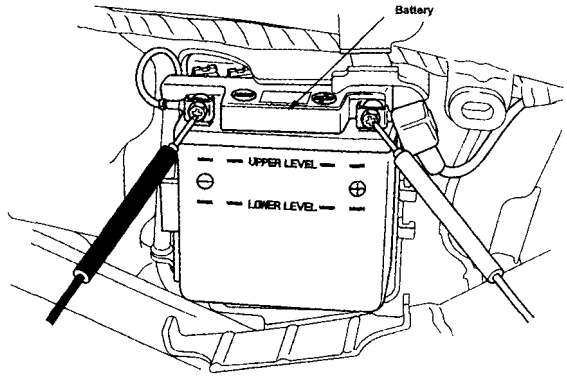
- Measuring circuits with a large capacity that exceeds the capacity of the tester may cause damage to the tester. Before starting each test, set the tester at the high capacity range first, the gradually down to low capacity ranges in order to ensure that you have the correct range and do not damage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

REGULATED VOLTAGE INSPECTION

Warning

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

Remove the battery (page16-5) and install the fully charged battery.
Start the engine and warm it up to the operating temperature; stop the engine.
Connect the multimeter between the positive and negative terminals of the battery.



CAUTION

- *To prevent short, make absolutely certain which are the positive and negative terminals or cable.*
- *Do not disconnect the battery or any cable in the charging system without first switching off the ignition switch. Failure to follow this precaution can damage the tester or electrical components.*

With the headlight ON (Lo beam), restart the engine.
Measure the voltage on the multitester when the engine runs at 5,000 min-1 (rpm).

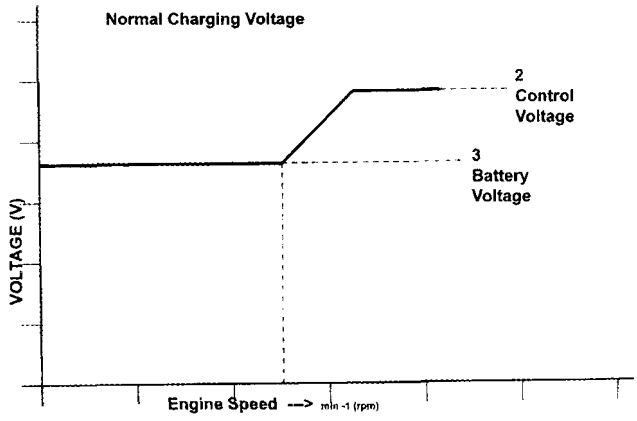
Regulated voltage: 14.7 ± 0.5V/5,000 min-1 (rpm)

The battery is normal if the voltage reads the regulated voltage on the tester.

NOTE

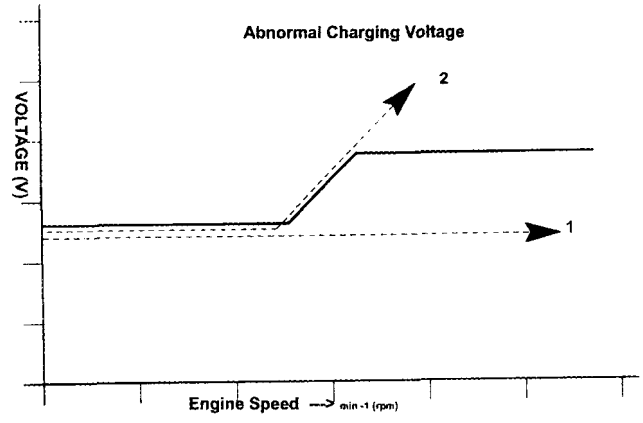
- The speed at which voltage starts to rise cannot be checked as it varies with the temperature and loads of the generator.

A frequently discharges battery is an indication that it is deteriorated even if it proves normal in the regulated voltage inspection.
The charging circuit may be abnormal if any of the following symptoms is encountered:



1. Voltage not raised to regulated voltage (page 16-3)
- Open or shorted circuit in the charging system wire harness or poorly connected connector
- Open or shorted of the alternator
- Faulty regulator/rectifier

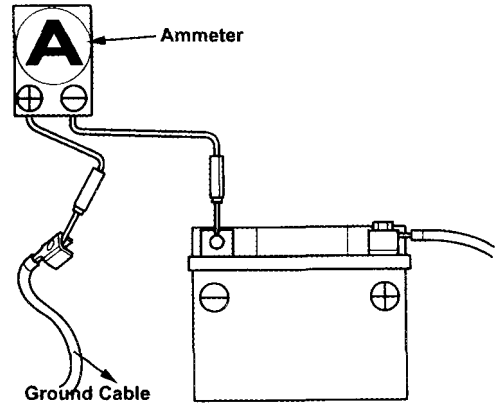
2. Regulated voltage too high (page16-4)
- Poorly grounded voltage regulator/rectifier
- Faulty battery
- Faulty regulator/rectifier



CURRENT LEAKAGE TEST

Remove the battery cover (page 16-5).

Turn the ignition switch off, and disconnect the ground (-) cable from the battery.
Connect the ammeter (+) probe to the battery ground cable and the ammeter (-) probe to the battery (-) terminal.
With the ignition switch off, check for current leakage.

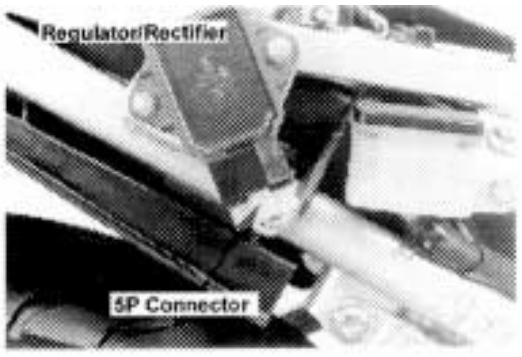


NOTE
- When measuring current using a tester, set it to a high range, and then bring the range down to an appropriate level. Current flow higher than the range selected may blow out the fuse in the tester.
- While measuring current, do not turn the ignition on. A sudden surge of current may blow out the fuse in the tester.

Specified current leakage: 1 mA max.

If current leakage exceeds the specified value, a shorted circuit is likely.
Locate the short by disconnecting connections one by one and measuring the current.

REGULATOR / RECTIFIER



WIRE HARNESS INSPECTION

Remove the side cover (page 2-6).

Disconnect the regulator/rectifier 5P connector. Check the connector for loose or corroded terminals.

BATTERY LINE

Make sure the battery voltage between Red (+) and Green (-).
If there are no voltage, measure the followings:

Item	Terminals	Specification
Battery charging line	Red (+) and ground (-)	Battery voltage should register
Ground line	Green and ground	Continuity exists

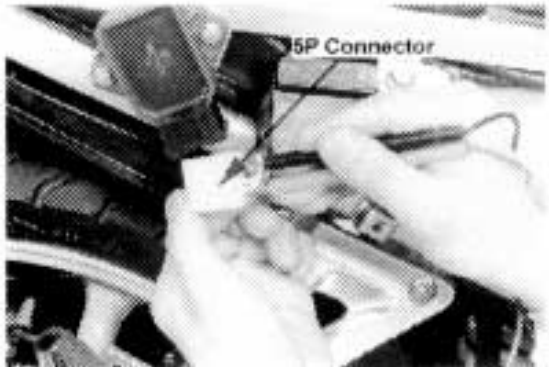
CHARGING LINE

NOTE

- *It is necessary to remove the stator coil to complete this test.*

Measure the resistance between the 5P connector terminals and ground.

Connection: Yellow and Yellow
Standard: 0.1 - 1.0 Ω (20 °C/68 °F)



If the charging coil reading is out of specification, check the alternator (page 16-10).

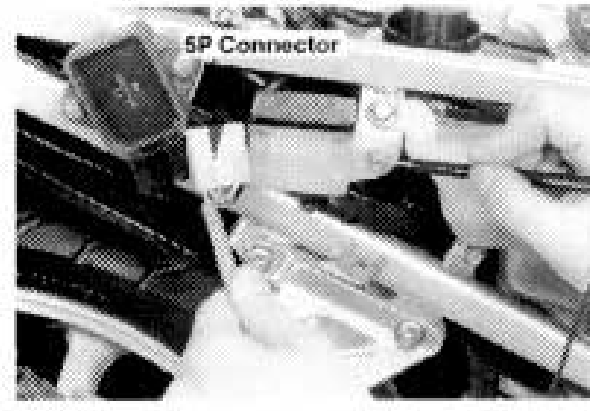
Check for continuity between the 5P connector terminals and ground.
There should be no continuity.

If there is continuity between the 5P connector and ground, check the alternator (page 16-10).

If the charging coil reading is out of specification, check the alternator (page 16-10).

Check for continuity between the 5P connector terminals and ground.
There should be no continuity.

If there is continuity between the 5P connector and ground, check the alternator (page 16-10).



REMOVAL INSTALLATION

Remove the right side cover (page 2-6)

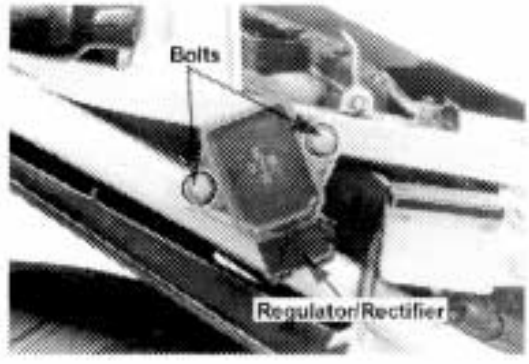
Disconnect the regulator/rectifier 5P connector.

Remove the bolts and regulator/rectifier unit.

Installation is in the reverse order of removal.

Remove the bolts and regulator/rectifier unit.

Installation is in the reverse order of removal.



NOTE

- Route the wire harness properly (page1-18).

ALTERNATOR INSPECTION

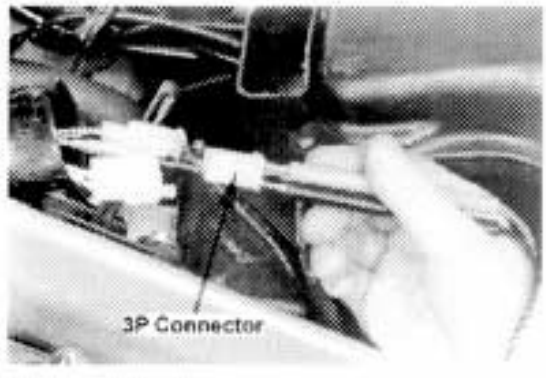
NOTE

- Refer to section 11 alternator removal/installation.

ove the fuel tank (page 1-12).

Disconnect the alternator 3P connector.
Measure the resistance between the 3P connector terminals
and ground.

Connection: Yellow and Yellow



If the charging coil reading is out of specification, replace the
stator (page 11-12).

Check for continuity between the 3P connector terminals and ground.
There should be no continuity.

If the there is continuity between the 3P connector and ground, replace the stator (page 11-2).

Remove the fuel tank (page 2-12).

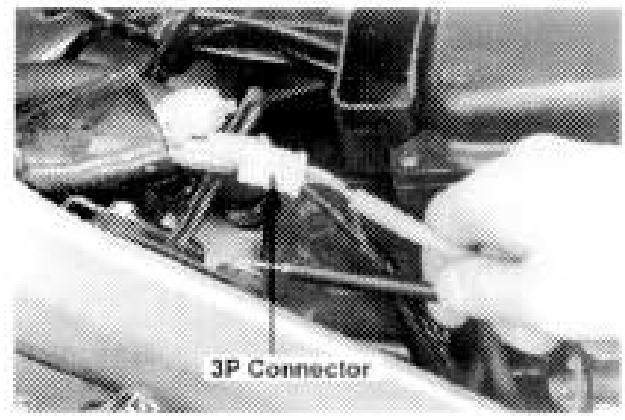
Disconnect the alternator 3P connector.
Measure the resistance between the 3P connector terminals and ground.

Connection: Yellow and Yellow
Standard: 0.1 – 1.0 ohms (20 ^{0}C 68^{0} F)

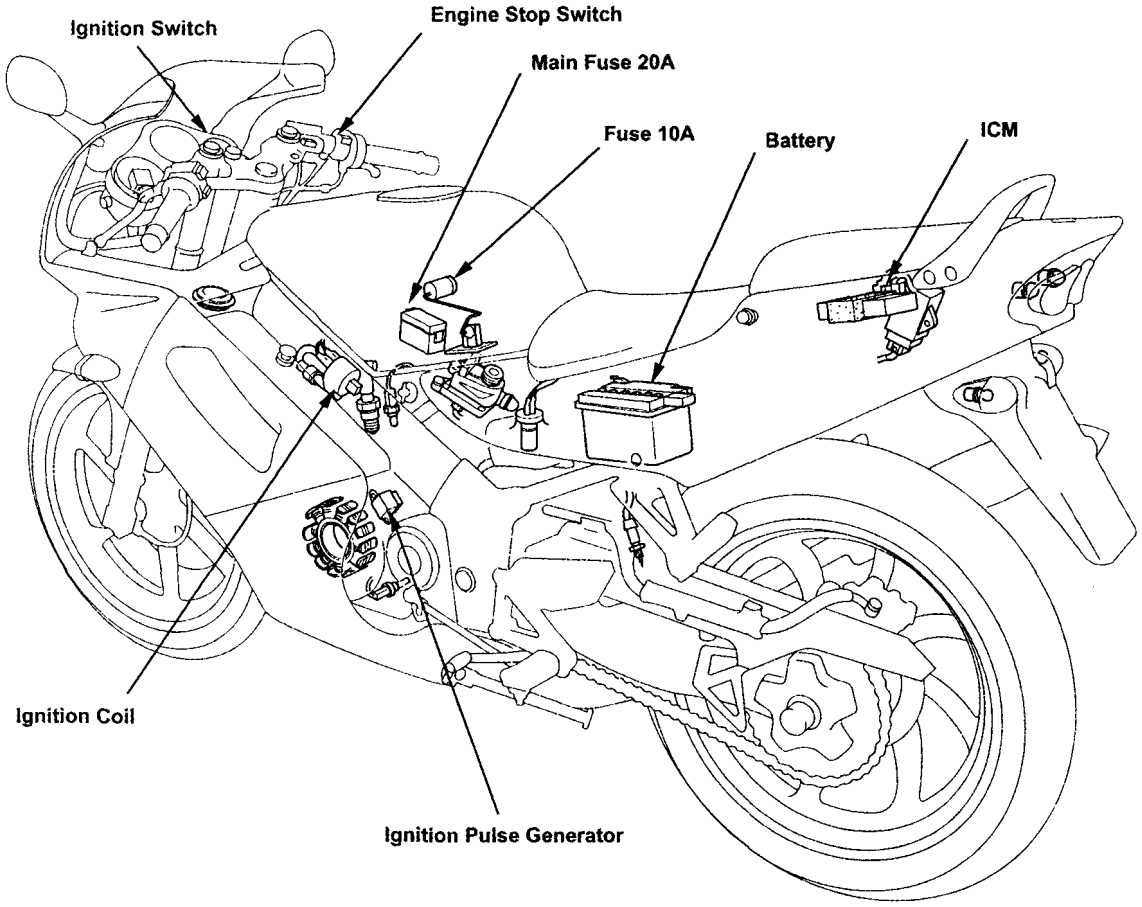
If the charging coil reading is out of specification, replace the stator (page 11-2).

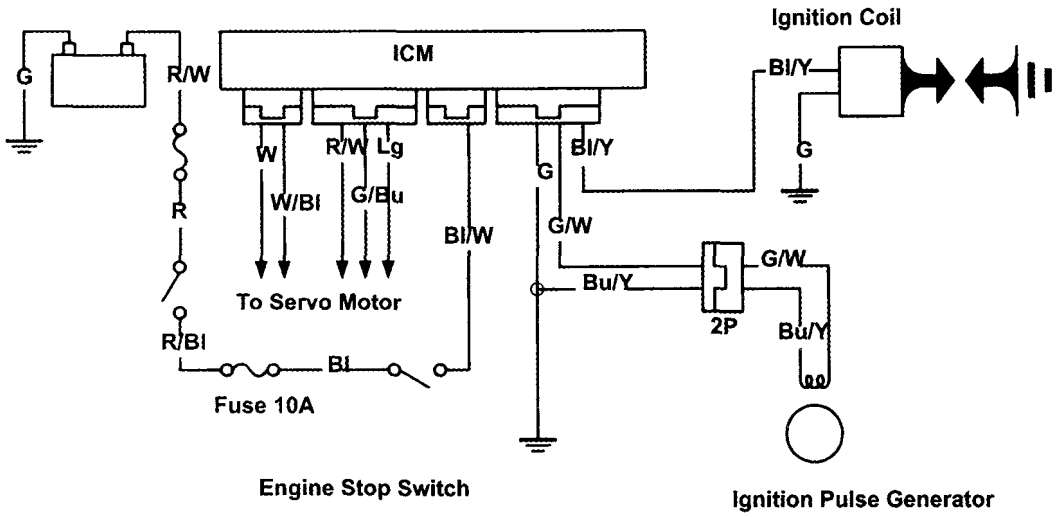
Check for continuity between the 3P connector terminals and ground.
There should be no continuity.

If there is continuity between the 3P connector and ground replace the stator (page 11-2).



SYSTEM DIAGRAM





Bl: BLACK
G: GREEN
Bu: BLUE
Lg: LIGHT GREEN
R: RED
W: WHITE
Y: YELLOW

SERVICE INFORMATION

GENERAL

Warning

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

CAUTION

- *Some electrical components may be damaged If terminals or connectors are connected or disconnected while the ignition switch is ON and a current is present.*

- When checking the ignition system, always follow the steps in the troubleshooting (page 17-3).
- Ignition timing cannot be adjusted since the Ignition Control Module (ICM) is non-adjustable. If ignition timing is incorrect, check the system components and replace any faulty parts.
- The ICM may be damaged if dropped. Also, if the connector is disconnected when current is flowing, the resulting excessive voltage may damage the unit. Always turn off the ignition switch before servicing.
- A faulty ignition system is often related to poorly connected or corroded connectors. Check those connections before proceeding. Make sure the battery is adequately charged. Using the starter motor with a week battery results in a slower engine cranking speed as well as no spark at the spark plugs.
- Use spark plugs of the correct heat range. Using a spark plug of an incorrect heat range can damage the engine.
- For ignition pulse generator removal/installation see section 16.
- For neutral switch inspection and removal/installation see section 19.
- For engine stop switch inspection and removal/installation see section 13,19.
- For ignition switch inspection see section 13, 19.

SPECIFICATIONS

ITEM			SPECIFICATIONS
Spark plug	Standard	NGK	B9ES
		NIPPONDENSO	W27ES-U
	For cold climate/below (5 °C/41 °F)	NGK	B8ES
		NIPPONDENSO	W24ES-U
Ignition timing "F" mark			BTDC 12 ± 3 °/ ± 200 min-1 (rpm)
Advance	Start		1,900 ± 200 min-1 (rpm)
	Stop		3,500 ± 200 min-1 (rpm)
Full advance			BTDC 35 ± 3 °
Ignition cut-out revolution			13,000 ± 200 min-1 (rpm)
Ignition coil Peak voltage			100 V minimum
Ignition pulse generator peak voltage			0.7 V minimum

TORQUE VALUES

Timing hole cap	3 N·m (0.3 kgf·m, 2.2 lbf·ft)
Ignition pulse generator socket bolt	10 N·m (1.0 kgf·m, 7 lbf·ft) Apply a locking agent to the threads
Ignition coil mounting bolt	12 N·m (1.2kgf·m, 9 lbf·ft)

TOOLS

Peak voltage adaptor	07HGJ-020100
Imrie diagnostic tester (model 625)	

TROUBLESHOOTING

- Inspect the following before diagnosing the system.
  - Faulty spark plug
  - Loose spark cap or spark plug wire connections
  - Water got into the spark plug cap (Leaking to the ignition coil secondary voltage)
- If there is no spark at either cylinders, temporarily exchange the ignition coil with the other good one and perform the spark test. If there is a spark, the exchanged ignition coil is faulty.

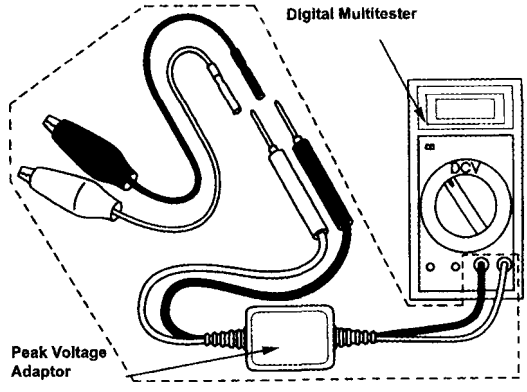
NO SPARK AT SPARK PLUG

Unusual condition		Probable cause (Check in numerical order)
Ignition coil primary volt-age	Low peak voltage	1. Incorrect peak voltage adaptor connections 2. Multimeter impedance is too low; below 10 MΩ/DCV 3. Cranking speed is too slow (Operating force of the kickstarter is weak) 4. The sample timing of the tester and measured pulse were not synchronized (system is normal if measured voltage is over the specifications at least once) 5. Poorly connected connectors or an open circuit in ignition system 6. Faulty side stand switch or neutral switch 7. Faulty ignition coil 8. Faulty ignition control module (ICM) (in cases when above No. 1-7 are normal)
	No peak voltage	1. Incorrect peak voltage adaptor connectors 2. Faulty ignition switch or engine stop switch 3. No voltage at the power source wire between BI/W (+) and ground (-) of the ICM, or loose or poorly connected ICM connectors 4. Poor connection or open circuit in G wire of the ICM 5. Faulty neutral switch 6. Faulty peak voltage adaptor 7. Faulty ignition pulse generator 8. Faulty ICM (in cases when above No. 1-7 are normal)
	Peak voltage is normal, but no spark jumps at plug	1. Faulty spark plug or leaking ignition coil secondary current ampere 2. Faulty ignition coil
Ignition pulse generator	Low peak voltage	1. Multimeter impedance is too low; below 10 MΩ/DCV 2. Cranking speed is too slow (Operating force of the kickstarter is weak) 3. The sample timing of the tester and measured pulse were not synchronized (System is normal if measured voltage is over the specifications at least once) 4. Faulty ignition pulse generator (in cases when above No.1 -3 are normal)
	No peak voltage	1. Faulty peak voltage adaptor 2. Faulty ignition pulse generator

IGNITION SYSTEM INSPECTION

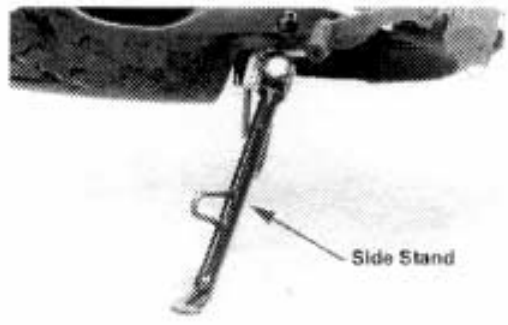
NOTE

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



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

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



IGNITION PRIMARY VOLTAGE INSPECTION

NOTE

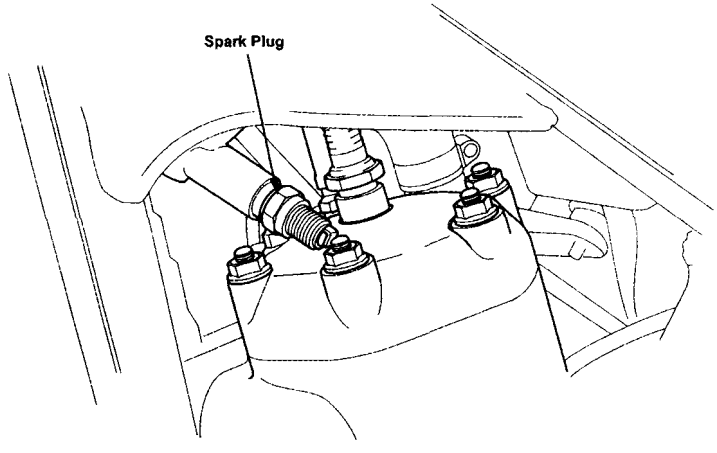
- Check all system connection before the inspection.
- If the system is disconnected, an incorrect peak voltage will register.
- Check cylinder compression at each cylinder and check that the spark plugs are installed correctly in each cylinder.

Support the motorcycle using the side stand.

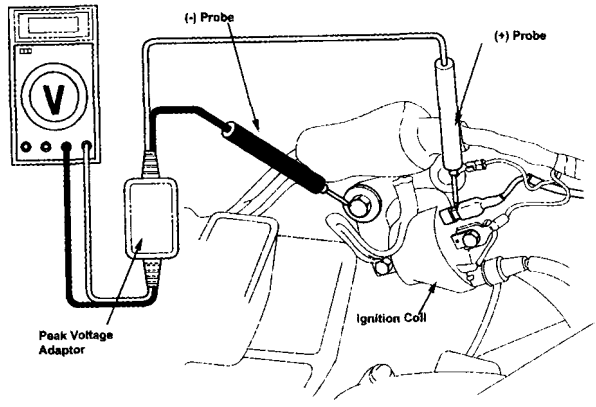
Disconnect the spark plug cap from the spark plug on the cylinder head (page 17-6).

Connect a good known spark plug to the spark plug cap and ground the spark plug to the cylinder as done in a spark test.

Remove the fuel tank (page 2-12).



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



NOTE
- Do not disconnect the ignition coil primary wires.

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

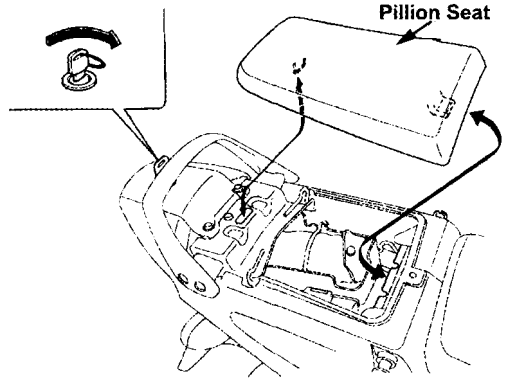
CONNECTION: Black/Yellow (+) - Body ground (-)

Turn the ignition switch "ON" and engine stop switch to "RUN".
Shift the transmission into neutral.
Crank the engine with the kickstarter and read the ignition coil primary voltage.

PEAK VOLTAGE: 100 V minimum

Warning

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

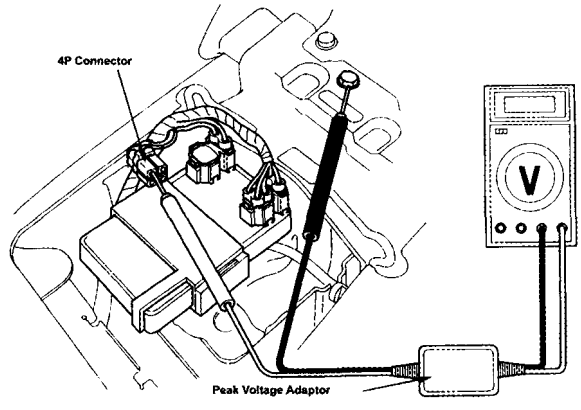


If the peak voltage is lower than the standard value, follow the checks described in the troubleshooting on page 17-3.

IGNITION PULSE GENERATOR PEAK VOLTAGE INSPECTION

Remove the pillion seal (page 2-3).

NOTE
- **Check all system connection before the inspection. If the system is disconnected, an incorrect peak voltage will register.**
- **Check cylinder compression at each cylinder and check that the spark plugs are installed correctly in each cylinder.**



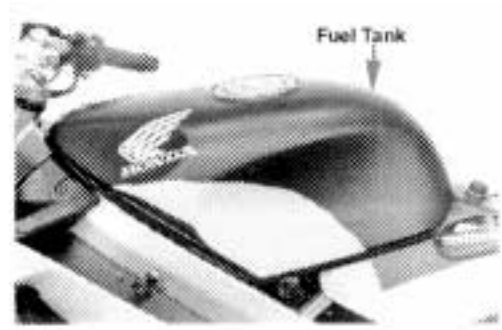
Disconnect the ICM 4P connector.
Connect the peak voltage adaptor to the 4P connector wire harness side.

TOOLS:
Imrie diagnostic tester (model 625) or
Peak voltage adaptor 07HGJ-0020100 with
Commercially available digital multimeter (impedance 10M Ω DCV minimum)

CONNECTION: Green/White (+) - Green (-)

Turn the ignition switch "ON" and engine stop switch to "RUN".
Shift the transmission into neutral.
Crank the engine with the kickstarter and read the ignition pulse generator peak voltage.

PEAK VOLTAGE: 0.7 V minimum



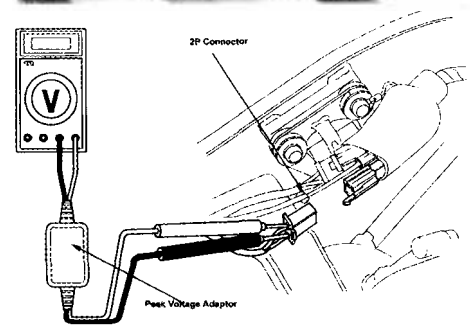
Warning

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

If the peak voltage is lower than standard value, perform the following procedure.

Remove the fuel tank (page 2-12).

Disconnect the ignition pulse generator 2P connector.
Turn the ignition switch "ON" and engine stop switch to "RUN".
Shift the transmission into neutral.
Crank the engine with the kickstarter and measure the peak voltage at the 2P connector ignition pulse generator side and record it.

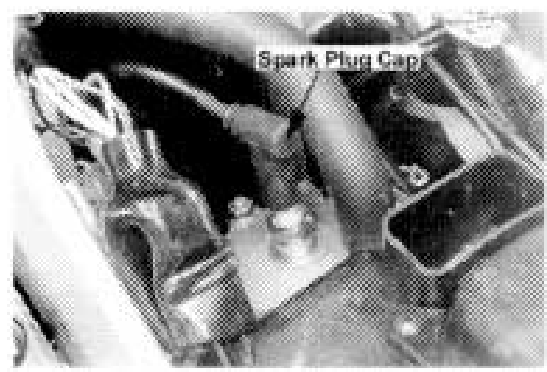


CONNECTION: Green/White (+) - Blue/Yellow (-)

PEAK VOLTAGE: 0.7 V minimum

Compare their values at the ICM 4P connector and the ignition pulse generator 2P connector.

If the value at the ignition pulse generator is normal, but abnormal at the ICM:
- Open circuit in the ignition pulse generator wires
- Loosen connection in the ignition pulse generator connector



If both values are abnormal:
- The ignition pulse generator is likely to be faulty. Check and perform troubleshooting on page 17-3.

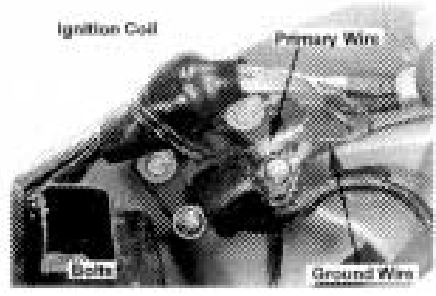
IGNITION COIL

REMOVAL/INSTALLATION

Remove the fuel tank (page 2-12).

Disconnect the spark plug cap from the spark plug.

Disconnect the ignition coil primary wires from the terminals.
Remove the bolts and ground wire eyelet.
Remove the ignition coil.



Installation is in the reverse order of removal.

TORQUE: 12N·m(1.2kgf·m, 9 lbf·ft)

NOTE

- Route the spark plug wires properly (page 1-18).

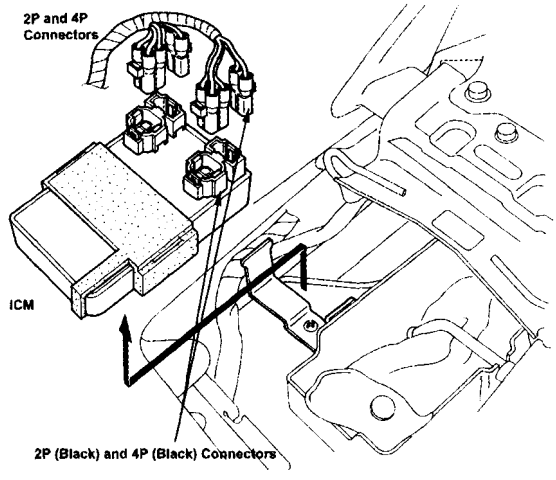
ICM REMOVAL /INSTALLATION

Remove the pillion seat (page 2-3).

Disconnect the ICM 2P and 4P connectors.
Disconnect the ICM 2P (Black) and 4P (Black) connectors.

Remove the ICM from the bracket.

Installation is in the reverse order of removal.



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 the consciousness and may lead to death. Run the engine in an open area or with an exhaust evacuation system in an enclosed area.*

NOTE

- Read the manufacturer's operating instructions for the timing light.

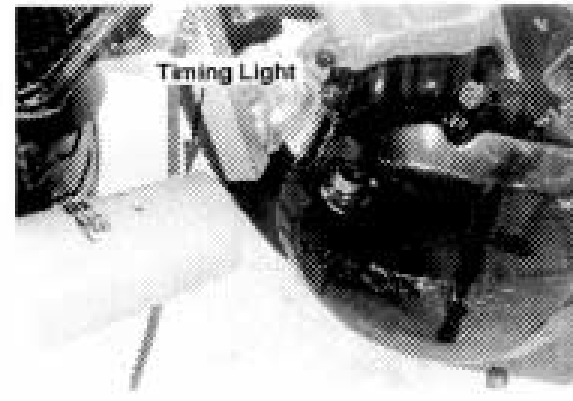
Warm up the engine.
Stop the engine.

Remove the side cowl and lower cowl (page 2-4).

Remove the timing hole cap.

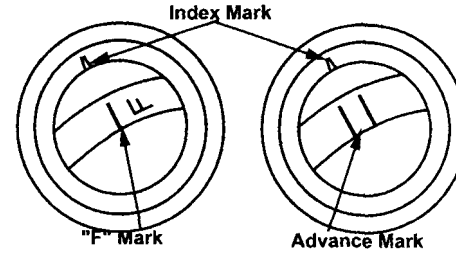
Connect a timing light to the spark plug wire.
Start the engine and let it idle.

IDLE SPEED: 1,300 ± 100 min^{-1} (rpm)



The timing is correct if the "F" mark on the flywheel aligns
with the index mark on the left crankcase cover.

Increase the engine speed by rotating the throttle stop control knob.
The timing is correct if the advance marks on the flywheel aligns with the index mark on the left crankcase cover.

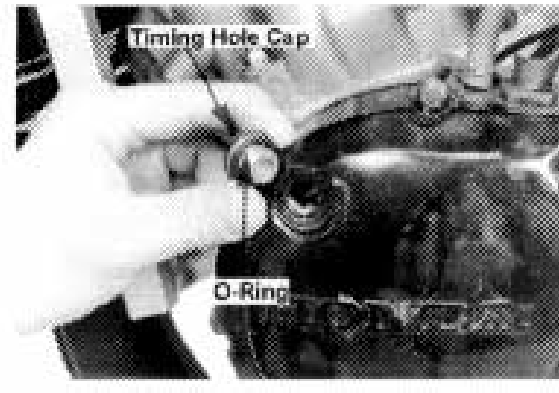


Coat the new O-ring with engine oil and install it in the timing hole cap groove.
Apply molybdenum disulfide oil to the timing hole cap threads and flange surface.

Install and tighten the timing hole cap to the specified torque.

TORQUE: 3 N·m (0.3 kgf·m, 2.2 lbf·ft)

Install the side cowl and lower cowl (page 2-4, 5).



To print chapters, click on the printer icon and fill in the page range.

HONDA® MPE

MOTORCYCLE & POWER EQUIPMENT ACN.006 662 862

Service Bulletin

Service Bulletin No: SBMC0549

To: ***All Motorcycle Franchises***

From ***Motorcycle Service Department***

Date: ***December 2005***

Attention: ***Franchisee, Service Manager, Sales Manager and Relevant Staff***

Subject: ***NSR150SP Spark Plug Application – Additional Information to SBMC0311***

Ladies and Gentlemen,

Please be advised that when servicing the NSR150SP, it is important to use the correct spark plug. The current specification is incorrect and in some cases may lead to severe engine damage.

The B-8ES and the B-9ES are listed in the current parts list as the replacement plugs for this model. **These are incorrect and must not be used.**

The correct replacement plug for this model is the B-9ECS, as marked on the fuel tank sticker. Please ensure owners are made aware of this.

This part is currently in stock and can be ordered through the normal parts ordering channels.

It is also important to note that the spark plug ***must*** be removed, inspected and the spark plug gap ***adjusted at 2,000 klm intervals*** and the plug ***replaced at 4,000 klm intervals.***

****** Additional Information:*** *When ordering the correct replacement spark plug for the NSR150SP from the Honda MPE spare parts department, please ensure that P/N:* ***98079-59812*** *is used. This spark plug has a removable cap that will need to be removed to fit the standard spark plug caps that come fitted to the NSR150SP.**********

GREG SNART
National Motorcycle Service Manager

PLEASE ENSURE ALL RELEVANT STAFF ARE AWARE OF THIS BULLETIN AND IT'S CONTENTS.

Service Manager	Parts Manager	Sales Manager	Franchise Principle

HONDA® MPE

MOTORCYCLE & POWER EQUIPMENT ACN.006 662 862

Service Bulletin

Service Bulletin No: SBMC0312

To:	***All Motorcycle Franchises***
From	***Motorcycle Service Department***
Date:	***September 2003***
Attention:	***Franchisee, Service Manager, Sales Manager and Relevant Staff***
Subject:	***NSR 150 SP Important Service Information.***

Ladies and Gentlemen,

The following information has been revised and updated for the Pre Delivery and Scheduled Servicing of the NSR 150 SP.

Pre Delivery Inspection.

Transmission Oil: To ensure the correct level is obtained, the transmission oil must be drained completely and refilled. Please ensure the correct amount oil of 0.7l and the correct oil viscosity of 10w-40 rated SE, SF or SG are used.

Oil Pump: The oil pump must be bled and the oil pump control cable should be adjusted correctly as per the service manual.

Engine Oil: When filling the engine oil, please ensure only Honda 2-stroke oil or equivalent premium grade oil.

L/H Hand Grip: It may also be necessary on some units to secure the L/H hand grip

Scheduled Servicing.

Maintenance should be carried out as per the service schedule with the following exception. The spark plug ***must*** be removed, inspected and the spark plug gap ***adjusted at 2,000 klm intervals*** and the plug ***replaced at 4,000 klm intervals.***

It is important to understand that the NSR 150 SP, is a motorcycle that ***requires a higher maintenance schedule***, due to the nature of the single cylinder, 2-stroke design. Please ensure all of your NSR 150 customers are aware of the need to run a ***premium quality 2-stroke engine oil and the shorter service intervals***, required for this model.

GREG SNART
National Motorcycle Service Manager

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Service Manager	Parts Manager	Sales Manager	Franchise Principle

HONDA® MPE

MOTORCYCLE & POWER EQUIPMENT ACN.006 662 862

Service Bulletin

Service Bulletin No: SBMC0311

To: ***All Motorcycle Franchises***

From ***Motorcycle Service Department***

Date: ***September 2003***

Attention: ***Franchisee, Service Manager, Sales Manager and Relevant Staff***

Subject: ***NSR 150 Spark Plug Application***

Ladies and Gentlemen,

Please be advised that when servicing the NSR 150 SP, it is important to use the correct spark plug. The current specification is incorrect and in some cases may lead to severe engine damage.

The B-8ES and the B-9ES are listed in the current parts list as the replacement plugs for this model. **These are incorrect and must not be used.**

The correct replacement plug for this model is the B-9ECS, as marked on the fuel tank sticker. Please ensure owners are made aware of this.

This part is currently in stock and can be ordered through the normal parts ordering channels.

It is also important to note that the spark plug ***must*** be removed, inspected and the spark plug gap ***adjusted at 2,000 klm intervals*** and the plug ***replaced at 4,000 klm intervals.***

GREG SNART
National Motorcycle Service Manager

PLEASE ENSURE ALL RELEVANT STAFF ARE AWARE OF THIS BULLETIN AND IT'S CONTENTS.

Service Manager	Parts Manager	Sales Manager	Franchise Principle

HONDA® MPE

MOTORCYCLE & POWER EQUIPMENT ACN.006 662 862

Service Bulletin

Service Bulletin No: SBMC0209

To: ***All Motorcycle Franchises***

From ***Motorcycle Service Department***

Date: ***6th April 2002***

Attention: ***Franchisee, Service Manager, Sales Manager and Relevant Staff***

Subject: ***Important Service Tip***

Ladies and Gentlemen,

Please be advised that when pre-delivering or servicing the NSR150SP make sure the correct amount of oil is placed in the gearbox.

The most accurate way in doing this on pre-delivery inspection, is to **DRAIN** out **ALL** of the gearbox oil, and measure the specified amount (**700mls**) of good quality 10w-40 4 stroke engine oil, as recommended in the service manual.

CHECKING THE OIL LEVEL THROUGH THE SIGHT GLASS CAN GIVE AN INACCURATE OIL LEVEL READING, AS THE OIL TAKES A WHILE TO SETTLE.

Make sure a measured 700ml of oil is put in the gearbox, and you should have no problem with correct gearbox oil levels.

Thank you for your co-operation.

GREG SNART
National Motorcycle Service Manager

PLEASE ENSURE ALL RELEVANT STAFF ARE AWARE OF THIS BULLETIN AND IT'S CONTENTS.

Service Manager	Parts Manager	Sales Manager	Franchise Principle