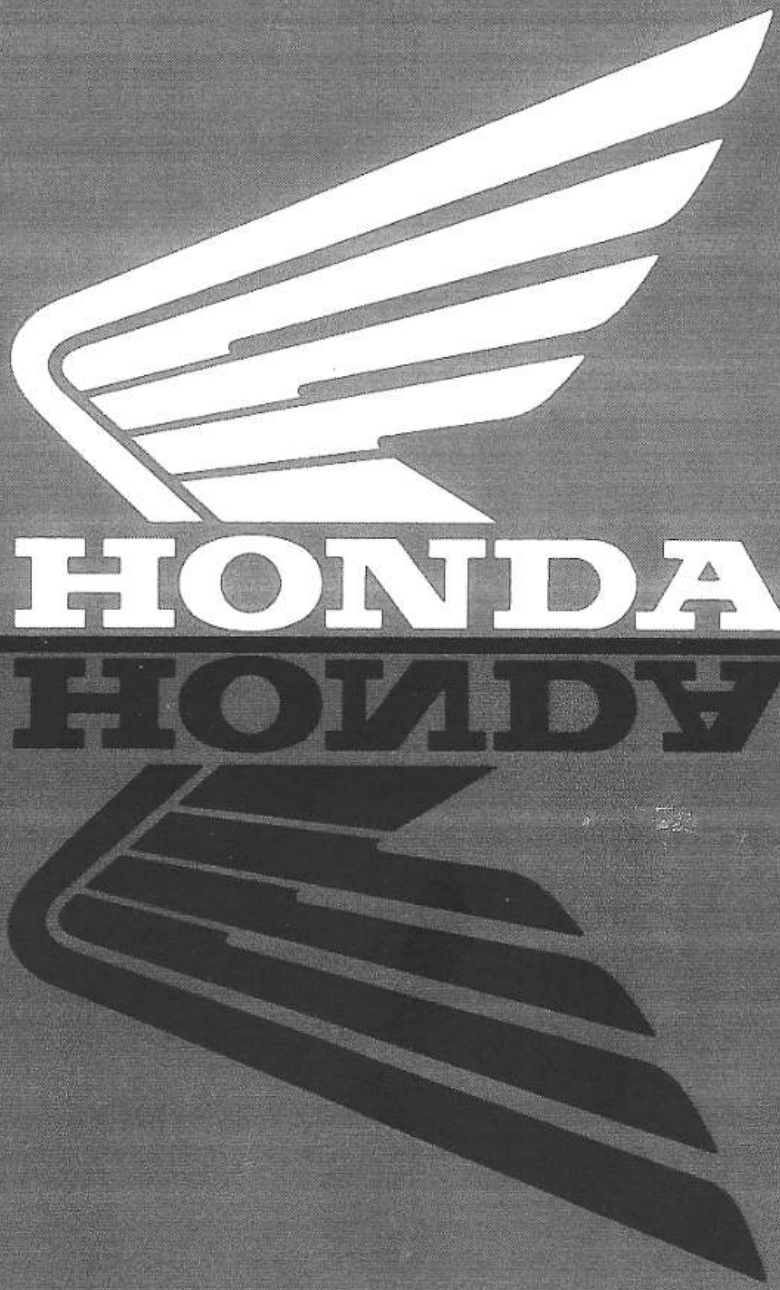
HONDA

SHOP MANUAL



XR650R$_Y$

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HOW TO USE THIS MANUAL

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

Sections 1 and 3 apply to the whole motorcycle. Section 2 illustrates procedures for removal/installation of components that may be required to perform service described in the following sections. Sections 4 through 17 describe parts of the motorcycle, grouped according to location.

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

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

If you don't know the source of the trouble, go to section 19, Troubleshooting.

ALL INFORMATION, ILLUSTRATIONS, DIRECTIONS AND SPECIFICATIONS INCLUDED IN THIS PUBLICATION ARE BASED ON THE LATEST PRODUCT INFORMATION AVAILABLE AT THE TIME OF APPROVAL FOR PRINTING. HONDA MOTOR CO., LTD. RESERVES THE RIGHT TO MAKE CHANGES AT ANY TIME WITHOUT NOTICE AND WITHOUT INCURRING ANY OBLIGATION WHATEVER. NO PART OF THIS PUBLICATION MAY BE REPRODUCED WITHOUT WRITTEN PERMISSION. THIS MANUAL IS WRITTEN FOR PERSONS WHO HAVE ACQUIRED BASIC KNOWLEDGE OF MAINTENANCE ON HONDA MOTORCYCLES, MOTOR SCOOTERS OR ATVS.

HONDA MOTOR CO., LTD.
SERVICE PUBLICATION OFFICE

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IMPORTANT SAFETY NOTICE

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

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

NOTE: Gives helpful information.

Detailed descriptions of standard workshop procedures, safety principles and service operations are not included. It is important to note that this manual contains some warnings and cautions against some specific service methods which could cause **PERSONAL 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 jeopardized by the service methods or tools selected.

Type Codes

- Throughout this manual, the following abbreviations are used to identify individual model.
- The asterisk (*) indicates that this manual is applicable for the corresponding area type.

Code	Available	Area Type
ED	*	European direct sales
E		U.K.
F		France
G		Germany
U	*	Australia
SA		South Africa
ND		North Europe
SW		Switzerland
SD		Sweden
FI		Finland
N		Norway
IT		Italy
B		Belgium
H		Netherland
AR		Austria
SP		Spain
D (DK, DM)	*	General export (km/h, mph)

SYMBOLS

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

	Replace the part(s) with new one(s) before assembly.
	Use 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 DOT 4 brake fluid. Use the recommended brake fluid unless otherwise specified.
	Use Fork or Suspension Fluid.

1. GENERAL INFORMATION

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GENERAL SAFETY

CARBON MONOXIDE

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

⚠WARNING

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

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

GASOLINE

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

⚠WARNING

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

HOT COMPONENTS

⚠WARNING

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

USED ENGINE 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 the 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.

NITROGEN PRESSURE

For shock absorber with a gas-filled reservoir:

⚠WARNING

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

COOLANT

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

⚠WARNING

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

CAUTION:

Using coolant with silicate corrosion inhibitors may cause premature wear of water pump seals or blockage of radiator passages.
Using tap water may cause engine damage.

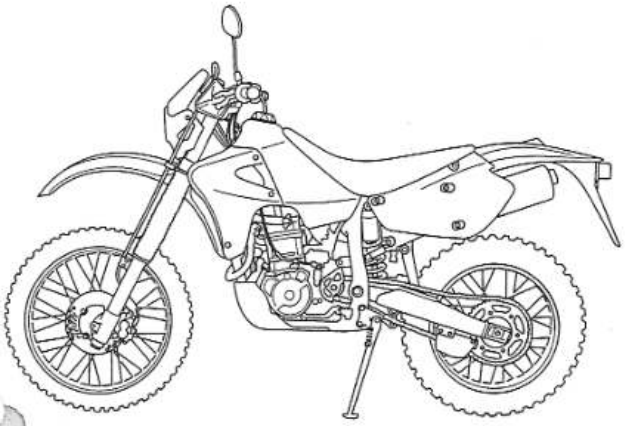
If it contacts your skin, wash the affected areas immediately with soap and water. If it contacts your eyes, flush them thoroughly with fresh water and get immediate medical attention. If it is swallowed, the victim must be forced to vomit, then rinse mouth and throat with fresh water before obtaining medical attetion. Because of these dangers, always keep from the reach of children. Recycle used coolant in an ecologically correct manner.

SERVICE RULES

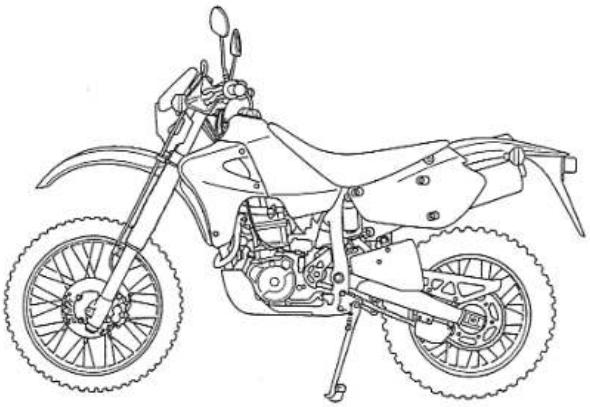
1. Use genuine HONDA or HONDA-recommended parts and lubricants or their equivalents. Parts that don't meet HONDA's design specifications may cause damage to the motorcycle.
2. Use the special tools designed for this product to avoid damage and incorrect assembly.
3. Use only metric tools when servicing the motorcycle. Metric bolts, nuts and screws are not interchangeable with English fasteners.
4. Install new gaskets, O-rings, cotter pins, and lock plates when reassembling.
5. When tightening bolts or nuts, begin with the larger diameter or inner bolt first. Then tighten to the 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 reassembly.
7. After reassembly, check all parts for proper installation and operation.
8. Route all electrical wires as show on pages 1-20 through 1-22, Cable and Harness Routing.

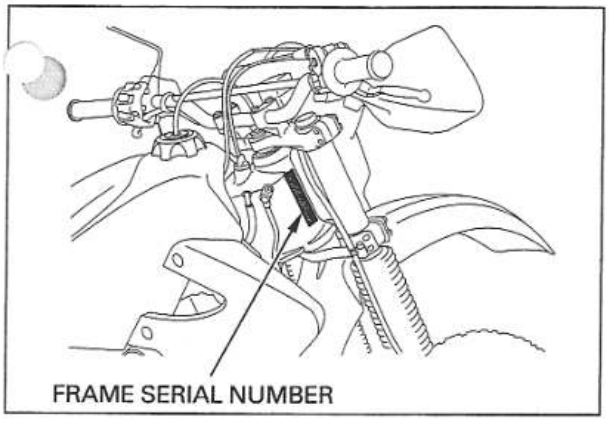
MODEL IDENTIFICATION

ED type:

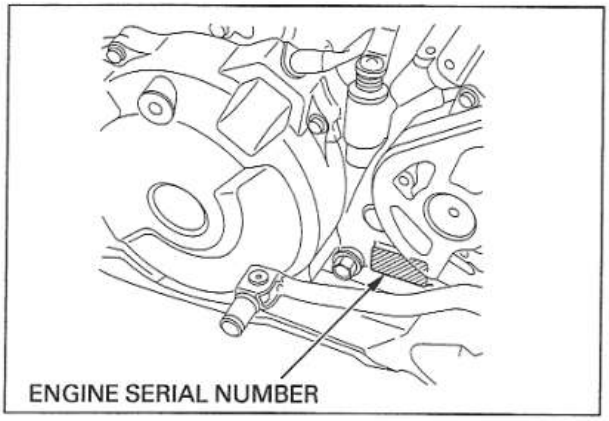


U type:

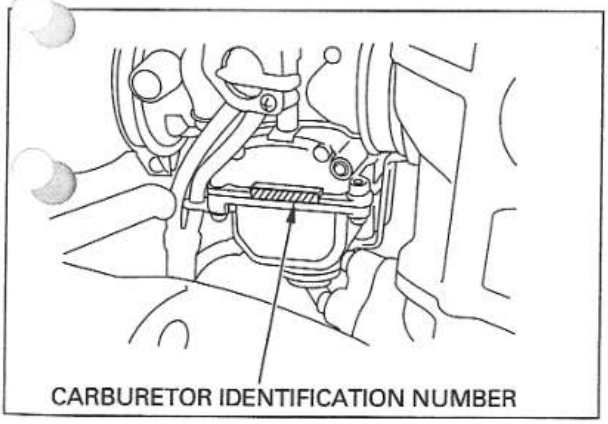




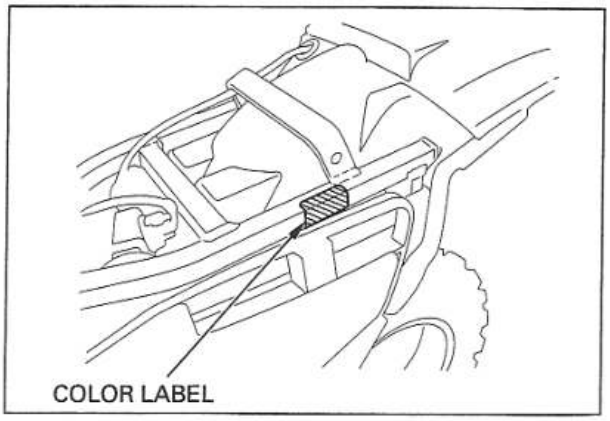
(1) FRAME SERIAL NUMBER
The frame serial number is stamped on the right side of the steering head.



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



(3) CARBURETOR IDENTIFICATION NUMBER
The carburetor identification number is stamped on the right side of the carburetor body.



(4) COLOR LABEL
The color label is attached to the sub frame behind the left side cover. When ordering color-coded parts, always specify the designated color code.

SPECIFICATIONS

GENERAL

ITEM		SPECIFICATIONS
DIMENSIONS	Overall length	2,255 mm (88.8 in)
	Overall width	825 mm (32.5 in)
	Overall height	1,245 mm (49.0 in)
	Wheelbase (ED, DK types)	1,485 mm (58.5 in)
	(U type)	1,490 mm (58.7 in)
	Seat height	939 mm (37.0 in)
	Footpeg height	411 mm (16.2 in)
	Ground clearance	305 mm (12.0 in)
	Dry weight (ED, DK types)	131 kg (289 lbs)
	(U type)	133 kg (293 lbs)
	Curb weight (ED, DK types)	142 kg (313 lbs)
	(U type)	144 kg (317 lbs)
FRAME	Frame type	Semi-double cradle
	Front suspension	Telescopic fork
	Front cushion stroke	285 mm (11.2 in)
	Rear suspension	Swingarm
	Rear wheel travel	307 mm (12.1 in)
	Rear damper	Nitrogen gas filled damper with reserve tank
	Front tire size	3.00−21 51P
	Rear tire size	4.50−18 70P
	Tire brand (Front/Rear)	TR8/TR8 (IRC)
	Front brake	Hydraulic single disc brake
	Rear brake	Hydraulic single disc brake
	Caster angle	27°32′
	Trail length	108 mm (4.3 in)
	Fuel tank capacity	10.0 ℓ (2.64 US gal , 2.20 Imp gal)
	Fuel tank reserve capacity	4.5 ℓ (1.19 US gal , 0.99 Imp gal)
ENGINE	Type	Gasoline, liquid cooled 4-stroke SOHC
	Cylinder arrangement	Single cylinder inclined 13°
	Bore and stroke	100.0 × 82.6 mm (3.94 × 3.25 in)
	Displacement	649 cm³ (39.6 cu-in)
	Compression ratio	10.0 : 1
	Valve train	4-valve, single chain driven SOHC
	Intake valve opens	15° BTDC
	closes	45° ABDC
	Exhaust valve opens	45° BBDC
	closes	15° ATDC
	Lubrication system	Forced pressure and dry sump
	Oil pump type	Trochoid/double rotor
	Cooling system	Liquid cooled
	Air filtration	Oiled polyurethane foam
	Engine dry weight	40.9 kg (90.2 lbs)

GENERAL (Cont'd)

ITEM		SPECIFICATIONS
CARBURETOR	Carburetor type	Piston valve type
	Throttle bore	42 mm (1.7 in)
DRIVE TRAIN	Clutch system	Multi-plate, wet
	Clutch operation system	Cable operated type
	Transmission	Constant mesh, 5-speed
	Primary reduction	1.651 (71/43)
	Gear ratio 1st	3.083 (37/12)
	2nd	2.125 (34/16)
	3rd	1.666 (30/18)
	4th	1.333 (28/21)
	5th	1.115 (29/26)
	Final reduction (ED, DK types)	3.429 (48/14)
	(U type)	2.733 (41/15)
	Gearshift pattern	Left foot operated return system, 1−N−2−3−4−5
ELECTRICAL	Ignition system	CDI (Capacitive Discharge Ignition)

LUBRICATION SYSTEM

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Engine oil capacity	At draining	1.56 ℓ (1.65 US qt , 1.37 Imp qt)	———
	At oil filter change	1.6 ℓ (1.7 US qt , 1.4 Imp qt)	———
	At disassembly	2.0 ℓ (2.1 US qt , 1.8 Imp qt)	———
Recommended engine oil		HONDA 4-stroke oil or equivalent motor oil API service classification: SE, SF or SG	———
Oil pump rotor A, B	Body clearance	0.15—0.22 (0.006—0.009)	0.35 (0.014)
	Tip clearance	0.15 (0.006)	0.20 (0.008)
	Side clearance	0.03—0.08 (0.001—0.003)	0.10 (0.004)

FUEL SYSTEM

ITEM		SPECIFICATIONS
Carburetor identification number	ED, DK types	PE78C
	U type	PE78D
Main jet	ED, DK types	# 175
	U type	# 112
Slow jet		# 65
Jet needle clip position		3rd groove from top
Pilot screw opening		see page 5-15
Float level		16.0 mm (0.63 in)
Idle speed		1,400 ± 100 min^{-1} (rpm)
Throttle grip free play		2.0—6.0 mm (1/16—1/4 in)

COOLING SYSTEM

ITEM		SPECIFICATIONS
Coolant capacity	Radiator and engine	1.52 ℓ (1.61 US qt , 1.34 Imp qt)
	Reserve tank	0.20 ℓ (0.21 US qt , 0.18 Imp qt)
Radiator cap relief pressure		108—137 kPa (1.1—1.4 kgf/cm^2 , 16—20 psi)
Thermostat	Begin to open	80—84 °C (176—183 °F)
	Fully open	95 °C (203 °F)
	Valve lift	8 mm (0.3 in) minimum
Standard coolant concentration		50 % mixture with soft water

CYLINDER HEAD/VALVES

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Decompressor lever free play			5.0–8.0 (3/16–5/16)	———
Cylinder compression	Valve clearance at standard (decompressor applied)		600 kPa (6.12 kgf/cm², 87 psi) at 400 min⁻¹ (rpm)	———
	Valve clearance at 1 mm (0.04 in) (decompressor not applied)		1,100 kPa (11.22 kgf/cm², 160 psi) at 400 min⁻¹ (rpm)	———
Cylinder head warpage			———	0.10 (0.004)
Valve, valve guide	Valve clearance	IN	0.15 ± 0.02 (0.006 ± 0.001)	———
		EX	0.20 ± 0.02 (0.008 ± 0.001)	———
	Valve stem O.D.	IN	6.575–6.590 (0.2589–0.2594)	6.56 (0.258)
		EX	6.555–6.570 (0.2581–0.2587)	6.55 (0.258)
	Valve guide I.D.	IN/EX	6.600–6.615 (0.2598–0.2604)	6.655 (0.2620)
	Stem-to-guide clearance	IN	0.010–0.040 (0.0004–0.0016)	0.12 (0.005)
		EX	0.030–0.060 (0.0012–0.0024)	0.14 (0.006)
	Valve guide projection above cylinder head	IN	16.3–16.5 (0.64–0.65)	———
		EX	16.3–16.5 (0.64–0.65)	———
	Valve seat width	IN	1.1–1.3 (0.04–0.05)	2.0 (0.08)
		EX	1.3–1.5 (0.05–0.06)	2.0 (0.08)
Valve spring free length	Inner	IN/EX	44.0 (1.73)	43.0 (1.69)
	Outer	IN/EX	45.2 (1.78)	44.2 (1.74)
Rocker arm	Rocker arm I.D.	IN/EX	14.000–14.018 (0.5512–0.5519)	14.05 (0.553)
	Rocker arm shaft O.D.	IN/EX	13.966–13.984 (0.5498–0.5506)	13.91 (0.548)
	Rocker arm-to-shaft clearance	IN/EX	0.016–0.052 (0.0006–0.0020)	0.14 (0.006)
Camshaft	Cam lobe height	IN	41.158–41.398 (1.6204–1.6298)	41.00 (1.614)
		EX	41.196–41.436 (1.6219–1.6313)	41.05 (1.616)
	Runout		———	0.03 (0.001)

CYLINDER/PISTON

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Cylinder	I.D.		100.000–100.015 (3.9370–3.9376)	100.05 (3.939)
	Taper		———	0.05 (0.002)
	Out of round		———	0.05 (0.002)
	Warpage		———	0.05 (0.002)
Piston, pistonrings	Piston mark direction		"IN" mark facing toward the intake side	———
	Piston O.D.		99.96–99.99 (3.935–3.937)	99.86 (3.931)
	Piston O.D. measurement point		20 mm (0.8 in) from bottom of skirt	———
	Piston pin bore I.D.		23.002–23.008 (0.9056–0.9058)	23.03 (0.907)
	Piston pin O.D.		22.994–23.000 (0.9053–0.9055)	22.98 (0.905)
	Piston-to-piston pin clearance		0.002–0.014 (0.0001–0.0006)	0.04 (0.002)
	Piston ring-to-ring groove clearance	Top	0.045–0.080 (0.0018–0.0031)	0.095 (0.0037)
		Second	0.025–0.060 (0.0010–0.0024)	0.075 (0.0030)
	Piston ring end gap	Top	0.25–0.40 (0.010–0.016)	0.55 (0.022)
		Second	0.40–0.55 (0.016–0.022)	0.70 (0.028)
		Oil (side rail)	0.20–0.70 (0.008–0.028)	0.90 (0.035)
	Piston ring mark	Top	"R" mark	———
		Second	"RN" mark	———
Cylinder-to-piston clearance			0.010–0.055 (0.0004–0.0022)	0.19 (0.007)
Connecting rod small end I.D.			23.020–23.041 (0.9063–0.9071)	23.05 (0.907)
Connecting rod-to-piston pin clearance			0.020–0.047 (0.0008–0.0019)	0.067 (0.0026)

CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Clutch	Clutch lever free play		10–20 (3/8–13/16)	———
	Spring free length		49.0 (1.93)	46.0 (1.81)
	Disc thickness	A (6 discs)	3.22–3.38 (0.127–0.133)	3.00 (0.118)
		B (1 disc)	2.92–3.08 (0.115–0.121)	2.69 (0.106)
	Plate warpage		———	0.30 (0.012)
	Clutch outer I.D.		29.000–29.021 (1.1417–1.1426)	29.05 (1.144)
	Outer guide	I.D.	21.990–22.035 (0.8657–0.8675)	22.05 (0.868)
		O.D.	28.959–28.980 (1.1401–1.1409)	28.91 (1.138)
	Mainshaft O.D. at clutch outer guide		21.967–21.980 (0.8648–0.8654)	21.94 (0.864)
Kickstarter	Starter idle gear I.D.		23.000–23.021 (0.9055–0.9063)	23.11 (0.910)
	Starter idle gear bushing	I.D.	20.013–20.031 (0.7879–0.7886)	20.05 (0.789)
		O.D.	22.959–22.980 (0.9039–0.9047)	22.90 (0.902)
	Kickstarter pinion gear I.D.		22.020–22.041 (0.8669–0.8678)	22.09 (0.870)
	Kickstarter spindle O.D.		21.959–21.980 (0.8645–0.8654)	21.91 (0.863)
	Countershaft O.D. at starter idle gear		19.980–19.993 (0.7866–0.7871)	19.94 (0.785)

CRANKCASE/CRANKSHAFT/BALANCER

Unit: mm (in)

ITEM	STANDARD	SERVICE LIMIT
Connecting rod big end side clearance	0.05–0.65 (0.002–0.026)	0.80 (0.031)
Crankshaft runout	———	0.05 (0.002)
Connecting rod big end radial clearance	———	0.05 (0.002)

TRANSMISSION

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Transmission	Gear I.D.	M4, M5, C2	28.000–28.021 (1.1024–1.1032)	28.04 (1.104)
		C1	23.000–23.021 (0.9055–0.9063)	23.04 (0.907)
		C3	31.000–31.025 (1.2205–1.2215)	31.05 (1.222)
	Bushing O.D.	M4, M5	27.959–27.980 (1.1007–1.1016)	27.93 (1.100)
		C1	22.959–22.979 (0.9039–0.9047)	22.93 (0.903)
		C2	27.959–27.980 (1.1007–1.1016)	27.93 (1.100)
		C3	30.950–30.975 (1.2185–1.2195)	30.92 (1.217)
	Bushing I.D.	M4	24.985–25.006 (0.9837–0.9845)	25.02 (0.985)
		C1	20.000–20.021 (0.7874–0.7882)	20.04 (0.789)
		C2	25.000–25.021 (0.9843–0.9851)	25.04 (0.986)
		C3	27.995–28.016 (1.1022–1.1030)	28.04 (1.104)
	Gear-to-bushing clearance	M4, M5, C2	0.020–0.062 (0.0008–0.0024)	0.10 (0.004)
		C1	0.021–0.062 (0.0008–0.0024)	0.10 (0.004)
		C3	0.025–0.075 (0.0010–0.0030)	0.13 (0.005)
	Mainshaft O.D.	M4	24.967–24.980 (0.9830–0.9835)	24.94 (0.982)
		Clutch outer guide	21.967–21.980 (0.8648–0.8654)	21.94 (0.864)
	Countershaft O.D.	C1	19.980–19.993 (0.7866–0.7871)	19.94 (0.785)
		C2	24.972–24.993 (0.9831–0.9840)	24.95 (0.982)
		C3	27.959–27.980 (1.1007–1.1016)	27.93 (1.100)
		Starter idle gear	19.980–19.993 (0.7866–0.7871)	19.94 (0.785)
	Bushing-to-shaft clearance	M4	0.005–0.039 (0.0002–0.0015)	0.06 (0.002)
		C1	0.007–0.041 (0.0003–0.0016)	0.06 (0.002)
		C2	0.007–0.049 (0.0003–0.0019)	0.06 (0.002)
		C3	0.015–0.057 (0.0006–0.0022)	0.06 (0.002)
Shift fork, Shift fork shaft	Shift fork	I.D.	14.000–14.021 (0.5512–0.5520)	14.03 (0.552)
		Operation area thickness	5.93–6.00 (0.233–0.236)	5.9 (0.23)
	Shift fork shaft O.D.		13.957–13.968 (0.5495–0.5499)	13.95 (0.549)
Shift drum	O.D. at right crankcase bearing side		19.959–19.980 (0.7858–0.7866)	19.93 (0.785)
	O.D. at left side journal side		11.966–11.984 (0.4711–0.4718)	11.95 (0.470)

FRONT WHEEL/SUSPENSION/STEERING

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Cold tire pressure		175 kPa (1.75 kgf/cm², 25 psi)	———
Axle runout		———	0.2 (0.01)
Wheel rim runout	Redial	———	2.0 (0.08)
	Axial	———	2.0 (0.08)
Wheel hub-to-rim distance		20.3 (0.80)	———
Fork	Spring free length	506 (19.9)	496 (19.5)
	Tube runout	———	0.2 (0.01)
	Recommended suspension oil	Fork fluid	———
	Fluid level	120 (4.7)	———
	Fluid capacity	637 cm³ (21.5 US oz, 22.4 Imp oz)	———
Compression damping adjuster standard position		11 clicks out from full in	———
Rebound damping adjuster standard position		9 clicks out from full in	———

REAR WHEEL/SUSPENSION

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Cold tire pressure			125 kPa (1.25 kgf/cm², 18 psi)	———
Axle runout			———	0.2 (0.01)
Wheel rim runout	Radial		———	2.0 (0.08)
	Axial		———	2.0 (0.08)
Wheel hub-to-rim distance			19.0 (0.75)	———
Drive chain	Slack		20—30 (13/16—1 3/16)	———
	Length (at 41 pins/40 links)		———	638 (25.1)
	Size/link	ED, DK types	DID520VM-110LE or RK520KZO-110LE	———
		U type	DID520VM-108LE or RK520KZO-108LE	———
Drive chain slider thickness			———	To the indicator
Drive chain guide slider thickness			———	To the indicator
Shock absorber	Damper gas pressure		981 kPa (10.0 kgf/cm², 142 psi)	———
	Damper compressed gas		Nitrogen gas	———
	Recommended shock absorber oil		Fork fluid	———
	Spring direction		Narrow wound coil facing down	———
	Spring installed length (standard)		236.5 (9.31)	———
Compression damping adjuster standard position			6—10 clicks out from full in	———
Rebound damping adjuster standard position			11—15 clicks out from full in	———

HYDRAULIC BRAKE

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Front	Specified brake fluid		DOT 4	———
	Brake disc thickness	ED, DK types	2.8–3.2 (0.11–0.13)	2.5 (0.10)
		U type	3.3–3.7 (0.13–0.15)	3.0 (0.12)
	Brake disc runout		———	0.20 (0.008)
	Master cylinder I.D.		12.700–12.743 (0.5000–0.5017)	12.76 (0.502)
	Master piston O.D.		12.657–12.684 (0.4983–0.4994)	12.64 (0.498)
	Caliper cylinder I.D.		27.000–27.050 (1.0630–1.0650)	27.06 (1.065)
	Caliper piston O.D.	ED, DK types	26.900–26.950 (1.0591–1.0610)	26.89 (1.059)
		U type	26.935–26.968 (1.0604–1.0617)	26.91 (1.059)
Rear	Specified brake fluid		DOT 4	———
	Brake disc thickness	ED, DK types	3.8–4.2 (0.15–0.17)	3.5 (0.14)
		U type	4.3–4.7 mm (0.17–0.19 in)	4.0 (0.16)
	Brake disc runout		———	0.30 (0.012)
	Master cylinder I.D.		12.700–12.743 (0.5000–0.5017)	12.76 (0.502)
	Master piston O.D.		12.657–12.684 (0.4983–0.4994)	12.64 (0.498)
	Caliper cylinder I.D.		27.000–27.050 (1.0630–1.0650)	27.06 (1.065)
	Caliper piston O.D.		26.935–26.968 (1.0604–1.0617)	26.89 (1.059)

ELECTRICAL SYSTEM

ITEM			SPECIFICATIONS
ignition system	Spark plug	Standard	BKR7E-11 (NGK)
			K22PR-U11 (DENSO)
		Optional	BKR8E-11 (NGK)
			K24PR-U11 (DENSO)
	Spark plug gap		1.00–1.10 mm (0.039–0.043 in)
	Ignition coil primary peak voltage		100 V minimum
	Ignition pulse generator peak voltage		0.7 V minimum
	Exciter coil peak voltage		100 V minimum
	Ignition timing	Initial	6° BTDC at 1,300 min^{-1} (rpm)
		Full advance	31° BTDC at 3,500 min^{-1} (rpm)
Lighting system	AC regulator regulated voltage		13.5–14.5V/4,500 min^{-1} (rpm)
	Lighting coil resistance (at 20°C/68°F)		0.1–1.0 Ω
	Regulator/rectifier regulated voltage		13.7–15.3V/4,500 min^{-1} (rpm)
	DC coil resistance (at 20°C/68°F)		0.2–1.2 Ω
Bulb	Headlight		12V 35/35W
	Position light (ED type)		12V5W
	Tail/brake light		12V 21/5W
	Turn signal light		12V 21W×4
	Meter light		12V3.4W

TORQUE VALUES

FASTENER TYPE	TORQUE N·m (kgf·m, lbf·ft)	FASTENER TYPE	TORQUE N·m (kgf·m, lbf·ft)
5 mm hex bolt and nut	5 (0.5 , 3.6)	5 mm screw	4 (0.4 , 2.9)
6 mm hex bolt and nut	10 (1.0 , 7)	6 mm screw	9 (0.9 , 6.5)
8 mm hex bolt and nut	22 (2.2 , 16)	6 mm flange bolt (8 mm head)	9 (0.9 , 6.5)
10 mm hex bolt and nut	34 (3.5 , 25)	6 mm flange bolt (10 mm head) and nut	12 (1.2 , 9)
12 mm hex bolt and nut	54 (5.5 , 40)	8 mm flange bolt and nut	26 (2.7 , 20)
		10 mm 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 a locking agent to the threads.
2. Apply grease to the threads.
3. Stake.
4. Apply oil to the threads and seating surface.
5. U-nut
6. CT bolt

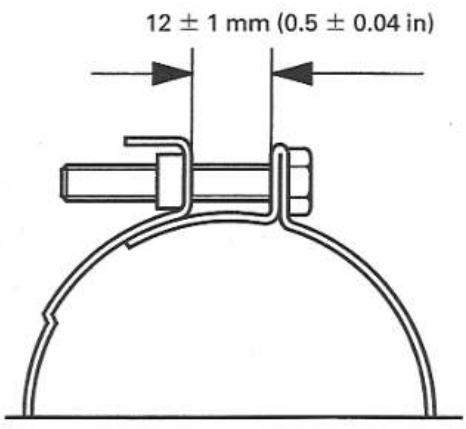
ENGINE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
MAINTENANCE:				
Valve adjust hole cover bolt	4	6	12 (1.2 , 9)	
Crankcase oil drain bolt	1	12	25 (2.5 , 18)	
Valve adjust screw lock nut	4	8	25 (2.5 , 18)	
Spark plug	1	14	18 (1.8 , 13)	
LUBRICATION SYSTEM:				
Oil pump plate bolt	2	6	12 (1.2 , 9)	
Outer rotor set plate screw	1	4	2 (0.2 , 1.4)	
FUEL SYSTEM:				
Throttle cable guide screw	1	5	4 (0.4 , 2.9)	
Link arm screw	2	3	1 (0.1 , 0.7)	
Link arm set screw	1	4	2 (0.2 , 1.4)	
Baffle plate screw	1	3	1 (0.1 , 0.7)	
Air cut-off valve cover screw	2	4	2 (0.2 , 1.4)	
Float chamber screw	4	4	2 (0.2 , 1.4)	
Carburetor top cover screw	2	4	2 (0.2 , 1.4)	
Choke lever set screw	1	5	4 (0.4 , 2.9)	
COOLING SYSTEM:				
Water pump assembly bolt	2	6	13 (1.3 , 9)	NOTE 6
Thermostat housing cover bolt	2	6	12 (1.2 , 9)	
ENGINE REMOVAL/INSTALLATION:				
Drive sprocket bolt	2	6	12 (1.2 , 9)	

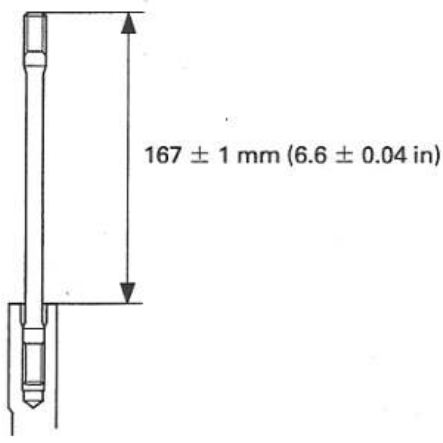
ENGINE (Cont'd)

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
CYLINDER HEAD/VALVES:				
Cylinder head 10 mm nut	4	10	67 (6.8 , 49)	NOTE 4
5 mm socket bolt	1	5	3 (0.3 , 2.2)	
Valve lifter lever stopper bolt	1	6	12 (1.2 , 9)	NOTE 1
Cylinder head cover 8 mm bolt	2	8	23 (2.3 , 17)	
6 mm bolt	8	6	12 (1.2 , 9)	
Cam sprocket bolt	2	7	20 (2.0 , 14)	NOTE 1
Cam chain tensioner bolt	2	6	12 (1.2 , 9)	NOTE 1
CYLINDER/PISTON:				
Cylinder bolt	2	6	12 (1.2 , 9)	
CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE:				
Clutch spring bolt	4	6	12 (1.2 , 9)	
Clutch center lock nut	1	18	118 (12.0 , 87)	NOTE 3,4
Primary drive gear nut	1	18	118 (12.0 , 87)	NOTE 4
Right crankcase cover bolt	11	6	12 (1.2 , 9)	
Gearshift cam stopper arm pivot bolt	1	6	12 (1.2 , 9)	
Gearshift cam bolt	1	6	12 (1.2 , 9)	
Kickstarter pedal bolt	1	8	37 (3.8 , 27)	
ALTERNATOR:				
Flywheel bolt	1	12	123 (12.5 , 90)	NOTE 4
Stator mounting bolt	3	6	12 (1.2 , 9)	
Ignition pulse generator bolt	2	6	12 (1.2 , 9)	
Left crankcase cover bolt	4	6	12 (1.2 , 9)	
CRANKCASE/CRANKSHAFT/BALANCER:				
Crankcase bolt	13	6	12 (1.2 , 9)	
Mainshaft bearing set plate bolt	1	6	12 (1.2 , 9)	NOTE 1
Cam chaintensioner bolt	1	6	12 (1.2 , 9)	
ELECTRICAL SYSTEM:				
Timing hole cap	1	14	10 (1.0 , 7)	NOTE 2

Carburetor insulator clamp:



Cylinder stud bolt:



FRAME

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
FRAME/BODY PANELS:				
Exhaust pipe joint nut	4	8	18 (1.8 , 13)	
Exhaust pipe clamp bolt	1	8	20 (2.0 , 14)	
Muffler clamp bolt	1	8	20 (2.0 , 14)	
Muffler mounting bolt	2	8	32 (3.3 , 24)	
Exhaust pipe protector bolt	2	6	12 (1.2 , 9)	
MAINTENANCE:				
Fuel valve mounting bolt	2	6	9 (0.9 , 6.5)	
Down tube oil drain bolt	1	8	39 (4.0 , 29)	
Rear brake pedal adjuster lock nut	1	8	18 (1.8 , 13)	
Side stand pivot bolt	1	10	see page 3-22	
Side stand pivot nut	1	10	39 (4.0 , 29)	
Spark arrester bolt	3	6	12 (1.2 , 9)	
Spoke	68	BC 3.5	4 (0.4 , 2.9)	
Rim lock	2	8	13 (1.3 , 9)	
LUBRICATION:				
Down tube oil strainer	1	27	54 (5.5 , 40)	
Oil inlet pipe bolt	1	12	37 (3.8 , 27)	
ENGINE REMOVAL/INSTALLATION:				
Engine hanger plate nut (8 mm)	8	8	26 (2.7 , 20)	
(10 mm)	4	10	54 (5.5 , 40)	
Right footpeg mounting bolt	2	10	54 (5.5 , 40)	
FRONT WHEEL/SUSPENSION/STEERING:				
Brake disc bolt	4	6	20 (2.0 , 14)	NOTE 1
Front axle	1	16	88 (9.0 , 65)	
Axle holder nut	4	6	12 (1.2 , 9)	NOTE 5
Fork center bolt	2	27	54 (5.5 , 40)	NOTE 1
Fork cap (to damper rod)	2	12	15 (1.5 , 11)	
Fork cap bolt	2	43	30 (3.1 , 22)	
Top bridge pinch bolt	4	8	27 (2.8 , 20)	
Bottom bridge pinch bolt	4	8	32 (3.3 , 24)	
Master cylinder holder bolt	2	6	10 (1.0 , 7)	
Clutch lever bracket holder bolt	2	6	10 (1.0 , 7)	
Steering head adjusting nut	1	24	see page 14-28	
Steering stem nut	1	24	98 (10.0 , 72)	
REAR WHEEL/SUSPENSION:				
Rear brake disc bolt	4	6	20 (2.0 , 14)	NOTE 1
Driven sprocket nut	6	8	42 (4.3 , 31)	NOTE 5
Drive chain slider screw	3	5	4 (0.4 , 2.9)	NOTE 1
Rear axle nut	1	16	93 (9.5 , 69)	NOTE 5
Swingarm pivot nut	1	18	108 (11.0 , 80)	NOTE 5
Shock absorber mounting nut (upper)	1	10	44 (4.5 , 33)	NOTE 5
(lower)	1	10	44 (4.5 , 33)	NOTE 5
Shock arm nut (Swingarm side)	1	12	78 (8.0 , 58)	NOTE 5
(Shock link side)	1	12	69 (7.0 , 51)	NOTE 5
Shock link nut	1	12	69 (7.0 , 51)	NOTE 5
Shock absorber spring lock nut	1	56	29 (3.0 , 22)	
Damper rod end nut	1	12	26 (2.7 , 20)	NOTE 3
Damping adjuster	1	24	20 (2.0 , 14)	NOTE 3
Swingarm pivot adjusting bolt	1	28	see page 15-33	
Swingarm pivot lock nut	1	28	64 (6.5 , 47)	
Side stand mounting bolt (8 mm socket bolt)	1	8	26 (2.7 , 20)	
(10 mm socket bolt)	2	10	39 (4.0 , 29)	

FRAME (Cont'd)

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
HYDRAULIC BRAKE:				
Brake hose oil bolt	4	10	34 (3.5 , 25)	
Brake lever pivot bolt/nut	1/1	6	6 (0.6 , 4.3)	
Brake lever adjuster lock nut	1	5	6 (0.6 , 4.3)	
Front master cylinder reservoir cover screw	2	4	2 (0.2 , 1.4)	
Front master cylinder holder bolt	2	6	10 (1.0 , 7)	
Front caliper mounting bolt	2	8	29 (3.0 , 22)	NOTE 1
Caliper bleed valve	2	8	6 (0.6 , 4.3)	
Rear brake disc cover screw	2	6	7 (0.7 , 5.1)	NOTE 1
Rear master cylinder mounting bolt	2	6	12 (1.2 , 9)	
Brake pad pin	2	10	18 (1.8 , 13)	
Brake pad pin plug	2	10	3 (0.3 , 2.2)	
Front caliper pin bolt A	1	8	23 (2.3 , 17)	NOTE 1
Front caliper bracket pin bolt	1	8	23 (2.3 , 17)	NOTE 1
Rear caliper pin bolt	1	12	27 (2.8 , 20)	
Rear caliper bracket pin bolt	1	8	13 (1.3 , 9)	NOTE 1
Brake pedal pivot bolt	1	8	25 (2.6 , 19)	
Rear master cylinder push rod lock nut	1	8	18 (1.8 , 13)	

TOOLS

NOTE: 1. Alternative tool.

DESCRIPTION	TOOL NUMBER	REMARKS	REF. SEC.
Carburetor float level gauge	07401-0010000		5
Spoke wrench, 5.8 × 6.1 mm	07701-0020300		14, 15
Pin spanner	07702-0020001	2 required	7, 15
Gear holder	07724-0010200		10
Clutch center holder	07724-0050002		10
Flywheel holder	07725-0040000		11
Flywheel puller	07733-0020001	NOTE 1: 07923-3950000	11
Bearing remover weight	07741-0010201		12, 15
Valve guide remover, 6.6 mm	07742-0010200		8
Attachment, 37 × 40 mm	07746-0010200		12, 14, 15
Attachment, 42 × 47 mm	07746-0010300		12, 15
Attachment, 52 × 55 mm	07746-0010400		12
Attachment, 62 × 68 mm	07746-0010500		12
Attachment, 24 × 26 mm	07746-0010700		10, 15
Attachment, 22 × 24 mm	07746-0010800		15
Inner bearing driver	07746-0020100		8
Attachment, 20 mm	07746-0020400		8
Pilot, 15 mm	07746-0040300		15
Pilot, 17 mm	07746-0040400		14, 15
Pilot, 20 mm	07746-0040500		10, 12, 15
Pilot, 25 mm	07746-0040600		12, 15
Pilot, 40 mm	07746-0040900		12
Pilot, 16 mm	07746-0041300		12
Bearing remover shaft	07746-0050100		14, 15
Bearing remover head, 17 mm	07746-0050500		14, 15
Bearing remover head, 20 mm	07746-0050600		15
Driver	07749-0010000		10, 12, 14, 15
Valve spring compressor	07757-0010000		8
Valve seat cutter			
−Seat cutter IN 35 mm (45°)	07780-0010400		8
EX 40 mm (45°)	07780-0010500		8
−Flat cutter IN 35 mm (32°)	07780-0012300		8
EX 42 mm (32°)	07780-0013000		8
−Interior cutter IN/EX 37.5 mm (60°)	07780-0014100		8
−Cutter holder IN/EX 6.6 mm	07781-0010202		8
Snap ring pliers	07914-SA50001		16
Steering stem socket	07916-KA50100		14
Assembly collar	07931-KF00100		12
Thread adapter	07931-KF00200		12
Shaft puller	07931-ME40000		12
Bearing remover assembly	07936-KC10500		12, 15
Bearing remover collets	07936-MK50100		12, 15
Attachment, 28 × 30 mm	07946-1870100		15
Ball race remover	07946-3710500		14
Steering stem driver	07946-MB00000		14
Driver	07949-3710001		15
Ball race remover attachment	07953-MJ10100		14
Ball race remover shaft	07953-MJ10200		14
Slider guide attachment	07974-KA50102		15
Valve guide reamer	07984-ZE20001		8
Bearing driver attachment	07GAD-SD40101		12
Peak voltage adapter	07HGJ-0020100		17

DESCRIPTION	TOOL NUMBER	REMARKS	REF. SEC.
Drive chain tool set	07HMH-MR10103		3
Lock nut wrench, 5.8 × 38 mm	07KMA-KAB0100		15
Fork damper holder, 27 mm	07PMB-KZ40101		14
Slider guide, 16 mm	07PMG-KZ40100		15
Compression gauge attachment	07RMJ-MY50100		8
Fork seal driver	07TMD-MAC0100		14
Lock nut wrench, 6 × 25.5 mm	07VMA-MBB0100		15
Bearing race installer	07VMF-KZ30100		14
Bearing installer shaft	07VMF-KZ30200		14

LUBRICATION & SEAL POINTS

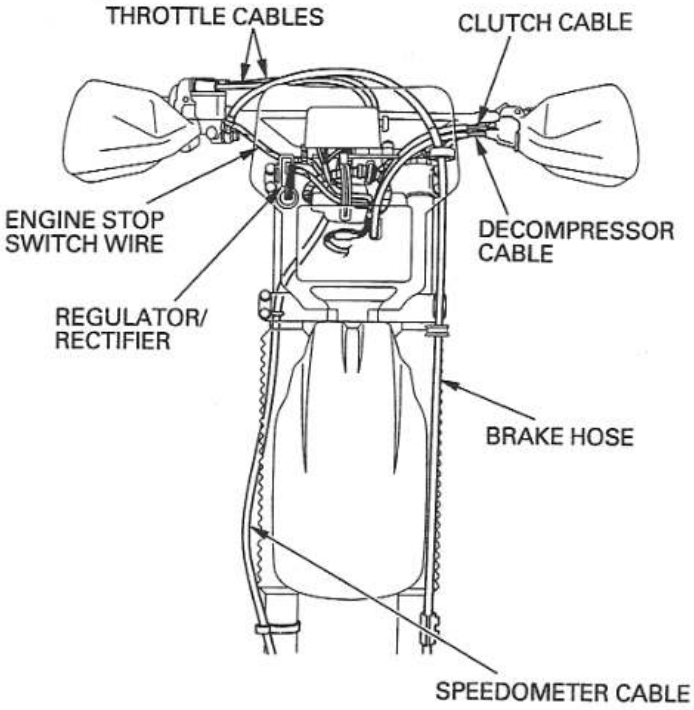
ENGINE LOCATION	MATERIAL	REMARKS
Cylinder head nut threads and seating surface Piston outer surface and piston pin hole Piston pin outer surface Piston ring whole surface Crankshaft big end Valve adjust screw lock nut threads Oil pump rotor sliding area Clutch disc lining surface Clutch center lock nut threads and seating surface Primary drive gear nut threads and seating surface Kickstarter bearing rolling area (right crankcase cover side) Flywheel bolt threads and seating surface Bearing rolling area O-rings	Engine oil	
Connecting rod small end inner surface Camshaft lobes and journals Rocker arm sliding area and inner surface Valve stem sliding surface and stem end Clutch outer and outer guide sliding surface Each gear rolling and sliding area Other rotating or sliding area Kickstarter spindle spline and pinion sliding surface Mainshaft/countershaft spline and gear rolling area Gearshift spindle spline Gearshift drum guide groove Shift fork claw Shift fork shaft outer surface	Use molybdenum solution (mixture of the engine oil and molybdenum grease with the ratio 100 g: 70 cc)	
Timing hole cap threads O-rings Oil seal lips Water seal lips	Multi-purpose grease	
Right and left crankcase mating surface Crankcase breather joint area Cylinder head-to-head cover mating surface	Liquid sealant	
Cam sprocket bolt threads Cam chain tensioner bolt threads Mainshaft bearing set plate bolt threads Gearshift cam bolt threads Valve lifter lever stopper bolt threads	Locking agent	6.5 ± 1 mm (0.26 ± 0.04 in) from tip 13.0 ± 1 mm (0.51 ± 0.04 in) from tip 6.5 ± 1 mm (0.26 ± 0.04 in) from tip 6.5 ± 1 mm (0.26 ± 0.04 in) from tip

FRAME

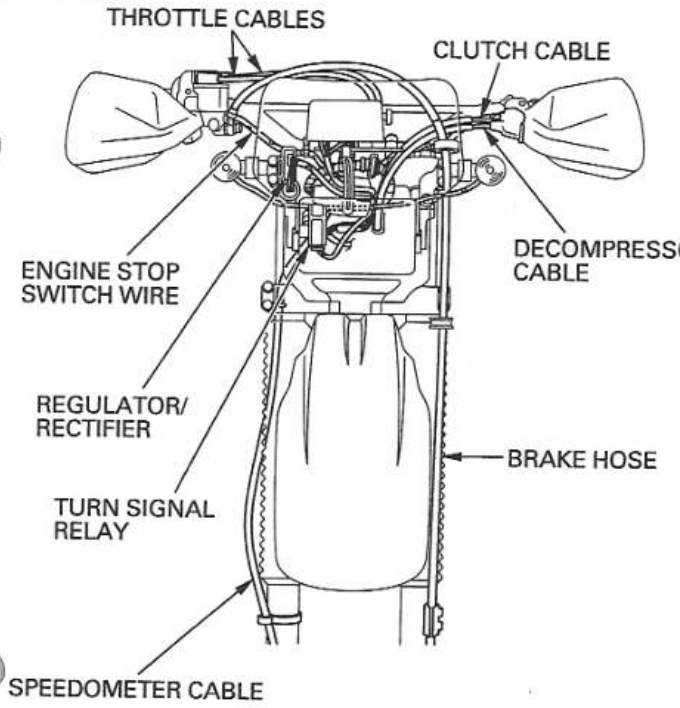
LOCATION	MATERIAL	REMARKS
Steering head bearing rolling area and oil seal lips Wheel bearing dust seal lips Swingarm pivot needle bearing rolling area Swingarm pivot collar sliding surface Swingarm pivot dust seal lips Shock arm needle bearing rolling area Shock arm pivot collar sliding surface Shock arm dust seal lips Rear shock absorber needle bearing rolling area Rear shock absorber dust seal lips Throttle grip pipe sliding area Throttle cable roller sliding surface Clutch lever pivot bolt sliding surface Decompressor lever pivot bolt sliding surface Kickstarter pedal joint sliding surface Brake pedal pivot shaft sliding surface Side stand pivot bolt sliding surface Gearshift pedal pin sliding surface	Multi-purpose grease	Apply 3 g Apply two points
Brake caliper pin bolt/pin bolt A Brake lever pivot bolt sliding surface Brake lever adjust bolt tip Rear master cylinder push rod rounded surface Rear master cylinder boot fitting area	Silicone grease	
Front/rear brake disc bolt threads Fork center bolt Drive chain slider mounting screw threads Front brake caliper mounting bolt threads Brake caliper slide pin threads Rear brake disc cover screw threads	Locking agent	
Brake caliper piston seal lips Master cylinder inner surface Master piston outer sliding surface	DOT4 brake fluid	
Handle grip rubber inner surface	Honda Bond A or Cemedine # 540	

CABLE & HARNESS ROUTING

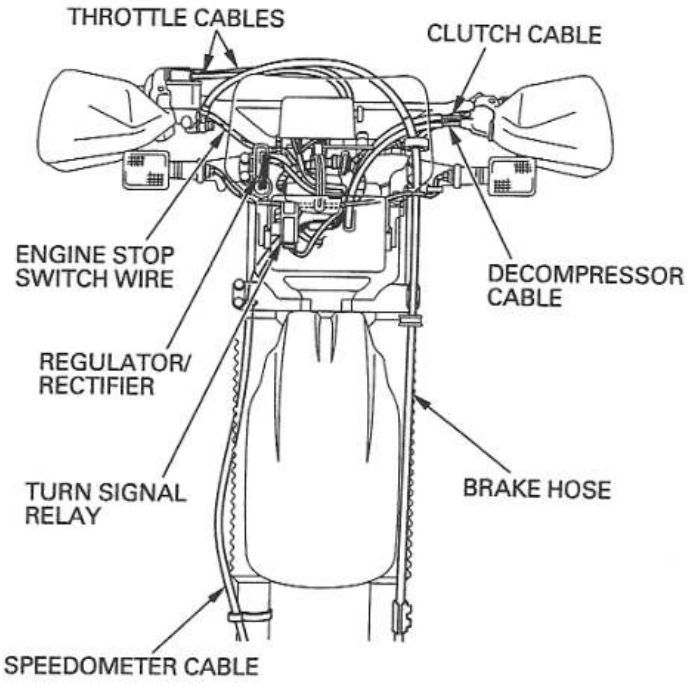
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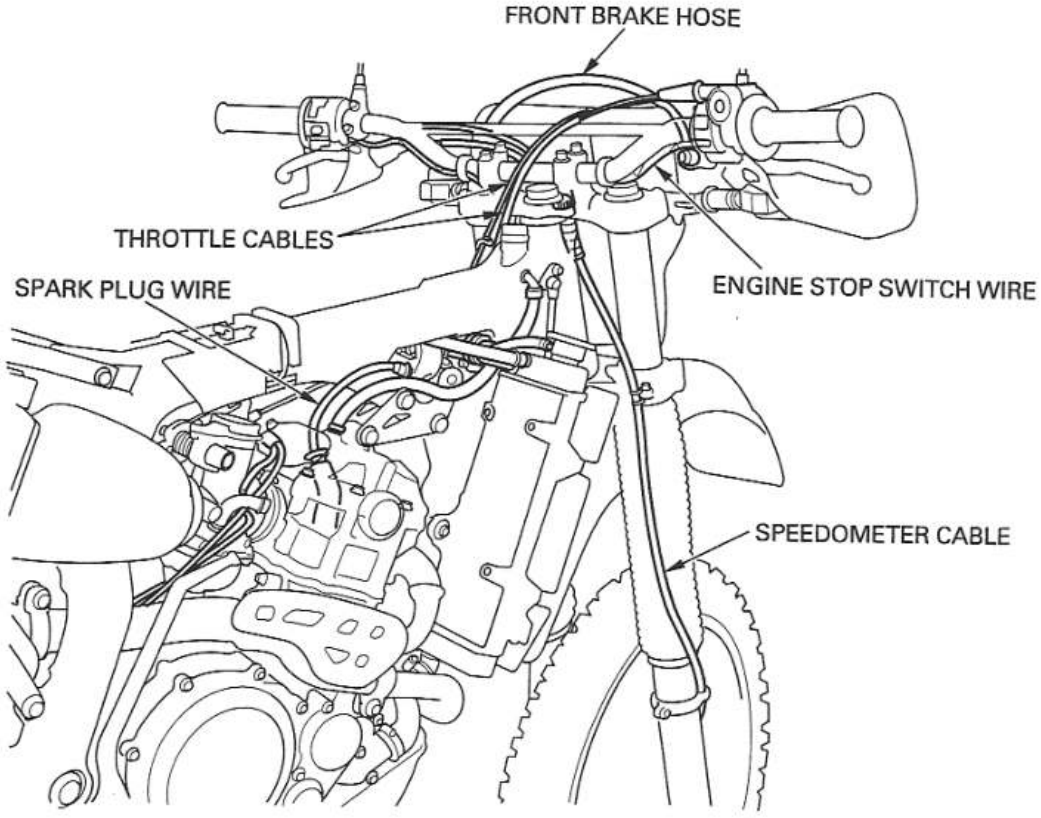


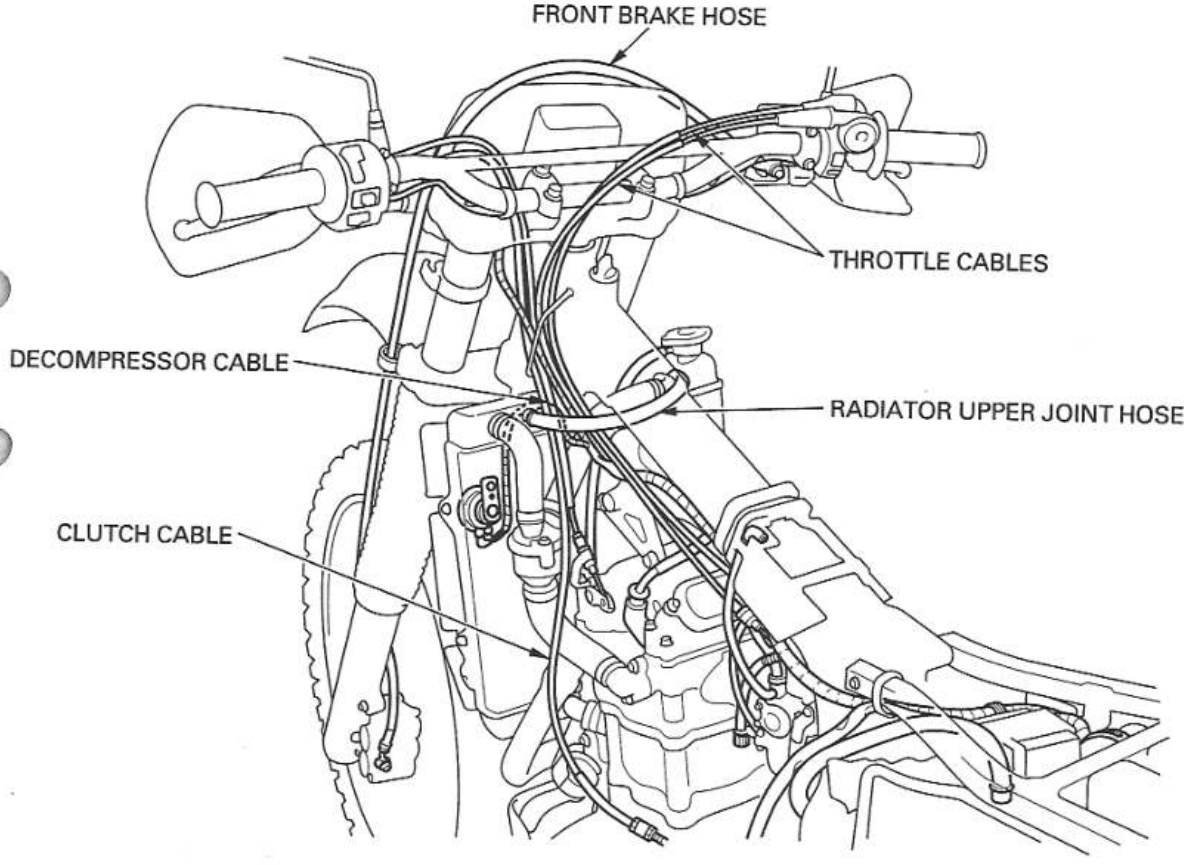
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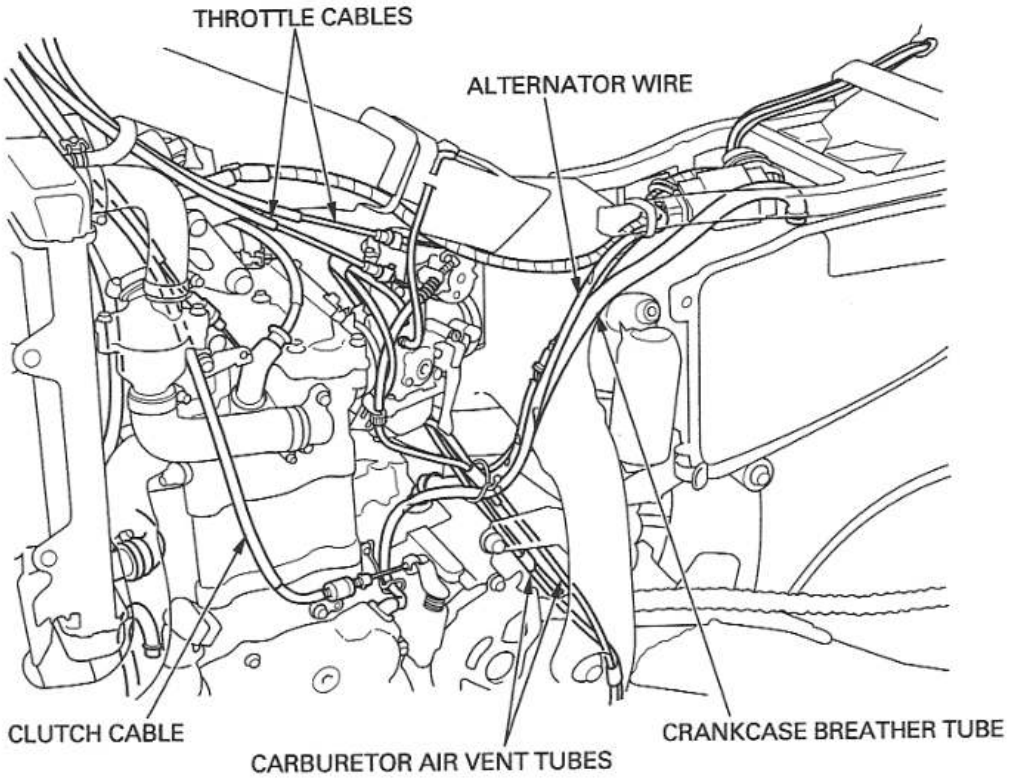


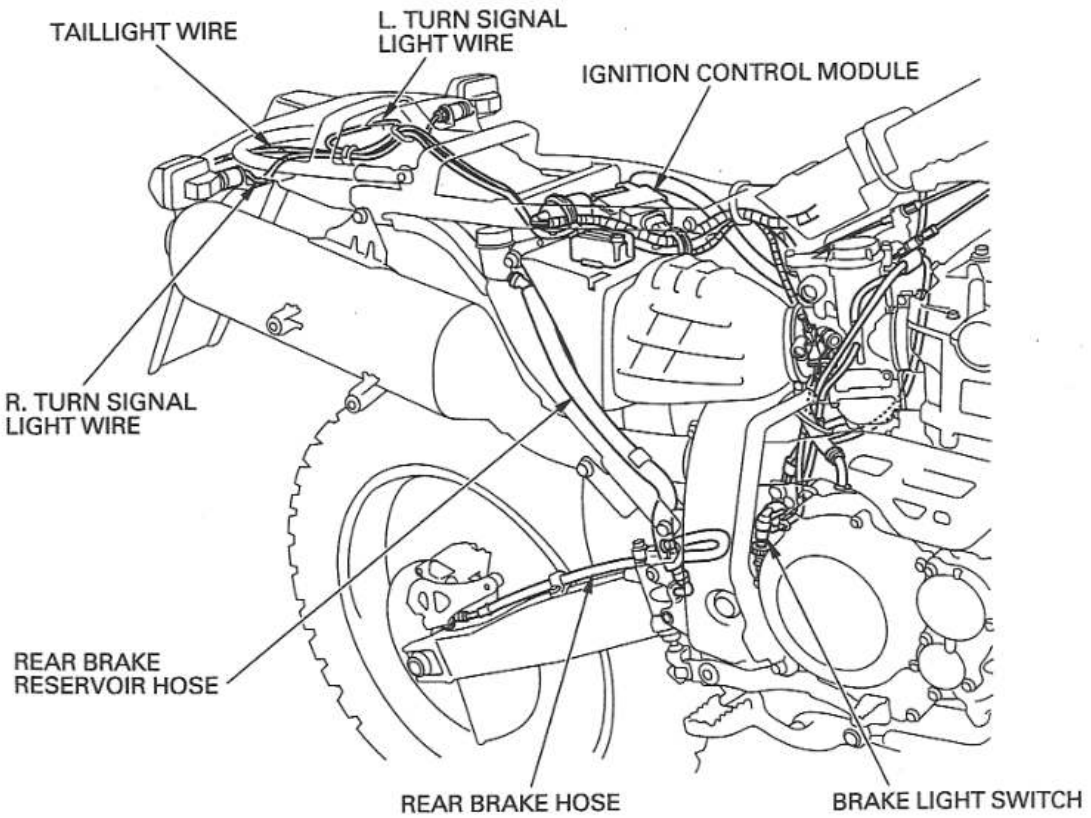
U type:




FRONT BRAKE HOSE
THROTTLE CABLES
SPARK PLUG WIRE
ENGINE STOP SWITCH WIRE
SPEEDOMETER CABLE


FRONT BRAKE HOSE
THROTTLE CABLES
DECOMPRESSOR CABLE
RADIATOR UPPER JOINT HOSE
CLUTCH CABLE


THROTTLE CABLES
ALTERNATOR WIRE
CLUTCH CABLE
CARBURETOR AIR VENT TUBES
CRANKCASE BREATHER TUBE


TAILLIGHT WIRE
L. TURN SIGNAL LIGHT WIRE
IGNITION CONTROL MODULE
R. TURN SIGNAL LIGHT WIRE
REAR BRAKE RESERVOIR HOSE
REAR BRAKE HOSE
BRAKE LIGHT SWITCH

EMISSION CONTROL SYSTEM

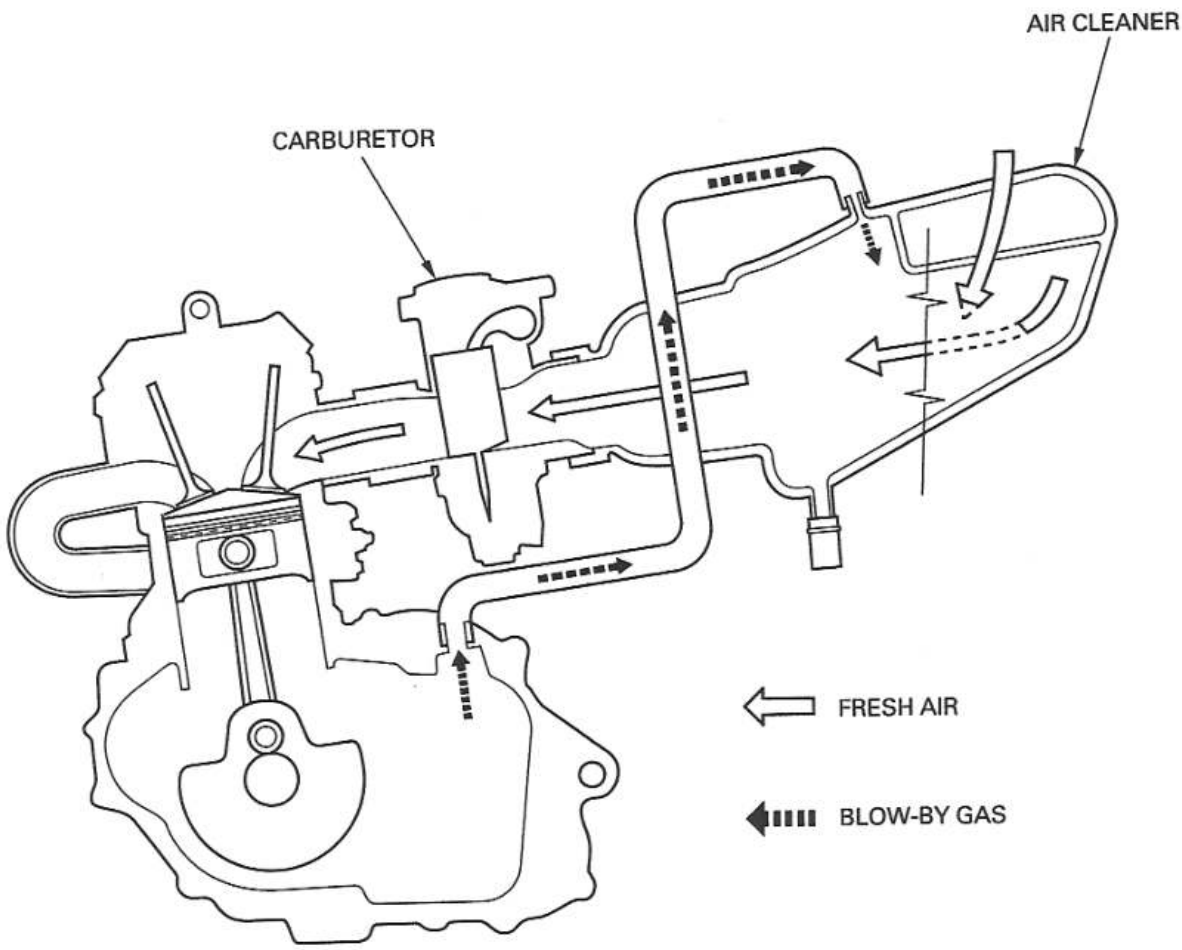
SOURCE OF EMISSIONS

The combustion process produces carbon monoxide and hydrocarbons. Control of hydrocarbons is very important because, under certain conditions, they react to form photochemical smog when subjected to sunlight. Carbon monoxide does not react in the same way, but it is toxic.

Honda Motor Co., Ltd. utilizes lean carburetor settings as well as other systems, to reduce carbon monoxide and hydrocarbons.

CRANKCASE EMISSION CONTROL SYSTEM

The engine is equipped with a closed crankcase system to prevent discharging crankcase emissions into the atmosphere. Blow-by gas is returned to the combustion chamber through the air cleaner and carburetor.



MEMO

2. FRAME/BODY PANELS/EXHAUST SYSTEM

SERVICE INFORMATION	2-1	FRONT VISOR	2-3
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SERVICE INFORMATION

GENERAL

⚠WARNING

- ***Gasoline is extremely flammable and is explosive under certain condition. KEEP OUT OF REACH OF CHILDREN.***
- ***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 work area or where gasoline is stored can cause a fire or explosion.
- This section covers removal and installation of the body panels, fuel tank and exhaust system.
- Always replace the exhaust pipe gaskets after removing the exhaust pipe from the engine.
- When installing the exhaust system, loosely install all of the exhaust pipe fasteners. Always tighten the exhaust clamps first, then tighten the mounting fasteners. If you tighten the mounting fasteners first, the exhaust pipe may not seat properly.
- Always inspect the exhaust system for leaks after installation.

TORQUE VALUES

Exhaust pipe joint nut	18 N·m (1.8 kgf·m , 13 lbf·ft)
Exhaust pipe clamp bolt	20 N·m (2.0 kgf·m , 14 lbf·ft)
Muffler clamp bolt	20 N·m (2.0 kgf·m , 14 lbf·ft)
Muffler mounting bolt	32 N·m (3.3 kgf·m , 24 lbf·ft)
Exhaust pipe protector bolt	12 N·m (1.2 kgf·m , 9 lbf·ft)

TROUBLESHOOTING

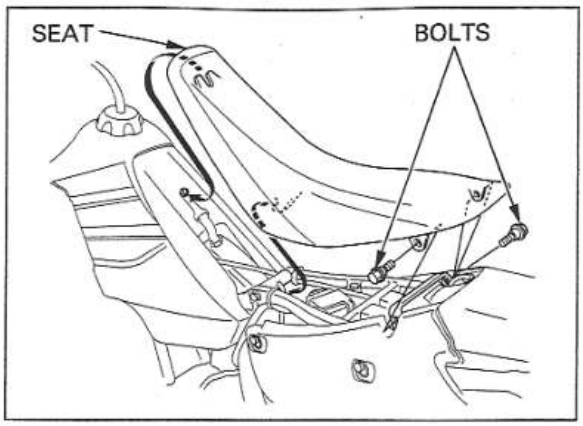
EXCESSIVE EXHAUST NOISE

- Broken exhaust system
- Exhaust gas leak

POOR PERFORMANCE

- Deformed exhaust system
- Exhaust gas leak
- Clogged muffler

SEAT



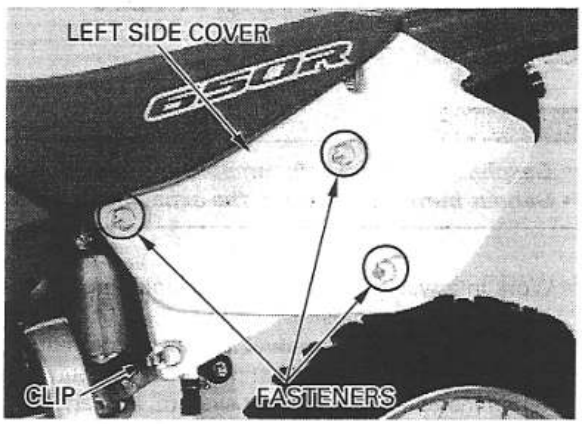
REMOVAL

Remove the two bolts, collars and seat.

INSTALLATION

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

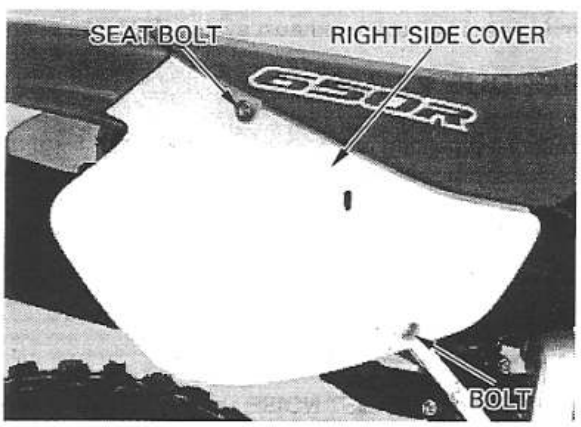
SIDE COVERS



REMOVAL/INSTALLATION

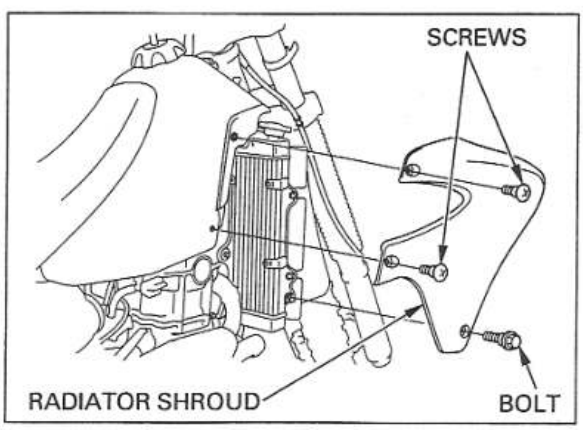
LEFT SIDE:
Remove the fasteners and left side cover.

RIGHT SIDE:
Remove the right side cover mounting bolt.
Remove the right seat mounting bolt, collar and right side cover.



Installation is in the reverse order of removal.

RADIATOR SHROUD



REMOVAL/INSTALLATION

Remove the screws.
Remove the bolt and radiator shroud.

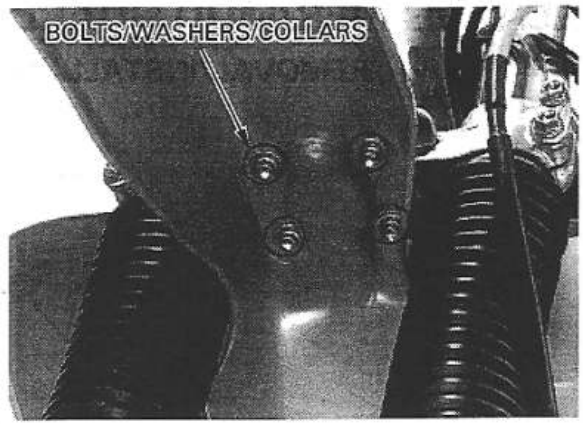
Installation is in the reverse order of removal.

FRONT FENDER

REMOVAL/INSTALLATION

Remove the bolts, washers and collars.
Remove the front fender.

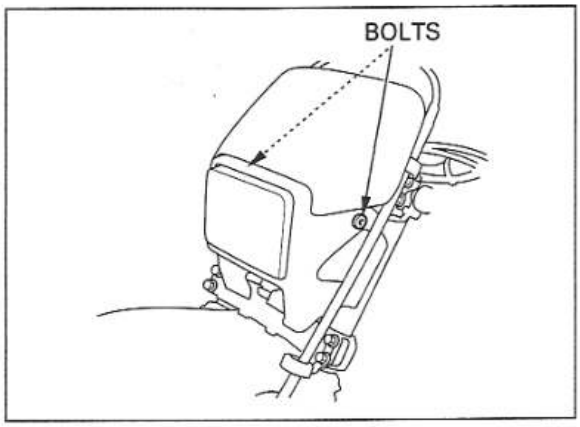
Installation is in the reverse order of removal.



FRONT VISOR

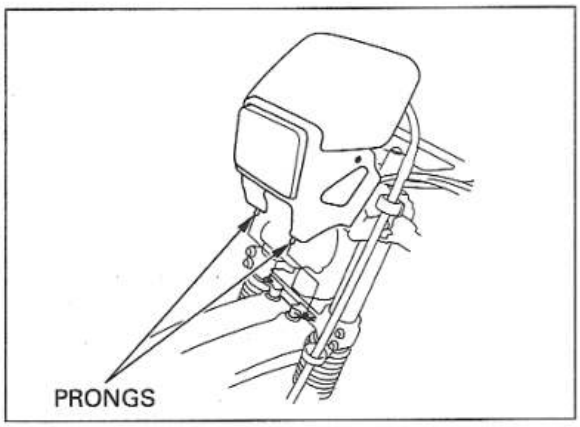
Remove the front visor mounting bolts.

Remove the front visor.



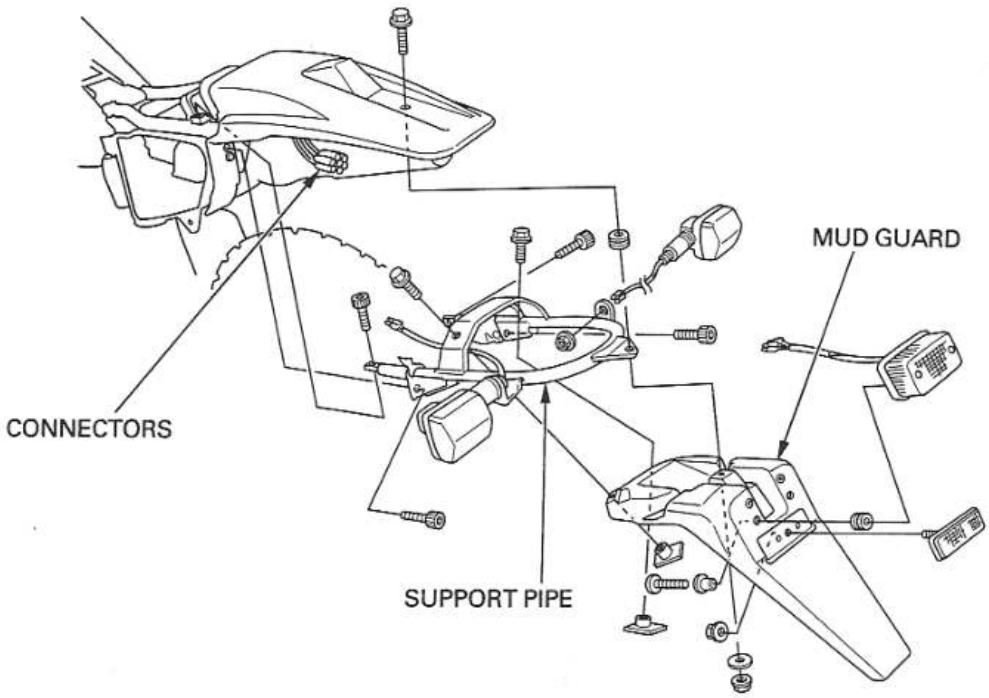
Install the front visor aligning its prongs with holes on the steering stem.

Installation is in the reverse order of removal.



REAR FENDER/MUD GUARD

REMOVAL/INSTALLATION

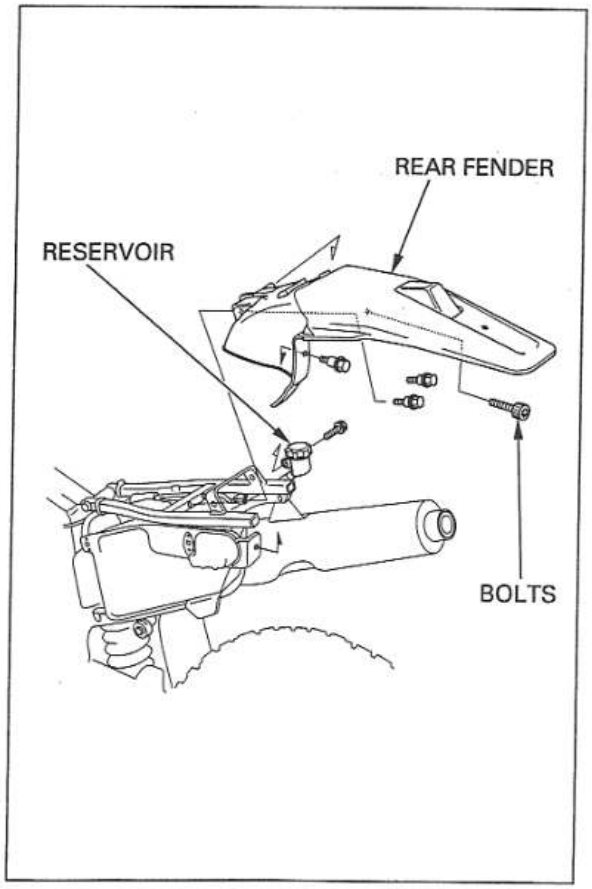


Remove the seat and side covers (page 2-2).
Disconnect the turn signal light and tail/brake light connectors.

Remove the bolts and sub-frame support pipe with the mud guard.
Remove the bolts/collars and mud guard from the support pipe.

Remove the bolt and rear brake reservoir from the bracket.
Remove the bolts and rear fender.

Installation is in the reverse order of removal.



FUEL TANK

REMOVAL/INSTALLATION

⚠WARNING

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

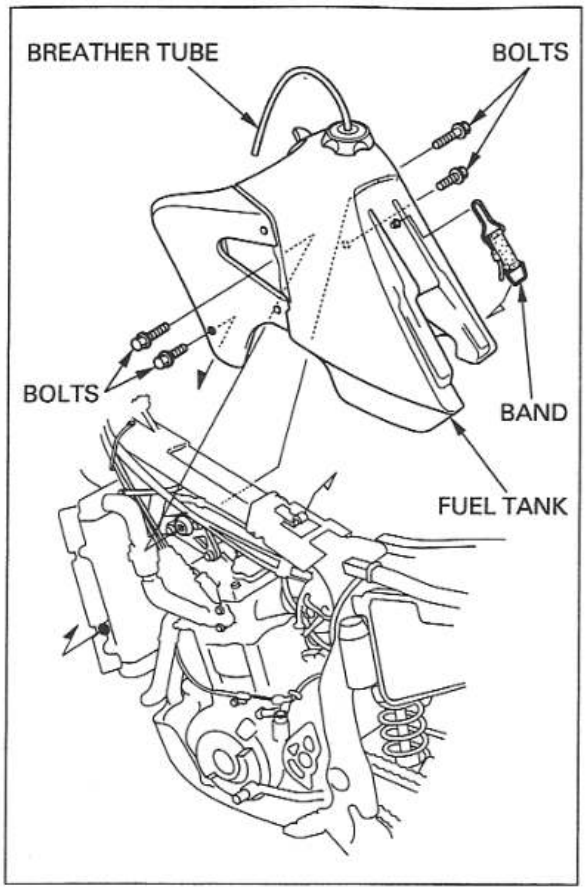
Remove the seat (page 2-2).

Disconnect the breather tube from the stem nut.
Turn the fuel valve OFF, and disconnect the fuel line.

Remove the radiator shroud bolts.
Remove the fuel tank mounting bolts.
Unhook the band and remove the fuel tank.

Installation is in the reverse order of removal.

After installation, make sure there are no fuel leaks.

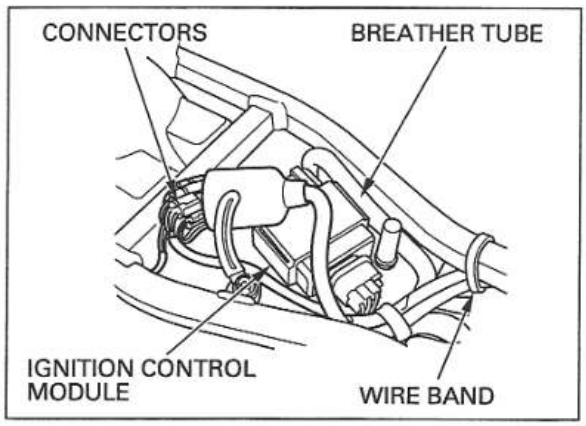


SUB-FRAME

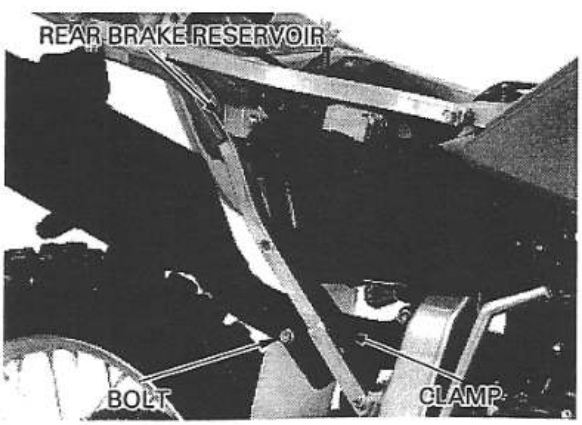
REMOVAL

Remove the following:
—Seat (page 2-2)
—Right side cover (page 2-2)

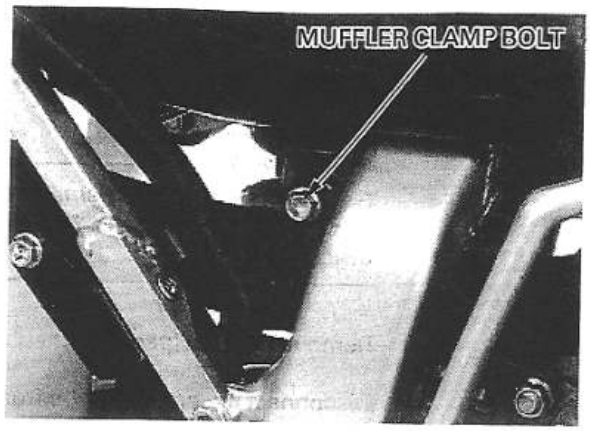
Disconnect the crankcase breather tube from the air cleaner housing.
Remove the ignition control module from the air cleaner housing.
Remove the wire band and disconnect the taillight connectors and AC regulator connectors.



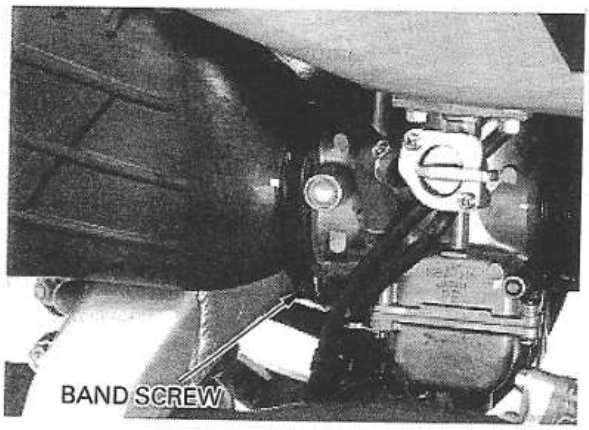
Remove the bolt and rear brake reservoir.
Loosen the bolt and free the reservoir hose from the clamp.



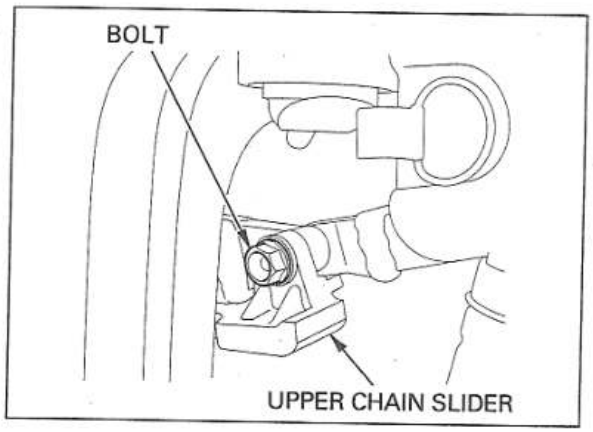
Loosen the muffler clamp bolt.



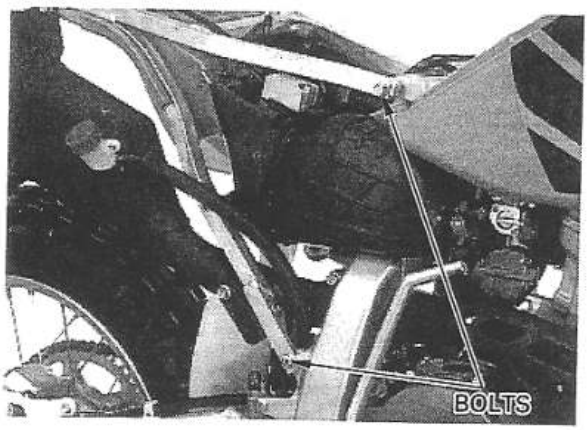
Loosen the carburetor connecting tube band screw.



Remove the left lower sub-frame mounting bolt and upper chain slider.

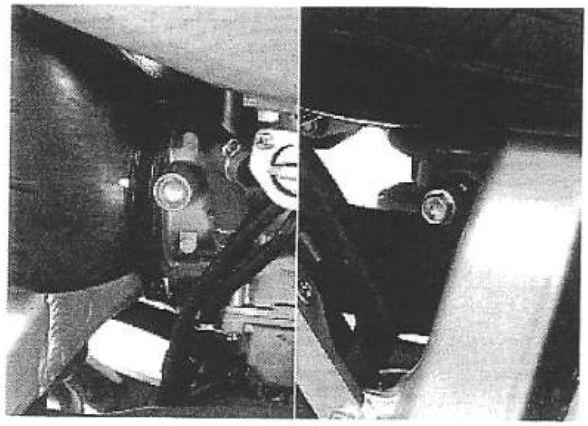


Remove the upper and lower sub-frame mounting bolts, and then remove the sub-frame.



INSTALLATION

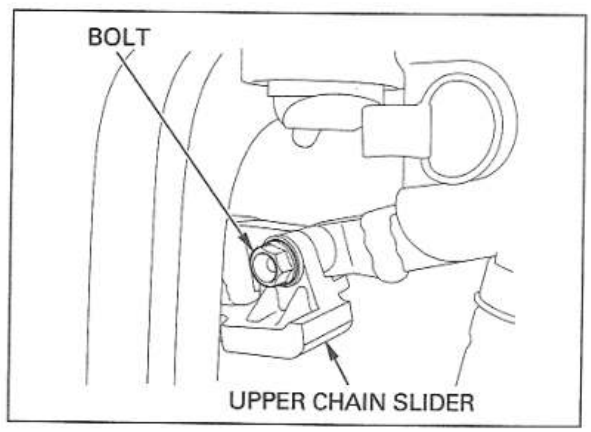
Loosely attach the upper and lower ends of the sub-frame to the main-frame while connecting the muffler to the exhaust pipe and the carburetor connecting tube to the carburetor.



Tighten the upper and lower sub-frame mounting bolts.



Install the upper chain slider and tighten the left lower sub-frame mounting bolt.

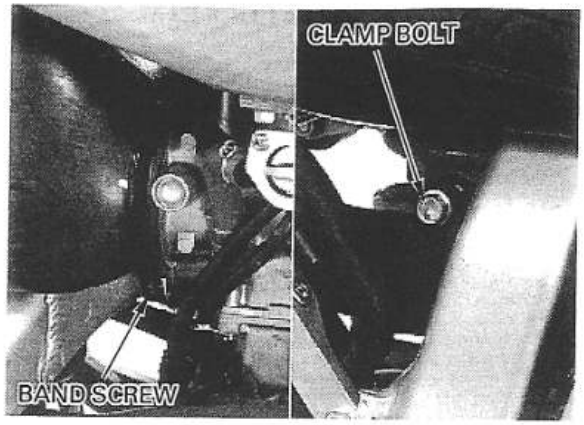


Clamp the rear brake reservoir hose to the sub-frame and tighten the lower muffler mounting bolt. Install the rear brake reservoir and tighten the bolt.



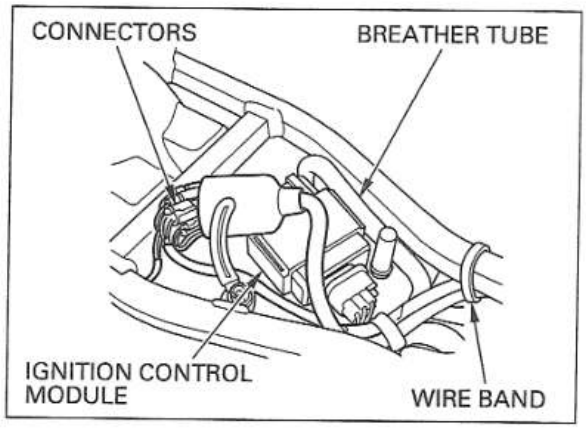
Tighten the connecting tube band screw securely.
Tighten the muffler clamp bolt to the specified torque.

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



Connect the taillight connectors and AC regulator connectors.
Install the ignition control module to the air cleaner housing.
Connect the crankcase breather tube to the air cleaner housing clamp the alternator wire and main wire harness with the wire band.

Install the following:
– Seat (page 2-2)
– Right side cover (page 2-2)



EXHAUST PIPE/MUFFLER

REMOVAL

⚠WARNING

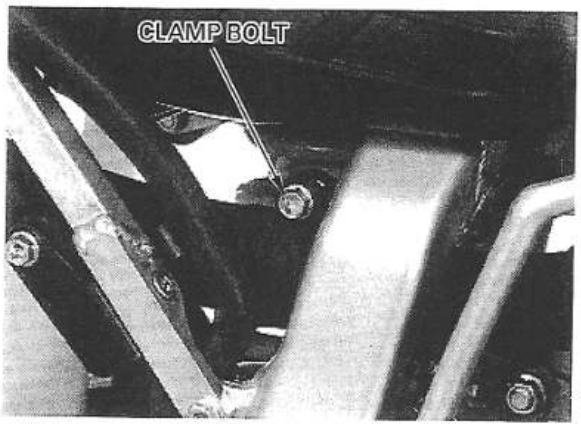
Do not service the exhaust system while it is hot.

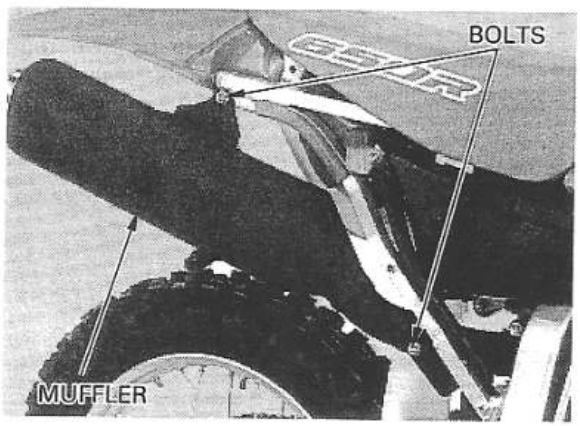
Let the exhaust system cool before starting this procedure.

Remove the right side cover (page 2-2).
Remove the radiator shrouds. (page 2-2).

Loosen the muffler clamp bolt.

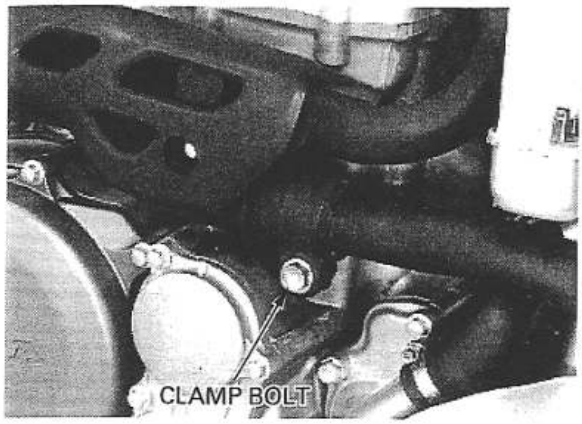
Remove the muffler mounting bolts and muffler.
– Spark arrester maintenance (page 3-24)



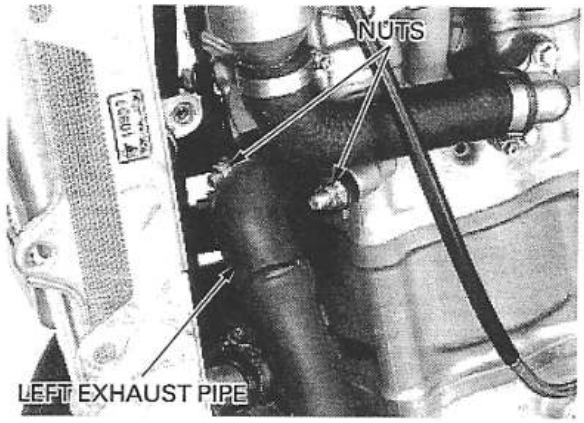


Remove the radiator mounting bolts and swing the radiators forward (page 6-8).

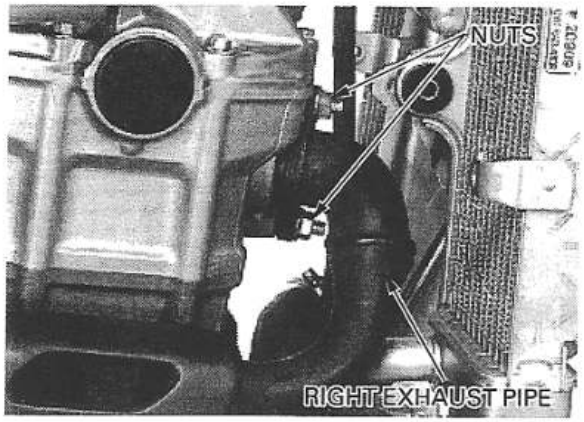
Loosen the left exhaust pipe clamp bolt.



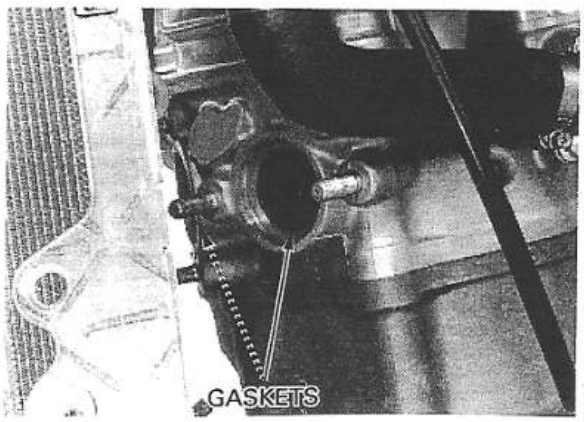
Remove the joint nuts and left exhaust pipe.



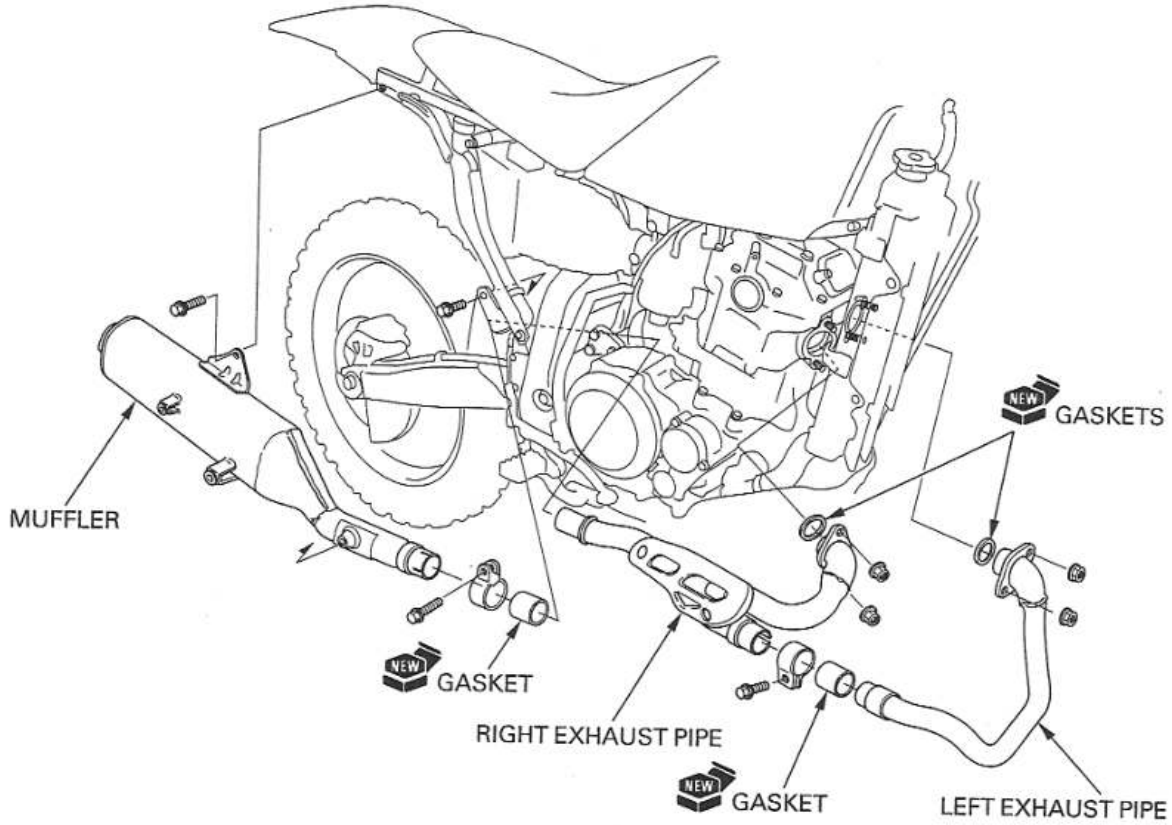
Remove the joint nuts and right exhaust pipe.



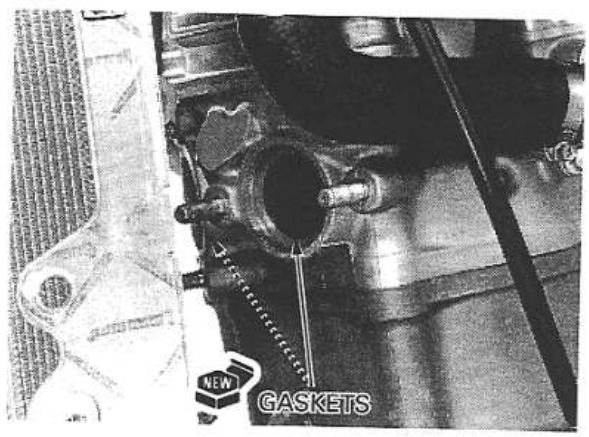
Remove the gaskets.



INSTALLATION



Install the new gaskets into the cylinder head.



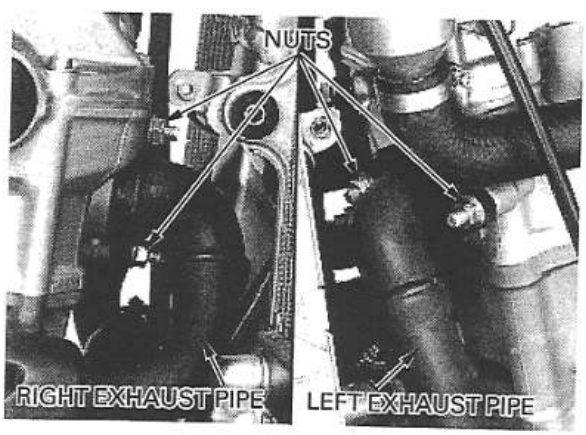
Install the exhaust pipes and muffler.

NOTE:

Loosely install all of the exhaust pipe/muffler fasteners. Always tighten the exhaust pipe joint nuts first, then tighten the mounting fasteners. If you tighten the mounting fasteners first, the exhaust pipe may not seat properly.

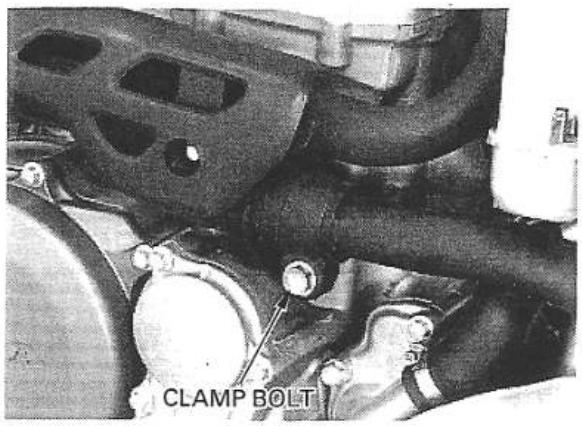
Tighten the exhaust pipe joint nuts to the specified torque.

TORQUE: 18 N·m (1.8 kgf·m , 13 lbf·ft)



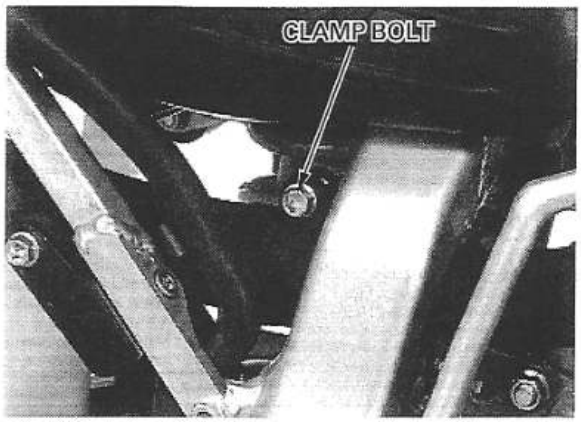
Tighten the exhaust pipe clamp bolt to the specified torque.

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



Tighten the muffler clamp bolt to the specified torque.

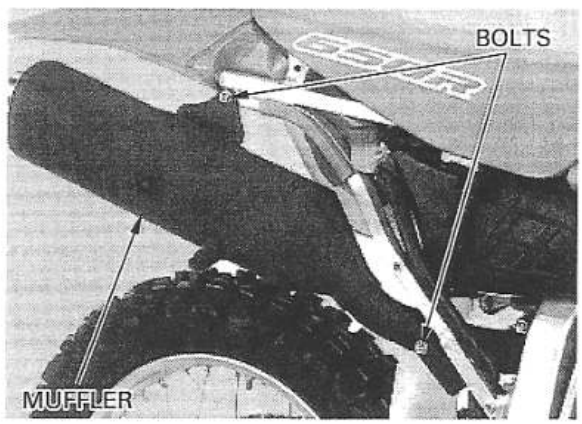
TORQUE: 20 N·m (2.0 kgf·m , 14 lbf·ft)



Install the muffler mounting bolts to the specified torque.

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

Install the following:
- Radiator mounting bolts
- Radiator shrouds (page 2-2)
- Right side cover (page 2-2)

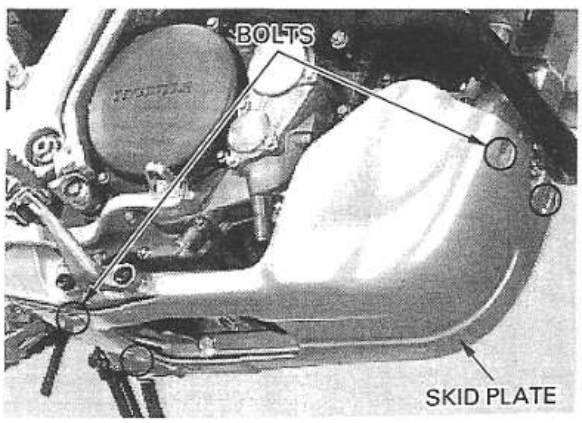


SKID PLATE

REMOVAL/INSTALLATION

Remove the bolts and skid plate.

Installation is in the reverse order of removal.



MEMO

3. MAINTENANCE

SERVICE INFORMATION	3-1	DRIVE CHAIN/SPROCKET	3-15
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COMPETITION MAINTENANCE SCHEDULE	3-4	BRAKE FLUID	3-19
FUEL LINE	3-5	BRAKE PAD WEAR	3-20
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AIR CLEANER	3-6	BRAKE LIGHT SWITCH	3-21
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VALVE CLEARANCE	3-8	CLUTCH SYSTEM	3-21
ENGINE OIL	3-10	SIDE STAND	3-22
ENGINE OIL FILTER	3-12	SUSPENSION	3-22
DECOMPRESSOR SYSTEM	3-13	SPARK ARRESTER	3-24
ENGINE IDLE SPEED	3-13	NUTS, BOLTS, FASTENERS	3-24
RADIATOR COOLANT	3-14	WHEELS/ TIRES	3-25
COOLING SYSTEM	3-14	STEERING HEAD BEARINGS	3-25

SERVICE INFORMATION

GENERAL

⚠WARNING

- ***Gasoline is extremely flammable and is explosive under certain conditions. Work in a well ventilated area. Smoking or allowing flames or sparks in the work area or where the gasoline is stored can cause a fire or explosion.***
- ***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.***

- Place the motorcycle on level ground before starting any work.

SPECIFICATIONS

ITEM		SPECIFICATIONS	SERVICE LIMIT
Throttle grip free play		2.0–6.0 mm (1/16–1/4 in)	—
Spark plug	Standard	BKR7E-11 (NGK)	—
		K22PR-U11 (DENSO)	—
	Optional	BKR8E-11 (NGK)	—
		K24PR-U11 (DENSO)	—
Spark plug gap		1.00–1.10 mm (0.039–0.043 in)	—
Valve clearance	IN	0.15 ± 0.02 mm (0.006 ± 0.001 in)	—
	EX	0.20 ± 0.02 mm (0.008 ± 0.001 in)	—
Engine oil capacity	At draining	1.56 ℓ (1.65 US qt , 1.37 Imp qt)	—
	At oil filter change	1.6 ℓ (1.7 US qt , 1.4 Imp qt)	—
	At disassembly	2.0 ℓ (2.1 US qt , 1.8 Imp qt)	—
Recommended engine oil		HONDA 4-stroke oil or equivalent motor oil API service classification: SE, SF or SG	—
Decompressor lever free play		5.0–8.0 mm (3/16–5/16 in)	—
Engine idle speed		1,400 ± 100 min^{-1} (rpm)	—
Drive chain slack		20–30 mm (13/16–1 3/16 in)	—
Drive chain length (at 41 pins/40 links)		—	638 mm (25.1 in)
Recommended drive chain	(ED, DK types)	DID520VM-110LE or RK520KZO-110LE	—
	(U type)	DID520VM-108LE or RK520KZO-108LE	—
Drive chain guide slider thickness		—	To the indicator
Drive chain slider thickness		—	To the indicator
Recommended brake fluid		DOT 4	—
Brake pedal height		68 mm (2.7 in)	—
Clutch lever free play		10–20 mm (3/8–13/16 in)	—
Tire size	Front	3.00–21 51P	—
	Rear	4.50–18 70P	—
Tire brand (Front/Rear)		TR8/TR8 (IRC)	—
Cold tire pressure	Front	175 kPa (1.75 kgf/cm^2 , 25 psi)	—
	Rear	125 kPa (1.25 kgf/cm^2 , 18 psi)	—
Minimum tire tread depth		—	3 mm (1/8 in)

TORQUE VALUES

Fuel valve mounting bolt	9 N·m (0.9 kgf·m , 6.5 lbf·ft)
Spark plug	18 N·m (1.8 kgf·m , 13 lbf·ft)
Valve adjust screw lock nut	25 N·m (2.5 kgf·m , 18 lbf·ft)
Valve adjust hole cover bolt	12 N·m (1.2 kgf·m , 9 lbf·ft)
Crankcase oil drain bolt	25 N·m (2.5 kgf·m , 18 lbf·ft)
Down tube oil drain bolt	39 N·m (4.0 kgf·m , 29 lbf·ft)
Oil filter cover bolt	12 N·m (1.2 kgf·m , 9 lbf·ft)
Rear axle nut	93 N·m (9.5 kgf·m , 69 lbf·ft)
Front master cylinder reservoir cover screw	2 N·m (0.2 kgf·m , 1.4 lbf·ft)
Front brake lever adjuster lock nut	6 N·m (0.6 kgf·m , 4.3 lbf·ft)
Rear brake pedal adjuster lock nut	18 N·m (1.8 kgf·m , 13 lbf·ft)
Side stand pivot bolt	see page 3-22
Side stand pivot nut	39 N·m (4.0 kgf·m , 29 lbf·ft)
Spark arrester bolt	12 N·m (1.2 kgf·m , 9 lbf·ft)
Spoke	4 N·m (0.4 kgf·m , 2.9 lbf·ft)
Rim lock	13 N·m (1.3 kgf·m , 9 lbf·ft)

TOOLS

Drive chain tool set	07HMH-MR10103
Spoke wrench	07701-0020300

MAINTENANCE SCHEDULE

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

	ITEMS \ FREQUENCY	WHICHEVER COMES FIRST ⇨		INITIAL MAINTENANCE	REGULAR MAINTENANCE INTERVAL				Refer to page
			mi	100	600	1,200	1,800	2,400	
			km	150	1,000	2,000	3,000	4,000	
		NOTE	MONTH	1	6	12	18	24	
*	FUEL LINE					I		I	3-5
**	FUEL STRAINER SCREEN					C		C	3-5
*	THROTTLE OPERATION					I		I	3-5
	AIR CLEANER	NOTE 1			C	C	C	C	3-6
	SPARK PLUG				I	I	I	I	3-7
*	VALVE CLEARANCE			I	I	I	I	I	3-8
	ENGINE OIL			R	R	R	R	R	3-10
	ENGINE OIL FILTER			R	R	R	R	R	3-12
*	ENGINE OIL STRAINER SCREEN IN DOWN TUBE			I		C		C	4-2
*	DECOMPRESSOR SYSTEM			I	I	I	I	I	3-13
**	ENGINE IDLE SPEED			I	I	I	I	I	3-13
	RADIATOR COOLANT	NOTE 2				I		R	3-14
*	COOLING SYSTEM			I	I	I	I	I	3-14
	DRIVE CHAIN	NOTE 1		I, L	I, L: Every 300 mi (500 km) or 3 months				3-15
	DRIVE CHAIN SLIDER				I	I	I	I	3-18
	BRAKE FLUID	NOTE 2			I	I	I	I	3-19
	BRAKE PAD WEAR				I	I	I	I	3-20
	BRAKE SYSTEM			I	I	I	I	I	3-20
	BRAKE LIGHT SWITCH					I		I	3-21
*	HEADLIGHT AIM					I		I	3-21
	CLUTCH SYSTEM			I	I	I	I	I	3-21
	SIDE STAND					I		I	3-22
*	SUSPENSION					I		I	3-22
*	SPARK ARRESTER			C: Every 1,000 mi (1,600 km) or every 100 operating hours					3-24
*	NUTS, BOLTS, FASTENERS			I		I		I	3-24
**	WHEELS/TIRES			I	I	I	I	I	3-25
**	STEERING HEAD BEARINGS			I		I		I	3-25

* Should be serviced by an 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 an authorized HONDA dealer.

NOTES:
1. Service more frequently if the motorcycle is ridden in usually wet or dusty areas.
2. Replace every 2 years. Replacement requires mechanical skill.

COMPETITION MAINTENANCE SCHEDULE

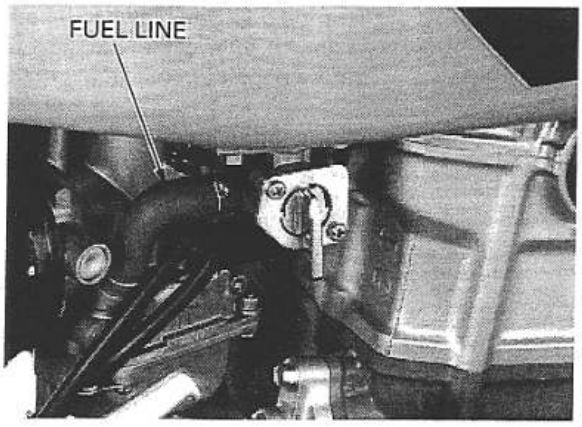
Check all items before each race.
Refer to REGULAR MAINTENANCE SCHEDULE (page 3-3) for regular (non-competition use) service intervals.

ITEM	INSPECT FOR	ACTION AS REQUIRED	REFER TO PAGE
ENGINE OIL	Oil level, leakage	Supply or change	3-10
FUEL TANK	Damage, leakage	Replace	3-5
BRAKE SYSTEM	Brake lever free play, brake pedal height, braking, efficiency and wear beyond service limit	Adjust, tighten or replace	3-20
BRAKE FLUID	Fluid level, leakage	Supply or change	3-19
WHEELS/TIRES	Tire pressure, wear or damage, spoke tightness and rim lock tightness	Adjust, tighten or replace	3-25
DRIVE CHAIN	Slack, lubricate	Adjust, tighten or replace	3-15
SPROCKETS	Wear and secure installation	Tighten or replace	3-15
SEAT	Security	Tighten	2-2
CLUTCH DISCS	Proper operation, wear (NOTE 1)	Replace	3-21
AIR CLEANER ELEMENT	Contamination or tears	Clean or replace	3-6
ENGINE STOP SWITCH	Proper operation	Correct or replace	17-15
NUTS, BOLTS, FASTENERS	Tightness	Tighten	3-24
FUEL LINE	Deterioration, damage or leakage	Replace	3-5
VALVE CLEARANCE	Correct clearance	Adjust	3-8
CAM CHAIN	Excessive noise	Replace	12-3
ENGINE IDLE SPEED	Correct idle speed	Adjust	3-13
DECOMPRESSOR SYSTEM	Proper operation, lever free play	Adjust	3-13
SPARK PLUG	Tightness, proper heat range, spark plug wire looseness and damage	Tighten or replace	3-7
COOLING SYSTEM	Damage, leakage	Replace	3-14
STEERING HEAD	Free rotation of handlebar and steering stem nut tightness	Adjust or tighten	3-25
FRONT SUSPENSION	Smooth operation, no oil leaks, good boot condition and proper oil volume	Adjust or replace	3-22
REAR SUSPENSION	Smooth operation, no oil leaks and spring length	Adjust or replace	3-23
SWINGARM BEARINGS	Smooth operation	Lubricate or replace	3-24
REAR SUSPENSION LINKAGE BEARINGS	Smooth operation	Lubricate or replace	3-23
CONTROL CABLES	Smooth operation, inner cable damage, kinks and correct rooting	Lubricate or replace	1-20
ENGINE MOUNTING BOLTS	Tightness	Tighten	7-5
SPARK ARRESTER	Clogged	Clean	3-24

NOTE 1: Competition use necessitates more frequent service.

FUEL LINE

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

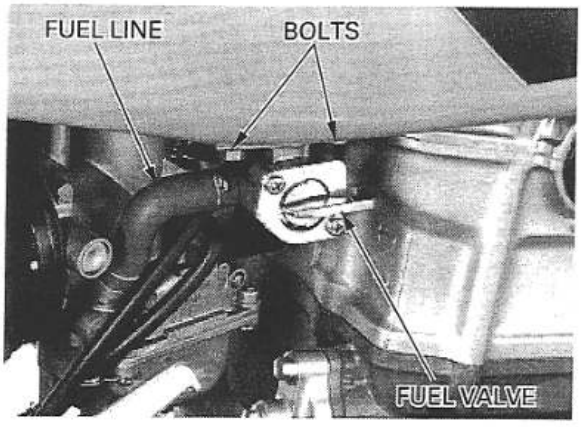


FUEL STRAINER SCREEN

⚠WARNING

- ***Gasoline is extremely flammable and is explosive under certain conditions. Work in a well ventilated area. Smoking or allowing flames or sparks in the work area or where the gasoline is stored can cause a fire or explosion.***
- ***Wipe up spilled gasoline at once.***

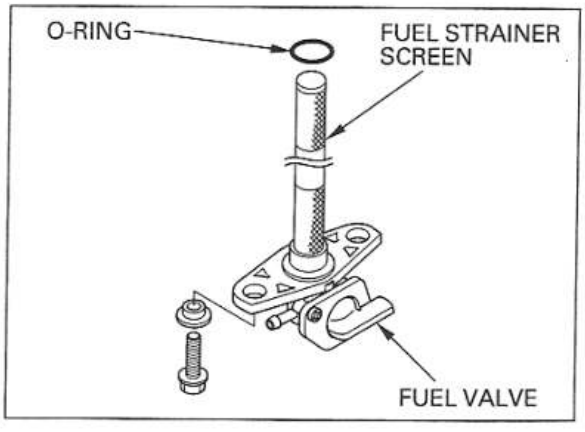
Turn the fuel valve OFF, disconnect the fuel line from the carburetor.
Turn the fuel valve to RES and drain the fuel into an approved gasoline container.
Remove the fuel tank (page 2-5).



Remove the two bolts attaching the fuel valve to the fuel tank, then remove the fuel valve with its strainer screen.

Clean the fuel strainer screen.
Install a new O-ring to the fuel valve.
Install the fuel valve and tighten the bolts to the specified torque.

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



Install the fuel tank and connect the fuel line.
After filling the fuel tank, check for fuel leaks.

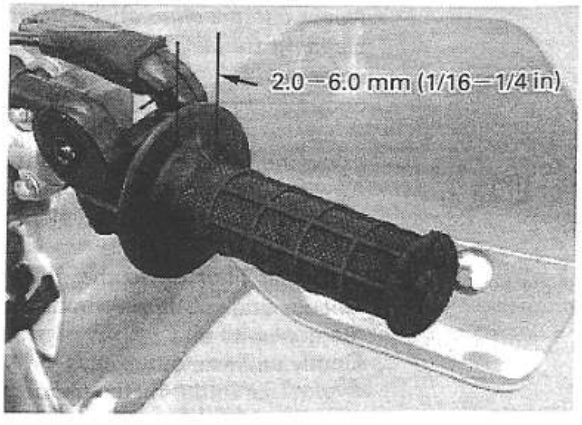
THROTTLE OPERATION

Check that the throttle grip opens smoothly to full throttle and free closes, automatically, in all steering positions.

Make sure there is no deterioration, damage or kinking in the throttle cables.

Measure the free play at the throttle grip flange.

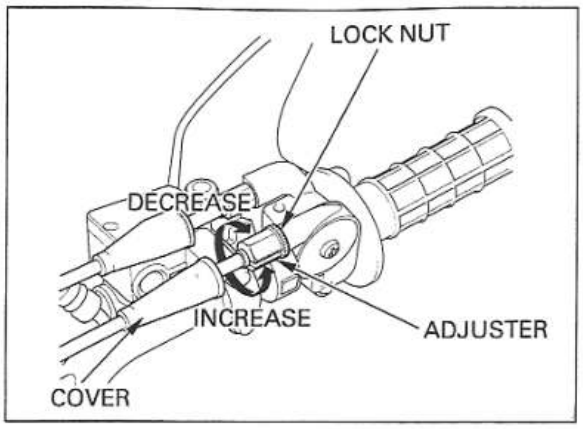
FREE PLAY: 2.0—6.0 mm (1/16—1/4 in)



Throttle grip free play can be adjusted at either end of the throttle cable. Replace any damaged parts before beginning this adjustment.

Minor adjustments are made with the upper adjuster. Adjust the free play by sliding the rubber cover off, loosening the lock nut and turning the adjuster.

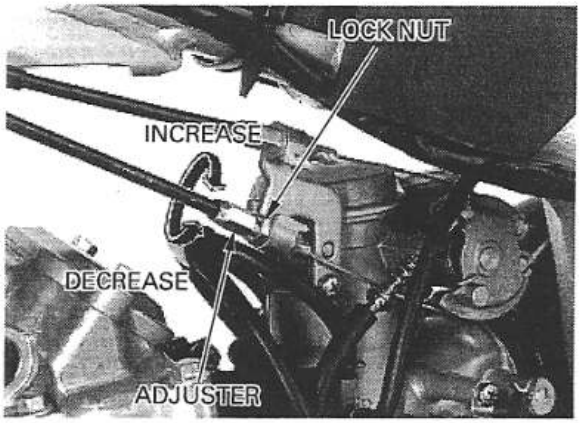
Tighten the lock nut and put the rubber cover back.
Recheck for proper throttle operation.



Major adjustments are made with the lower adjuster on the carburetor.

Remove the fuel tank (page 2-5).
Adjust the free play by loosening the lock nut and turning the adjuster.

Tighten the lock nut.
Recheck the throttle operation.

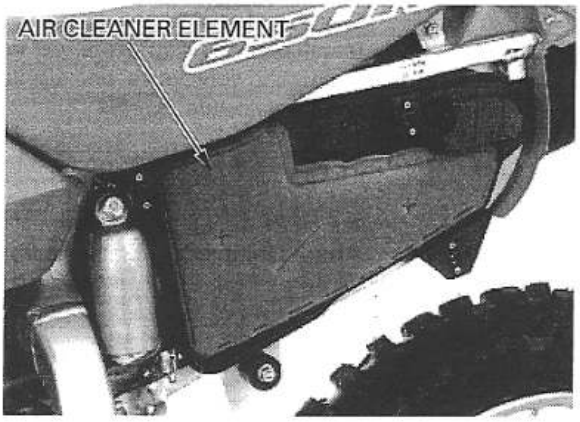


AIR CLEANER

Remove the left side cover (page 2-2).

Remove the air cleaner element.

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

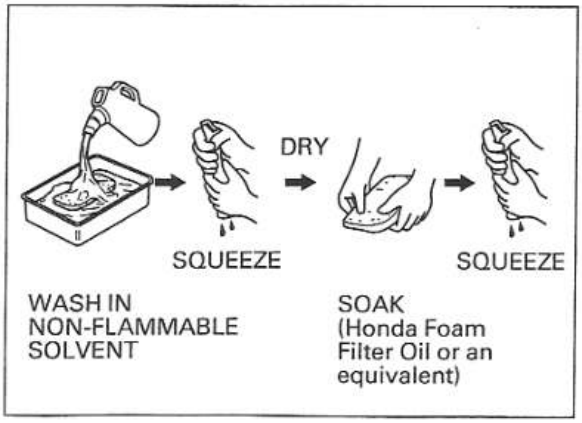


▲WARNING

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

Allow the air cleaner to dry thoroughly.
After drying, soak the air cleaner in clean Honda Foam Filter Oil or an equivalent.

Apply air filter oil to the entire surface of the air cleaner and rub it with both hands to saturate the element with oil.
Gently squeeze out excess oil. It is important not to over oil, or under-oil the element.

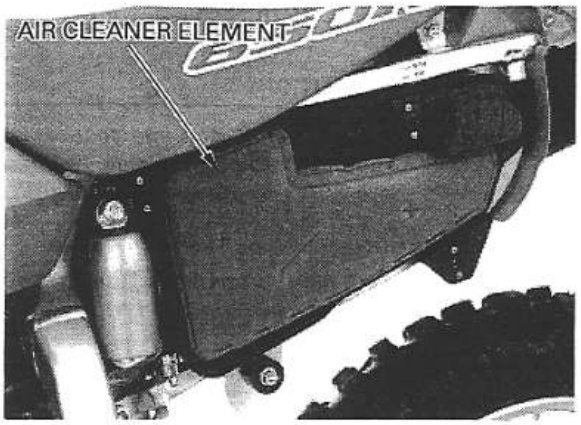


Install the element to the air cleaner housing.

Install the left side cover (page 2-2).

CAUTION:

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

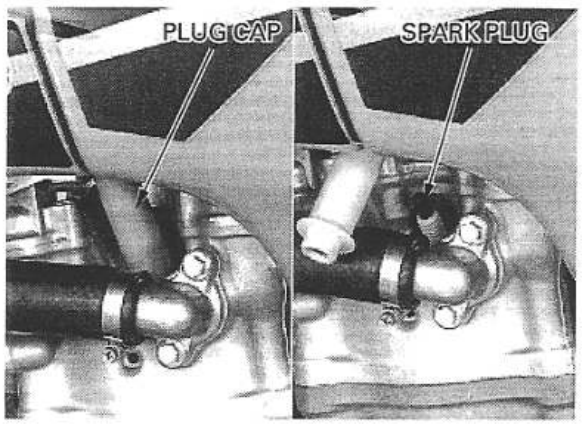


SPARK PLUG

Disconnect the spark plug cap.

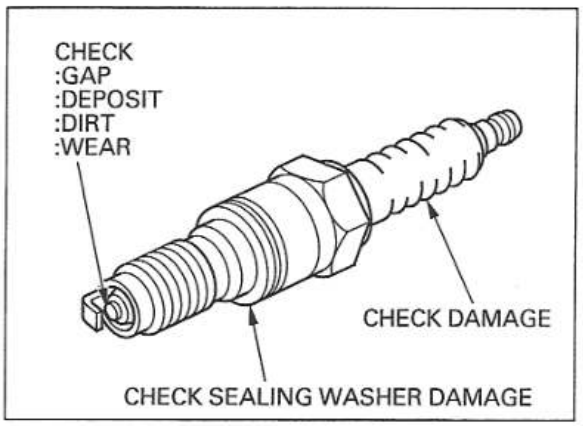
NOTE:

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



Remove the spark plug and inspect it for damage.

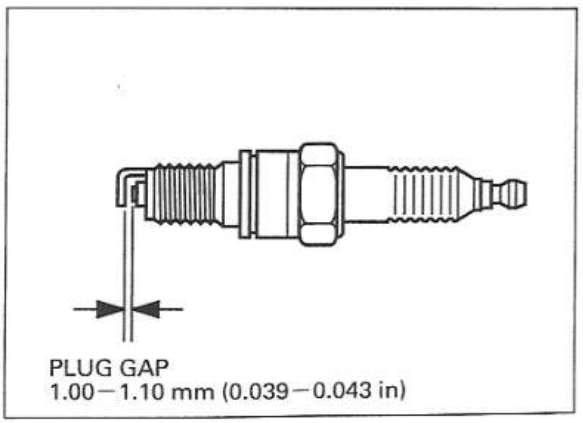
Check the following and replace if necessary:
- Insulator for damage
- Electrodes for wear
- Burning condition, coloration;
  - —Dark to light brown indicates good condition.
  - —Excessive lightness indicates malfunctioning ignition system or lean mixture.
  - —Wet or black sooty deposit indicates over-rich mixture.



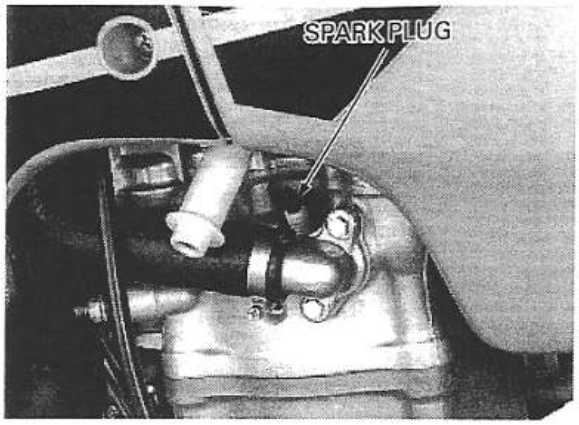
RECOMMENDED SPARK PLUG
STANDARD: BKR7E-11 (NGK)
K22PR-U11 (DENSO)
OPTIONAL: BKR8E-11 (NGK)
K24PR-U11 (DENSO)

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

SPARK PLUG GAP: 1.00—1.10 mm (0.039—0.043 in)



REUSING A SPARK PLUG



CAUTION:

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

Clean the spark plug electrodes with a wire brush or special plug cleaner.

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

TORQUE: 18 N·m (1.8 kgf·m , 13 lbf·ft)

REPLACING A SPARK PLUG

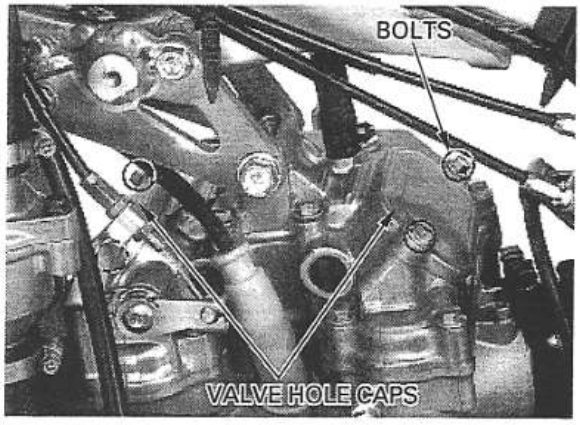
Set the spark plug gap to specification with a wiretype feeler gauge.

CAUTION:

Do not overtighten the spark plug.

Install and hand tighten the new spark plug, then tighten it about 1/8 — 1/4 of a turn after the sealing washer contacts the seat of the plug hole.

VALVE CLEARANCE



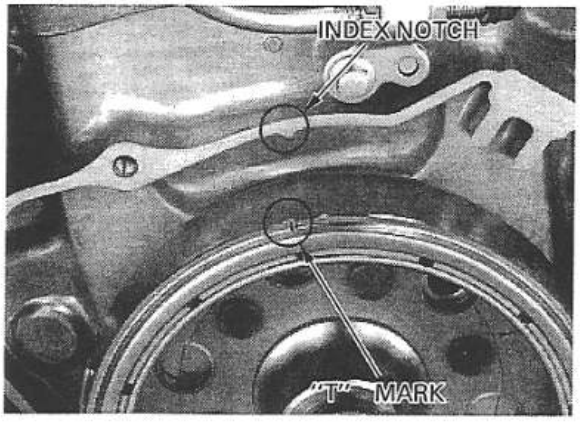
NOTE:

- Inspect and adjust valve clearance while the engine is cold (below 35°C/95°F).
- Make sure the decompressor valve lifters have some free play during this maintenance.

Remove the bolts and valve hole caps.

Remove the left crankcase cover (page 11-2).

Rotate the flywheel counterclockwise 2—3 turns to align the "T" mark with the index notch on the left crankcase.

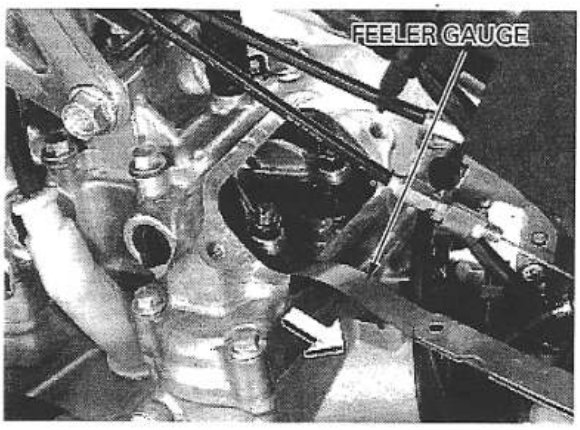


Make sure the piston is at TDC (Top Dead Center) on the compression stroke.

NOTE:

If the crankshaft passed the "T" mark (aligning mark), rotate the crankshaft counterclockwise twice again and align it with the "T" mark. This must be done to prevent the one-way decompressor system from functioning and to obtain the correct valve clearance.

Check the clearance of all four valves by inserting a feeler gauge between the adjusting screw and the rocker arm.

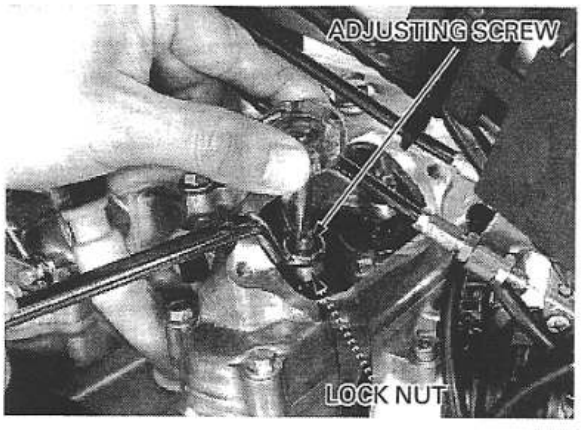


NOTE:

When checking the clearance, slide the feeler gauge from the inside out in the direction of the arrow.

VALVE CLEARACE:
IN : 0.15 ± 0.02 mm (0.006 ± 0.001 in)
EX :0.20 ± 0.02 mm (0.008 ± 0.001 in)

Adjust by loosening the lock nut and turning the adjusting screw until there is a slight drag on the feeler gauge.
After tightening the valve adjuster lock nut, recheck the valve clearance.

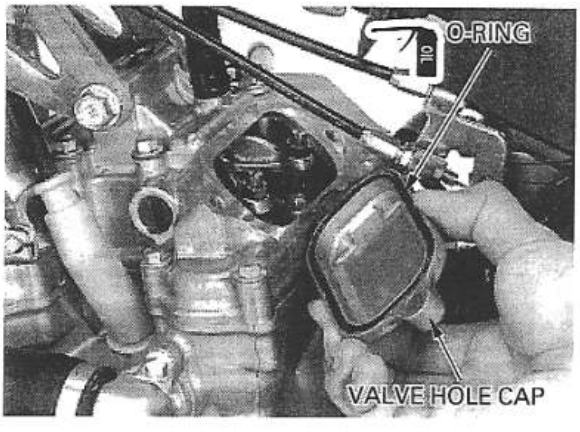


Hold the adjusting screw and tighten the lock nut.

TORQUE: 25 N·m (2.5 kgf·m , 18 lbf·ft)

Adjust the decompressor lever free play (page 3-13).

Check that O-rings are in good condition and replace if necessary.
Apply oil to the O-rings.
Install the valve hole caps and bolts.
Tighten the bolts to the specified torque.



TORQUE: 12 N·m (1.2 kgf·m , 9 lbf·ft)

Install the left crankcase cover (page 11-4).

ENGINE OIL

⚠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.

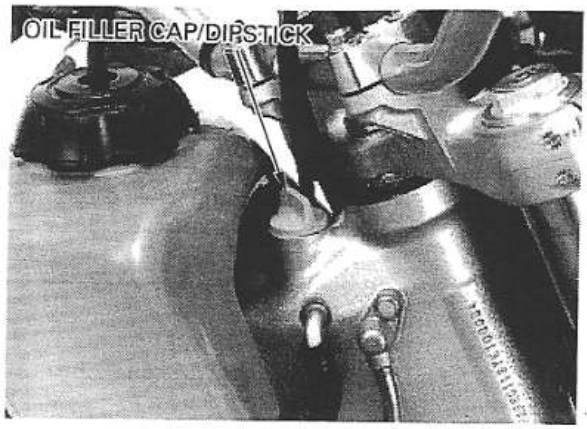
INSPECTION

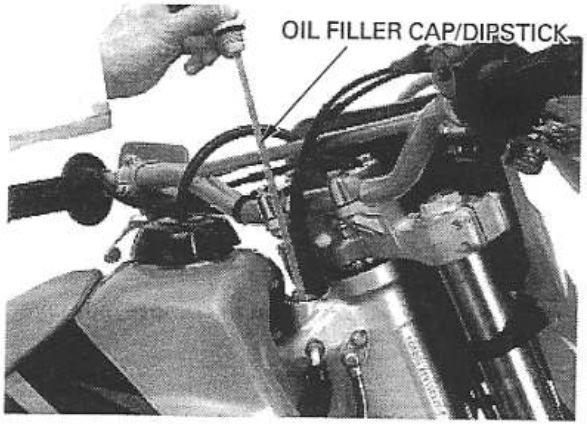
AT OIL FILLER CAP/DIPSTICK

Support the motorcycle upright on level ground.
Clean around the oil filler cap/dipstick and nearby surfaces.
Start the engine and let it idle for 5 minutes.
If the air temperature is below 10°C (50°F), let the engine idle for an additional 5 minutes (a total of 10 minutes).
During idling, make sure your motorcycle is supported in an upright position to ensure an accurate oil level reading.

An engine that is not warmed sufficiently may give an inaccurate (low) oil level reading.

Stop the engine.
Remove the oil filler cap/dipstick.
Check the oil level with the oil filler cap/dipstick by inserting it until the threads touch the filler neck.
Do not screw the cap in when making this check.
If the oil level is below the lower mark on the dipstick, fill to the upper level mark with the recommended oil.
Check the engine oil for contamination. Change the engine oil if it is contaminated.

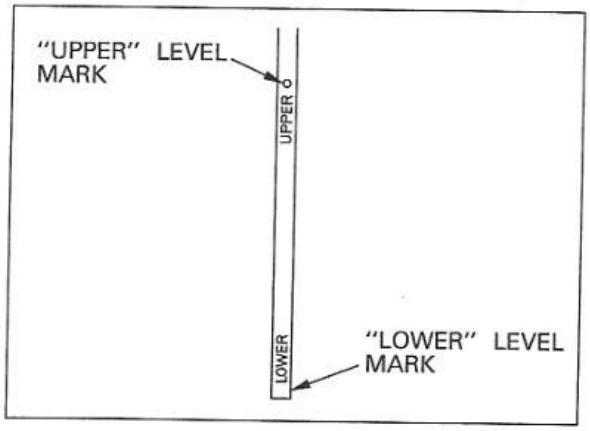




OIL CHANGE

CAUTION:

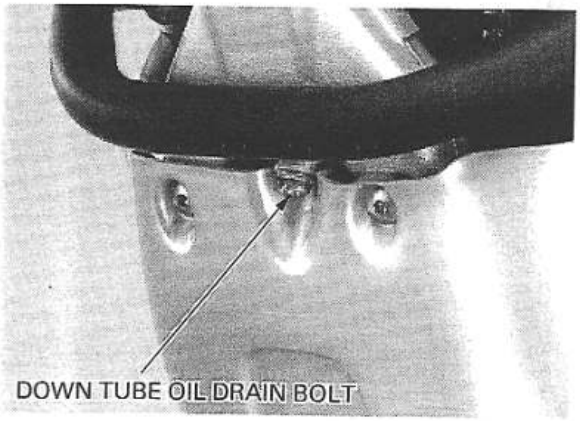
Used engine oil may cause skin cancer if repeatedly left in contact with the skin for prolonged periods. Although this is unlikely unless you handle used oil on a daily basis, it is still advisable to thoroughly wash your hands with soap and water as soon as possible after handling used oil.



NOTE:

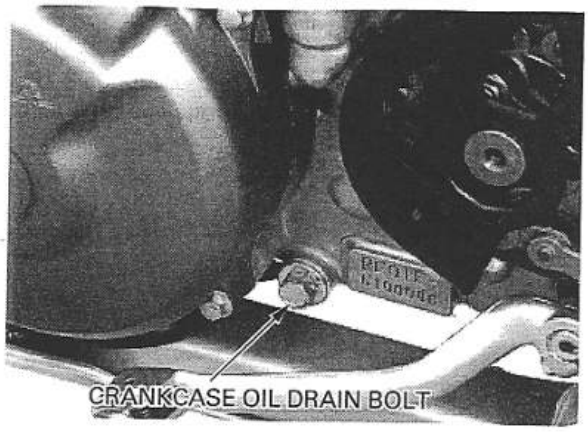
Change the engine oil with the engine warm and the vehicle on level ground to assure complete draining.

Start the engine and let it idle for a few minutes.
Stop the engine and remove the oil filler cap/dipstick.
Remove the down tube oil drain bolt and sealing washer.
Drain the engine oil.
Check the sealing washer for damage and replace if necessary.



Remove the crankcase oil drain bolt and sealing washer.
Drain the engine oil.

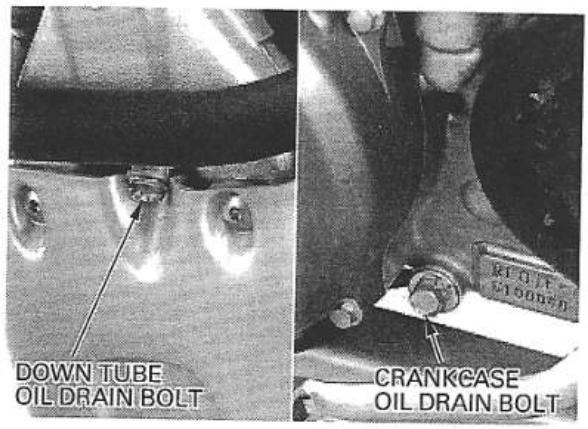
Check the sealing washer for damage.
Replace if necessary.



Install the down tube oil drain bolt/sealing washer and crankcase oil drain bolt/sealing washer.
Tighten to the specified torque.

TORQUE:
Crankcase oil drain bolt: 25 N·m (2.5 kgf·m , 18 lbf·ft)
Down tube oil drain bolt: 39 N·m (4.0 kgf·m , 29 lbf·ft)

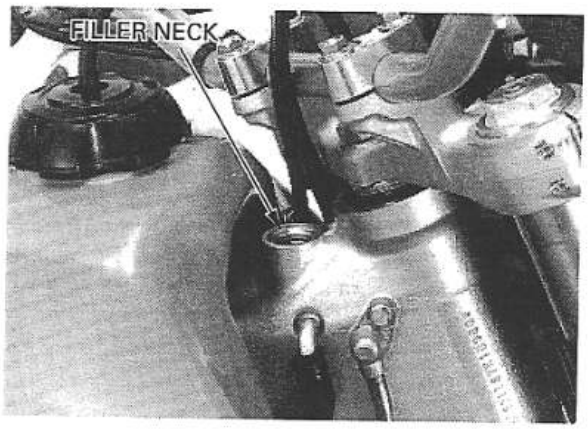
Clean the down tube oil strainer screen (page 4-2).



Fill to the filler neck with the correct quantity of the recommended engine oil.

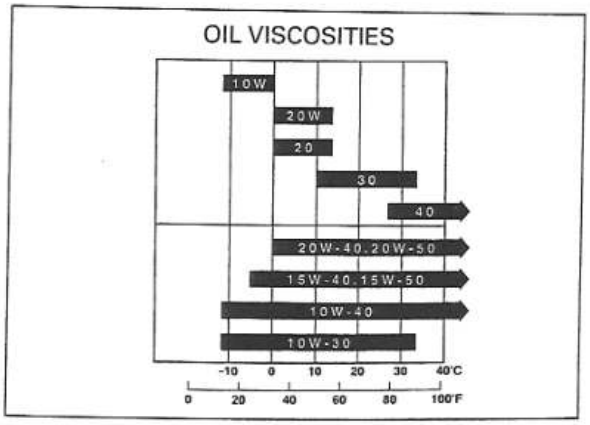
RECOMMENDED ENGINE OIL:
Honda 4-stroke oil or equivalent motor oil certified to meet API service classification:
SE, SF or SG

OIL CAPACITY:
1.56 ℓ (1.65 US qt , 1.37 Imp qt) at draining
1.6 ℓ (1.7 US qt , 1.4 Imp qt) at oil filter change
2.0 ℓ (2.1 US qt , 1.8 Imp qt) at disassembly



NOTE:

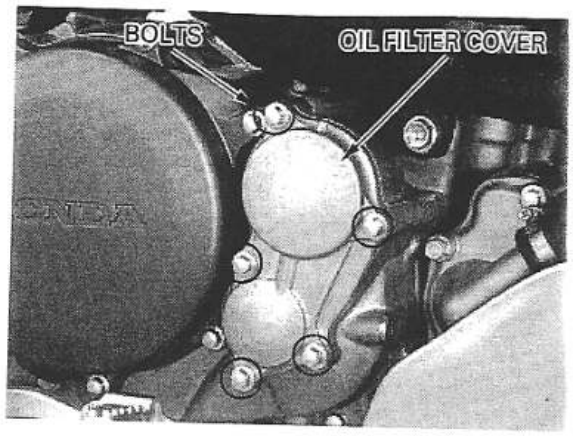
Other viscosities shown in the chart may be used when the average temperature in your riding area is within the indicated range.



Start the engine and check that there are no oil leaks.
Stop the engine and check the oil level (page 3-10).

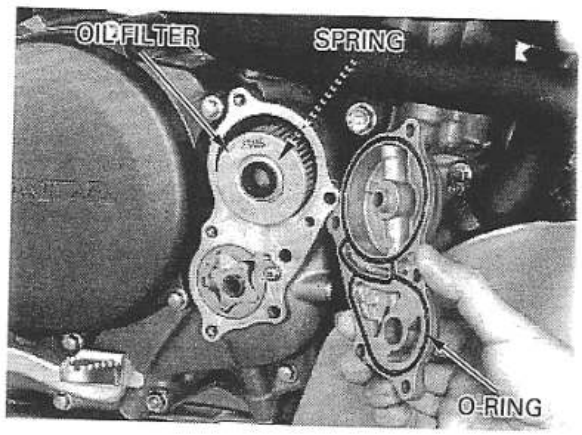
ENGINE OIL FILTER

Drain the engine oil (page 3-10).
Remove the bolts and oil filter cover.



Remove the oil filter and spring.
Remove the O-ring from the oil filter cover.

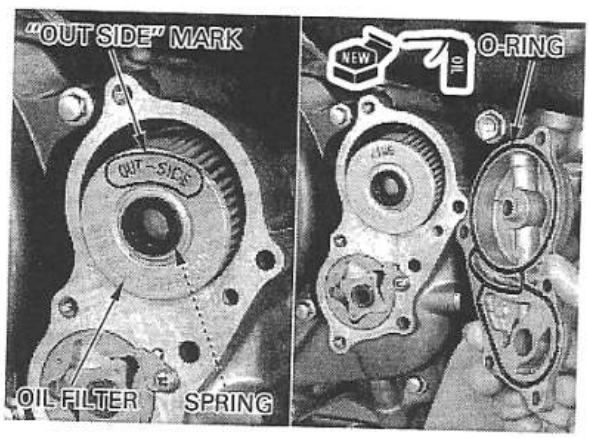
Check the oil filter is in good condition, replace it if necessary.



Apply engine oil to a new O-ring and install it to the oil filter cover.
Install the spring.
Install the oil filter with its "OUT SIDE" mark facing out.

CAUTION:

Installing the oil filter backwards will result in severe engine damage.

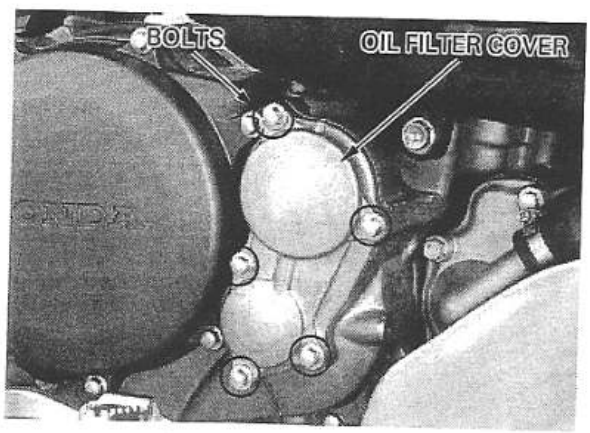


Install the oil filter cover and tighten the bolts to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m , 9 lbf·ft)

Fill to the filler neck with the correct quantity of the recommended engine oil.

Start the engine and check that there are no oil leaks.
Stop the engine and check the oil level (page 3-10).



DECOMPRESSOR SYSTEM

NOTE:

Always adjust the decompressor linkage after adjusting the valve clearance (page 3-8).

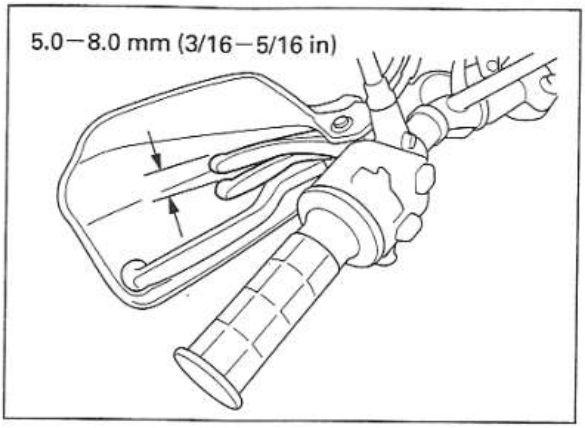
Remove the left crankcase cover (page 11-2).

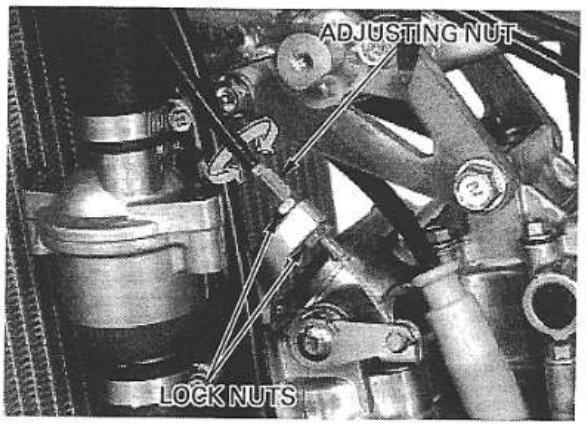
Rotate the flywheel counterclockwise to align the "T" mark with the index notch. Make sure that the piston is at TDC (Top Dead Center) on the compression stroke.

Measure the free play at the tip of the decompressor lever.

FREE PLAY: 5.0−8.0 mm (3/16−5/16 in)

To adjust, remove the fuel tank (page 2-5).
Loosen the lock nuts.
Adjust by turning the decompressor adjusting nut at the engine.
After adjusting, tighten the lock nuts.
Recheck the free play at the lever.





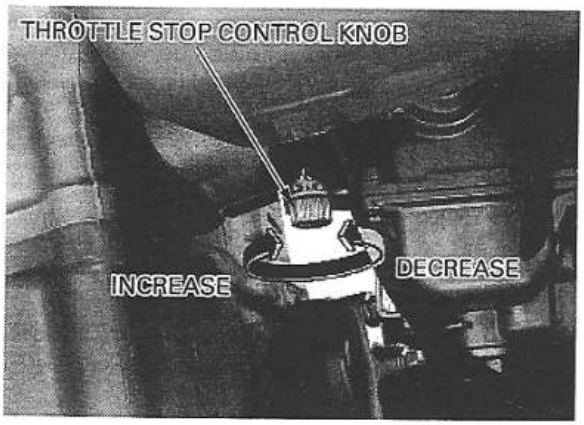
ENGINE IDLE SPEED

NOTE:

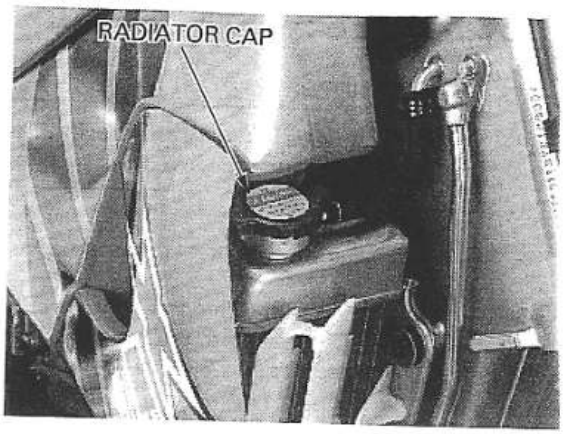
- Inspect and adjust the idle speed after all other engine adjustments are within specifications.
- The engine must be warm for an accurate idle inspection and adjustment. Ten minutes of stop and go riding is sufficient.

Warm up the engine, shift the transmission into NEUTRAL, and hold the motorcycle upright.
Connect a tachometer.
Turn the throttle stop control knob to obtain the specified idle speed.

IDLE SPEED: 1,400 ± 100 min^{-1} (rpm)



RADIATOR COOLANT

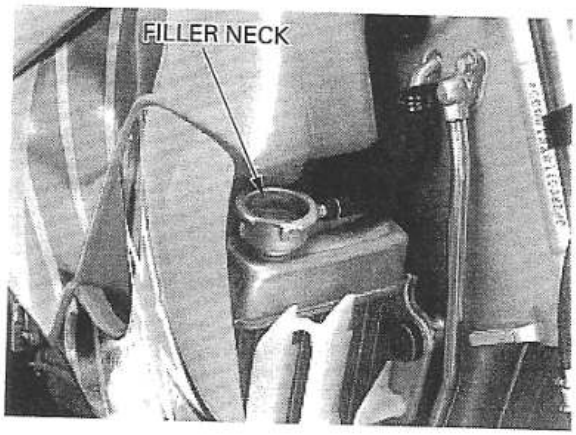


⚠WARNING

- ***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 eye, on your skin, or on your clothes.***
- ***If coolant gets in your eye, flush repeatedly with water and contact a doctor immediately.***
- ***If coolant is accidentally swallowed, induce voming and contact a doctor immediately.***
- ***KEEP OUT REACH OF CHILDREN.***

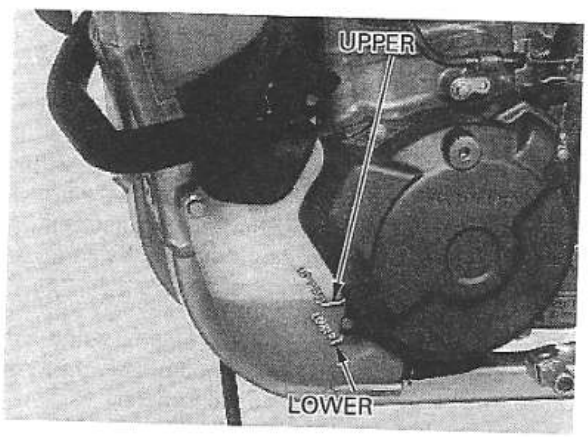
Support the motorcycle on a level surface.
Remove the radiator cap.

Check the coolant level with the engine cold, the coolant should be up to the filler neck.



Check the coolant level of the reserve tank. The level should be between the "UPPER" and "LOWER" level lines.

Add coolant as required (page 6-6).

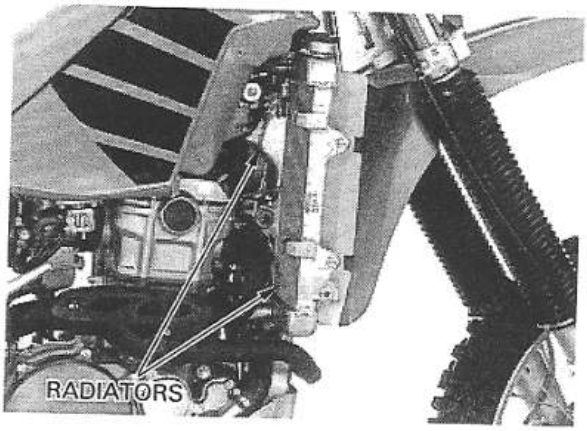


COOLING SYSTEM

Remove the radiator shrouds (page 2-2).

Check the radiator air passage for clogging or damage.
Inspect the hoses for cracks and deterioration.

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

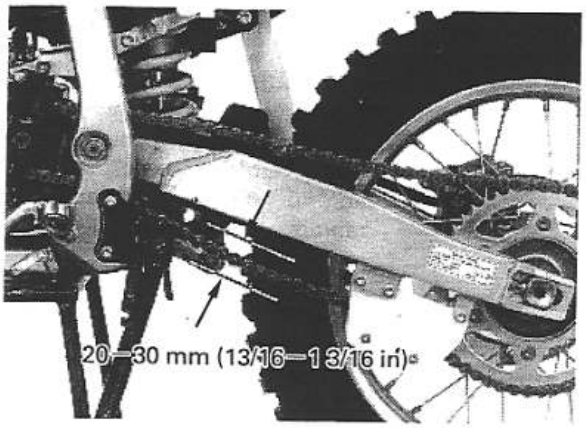


DRIVE CHAIN/SPROCKET

DRIVE CHAIN SLACK INSPECTION/ADJUSTMENT

⚠WARNING

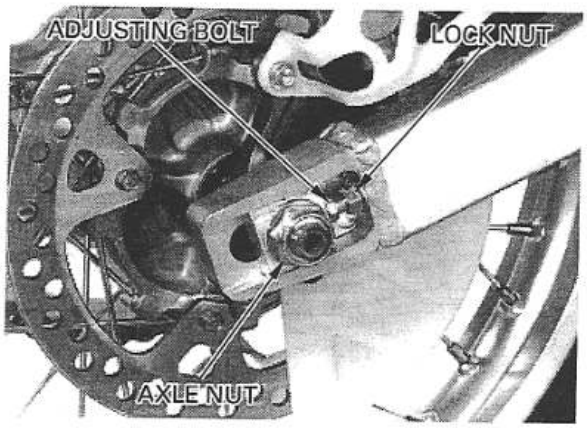
Take care to prevent catching your fingers between the chain and sprocket.



Turn the engine OFF. Raise the rear wheel off the ground by placing a work stand under the engine.
Shift the transmission into NEUTRAL.
Measure the slack in the lower drive chain run midway between the sprockets.

STANDARD SLACK: 20—30 mm (13/16—1 3/16 in)

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



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

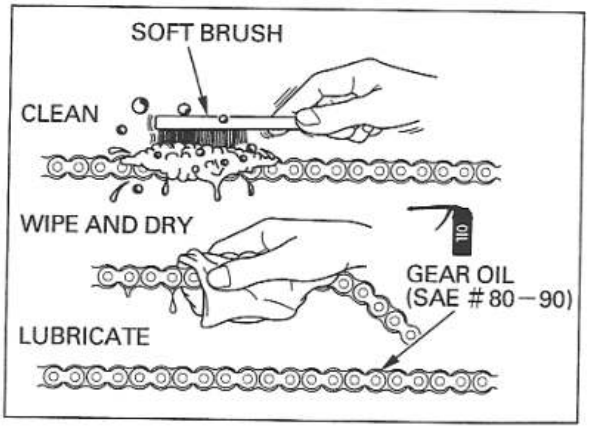
TORQUE: 93 N·m (9.5 kgf·m , 69 lbf·ft)

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

CLEANING, INSPECTION AND LUBRICATION

CAUTION:

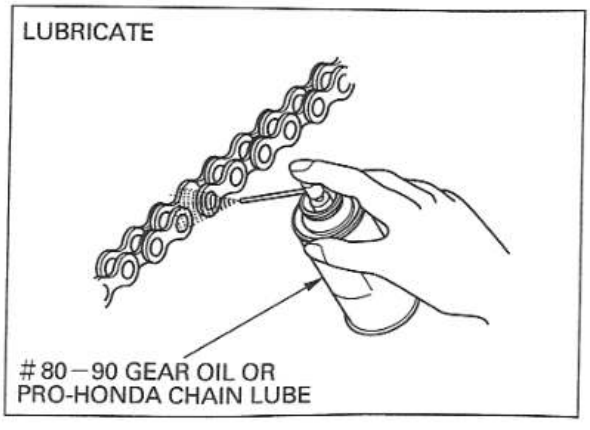
- ***Chains with O-rings should not be treated with steam or high pressure water washing. This treatment will cause degradation of the O-rings and loss of grease, thus shortening chain life.***
- ***Use a chain spray containing a cleaning agent or use gasoline to clean the chain.***



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 chain sliders, loose fitting links, or otherwise appears unserviceable. Installing a new chain on badly worn sprockets will cause the new chain to wear quickly. Inspect and replace sprockets as necessary.

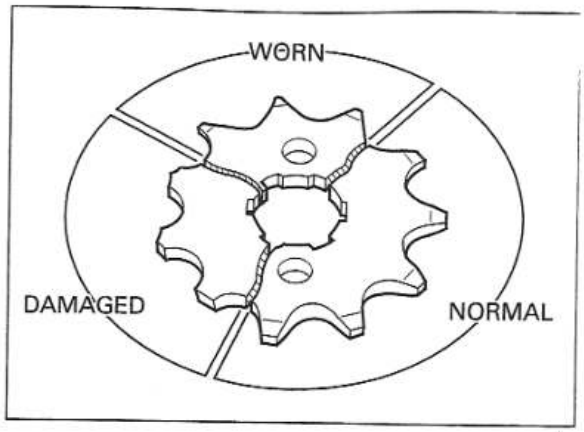
Lubricate the drive chain with #80—90 gear oil or Pro-Honda Chain Lube. Wipe off the excess chain lube.



SPROCKETS INSPECTION

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 will wear rapidly.

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



REPLACEMENT

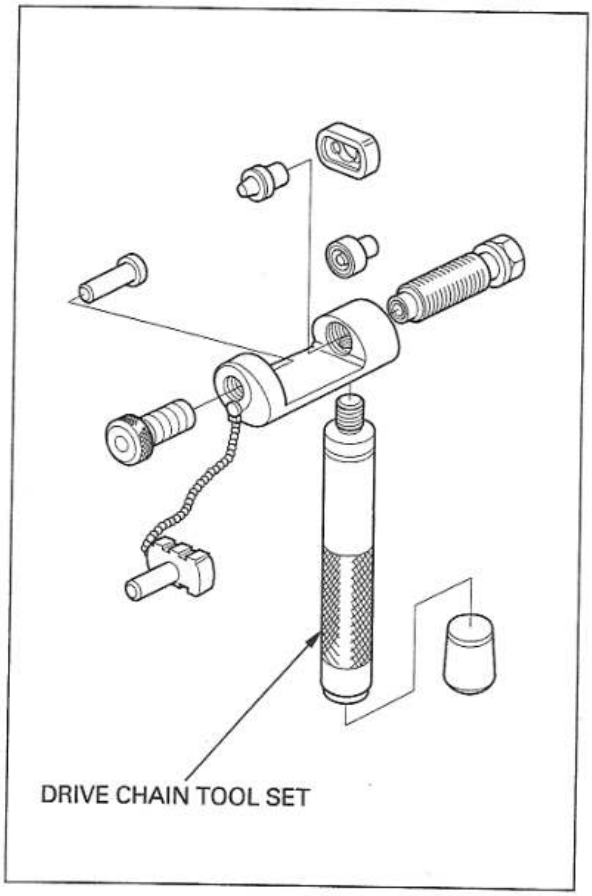
CAUTION:

Because of the drive chain has a staked master link joint pin staking type (the ends of the pins are expanded with the special tool), the specified types of chain and special tool must be used to replace. Do not use a drive chain with a clip-type master link.

Loosen the drive chain (page 3-15).
Assemble the special tool.

When using the special tool, follow the manufacturer's operating instructions.

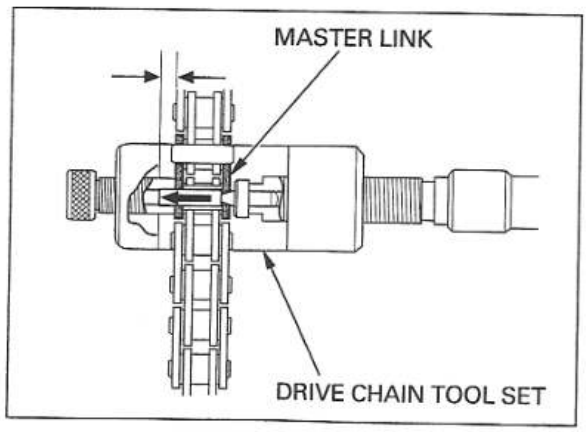
TOOL:
Drive chain tool set 07HMH-MR10103



Locate the drive chain cutter on the staked part of the drive chain and cut the staked pins.

TOOL:
Drive chain tool set 07HMH-MR10103

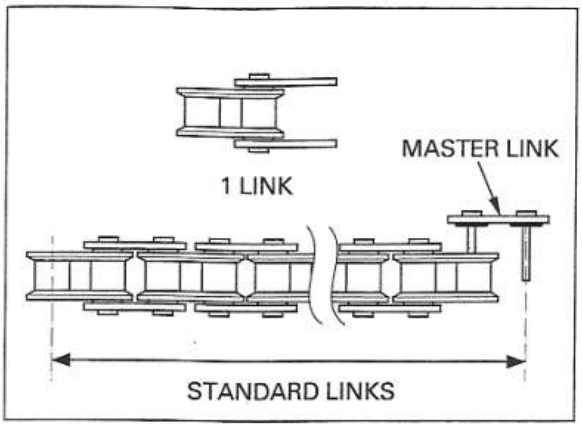
Remove the drive chain.



Remove the excess drive chain links from the new drive chain with the drive chain cutter.

NOTE:

- One (1) link is indicated as the figure on the right.
- Include the master link when you count the drive chain links.

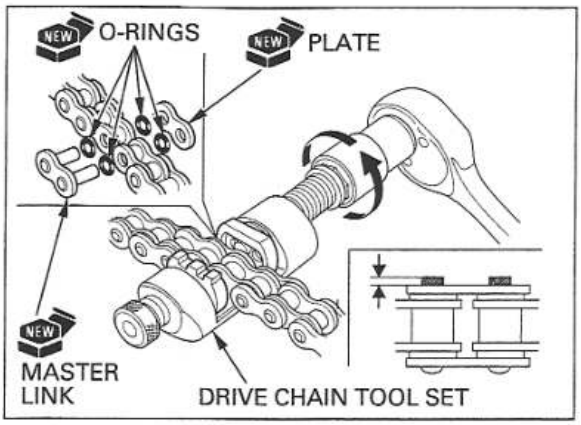


Standard links:
ED, DK types: 110 links
U type: 108 links
Replacement chain:
ED, DK types: DID520VM-110LE or RK520KZO-110LE
U type: DID520VM-108LE or RK520KZO-108LE

Install the new drive chain over the swingarm.

CAUTION:

Never reuse the old master link, master link plate and O-rings.

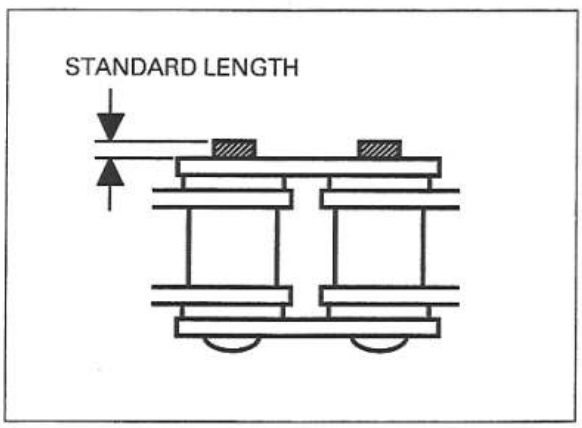


Install the new O-rings onto the new master link, and insert the master link from the inside of the drive chain taking care to prevent squeezing.
Install the O-rings and the link plate with the drive chain cutter.

TOOL:
Drive chain tool set 07HMH-MR10103

NOTE:

- Install the link plate with the identification mark facing the outside.
- Take care to prevent squeezing of the O-rings.
- Do not remove the lubricating grease from the link.



Remove the special tool and check the master link pin length projection from the plate.

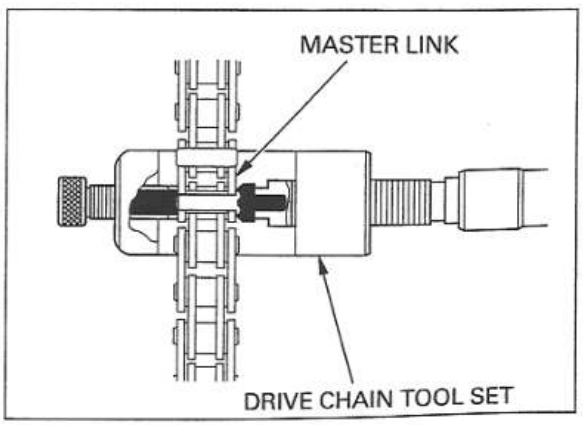
STANDARD LENGTH: 1.2—1.4 mm (0.05—0.06 in)

Install the drive chain cutter and stake the ends of the master link pins.

TOOL:
Drive chain tool set 07HMH-MR10103

NOTE:

To prevent over staking, stake gradually, checking the diameter of the staked area using slide calipers.

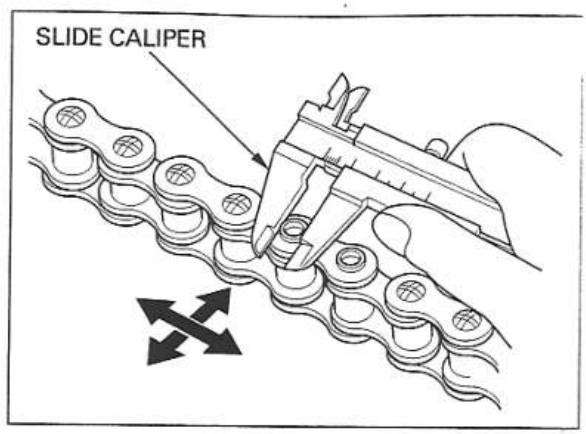


After staking, check the staked area of the master link using slide calipers.

DIAMETER OF THE STAKED AREA:
5.50—5.80 mm (0.217—0.228 in)

NOTE:

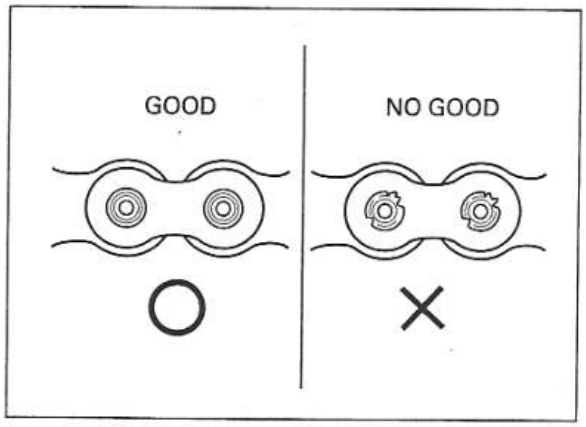
- When the measured staked area is over the prescribed value, restake using the new master link, plate and O-rings.
- When the measured staked area is below the prescribed value, reinstall the drive chain cutter and restake.



Check the staked area of the master link for cracks and the O-rings for damages.
If there is any cracking or damage, replace the master link, plate and O-rings.

Check that master link pivots freely on the pins.
If the movement is not smooth, restake using the new master link, plate and O-rings.

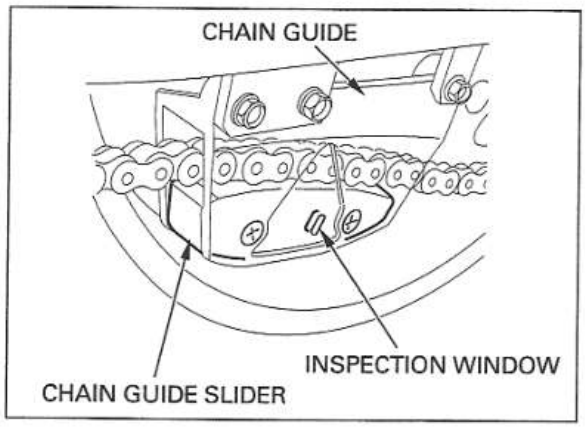
Adjust the drive chain free play (page 3-15).



DRIVE CHAIN SLIDERS

CHAIN GUIDE SLIDER

Inspect the chain guide slider for wear and replace it if you can see the chain through the wear limit opening.



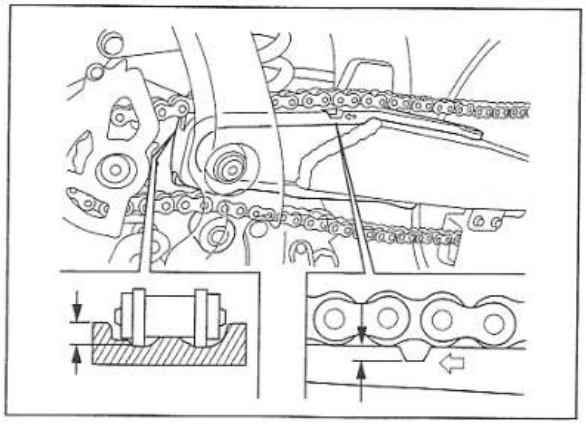
CHAIN SLIDER

Check the chain slider for wear.
Replace the chain slider if it is worn to the indicator limit groove.

CAUTION:

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

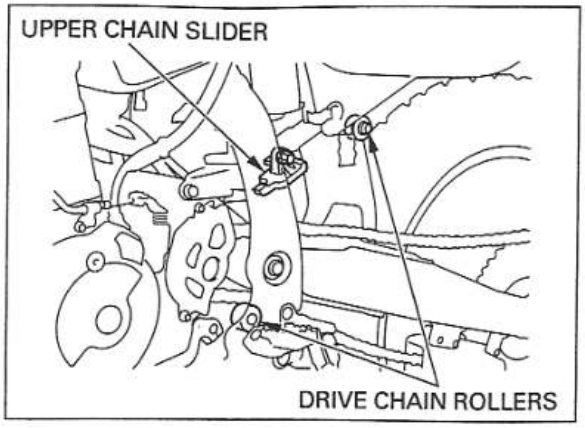
Inspect the upper chain slider for excessive wear and replace if necessary.



CHAIN GUIDE ROLLERS

Inspect the drive chain rollers for excessive wear or binding.

Replace the roller if necessary, and tighten the roller bolts.



BRAKE FLUID

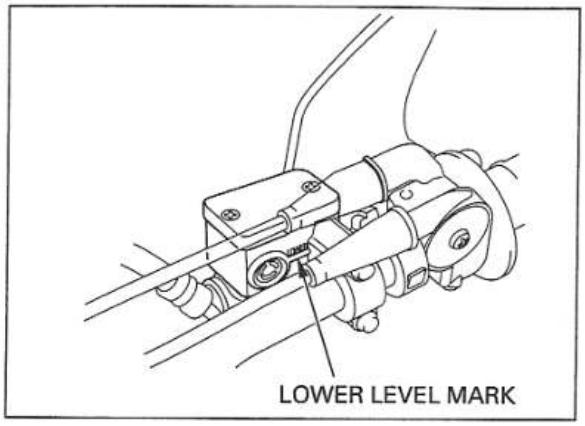
CAUTION:

- ***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 rag over these parts whenever the system is serviced.***

FLUID LEVEL INSPECTION

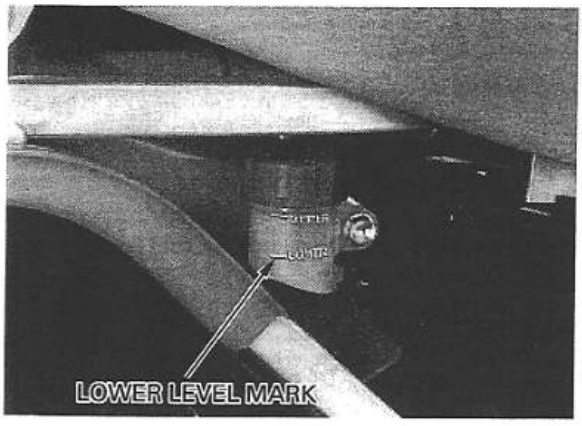
NOTE:

When the fluid level is low, check the brake pads for wear (see next page). 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.



Place the motorcycle on a level surface, and support it upright position.

FRONT BRAKE:
Check the front brake fluid reservoir level through the sight glass.
If the level is near the lower level mark, check the brake pad wear (page 3-20).



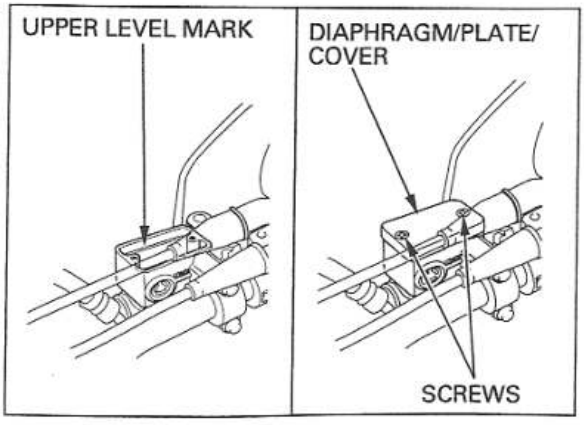
REAR BRAKE:
Remove the right side cover (page 2-2).
Check the rear brake fluid reservoir level.
If the level is near the lower level line, check the brake pad wear (page 3-20).

FLUID FILLING

FRONT:
Remove the screws, cover and diaphragm.
Fill the reservoir with DOT 4 brake fluid to the upper level mark. Install the diaphragm and cover.
Tighten the screws to the specified torque.

TORQUE: 2 N·m (0.2 kgf·m , 1.4 lbf·ft)

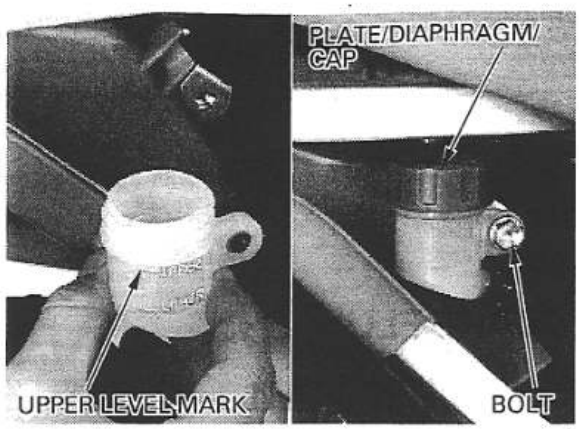
Check the entire system for leaks.



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

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

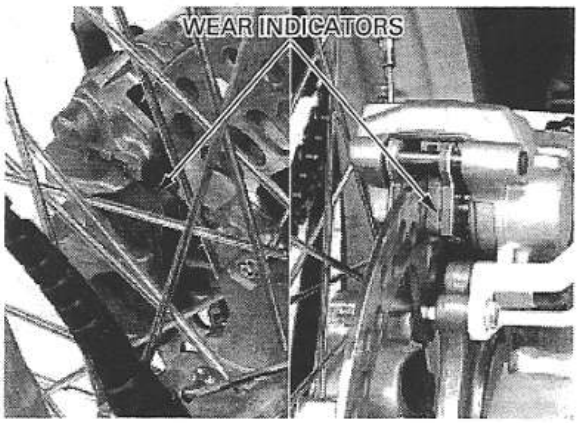
Replace the hose and fittings as required.



BRAKE PAD WEAR

Check the brake pad for wear.
Replace the brake pads if either pad is worn to the wear indicator groove.

Refer to page 16-5 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.

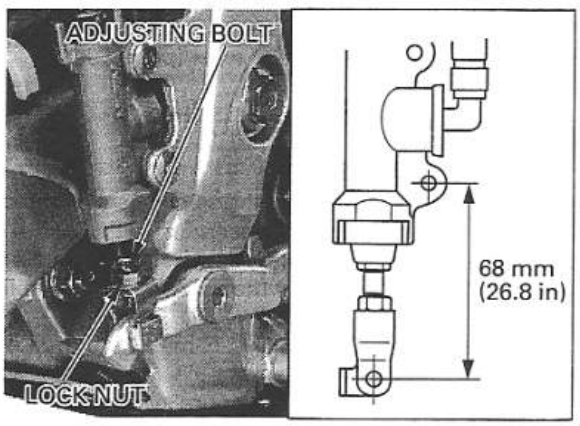
Inspect the brake hoses and fittings for deterioration, cracks and signs of leakage. Tighten any loose fittings. Replace hoses and fittings as required.

Refer to page 16-3 for brake system bleeding.

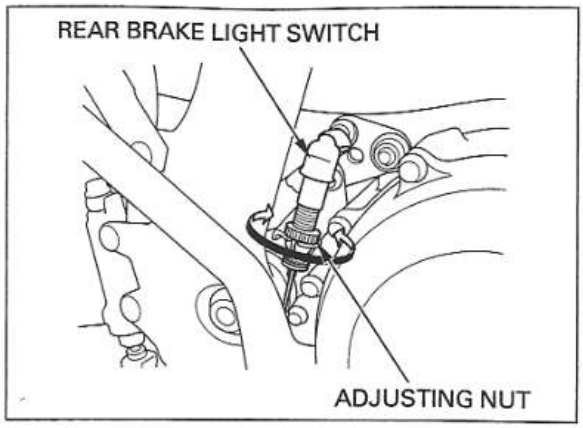
BRAKE PEDAL HEIGHT

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

TORQUE: 18 N·m (1.8 kgf·m , 13 lbf·ft)



BRAKE LIGHT SWITCH



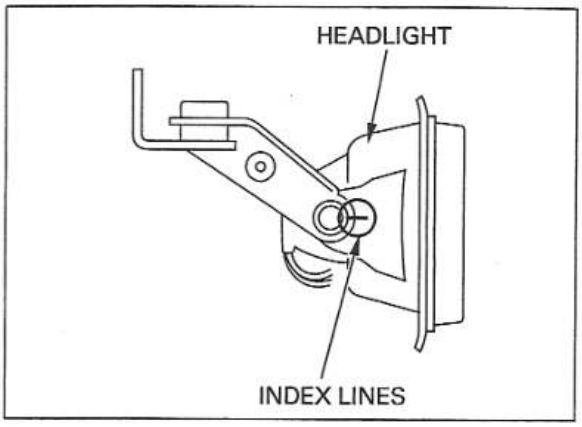
NOTE:

The front brake light switch does not require adjustment.

Adjust the 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. Hold the switch body and turn the adjusting nut. Do not turn the switch body.

For switch inspection, see section 17.

HEADLIGHT AIM



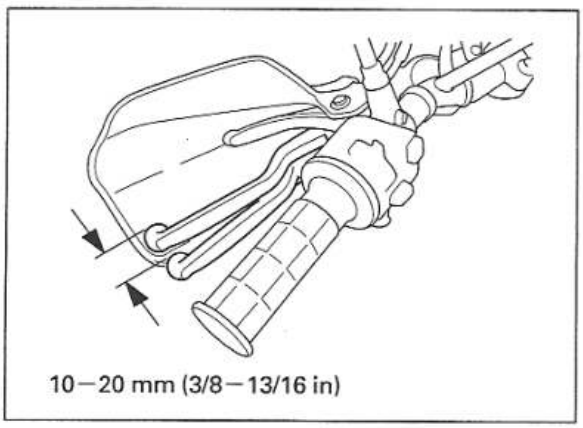
NOTE:

Adjust the headlight beam as specified by local laws and regulations.

Remove the front visor (page 2-3).

To make a vertical adjustment; loosen the headlight mounting bolts. Align the index lines on the headlight and the stay by moving the headlight up or down.
Tighten the headlight mounting bolts.

CLUTCH SYSTEM



Measure the clutch free play at lever end.

FREE PLAY: 10—20 mm (3/8—13/16 in)

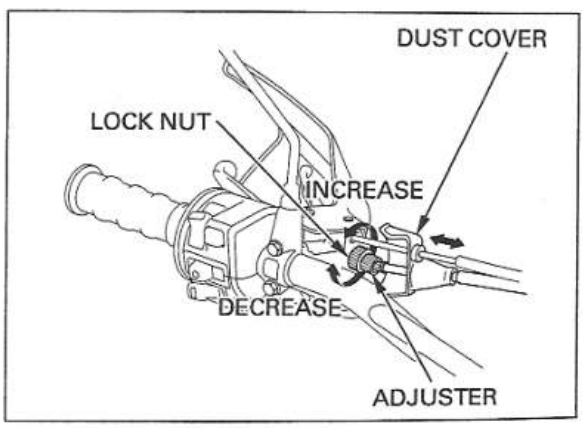
Adjust as follows:
Minor adjustments are made at the adjuster on the lever.

Pull the cover off.
Loosen the lock nut and turn the adjuster to obtain the free play.

Tighten the lock nut and install the dust cover.

If the adjuster is threaded out near its limit and the correct free play cannot be obtained, turn the adjuster all the way in and back out one turn.

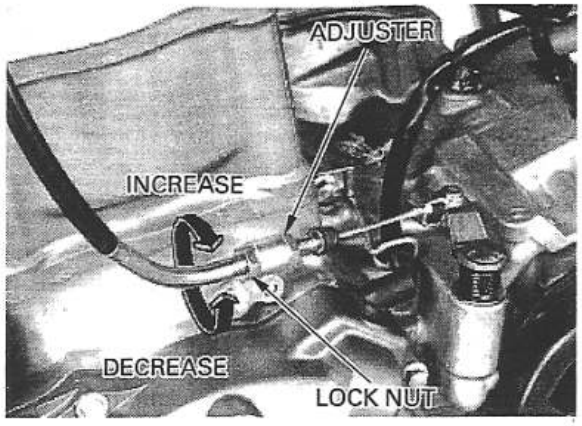
Tighten the lock nut, install the dust cover and make a major adjustment as follows.



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

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

If proper free play cannot be obtained using both procedures or the clutch slips during the test ride, disassemble and inspect the clutch (See section 10).



SIDE STAND

Check the side stand spring for damage and/or loss of tension.
Check that the side stand assembly is not bent and that it moves freely.
Lubricate the side stand pivot.

Check that the side stand pivot bolt and nut are tightened to their correct torque values.

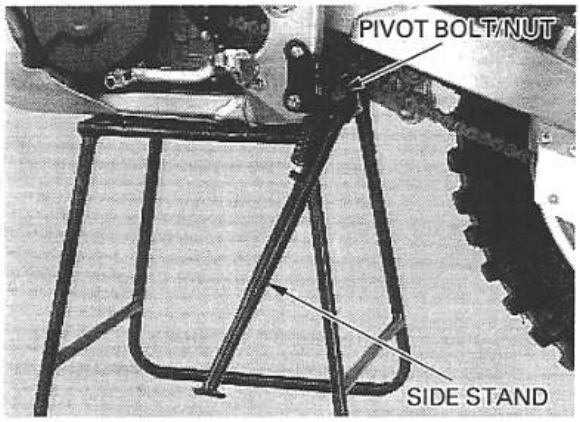
Tighten the pivot bolt to the specified torque.

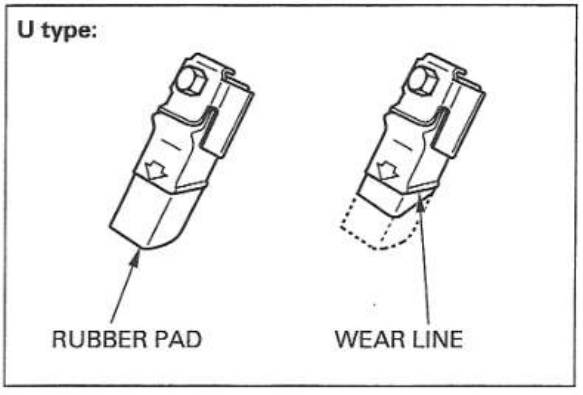
TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

Then back it off 45° to 90° (1/8 to 1/4) turn.
Tighten the pivot nut to the specified torque.

TORQUE: 39 N·m (4.0 kgf·m , 29 lbf·ft)

U type:
Check the rubber pad for deterioration on wear.
Replace if wear extends to the wear line.



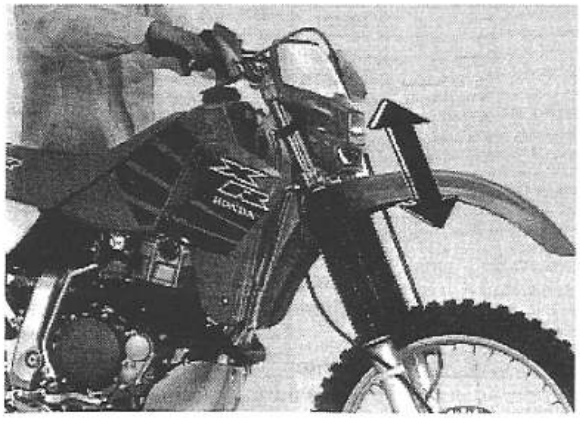


SUSPENSION

FRONT SUSPENSION INSPECTION

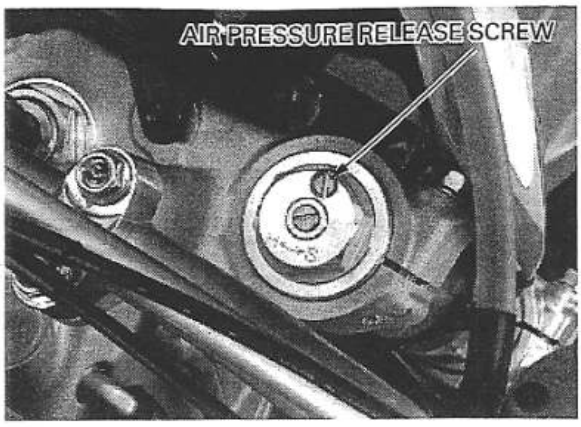
Check the action of the fork by operating the front brakes and compressing the front suspension several times.
Check the entire assembly for signs of leaks, damage or loose fasteners.
Make sure that the dust seals are clean and not packed with mud and dirt.
Remove any dirt that has accumulated on the fork seals.
Replace damaged components which cannot be repaired.
Tighten all nuts and bolts.

Refer to section 14 for fork service.



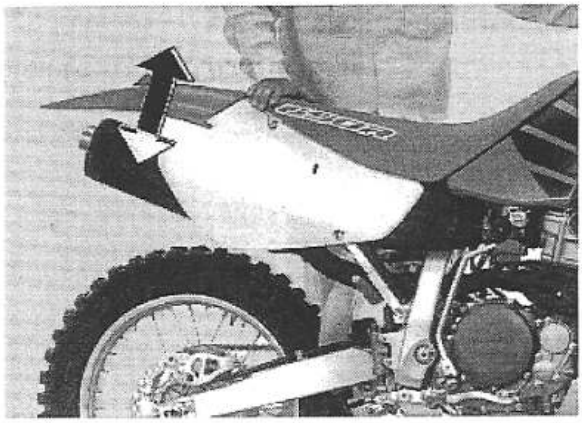
Air pressure acts as a progressive spring and affects the entire range of fork travel.
Air is an unstable gas; it increases in pressure as it is worked (such as in a fork), so the fork action on your XR will get stiffer as the race progresses.

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



REAR SUSPENSION INSPECTION

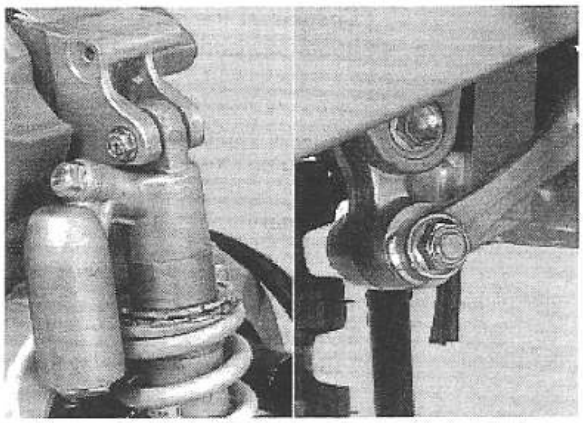
Check the action of the shock absorber by compressing it several times.



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

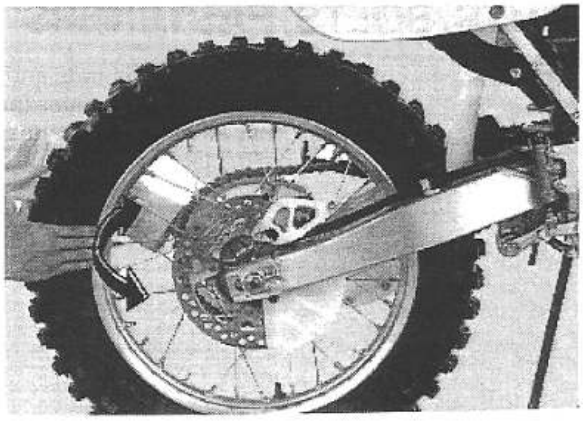
Check the entire shock absorber assembly for signs of leaks, damage or loose fasteners.
Replace damaged components which cannot be repaired.
Tighten all nuts and bolts.

Refer to section 15 for shock absorber service.



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

Hold the swingarm and move the rear wheel sideways with force to see if the wheel bearings are worn.

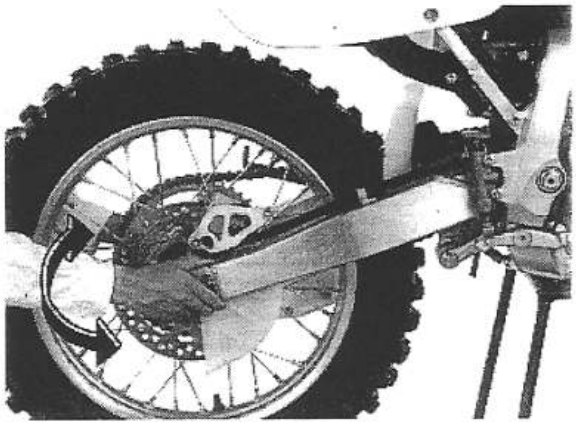


Raise the rear wheel off the ground by placing a work stand under the engine.

Check for worn swingarm bearings by grabbing the rear swingarm and attempting to move the swingarm side to side.

Replace the bearings if excessively worn (page 15-31).

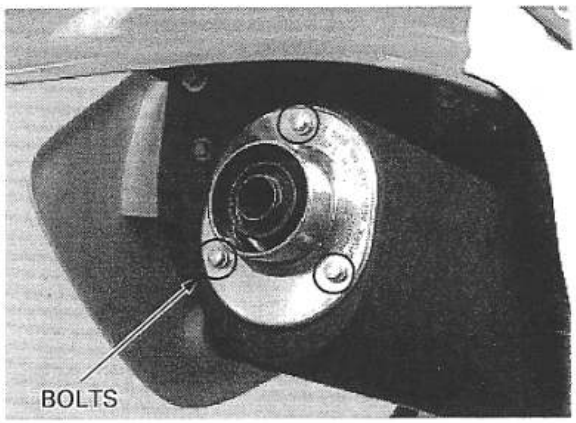
Check the shock linkage and needle bearings are not damaged.



SPARK ARRESTER

INSPECTION/CLEANING

Remove the bolts and spark arrester.

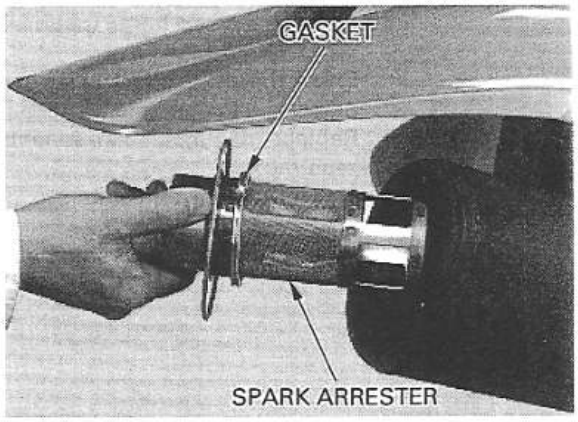


Check that the screen mesh and gasket is in good condition, and replace if necessary.

Use a soft brush to remove carbon deposits from the spark arrester screen. Be careful to avoid damaging the spark arrester screen. The spark arrester must be free of breaks and holes, replace if necessary.

Installation is in the reverse order of removal.

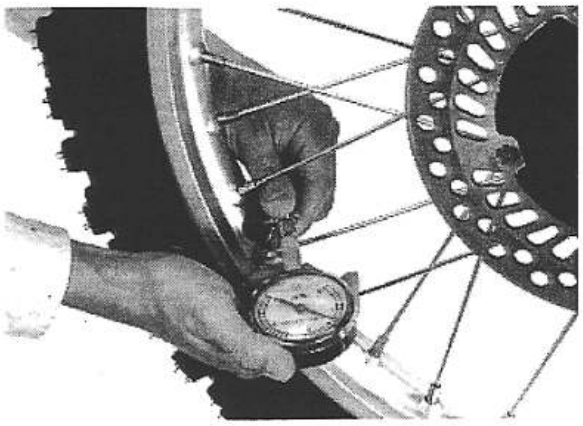
TORQUE:
Spark arrester bolt: 12 N·m (1.2 kgf·m , 9 lbf·ft)



NUTS, BOLTS, FASTENERS

Check that all chassis nuts and bolts are tightened to their correct torque values (page 1-12).
Check that all safety clips, hose clamps and cable stays are in place and properly secured.

WHEELS/TIRES

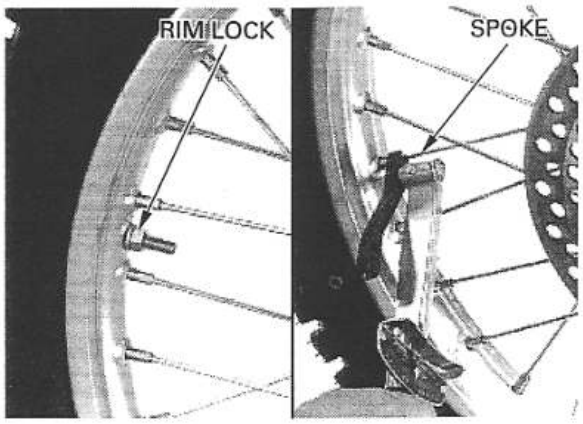


Check the tires for cuts, embedded nails, or other damage.
Check the front and rear wheels for trueness (refer to section 14 and 15).

Tire pressure should be checked when the tires are cold.

Check the cold tire pressure.

TIRE PRESSURE
FRONT: 175 kPa (1.75 kgf/cm², 25 psi)
REAR: 125 kPa (1.25 kgf/cm², 18 psi)

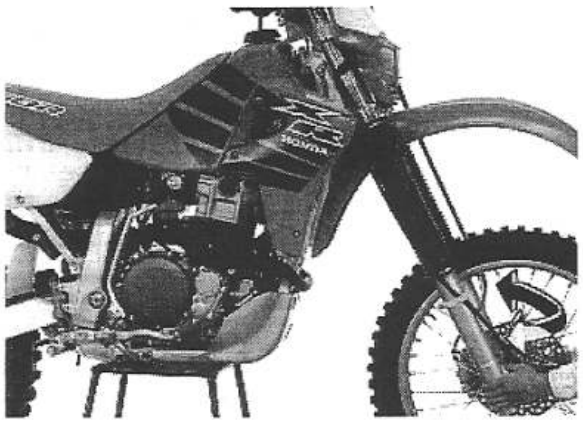


Inspect the wheel rims and spokes for damage.
Tighten any loose spokes and rim locks to the specified torque.

TORQUE:
SPOKES: 4 N·m (0.4 kgf·m, 2.9 lbf·ft)
RIM LOCK: 13 N·m (1.3 kgf·m, 9 lbf·ft)

TOOL:
Spoke wrench 07701-0020300

STEERING HEAD BEARINGS

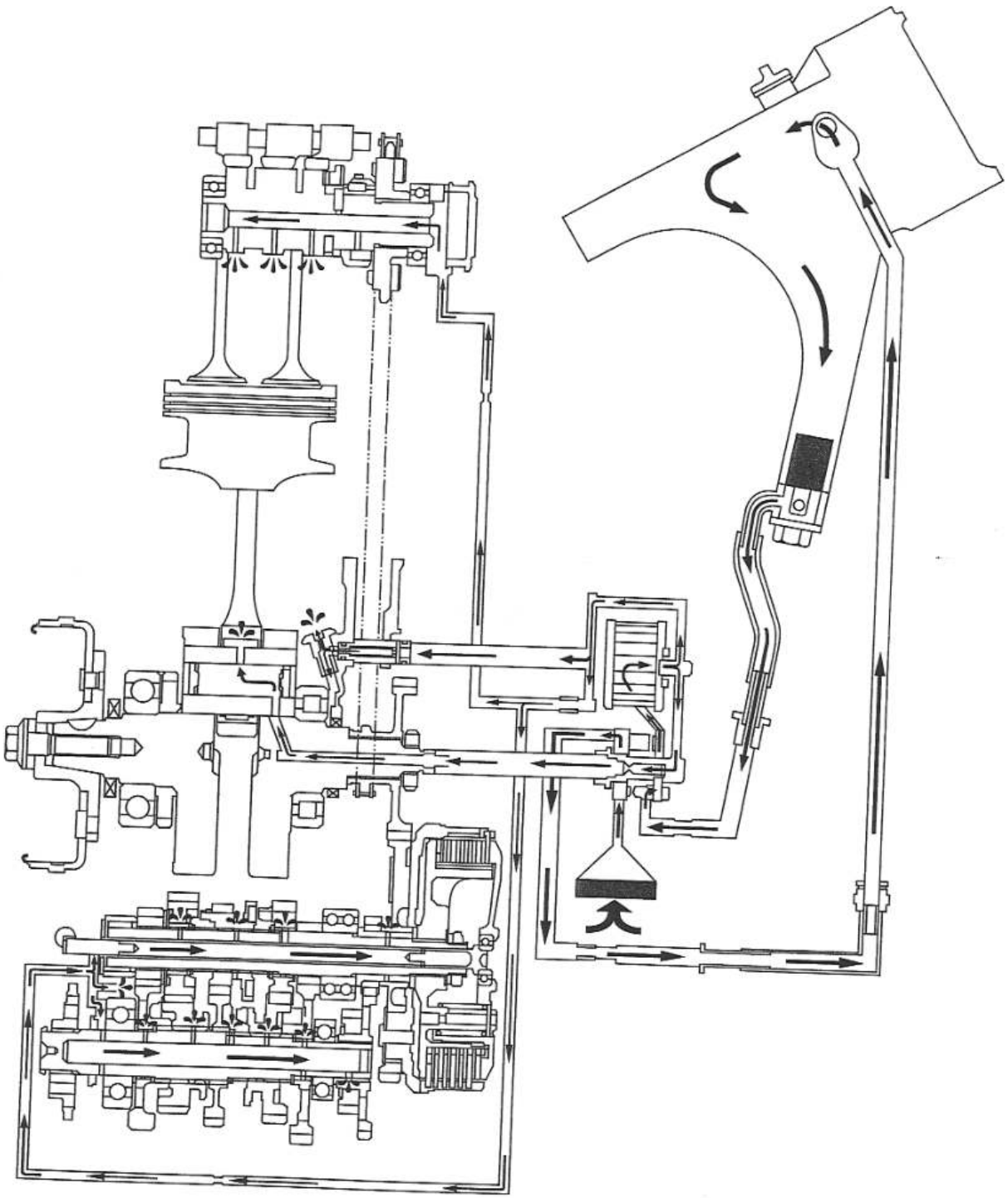


Raise the front wheel off the ground by placing a workstand under the engine.

Be sure that the control cables do not interfere with handlebar rotation.

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 (Section 14).
If excessive play has developed, check the steering stem for cracks.



4. LUBRICATION SYSTEM

SERVICE INFORMATION	4-1	OIL PUMP	4-3
TROUBLESHOOTING	4-1	CHECK VALVE	4-7
OIL STRAINER SCREEN CLEANING	4-2	OIL PIPE	4-7

SERVICE INFORMATION

GENERAL

⚠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.

- The right crankcase cover must be removed from the crankcase before servicing the oil pump.
- If any portion of the oil pump is worn beyond the specified service limits, replace the oil pump and right crankcase cover as an assembly.
- After the oil pump has been assembled, check that there are no oil leaks and that oil pressure is correct.

SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Engine oil capacity	At draining	1.56 ℓ (1.65 US qt , 1.37 Imp qt)	———
	At oil filter change	1.6 ℓ (1.7 US qt , 1.4 Imp qt)	———
	At disassembly	2.0 ℓ (2.1 US qt , 1.8 Imp qt)	———
Recommended engine oil		Honda 4-stroke oil or equivalent motor oil API service classification: SE, SF or SG	———
Oil pump rotor A, B	Body clearance	0.15—0.22 (0.006—0.009)	0.35 (0.014)
	Tip clearance	0.15 (0.006)	0.20 (0.008)
	Side clearance	0.03—0.08 (0.001—0.003)	0.10 (0.004)

TORQUE VALUES

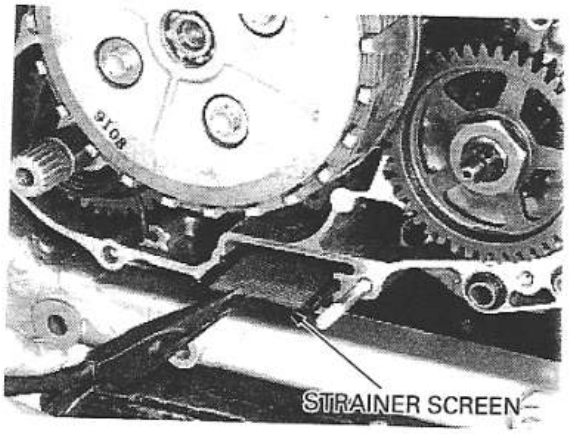
Down tube oil strainer	54 N·m (5.5 kgf·m , 40 lbf·ft)
Oil pump plate bolt	12 N·m (1.2 kgf·m , 9 lbf·ft)
Outer rotor stopper plate screw	2 N·m (0.2 kgf·m , 1.4 lbf·ft)
Inlet pipe oil bolt	37 N·m (3.8 kgf·m , 27 lbf·ft)

TROUBLESHOOTING

ENGINE OIL TOO LOW — HIGH OIL CONSUMPTION
- External oil leaks
- Worn piston rings
- Oil not changed often enough
- Faulty head gasket

ENGINE OIL CONTAMINATION
- Worn piston rings
- Oil not changed often enough
- Faulty head gasket

OIL STRAINER SCREEN CLEANING



AT INSIDE OF RIGHT CRANKCASE COVER

Remove the right crankcase cover (page 10-11).

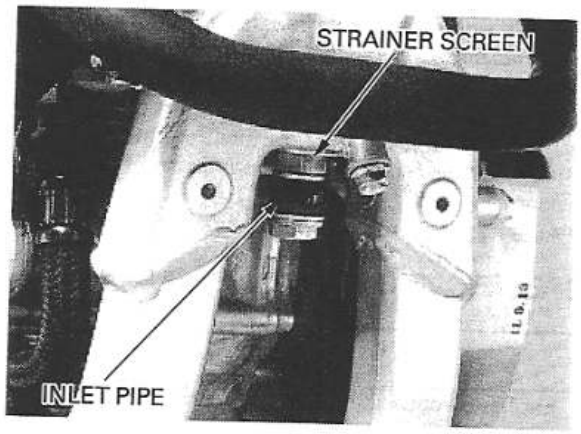
Remove the oil strainer screen and clean it.
Check the strainer screen for damage, and replace if necessary.
Install the oil strainer screen.

Install the right crankcase cover (page 10-20).

AT INSIDE OF DOWN TUBE

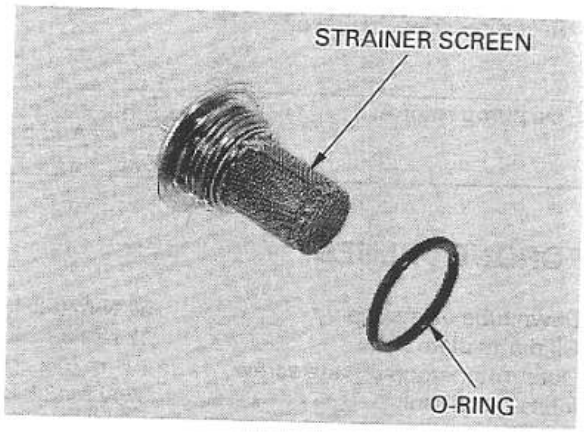
NOTE:

Always clean the strainer screen at inside of down tube before adding engine oil.



Remove the inlet oil pipe (page 4-7).
Remove the oil strainer screen and clean it.

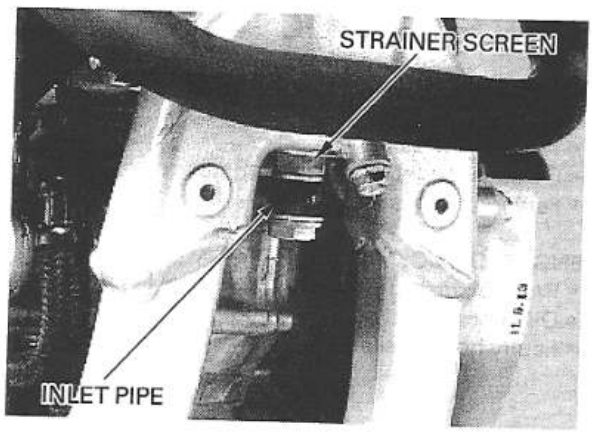
Check the O-ring and strainer screen for damage, and replace if necessary.



Install the oil strainer screen and tighten it to the specified torque.

TORQUE: 54 N·m (5.5 kgf·m , 40 lbf·ft)

Install the oil inlet pipe (page 4-8).

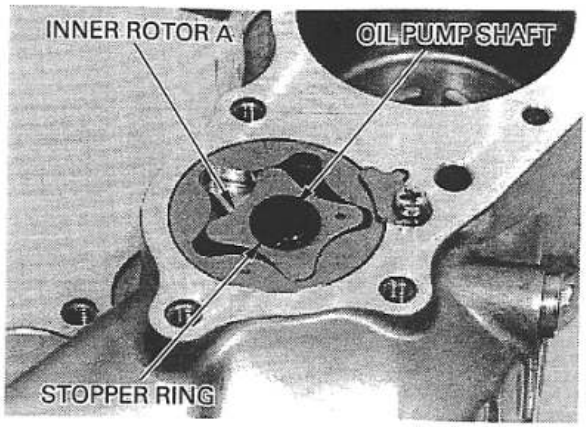


OIL PUMP

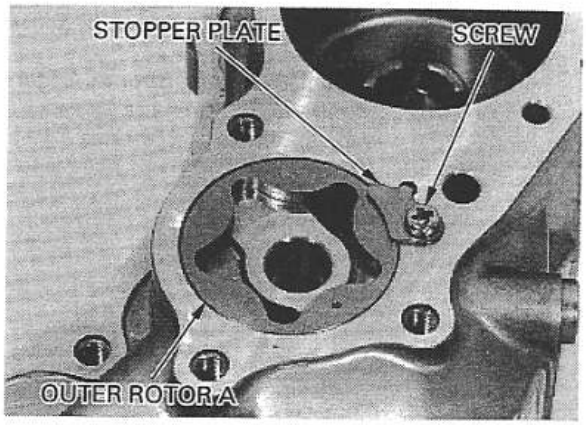
DISASSEMBLY

Remove the right crankcase cover (page 10-11).
Remove the oil filter cover (page 3-12).

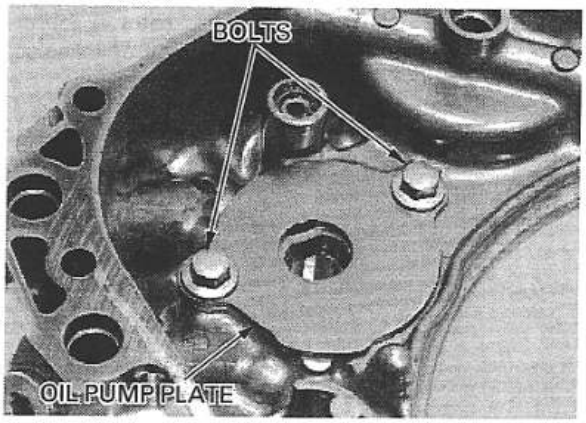
Remove the stopper ring and oil pump shaft.
Remove the inner rotor A.



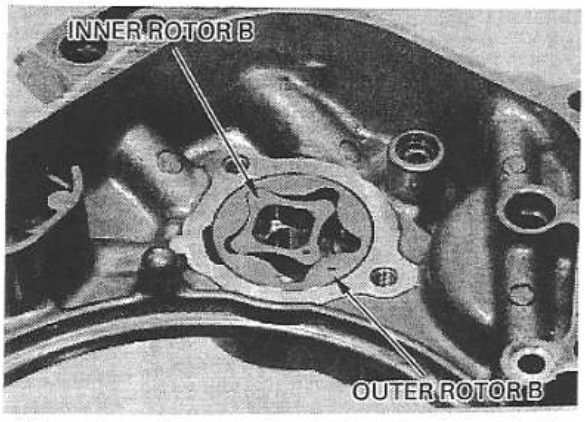
Remove the screw and outer rotor stopper plate.
Remove the outer rotor A.



Remove the bolts and oil pump plate.



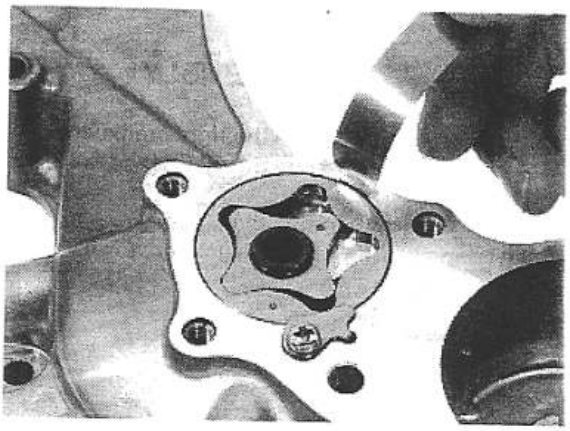
Remove the inner rotor B and outer rotor B.



INSPECTION

NOTE:

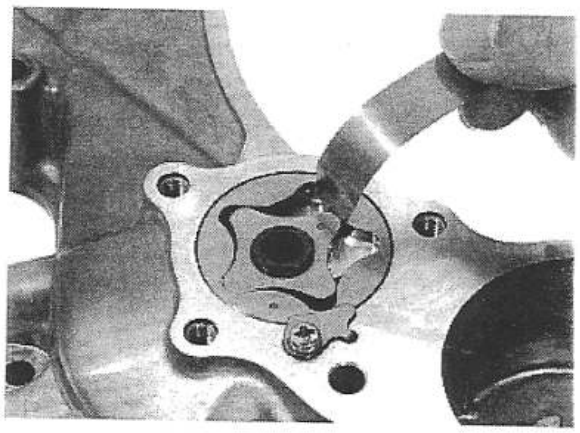
- Measure at several places and use the largest reading to compare to the service limit.
- If any portion of the oil pump is worn beyond the specified service limits, replace the oil pump and right crankcase cover as an assembly.



PUMP A

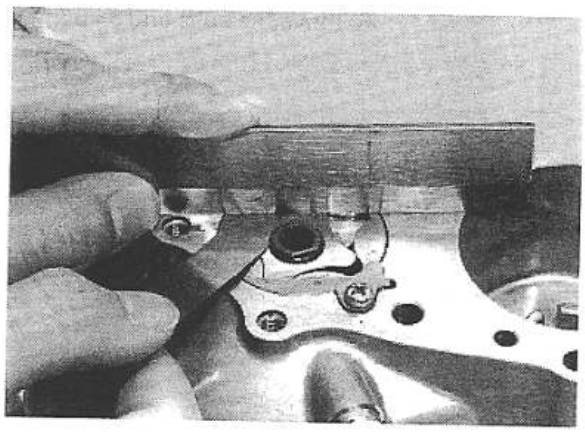
Install the inner rotor A, outer rotor A and pump shaft into the right crankcase cover.
Measure the body clearance.

SERVICE LIMIT: 0.35 mm (0.014 in)



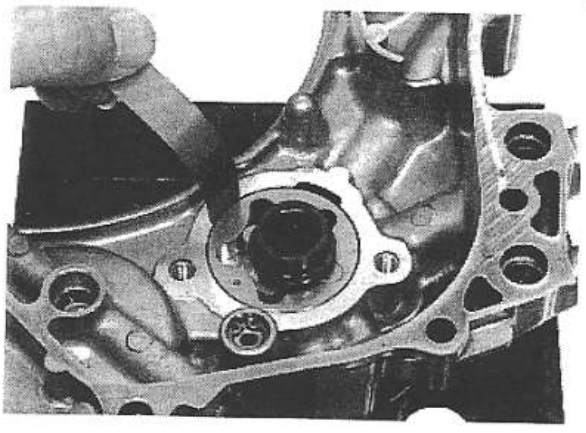
Install the inner rotor A, outer rotor A and pump shaft into the right crankcase cover.
Measure the tip clearance.

SERVICE LIMIT: 0.20 mm (0.008 in)



Install the inner rotor A, outer rotor A and pump shaft into the right crankcase cover.
Measure the side clearance.

SERVICE LIMIT: 0.10 mm (0.004 in)



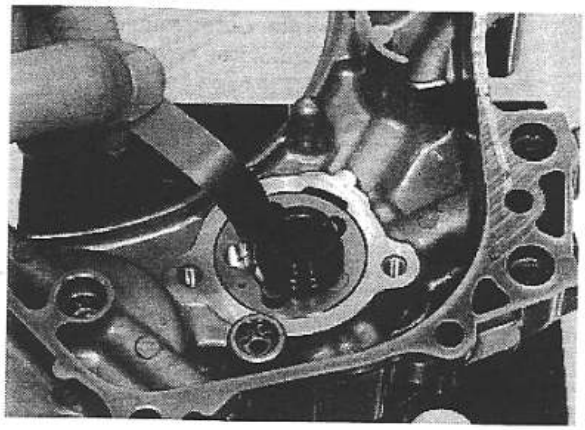
PUMP B

Install the inner rotor B, outer rotor B and pump shaft into the right crankcase cover.
Measure the body clearance.

SERVICE LIMIT: 0.35 mm (0.014 in)

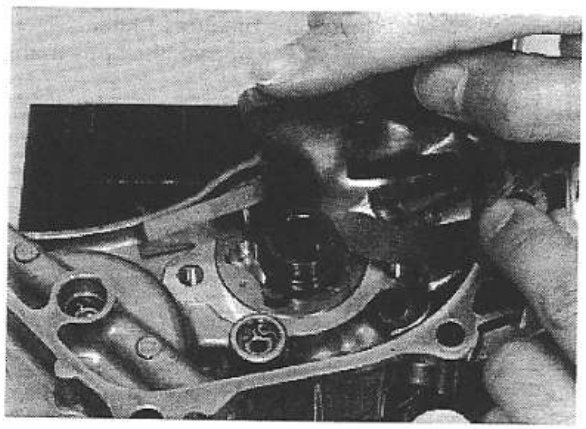
Install the inner rotor B, outer rotor B and pump shaft into the right crankcase cover.
Measure the tip clearance.

SERVICE LIMIT: 0.20 mm (0.008 in)

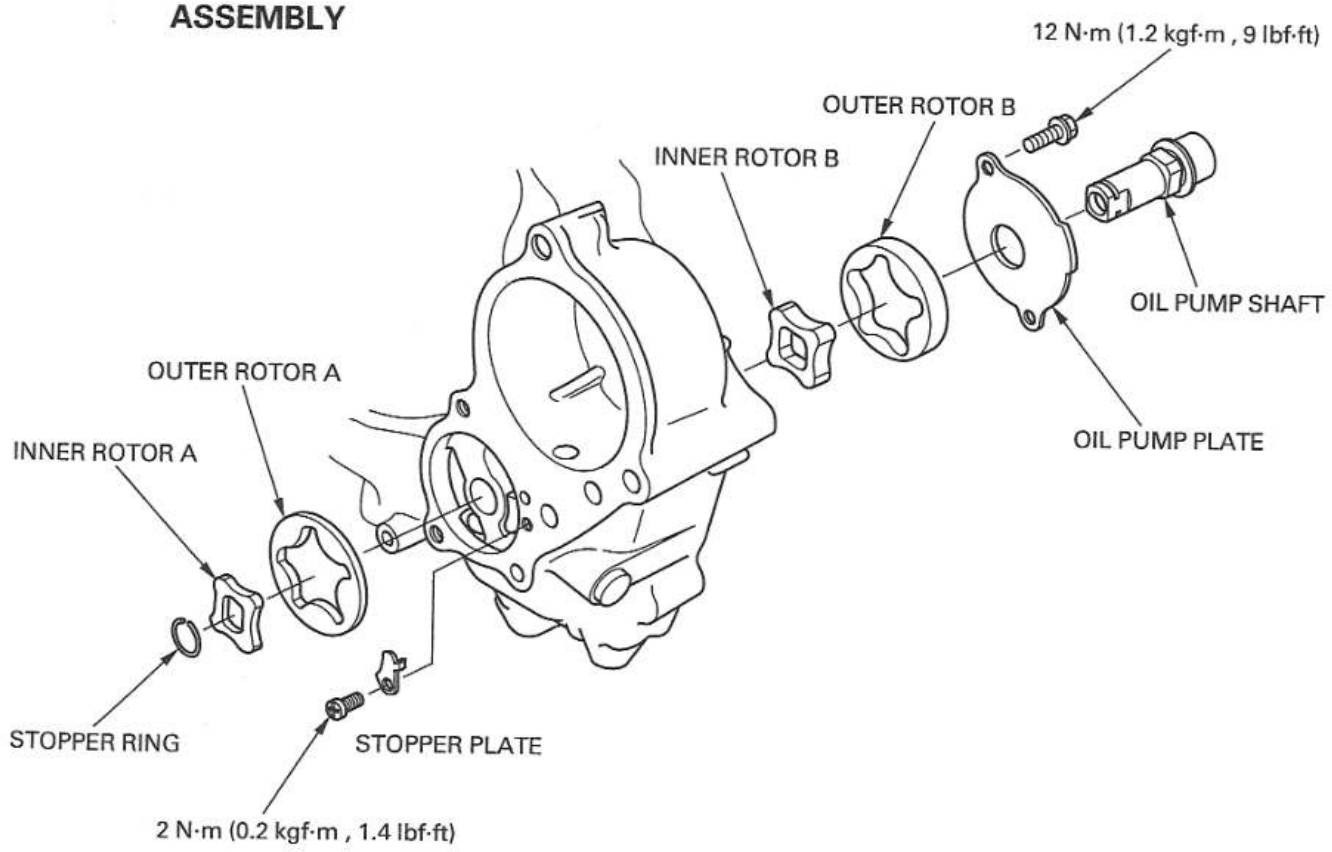


Install the inner rotor B, outer rotor B and pump shaft into the right crankcase cover.
Measure the side clearance.

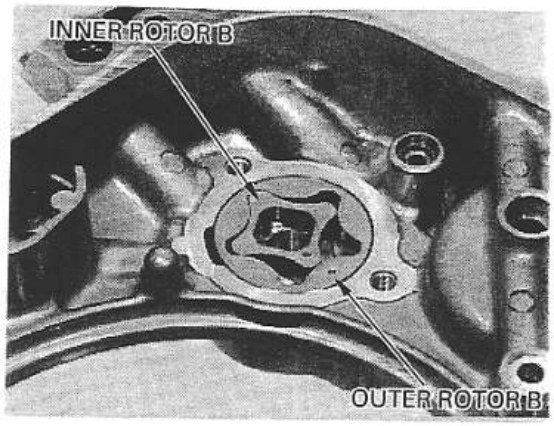
SERVICE LIMIT: 0.10 mm (0.004 in)



ASSEMBLY

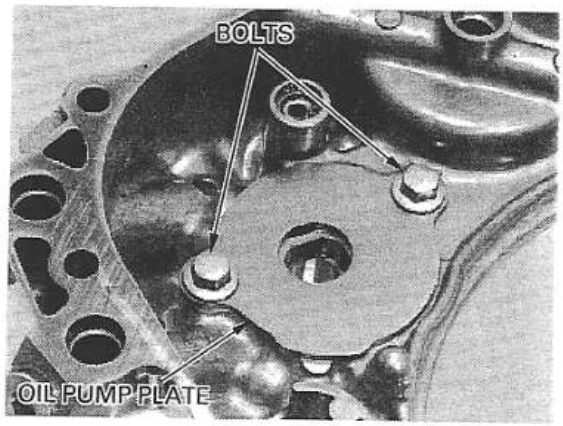


Install the outer rotor B and inner rotor B into the right crankcase cover.



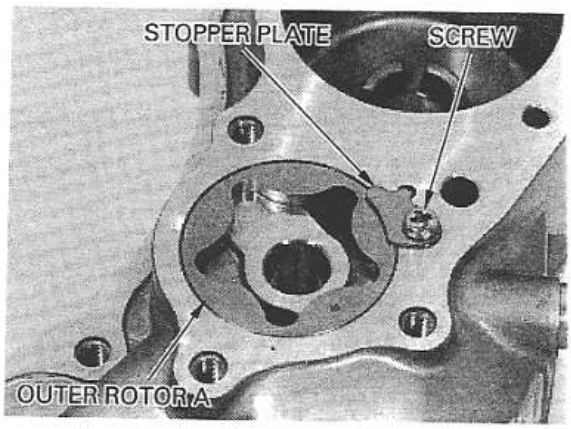
Install the oil pump plate.
Install and tighten the bolts to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m , 9 lbf·ft)



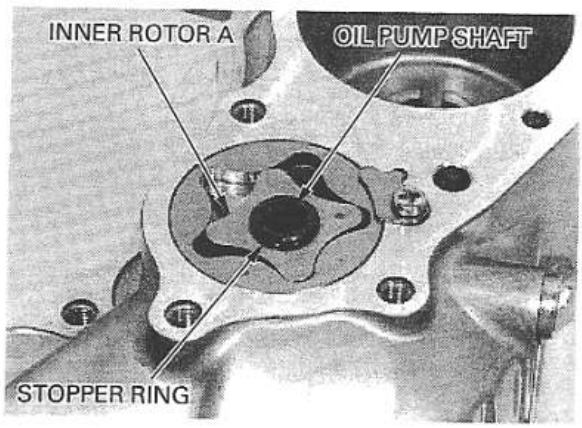
Install the outer rotor A into the right crankcase cover.
Install the outer rotor stopper plate and screw.
Tighten the screw to the specified torque.

TORQUE: 2 N·m (0.2 kgf·m , 1.4 lbf·ft)



Install the inner rotor A into the outer rotor A.
Install the oil pump shaft through the inside of the right crankcase cover.
Install the stopper ring securely.

Install the oil filter cover (page 3-12).
Install the right crankcase cover (page 10-20).



CHECK VALVE

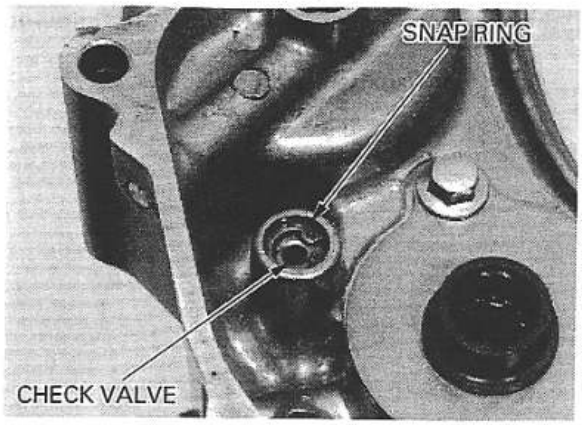
⚠WARNING

The snap ring is under spring pressure. Use care when removing it and wear eye and face protection.

Remove the right crankcase cover (page 10-11).

Be careful not to lose the disassembled parts.

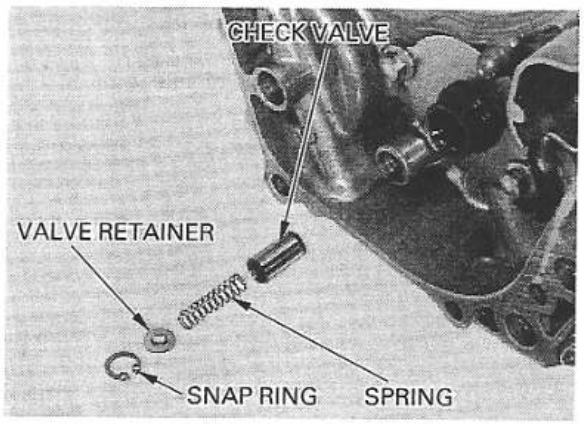
Remove the snapring, retainer, spring and check valve.



Inspect the check valve for scoring or contamination.

Check the valve spring for fatigue or damage.
Check the valve hole on the right crankcase cover for clogging or damage.

Clean the remaining parts and assemble the check valve in the reverse order of removal.



OIL PIPE

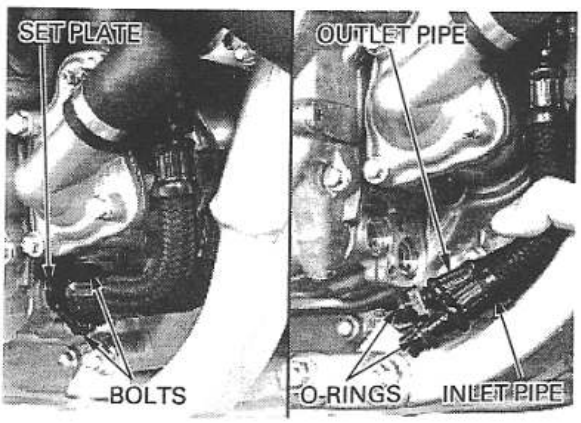
REMOVAL

Drain the engine oil (page 3-10).
Remove the skid plate (page 2-11).
Remove the right radiator shroud (page 2-2).

Remove the right radiator grill and radiator mounting bolts, then swing the right side radiator forward.



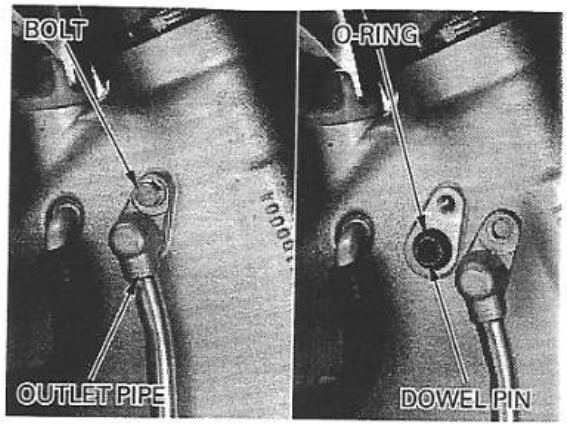
Remove the bolts and oil pipe set plate.
Disconnect the oil inlet pipe and oil outlet pipe.
Remove the O-rings from the pipes.



Remove the oil outlet pipe bolt, dowel pin and O-ring.

Do not bend the oil outlet pipe.

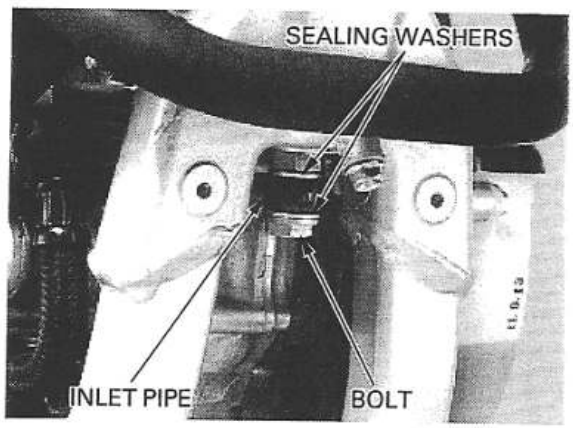
Remove the oil outlet pipe.



Remove the oil inlet pipe bolt and sealing washers at the frame.

Do not bend the oil inlet pipe.

Remove the oil inlet pipe.



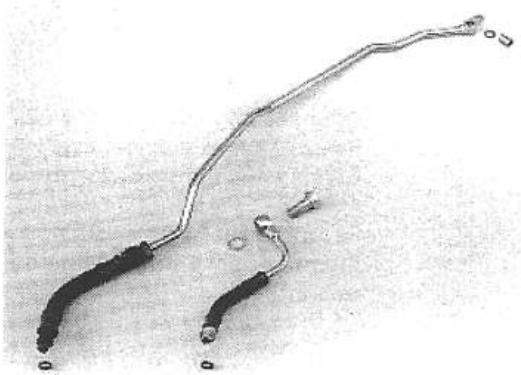
INSPECTION

Check the oil pipes and pipe bolts for damage or bends, replace if necessary.

If clogged, clean with non-flammable or high flash point solvent.

⚠WARNING

Never use gasoline or low flash point solvents for cleaning the oil pipe. A fire or explosion could result.

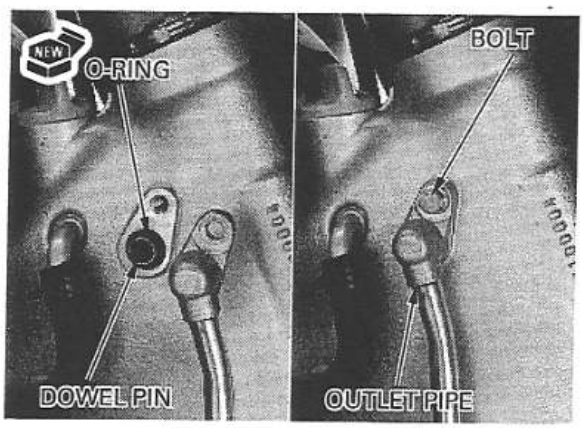


INSTALLATION

Install the dowel pin and new O-ring.

Do not bend the oil outlet pipe.

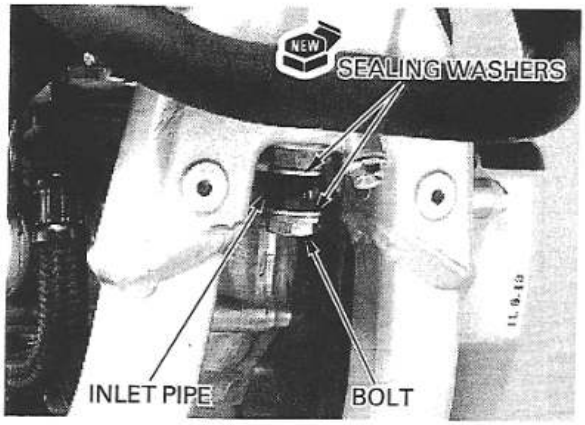
Install the oil outlet pipe and oil pipe bolt. Tighten the bolt securely.



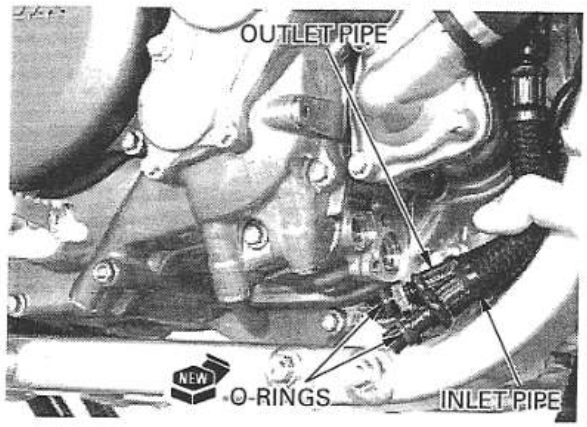
Do not bend the oil inlet pipe.

Install the oil inlet pipe, new sealing washer and oil pipe bolt.
Tighten the bolt to the specified torque.

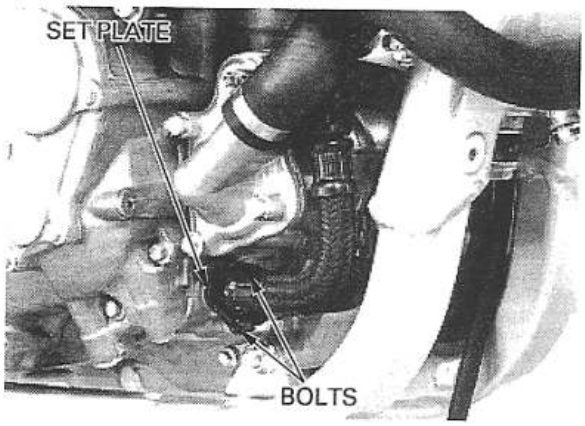
TORQUE: 37 N·m (3.8 kgf·m , 27 lbf·ft)



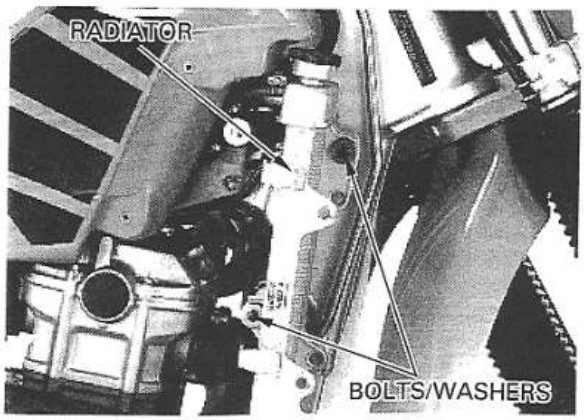
Install the new O-rings to the oil pipes.
Install the set plate to the oil pipes as shown.
Connect the pipes into the crankcase.

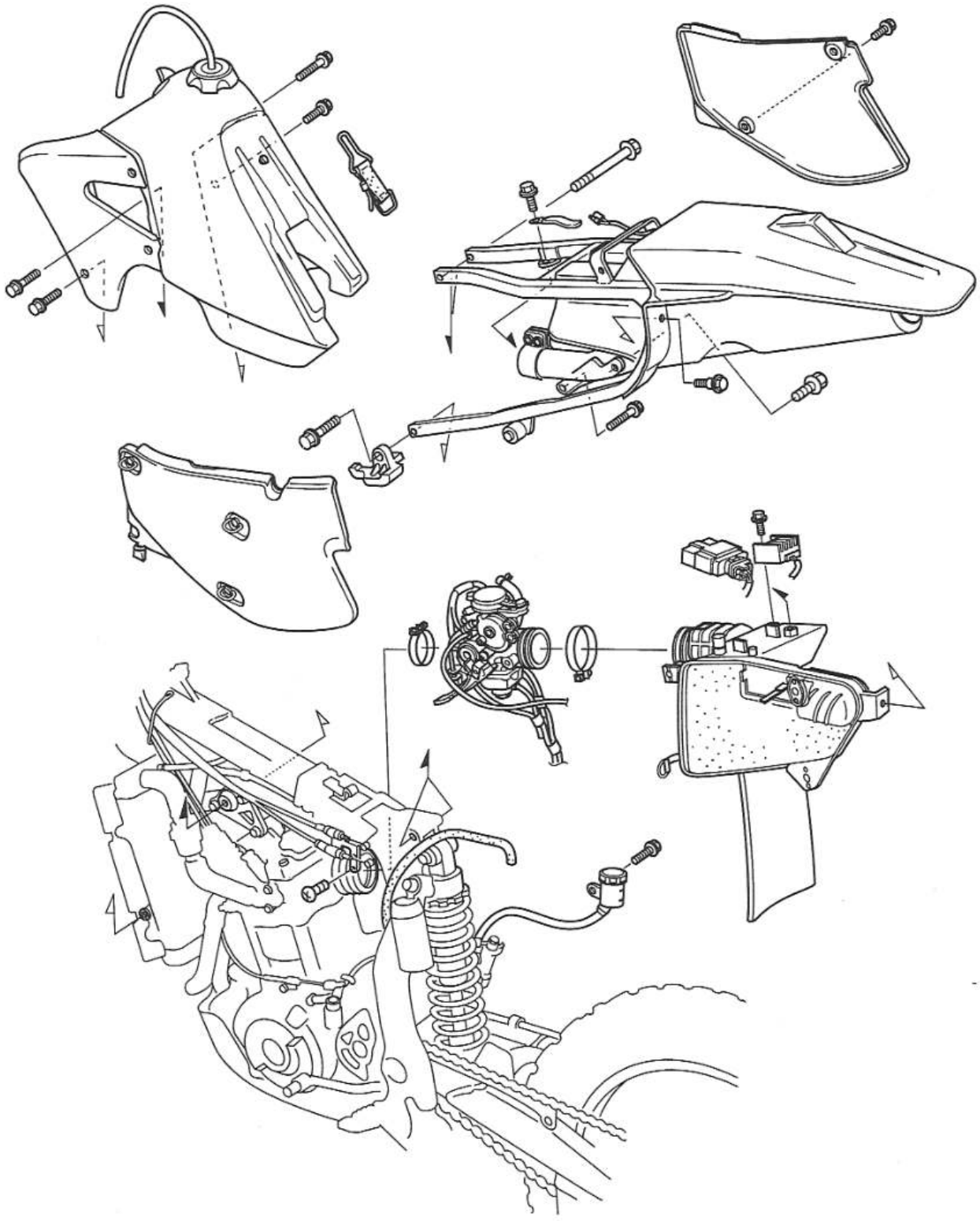


Install and tighten the set plate bolts securely.



Install the radiator right mounting bolts and grill.
Install the right radiator shroud (page 2-2).
Install the skid plate (page 2-11).
After installation, fill the engine and frame oil tank with the engine oil (page 3-11) and check that there are no oil leaks.





5. FUEL SYSTEM

SERVICE INFORMATION	5-1	CARBURETOR DISASSEMBLY	5-5
TROUBLESHOOTING	5-3	CARBURETOR ASSEMBLY	5-9
AIR CLEANER HOUSING REMOVAL/INSTALLATION	5-4	CARBURETOR INSTALLATION	5-14
CRANKCASE BREATHER	5-4	PILOT SCREW ADJUSTMENT	5-15
CARBURETOR REMOVAL	5-5		

SERVICE INFORMATION

GENERAL

⚠WARNING

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

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

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.

- Before disassembling the carburetor, place an approved gasoline container under the carburetor drain tube, loosen the drain screw and drain the carburetor.
- When disassembling the fuel system parts, note the locations of the O-rings. Replace them with new ones during reassembly.
- After removing the carburetor, wrap the intake port of the engine with a shop towel or cover it with a piece of tape to prevent any foreign material from dropping into the engine. Be sure to remove the cover when installing the carburetor.

SPECIFICATION

ITEM		SPECIFICATIONS
Carburetor identification number	ED, DK types	PE78C
	U type	PE78D
Main jet	ED, DK types	# 175
	U type	#112
Slow jet		# 65
Jet needle clip position		3rd groove from top
Pilot screw opening		see page 5-15
Float level		16.0 mm (0.63 in)
Idle speed		1,400 ± 100 min^{-1} (rpm)
Throttle grip free play		2.0—6.0 mm (1/16—1/4 in)

TORQUE VALUES

Choke lever set screw	4 N·m (0.4 kgf·m , 2.9 lbf·ft)
Air cut-off valve cover screw	2 N·m (0.2 kgf·m , 1.4 lbf·ft)
Link arm screw	1 N·m (0.1 kgf·m , 0.7 lbf·ft)
Link arm set screw	2 N·m (0.2 kgf·m , 1.4 lbf·ft)
Carburetor top cover screw	2 N·m (0.2 kgf·m , 1.4 lbf·ft)
Baffle plate screw	1 N·m (0.1 kgf·m , 0.7 lbf·ft)
Float chamber screw	2 N·m (0.2 kgf·m , 1.4 lbf·ft)
Throttle cable guide screw	4 N·m (0.4 kgf·m , 2.9 lbf·ft)

TOOL

Carburetor float level gauge	07401-0010000

TROUBLESHOOTING

ENGINE CRANKS BUT WON'T START
- No fuel to carburetor
- Engine flooded with fuel
- No spark at plug (ignition system faulty)
- Clogged air cleaner
- Intake air leak
- Improper choke operation
- Improper throttle operation

ENGINE IDLES ROUGHLY, RUNS POORLY OR STALLS
- Improper choke operation
- Ignition malfunction
- Fuel contaminated
- Intake air leak
- Incorrect idle speed
- Incorrect pilot screw adjustment
- Low cylinder compression
- Choke stuck open
- Rich mixture
- Lean mixture
- Clogged carburetor

MISFIRING DURING ACCELERATION
- Ignition system faulty
- Lean mixture

AFTERBURN DURING ACCELERATION
- Ignition system faulty
- Lean mixture

POOR PERFORMANCE (DRIVEABILITY) AND POOR FUEL ECONOMY
- Fuel system clogged
- Ignition system faulty
- Air cleaner clogged

AFTERFIRING
- Ignition system malfunction
- Carburetor malfunction
- Lean mixture
- Rich mixture

LEAN MIXTURE
- Clogged fuel jets
- Faulty float valve
- Float level too low
- Blocked fuel fill cap air vent hole
- Clogged fuel strainer screen
- Restricted fuel line
- Clogged air vent tube
- Intake air leak

RICH MIXTURE
- Clogged air cleaner
- Worn jet needle or needle jet
- Faulty float valve
- Float level too high
- Choke stuck open

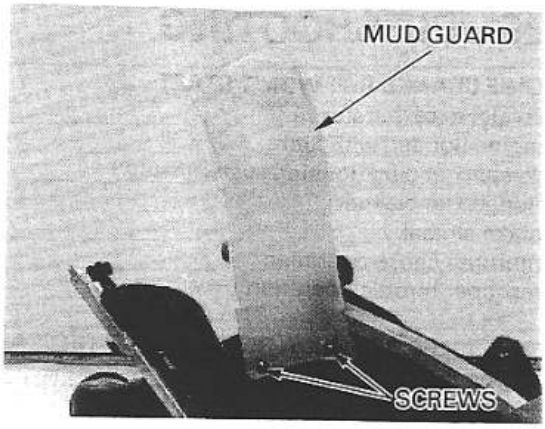
INCORRECT FAST IDLE SPEED
- Choke stuck open
- Worn piston rings

AIR CLEANER HOUSING REMOVAL/INSTALLATION

Remove the following:
- Right and left side covers (page 2-2).
- Air cleaner element (page 3-6).
- Sub-frame (page 2-5).

Remove the screws and mud guard.

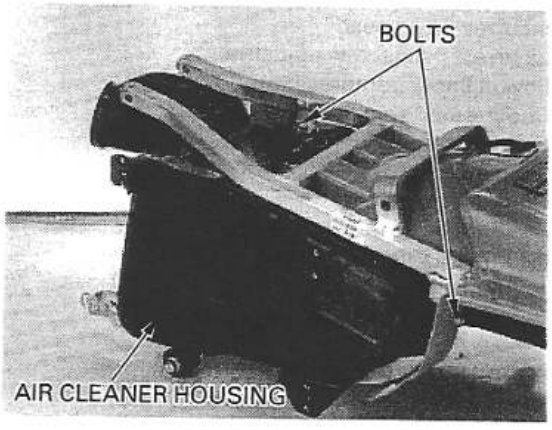
Remove the bolts and air cleaner housing from the sub-frame.



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

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

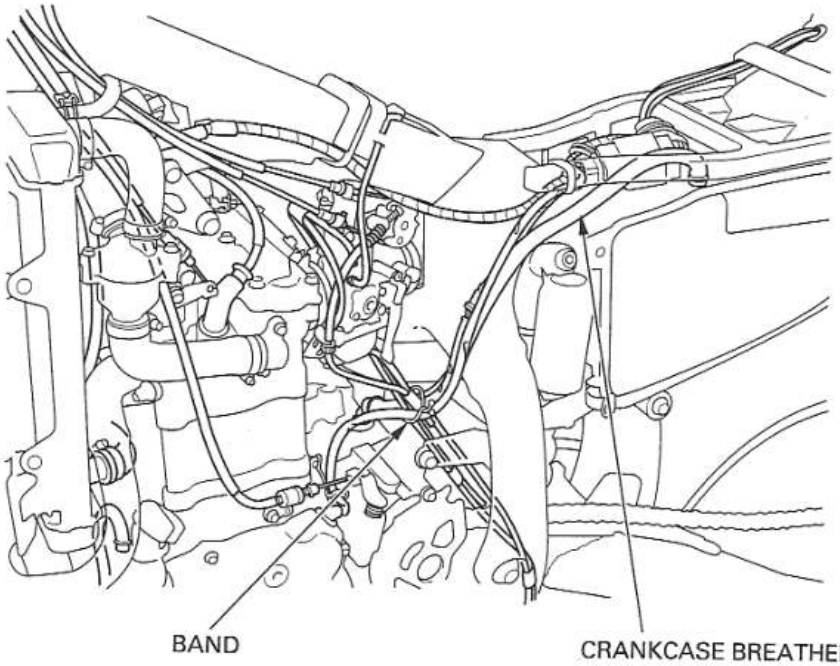
Installation is in the reverse order of removal.



CRANKCASE BREATHER

INSPECTION

Route the crankcase breather tube as shown.
Check the crankcase breather tube for kinks or clogs.



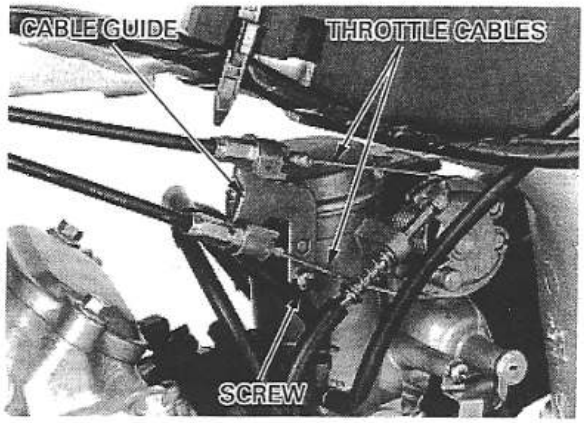
CARBURETOR REMOVAL

⚠WARNING

- ***Gasoline is extremely flammable and is explosive under certain conditions. Work in a well ventilated area. Smoking or allowing flames or sparks in the work area or where the gasoline is stored can cause a fire or explosion.***
- ***Wipe up spilled gasoline at once.***

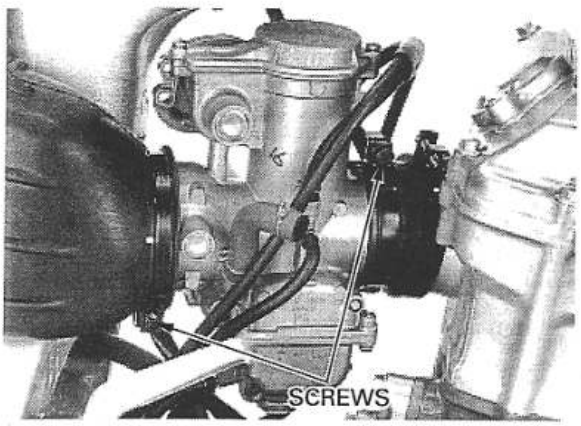
Remove the fuel tank (page 2-5).

Remove the screw and throttle cable guide from the carburetor.
Disconnect the throttle cables from the throttle drum.



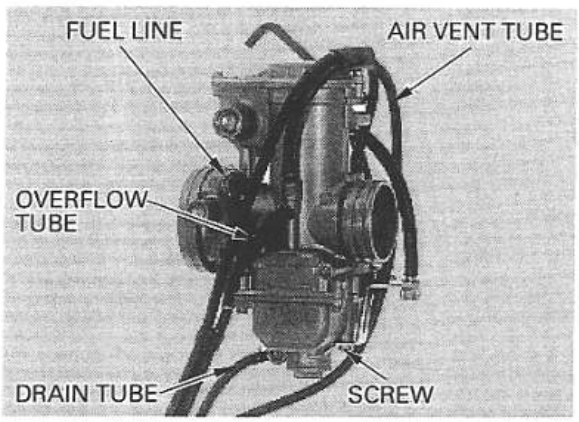
Place a suitable gasoline container under the drain tube and loosen the drain screw to drain the fuel.
Loosen the carburetor insulator band screw and connecting tube band screw.

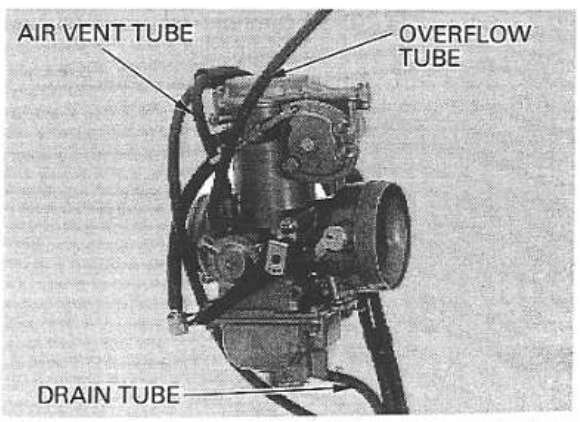
Remove the carburetor to the right.



CARBURETOR DISASSEMBLY

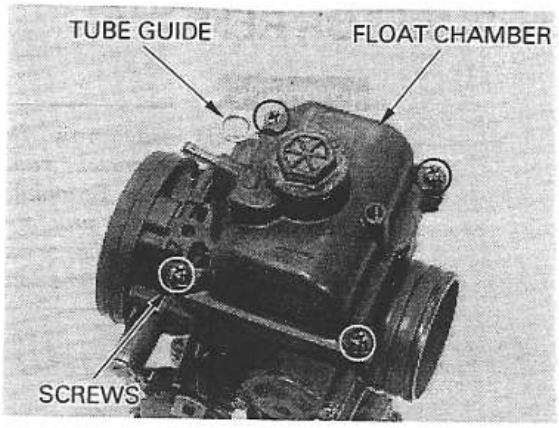
Remove the bracket screw.
Remove the overflow tube, drain tube, air vent tubes and fuel line from the carburetor.



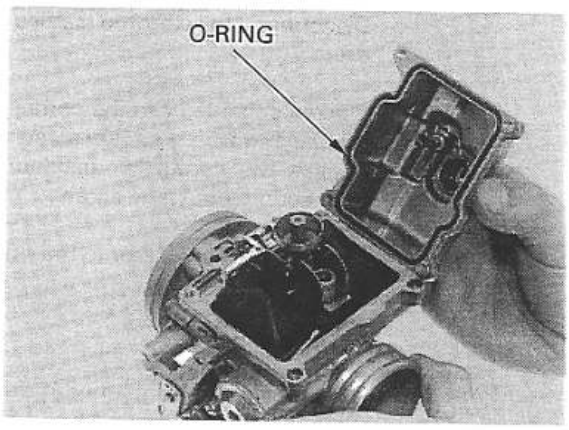


FLOAT AND JETS

Remove the screws, tube guide and float chamber.

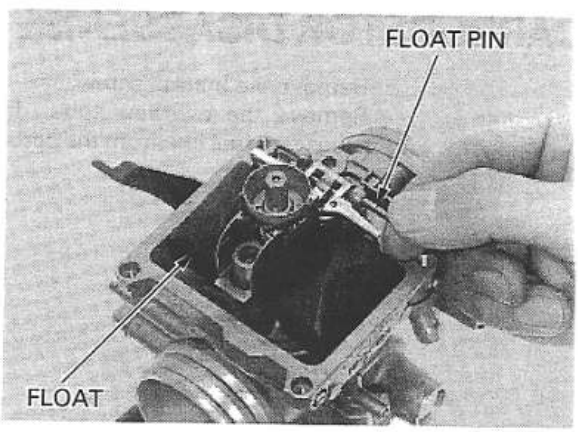


Remove the O-ring from the float chamber.

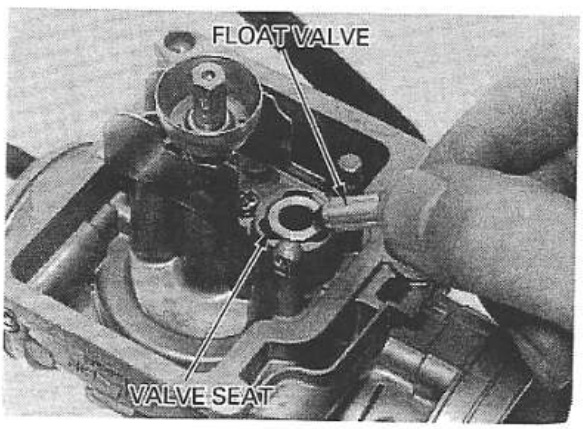


Remove the float pin, float and float valve.

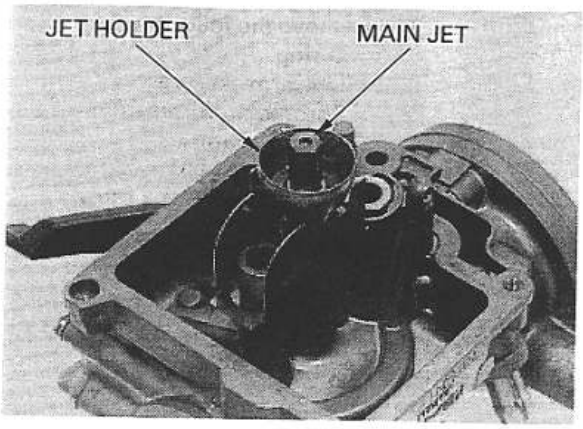
Check the float for damage.



Check the float valve and its seat for grooves, nicks, or contamination.
Check the operation of the float valve.



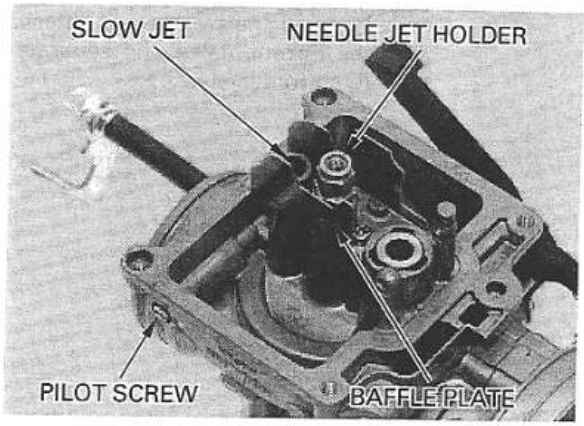
Remove the main jet and jet holder.



Remove the following:
- Needle jet holder
- Needle jet
- Screw and baffle plate

NOTE:

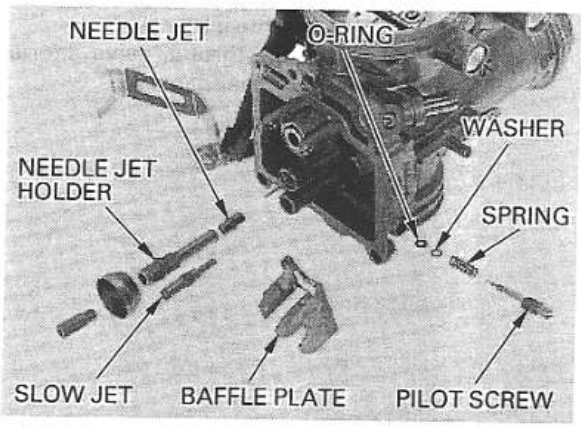
Before removing the pilot screw, turn it in, counting the number of turns until it seats lightly so you can return the pilot screw to its original position when reassembling.



CAUTION:

Damage to the pilot screw seat will occur if the pilot screw is tightened hard against the seat.

Remove the following:
- Slow jet
- Pilot screw
- Spring, washer and O-ring

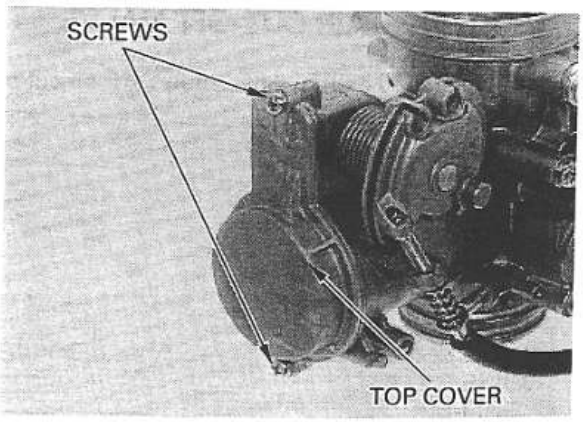


Inspection the following:
Check the main jet and slow jet for clogs.
Check the pilot screw for damage.

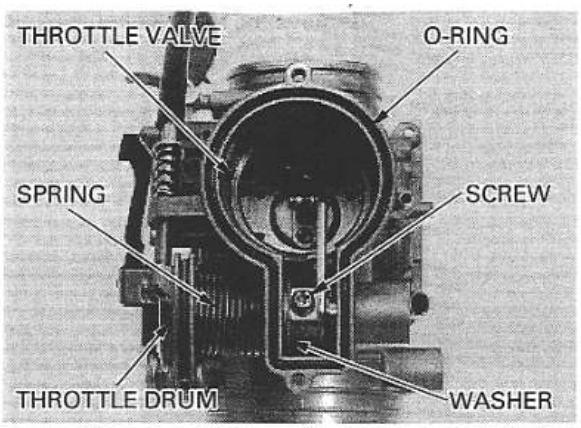
Blow open all jets with compressed air.

THROTTLE VALVE

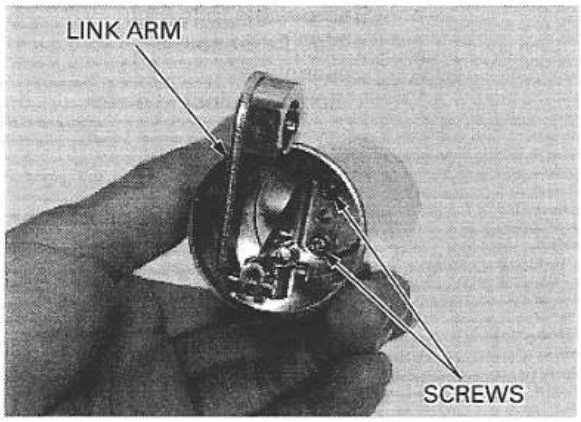
Remove the screws and carburetor top cover.



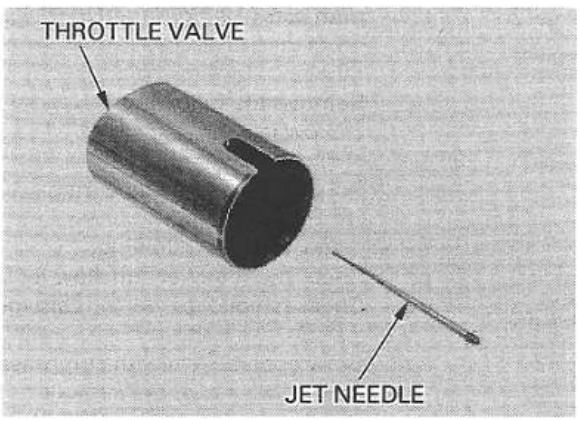
Remove the following:
- O-ring
- Link arm set screw
- Throttle drum assembly
- Return spring
- Plastic washer
- Throttle valve assembly



Remove the two screws attaching the link arm to the throttle valve and separate the link arm from the throttle valve.

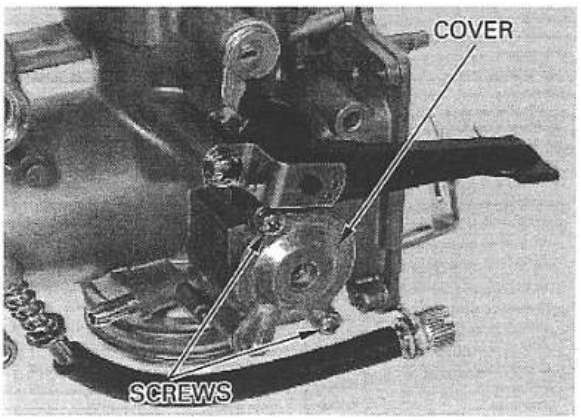


Remove the jet needle.
Check the throttle valve and jet needle for wear, nicks or other damage.



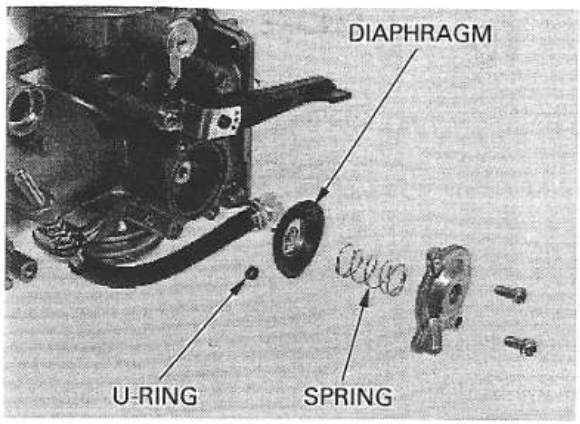
AIR CUT-OFF VALVE

Remove the screws and air cut-off valve cover.



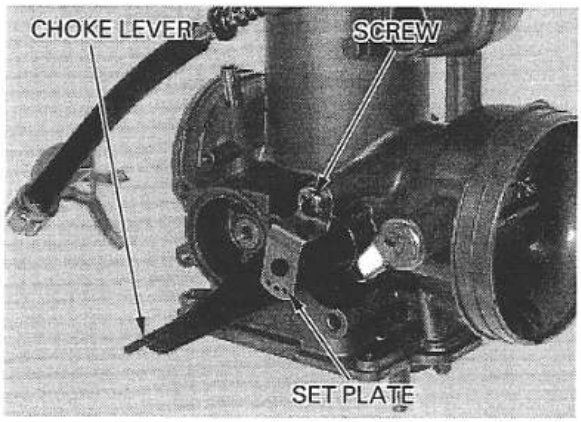
Remove the spring, diaphragm and U-ring.

Check the diaphragm for damage.

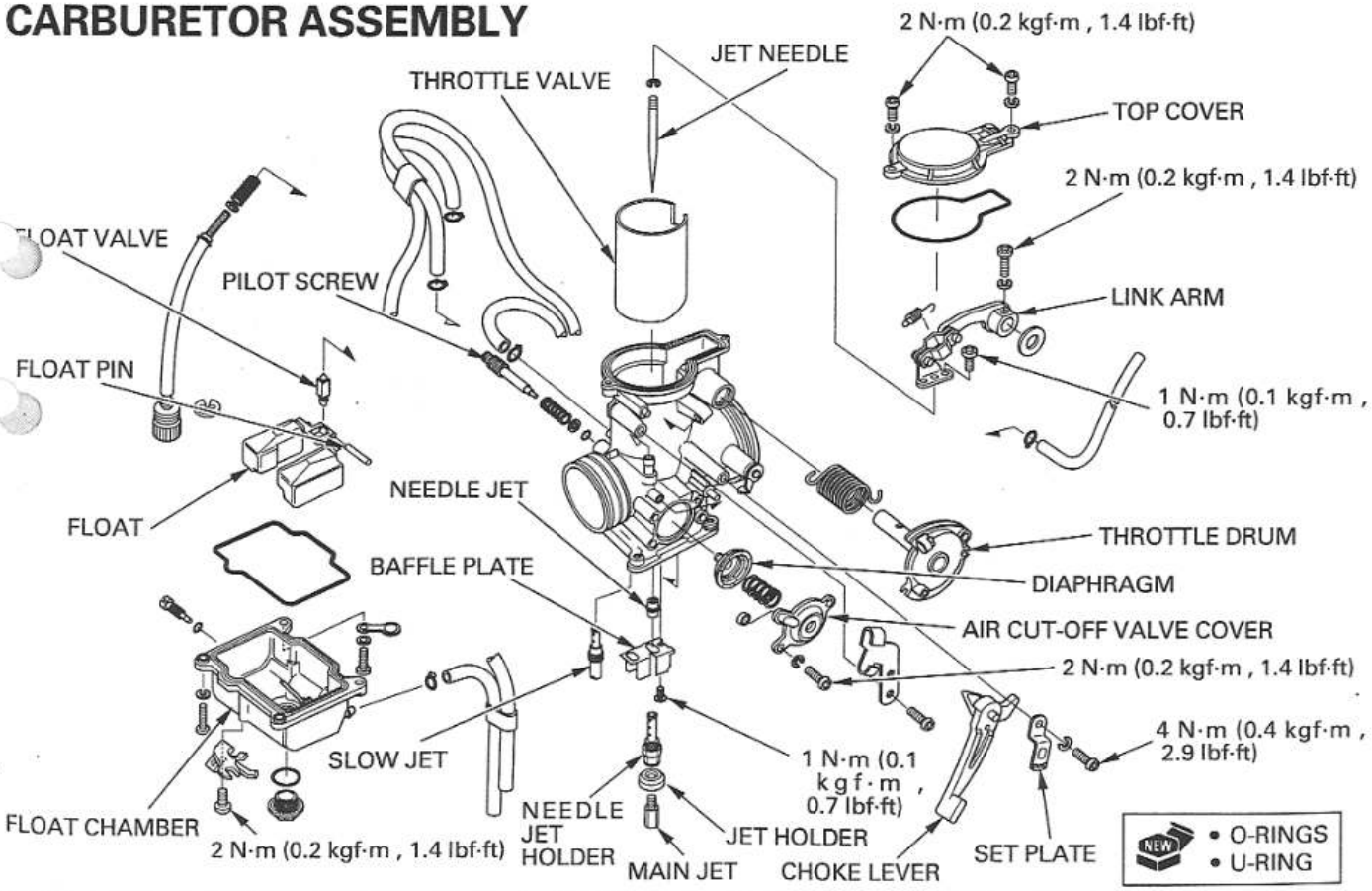


CHOKE LEVER

Remove the screw, set plate and choke lever.



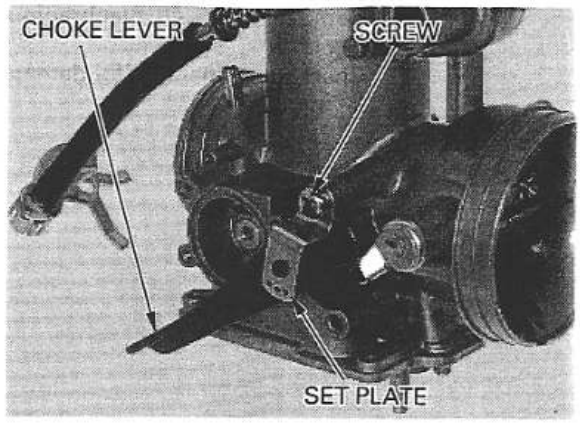
CARBURETOR ASSEMBLY



CHOKE LEVER

Install the choke lever, set plate and screw. Tighten the screw to the specified torque.

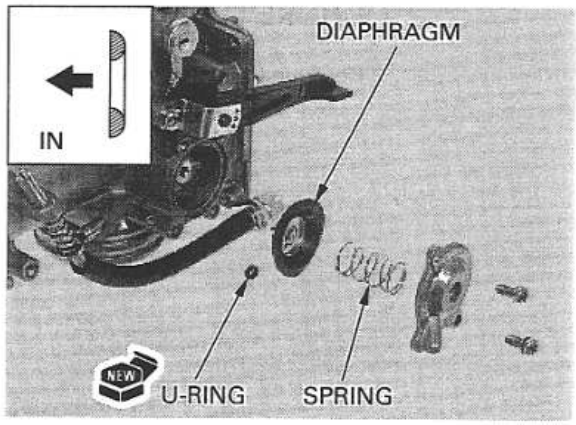
TORQUE: 4 N·m (0.4 kgf·m , 2.9 lbf·ft)



AIR CUT-OFF VALVE

Install the U-ring with its flat side toward the carburetor body as shown.

Install the following:
- U-ring
- Diaphragm
- Spring
- Air cut-off valve cover



Install and tighten the screws to the specified torque.

TORQUE: 2 N·m (0.2 kgf·m , 1.4 lbf·ft)

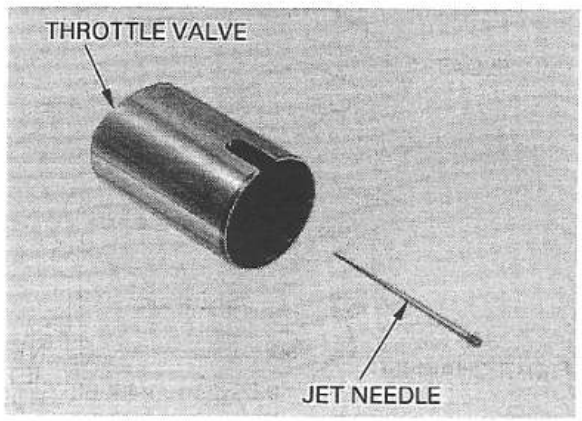


THROTTLE VALVE

Install the needle clip on the jet needle.

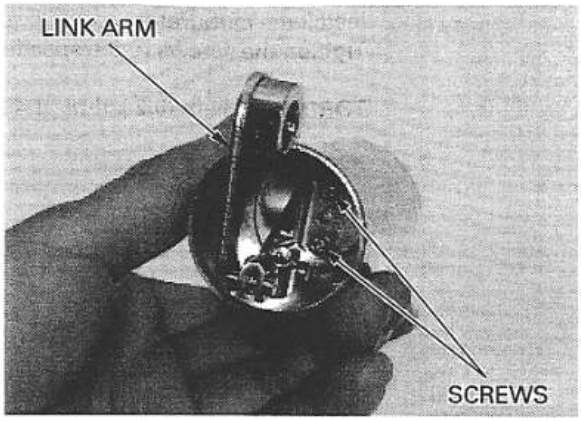
STANDARD: 3rd groove from top

Install the jet needle in the throttle valve.

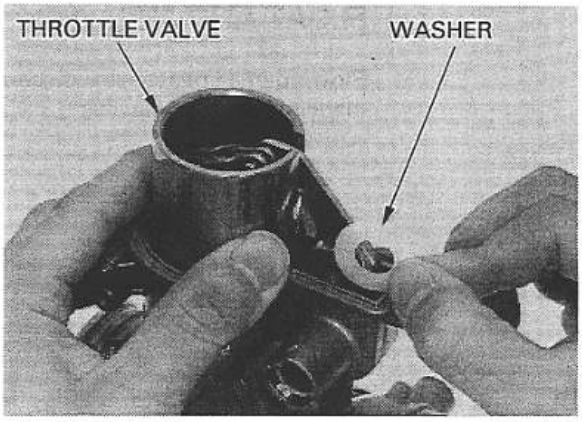


Assemble the link arm to the throttle valve.
Install and tighten the screws to the specified torque.

TORQUE: 1 N·m (0.1 kgf·m , 0.7 lbf·ft)

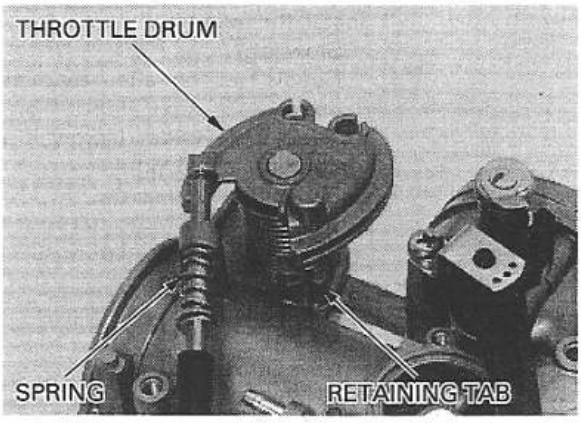


Install the throttle valve assembly and plastic washer.



Return spring should not hang over the retaining tab on the carburetor body.

Install the return spring and throttle drum as assembly.

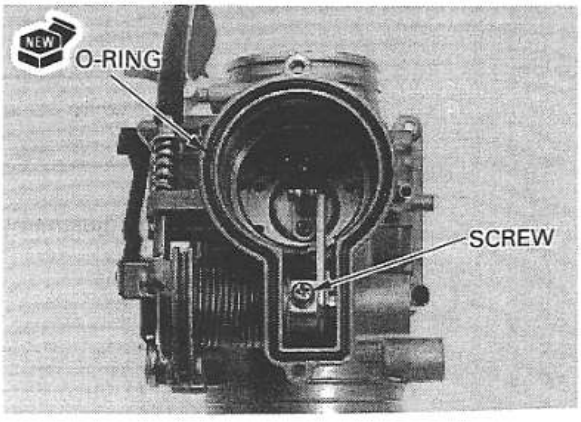


Align the hole in the link arm with the threaded hole in the link arm shaft and install the set screw.

Install and tighten the link arm set screw to the specified torque.

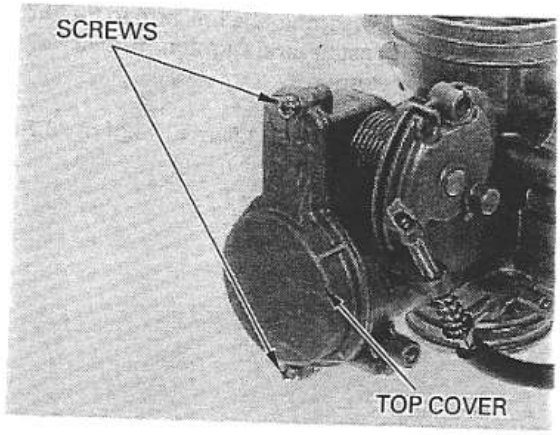
TORQUE: 2 N·m (0.2 kgf·m , 1.4 lbf·ft)

Install a new O-ring.



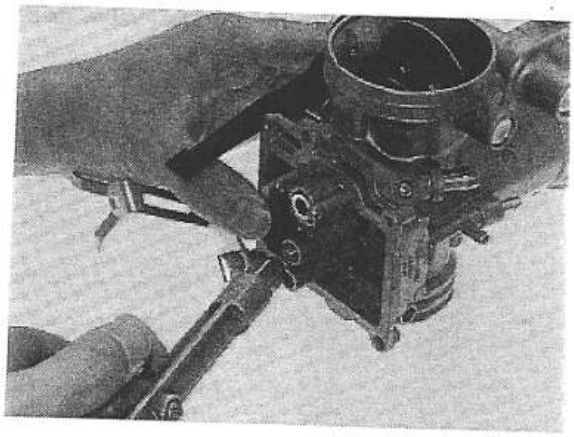
Install the carburetor top cover and screws. Tighten the screws to the specified torque.

TORQUE: 2 N·m (0.2 kgf·m , 1.4 lbf·ft)



FLOAT AND JETS

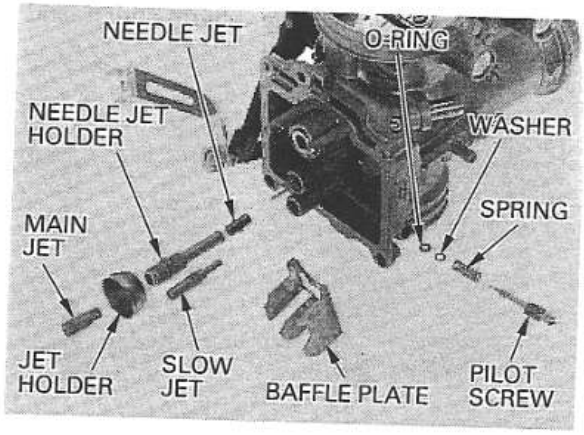
Blow open all passages with compressed air before installing jets and valves.



Install the following:
- Slow jet
- Needle jet (smaller diameter into carburetor body)
- Needle jet holder (screw in until it seats, then tighten the lock nut)
- Baffle plate and screw

TORQUE: 1 N·m (0.1 kgf·m , 0.7 lbf·ft)

- Jet holder
- Main jet
- New O-ring
- Washer
- Spring
- Pilot screw

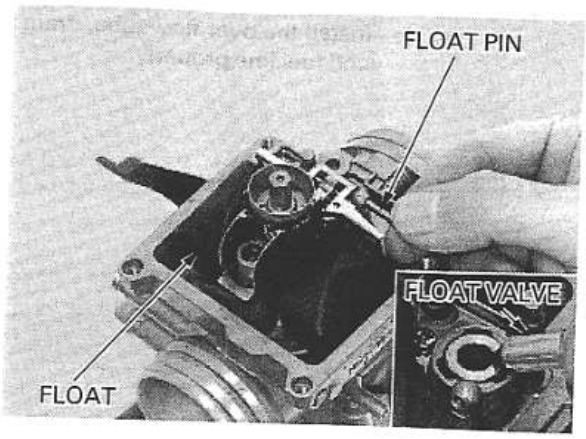


NOTE:

Return the pilot screw to its original position as noted during removal.

Perform pilot screw adjustment if new pilot screw is installed (page 5-15).

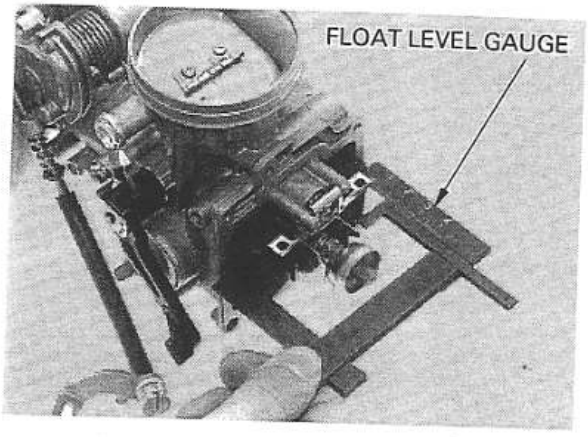
Install the following:
– Float valve
– Float
– Float pin



FLOAT LEVEL INSPECTION

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.



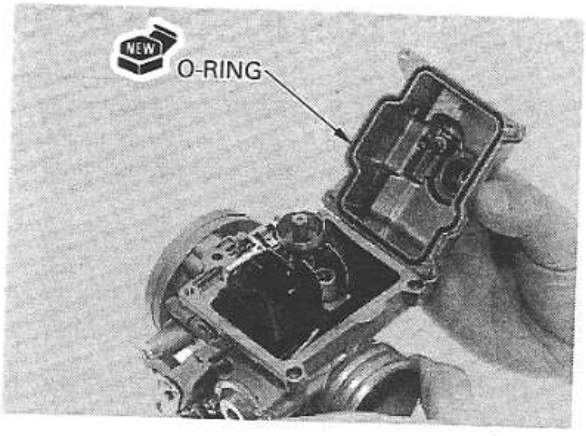
Set the carburetor so that the float valve just contacts the float arm lip. Be sure that the float valve tip is securely in contact with the valve seat.
Check the float level with the float level gauge.

FLOAT LEVEL: 16.0 mm (0.63 in)

TOOL:
Carburetor float level gauge 07401-0010000

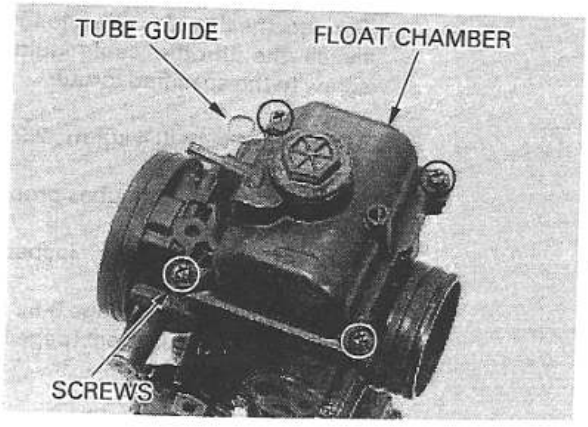
If the level is out of specification, adjust the float level by carefully bending the float tang.

Install a new O-ring to the float chamber.

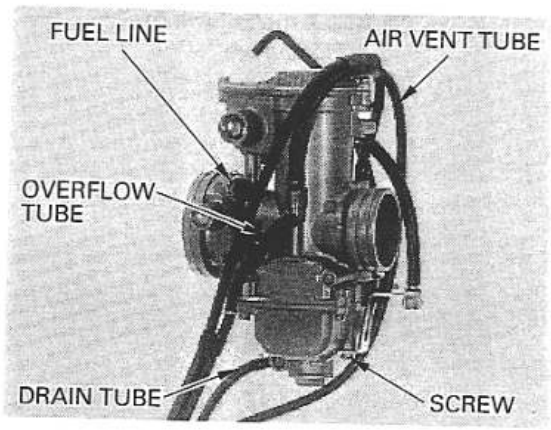


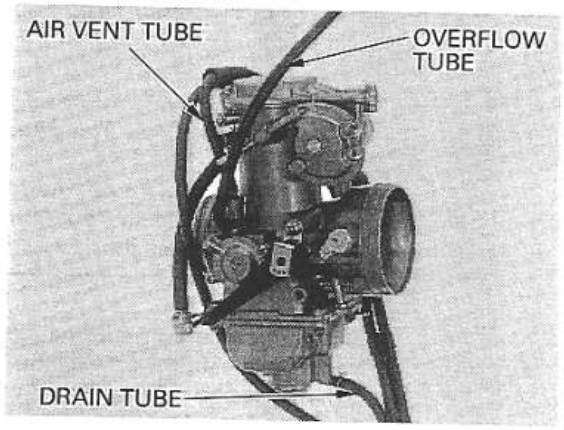
Install the float chamber and screws with the tube guide.
Tighten the screws to the specified torque.

TORQUE: 2 N·m (0.2 kgf·m , 1.4 lbf·ft)



Install the over flow tube, drain tube, air vent tubes and fuel line properly.





CARBURETOR INSTALLATION

Install the carburetor from the right side of the engine.
Tighten the carburetor insulator clamp screw and connecting tube clamp screw.

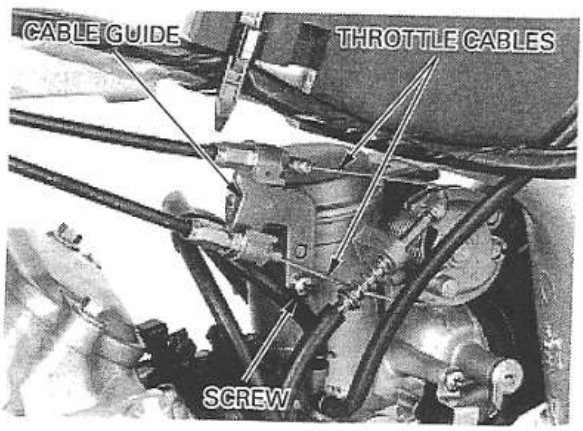


Connect the throttle cables to the throttle drum.
Install the throttle cable guide and tighten the screw to the specified torque.

TORQUE: 4 N·m (0.4 kgf·m , 2.9 lbf·ft)

Route the cables and tubes properly (page 1-20).

Perform the following inspections and adjustments:
– Throttle operation (page 3-5).
– Pilot screw adjustment (page 5-15)



PILOT SCREW ADJUSTMENT

IDLE DROP PROCEDURE

⚠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.***

NOTE:

- The pilot screw is factory pre-set and no adjustment is necessary unless it is replaced.
- Use a tachometer with graduations of 50 rpm or smaller that will accurately indicate a 50 rpm change.

1. Turn the pilot screw clockwise until it seats lightly, then back it out to specification given. This is an initial setting prior to the final pilot screw adjustment.

INITIAL OPENING: 1 3/4 turns out

CAUTION:

Damage to the pilot screw seat will occur if the pilot screw is tightened against the seat.

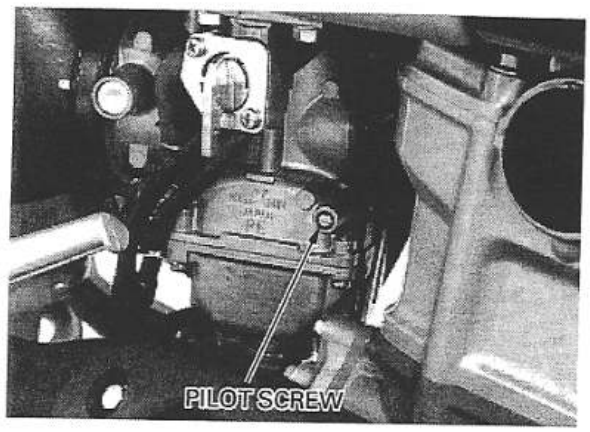
2. Warm up the engine to operating temperature. Stop and go riding for 10 minutes is sufficient.
3. Attach a tachometer according to its manufacturer's instructions.
4. Start the engine and adjust the engine idle speed to the specified rpm with the throttle stop screw.

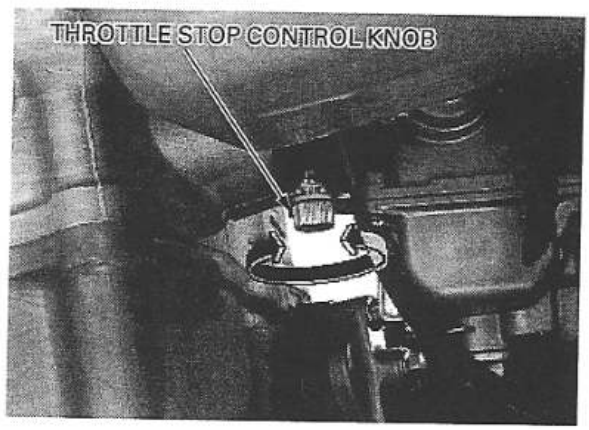
IDLE SPEED: 1,400 ± 100 min^{-1} (rpm)

5. Turn the pilot screw in or out slowly to obtain the highest engine speed.
6. Readjust the idle speed with the throttle stop control knob.
7. Lightly open the throttle 2−3 times, then adjust the idle speed with the throttle stop control knob.
8. Turn the pilot screw in gradually until the engine speed drops 100 rpm.
9. Turn the pilot screw counterclockwise the number of turns to the specification given.

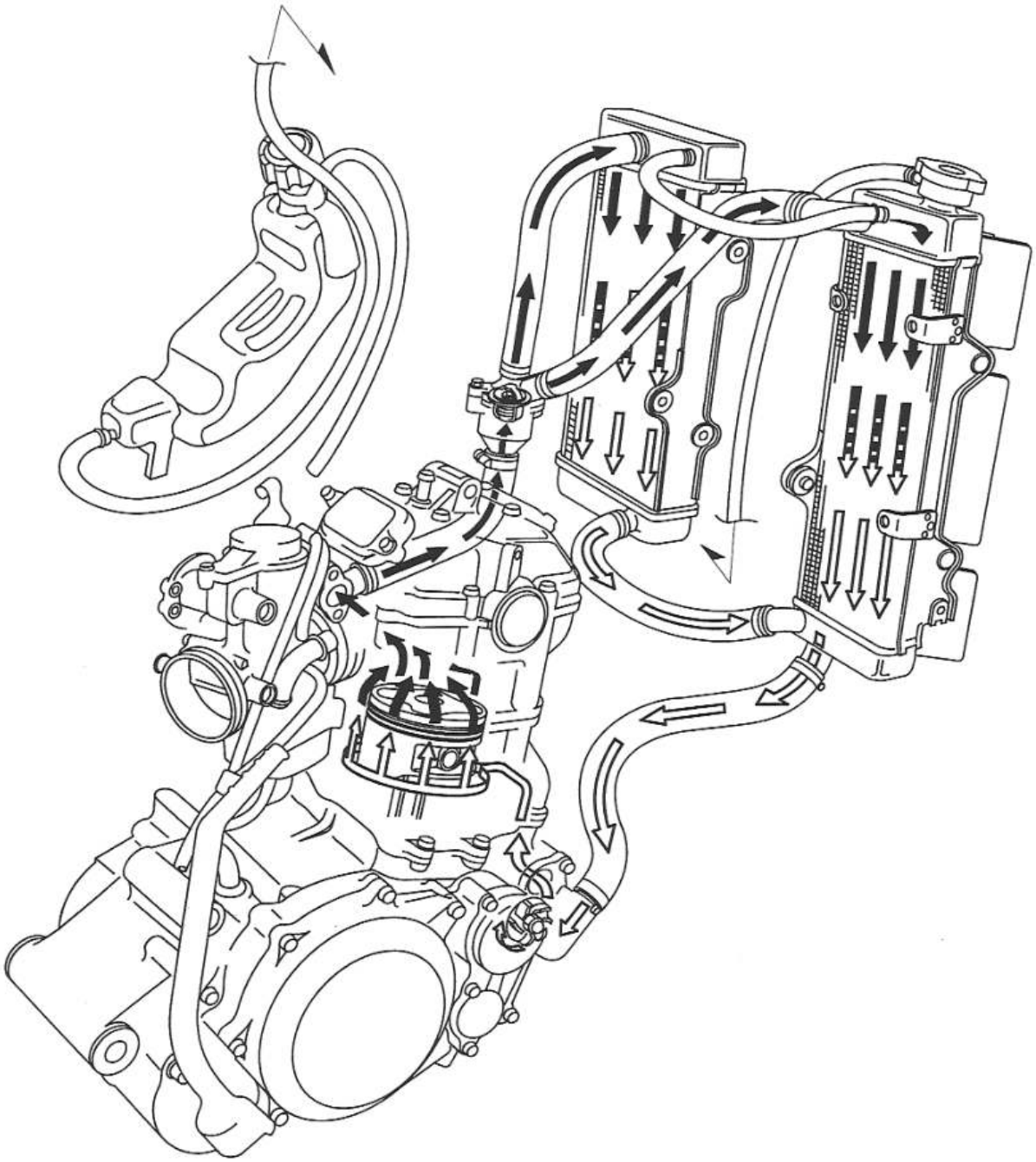
FINAL OPENING: 3/4 turns out

10. Readjust the idle speed with the throttle stop control knob.





SYSTEM FLOW PATTERN



6. COOLING SYSTEM

SYSTEM FLOW PATTERN	6-0	THERMOSTAT	6-6
SERVICE INFORMATION	6-1	RADIATOR	6-8
TROUBLESHOOTING	6-2	WATER PUMP	6-10
SYSTEM TESTING	6-3	RADIATOR RESERVE TANK	6-12
COOLANT	6-4		

SERVICE INFORMATION

GENERAL

WARNING

- ***Wait until the engine is cool before slowly removing the radiator cap. Removig 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 in swallowed, induce vomiting, gargle and consult a physician immediately.***
  - ***If any coolant gets on your skin or clothes, rince thoroughly with plenty of water.***
- ***KEEP OUT OF REACH OF CHILDREN.***

CAUTION:

Using coolant with silicate corrosion inhibitors may cause premature wear of water pump seals or blockage of radiator passages.
Using tap water may cause engine damage.

- All cooling system services can be done with the engine in the frame.
- Add coolant at the reserve tank. Do not remove the radiator cap except to refill or drain the system.
- Avoid spilling coolant on painted surfaces.
- After servicing the system, check for leaks with a cooling system tester.

SPECIFICATIONS

ITEM		SPECIFICATIONS
Coolant capacity	Radiator and engine	1.52 ℓ (1.61 US qt , 1.34 Imp qt)
	Reserve tank	0.20 ℓ (0.21 US qt , 0.18 Imp qt)
Radiator cap relief pressure		108−137 kPa (1.1−1.4 kgf/cm², 16−20 psi)
Thermostat	Begin to open	80−84 °C (176−183 °F)
	Fully open	95 °C (203 °F)
	Valve lift	8 mm (0.3 in) minimum
Standard coolant concentration		50 % mixture with soft water

TORQUE VALUES

Water pump assembly bolt	13 N·m (1.3 kgf·m , 9 lbf·ft)	CT bolt
Thermostat housing cover bolt	12 N·m (1.2 kgf·m , 9 lbf·ft)	

TROUBLESHOOTING

ENGINE TEMPERATURE TOO HIGH
- 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
- Thermostat stuck open

COOLANT LEAK
- Faulty water pump mechanical seal
- Deteriorated O-rings
- Damaged or deteriorated gasket
- Loose hose connection or clamp
- Damaged or deteriorated hose
- Faulty radiator cap

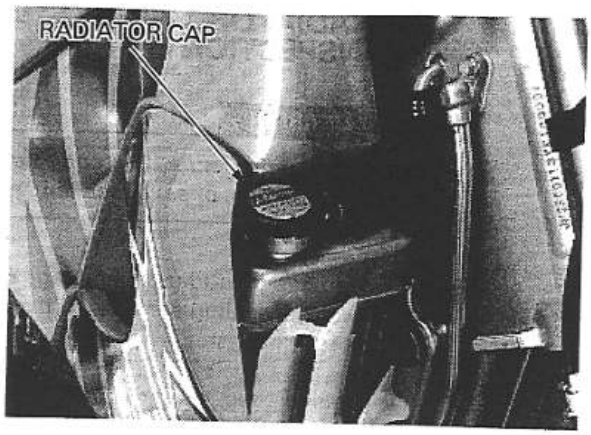
SYSTEM TESTING

⚠WARNING

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

COOLANT (HYDROMETER TEST)

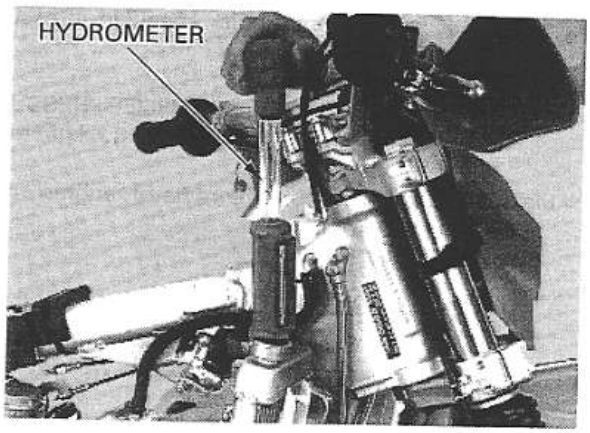
Remove the radiator cap.



If the tester cannot be attached, remove the fuel tank.

Test the coolant gravity using a hydrometer.

STANDARD COOLANT CONCENTRATION:
50 % mixture with soft water



Look for contamination and replace the coolant if necessary.

COOLANT GRAVITY CHART

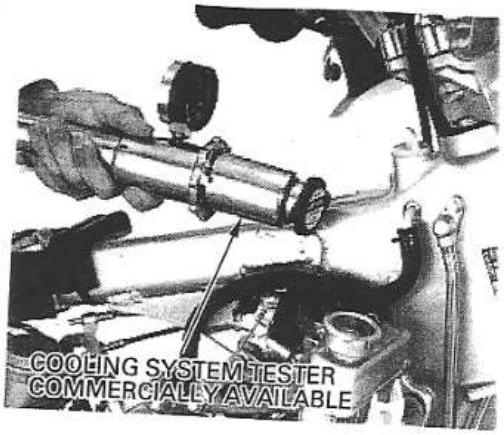
Coolant temperature °C (°F) / Coolant ratio %	0 (32)	5 (41)	10 (50)	15 (59)	20 (68)	25 (77)	30 (86)	35 (95)	40 (104)	45 (113)	50 (122)
5	1.009	1.009	1.008	1.008	1.007	1.006	1.005	1.003	1.001	0.999	0.997
10	1.018	1.017	1.017	1.016	1.015	1.014	1.013	1.011	1.009	1.007	1.005
15	1.028	1.027	1.026	1.025	1.024	1.022	1.020	1.018	1.016	1.014	1.012
20	1.036	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	1.076	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 radiator cap (page 6-3).
Wet the sealing surfaces of the cap, then install the cap to the tester.



Pressure test the radiator cap.
Replace the radiator cap if it 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/cm², 16–20 psi)

If the tester cannot be attached, remove the fuel tank.

Pressure 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/cm², 20 psi).

Check the following components if the system will not hold specified pressure for at least 6 seconds.
- All hoses and connections
- Water pump installation
- Water pump seal (for leakage)
- Deformed radiator filler neck

COOLANT

⚠WARNING

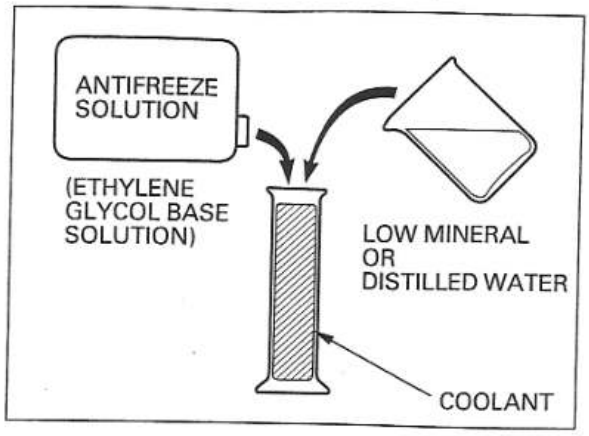
- ***Radiator coolant is toxic. Keep it away from eyes, mouth, skin and clothes.***
  - ***If any coolant gets in your eyes, rinse them with water and consult a doctor immediately.***
  - ***If any coolant in swallowed, induce vomiting, gargle and consult a physician immediately.***
  - ***If any coolant gets on your skin or clothes, rinse thoroughly with plenty of water.***
- ***KEEP OUT OF REACH OF CHILDREN.***

CAUTION:

Using coolant with silicate corrosion inhibitors may cause premature wear of water pump seals or blockage of radiator passages. Using tap water may cause engine damage.

NOTE:

- The effectiveness of the 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 recommended anti-freeze.



RECOMMENDED ANTIFREEZE:
High quality ethylene glycol antifreeze containing silicate-free corrosion protection inhibitors

RECOMMENDED MIXTURE:
50—50 (Distilled water and antifreeze)

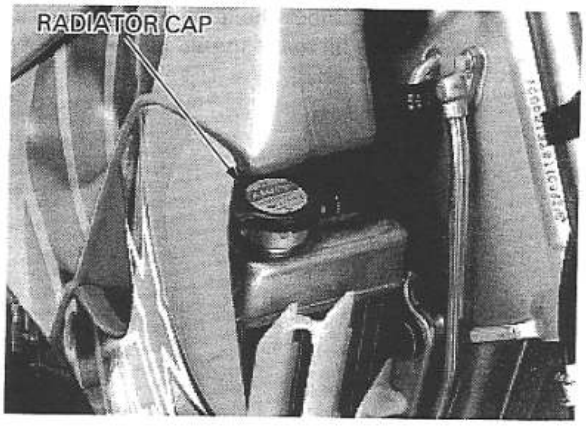
REPLACEMENT/AIR BLEEDING

⚠WARNING

The engine must be cool before servicing the cooling system, or severe scalding may result.

NOTE:

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

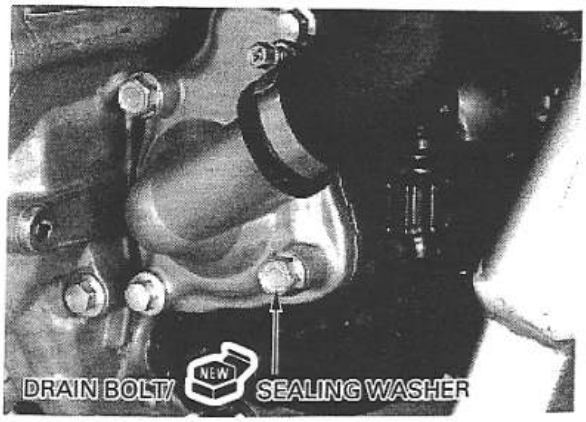


Remove the radiator cap.

Drain the coolant from the system by removing the drain bolt and sealing washer on the water pump cover.

Reinstall the drain bolt with a new sealing washer. Tighten the drain bolt to the specified torque.

TORQUE: 13 N·m (1.3 kgf·m , 9 lbf·ft)

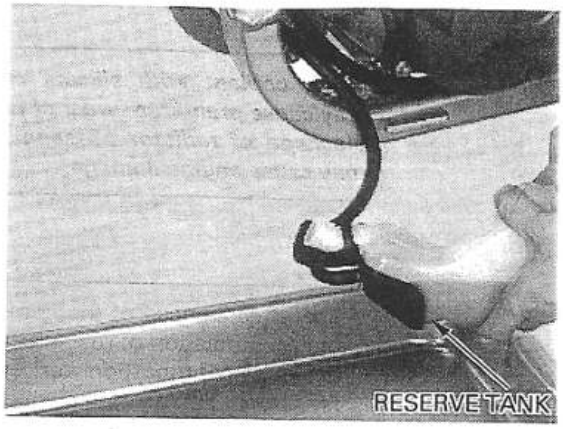


Remove the reserve tank (page 6-12).

Remove the reserve tank cap from the reserve tank and drain the reserve coolant.

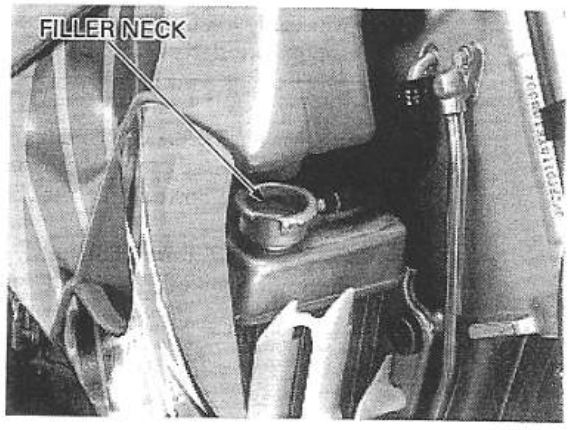
Empty the coolant and rinse the inside of the reserve tank with water.

Install the reserve tank (page 6-12).

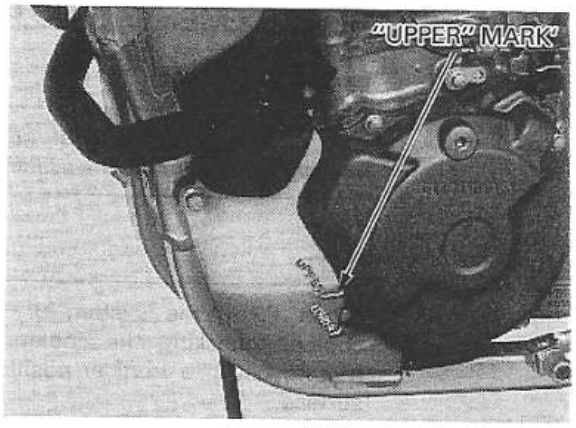


Fill the system with the recommended coolant through the filler opening up to filler neck.
Remove the reserve tank cap and fill the reserve tank to the upper level line.

Bleed air from the system as follows:
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.

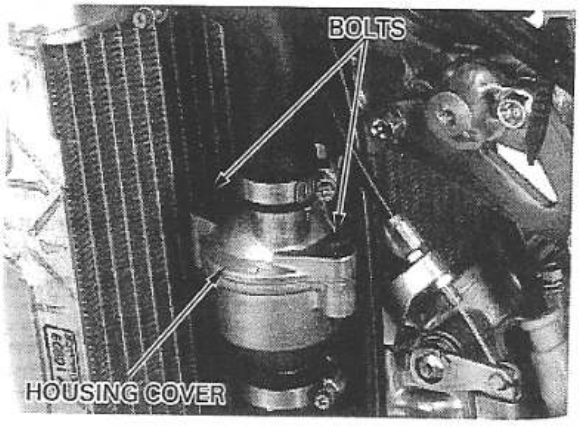


THERMOSTAT

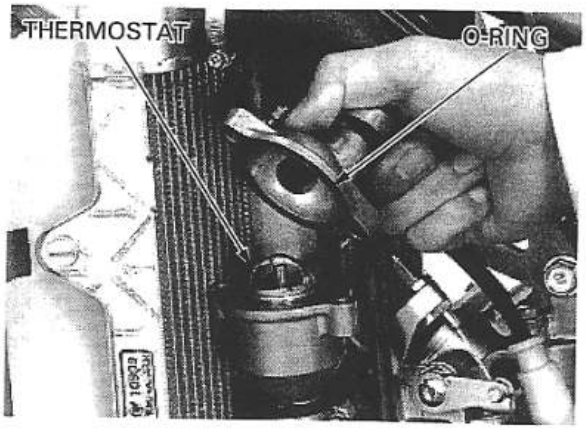
REMOVAL

Remove the fuel tank (page 2-5).
Drain the coolant (page 6-5).

Remove the thermostat housing cover bolts and cover.



Remove the O-ring from the housing cover.
Remove the thermostat from the housing.



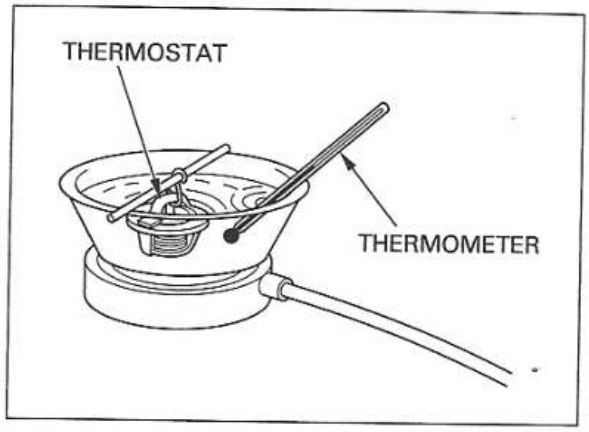
INSPECTION

⚠WARNING

- ***Wear insulated gloves and adequate eye protection.***
- ***Keep flammable materials away from the electric heating element.***

NOTE:

Replace the thermostat if valve stays open at room temperature, or if it responds at temperatures other than those specified.



Visually inspect the thermostat for damage.

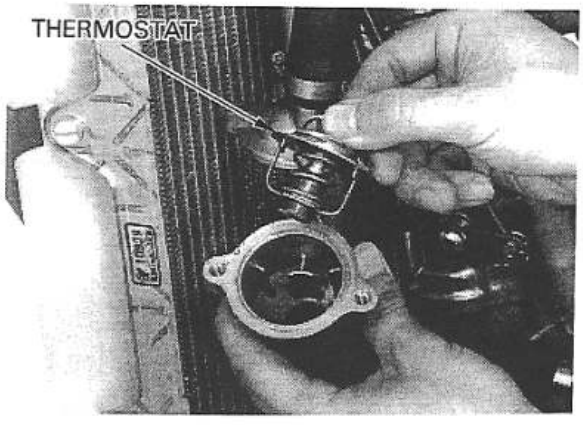
Do not let the thermostat touch the pan, or you will get false readings.

Heat the water with an electric heating element to operating temperature for 5 minutes.
Suspended the thermostat in heated water to check its operation.

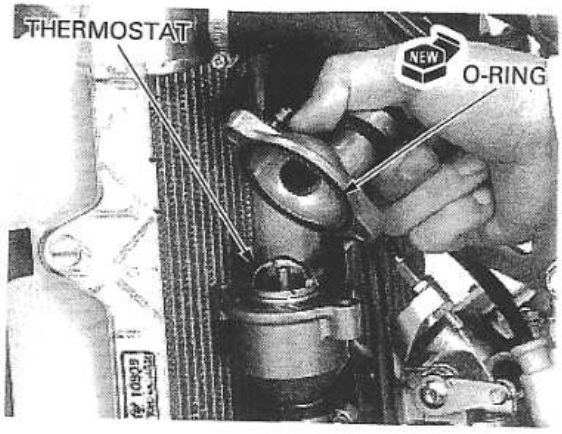
THERMOSTAT BEGINS TO OPEN:
80—84 °C (176—183 °F)
VALVE LIFT:
8 mm (0.3 in) minimum at 95°C (203°F)

INSTALLATION

Install the thermostat by aligning it with the groove in the housing.



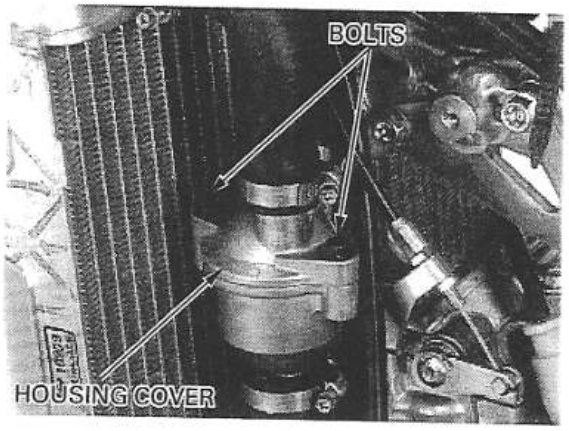
Install a new O-ring into the housing cover.



Install the thermostat housing cover.
Install and tighten the housing cover bolts to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m , 9 lbf·ft)

Install the fuel tank (page 2-5).
Fill and bleed the cooling system (page 6-6).



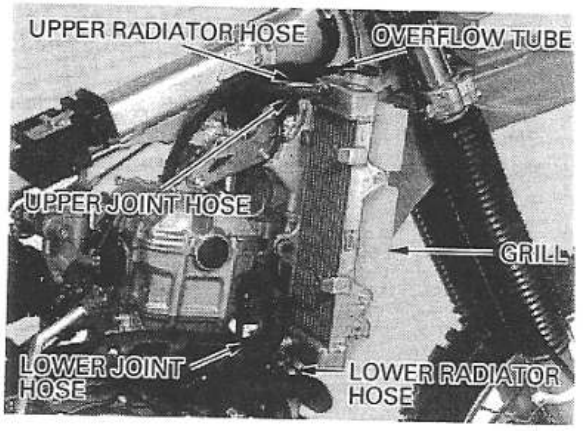
RADIATOR

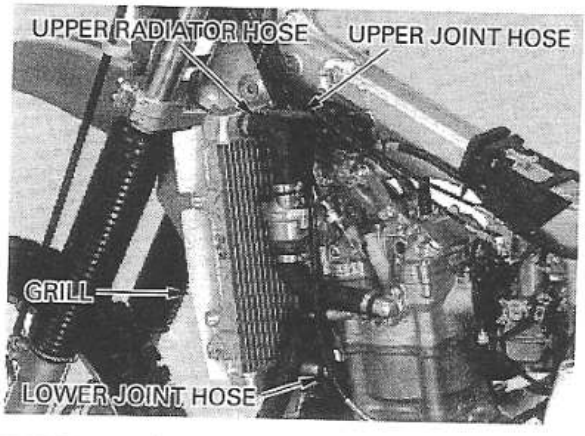
REMOVAL

Remove the fuel tank (page 2-5).
Drain the coolant (page 6-5).

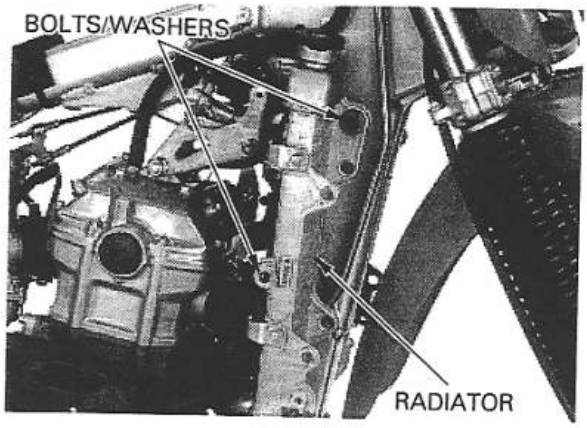
Be careful not to damage the radiator fins.

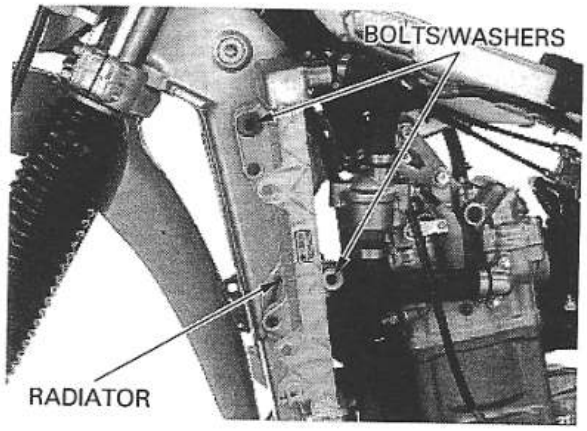
Remove the following:
- Right and left radiator grills
- Coolant overflow tube
- Upper and lower joint hoses
- Upper and lower radiator hoses



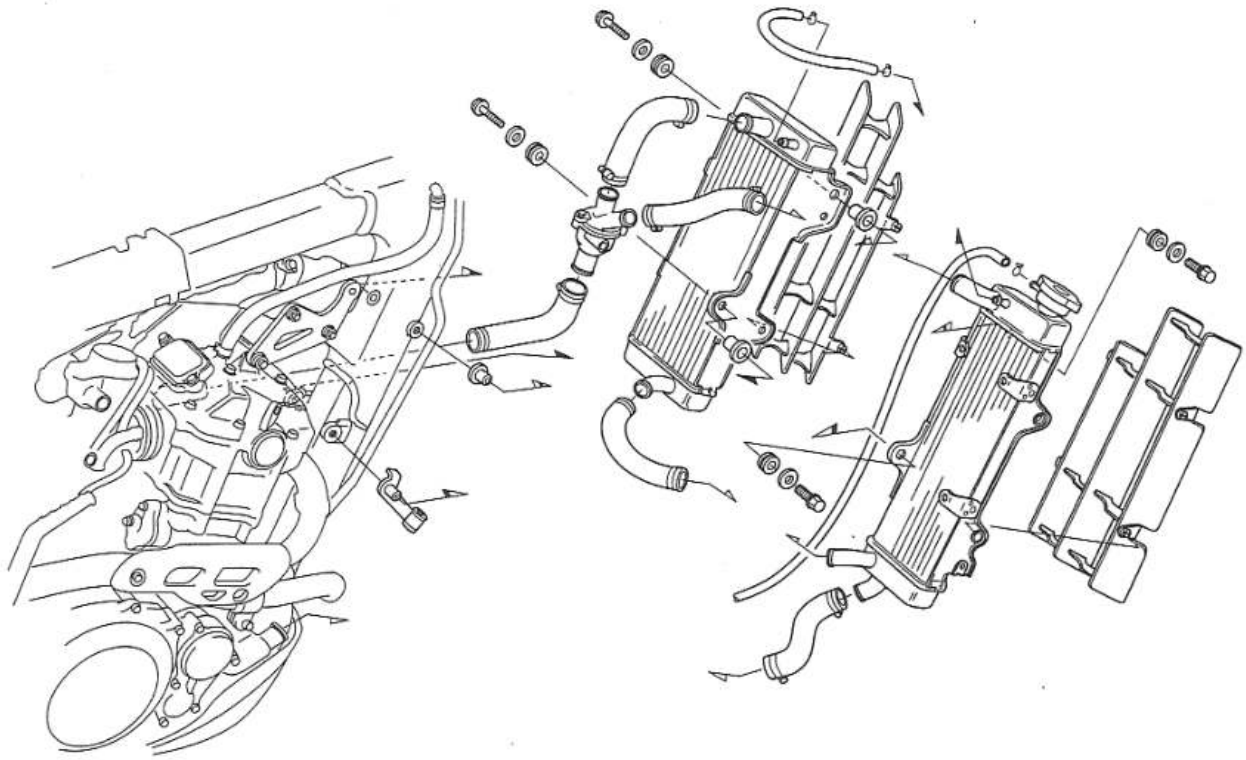


Remove the bolts and radiators from the frame.





INSTALLATION



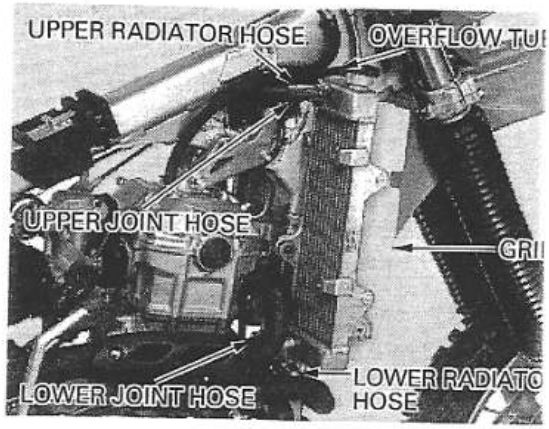
Be careful not to damage the radiator fins.

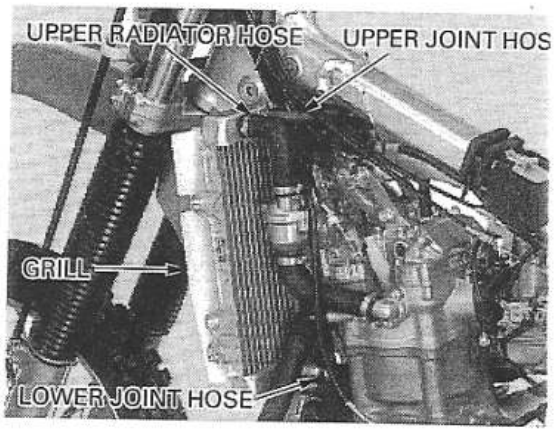
Installation is essentially the reverse order of removal.

Add the recommended coolant mixture up to the filler neck and bleed the air (page 6-5).

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

Install the fuel tank (page 2-5).

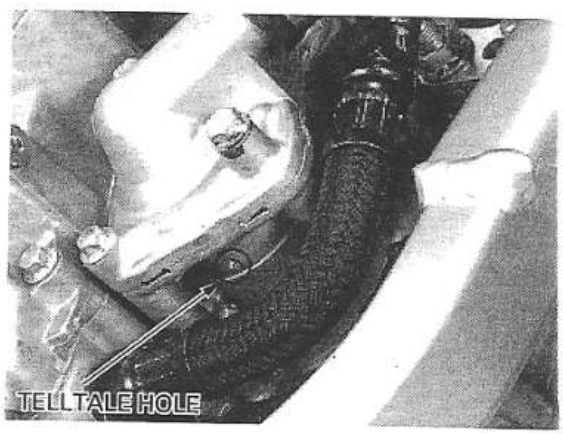




WATER PUMP

MECHANICAL SEAL INSPECTION

Inspect the telltale hole for signs of coolant leakage. If there is leakage, the mechanical seal is defective and replace the water pump as an assembly.

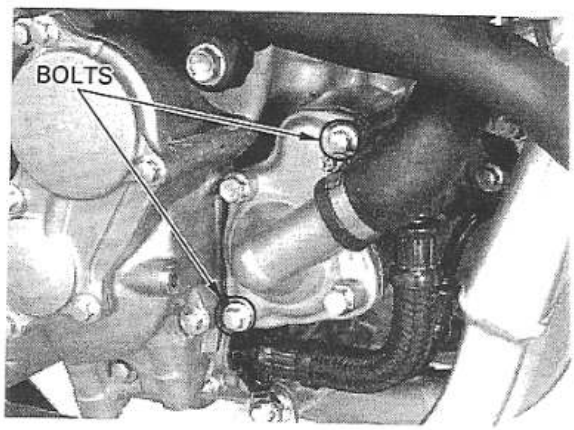


REMOVAL

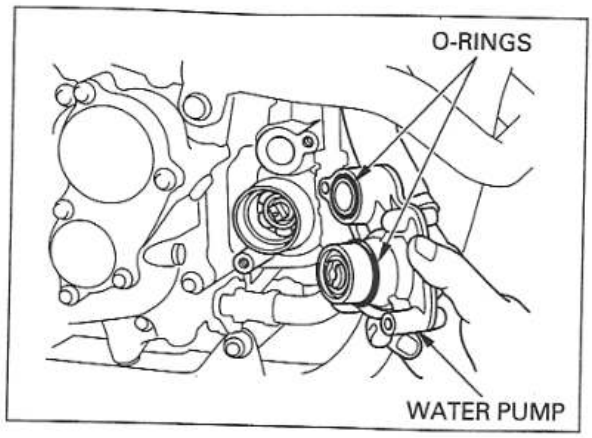
Drain the coolant (page 6-5).

Do not disassemble the water pump. Replace the pump as an assembly if it is damaged.

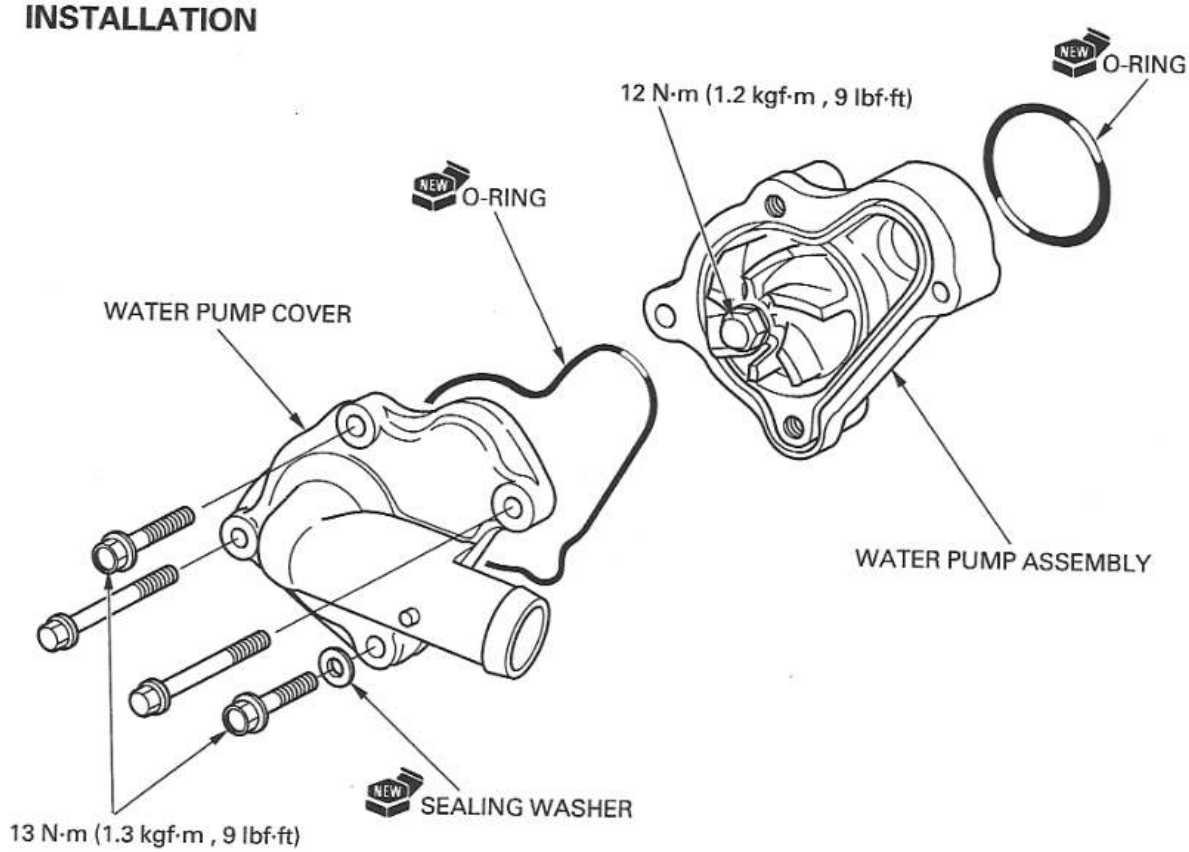
Remove the bolts and water pump assembly from the crankcase.



Remove the O-rings from the water pump.

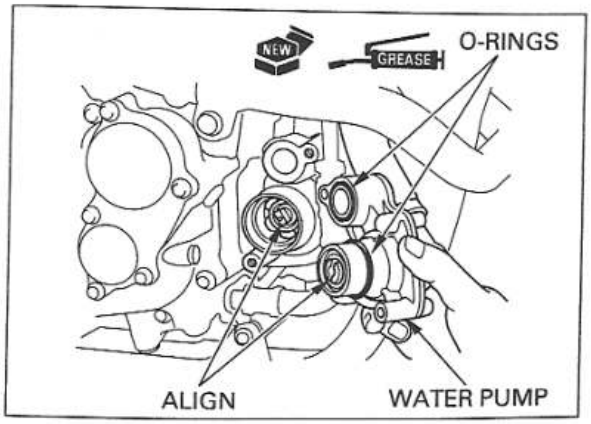


INSTALLATION

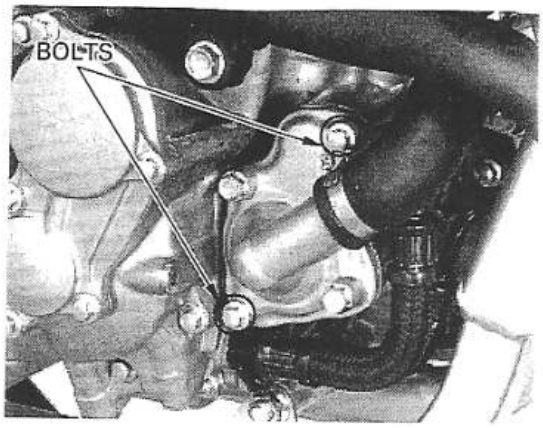


Apply a thin coat of grease to the new O-rings and install it in the water pump grooves.

Align the water pump shaft groove with the balancer gear shaft and install the water pump to the crankcase.



Install and tighten the bolts securely.
Fill the system with the recommended coolant (page 6-6).



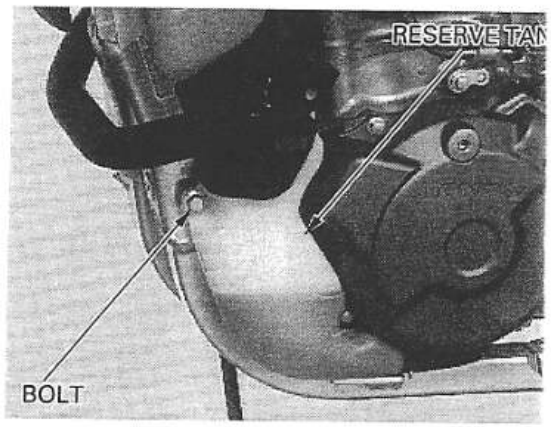
RADIATOR RESERVE TANK

REMOVAL/INSTALLATION

Remove the skid plate (page 2-11).

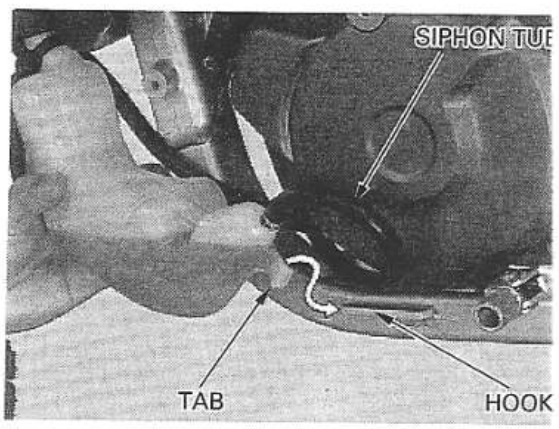
Place a suitable container under the radiator overflow tube joint of the reserve tank.

Remove the reserve tank mounting bolt.
Release the reserve tank tab from the frame hook and remove the reserve tank.
Disconnect the radiator siphon tube from the reserve tank.

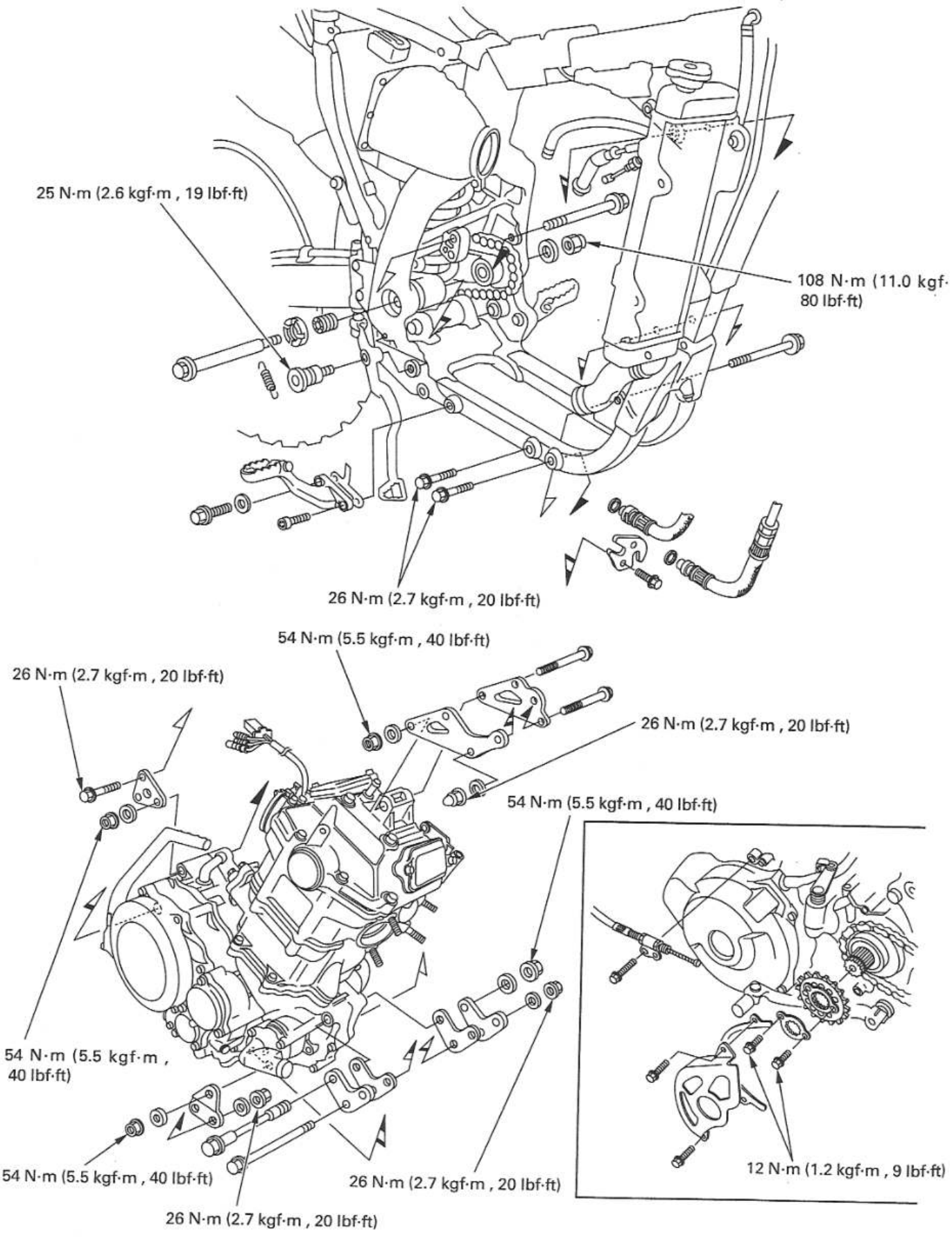


Remove the reserve tank cap from the reserve tank and drain the coolant if necessary.

Installation is in the reverse order of removal.



MEMO


25 N·m (2.6 kgf·m , 19 lbf·ft)
108 N·m (11.0 kgf·
80 lbf·ft)
26 N·m (2.7 kgf·m , 20 lbf·ft)
54 N·m (5.5 kgf·m , 40 lbf·ft)
26 N·m (2.7 kgf·m , 20 lbf·ft)
26 N·m (2.7 kgf·m , 20 lbf·ft)
54 N·m (5.5 kgf·m , 40 lbf·ft)
54 N·m (5.5 kgf·m ,
40 lbf·ft)
54 N·m (5.5 kgf·m , 40 lbf·ft)
26 N·m (2.7 kgf·m , 20 lbf·ft)
26 N·m (2.7 kgf·m , 20 lbf·ft)
12 N·m (1.2 kgf·m , 9 lbf·ft)

7. ENGINE REMOVAL/INSTALLATION

SERVICE INFORMATION	7-1	ENGINE INSTALLATION	7-5
DRIVE SPROCKET REMOVAL	7-2	DRIVE SPROCKET INSTALLATION	7-8
ENGINE REMOVAL	7-3		

SERVICE INFORMATION

GENERAL

- During engine removal and installation, support the motorcycle using a work stand.
- The following components can be serviced with the engine installed in the frame.
  - Alternator (Section 11)
  - Carburetor (Section 5)
  - Clutch/kickstarter/gearshift linkage (Section 10)
  - Cylinder head/valves (Section 8)
  - Cylinder/piston (Section 9)
  - Oil pump (Section 4)
  - Water pump (Section 6)
- The following components require engine removal for service.
  - Crankshaft/balancer (Section 12)
  - Transmission (Section 13)

SERVICE DATA

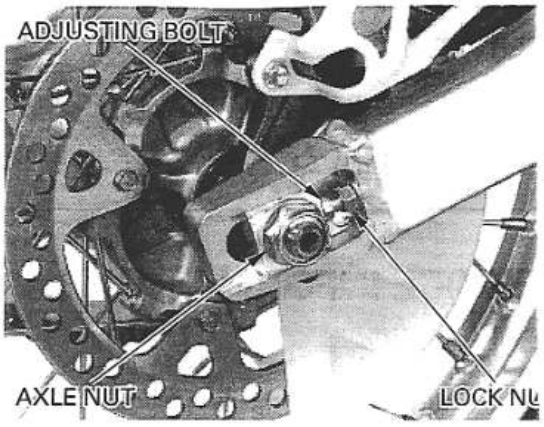
ITEM	SPECIFICATIONS
Engine dry weight	40.9 kg (90.2 lbs)
Coolant capacity (radiator and engine)	1.52 ℓ (1.61 US qt , 1.34 Imp qt)
Engine oil capacity at disassemble	2.0 ℓ (2.1 US qt , 1.8 Imp qt)

TORQUE VALUES

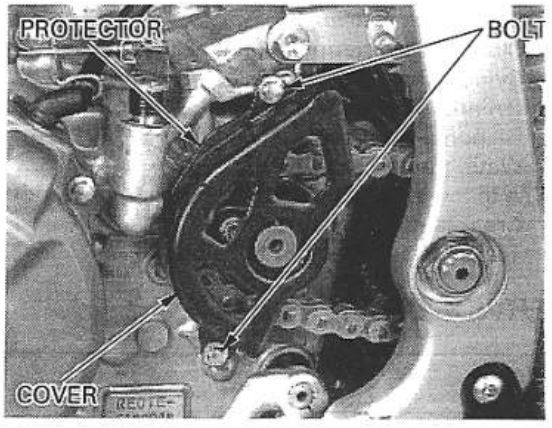
Engine hanger plate nut (8 mm)	26 N·m (2.7 kgf·m , 20 lbf·ft)
(10 mm)	54 N·m (5.5 kgf·m , 40 lbf·ft)
Swingarm pivot nut	108 N·m (11.0 kgf·m , 80 lbf·ft)
Brake pedal pivot bolt	25 N·m (2.6 kgf·m , 19 lbf·ft)
Right footpeg mounting bolt	54 N·m (5.5 kgf·m , 40 lbf·ft)
Drive sprocket bolt	12 N·m (1.2 kgf·m , 9 lbf·ft)

DRIVE SPROCKET REMOVAL

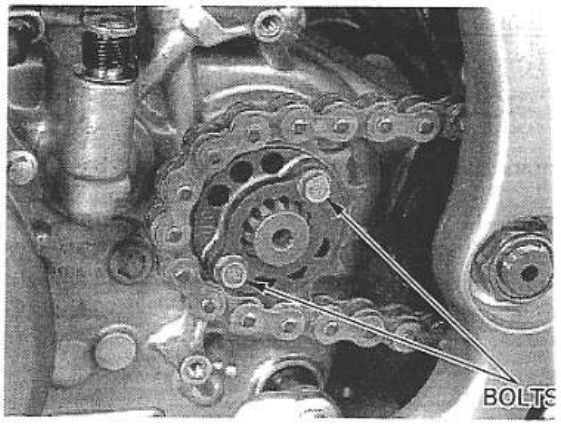
Loosen the rear axle nut and right/left drive chain adjuster lock nuts.
Turn the right/left adjusting bolts and push the rear wheel forward to loosen the drive chain.



Remove the drive sprocket cover bolts.
Remove the drive sprocket cover and drive chain protector.

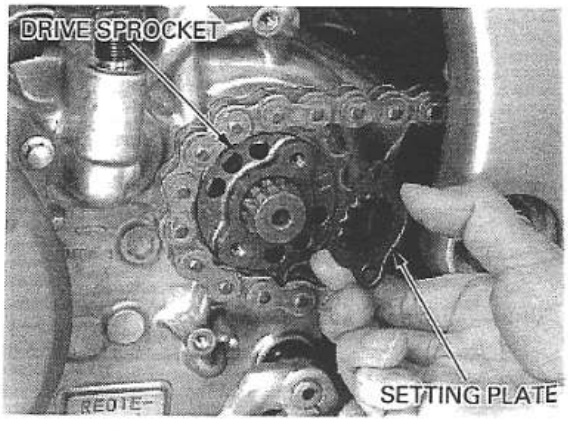


Remove the drive sprocket setting plate bolts.



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

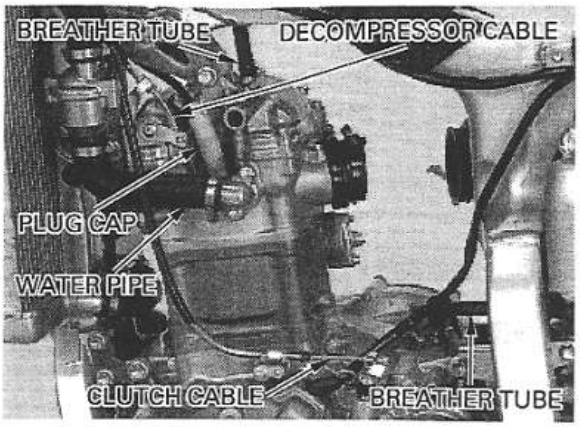
Remove the drive sprocket.



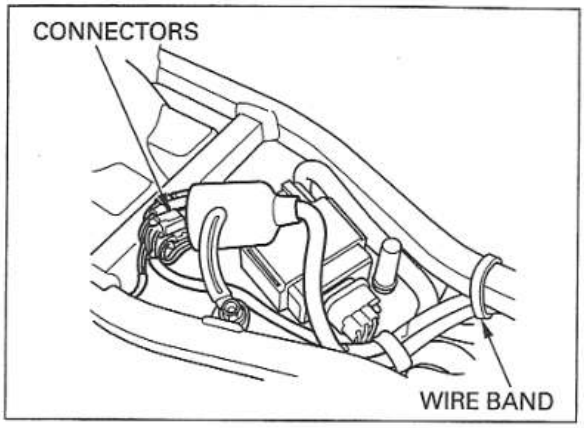
ENGINE REMOVAL

Drain the engine oil (page 3-10).
Drain the radiator coolant (page 6-5).

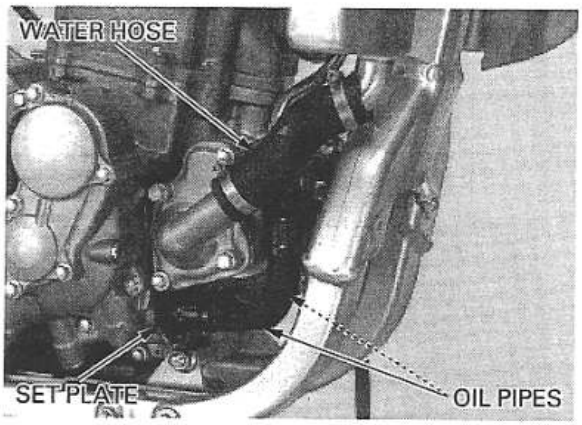
Remove the following:
- Seat (page 2-2)
- Fuel tank (page 2-5)
- Skid plate (page 2-11)
- Exhaust pipe (page 2-8)
- Carburetor (page 5-5)
- Coolant reserve tank (page 6-12)
- Drive sprocket (page 7-2)



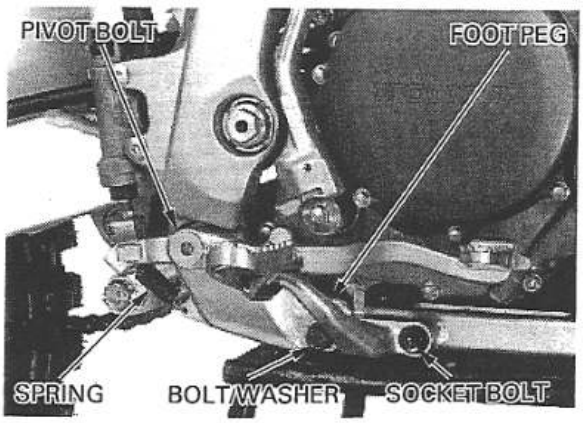
Disconnect the following:
- Spark plug cap
- Thermostat housing-to-cylinder head water pipe
- Decompressor cable
- Clutch cable
- Cylinder head cover breather tube
- Crankcase breather tube
- Alternator and ignition pulse generator connectors



Disconnect the water hose from the water pump cover.
Remove the bolts and oil pipe set plate.
Disconnect the oil pipes from the crankcase.

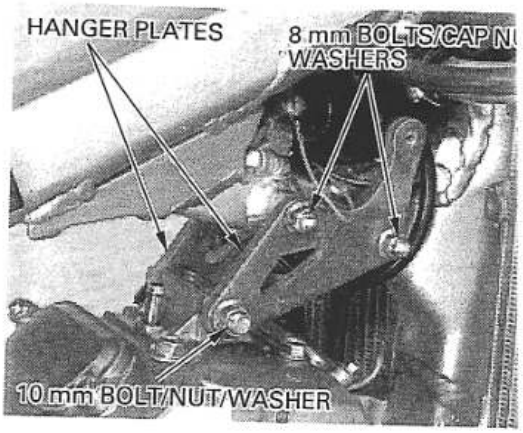


Remove the bolts, washer and right footpeg.
Remove the brake pedal pivot bolt and return spring.

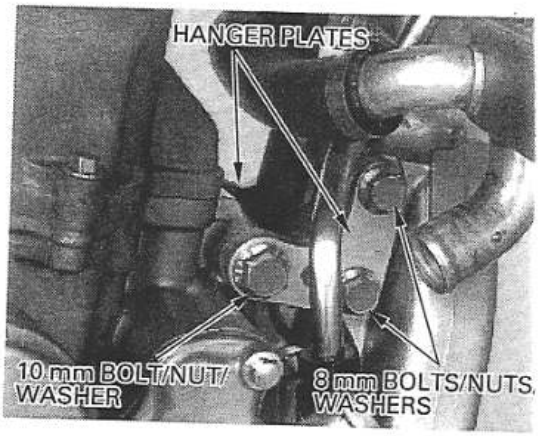


Place a work stand under the engine.

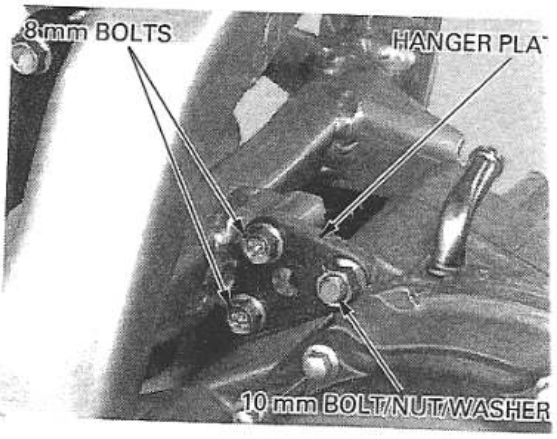
Remove the upper hanger plate 10 mm bolt/nut/washer.
Remove the upper hanger plate 8 mm bolts/cap nuts/washers and upper hanger plates.



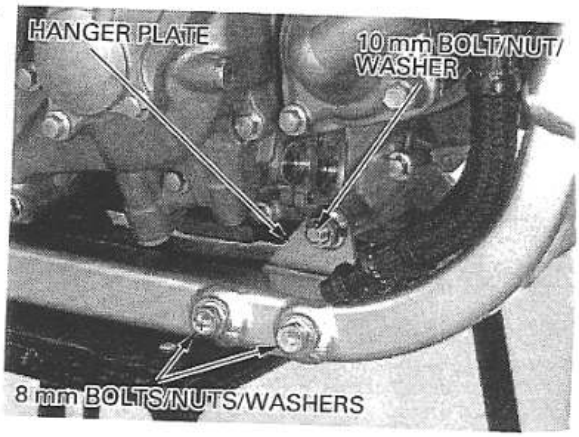
Remove the front hanger plate 10 mm bolt/nut/washer.
Remove the front hanger plate 8 mm bolts/nuts/washers and front hanger plates.



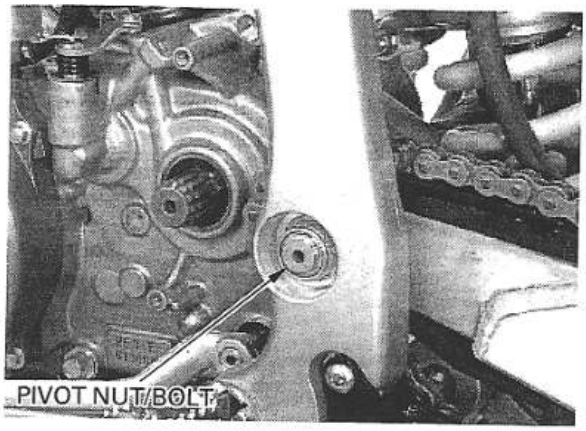
Remove the rear hanger plate 10 mm bolt/nut/washer.
Remove the rear hanger plate 8 mm bolts and rear hanger plate.



Remove the lower hanger plate 10 mm bolt/nut/washer.
Remove the lower hanger plate 8 mm bolts/nuts/washers and lower hanger plate.



Remove the swingarm pivot nut/bolt.

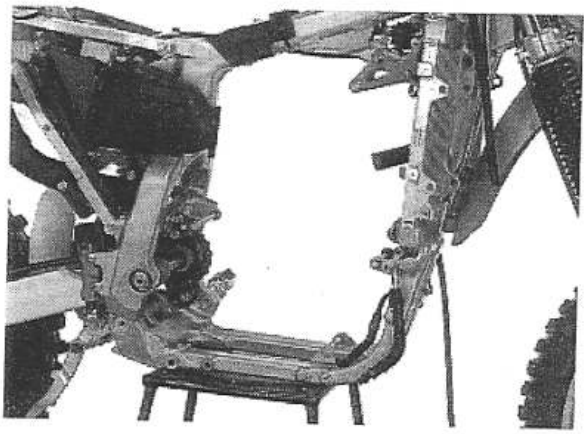


CAUTION:

During engine removal, hold the engine securely and be careful not to damage the frame, engine and radiator fins.

Remove the engine from the right side of the frame.

ENGINE INSTALLATION



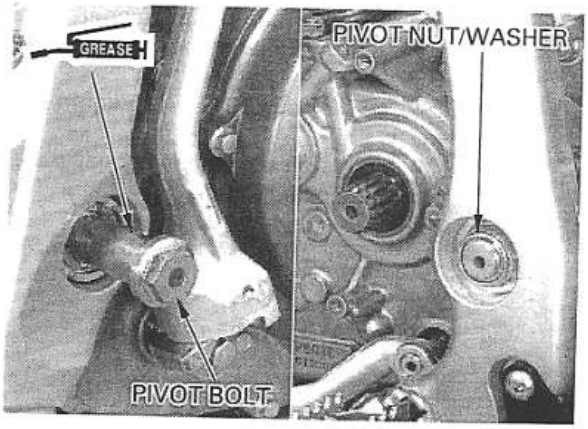
CAUTION:

Carefully align the mounting points to prevent damage to engine, frame, radiators, wires and cables.

NOTE:

- Install the swingarm pivot bolt first, then install the engine mounting bolts.
- All the engine mounting bolts and nuts loosely install, then tighten the bolts and nuts to the specified torque.

Install the engine in the frame from the right side. Carefully align the bolt holes in the frame and engine.



Apply a thin coat of grease on the swingarm pivot bolt sliding surface.
Install the swingarm pivot bolt from the right side.
Install the washer and swingarm pivot nut.

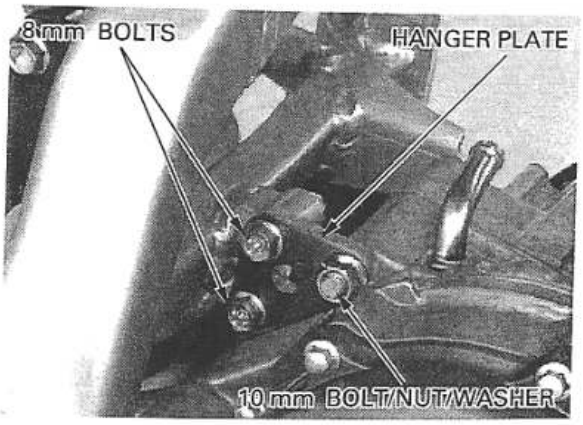
Temporarily install the all engine hanger bolts/nuts and engine mounting bolts/nuts.

Tighten the rear hanger plate 8 mm bolts to the specified torque.

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

Tighten the rear hanger plate 10 mm nut to the specified torque.

TORQUE: 54 N·m (5.5 kgf·m , 40 lbf·ft)

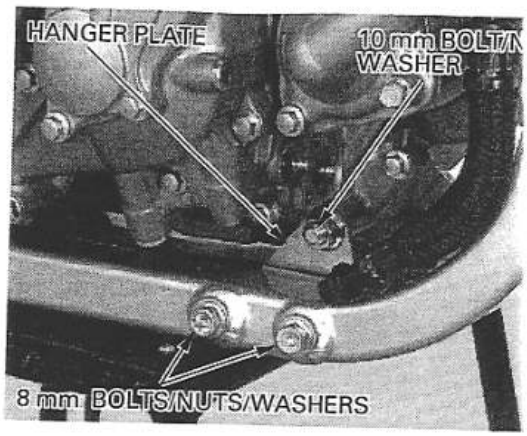


Tighten the lower hanger plate 8 mm nuts to the specified torque.

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

Tighten the lower hanger plate 10 mm nut to the specified torque.

TORQUE: 54 N·m (5.5 kgf·m , 40 lbf·ft)

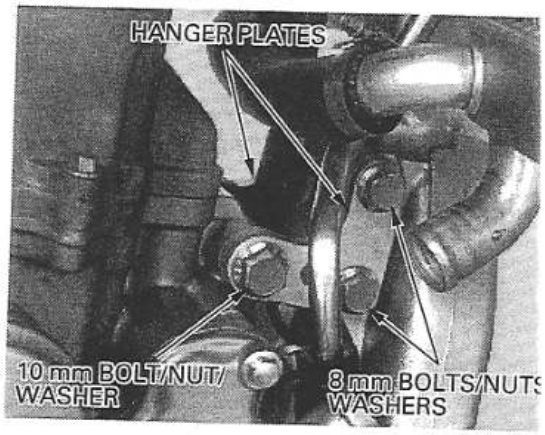


Tighten the front hanger plate 8 mm nuts to the specified torque.

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

Tighten the front hanger plate 10 mm nut to the specified torque.

TORQUE: 54 N·m (5.5 kgf·m , 40 lbf·ft)

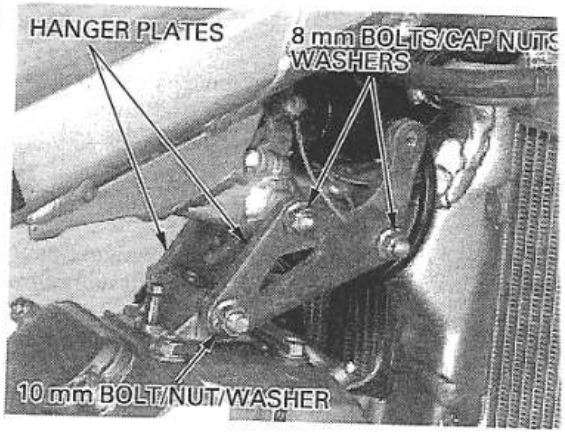


Tighten the upper hanger plate 8 mm cap nuts to the specified torque.

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

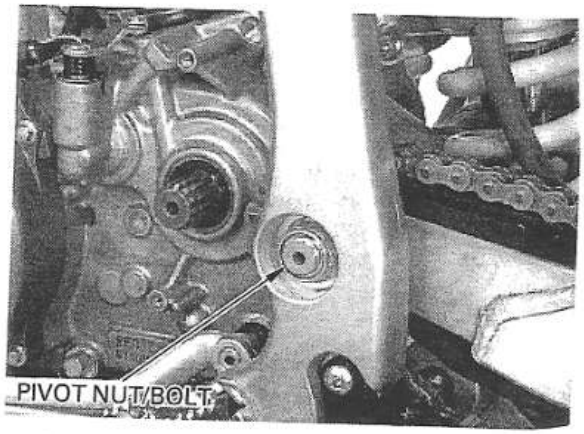
Tighten the upper hanger plate 10 mm nut to the specified torque.

TORQUE: 54 N·m (5.5 kgf·m , 40 lbf·ft)



Tighten the swingarm pivot nut to the specified torque.

TORQUE: 108 N·m (11.0 kgf·m , 80 lbf·ft)

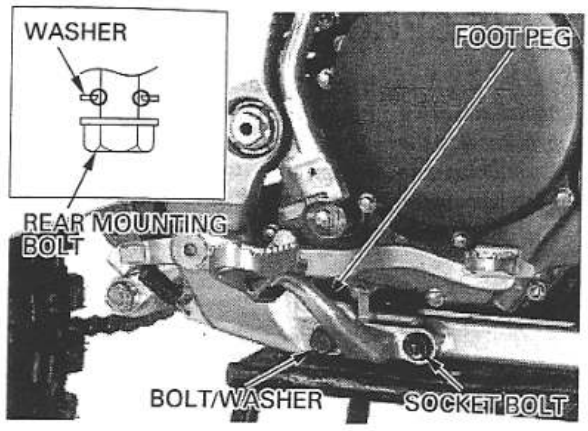


Install the brake pedal (page 16-19).

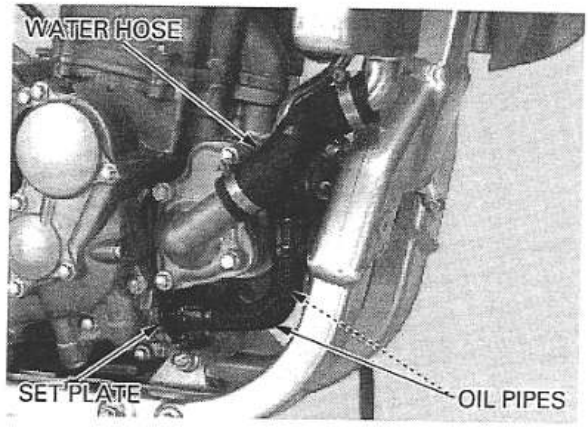
Install the right footpeg and front mounting bolt (socket bolt).
Install the rear mounting bolt (flange bolt) and washer with the washer's chamfered edge facing out.
Tighten the bolts to the specified torque.

Check that the washer is concentric with the rear mounting bolt.

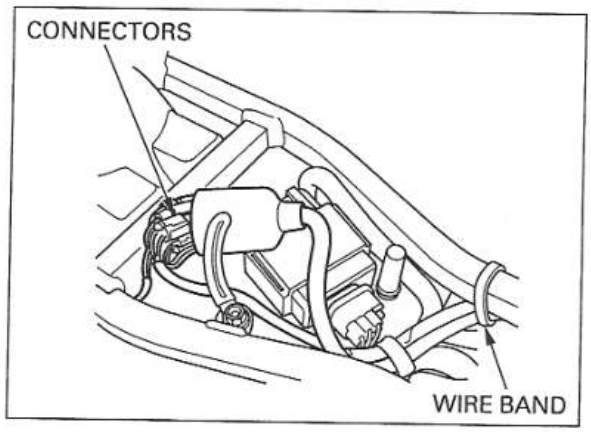
TORQUE: 54 N·m (5.5 kgf·m , 40 lbf·ft)



Connect the oil pipes to the crankcase.
Install the oil pipe set plate and tighten the bolts.
Connect the water hose to the water pump cover.

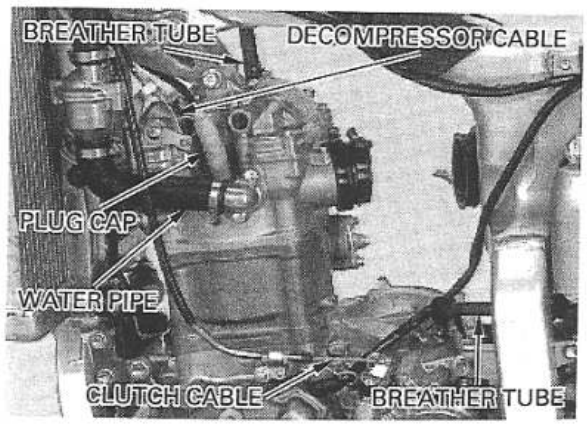


Connect the following:
- Alternator and ignition pulse generator connectors
- Crankcase breather tube
- Clutch cable
- Decompressor cable
- Thermostat housing-to-cylinder head water pipe
- Spark plug cap



Install the following:
- Drive sprocket (page 7-8)
- Coolant reserve tank (page 6-12)
- Carburetor (page 5-14)
- Exhaust pipe (page 2-10)
- Skid plate (page 2-11)
- Fuel tank (page 2-5)
- Seat (page 2-2)

Fill and bleed the cooling system (page 6-5)
Fill the engine with recommended engine oil (page 3-11)

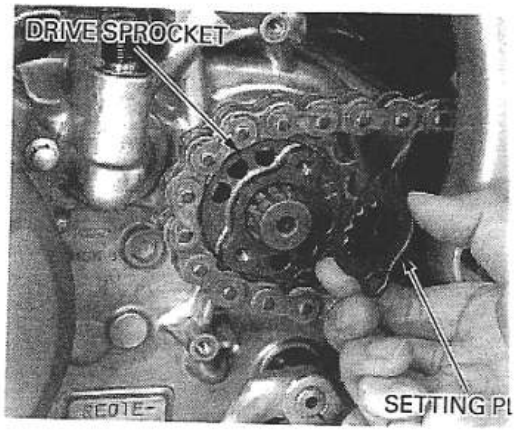


DRIVE SPROCKET INSTALLATION

Install the drive chain to the drive sprocket.
Install the drive sprocket to the countershaft.

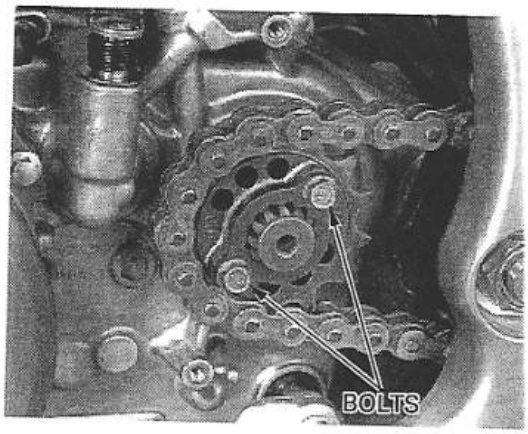
Install the drive sprocket with the sticking side facing outside.

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



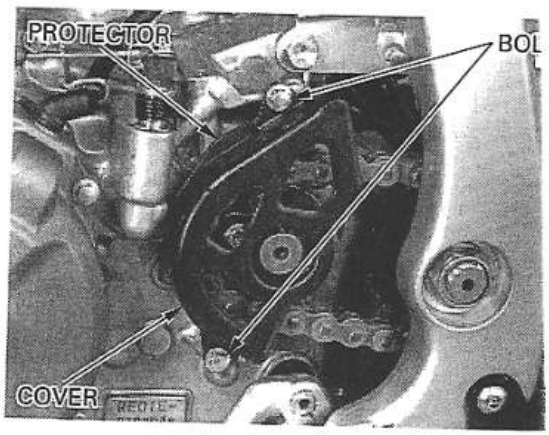
Install and tighten the bolts to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m , 9 lbf·ft)

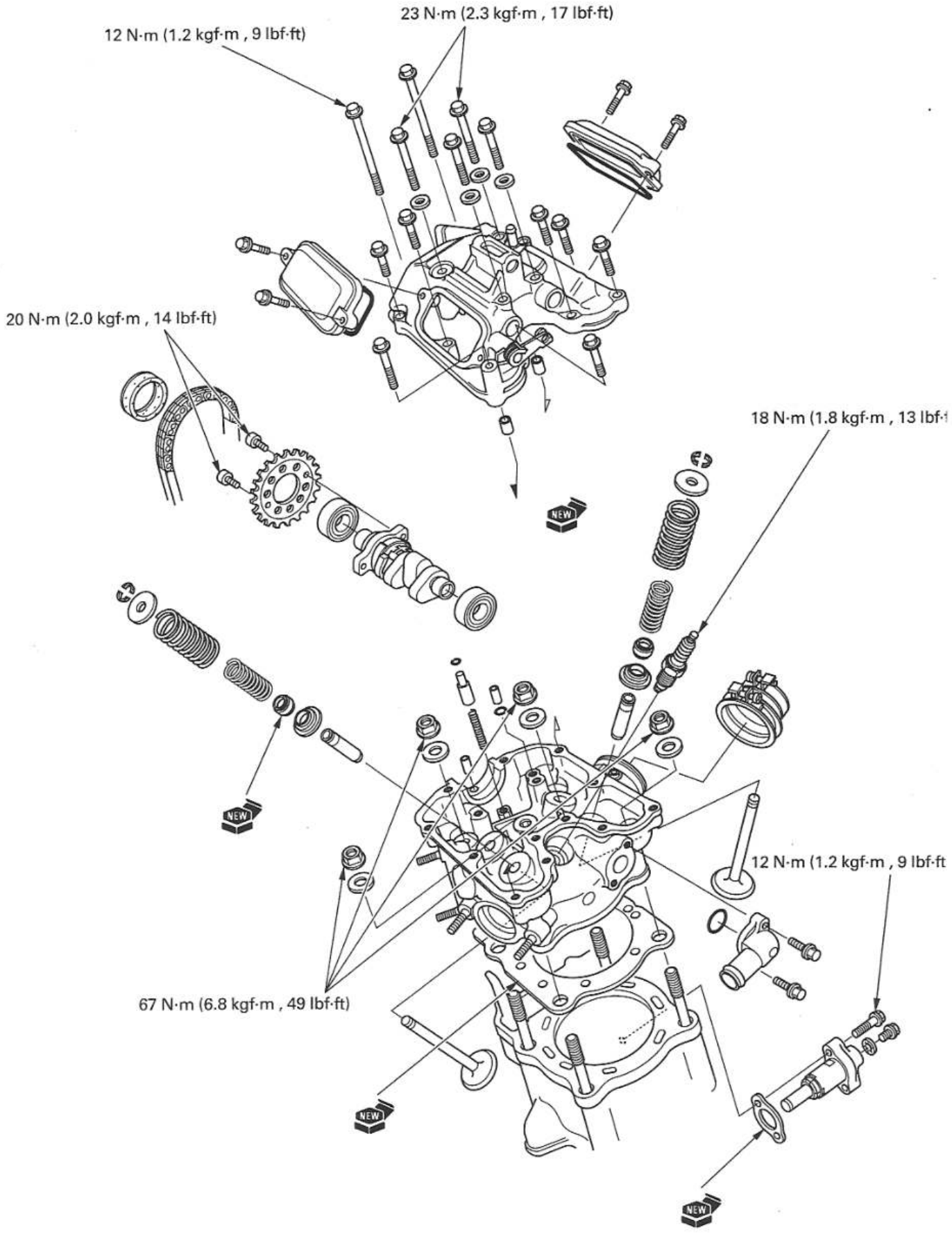


Install the drive chain protector and drive sprocket cover.
Install and tighten the bolts.

After installation, adjust the drive chain slack (page 3-15).



MEMO


23 N·m (2.3 kgf·m , 17 lbf·ft)
12 N·m (1.2 kgf·m , 9 lbf·ft)
20 N·m (2.0 kgf·m , 14 lbf·ft)
18 N·m (1.8 kgf·m , 13 lbf·
NEW
12 N·m (1.2 kgf·m , 9 lbf·ft
67 N·m (6.8 kgf·m , 49 lbf·ft)

8. CYLINDER HEAD/VALVES

SERVICE INFORMATION	8-1	VALVE GUIDE REPLACEMENT	8-13
TROUBLESHOOTING	8-3	VALVE SEAT INSPECTION AND REFACING	8-14
CYLINDER COMPRESSION	8-4	CYLINDER HEAD ASSEMBLY	8-17
CYLINDER HEAD COVER REMOVAL	8-4	CYLINDER HEAD INSTALLATION	8-19
CYLINDER HEAD COVER DISASSEMBLY	8-6	CAMSHAFT INSTALLATION	8-19
CAMSHAFT REMOVAL	8-7	CYLINDER HEAD COVER ASSEMBLY	8-22
CYLINDER HEAD REMOVAL	8-10	CYLINDER HEAD COVER INSTALLATION	8-23
CYLINDER HEAD DISASSEMBLY	8-11		

SERVICE INFORMATION

GENERAL

- This section covers maintenance of the cylinder head, valves and camshaft. These services can be done with the engine installed in the frame.
- When disassembling, mark and store the disassembled parts to ensure that they are reinstalled in their original locations.
- Clean all disassembled parts with cleaning solvent and dry them by blowing them off with compressed air before inspection.
- Be careful not to damage the mating surfaces when removing the cylinder head cover and cylinder head.

SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Decompressor lever free play			5.0–8.0 mm (3/16–5/16 in)	———
Cylinder compression	Valve clearance at standard (decompressor applied)		600 kPa (6.12 kgf/cm², 87 psi) at 400 min⁻¹ (rpm)	———
	Valve clearance at 1 mm (0.04 in) (decompressor not applied)		1,100 kPa (11.22 kgf/cm², 160 psi) at 400 min⁻¹ (rpm)	———
Cylinder head warpage			———	0.10 (0.004)
Valve, Valve guide	Valve clearance	IN	0.15 ± 0.02 (0.006 ± 0.001)	———
		EX	0.20 ± 0.02 (0.008 ± 0.001)	———
	Valve stem O.D.	IN	6.575–6.590 (0.2589–0.2594)	6.56 (0.258)
		EX	6.555–6.570 (0.2581–0.2587)	6.55 (0.258)
	Valve guide I.D.	IN/EX	6.600–6.615 (0.2598–0.2604)	6.655 (0.2620)
	Stem-to-guide clearance	IN	0.010–0.040 (0.0004–0.0016)	0.12 (0.005)
		EX	0.030–0.060 (0.0012–0.0024)	0.14 (0.006)
	Valve guide projection above cylinder head	IN	16.3–16.5 (0.64–0.65)	———
		EX	16.3–16.5 (0.64–0.65)	———
	Valve seat width	IN	1.1–1.3 (0.04–0.05)	2.0 (0.08)
		EX	1.3–1.5 (0.05–0.06)	2.0 (0.08)
Valve spring free length	Inner	IN/EX	44.0 (1.73)	43.0 (1.69)
	Outer	IN/EX	45.2 (1.78)	44.2 (1.74)
Rocker arm	Rocker arm I.D.	IN/EX	14.000–14.018 (0.5512–0.5519)	14.05 (0.553)
	Rocker arm shaft O.D.	IN/EX	13.966–13.984 (0.5498–0.5506)	13.91 (0.548)
	Rocker arm-to-shaft clearance	IN/EX	0.016–0.052 (0.0006–0.0020)	0.14 (0.006)
Camshaft	Cam lobe height	IN	41.158–41.398 (1.6204–1.6298)	41.00 (1.614)
		EX	41.196–41.436 (1.6219–1.6313)	41.05 (1.616)
	Runout		———	0.03 (0.001)

TORQUE VALUES

Spark plug	18 N·m (1.8 kgf·m , 13 lbf·ft)	
Cylinder head 10 mm nut	67 N·m (6.8 kgf·m , 49 lbf·ft)	Apply oil to the threads and seating surface
Valve lifter lever stopper bolt	12 N·m (1.2 kgf·m , 9 lbf·ft)	Apply a locking agent to the threads
Cylinder head cover 8 mm bolt	23 N·m (2.3 kgf·m , 17 lbf·ft)	
6 mm bolt	12 N·m (1.2 kgf·m , 9 lbf·ft)	
Cam sprocket bolt	20 N·m (2.0 kgf·m , 14 lbf·ft)	Apply a locking agent to the threads
Cam chain tensioner lifter bolt	12 N·m (1.2 kgf·m , 9 lbf·ft)	Apply a locking agent to the threads
Engine hanger plate bolt (8 mm)	26 N·m (2.7 kgf·m , 20 lbf·ft)	
(10 mm)	54 N·m (5.5 kgf·m , 40 lbf·ft)	

TOOLS

Valve guide remover, 6.6 mm	07742-0010200
Valve spring compressor	07757-0010000
Valve seat cutter	
—Seat cutter	07780-0010400
—Flat cutter	07780-0010500
	07780-0012300
—Interior cutter	07780-0013000
—Cutter holder	07780-0014100
Valve guide reamer (IN/EX)	07781-0010202
Compression gauge attachment	07984-ZE20001
	07RMJ-MY50100

TROUBLESHOOTING

- Engine top-end problems usually affect engine performance. These can be diagnosed by a compression test, or by tracking noises in the top end.
- If performance is poor at low speeds, check for white smoke in the crankcase breather tube. If the tube is smoky, check for a seized piston ring.

COMPRESSION TOO LOW, HARD STARTING OR POOR PERFORMANCE AT LOW SPEED

- Valves
  - —Incorrect valve adjustment
  - —Burned or bent valves
  - —Incorrect valve timing
  - —Broken valve spring
  - —Uneven valve seating
- Cylinder head
  - —Leaking or damaged cylinder head gasket
  - —Warped or cracked cylinder head
- Decompressor system
  - —Decompressor out of adjustment
- Loose spark plug
- Faulty cylinder, piston (Section 9)

COMPRESSION TOO HIGH

- Excessive carbon build-up in cylinder head or on top of piston

EXCESSIVE SMOKE

- Worn valve stem or valve guide
- Damaged stem seal
- Faulty cylinder, piston (Section 9)

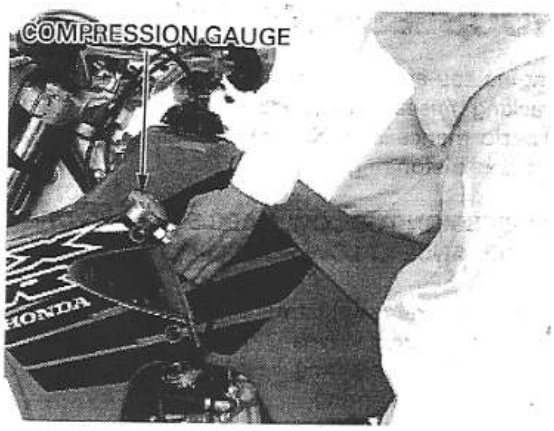
EXCESSIVE NOISE

- Incorrect valve adjustment
- Sticking valve or broken valve spring
- Worn or damaged rocker arm or camshaft
- Loose or worn cam chain
- Worn or damaged cam chain tensioner
- Worn cam sprocket teeth
- Faulty cylinder, piston (Section 9)

ROUGH IDLE

- Low cylinder compression
- Intake air leak
- Decompressor out of adjustment

CYLINDER COMPRESSION



Remove the spark plug.
Connect the compression gauge.

TOOL:
Compression gauge attachment 07RMJ-MY50100

NOTE:

Check that there are no leaks at the gauge connection.

Open the choke lever and throttle grip all the way.
Operate the kickstarter 5—6 times and check the gauge reading.

CYLINDER COMPRESSION
(decompressor applied):
600 kPa (6.12 kgf/cm², 87 psi) at 400 min⁻¹ (rpm)

If compression is not within specification, recheck the following:
Loosen the exhaust valve lock nut and adjust the exhaust valve to a valve clearance of approximately 1 mm (0.04 in).
Warm up the engine.
Stop the engine and recheck the compression.

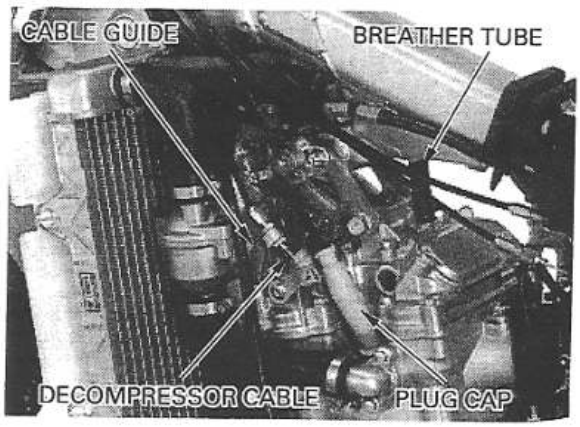
CYLINDER COMPRESSION
(decompressor not applied):
1,100 kPa (11.22 kgf/cm², 160 psi) at 400 min⁻¹ (rpm)

If the compression reading is not standard, the decompressor system did not work properly.

Low compression can be caused by:
—Improper valve adjustment
—Valve leakage
—Leakage cylinder head gasket
—Worn piston ring or cylinder
—Improper decompressor adjustment

High compression can be caused by:
—Carbon deposits in combustion chamber, or on the piston crown.

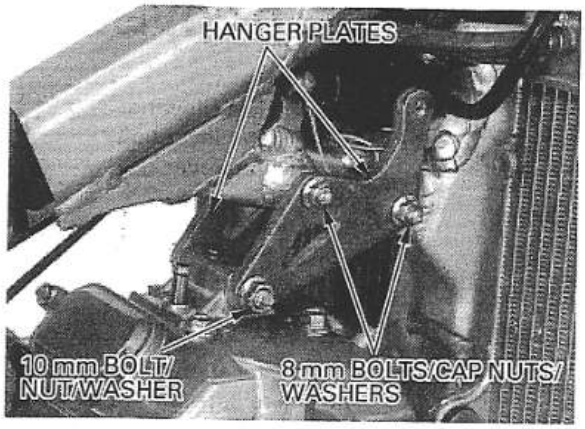
CYLINDER HEAD COVER REMOVAL



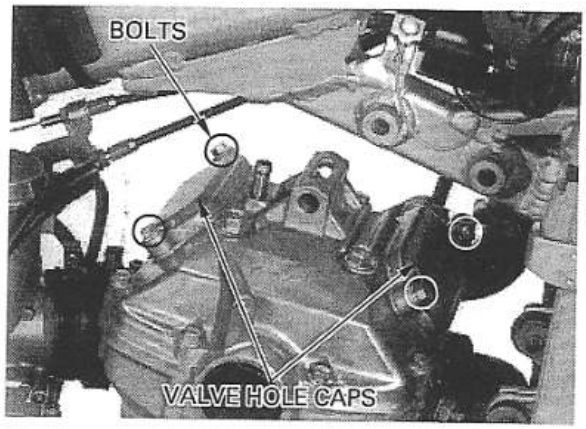
Drain the coolant (page 6-5).
Remove the fuel tank (page 2-5).

Remove the decompressor cable guide and disconnect the decompressor cable from the valve lifter lever.
Remove the spark plug cap.
Disconnect the oil tank breather tube from the cylinder head cover.

Remove the hanger plate 10 mm bolt/nut/washer.
Remove the hanger plate 8 mm bolts/cup nuts/washers and hanger plates.



Remove the bolts and valve hole caps.

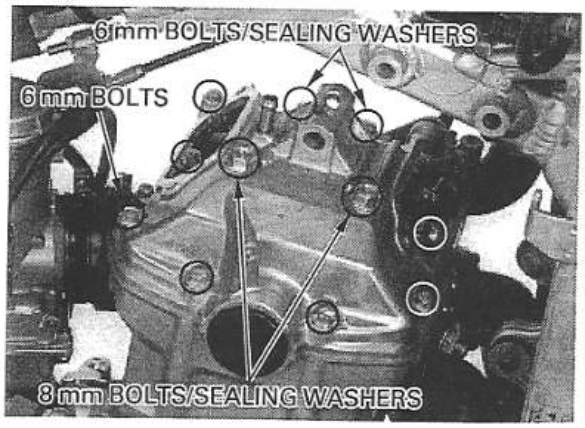


Remove the left crankcase cover (page 11-2).

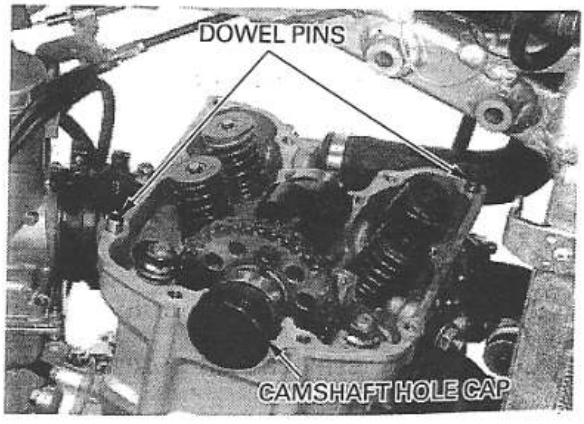
Rotate the flywheel counterclockwise to align the "T" mark with the index notch. Make sure that the piston is at TDC (Top Dead Center) on the compression stroke.

Loosen the 6 mm bolts in a crisscross pattern in two or more steps.

Remove the 6 mm bolts.
Remove the 8 mm bolts, sealing washers and cylinder head cover.



Remove the dowel pins and camshaft hole cap.

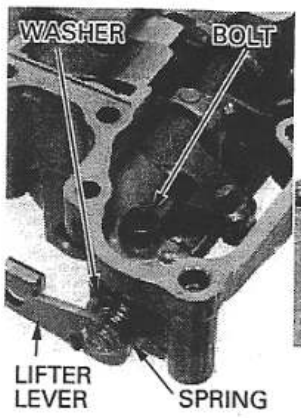


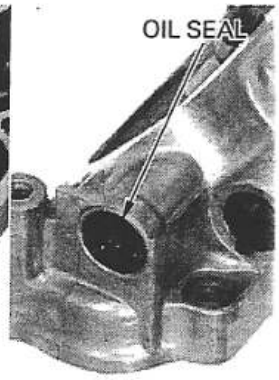
CYLINDER HEAD COVER DISASSEMBLY

Remove the following:
- Valve lifter lever bolt
- Valve lifter lever
- Spring
- Washer
- Oil seal

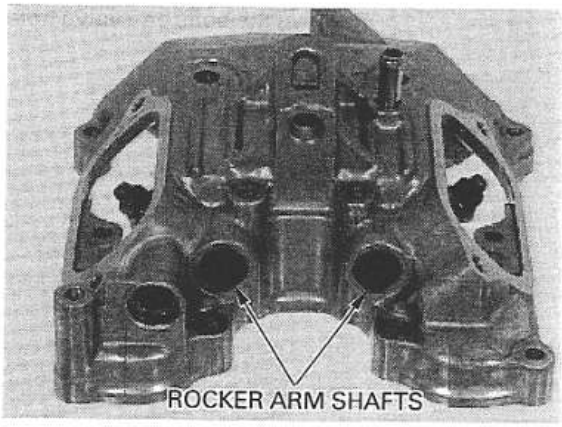
NOTE:

Note the location of all parts during disassembly so you can reinstall the parts in their same positions.

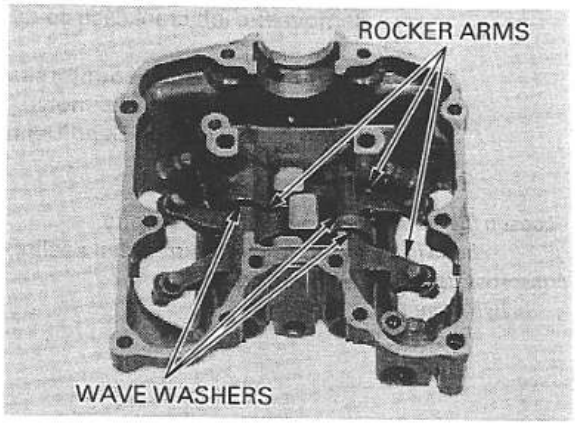




Remove the rocker arm shafts.



Remove the rocker arms and wave washers.



ROCKER ARM INSPECTION

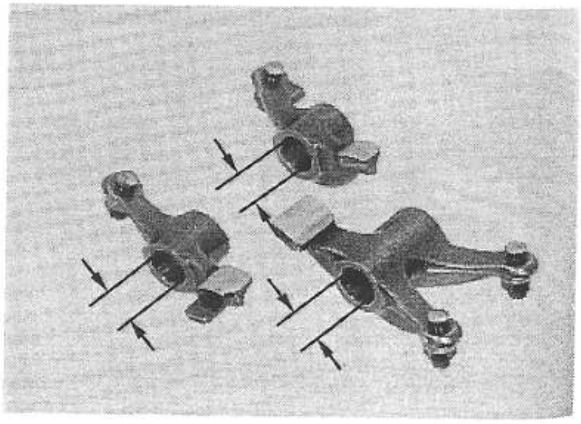
Inspect the rocker arms for wear or damage.

NOTE:

Inspect the cam lobe if the rocker arm sliding surface is worn or damaged.

Measure the I.D. of the rocker arms.

SERVICE LIMIT: 14.05 mm (0.553 in)



ROCKER ARM SHAFT INSPECTION

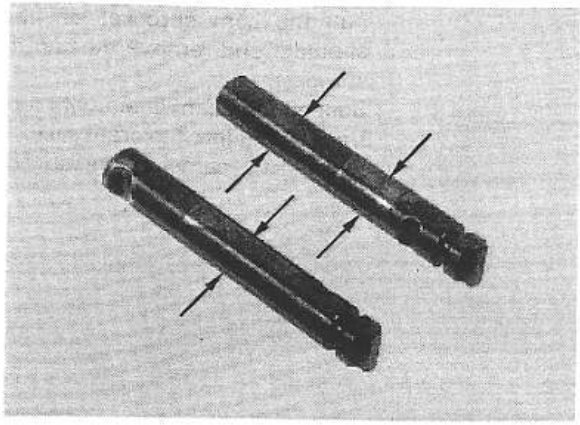
Inspect the rocker arm shafts for wear or damage.

Measure the O.D. of the rocker arm shafts.

SERVICE LIMIT: 13.91 mm (0.548 in)

Calculate the rocker arm-to-shaft clearance.

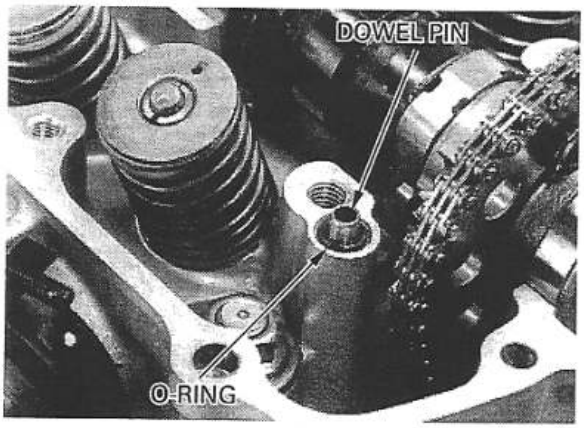
SERVICE LIMIT: 0.14 mm (0.006 in)



CAMSHAFT REMOVAL

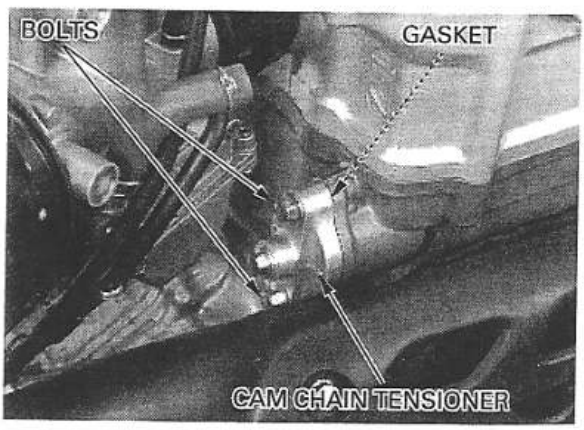
Remove the cylinder head cover (page 8-4).

Remove the dowel pin and O-ring.



Loosen the bolts to the alternately.

Remove the bolts and cam chain tensioner.
Remove the gasket.

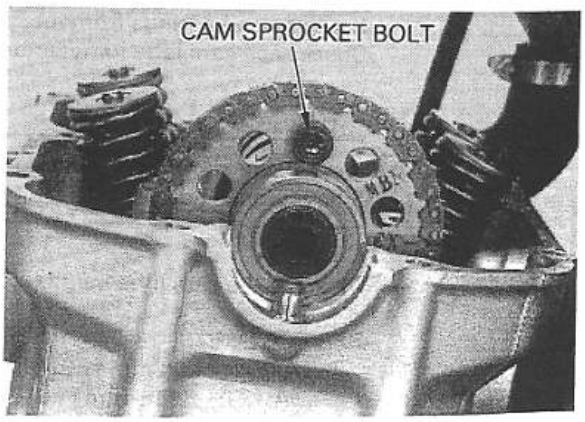


Remove the left crankcase cover (page 11-2).

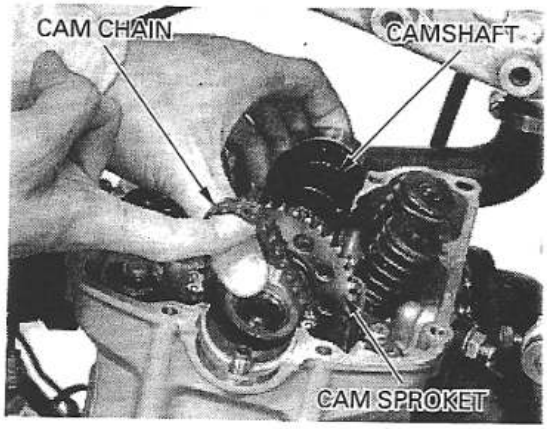
Turn the crankshaft and remove a cam sprocket bolt.

Be careful not to drop the bolts into the crankcase.

Rotate the crankshaft, then remove the other cam sprocket bolt.

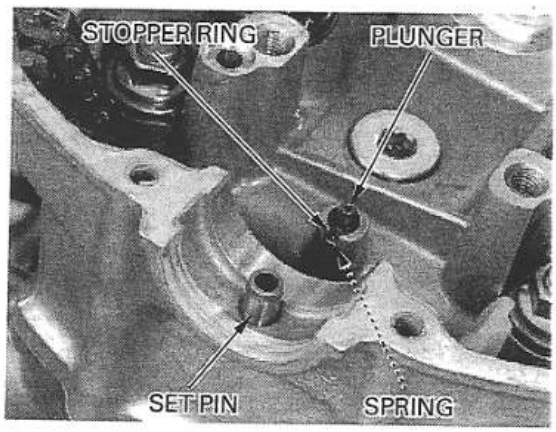


Pull the cam sprocket off the camshaft flange shoulder and remove the cam chain from the cam sprocket.
Suspend the cam chain with a piece wire to keep it from falling into the crankcase.
Remove the camshaft and sprocket.



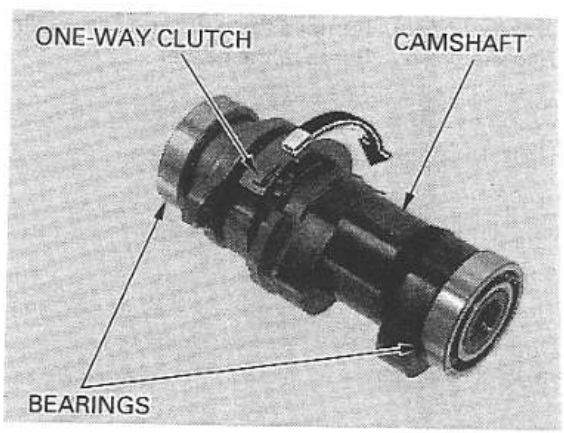
Remove the camshaft bearing set pin.
Remove the stopper ring, plunger and spring.

Be careful not to drop the stopper ring, plunger and spring into the crankcase.



CAMSHAFT INSPECTION

Turn the outer race of the bearings with your finger.
The bearings should turn smoothly and quietly.
Remove the bearings, if they need replacement.
Be sure the one-way clutch outer rotates in one direction only.



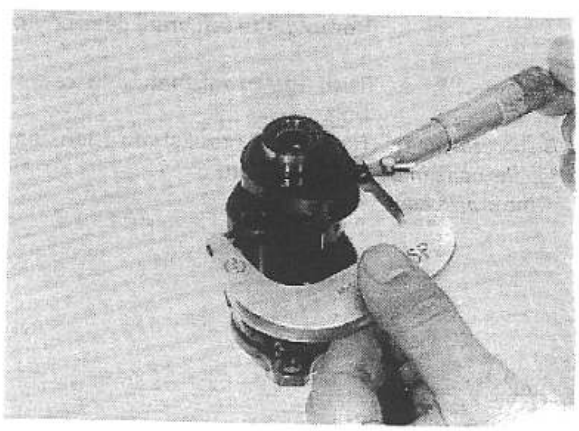
Remove the bearings from the camshaft.
Check each cam lobe for wear or damage.

NOTE:

Inspect the rocker arm sliding surface if the cam lobe is worn or damaged.

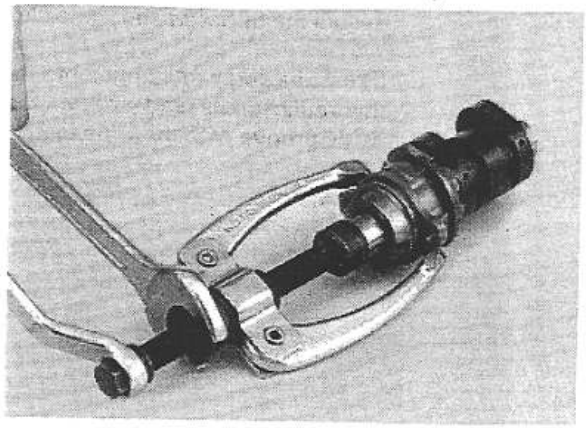
Measure the cam lobe height.

SERVICE LIMITS:
INTAKE: 41.00 mm (1.614 in)
EXHAUST: 41.05 mm (1.616 in)



DECOMPRESSOR SYSTEM DISASSEMBLY

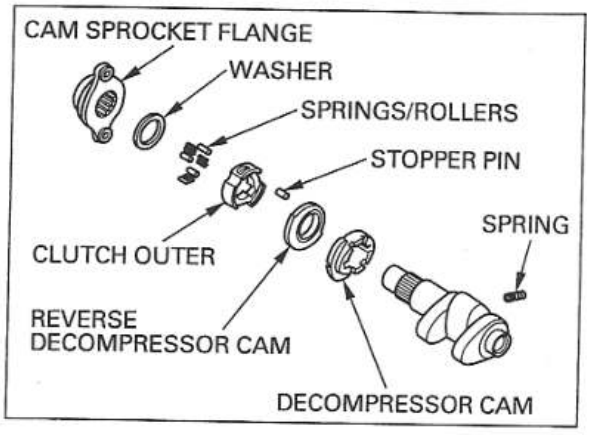
Remove the cam sprocket flange from the camshaft using a bearing puller.



Remove the following:
- Thrust washer
- One way clutch (clutch outer, rollers and springs)
- Stopper pin
- Reverse decompressor cam
- Decompressor cam
- Spring

INSPECTION

Check the one way clutch outer, rollers and springs for wear or damage.
Check both cams for wear or damage.
Inspect the cam's sliding surface on the camshaft for scoring or wear.

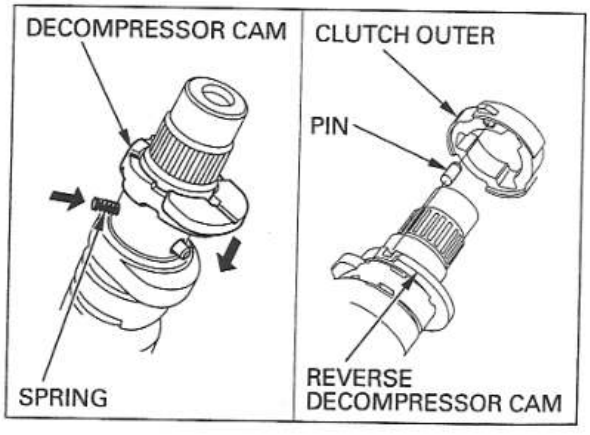


DECOMPRESSOR SYSTEM ASSEMBLY

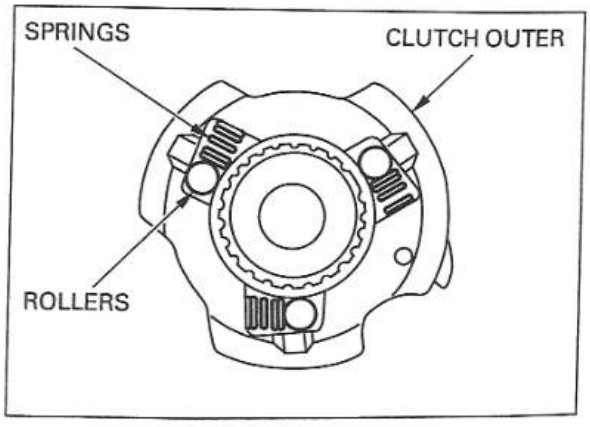
Lubricate the cams, one way clutch and washer.

Install the spring into camshaft hole, then install the decompressor cam while holding the spring.

Assemble the reverse decompressor cam and clutch outer with the stopper pin and install the assembly over the camshaft.



Install the rollers and springs into the clutch outer grooves as shown.

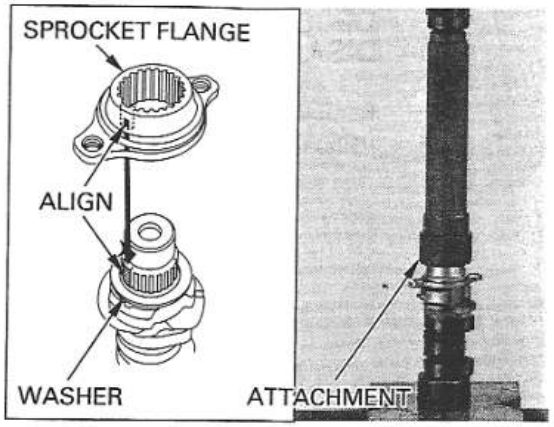


Install the thrust washer onto clutch outer.

Press the sprocket flange onto the camshaft using a hydraulic press and special tool by aligning the wide groove with the wide teeth.

TOOLS:

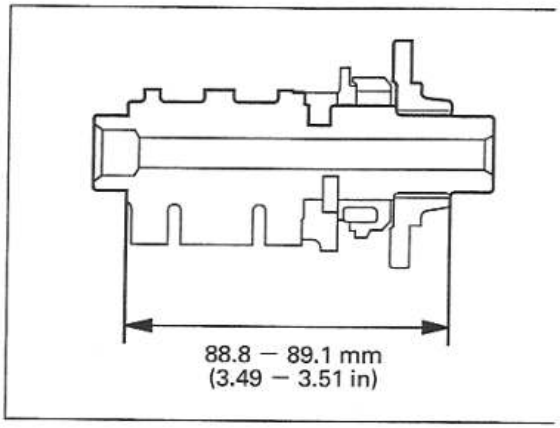
Driver	07746-0020100
Attachment, 20 mm	07746-0020400



After installing the cam sprocket flange, make sure the specified length as shown.

Specified length: 88.8 – 89.1 mm (3.49 – 3.51 in)

Be sure the one-way clutch rotates in one direction only.

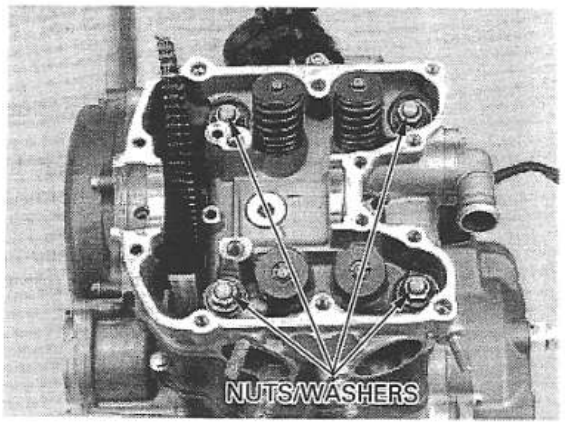


CYLINDER HEAD REMOVAL

NOTE:

The cylinder head can be serviced with the engine in the frame.

Remove the following:
- Exhaust pipe (page 2-8)
- Carburetor from the insulator (page 5-5)
- Thermostat housing-to-cylinder head water pipe (page 7-3)
- Cylinder head cover (page 8-4)
- Camshaft and cam sprocket (page 8-7)

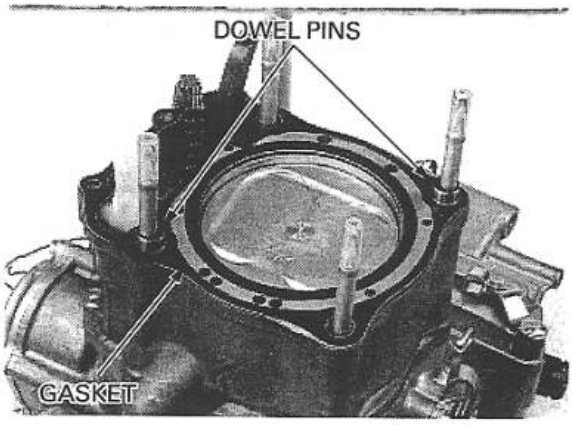


Remove the cylinder head nuts and washers.

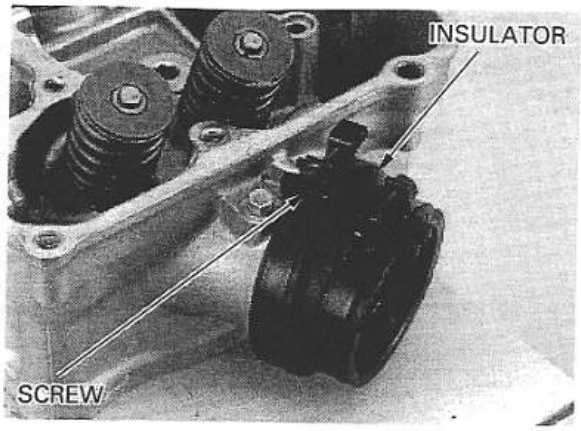
NOTE:

- Loosen the nuts in a crisscross pattern in two or more steps.
- Be careful not to drop the nuts and washers into the crankcase.

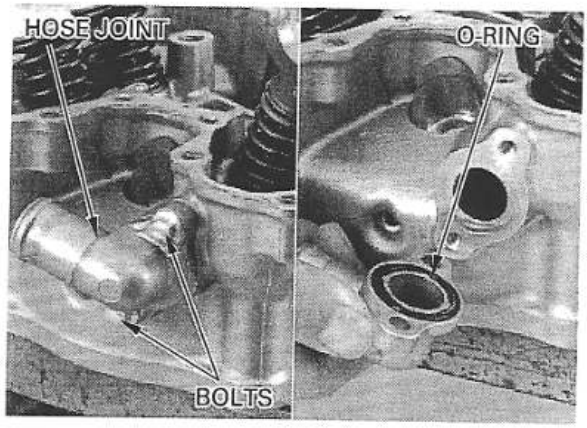
Remove the cylinder head.
Remove the gasket and dowel pins.



Remove the band screw and loosen the insulator band.
Remove the insulator from the cylinder head.



Remove the water hose joint from the cylinder head.
Remove the O-ring from the water hose joint.



CYLINDER HEAD DISASSEMBLY

Remove the valve spring cotters, retainers, springs, valves and spring seats with a valve spring compressor.

TOOL:
Valve spring compressor 07757-0010000

CAUTION:

To prevent loss of tension, do not compress the valve springs more than necessary to remove the cotters.



NOTE:

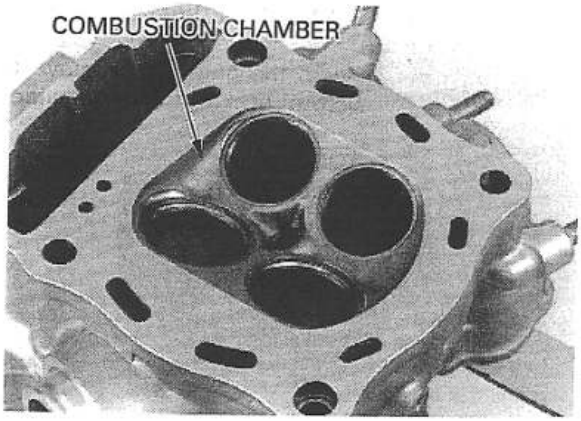
- Mark all parts to ensure that they are reassembled in their original locations.
- Whenever the stem seals are removed, replace them with new ones.

CYLINDER HEAD INSPECTION

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

CAUTION:

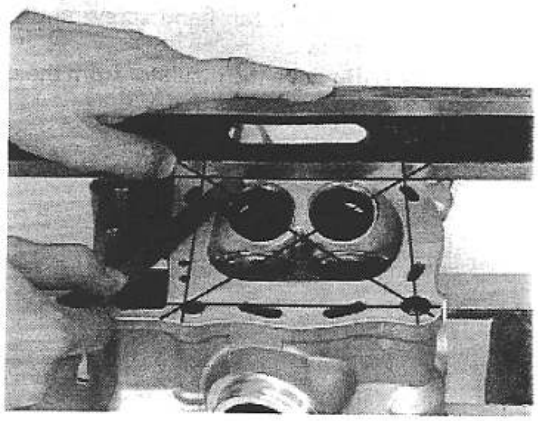
Use care not to scratch the combustion chamber or the head gasket surface.



Check the spark plug hole and valve areas for cracks.

Check the cylinder head diagonally two ways for warpage with a straight edge and feeler gauge.

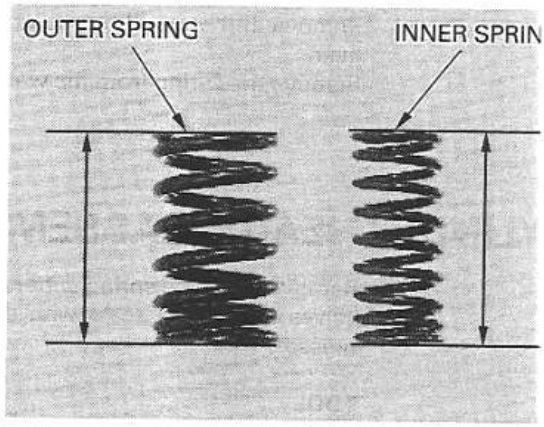
SERVICE LIMIT: 0.10 mm (0.004 in)



VALVE SPRING INSPECTION

Measure the free length of the inner and outer valve springs.

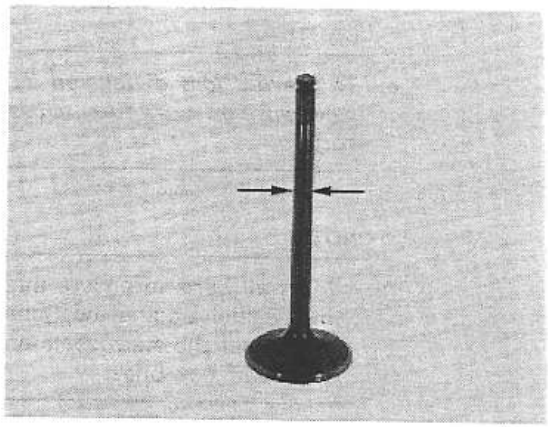
SERVICE LIMITS: INNER: 43.0 mm (1.69 in)
OUTER: 44.2 mm (1.74 in)



VALVE INSPECTION

Inspect each valve for trueness, burning, scratches or abnormal stem wear.
Check the valve movement in the guide. Measure and record each valve stem O.D.

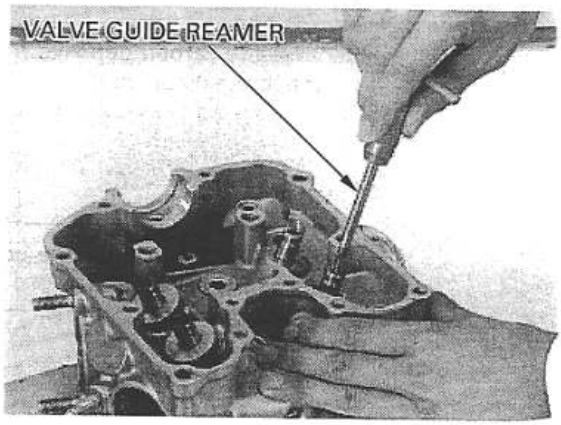
SERVICE LIMITS:INTAKE: 6.56 mm (0.258 in)
EXHAUST: 6.55 mm (0.258 in)



VALVE GUIDE INSPECTION

Ream the guides to remove the carbon build-up before checking the valve guide I.D.

TOOL:
Valve guide reamer 07984-ZE20001



Measure and record each valve guide I.D. using a ball gauge or inside micrometer.

SERVICE LIMITS: IN/EX: 6.655 mm (0.2620 in)

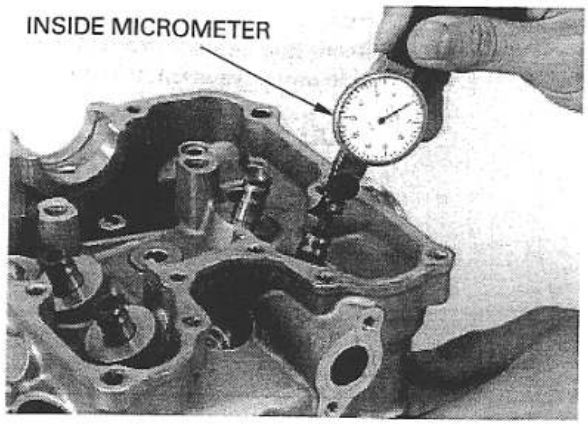
Subtract each valve stem O.D. from the corresponding guide I.D. to obtain the stem-to-guide clearance.

SERVICE LIMITS: IN: 0.12 mm (0.005 in)
EX: 0.14 mm (0.006 in)

If the stem-to-guide clearance exceeds the service limit, determine if a new guide with standard dimensions would bring the clearance within tolerance.
If so, replace the guides as necessary and ream them to fit.
If stem-to-guide clearance still exceeds the service limit after the new guides are installed, replace the valves.

NOTE:

Inspect and reface the valve seats whenever the valve guides are replaced (page 8-14).



VALVE GUIDE REPLACEMENT

⚠WARNING

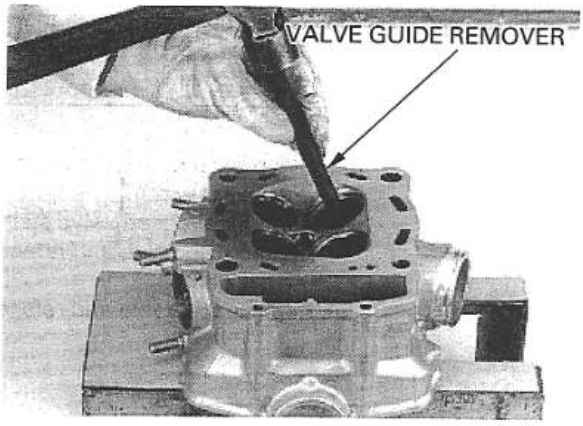
To avoid burns, wear heavy globes when handling the heated cylinder head.

CAUTION:

Do not use a torch to heat the cylinder head; it may cause warping.

Heat the cylinder head to 100—150°C (212—300°F).
Support the cylinder head and drive out the guides from the combustion chamber side.

TOOL:
Valve guide remover, 6.6 mm 07742-0010200

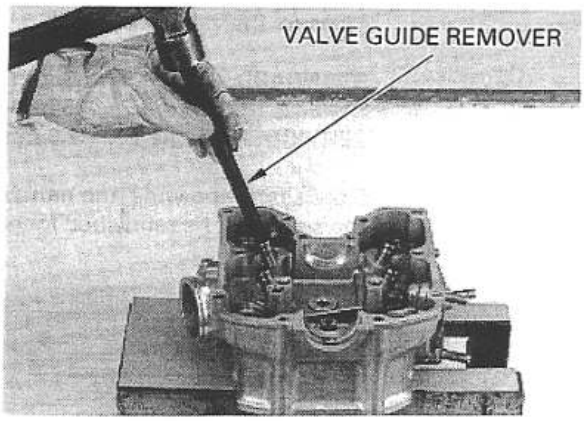


CAUTION:

Do not damage the cylinder head during guide removal.

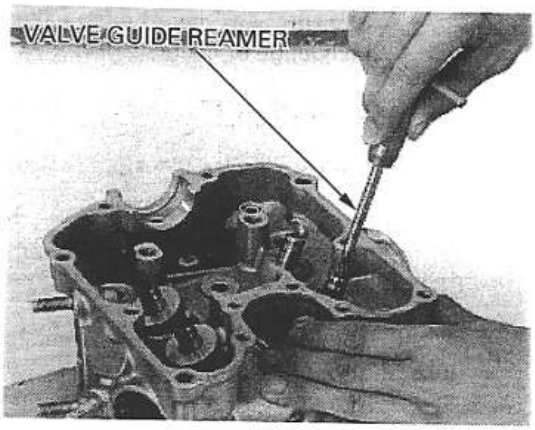
Install a new O-ring on a new valve guide.
Install a new valve guide from the top of the head, then check that it was not damaged during installation.

TOOL:
Valve guide remover, 6.6 mm 07742-0010200



Ream the new valve guides after installation.
Insert the reamer from the combustion chamber side and always rotate the reamer clockwise.

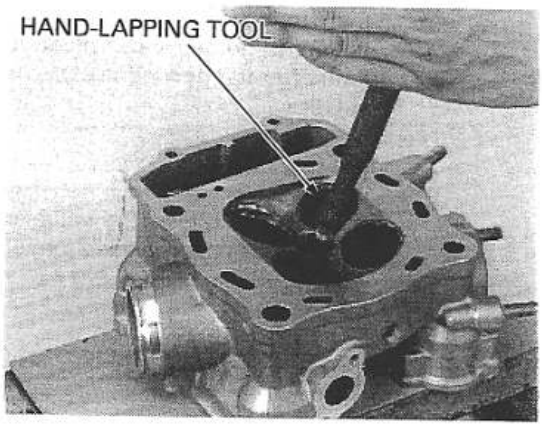
TOOL:
Valve guide reamer 07984-ZE20001



NOTE:

- Use cutting oil on the reamer during this operation.
- Rotate the reamer while inserting and removing it.

Clean the cylinder head thoroughly to remove any metal particles.
Reface the valve seats (page 8-15).



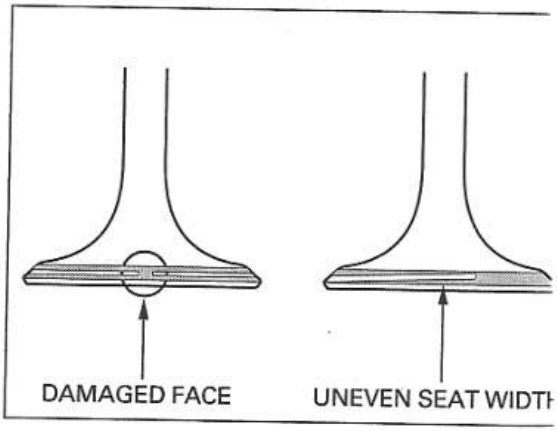
VALVE SEAT INSPECTION AND REFACING

INSPECTION

Clean the intake and exhaust valves thoroughly to remove carbon deposits.
Apply a light coating of Prussian Blue to each valve face. Lap each valve and seat using a rubber hose or other hand-lapping tool.

NOTE:

Valves cannot be ground. If the valve face is burned or badly worn or if it contacts the seat unevenly, replace the valve.

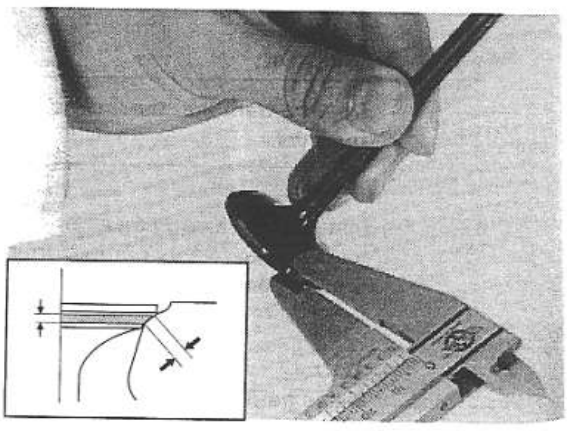


Remove the valve and inspect the face.
- Uneven seat width:
  - —Bent or collapsed valve stem;
    Replace the valve and reface the valve seat.
- Damaged face:
  - —Replace the valve and reface the valve seat.

Measure the valve seat width.

STANDARD: IN : 1.1—1.3 mm (0.04—0.05 in)
EX : 1.3—1.5 mm (0.05—0.06 in)
SERVICE LIMIT: IN/EX: 2.0 mm (0.08 in)

If the seat is too wide, too narrow, or has low spots, the seat must be refinished for good sealing.

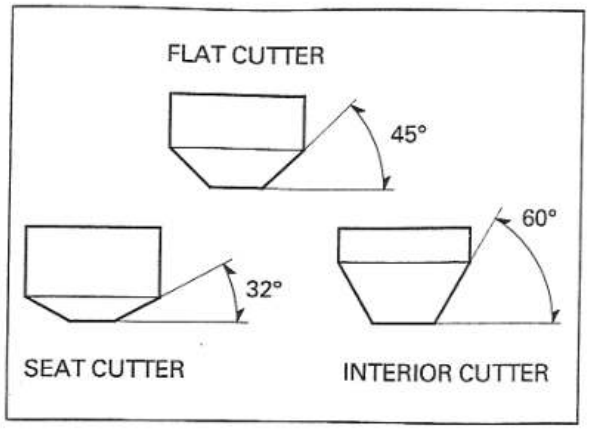


REFACING

Reface the valve seats with the valve seat cutters.

TOOLS:

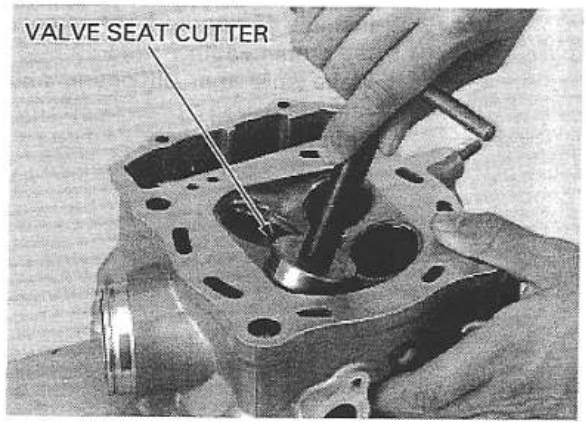
Valve seat cutter	
—Seat cutter IN 35 mm (45°)	07780-0010400
EX 40 mm (45°)	07780-0010500
—Flat cutter IN 35 mm (32°)	07780-0012300
EX 42 mm (32°)	07780-0013000
—Interior cutter	
IN/EX 37.5 mm (60°)	07780-0014100
—Cutter holder	
IN/EX 6.6 mm	07781-0010202



Valve seat cutters, a grinder or equivalent valve seat refacing equipment are recommended to correct a worn valve seat.

NOTE:

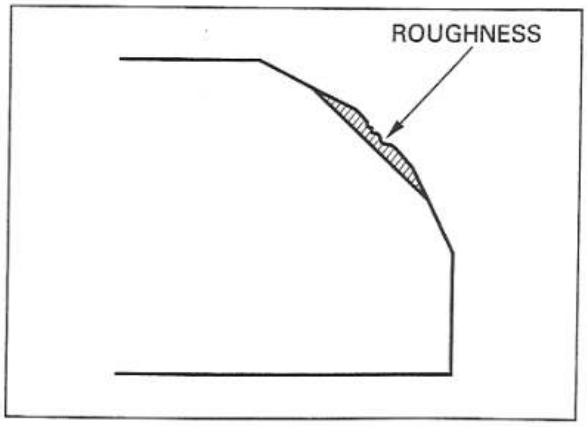
Follow the refacing manufacturer's operating instructions.



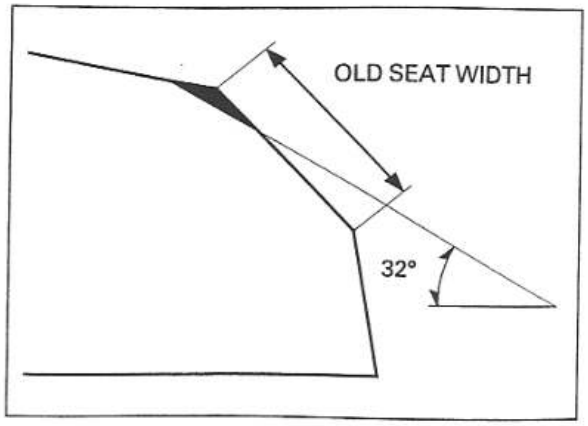
Use a 45 degree cutter to remove any roughness or irregularities from the seat.

NOTE:

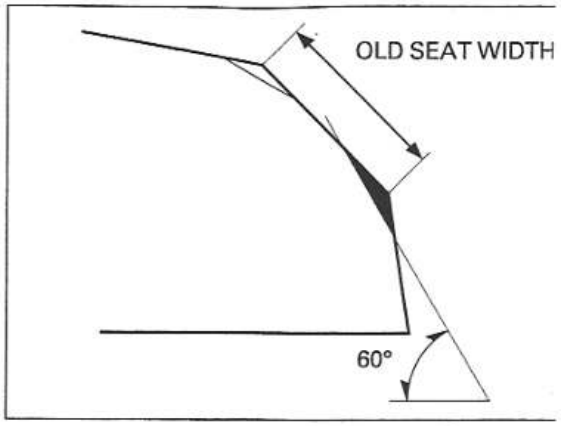
Reface the seat with a 45 degree cutter whenever a valve guide is replaced.



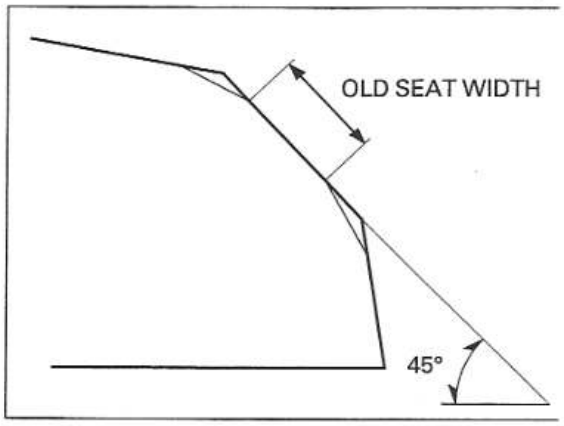
Use a 32 degree cutter to remove the top 1/4 of the existing valve seat material.



Use a 60 degree cutter to remove the bottom 1/4 of the old seat.
Remove the cutter and inspect the area you have refaced.



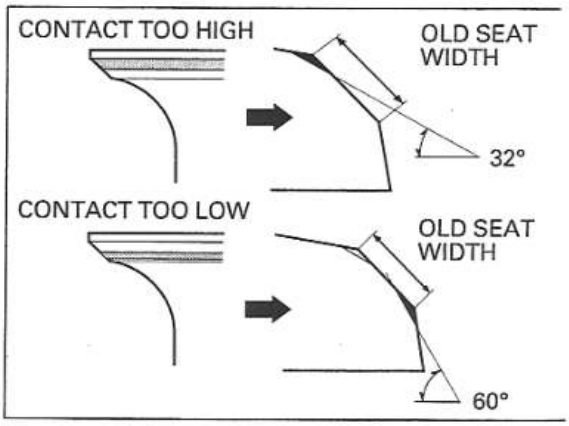
Install a 45 degree finish cutter and cut the seat to the proper width.
Make sure that all pitting and irregularities are removed.
Refinish if necessary.



Apply a thin coat of Prussian Blue to the valve seat.
Press the valve through the valve guide and onto the seat to make a clear pattern.

NOTE:

The location of the valve seat in relation to the valve face is very important for good sealing.



If the contact area is too high on the valve, the seat must be lowered using a 32 degree flat cutter.

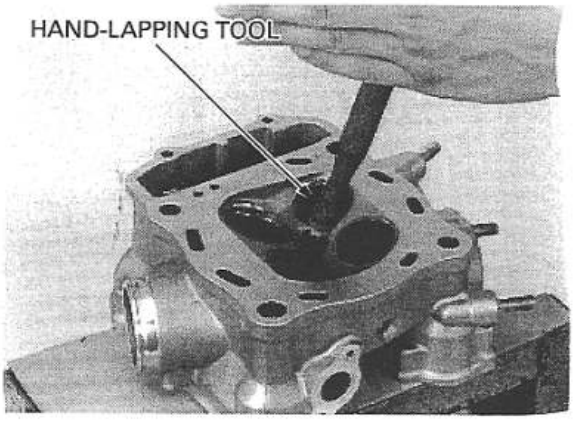
If the contact area is too low on the valve, the seat must be raised using a 60 degree inner cutter.

Refinish the seat specifications, using a 45 degree finish cutter.

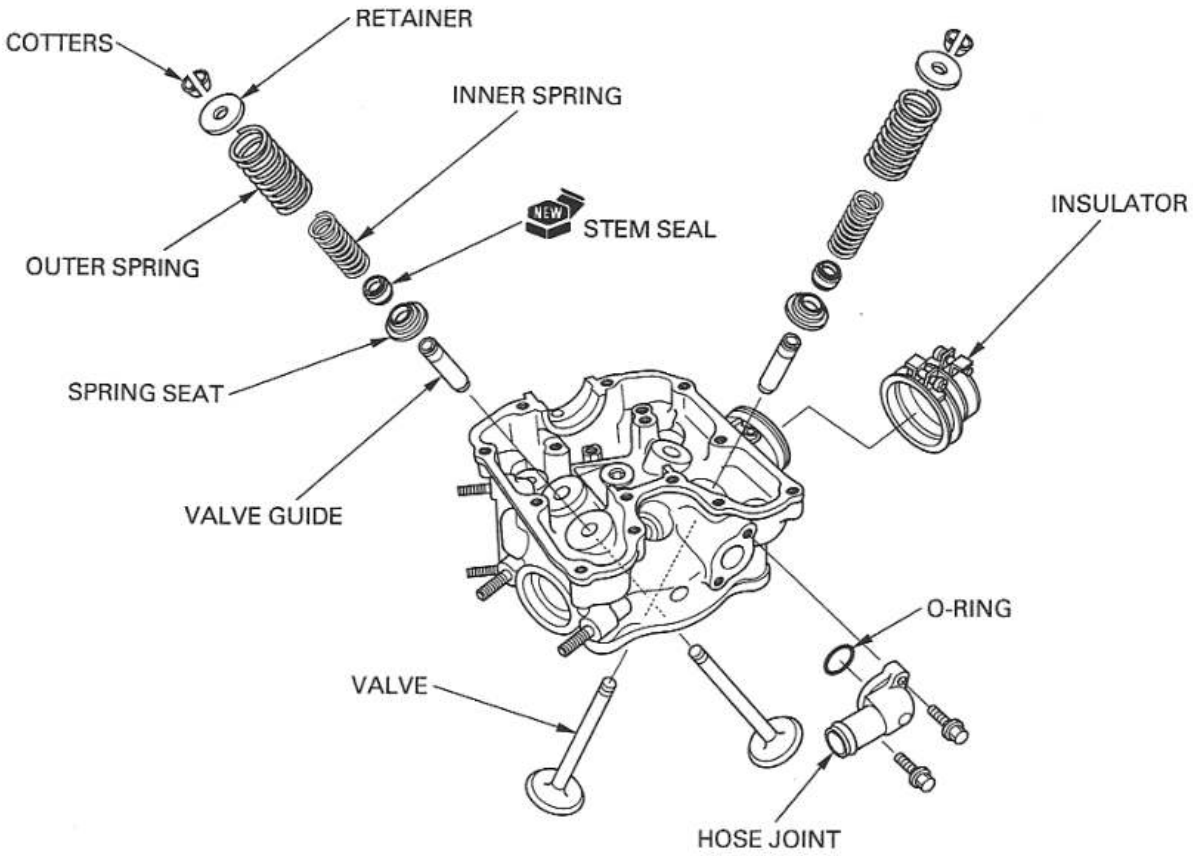
Do not allow lapping compound to enter the guides.

After cutting the seat apply lapping compound to the valve face, and lap the valve using light pressure.

After lapping, wash all residual compound off the cylinder head and valve.



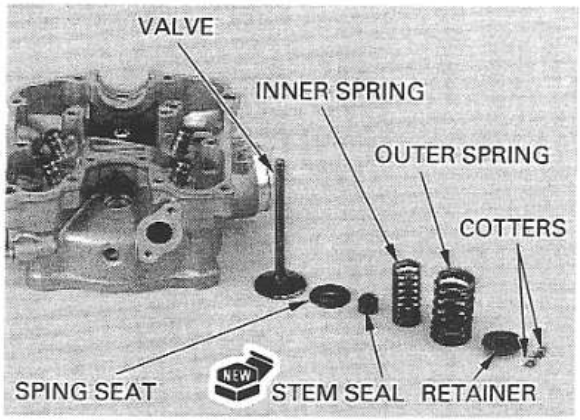
CYLINDER HEAD ASSEMBLY



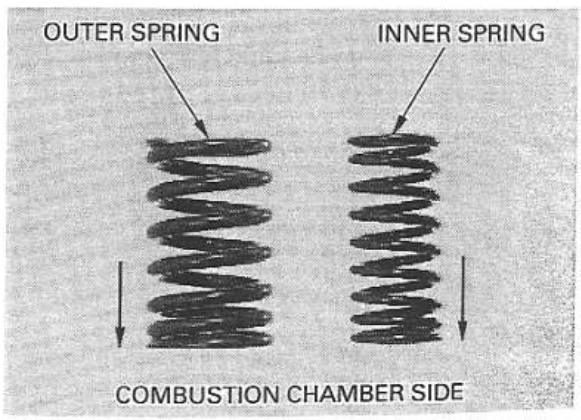
Whenever the stem seals are removed, replace them with new ones.

Install the spring seats and new stem seals in the cylinder head.

Lubricate each valve stem and valve guide inner surface with molybdenum disulfide oil and insert the valve into the valve guide. To avoid damage to the stem seal, turn the valve slowly when inserting.



Install the valve springs with the tightly wound coils facing the combusion chamber and install the retainers.

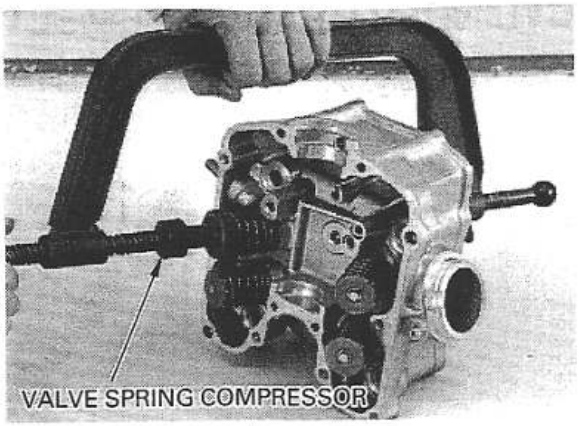


Compress the valve springs using the valve spring compressor, then install the valve cotters.

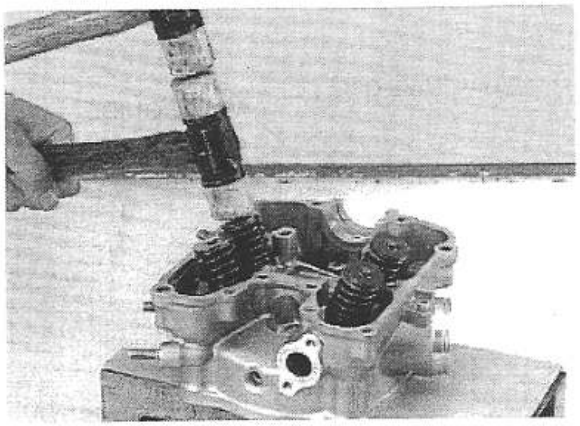
TOOL:
Valve spring compressor 07757-0010000

CAUTION:

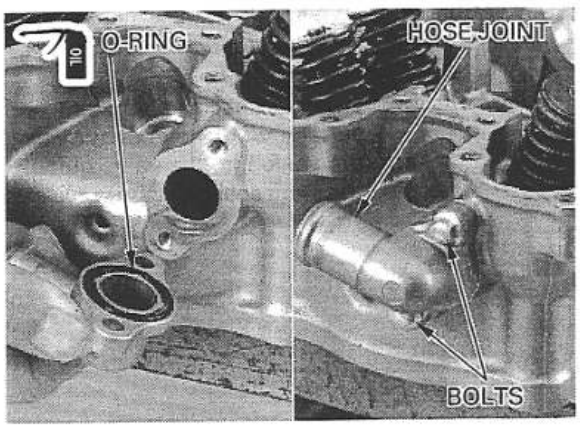
To prevent loss of tension, do not compress the valve springs more than necessary to remove the cotters.



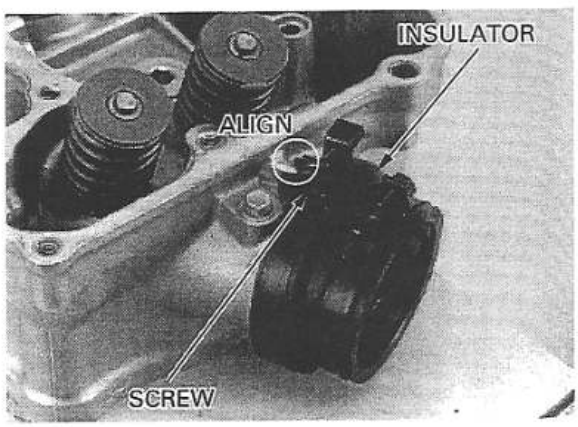
Support the cylinder head above the working bench surface to prevent possible valve damage, then gently tap the valve stems with two plastic hammers as shown to seat the cotters.



Check the O-ring in the water hose joint for wear or fatigue.
Apply oil to the O-ring and install it to the water hose joint.
Install the water hose joint to the cylinder head and tighten the bolts.

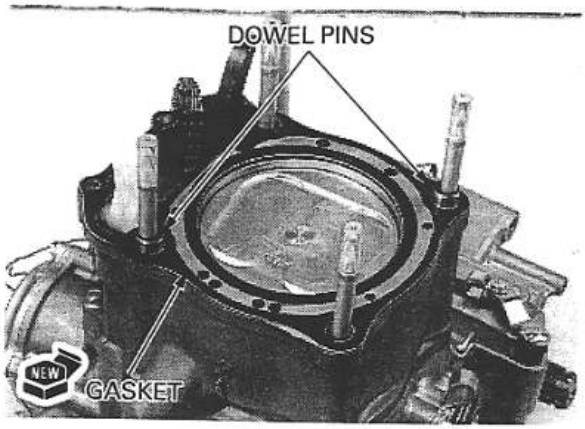


Align the lug on the cylinder head with the groove in the carburetor insulator and tighten the band screw.



CYLINDER HEAD INSTALLATION

Install the dowel pins and new cylinder head gasket.

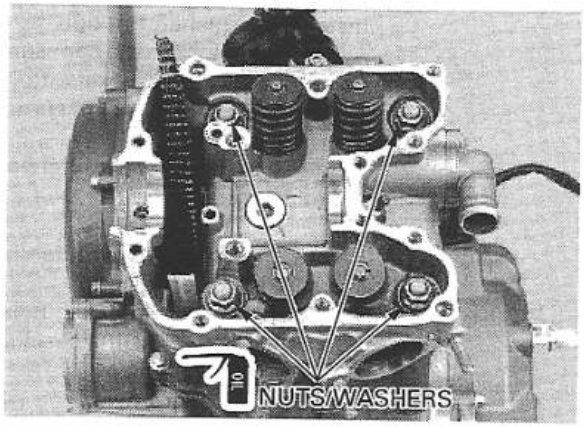


Be careful not to damage the mating surfaces when install the cylinder head.

Install the cylinder head.

Apply engine oil to all cylinder head nut threads.
Install the washer and nuts.
Tighten the nuts in a crisscross pattern in two or more steps.

TORQUE: 67 N·m (6.8 kgf·m , 49 lbf·ft)

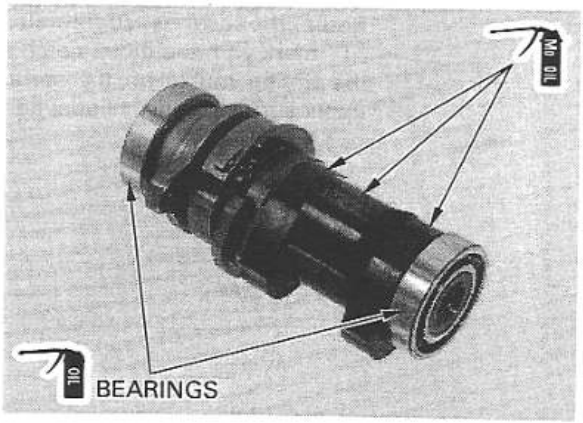


Install the following:
- Thermostat housing-to-cylinder head water pipe (page 7-7)
- Carburetor to the insulator (page 5-14)
- Exhaust pipe (page 2-10)

CAMSHAFT INSTALLATION

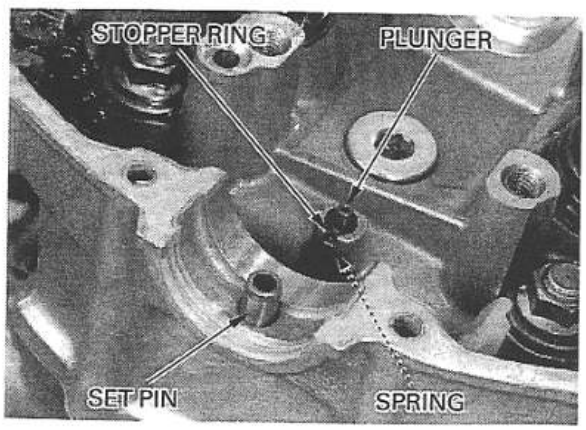
The outer bearing rubber shield faces outside.

Apply molybdenum disulfide oil to the cam lobes.
Apply oil to the camshaft bearings and install them onto the camshaft.



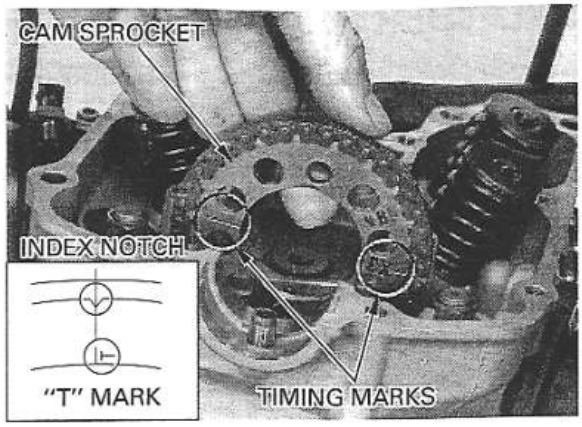
Be careful not to drop the stopper ring, plunger and spring into the crankcase.

Install the spring, plunger and stopper ring.
Install the camshaft bearing set pin.



Rotate the flywheel counterclockwise to align the "T" mark with the index notch on the left crankcase cover to the correct.

Place the cam sprocket with the "EX" mark toward exhaust side and align the timing marks on the cam sprocket with the upper surface of the cylinder head.
Install the cam chain over the sprocket without rotating the sprocket.

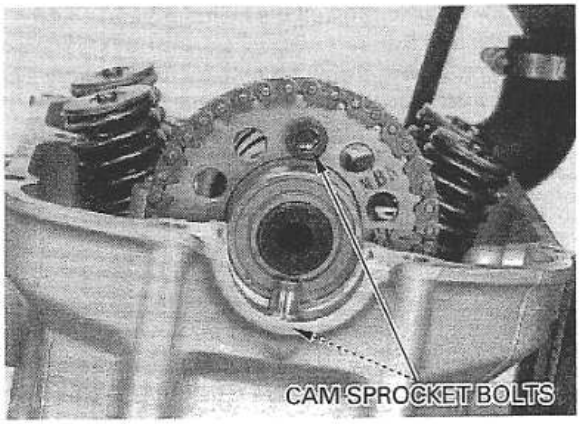


Install the camshaft through the sprocket.
Apply thread lock to the cam sprocket bolt threads.
Position the cam sprocket onto the shoulder of the camshaft and install a cam sprocket bolt.

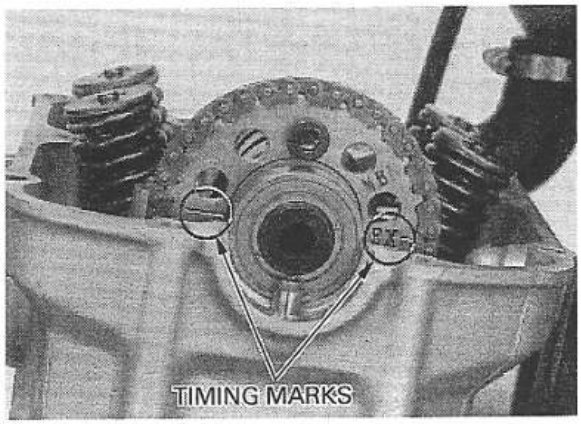
Rotate the flywheel counterclockwise and install the other sprocket bolt.

Rotate the flywheel counterclockwise; the "EX" mark to the exhaust side.
Tighten the cam sprocket bolt, then tighten the other sprocket bolt to the specified torque.

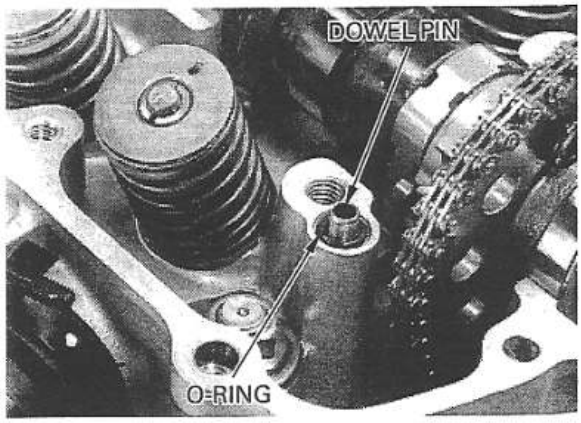
TORQUE: 20 N·m (2.0 kgf·m , 14 lbf·ft)



Rotate the flywheel counterclockwise to align the "T" mark with the index notch and make sure that the timing marks on the sprocket align with the upper surface of the cylinder head.



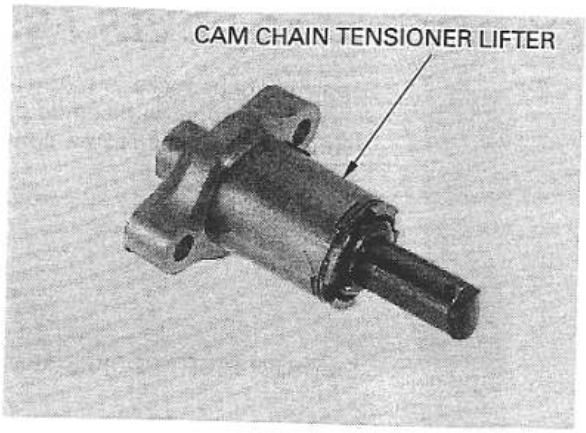
Install the O-ring and dowel pin.



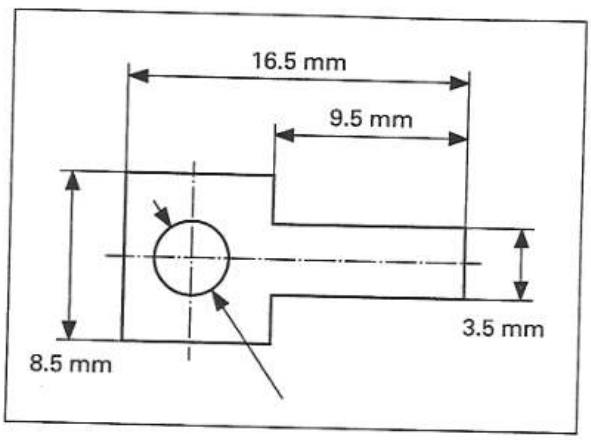
CAM CHAIN TENSIONER LIFTER INSTALLATION

Remove the tensioner lifter plug.

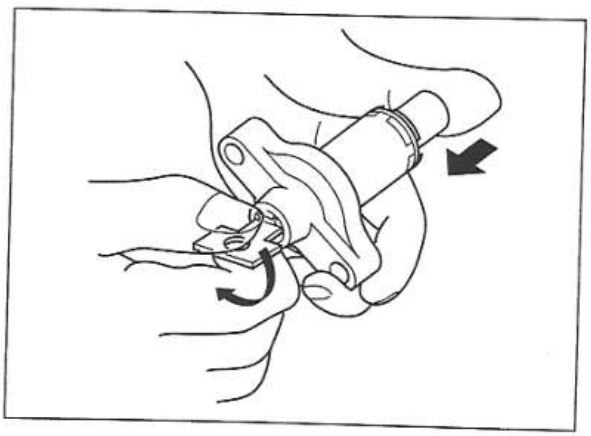
Check the lifter operation:
- The tensioner shaft should not go into the body when it is pushed.
- When it is turned clockwise with a screwdriver, the tensioner shaft should be pulled into the body. The shaft spring out of the body as soon as the screwdriver is released.



Make a tensioner shaft stopper tool out of a thin piece of steel (0.8 mm thick) using a diagram.



Turn the tensioner shaft clockwise with the stopper tool to retract the tensioner, then insert the stopper fully to hold the tensioner in the fully retracted position.

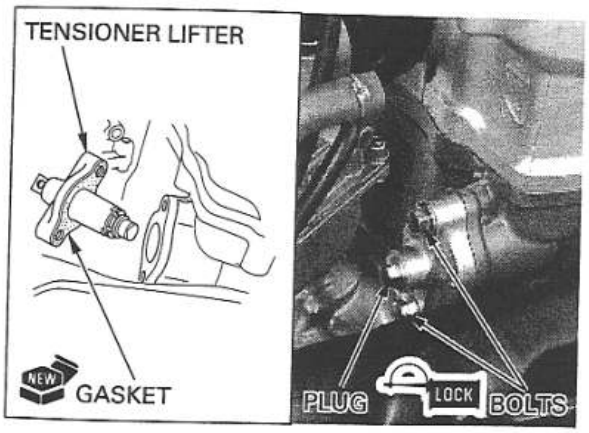


Install a new gasket on the cam chain tensioner lifter.
Install the tensioner lifter into the cylinder.

Clean and apply a locking agent to the tensioner lifter bolt threads.
Install and tighten the bolts to the specified torque.

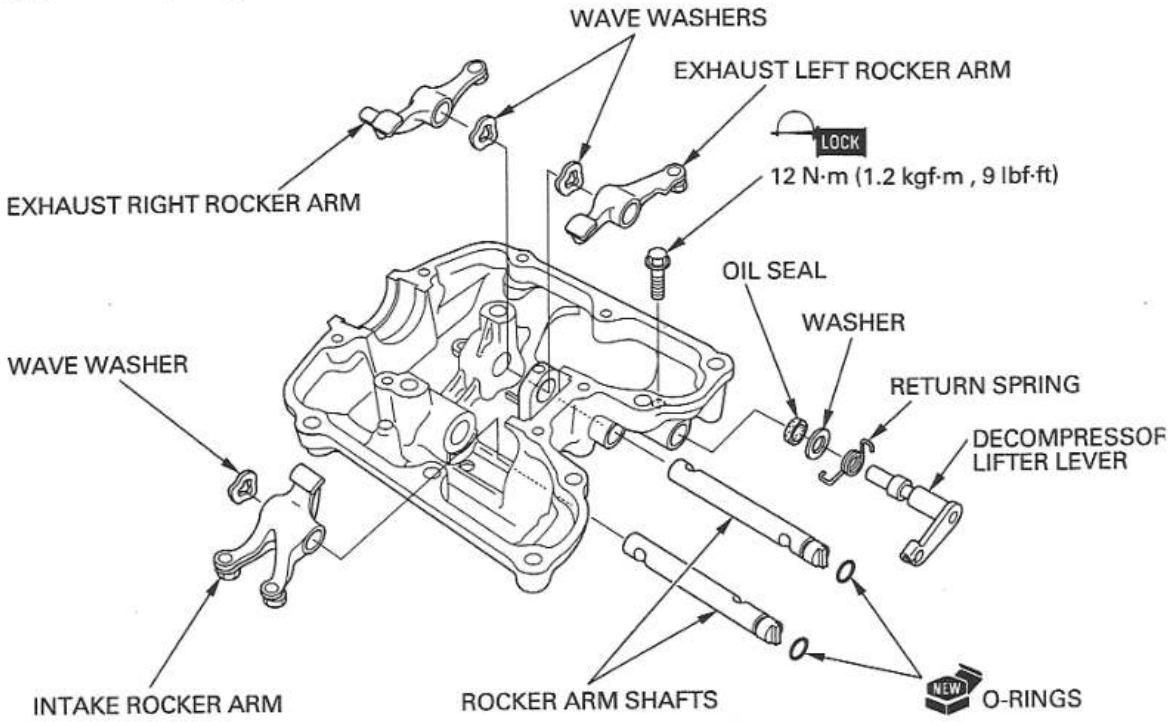
TORQUE: 12 N·m (1.2 kgf·m , 9 lbf·ft)

Remove the stopper tool from the tensioner lifter.
Install and tighten the plug. Make sure that the index lines align with the upper surface of the cylinder head when the "T" mark is aligned with the index notch on the left crankcase again.



CYLINDER HEAD COVER ASSEMBLY

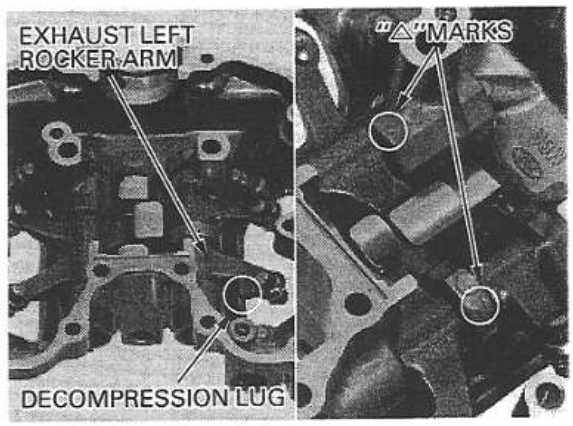
Apply oil to the rocker arm-to-shaft sliding surface.
Apply molybdenum disulfide oil to the rocker arm slipper and adjusting screw contact points.



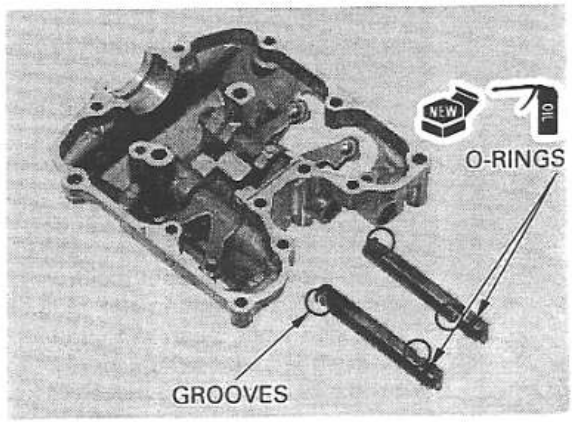
Install the rocker arms and then install the wave washers between the rocker arm-to-rocker arm holder "△" mark side.

NOTE:

Note the location of the exhaust left rocker arm with a decompression lug.



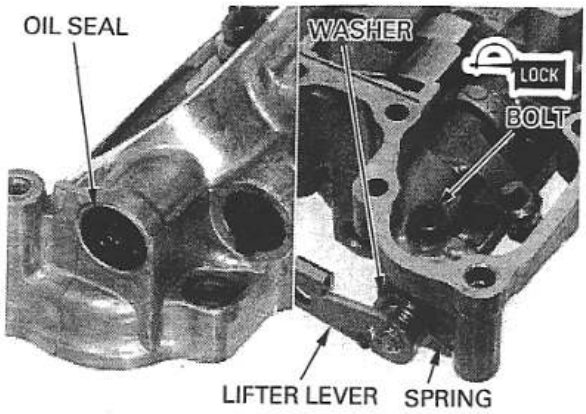
Coat the new O-rings with engine oil and install it to the rocker arm shafts.
Install the rocker arm shafts to the cylinder head cover.
Position the grooves in the rocker arm shafts vertically, aligning the bolt holes on the cylinder head.



Install the oil seal into the cylinder head cover.
Install the washer, spring and valve lifter lever to the cylinder head cover.

Clean and apply a locking agent to the valve lifter bolt threads.
Install and tighten the bolt to the specified torque.

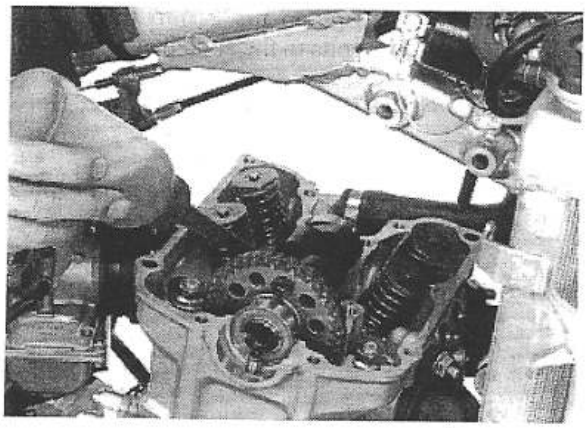
TORQUE: 12 N·m (1.2 kgf·m , 9 lbf·ft)



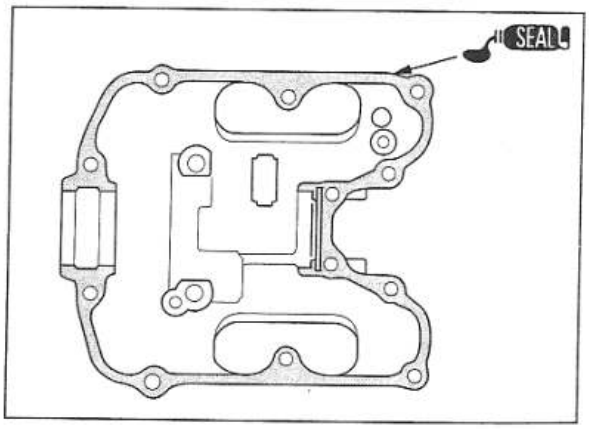
CYLINDER HEAD COVER INSTALLATION

Clean the cylinder head and head cover mating surface thoroughly, being careful not to damage them.

Pour clean engine oil into the cylinder head.

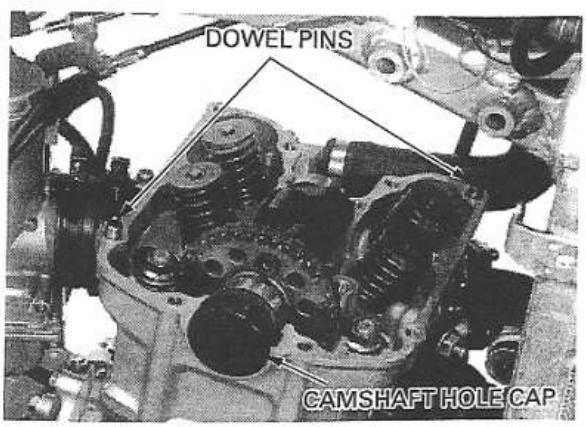


Apply a light but thorough coating of liquid sealant to the cylinder head and head cover mating surface.

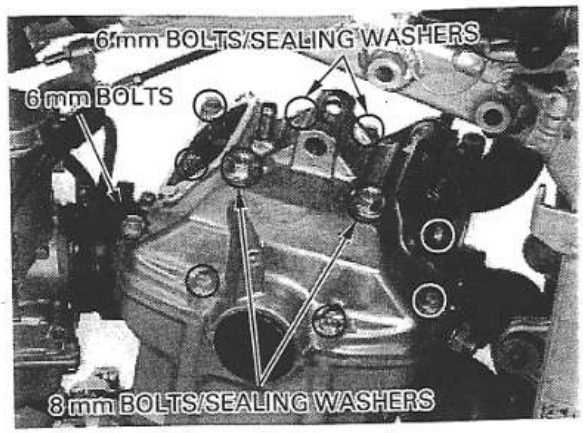


Install the camshaft hole cap and dowel pins.

Rotate the crankshaft until all the cam lobes are facing down.



Loosen all valve adjusting screws.
Install the cylinder head cover.
Install the 8 mm bolts with the new sealing washers.
Install the 6 mm bolts.

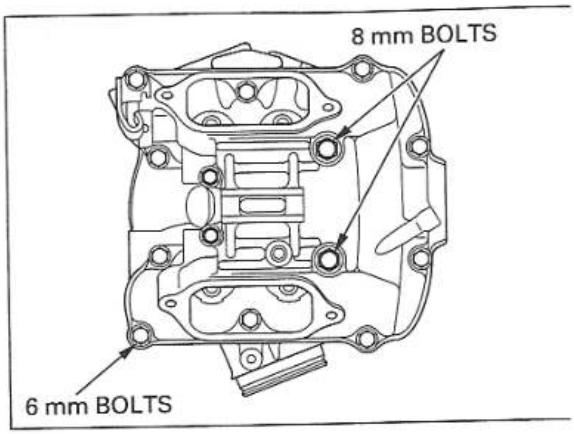


Tighten the 6 mm bolts in a crisscross pattern in two or more steps.

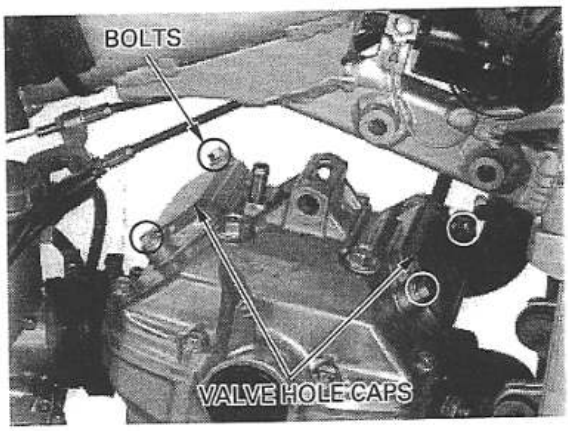
Tighten the 8 mm bolts, then tighten the 6 mm bolts to the specified torque.

TORQUE: 8 mm bolt: 23 N·m (2.3 kgf·m , 17 lbf·ft)
6 mm bolt: 12 N·m (1.2 kgf·m , 9 lbf·ft)

Adjust the valve clearance (page 3-8).

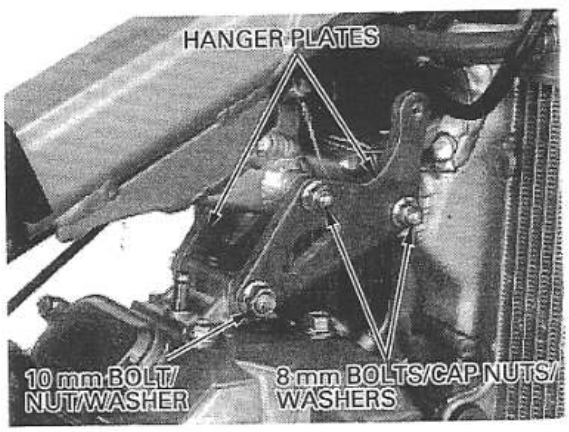


Install the valve hole caps and tighten the bolts.



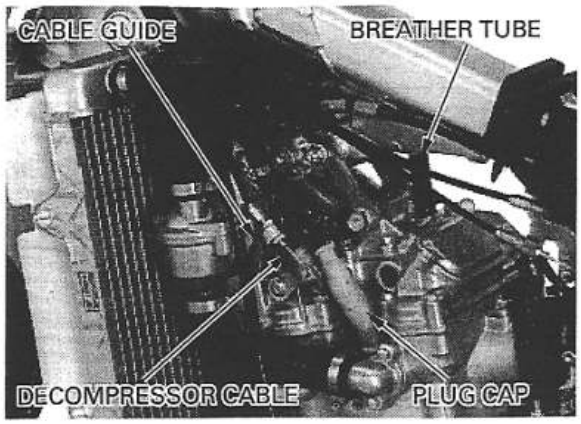
Install the upper engine hanger plates.
Install the 10 mm bolt/nut/washer and 8 mm bolts/cap nuts/washers, then tighten the nuts to the specified torque.

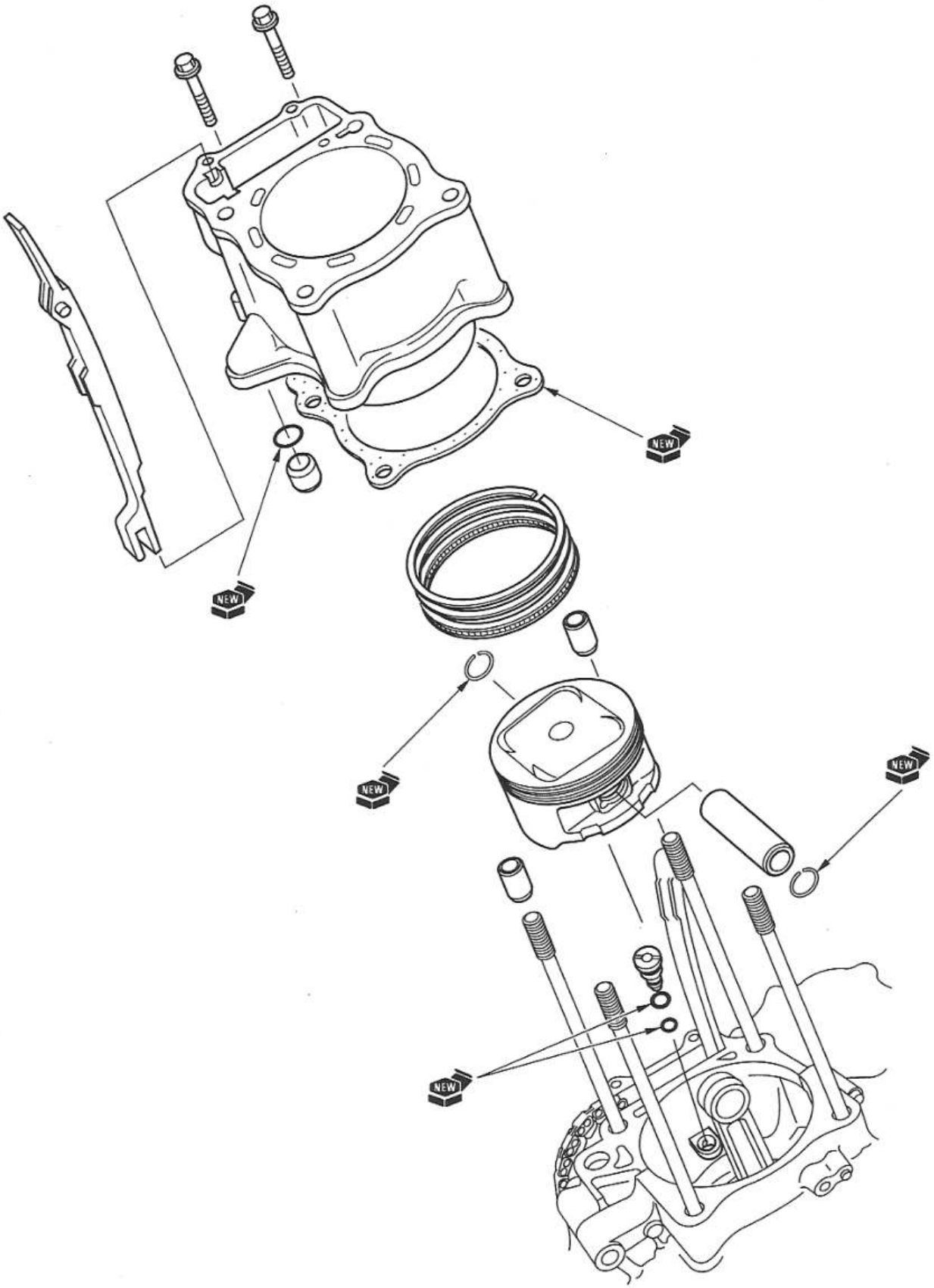
TORQUE: 8 mm bolt: 26 N·m (2.7 kgf·m , 20 lbf·ft)
10 mm bolt: 54 N·m (5.5 kgf·m , 40 lbf·ft)



Connect the breather tube to the cylinder head cover.
Connect the spark plug cap.
Connect the decompressor cable to the valve lifter lever and install the decompressor cable guide to the cylinder head cover.

Install the fuel tank (page 2-5).
Fill and bleed the cooling system (page 6-5).




NEW
NEW
NEW
NEW
NEW

9. CYLINDER/PISTON

SERVICE INFORMATION	9-1	PISTON REMOVAL	9-4
TROUBLESHOOTING	9-2	PISTON INSTALLATION	9-7
CYLINDER REMOVAL	9-3	CYLINDER INSTALLATION	9-9

SERVICE INFORMATION

GENERAL

- This section covers maintenance of the cylinder and piston. These services can be done with the engine installed in the frame.
- Take care not to damage the cylinder wall and piston.
- Be careful not to damage the mating surfaces by using a screwdriver when disassembling the cylinder.
- Clean all disassembled parts with clean solvent and dry them using compressed air before inspection.
- 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
Cylinder	I.D.		100.000 – 100.015 (3.9370 – 3.9376)	100.05 (3.939)
	Taper		———	0.05 (0.002)
	Out of round		———	0.05 (0.002)
	Warpage		———	0.05 (0.002)
Piston, piston rings	Piston mark direction		"IN" mark facing toward the intake side	———
	Piston O.D.		99.96 – 99.99 (3.935 – 3.937)	99.86 (3.931)
	Piston O.D. measurement point		20 mm (0.8 in) from bottom of skirt	———
	Piston pin bore I.D.		23.002 – 23.008 (0.9056 – 0.9058)	23.03 (0.907)
	Piston pin O.D.		22.994 – 23.000 (0.9053 – 0.9055)	22.98 (0.905)
	Piston-to-piston pin clearance		0.002 – 0.014 (0.0001 – 0.0006)	0.04 (0.002)
	Piston ring-to-ring groove clearance	Top	0.045 – 0.080 (0.0018 – 0.0031)	0.095 (0.0037)
		Second	0.025 – 0.060 (0.0010 – 0.0024)	0.075 (0.0030)
	Piston ring end gap	Top	0.25 – 0.40 (0.010 – 0.016)	0.55 (0.022)
		Second	0.40 – 0.55 (0.016 – 0.022)	0.70 (0.028)
		Oil (side rail)	0.20 – 0.70 (0.008 – 0.028)	0.90 (0.035)
	Piston ring mark	Top	"R" mark	———
		Second	"RN" mark	———
Cylinder-to-piston clearance			0.010 – 0.055 (0.0004 – 0.0022)	0.19 (0.007)
Connecting rod small end I.D.			23.020 – 23.041 (0.9063 – 0.9071)	23.05 (0.907)
Connecting rod-to-piston pin clearance			0.020 – 0.047 (0.0008 – 0.0019)	0.067 (0.0026)

TORQUE VALUE

Cylinder bolt	12 N·m (1.2 kgf·m , 9 lbf·ft)

TROUBLESHOOTING

- Engine top-end problems usually affect engine performance. These problem can be diagnosed by a compression test or by tracing engine noises to the top-end with a sounding rod stethoscope.
- If the performance is poor at low speeds, check for while smoke in the crankcase breather tube. If the tube is smoky, check for seized piston ring.

LOW COMPRESSION
- Worn cylinder or piston ring

HIGH COMPRESSION
- Excessive carbon build-up on piston head or on combustion chamber

EXCESSIVE SMOKE
- Worn cylinder, piston or piston ring
- Improper installation of piston rings
- Scored or scratched piston or cylinder wall

ROUGH IDLE
- Low cylinder compression

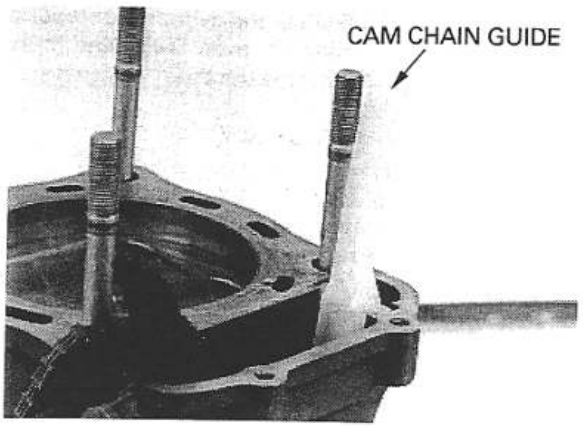
OVER HEATING
- Excessive carbon build-up on piston head or on combustion chamber

KNOCKING OR ABNORMAL NOISE
- Worn cylinder and piston
- Excessive carbon build-up

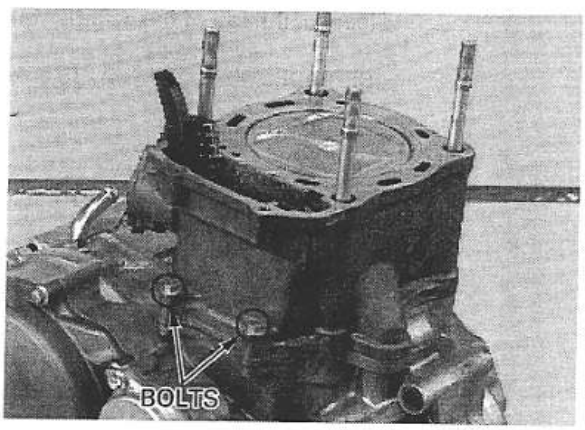
CYLINDER REMOVAL

Remove the cylinder head (page 8-10).

Remove the cam chain guide.

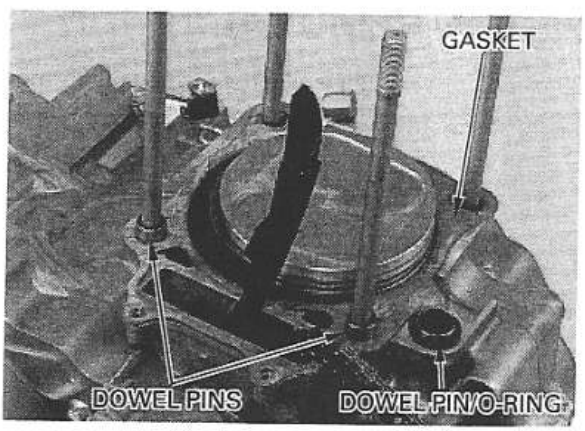


Remove the bolts and cylinder.



Remove the gasket and dowel pins.

Remove the dowel pin with O-ring.

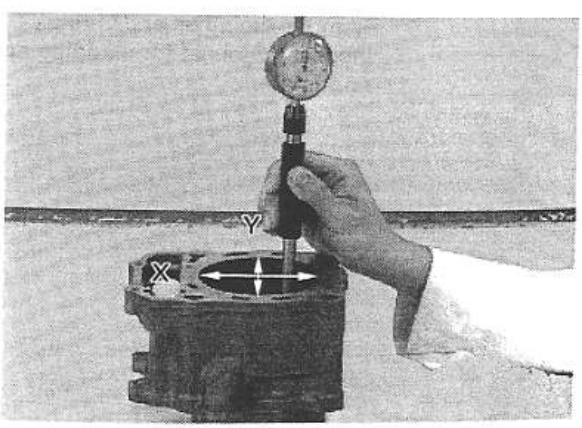


CYLINDER INSPECTION

Inspect the cylinder walls for scratches and wear.

Measure and record the cylinder I.D. at three levels in both an X and Y axis. Take the maximum reading to determine the cylinder wear.

SERVICE LIMIT: 100.05 mm (3.939 in)

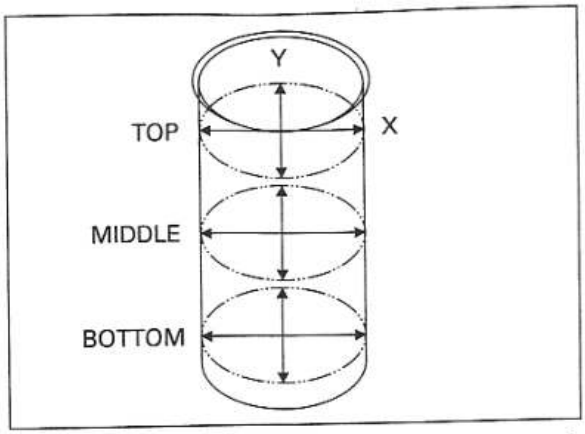


Calculate the cylinder for taper at three levels in an X and Y axis. Take the maximum reading to determine the taper.

SERVICE LIMIT: 0.05 mm (0.002 in)

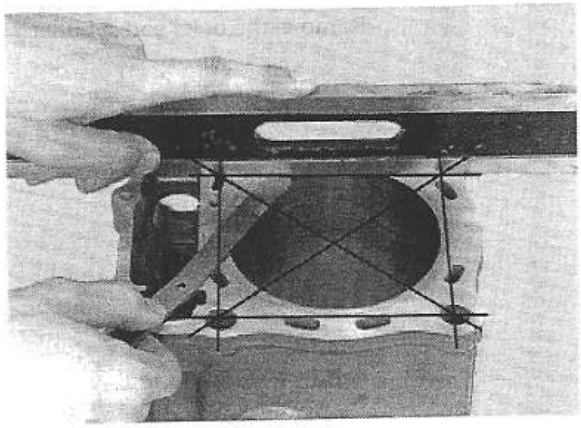
Calculate the cylinder for out-of-round at three levels in an X and Y axis. Take the maximum reading to determine the out-of-round.

SERVICE LIMIT: 0.05 mm (0.002 in)



Inspect the top of the cylinder for warpage.

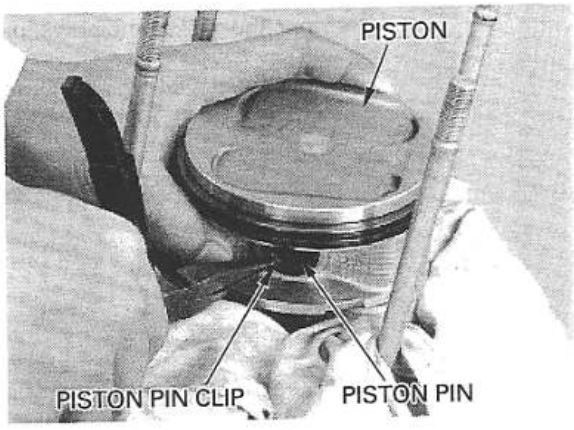
SERVICE LIMIT: 0.05 mm (0.002 in)



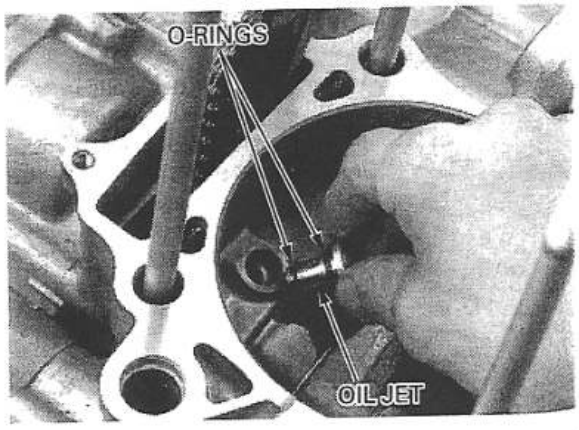
PISTON REMOVAL

Place clean shop towels in the crankcase to keep the piston pin clips, or other parts, from falling into the crankcase.

Remove the piston pin clips with pliers.
Remove the piston pin out of the piston.
Remove the piston.



Remove the oil jet and O-rings.
Inspect the oil jet for clogging and O-rings for wear or damage.

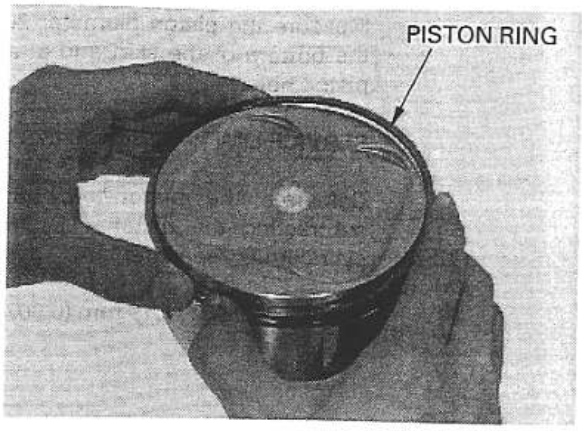


PISTON RING REMOVAL

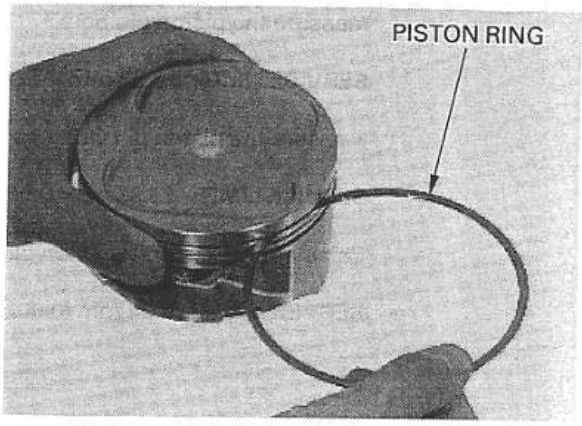
Spread each piston ring and remove by fitting it up at point on the other side of the gap.

CAUTION:

Piston ring are easily broken; take care not to damage them during removal.

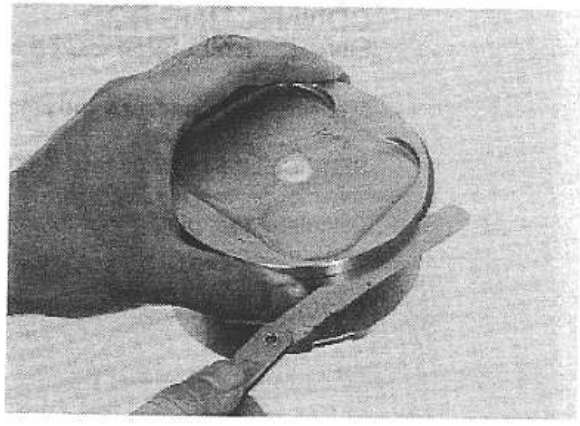


Remove the carbon or deposits from the piston head or piston ring grooves.
Inspect the piston for damage and the ring grooves for wear.



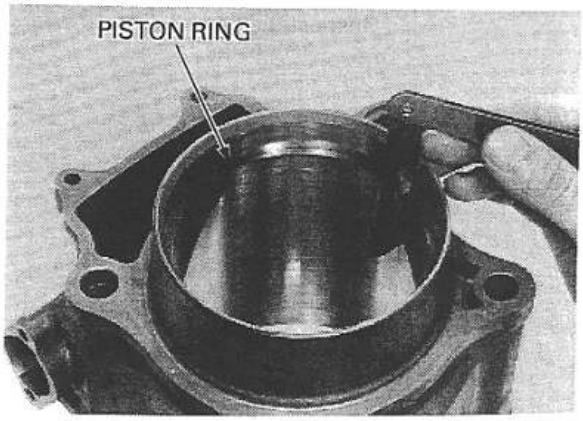
Install the piston ring as shown.
Measure the piston ring-to-groove clearance.

SERVICE LIMITS: **TOP:** 0.095 mm (0.0037 in)
SECOND: 0.075 mm (0.0030 in)



Insert each piston rings into the cylinder, about 42 mm (1.7 in) in from the bottom.
To ensure that its square in the bore, use a piston to push it in.
Measure the end gap.

SERVICE LIMITS: **TOP:** 0.55 mm (0.022 in)
SECOND: 0.70 mm (0.028 in)
OIL: 0.90 mm (0.035 in)

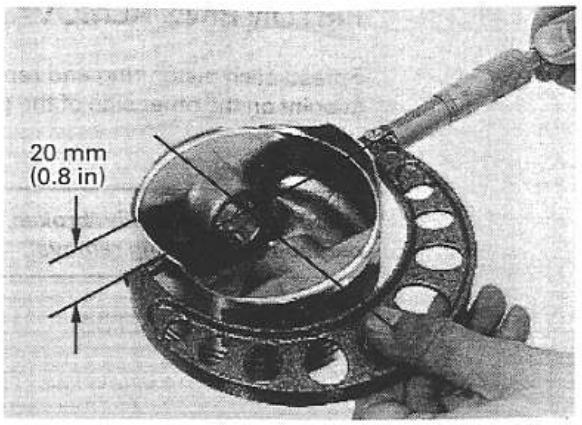


Measure the piston diameter 20 mm (0.8 in) from the bottom of the skirt and at a right angle to the piston hole.

SERVICE LIMIT: 99.86 mm (3.931 in)

Calculate the piston-to-cylinder clearance, by subtracting the piston O.D. from the maximum cylinder I.D. measurement.

SERVICE LIMIT: 0.19 mm (0.007 in)



Measure the piston pin bore.

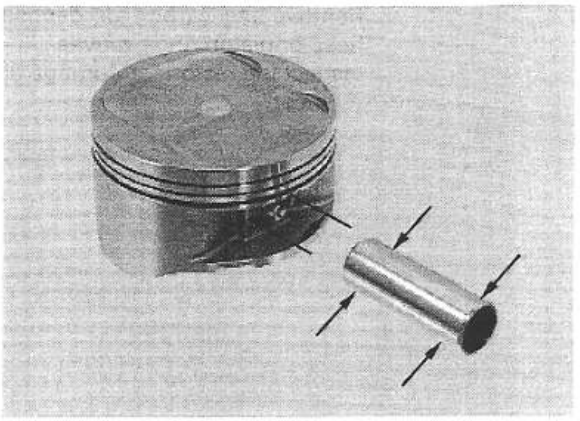
SERVICE LIMIT: 23.03 mm (0.907 in)

Measure the piston pin O.D.

SERVICE LIMIT: 22.98 mm (0.905 in)

Calculate the piston-to-piston pin clearance.

SERVICE LIMIT: 0.04 mm (0.002 in)



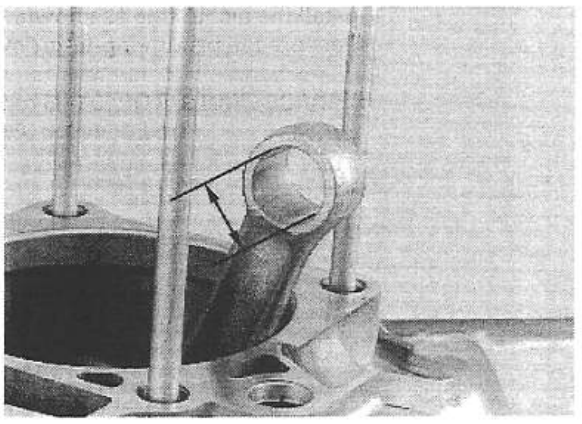
CONNECTING ROD SMALL END INSPECTION

Measure the connecting rod small end I.D..

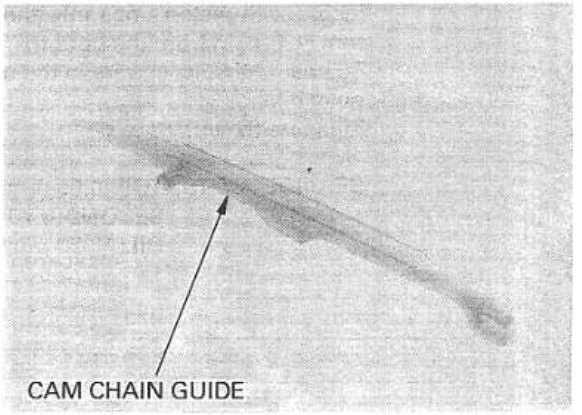
SERVICE LIMIT: 23.05 mm (0.907 in)

Calculate the piston pin-to-connecting rod small end clearance.

SERVICE LIMIT: 0.067 mm (0.0026 in)

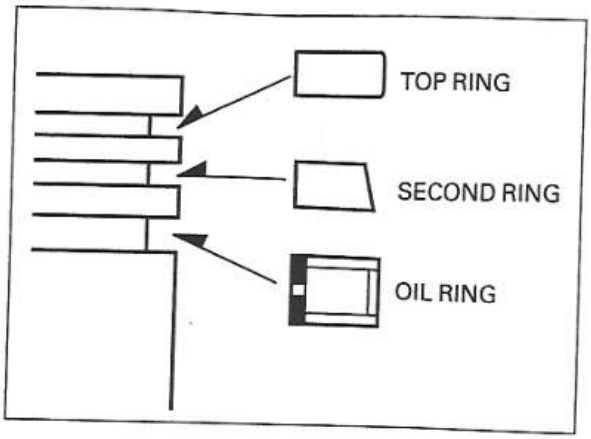


Inspect the cam chain guide for wear or damage.



PISTON INSTALLATION

PISTON RING INSTALLATION



Clean the piston grooves thoroughly.
Apply engine oil to the piston rings and install the piston rings.

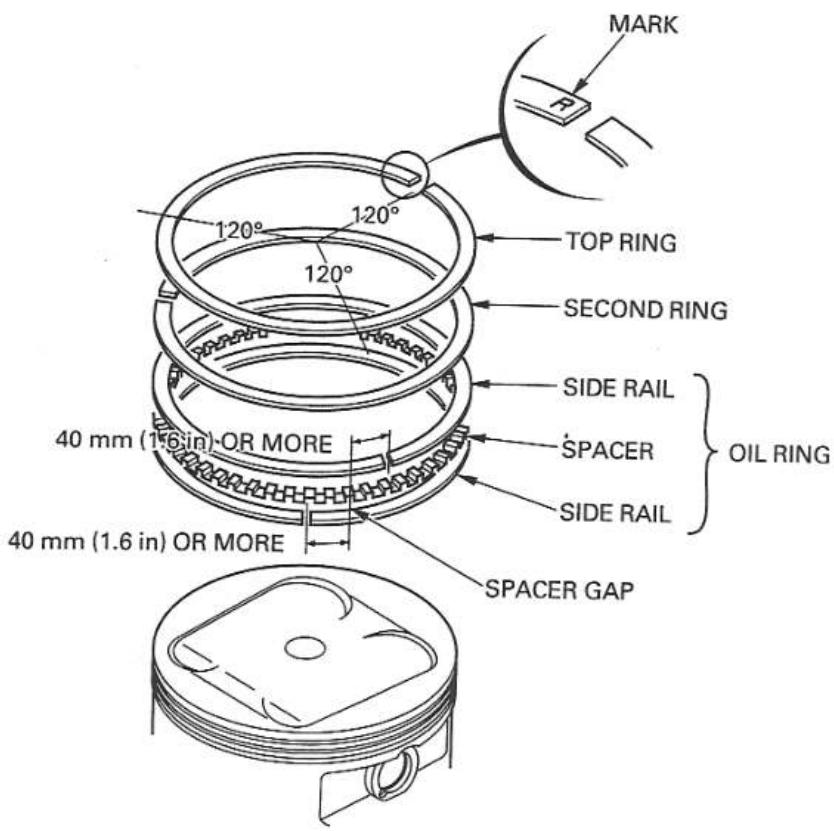
CAUTION:

- ***Do not damage the piston ring by spreading the ends too far.***
- ***Be careful not to damage the piston during piston ring installation.***

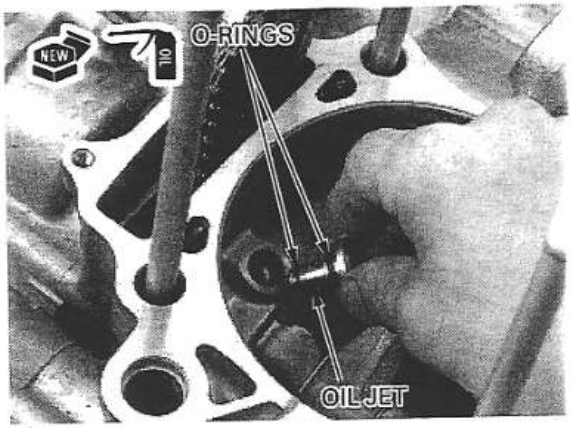
NOTE:

- Install the piston ring on the piston with the marking side facing up.
- Space the ring end gaps 120 degrees apart.
- Do not align the piston ring end gap with the piston pin hole or 90 degrees to the piston pin hole.
- Space the side rail gaps 40 mm (1.6 in) or more apart as shown.

After installing the rings they should rotate freely, without sticking.



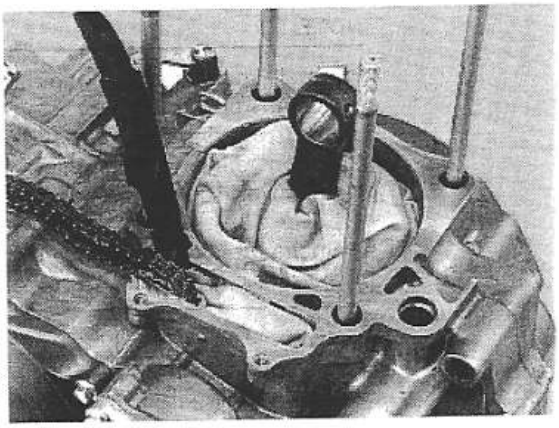
Apply engine oil to the new O-rings and install it to the oil jet.
Securely install the oil jet onto the crankcase.



NOTE:

When cleaning the cylinder mating surface, place a shop towel over the cylinder opening to prevent dust or dirt from entering engine.

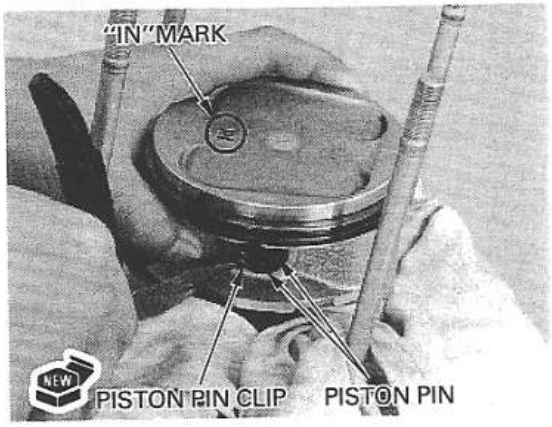
Clean any gasket material from the cylinder mating surfaces of the crankcase.



Place a shop towel around the piston skirt and in the crankcase to prevent the piston pin clips from falling into the crankcase.

Apply molybdenum disulfide oil to the connecting rod small end and piston pin.

Install the piston with the "IN" mark facing intake side.
Install the piston pin and new piston pin clip.

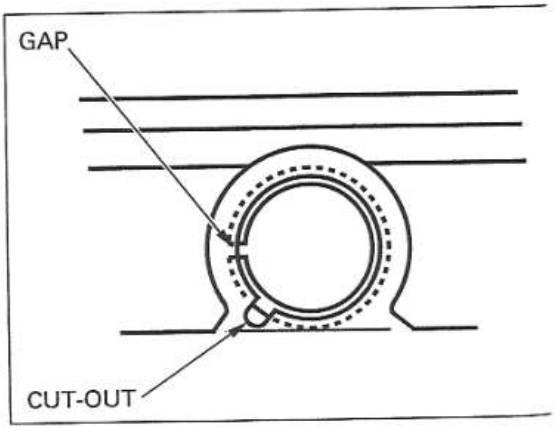


CAUTION:

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

NOTE:

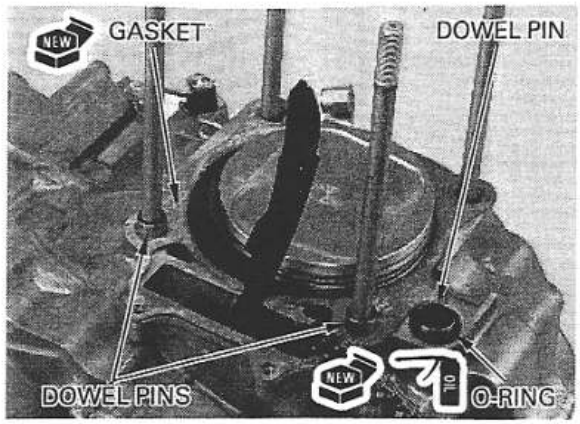
- Do not align the piston pin clip end gap with the piston cut-out.
- Be careful not to drop the piston pin clip into the crankcase.



CYLINDER INSTALLATION

Apply engine oil to the new O-ring.
Install the dowel pin with O-ring to the cylinder.

Install the dowel pins and new gasket.

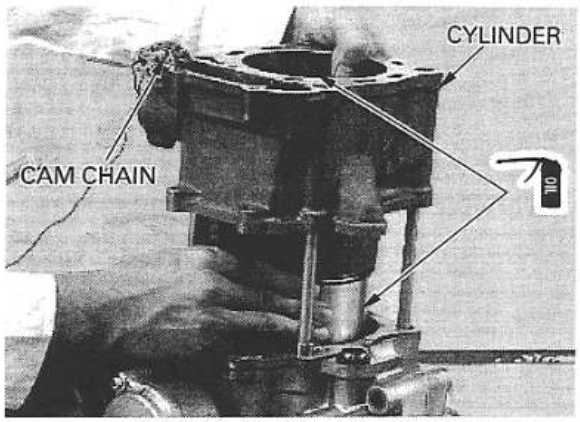


Apply fresh engine oil to the cylinder wall, piston outer surface and piston rings.

CAUTION:

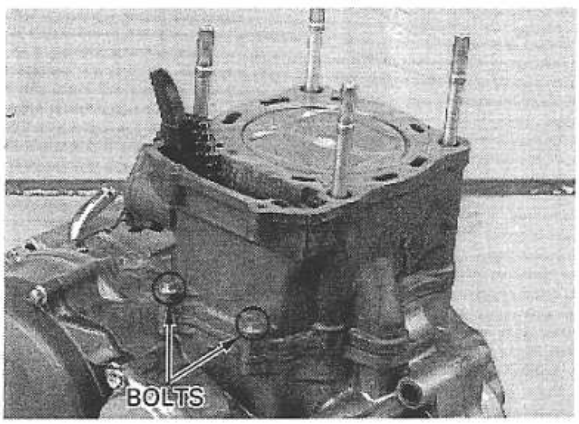
Be careful not to damage the piston rings and cylinder walls.

Route the cam chain through the cylinder.
Install the cylinder over the piston rings by hand while compressing the piston rings.



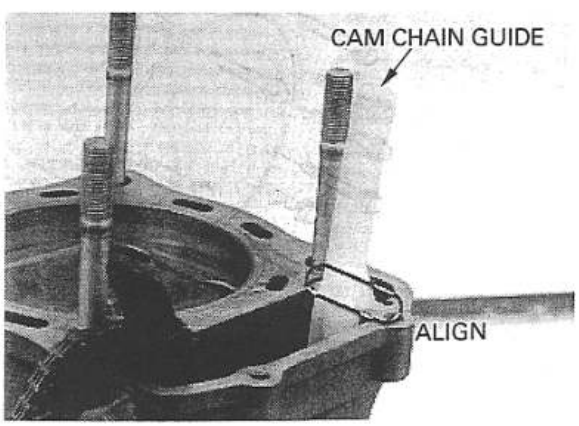
Install and tighten the cylinder bolts to the specified torque.

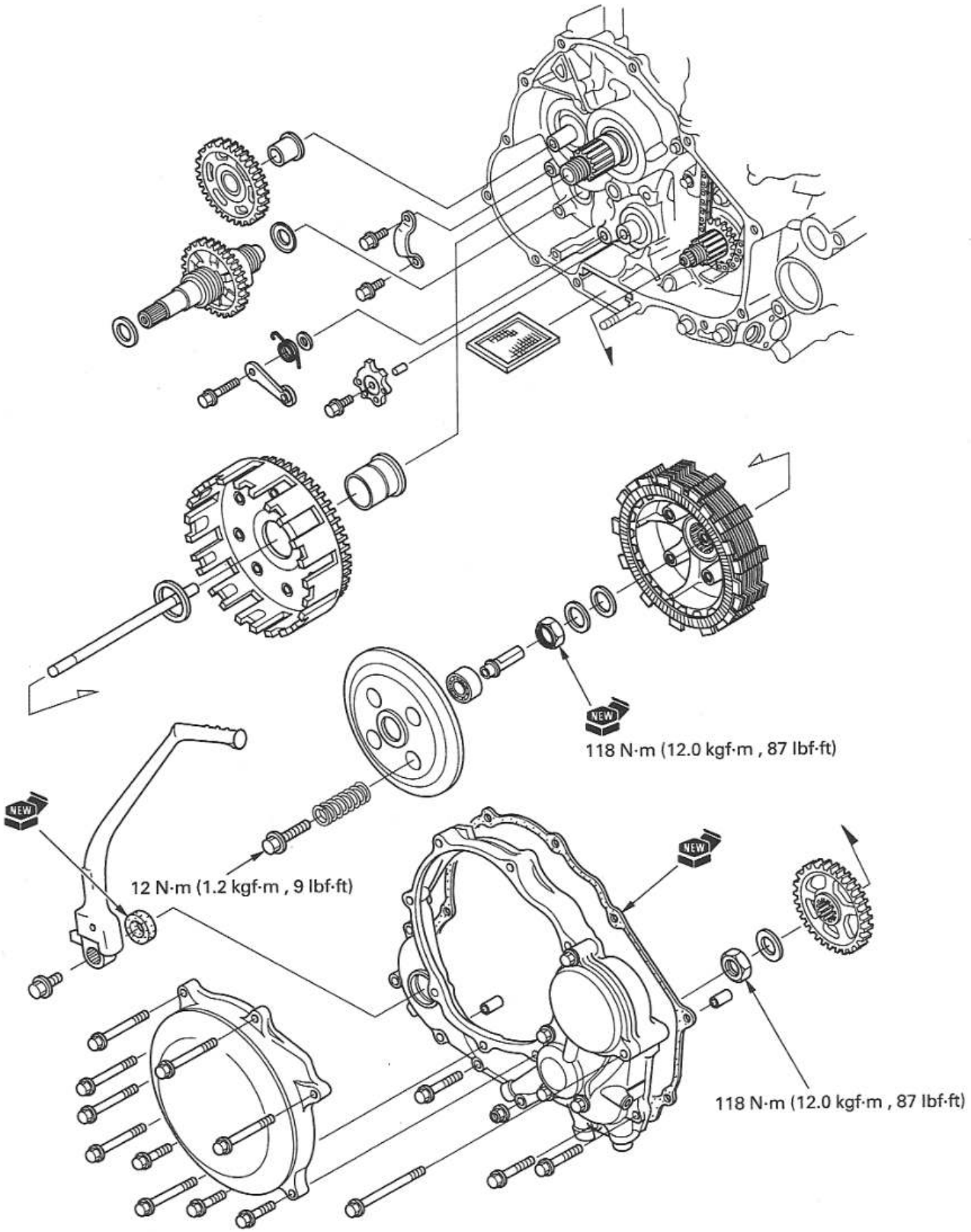
TORQUE: 12 N·m (1.2 kgf·m , 9 lbf·ft)



Install the cam chain guide and fit the cam chain guide tab in the cylinder cut-out as shown.
Push the guide until it bottoms in the crankcase guide hole.

Install the cylinder head (page 8-19).
Install the camshaft (page 8-19).
Install the cylinder head cover (page 8-23).




NEW
118 N·m (12.0 kgf·m , 87 lbf·ft)
NEW
12 N·m (1.2 kgf·m , 9 lbf·ft)
NEW
118 N·m (12.0 kgf·m , 87 lbf·ft)

10. CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

SERVICE INFORMATION	10-1	PRIMARY DRIVE GEAR	10-13
TROUBLESHOOTING	10-2	KICKSTARTER	10-15
CLUTCH	10-3	GEARSHIFT CAM	10-20
RIGHT CRANKCASE COVER REMOVAL	10-11	RIGHT CRANKCASE COVER INSTALLATION	10-20

SERVICE INFORMATION

GENERAL

- This section covers service of the clutch, kickstarter, gearshift linkage, shift drum and shift forks. All service can be done with the engine installed in the frame.
- When the existing clutch discs are replaced, coat the new discs with engine oil prior to assembly.

SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Clutch	Clutch lever free play		10–20 (0.4–0.8)	———
	Spring free length		49.0 (1.93)	46.0 (1.81)
	Disc thickness	A (6 discs)	3.22–3.38 (0.127–0.133)	3.00 (0.118)
		B (1 disc)	2.92–3.08 (0.115–0.121)	2.69 (0.106)
	Plate warpage		———	0.30 (0.012)
	Clutch outer I.D.		29.000–29.021 (1.1417–1.1426)	29.05 (1.144)
	Outer guide	I.D.	21.990–22.035 (0.8657–0.8675)	22.05 (0.868)
		O.D.	28.959–28.980 (1.1401–1.1409)	28.91 (1.138)
	Mainshaft O.D. at clutch outer guide		21.967–21.980 (0.8648–0.8654)	21.94 (0.864)
Kickstarter	Starter idle gear I.D.		23.000–23.021 (0.9055–0.9063)	23.11 (0.910)
	Starter idle gear bushing	I.D.	20.013–20.031 (0.7879–0.7886)	20.05 (0.789)
		O.D.	22.959–22.980 (0.9039–0.9047)	22.90 (0.902)
	Kickstarter pinion gear I.D.		22.020–22.041 (0.8669–0.8678)	22.09 (0.870)
	Kickstarter spindle O.D.		21.959–21.980 (0.8645–0.8654)	21.91 (0.863)
	Countershaft O.D. at starter idle gear		19.980–19.993 (0.7866–0.7871)	19.94 (0.785)

TORQUE VALUES

Clutch spring bolt	12 N·m (1.2 kgf·m , 9 lbf·ft)	
Clutch center lock nut	118 N·m (12.0 kgf·m , 87 lbf·ft)	Apply oil to the threads and seating surface Stake
Primary drive gear lock nut	118 N·m (12.0 kgf·m , 87 lbf·ft)	Apply oil to the threads and seating surface
Clutch cover bolt	12 N·m (1.2 kgf·m , 9 lbf·ft)	
Right crankcase cover bolt	12 N·m (1.2 kgf·m , 9 lbf·ft)	
Brake pedal pivot bolt	25 N·m (2.6 kgf·m , 19 lbf·ft)	
Gearshift cam stopper arm pivot bolt	12 N·m (1.2 kgf·m , 9 lbf·ft)	
Gearshift cam bolt	12 N·m (1.2 kgf·m , 9 lbf·ft)	Apply locking agent to the threads
Right footpeg mounting bolt	54 N·m (5.5 kgf·m , 40 lbf·ft)	
Kickstarter pedal bolt	37 N·m (3.8 kgf·m , 27 lbf·ft)	

TOOLS

Gear holder	07724-00010200
Clutch center holder	07724-00050002
Attachment, 24 × 26 mm	07746-0010700
Pilot, 20 mm	07746-0040500
Driver	07749-0010000

TROUBLESHOOTING

- Faulty clutch operation can usually be corrected by adjusting the clutch lever free play.

HARD TO SHIFT
- Incorrect clutch adjustment
- Loose stopper plate bolt
- Damaged stopper plate and pin
- Damaged gearshift spindle

TRANSMISSION JUMPS OUT OF GEAR
- Worn shift drum stopper arm
- Weak or broken shift arm return spring
- Loose stopper plate bolt

GEARSHIFT PEDAL WILL NOT RETURN
- Weak or broken gearshift spindle return spring
- Bent gearshift spindle

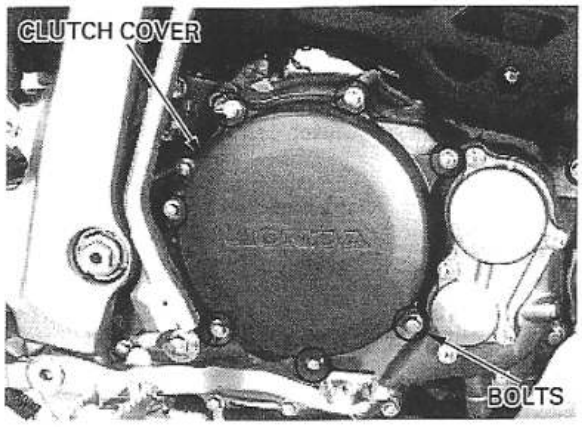
CLUTCH SLIPS WHEN ACCELERATING
- Incorrect clutch adjustment
- Worn clutch discs
- Weak clutch springs

MOTORCYCLE CREEPS WITH THE ENGINE IDLING
- Incorrect clutch adjustment
- Clutch plate warped
- Faulty clutch lifter
- Incorrect engine oil

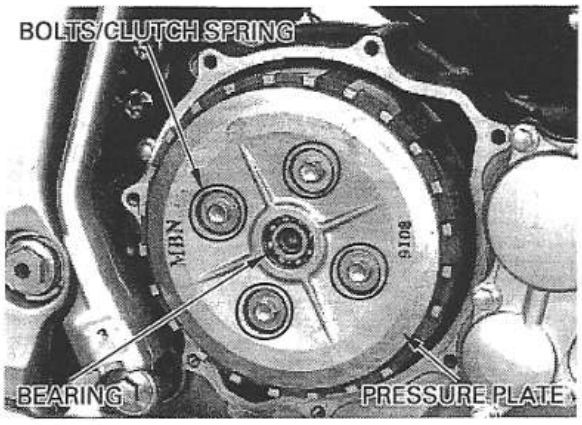
CLUTCH

CLUTCH REMOVAL

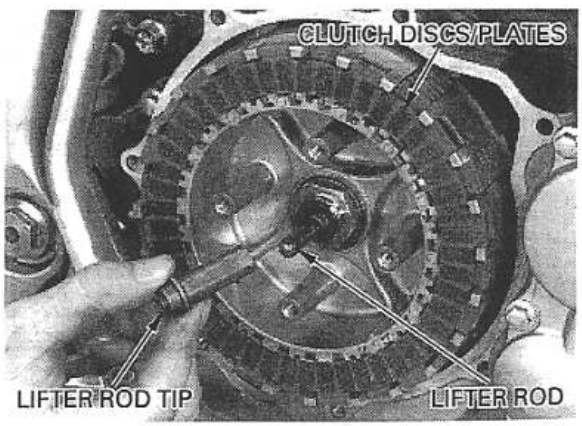
Remove the bolts, clutch cover and O-ring.



Remove the clutch spring bolts in a crisscross pattern in several steps.
Remove the clutch springs.
Remove the clutch pressure plate and bearing.



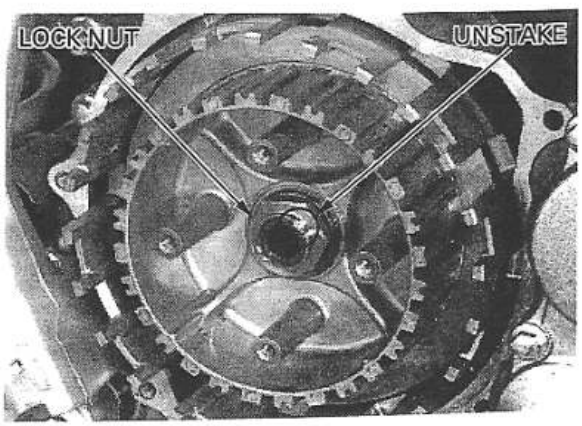
Remove the lifter rod tip and lifter rod.
Remove the seven clutch friction discs and six clutch plates.



Unstake the lock nut with a drill or grinder

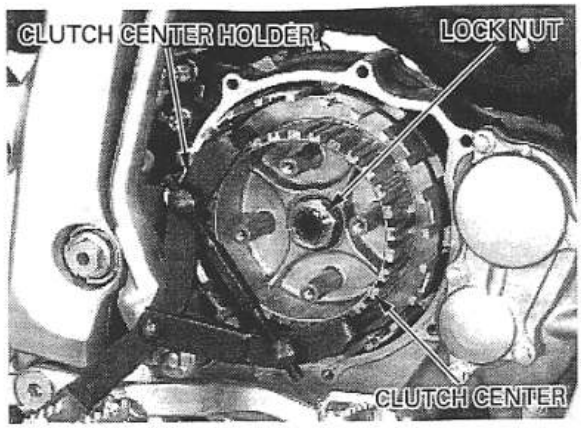
NOTE:

- Be careful that the threads on the mainshaft are not damaged.
- Clean any metal shavings.

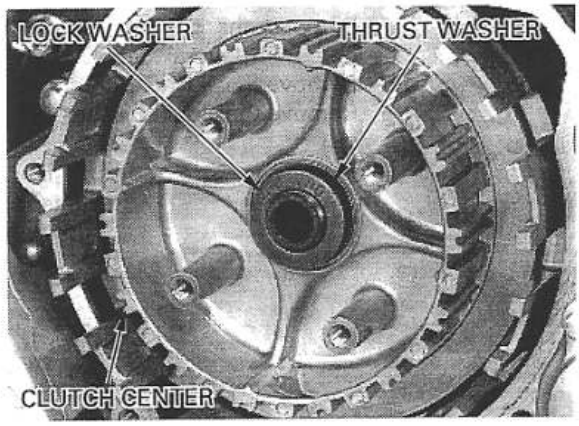


Hold the clutch center with the clutch center holder. Remove the lock nut.

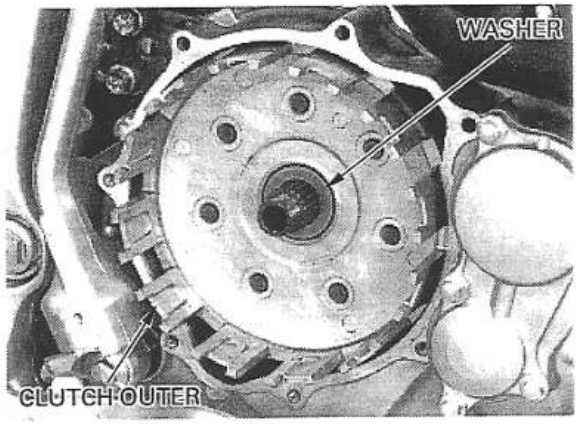
TOOL:
Clutch center holder 07724-0050002



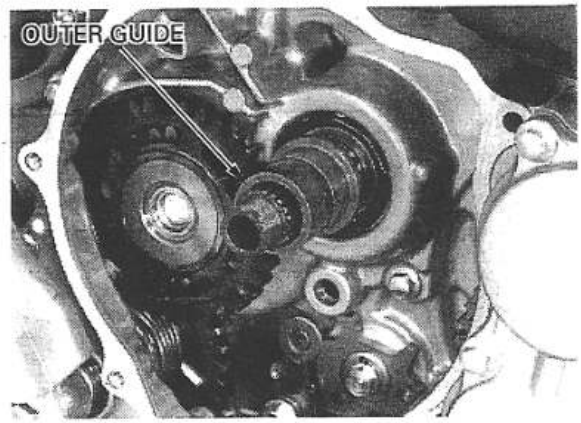
Remove the lock washer, thrust washer and clutch center.



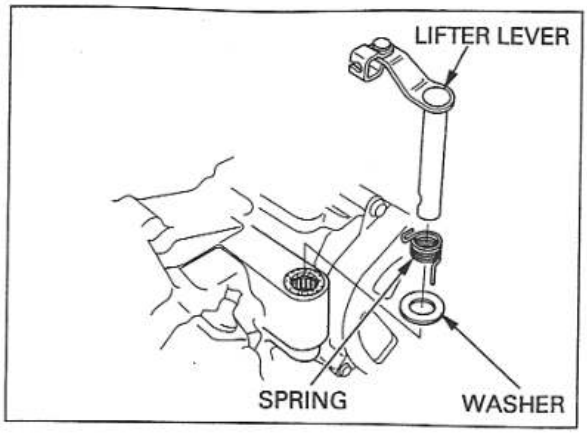
Remove the thrust washer and clutch outer.



Remove the clutch outer guide.



Remove the clutch lifter lever, spring and washer.



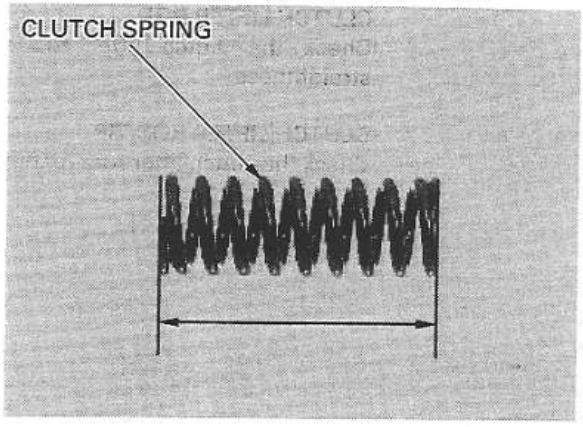
INSPECTION

CLUTCH SPRING

Measure the clutch spring free length.

Clutch springs should be replaced as a set if one or more is below the service limit.

SERVICE LIMIT: 46.0 mm (1.81 in)



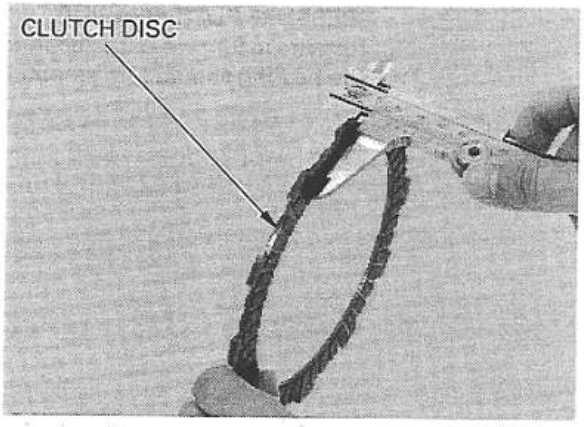
CLUTCH DISC

Check the clutch discs for signs of scoring or discoloration.

Measure the thickness of the discs.

Clutch discs should be replaced as a set if one or more is less the service limit.

SERVICE LIMITS: **Disc A:** 3.00 mm (0.118 in)
Disc B: 2.69 mm (0.106 in)



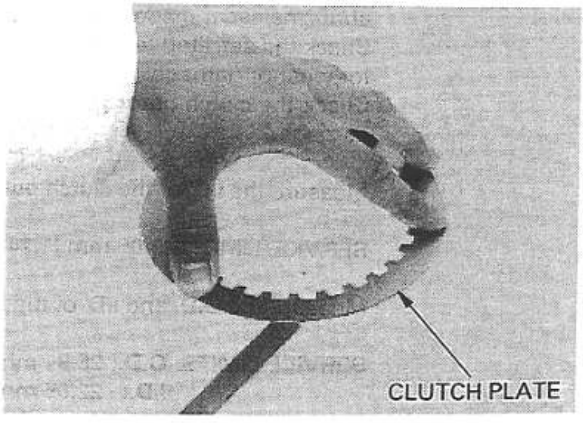
CLUTCH PLATE

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

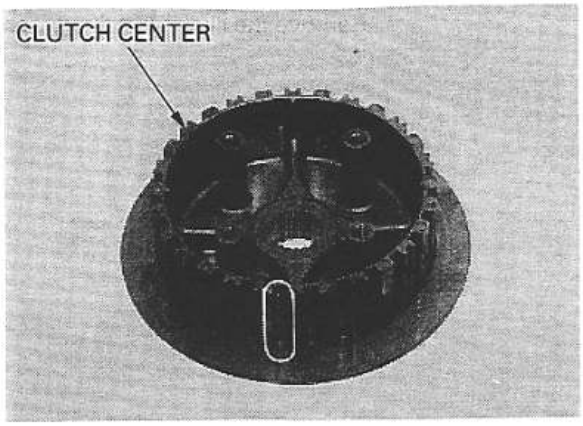
Measure the thickness of the plates.

Clutch plates should be replaced as a set if one or more is less the service limit.

SERVICE LIMIT: 0.30 mm (0.012 in)

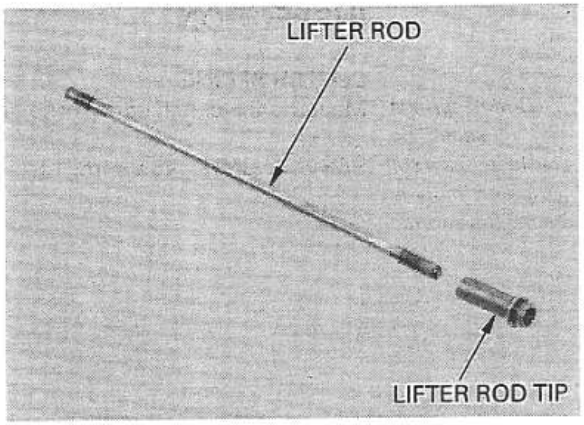


CLUTCH CENTER
Check the clutch center for nicks, indentations or abnormal wear made by the clutch plates.

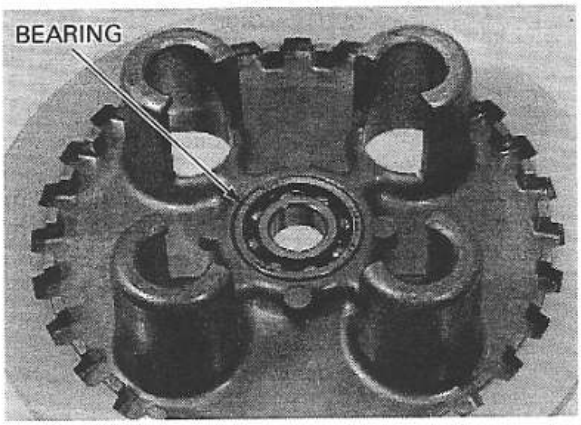


CLUTCH LIFTER ROD
Check the clutch lifter rod for damage, and straightness.

CLUTCH LIFTER ROD TIP
Check the clutch lifter rod tip for wear of damage.



PRESSURE PLATE BEARING
Turn the inner race of the bearing with you finger. The bearing should turn smoothly and quietly.



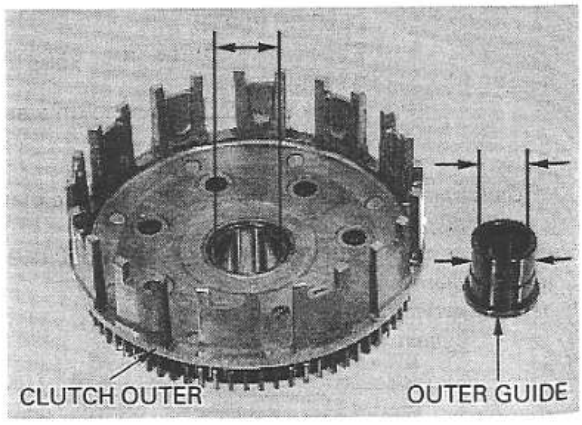
CLUTCH OUTER/OUTER GUIDE
Check the clutch outer for nicks, indentations or abnormal wear made by the clutch discs.
Check the serrated teeth of the primary driven gear for wear or damage.
Check the clutch outer guide for abnormal wear or damage.

Measure the I.D. of the clutch outer.

SERVICE LIMIT: 29.05 mm (1.144 in)

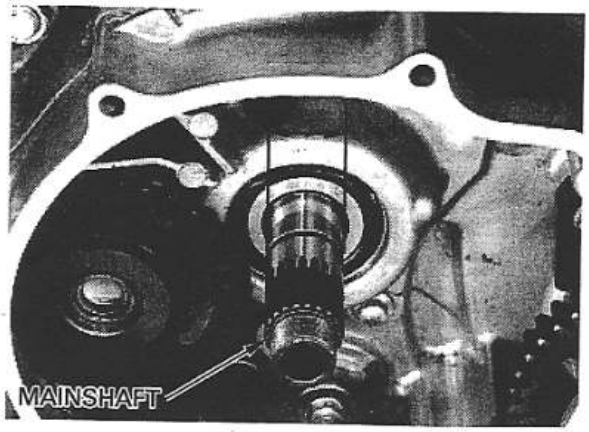
Measure the O.D. and I.D. of the clutch outer guide.

SERVICE LIMITS: **O.D.:** 28.91 mm (1.138 in)
I.D.: 22.05 mm (0.868 in)

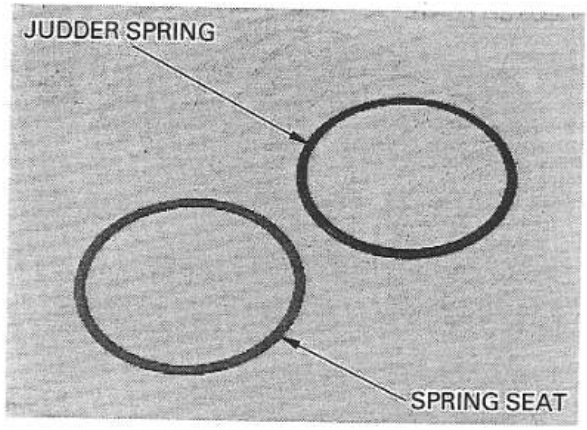


MAINSHAFT
Measure the mainshaft O.D. at the clutch outer guide area.

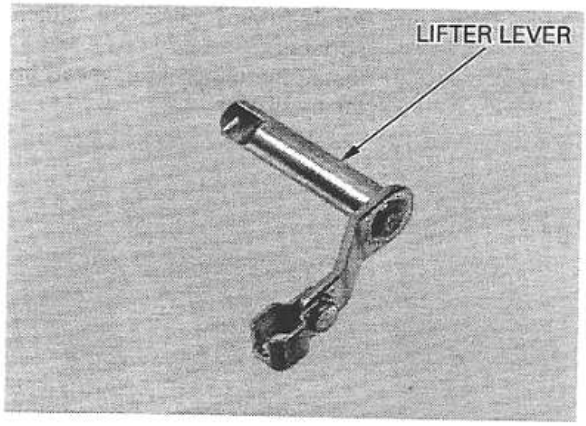
SERVICE LIMIT: 21.94 mm (0.864 in)



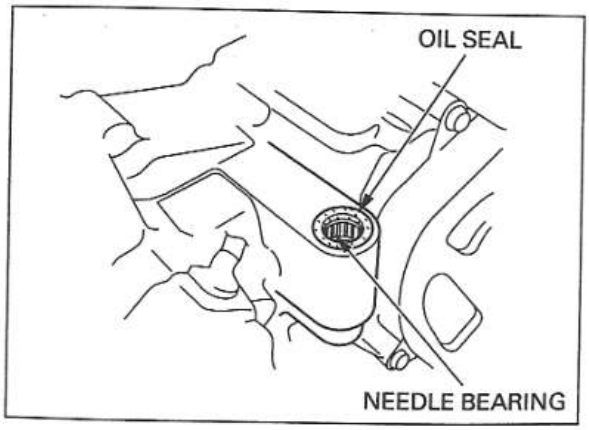
JUDDER SPRING, SPRING SEAT
Check the judder spring and spring seat for distortion, wear or damage.



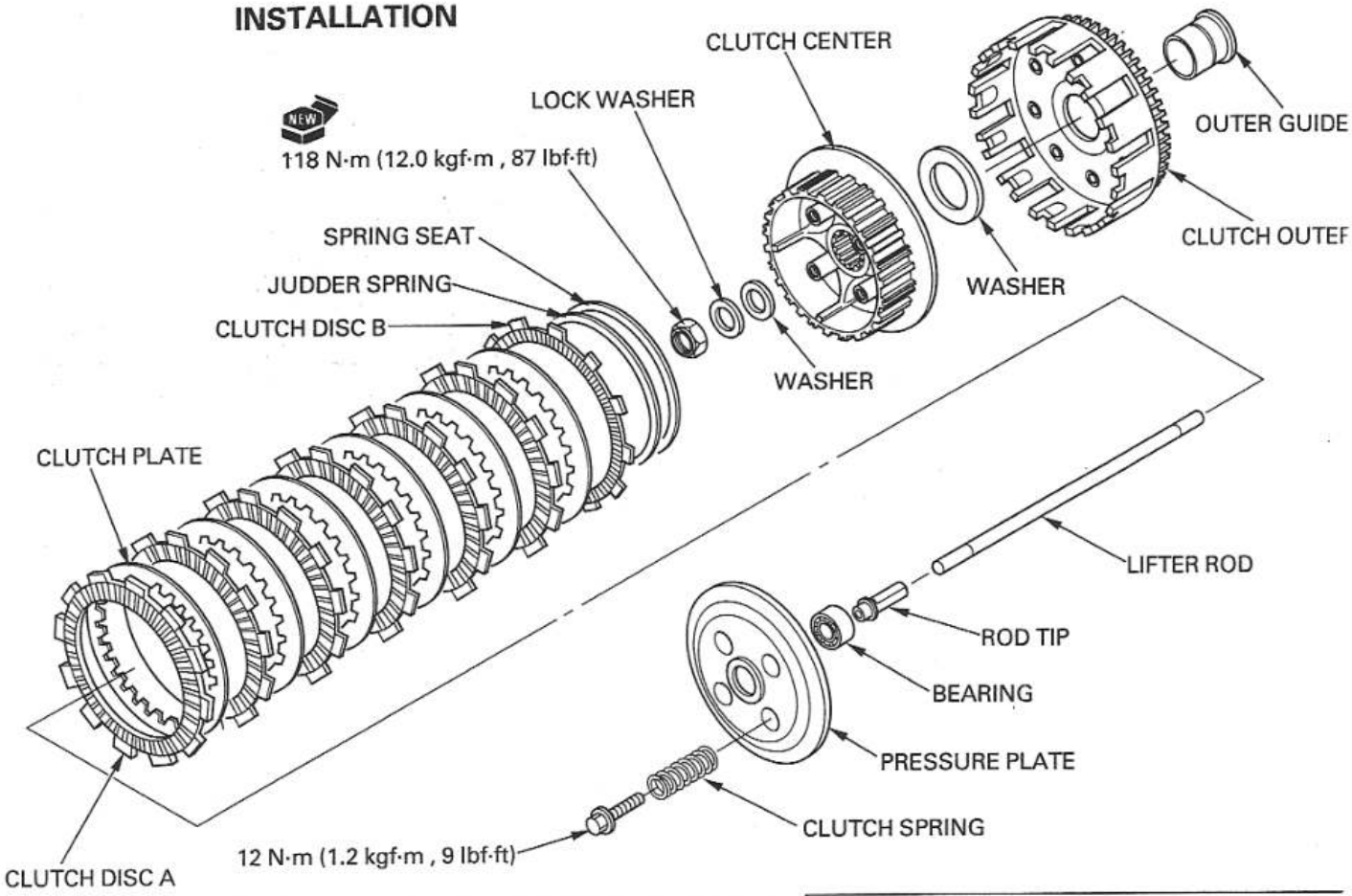
CLUTCH LIFTER LEVER
Check the clutch lifter lever for damage.



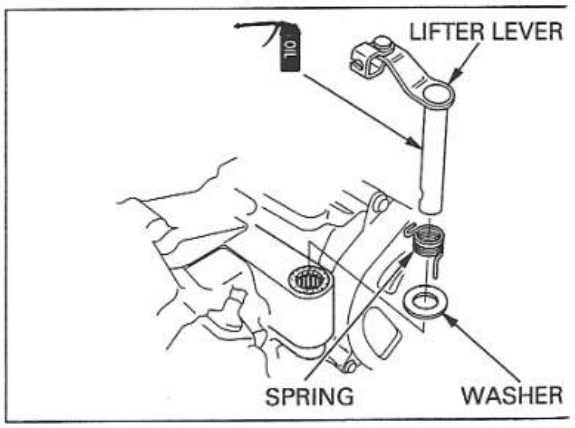
Check the oil seal and needle bearing for wear or damage.



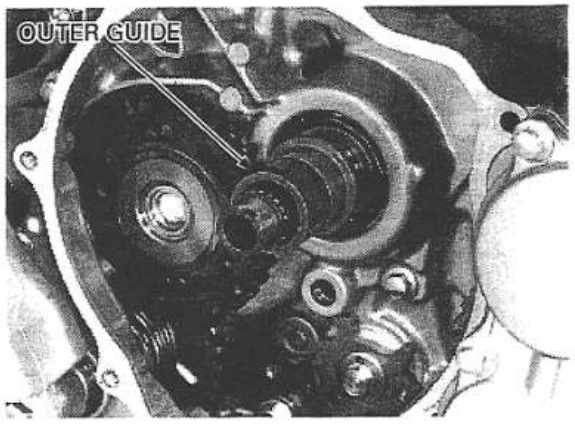
INSTALLATION



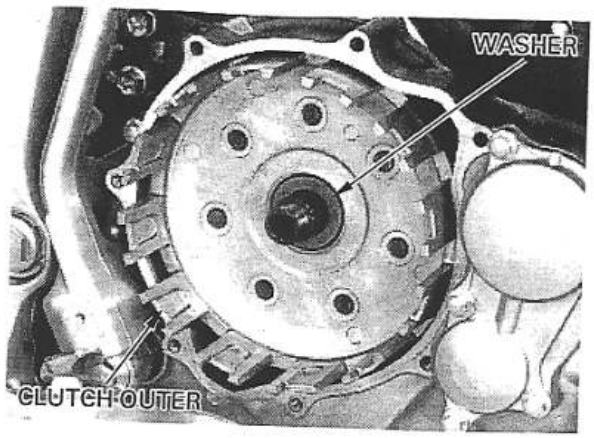
Apply engine oil to the clutch lifter lever sliding surface.
Install the clutch lifter lever, spring and washer to the crankcase.



Apply molybdenum solution to the clutch outer guide sliding surface.
Install the clutch outer guide onto the mainshaft.

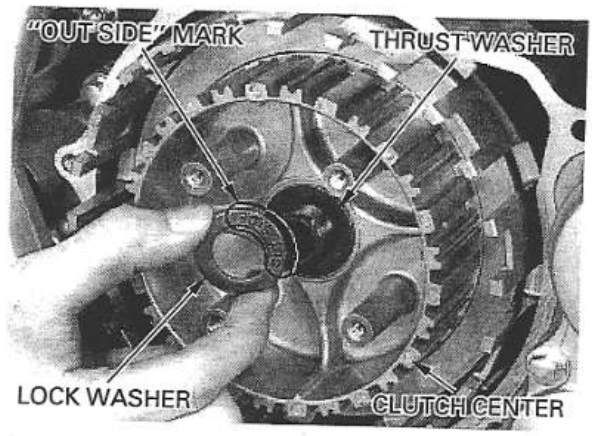


Install the clutch outer and thrust washer.



Install the clutch center onto the mainshaft.
Install the thrust washer and lock washer.

Install the lock washer with the "OUT SIDE" mark facing outside

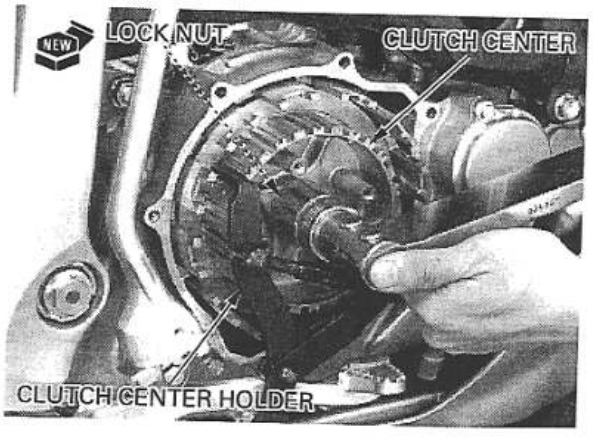


Apply engine oil to the new clutch center lock nut threads and seating surface then install it.

Tighten the clutch center lock nut to the specified torque while holding the clutch center with the special tool.

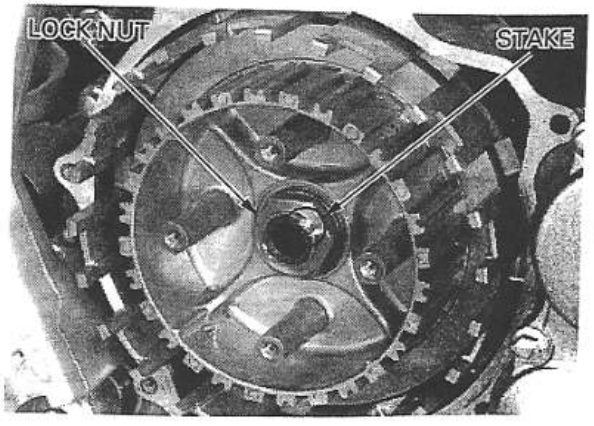
TOOL:
Clutch center holder 07724-0050002

TORQUE: 118 N·m (12.0 kgf·m , 87 lbf·ft)

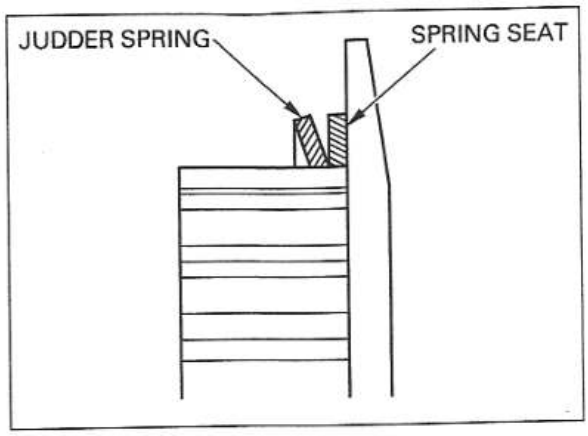


Remove the clutch center holder and stake the lock nut.

Be sure that the threads on the mainshaft are not damaged.

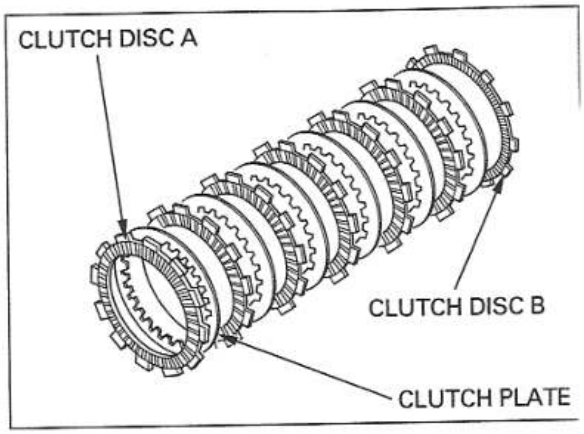


Install the spring seat and judder spring on the clutch center as shown.

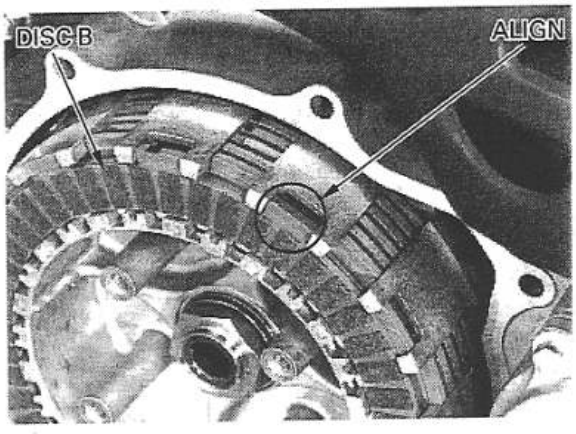


Coat the clutch plates and discs with clean engine oil.

Install the seven friction discs and six clutch plates alternately, starting with the large I.D. disc B.

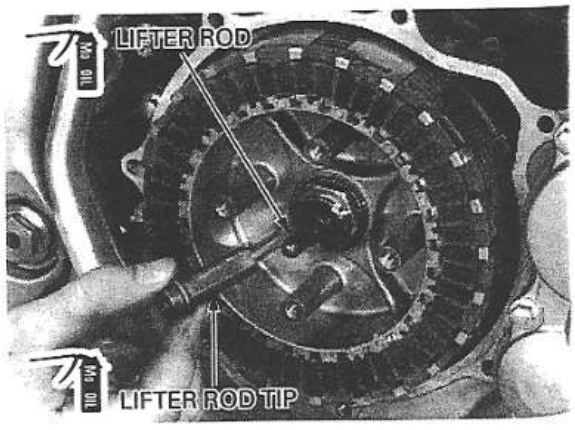


When installing the outside clutch disc A only, align the end grooves in the clutch outer with the tabs of the disc.



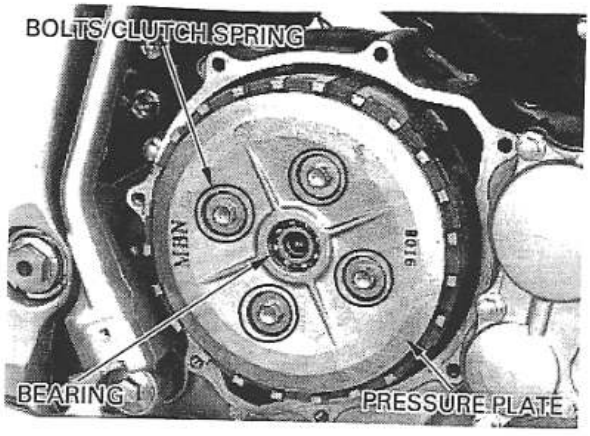
Apply molybdenum solution to the clutch lifter rod and lifter rod tip.

Insert the clutch lifter rod and lifter rod tip into the mainshaft.

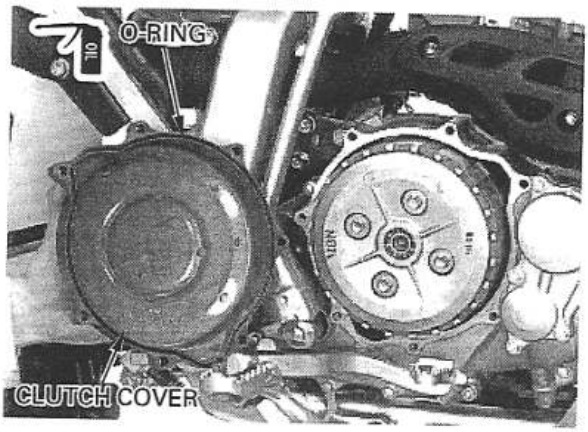


Install the clutch pressure plate and bearing as a set.
Install the clutch springs and spring bolts.
Tighten the bolts in a crisscross pattern in 2 or 3 steps.

TORQUE: 12 N·m (1.2 kgf·m , 9 lbf·ft)



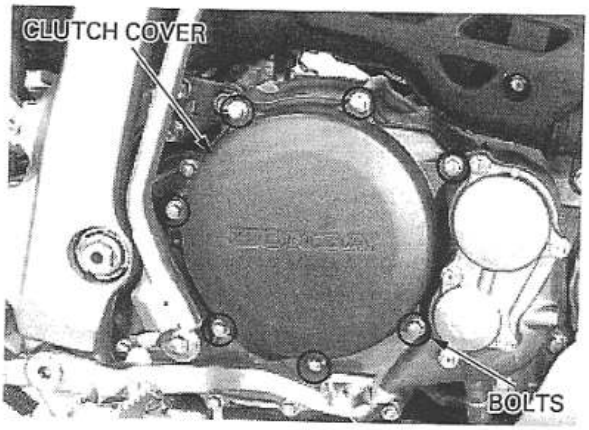
Check that the clutch cover O-ring is in good condition.
Apply oil to the O-ring and install the clutch cover.



Install and tighten the clutch cover bolts to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m , 9 lbf·ft)

After clutch system service, perform the clutch adjustment (page 3-21).
Check the oil level and fill the engine with the recommended engine oil as necessary (page 3-10).

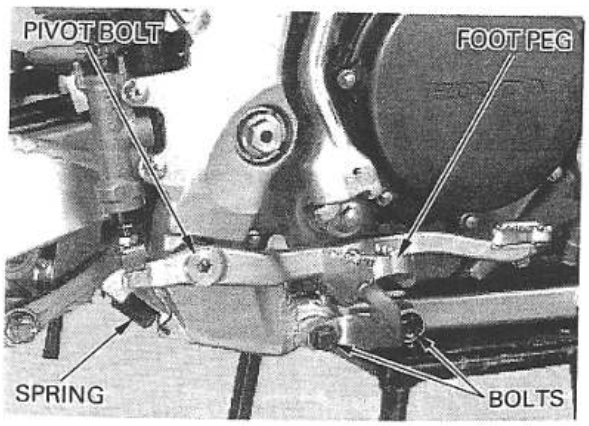


RIGHT CRANKCASE COVER REMOVAL

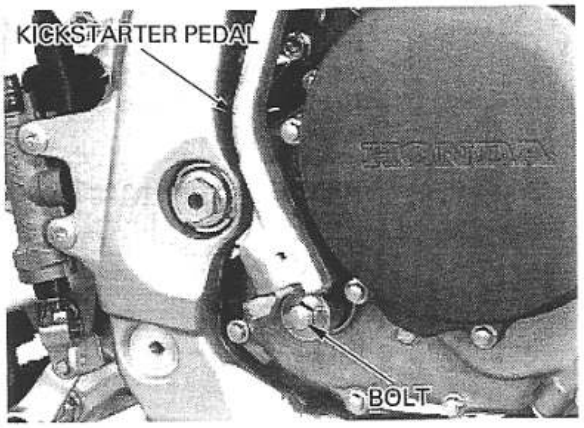
REMOVAL

Drain the engine oil (page 3-10).
Remove the skid plate (page 2-11).

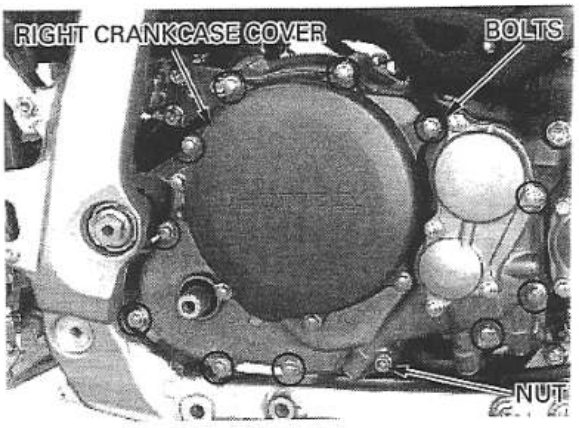
Remove the bolts and right footpeg.
Remove the brake pedal pivot bolt and return spring.



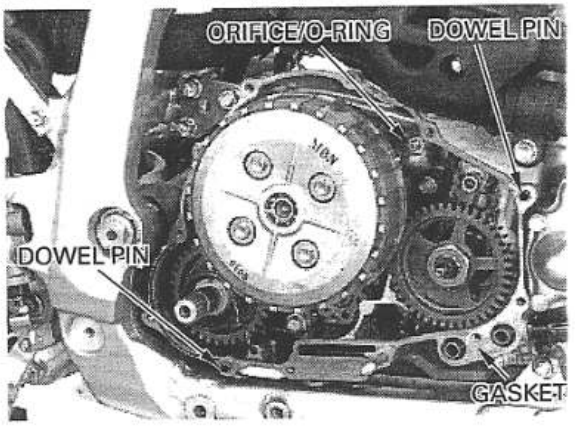
Remove the bolt and kickstarter pedal.



Remove the bolts, nut and right crankcase cover.



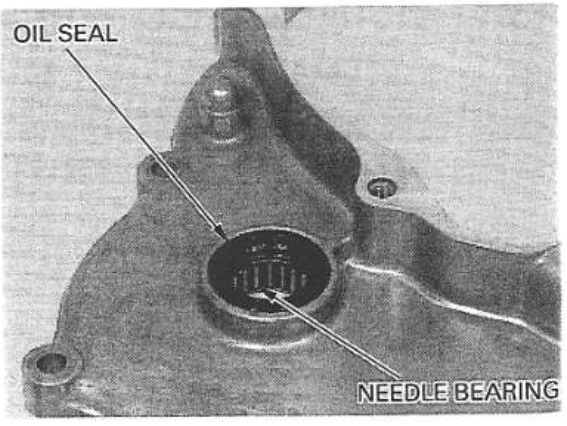
Remove the gasket, dowel pins and orifice/O-ring.



KICKSTARTER SPINDLE NEEDLE BEARING REPLACEMENT

Inspect the kickstarter spindle oil seal and needle bearing for wear, excessive play and damaged, replace if necessary as follows:

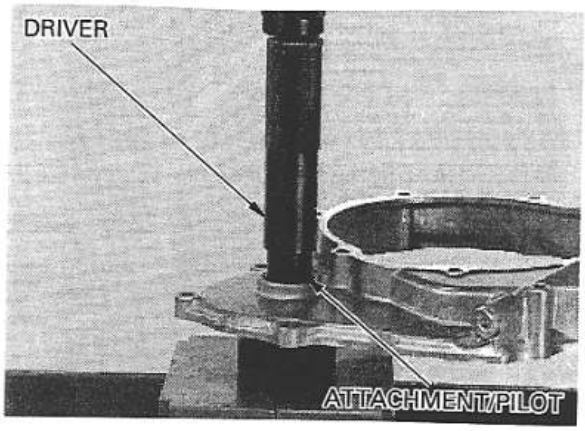
Remove the oil seal.



Remove the kickstarter spindle needle bearing using the special tools and a hydraulic press.

TOOLS:

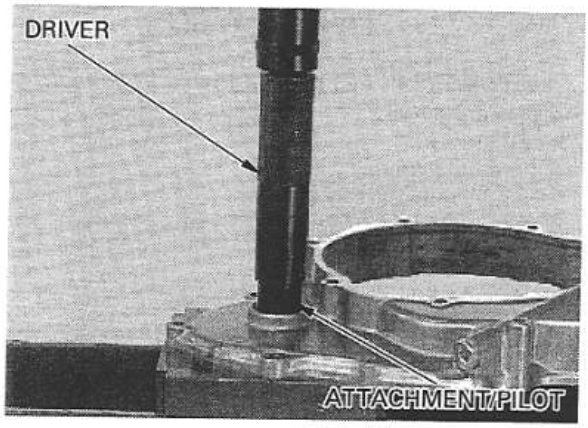
Driver	07749-0010000
Attachment, 24 × 26 mm	07746-0010700
Pilot, 20 mm	07746-0040500



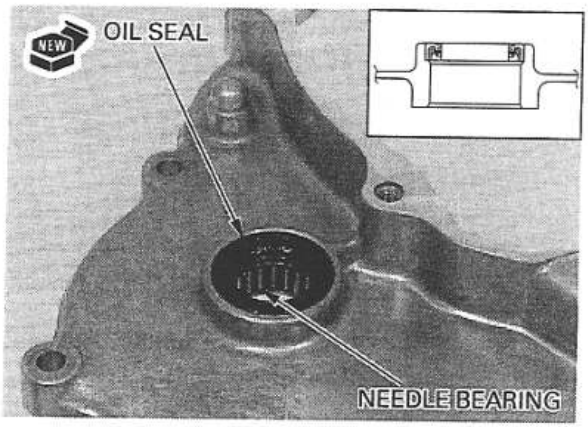
Install a new kickstarter spindle needle bearing using the special tools and a hydraulic press.

TOOLS:

Driver	07749-0010000
Attachment, 24 × 26 mm	07746-0010700
Pilot, 20 mm	07746-0040500



Install a new oil seal with the marking side facing out.
Press the oil seal into the crankcase cover even with the crankcase cover surface as shown.



PRIMARY DRIVE GEAR

REMOVAL

Remove the right crankcase cover (page 10-11).
Remove the clutch (page 10-3).

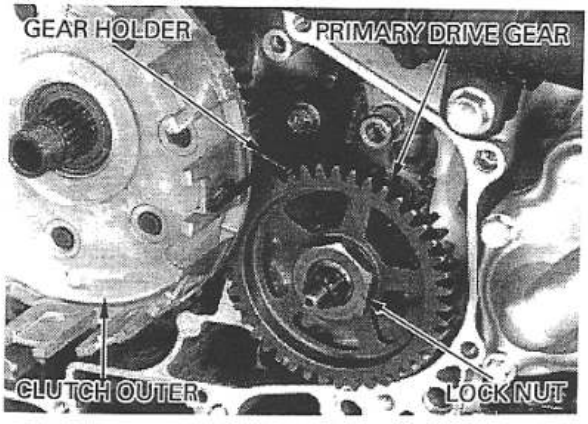
Temporary install the clutch outer guide and clutch outer to the mainshaft.

Place the gear holder between the primary drive gear and driven gear.
Remove the primary drive gear lock nut.

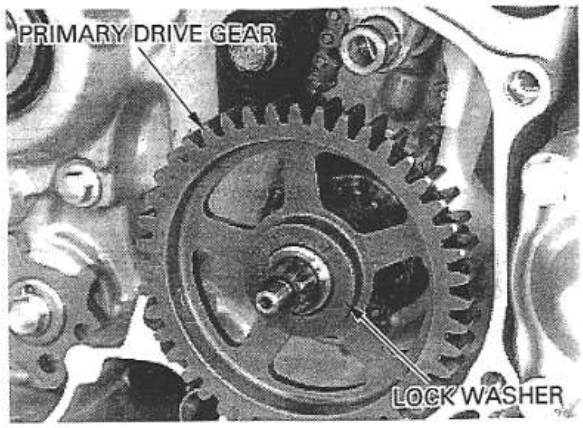
TOOL:

Gear holder	07724-0010200

Remove the gear holder.
Remove the clutch outer and outer guide.



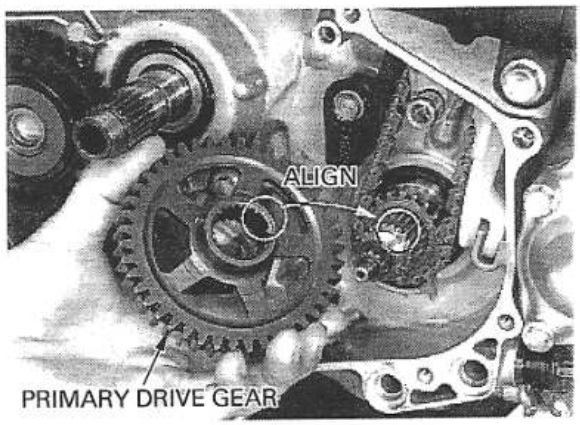
Remove the lock washer and primary drive gear.



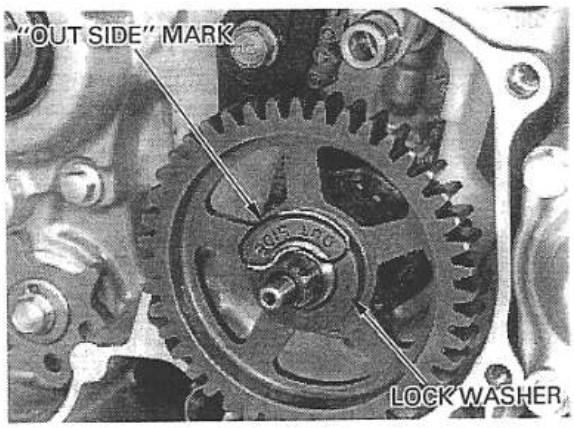
INSTALLATION

Install the drive gear aligning the wide cut-out with the crankshaft spline.

Install the primary drive gear.



Install the lock washer with the "OUT SIDE" mark facing out.



Temporary install the clutch outer guide and clutch outer.
Place the gear holder between the drive gear and driven gear.

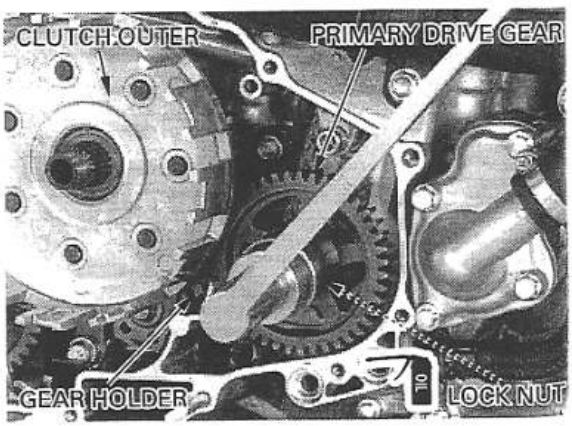
TOOL:
Gear holder 07724-0010200

Apply engine oil to the primary drive gear lock nut threads and seating surface.
Install and tighten the lock nut to the specified torque.

TORQUE: 118 N·m (12.0 kgf·m , 87 lbf·ft)

Remove the gear holder, clutch outer and outer guide.

Install the clutch (page 10-8).
Install the right crankcase cover (page 10-20).

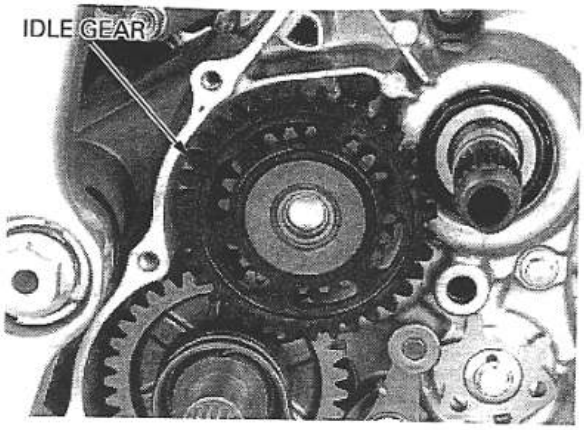


KICKSTARTER

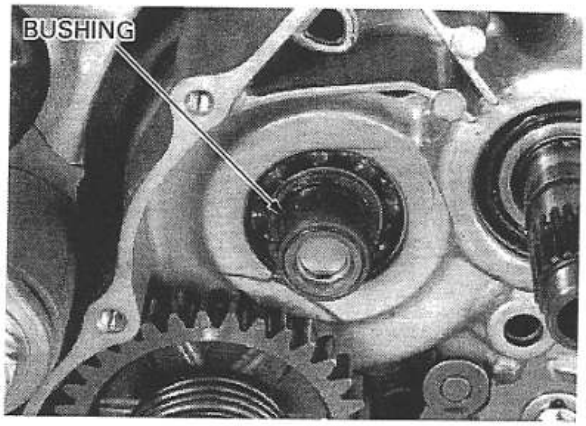
REMOVAL

Remove the right crankcase cover (page 10-11).
Remove the clutch (page 10-3).

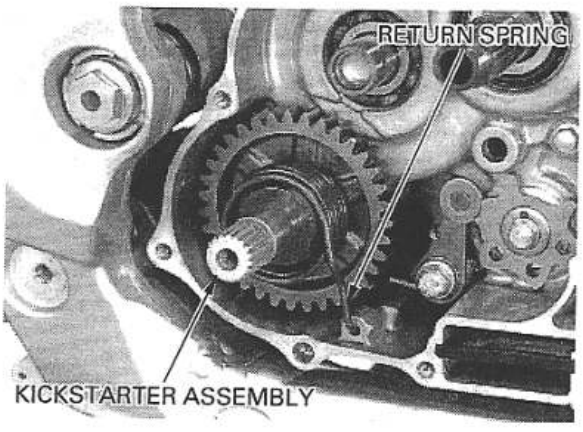
Remove the kickstarter idle gear.



Remove the flange bushing and thrust washer.

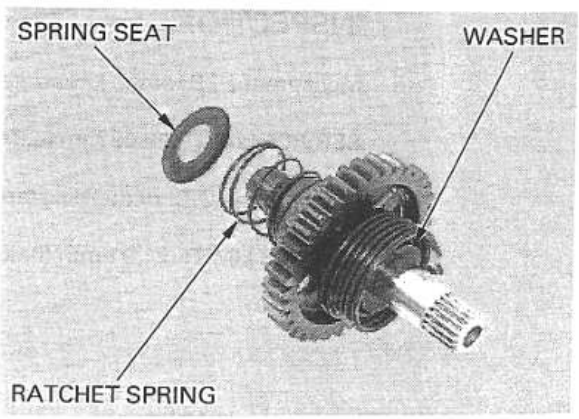


Release the hook end of the return spring from the crankcase hole; remove the kickstarter spindle assembly.

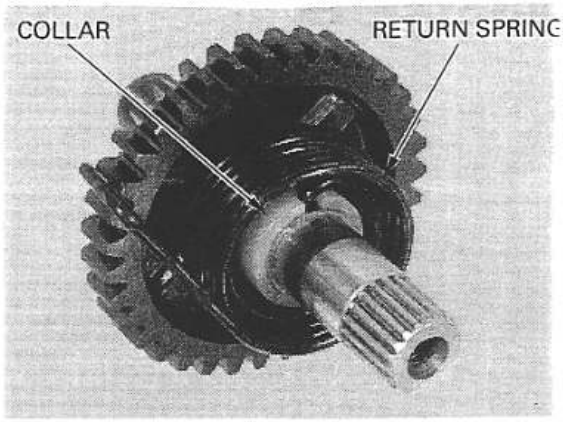


DISASSEMBLY

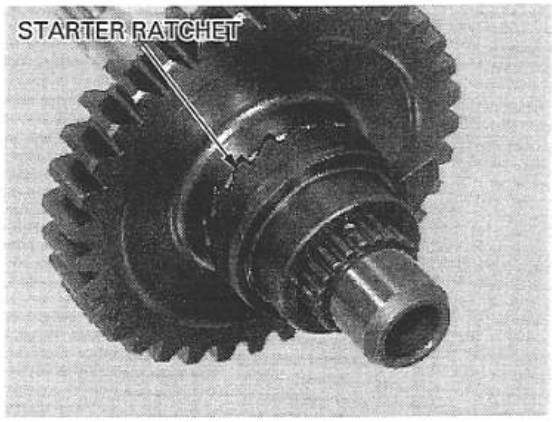
Remove the thrust washer, spring seat and ratchet spring from the spindle.



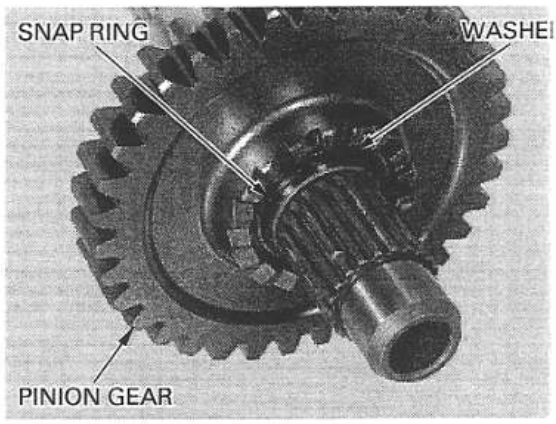
Release the hook end of the return spring from the kickstarter spindle hole; remove the return spring and collar.



Remove the starter ratchet.



Remove the snap ring, washer and starter pinion gear from the spindle.



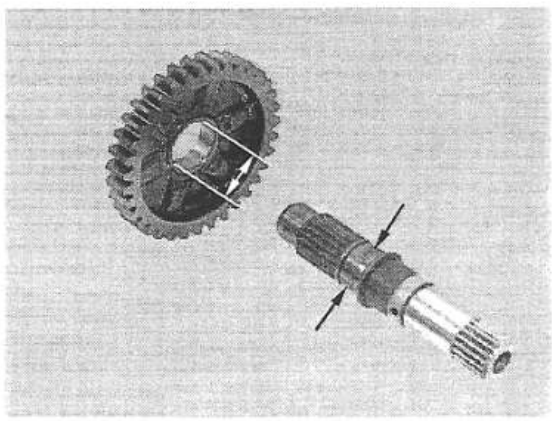
INSPECTION

Measure the I.D. of the kickstarter pinion gear.

SERVICE LIMIT: 22.09 mm (0.870 in)

Measure the O.D. of the kickstarter spindle.

SERVICE LIMIT: 21.91 mm (0.863 in)

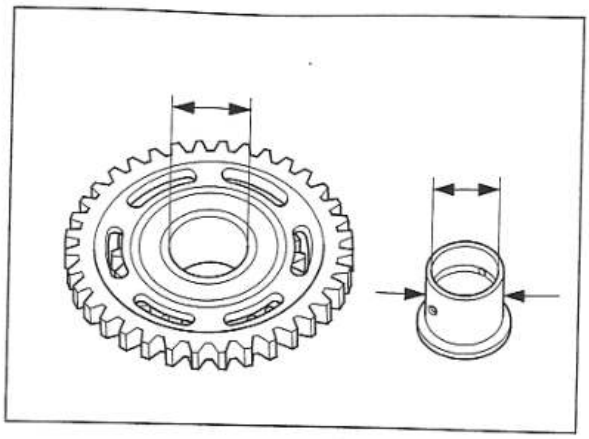


Measure the I.D. of the kickstarter idle gear.

SERVICE LIMIT: 23.11 mm (0.910 in)

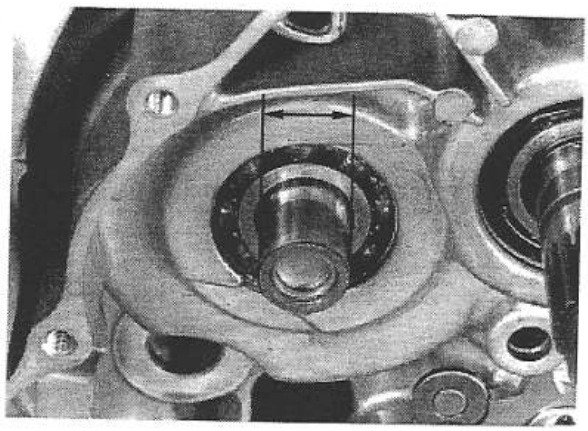
Measure the I.D. and O.D. of the kickstarter idle gear bushing.

SERVICE LIMITS: I.D.: 20.05 mm (0.789 in)
O.D.: 22.90 mm (0.902 in)

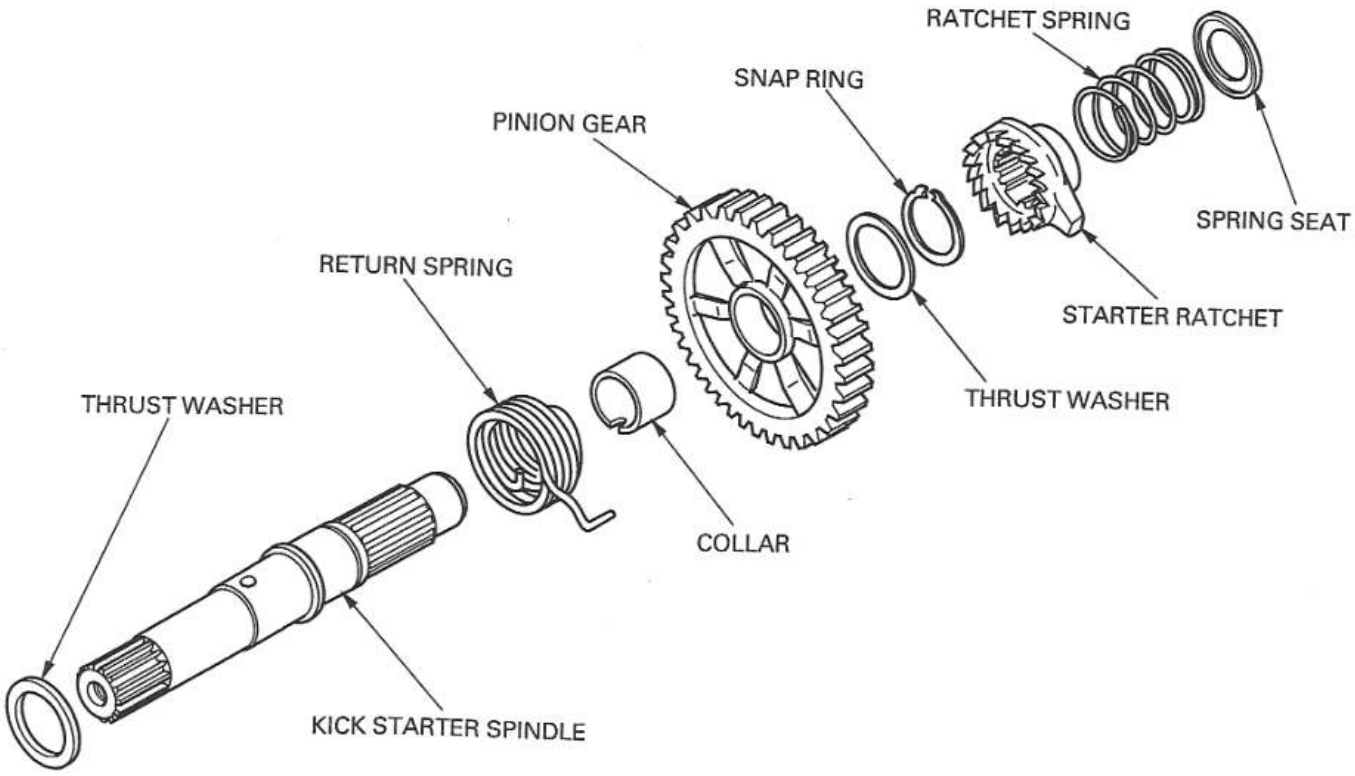


Measure the O.D. of the countershaft at the idle gear bushing sliding surface.

SERVICE LIMIT: 19.94 mm (0.785 in)



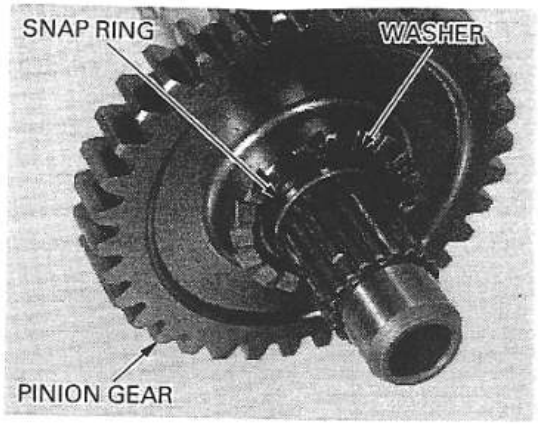
ASSEMBLY



Apply molybdenum solution to the each parts sliding and rolling surface.

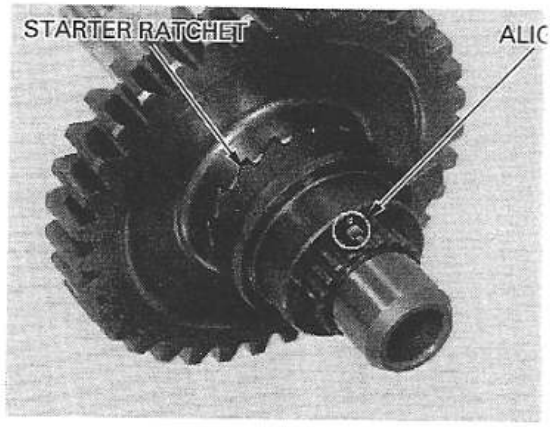
Set the sharp edge of the snap ring facing towards the outside.

Install the kickstarter pinion gear, thrust washer and snap ring to the kickstarter spindle.

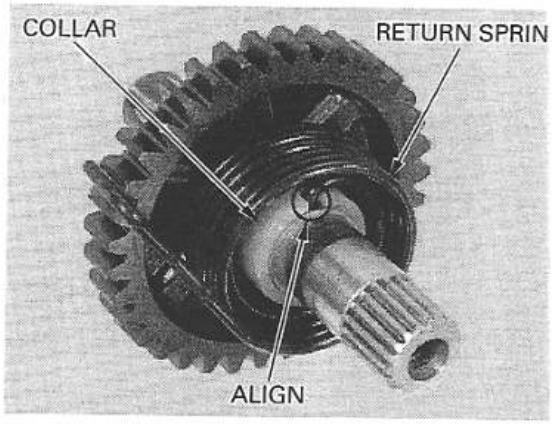


Align the punch marks on the spindle and ratchet.

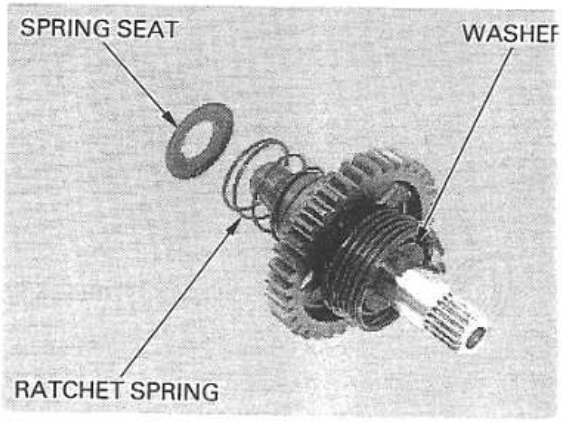
Install the starter ratchet to the spindle.



Install the collar aligning its cut-out with the hole in the spindle.
Install the return spring and insert the spring end into the cut-out on the collar and hole in the spindle.



Install the ratchet spring, spring seat and thrust washer.

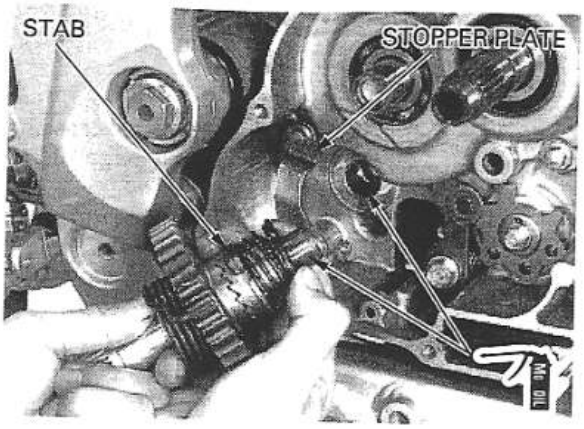


INSTALLATION

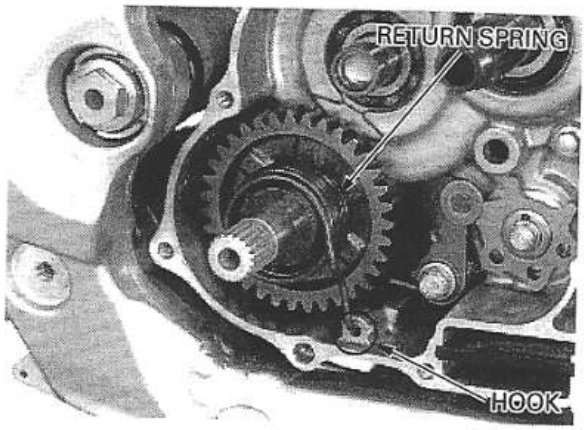
Apply molybdenum solution to the kickstarter spindle journal.

Be sure the spring seat did not fall off the spindle during installation.

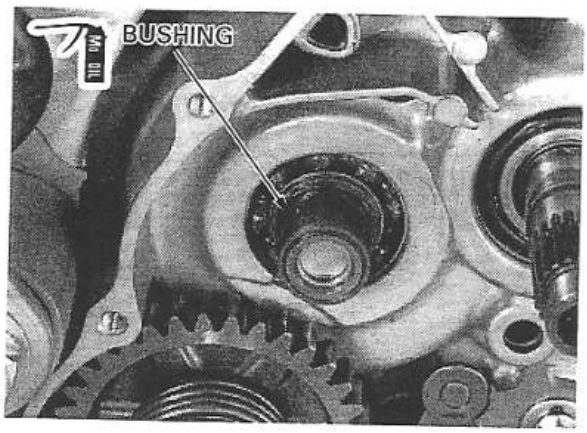
Install the kickstarter assembly to the crankcase and rotate the spindle counterclockwise until the ratchet stab is clear of the stopper plate.



Hook the return spring end into the hole on the crankcase.

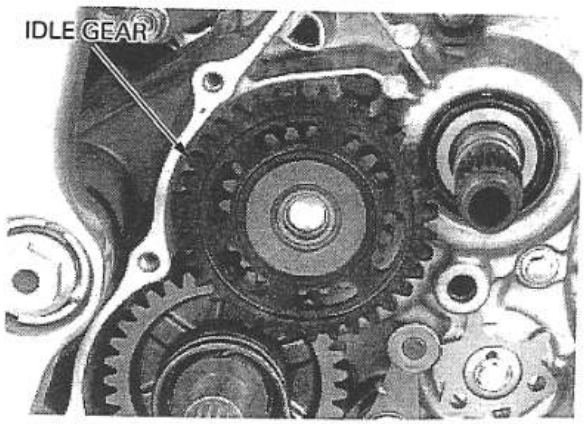


Install the thrust washer onto the countershaft.
Coat molybdenum solution to the kickstarter idle gear bushing and install it to the countershaft.



Install the kickstarter idle gear to the countershaft.

Install the clutch (page 10-8).
Install the right crankcase cover (page 10-20).

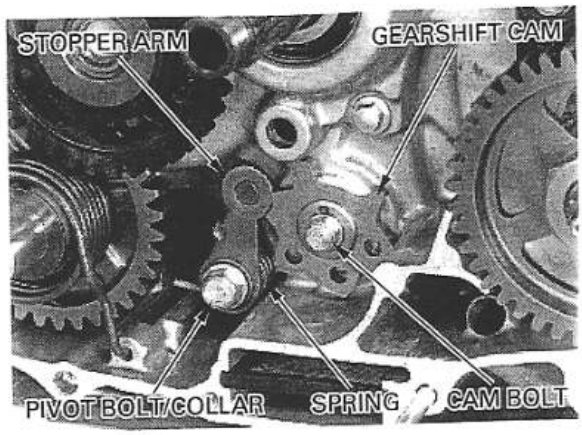


GEARSHIFT CAM

REMOVAL

Remove the right crankcase cover (page 10-11).
Remove the clutch (page 10-3).

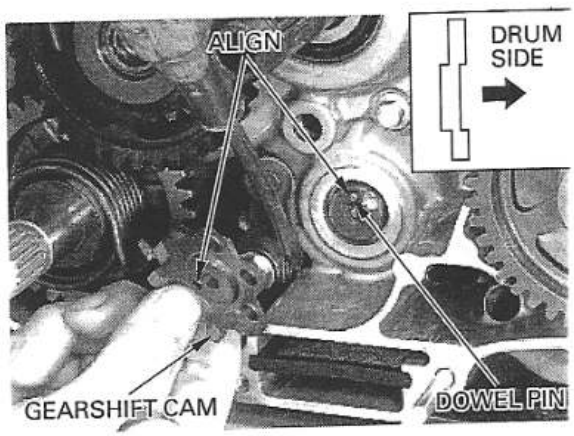
Remove the stopper arm pivot bolt, stopper arm, collar and return spring.
Remove the gearshift cam bolt and gearshift cam.



Remove the dowel pin.

INSTALLATION

Install the dowel pin into the gearshift drum.
Align the hole in the gearshift cam with the dowel pin on the gearshift drum and install the cam plate.



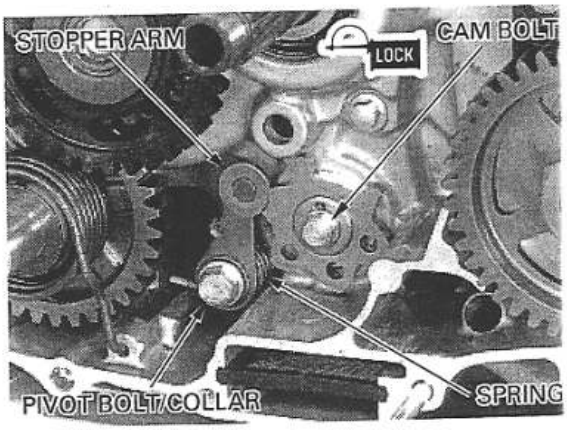
Apply a locking agent on the gearshift cam bolt threads, 6.5±1.0 mm (0.26±0.04 in) from the tip.
Install and tighten the gearshift cam bolt to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m , 9 lbf·ft)

Install the spring, collar, stopper arm and pivot bolt.
Tighten the pivot bolt to the specified torque.

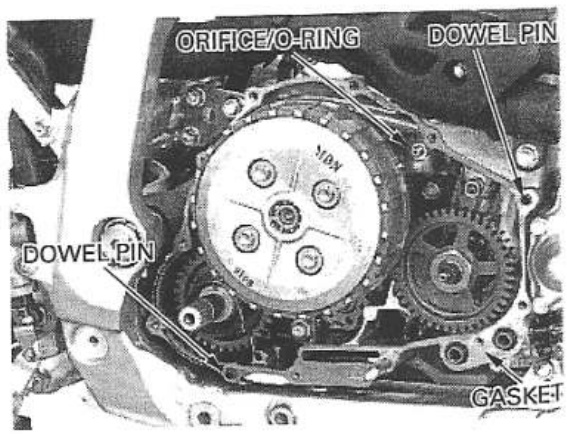
TORQUE: 12 N·m (1.2 kgf·m , 9 lbf·ft)

Install the clutch (page 10-8).
Install the right crankcase cover (see below).



RIGHT CRANKCASE COVER INSTALLATION

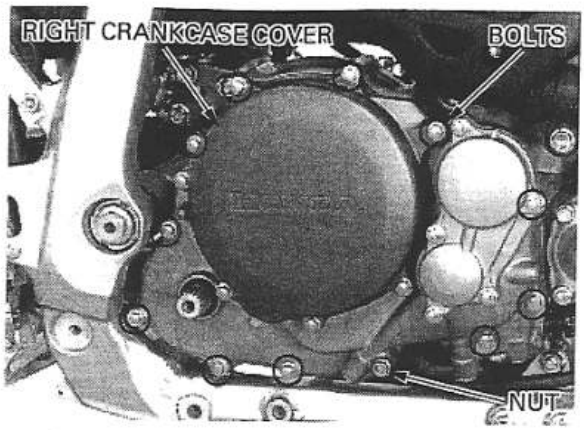
Install the dowel pins, new gasket and orifice with new O-ring.



Tighten the bolts in a crisscross pattern in two or more steps.

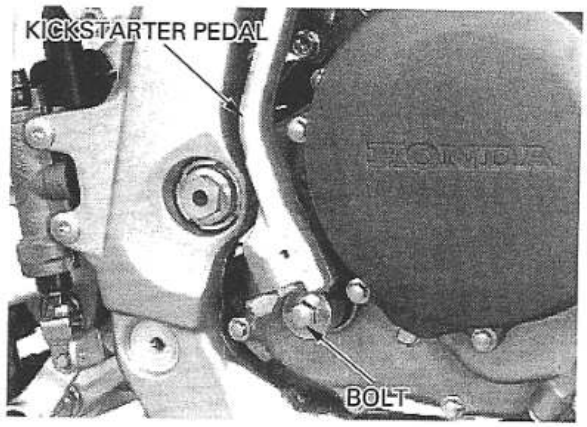
Install and tighten the right crankcase cover bolt and nut to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m , 9 lbf·ft)



Install the kickstarter pedal and tighten the bolt to the specified torque.

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



Install the brake pedal (page 16-19).

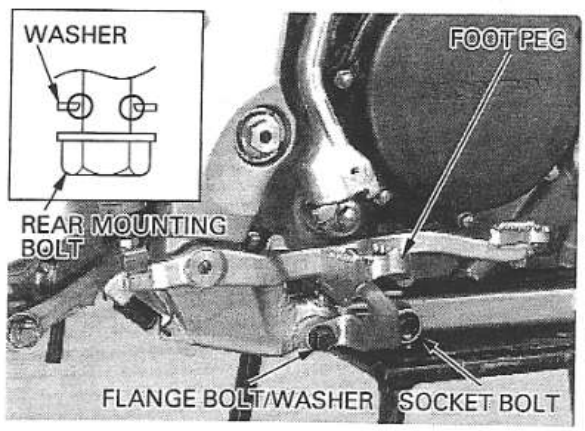
Install the right footpeg and front mounting bolt (socket bolt).
Install the rear mounting bolt and washer with the washer's chamfered edge facing out.
Tighten the bolts to the specified torpue.

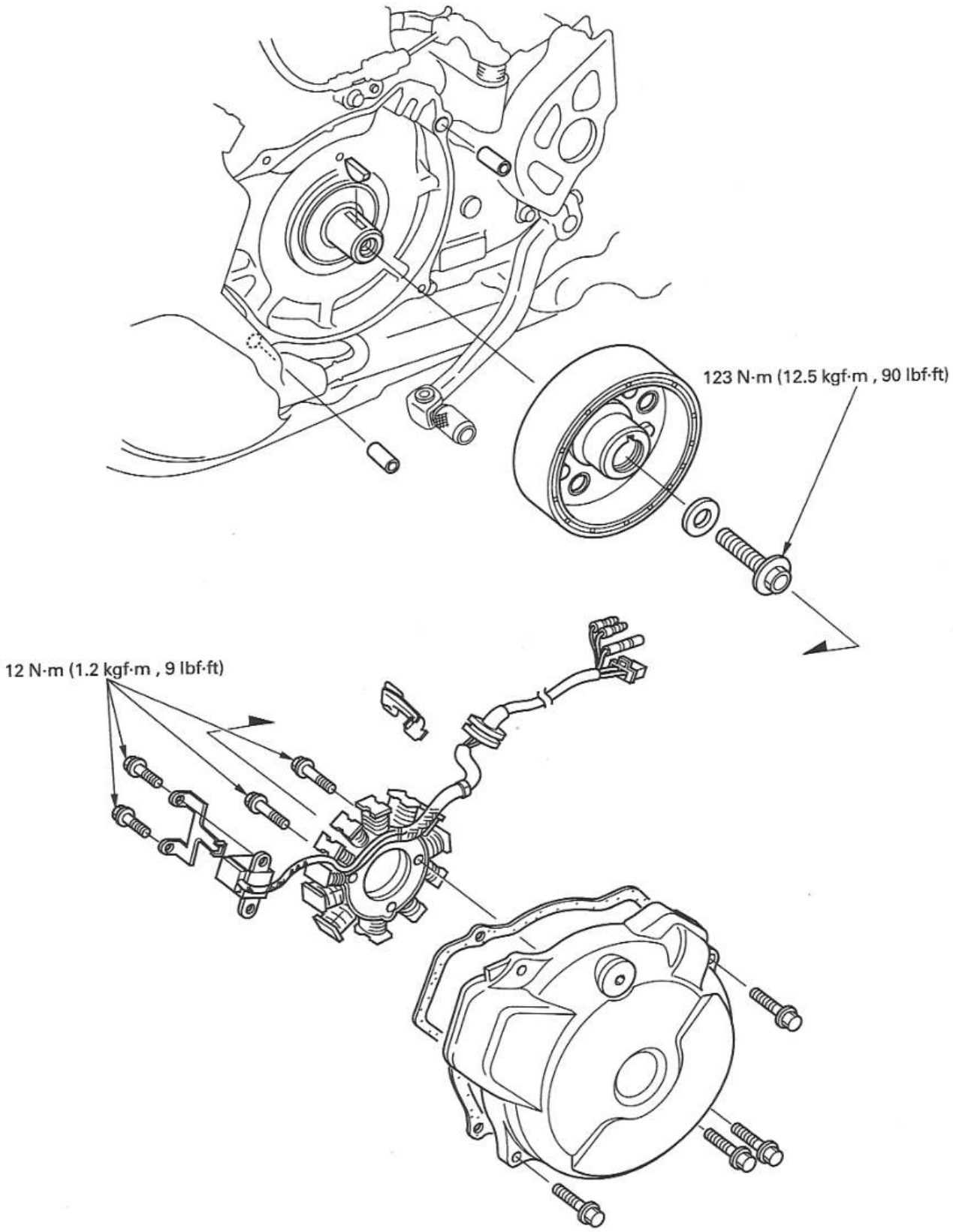
Check that the washer is concentric with the rear mounting bolt.

TORQUE: 54 N·m (5.5 kgf·m , 40 lbf·ft)

Install the skid plate (page 2-11).
Fill the engine with the recommended engine oil (page 3-11).

After installation, adjust the clutch lever free play (page 3-21).




123 N·m (12.5 kgf·m , 90 lbf·ft)
12 N·m (1.2 kgf·m , 9 lbf·ft)

11. ALTERNATOR

SERVICE INFORMATION	11-1	FLYWHEEL INSTALLATION	11-4
LEFT CRANKCASE COVER REMOVAL	11-2	LEFT CRANKCASE COVER INSTALLATION	11-4
FLYWHEEL REMOVAL	11-3		

SERVICE INFORMATION

GENERAL

- This section covers maintenance of the alternator. This maintenance can be done with the engine in the frame.
- For alternator inspection, refer to Section 17.

TORQUE VALUES

Flywheel bolt	123 N·m (12.5 kgf·m , 90 lbf·ft)	Apply oil to the threads and seating surface
Stator bolt	12 N·m (1.2 kgf·m , 9 lbf·ft)	
Ignition pulse generator bolt	12 N·m (1.2 kgf·m , 9 lbf·ft)	
Left crankcase cover bolt	12 N·m (1.2 kgf·m , 9 lbf·ft)	

TOOLS

Flywheel holder	07725-0040000
Flywheel puller	07733-0020001 or 07933-3950000

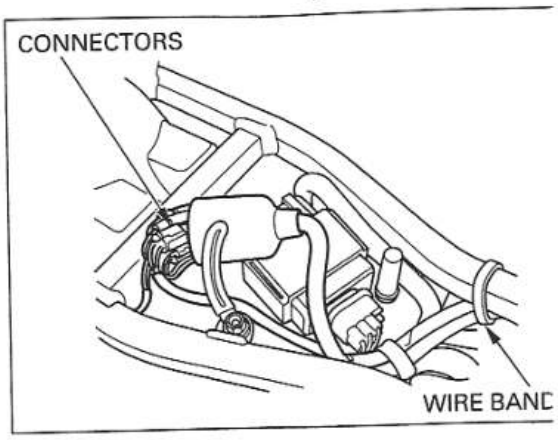
LEFT CRANKCASE COVER REMOVAL

Remove the seat (page 2-2).

Remove the wire band.

Refer to Section 17 for alternator inspection.

Disconnect the alternator connectors and ignition pulse generator connector.

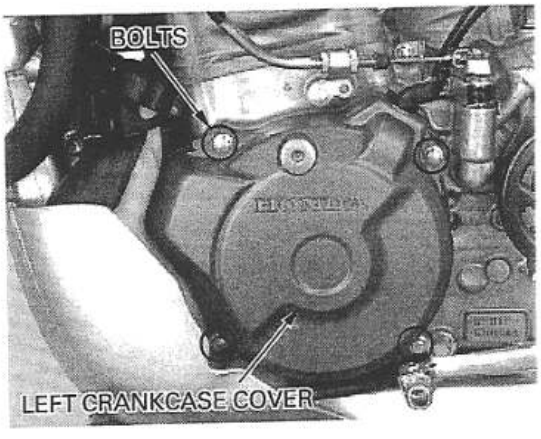


Remove the wire from the clamp and remove the wire band.

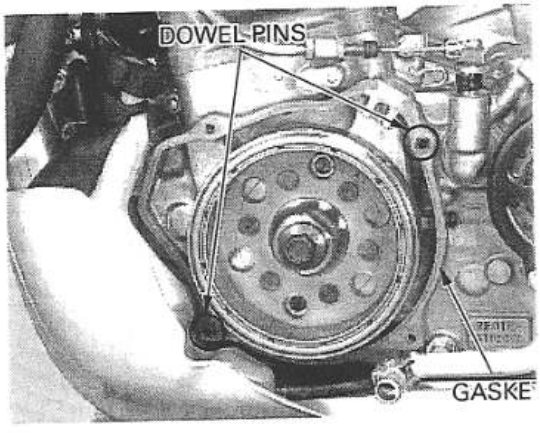


Loosen the left crankcase cover bolts in a crisscross pattern in several steps.

Remove the bolts and left crankcase cover.

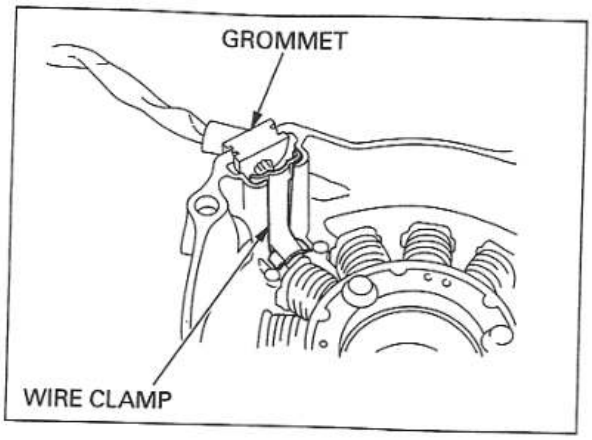


Remove the dowel pins and gasket.

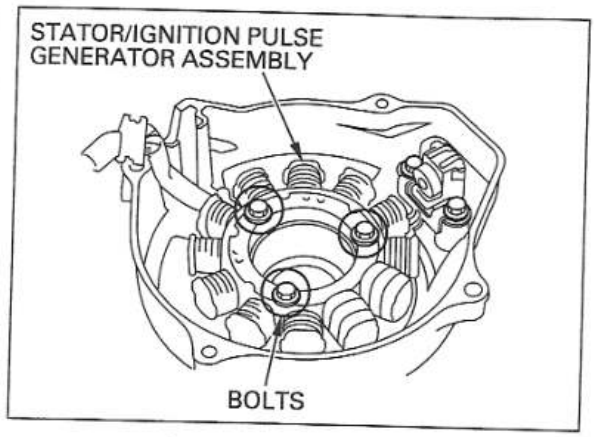


STATOR/IGNITION PULSE GENERATOR REMOVAL

Remove the wire clamp and grommet from the left crankcase cover.



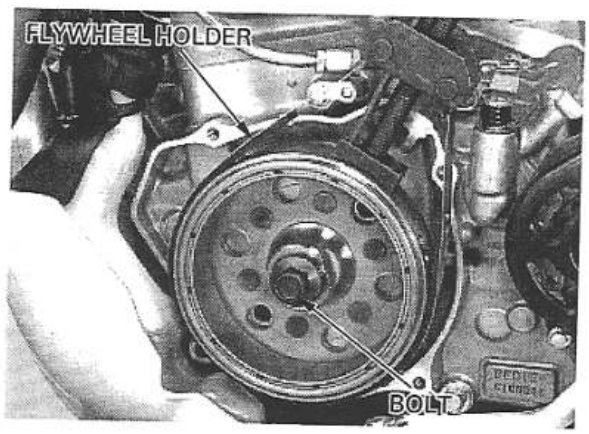
Remove the stator bolts and ignition pulse generator bolts.
Remove the stator/ignition pulse generator assembly.



FLYWHEEL REMOVAL

Hold the flywheel with the flywheel holder.
Remove the flywheel bolt.

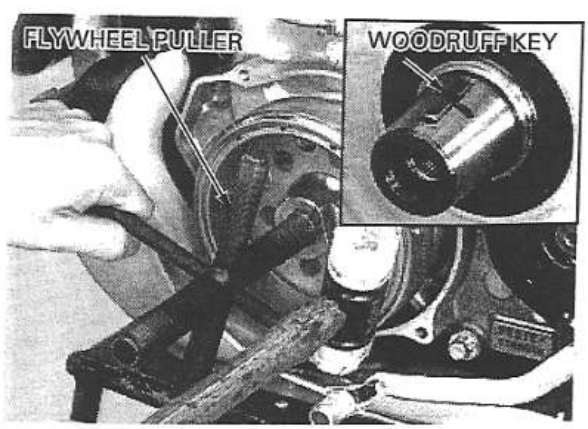
TOOL:
Flywheel holder 07725-0040000



Remove the flywheel using the flywheel puller.

TOOL:
Flywheel puller 07733-0020001 or
07933-3950000

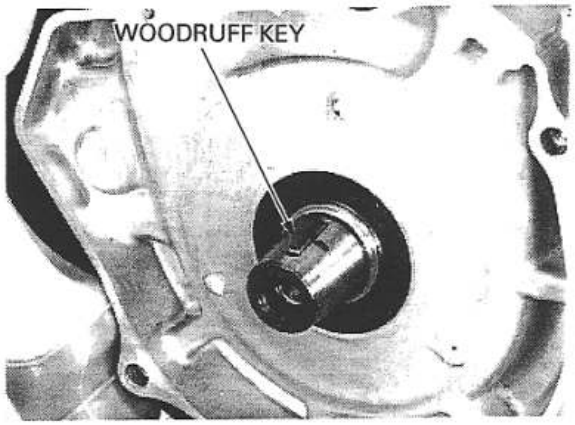
Remove the woodruff key from the crankshaft.



FLYWHEEL INSTALLATION

Clean the crankshaft tapered area.
Install the woodruff key on the crankshaft.

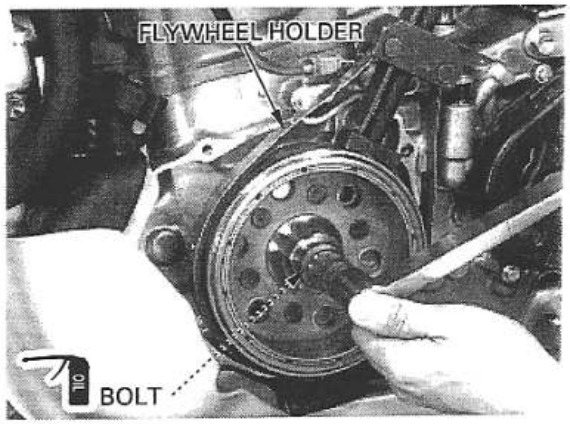
Install the flywheel by aligning the woodruff key on the crankshaft with the flywheel keyway.



Apply engine oil to the flywheel bolt threads and seating surface.
Hold the flywheel with the flywheel holder and tighten the flywheel bolt.

TORQUE: 123 N·m (12.5 kgf·m , 90 lbf·ft)

TOOL:
Flywheel holder 07725-0040000



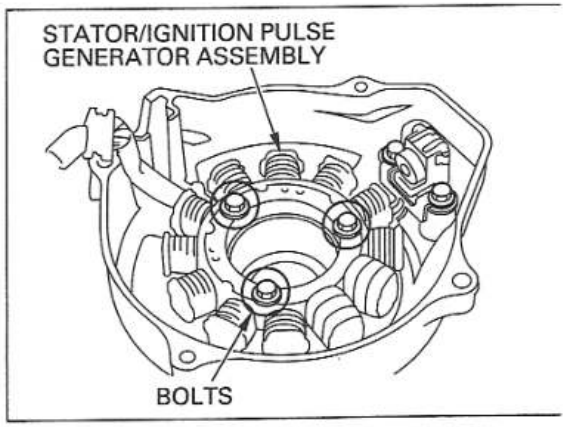
LEFT CRANKCASE COVER INSTALLATION

Install the stator/ignition pulse generator assembly to the left crankcase cover.
Install the ignition pulse generator bolt with the wire clamp.
Tighten the bolts to the specified torque.

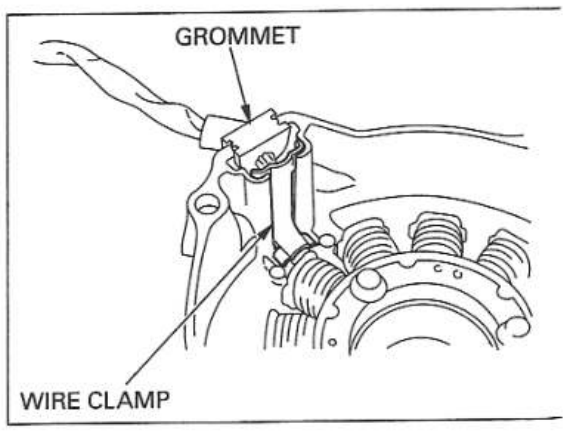
TORQUE: 12 N·m (1.2 kgf·m , 9 lbf·ft)

Install and tighten the stator bolts to the specified torque.

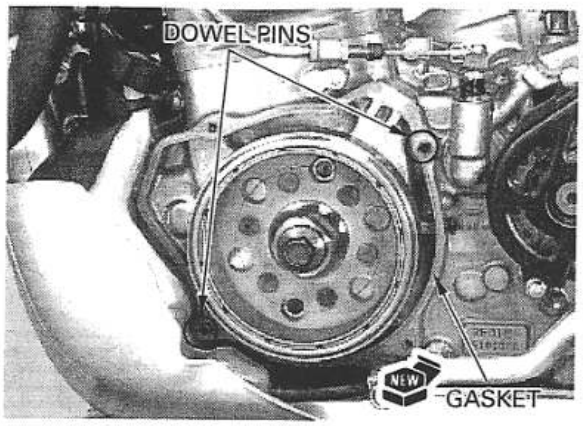
TORQUE: 12 N·m (1.2 kgf·m , 9 lbf·ft)



Install the wire clamp and grommet to the left crankcase.



Install the new gasket and dowel pins to the left crankcase.

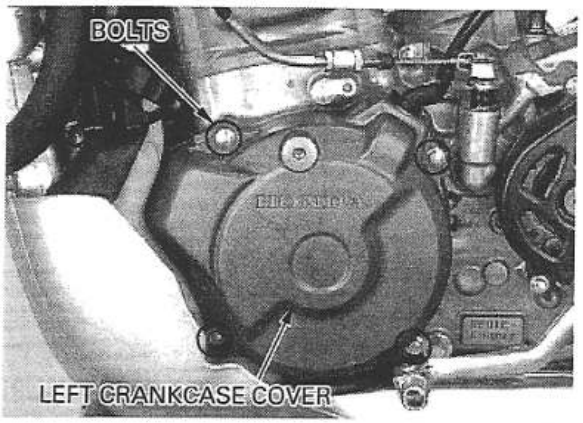


Install the left crankcase cover.

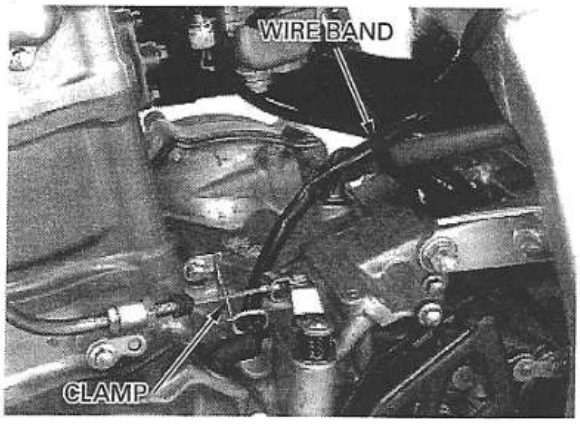
Tighten the bolts in a crisscross pattern in two or more steps.

Install and tighten the left crankcase cover bolts to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m , 9 lbf·ft)

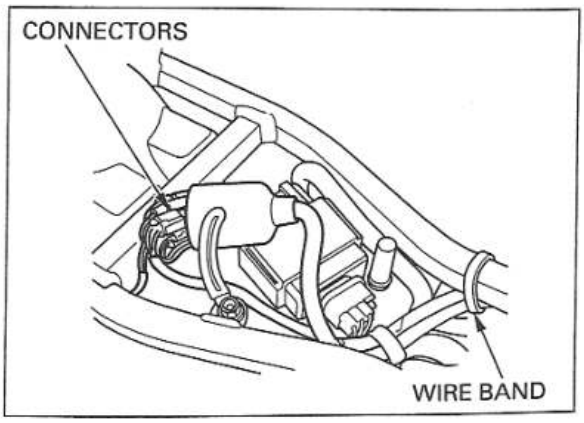


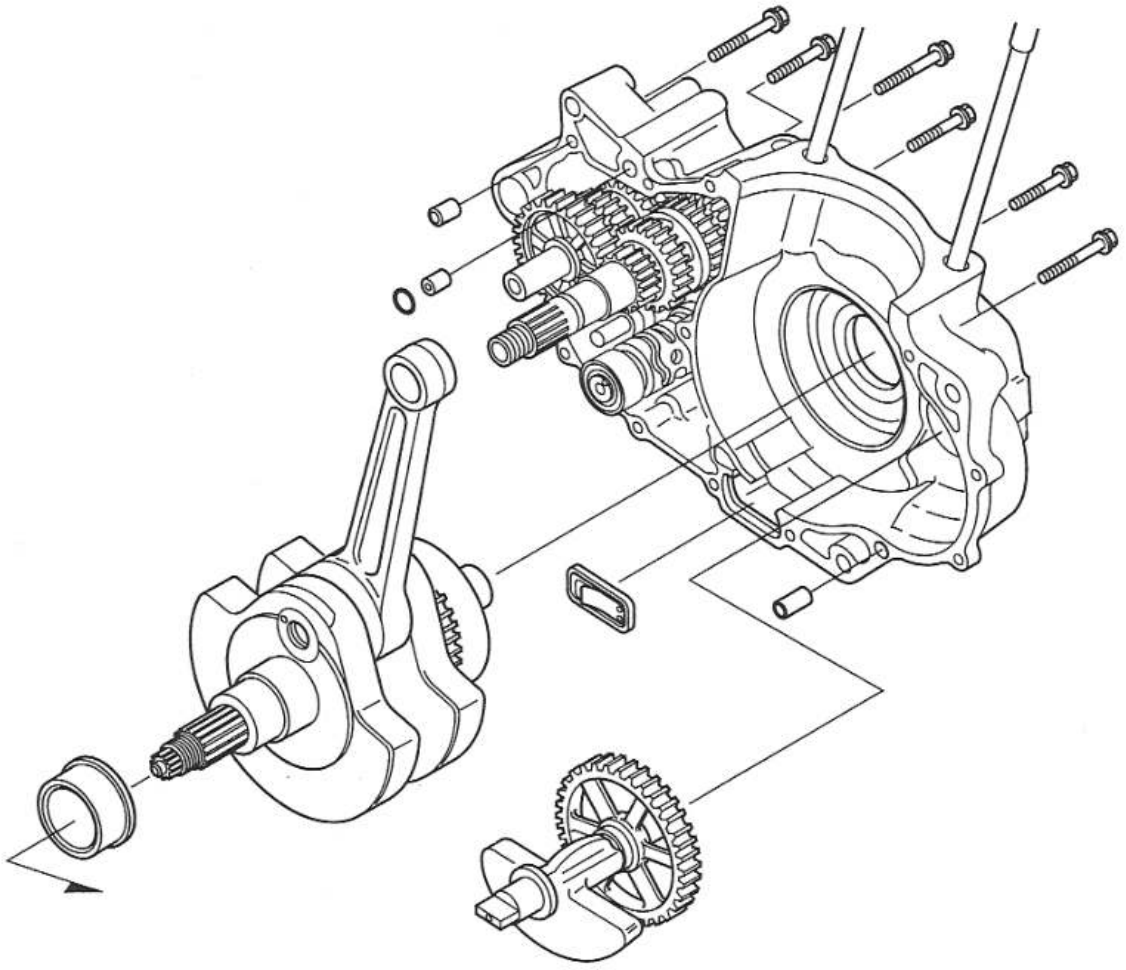
Clamp the alternator wire and secure the crankcase breather tube, carburetor air vent tubes and alternator wire with the wire band.

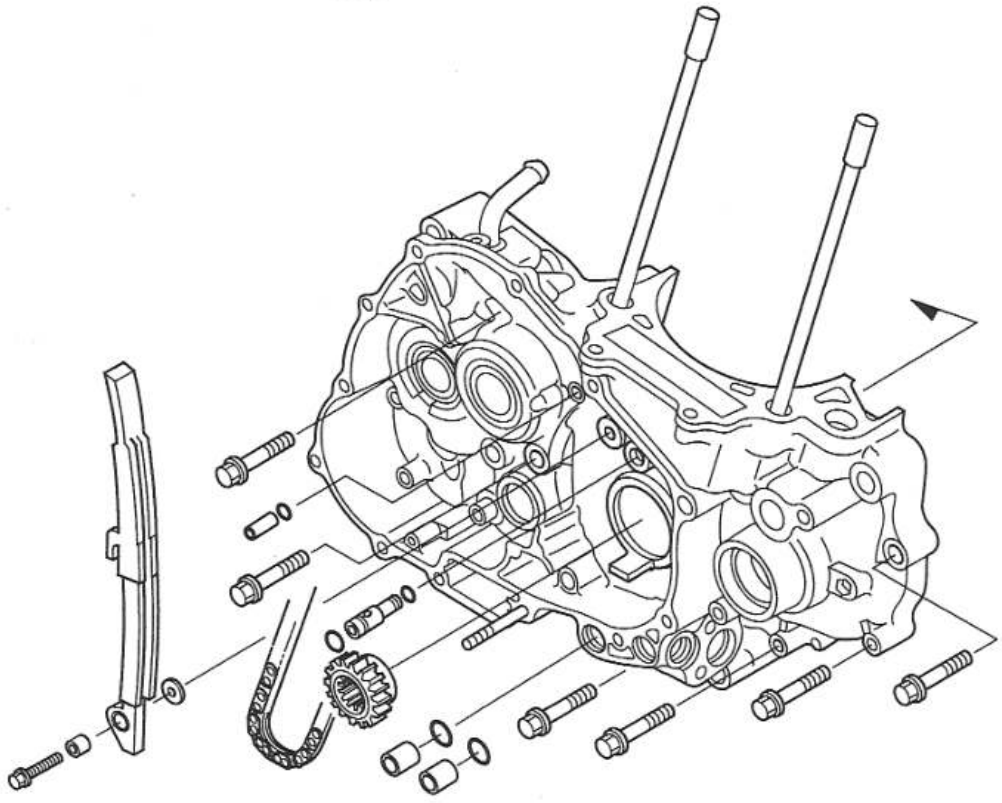


Connect the alternator connectors and ignition pulse generator connector.
Secure the wire with the frame clamp and wire band.

Install the seat (page 2-2).







12. CRANKCASE/CRANKSHAFT/BALANCER

SERVICE INFORMATION	12-1	CRANKCASE BEARING REPLACEMENT	12-7
TROUBLESHOOTING	12-2		
CRANKCASE SEPARATION	12-3	CRANKSHAFT/BALANCER INSTALLATION	12-12
CRANKSHAFT/BALANCER REMOVAL	12-5	CRANKCASE ASSEMBLY	12-14

SERVICE INFORMATION

GENERAL

- This section covers crankcase separation for service of the crankshaft, connecting rod, transmission and balancer.
- The engine must be out of frame for this service.
- The following parts must be removed before separating the crankcase.
  - —Water pump (Section 6)
  - —Alternator (Section 11)
  - —Clutch/kickstarter/gearshift linkage (Section 10)
  - —Cylinder head (Section 8)
  - —Cylinder/piston (Section 9)
  - —Engine (Section 7)

SPECIFICATIONS

Unit: mm (in)

ITEM	STANDARD	SERVICE LIMIT
Connecting rod big end side clearance	0.05—0.65 (0.002—0.026)	0.80 (0.031)
Crankshaft runout	———	0.05 (0.002)
Connecting rod big end radial clearance	———	0.05 (0.002)

12

TORQUE VALUES

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

TOOLS

Remover weight	07741-0010201
Attachment, 37 × 40 mm	07746-0010200
Attachment, 42 × 47 mm	07746-0010300
Attachment, 52 × 55 mm	07746-0010400
Attachment, 62 × 68 mm	07746-0010500
Pilot, 20 mm	07746-0040500
Pilot, 25 mm	07746-0040600
Pilot, 40 mm	07746-0040900
Pilot, 16 mm	07746-0041300
Driver	07749-0010000
Assembly collar	07931-KF00100
Thread adapter	07931-KF00200
Shaft puller	07931-ME40000
Bearing remover assembly	07936-KC10500
Bearing remover collets	07936-MK50100
Bearing driver attachment	07GAD-SD40101

TROUBLESHOOTING

EXCESSIVE NOISE

- Worn connecting bearings
- Bent connecting rod
- Worn crankshaft bearings
- Improper balancer installation

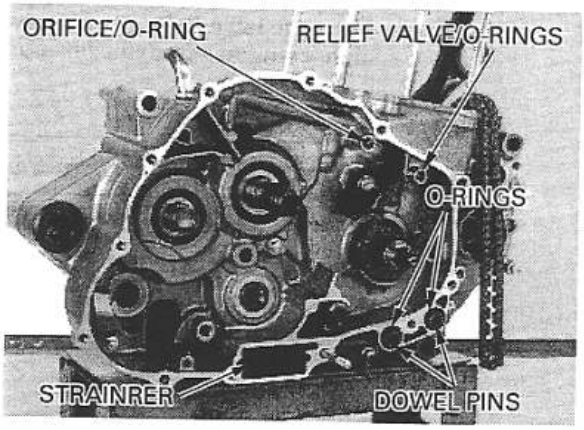
ENGINE VIBRATION

- Improper balancer timing
- Excessive crankshaft runout

CRANKCASE SEPARATION

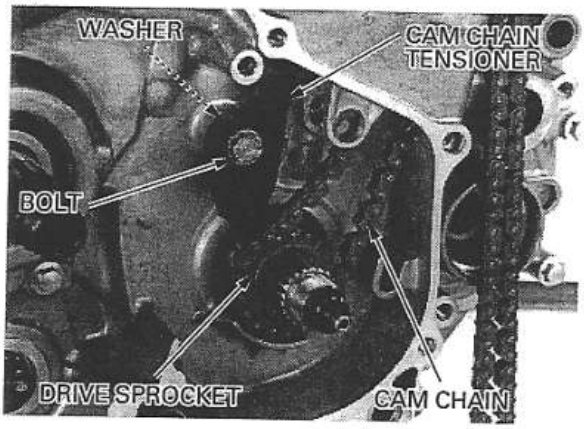
NOTE:

Refer to service information (page 12-1) for removal of necessary parts before separating the crankcase.



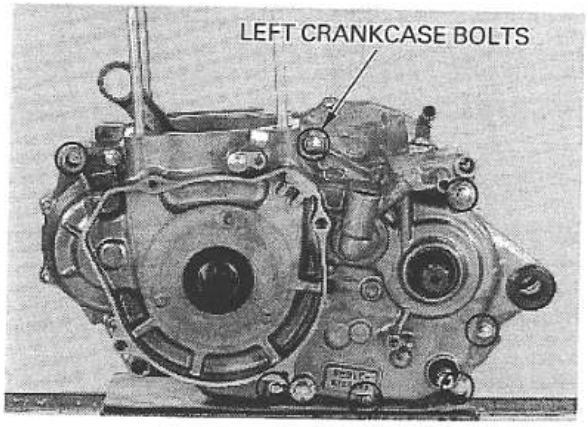
Remove the dowel pins, relief valve, orifice and O-rings.
Remove the oil strainer screen.

Remove the bolt, cam chain tensioner and washer.
Remove the cam chain and cam chain drive sprocket.



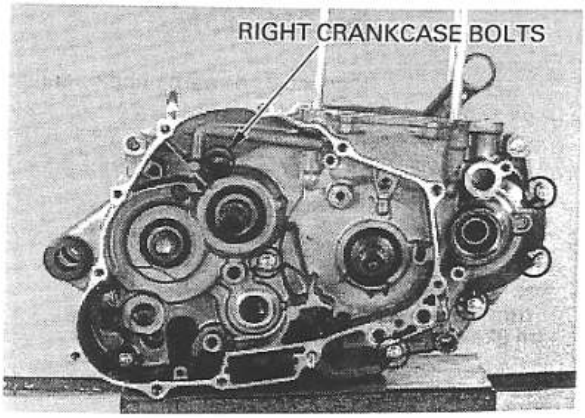
Loosen the bolts in a crisscross pattern in two or more steps.

Remove the left crankcase bolts.



Loosen the bolts in a crisscross pattern in two or more steps.

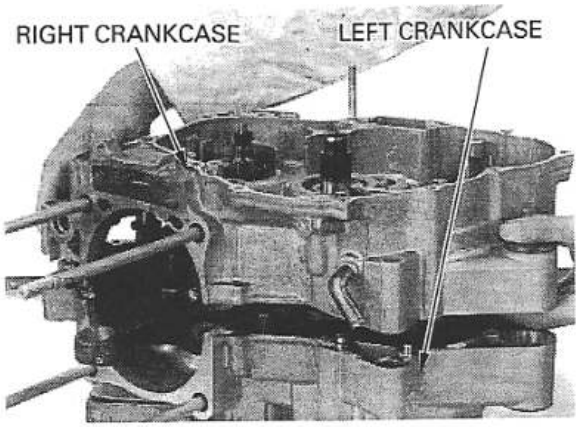
Remove the right crankcase bolt.



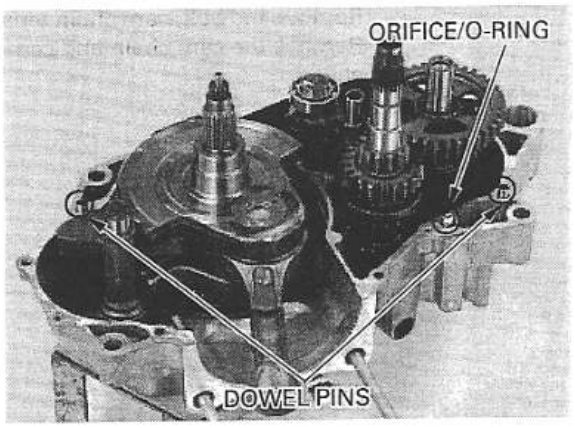
Place the left crankcase side down and separate the right crankcase from the left crankcase.

CAUTION:

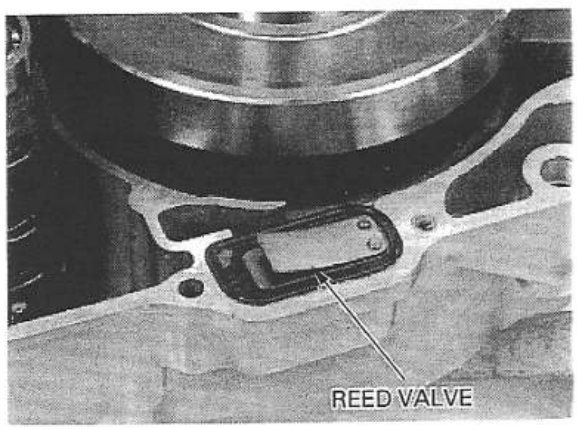
Do not pry the left and right crankcase apart.



Remove the dowel pins and orifice/O-ring.

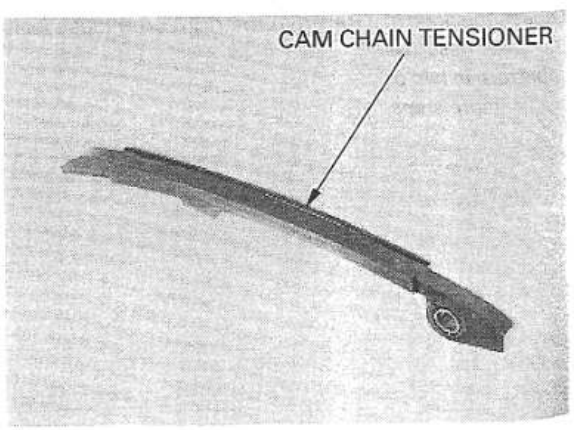


Remove the reed valve.

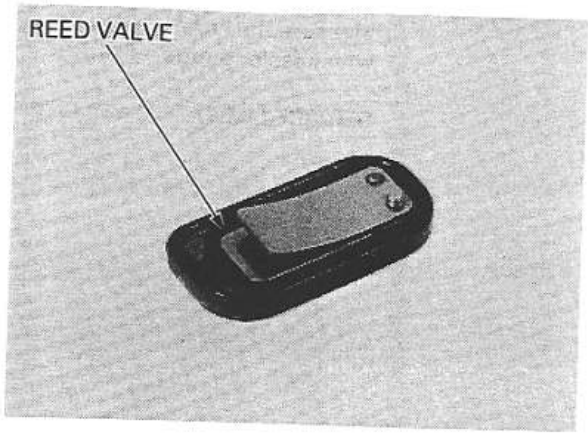


INSPECTION

Inspect the cam chain tensioner for wear or damage.
Replace if necessary.



Inspect the reed valve for wear or damage. Replace if necessary.



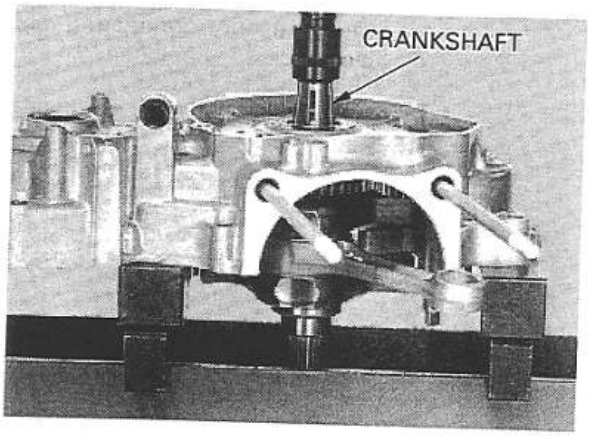
CRANKSHAFT/BALANCER REMOVAL

Remove the transmission (page 13-3).

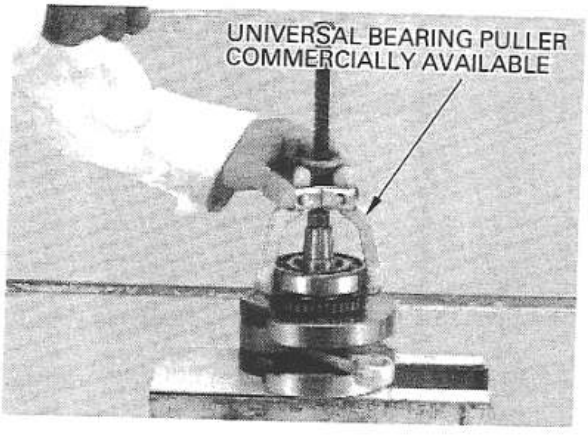
Remove the crankshaft and balancer from the left crankcase with a press.

CAUTION:

Be careful not to damage the crankcase mating surface.



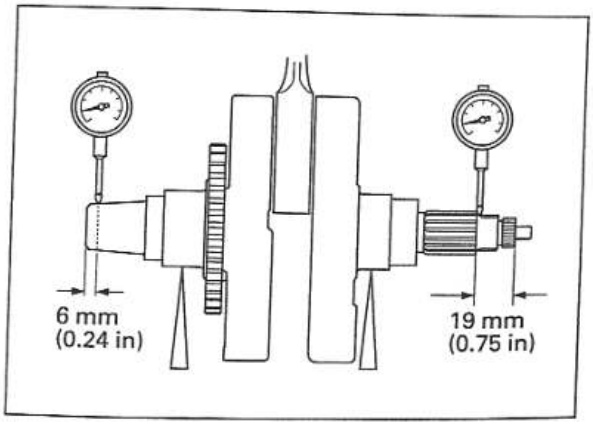
Remove the left crankshaft bearing using a bearing puller.



CRANKSHAFT INSPECTION

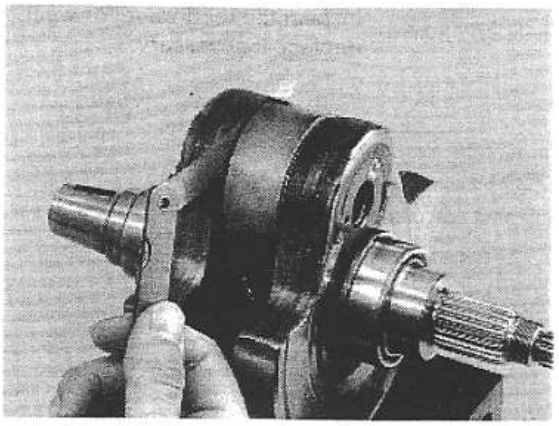
Set the crankshaft on a turning stand or V-blocks and measure the runout using a dial indicator.

SERVICE LIMIT: 0.05 mm (0.002 in)



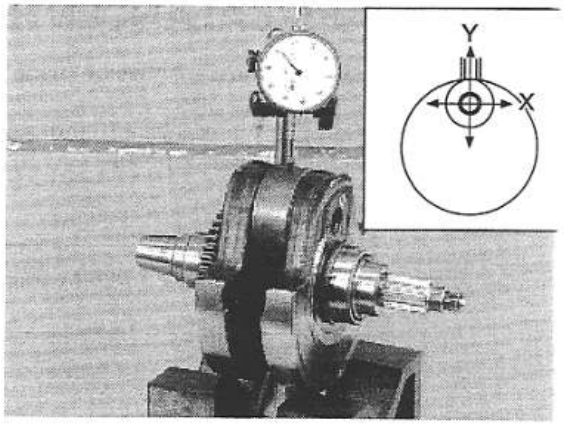
Measure the connecting rod big end side clearance with a feeler gauge.

SERVICE LIMIT: 0.80 mm (0.031 in)



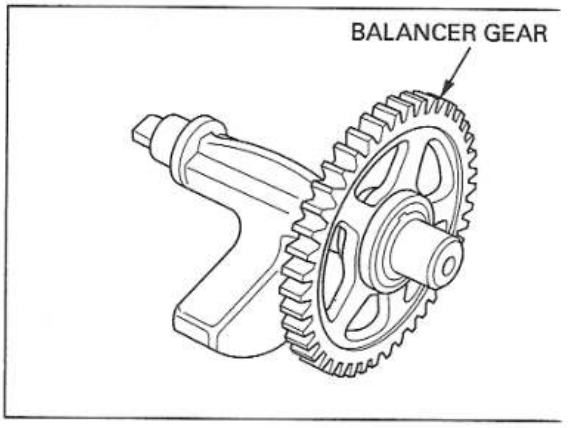
Measure the connecting rod big end radial clearance.

SERVICE LIMIT: 0.05 mm (0.002 in)



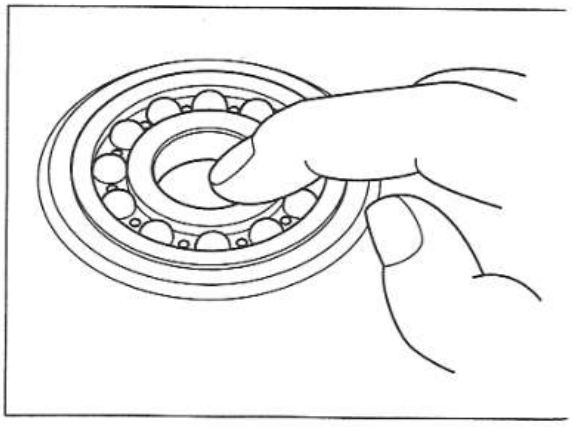
BALANCER GEAR INSPECTION

Inspect the balancer gear for wear or damage.



CRANKSHAFT BEARING/ TRANSMISSION BEARING INSPECTION

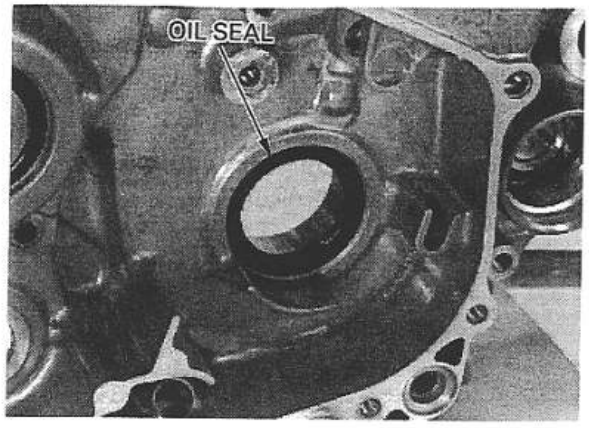
Turn the inner race of the bearings with your finger. The bearings should turn smoothly and quietly. Also check that the bearing outer races fit tightly in the crankcase.



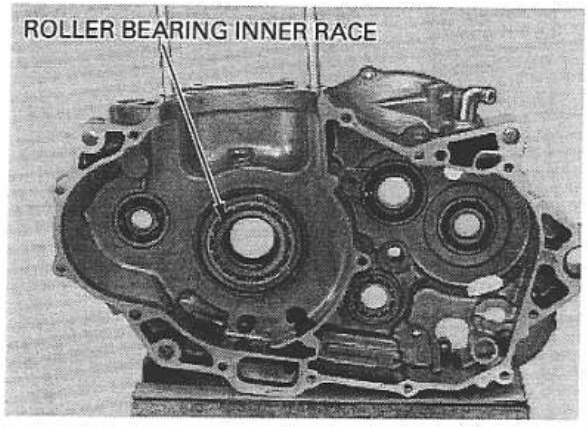
CRANKCASE BEARING REPLACEMENT

CRANKSHAFT BEARING

Remove the crankshaft bearing oil seal.

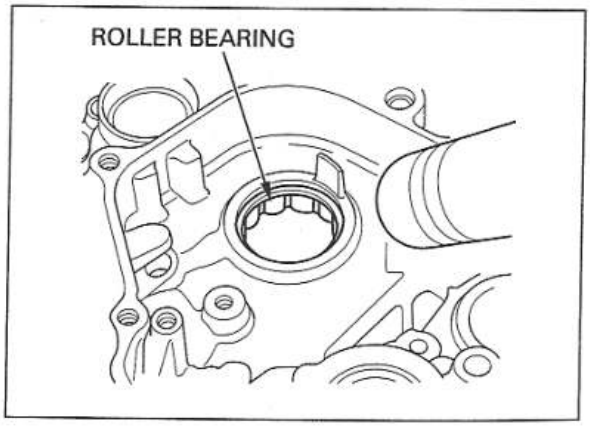


Remove the right crankshaft roller bearing inner race from the roller bearing.



Always wear insulated gloves when handling a heated crankcase.

Before removing the roller bearing, heat the crankcase around the roller bearing to 80°C (176°F). Remove the crankshaft roller bearing from the right crankcase.



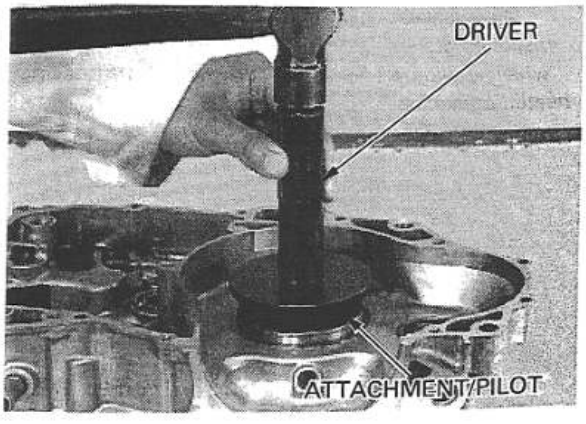
Drive in the new bearing outer race squarely with the marking side facing toward the inside of the crankcase.

Drive new right crankshaft bearing roller into the right crankcase using the special tools.

TOOLS:

Driver	07749-0010000
Bearing driver attachment	07GAD-SD40101
Pilot, 40 mm	07746-0040900

Install the new inner race into the bearing roller.

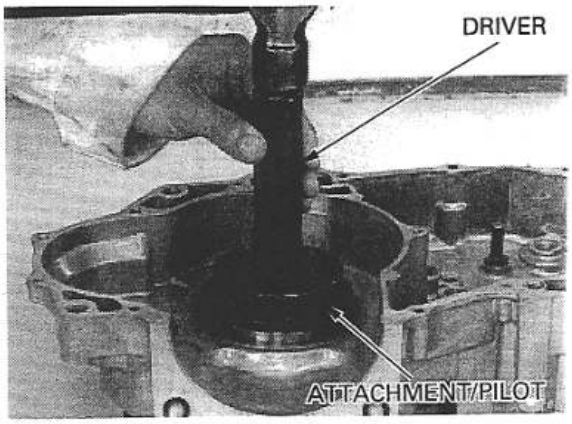


Drive in the new bearing squarely with the marking side facing toward the inside of the crankcase.

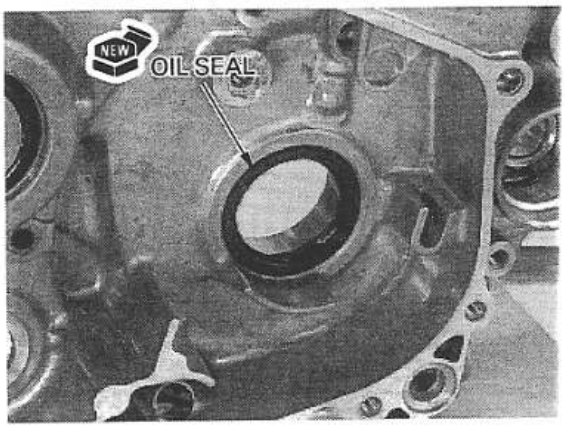
Drive new left crankshaft bearing into the left crankcase using the special tools.

TOOLS:

Driver	07749-0010000
Bearing driver attachment	07GAD-SD40101
Pilot, 40 mm	07746-0040900



Install the new right crankshaft oil seal.

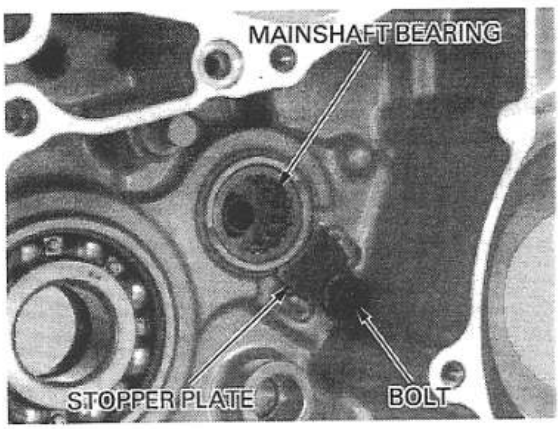


TRANSMISSION BEARINGS

LEFT CRANKCASE

Remove the left mainshaft bearing.

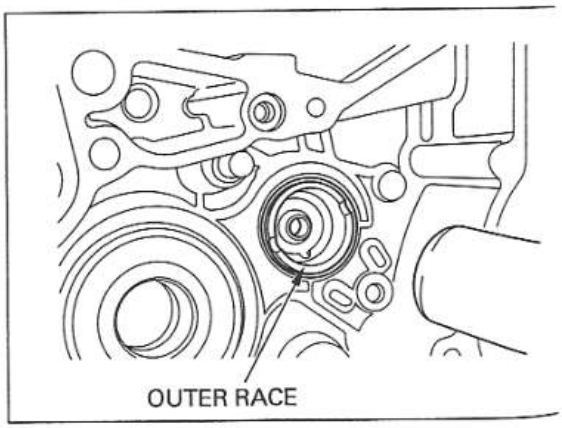
Remove the bolt and outer race stopper plate.



Always wear insulated gloves when handling a heated crankcase.

Heat the crankcase around the outer race to 80°C (176°F).

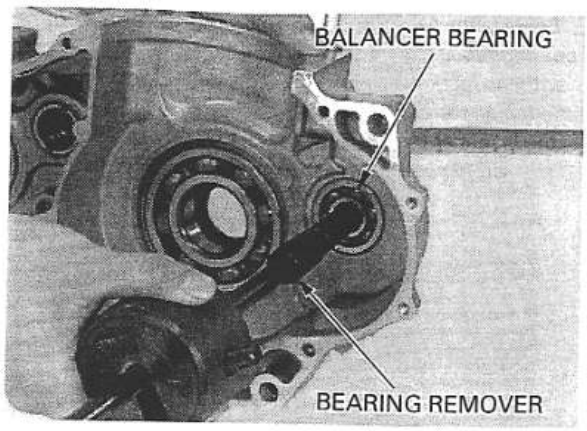
Remove the mainshaft bearing outer race from the left crankcase.



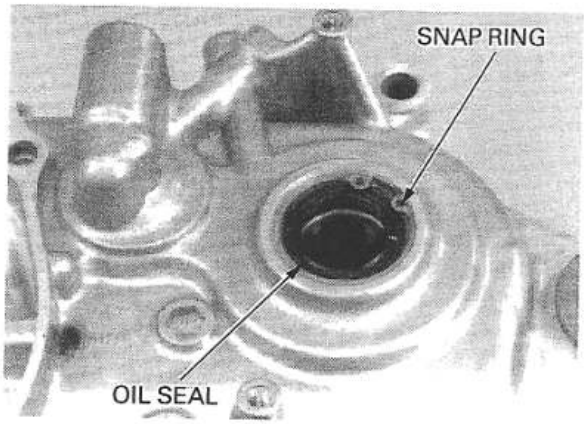
Remove the balancer bearing using the special tools.

TOOLS:

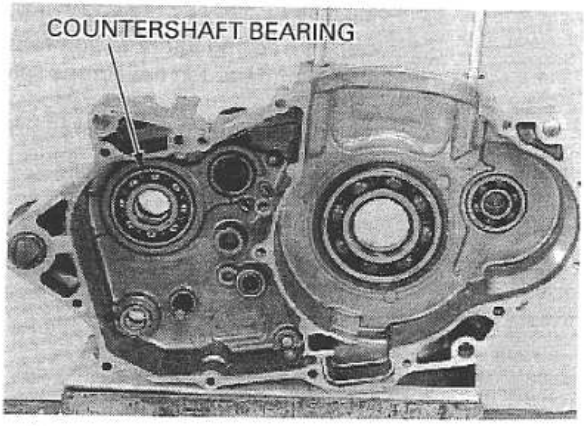
Bearing remover assembly	07936-KC10500
Bearing remover collets	07936-MK50100
Remover weight	07741-0010201



Remove the snap ring.
Remove the countershaft oil seal.



Remove the left countershaft bearing.

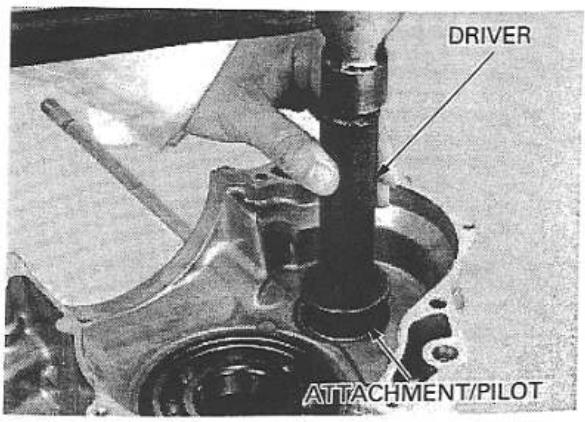


Drive in the new bearings squarely with the marking side facing toward the inside of the crankcase.

Install a new left balancer bearing using the special tools.

TOOLS:

Driver	07749-0010000
Attachment, 42 × 47 mm	07746-0010300
Pilot, 16 mm	07746-0041300

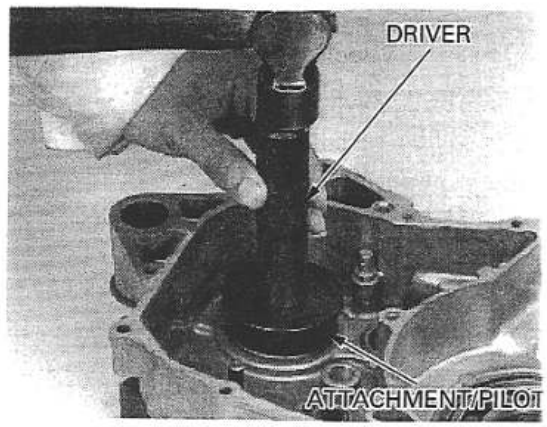


Drive in the new bearings squarely with the marking side facing toward the inside of the crankcase.

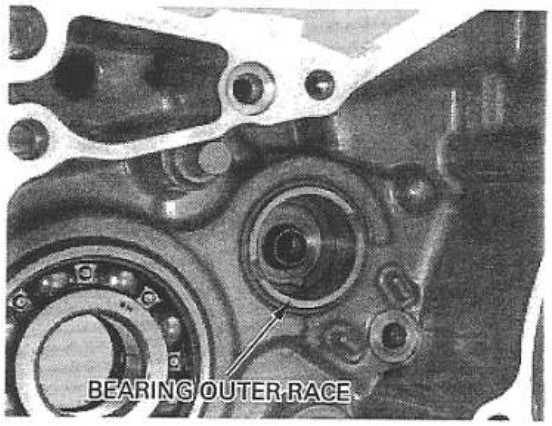
Install a new countershaft bearing using the special tools.

TOOLS:

Driver	07749-0010000
Attachment, 62 × 68 mm	07746-0010500
Pilot, 25 mm	07746-0040600

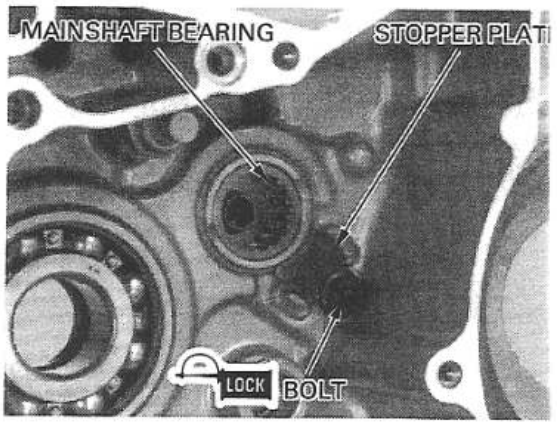


Install a new left mainshaft bearing outer race.

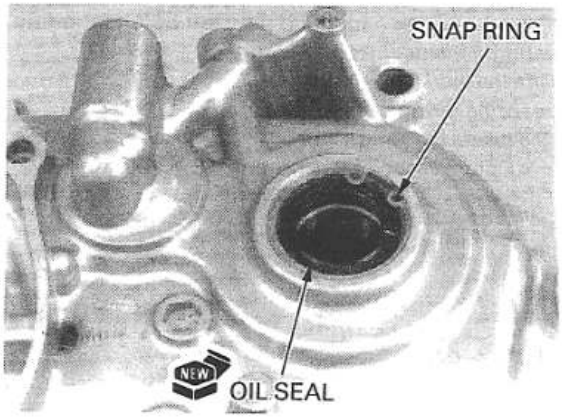


Clean the outer race stopper plate bolt threads and apply a locking agent to bolt threads.
Install and tighten the stopper plate bolt securely.

Install a new left mainshaft bearing.

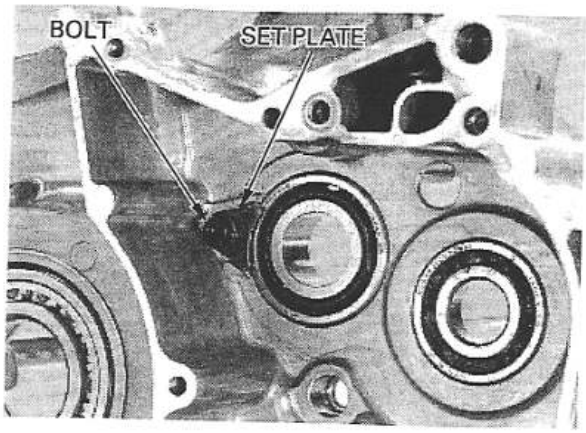


Install a new left countershaft oil seal.
Install the snap ring.

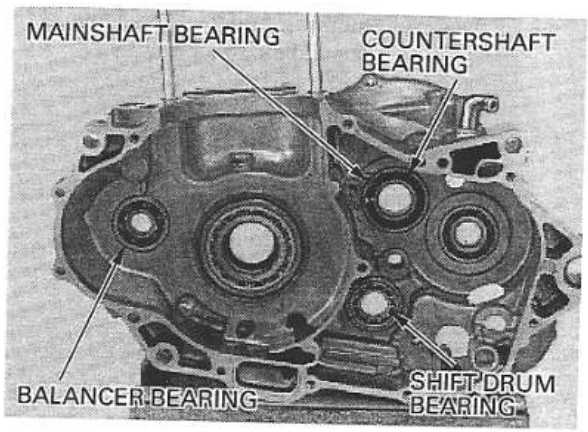


RIGHT CRANKCASE

Remove the bolts and mainshaft bearing set plate.



Remove the mainshaft bearing, countershaft bearing, shift drum bearing and balancer bearing.

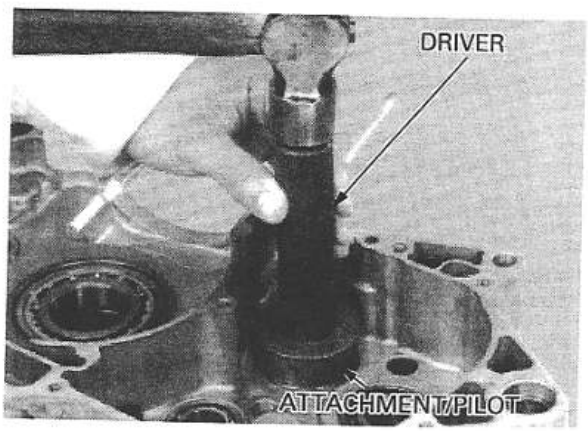


Drive in the new bearings squarely with the marking side facing toward the inside of the crankcase.

Install a new right mainshaft bearing using the special tools.

TOOLS:

Driver	07749-0010000
Attachment, 52 × 55 mm	07746-0010400
Pilot, 25 mm	07746-0040600

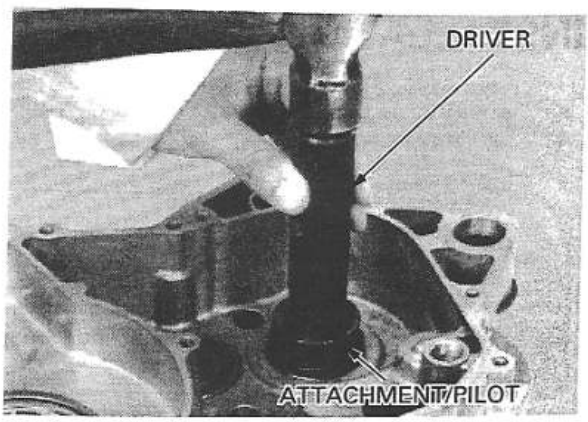


Drive in the new bearings squarely with the marking side facing toward the inside of the crankcase.

Install a new right countershaft bearing using the special tools.

TOOLS:

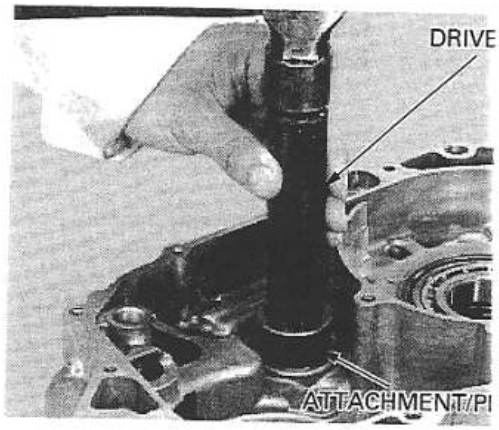
Driver	07749-0010000
Attachment, 42 × 47 mm	07746-0010300
Pilot, 20 mm	07746-0040500



Install a new shift drum bearing using the special tools.

TOOLS:

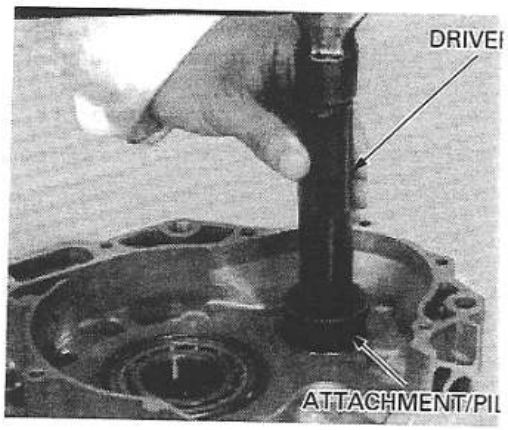
Driver	07749-0010000
Attachment, 37 × 40 mm	07746-0010200
Pilot, 20 mm	07746-0040500



Install a new right balancer bearing using the special tools.

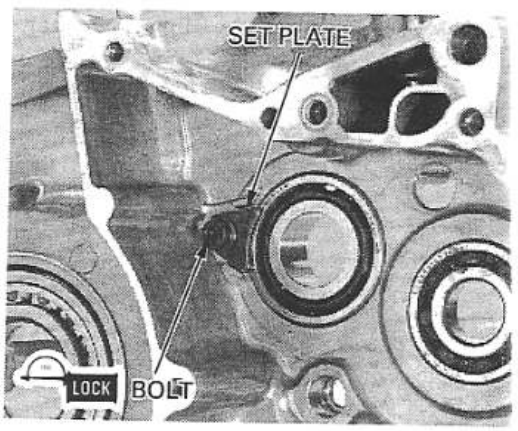
TOOLS:

Driver	07749-0010000
Attachment, 42 × 47 mm	07746-0010300
Pilot, 16 mm	07746-0041300



Clean and apply a locking agent to the mainshaft bearing set plate bolt threads.
Install and tighten the bolt to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m , 9 lbf·ft)

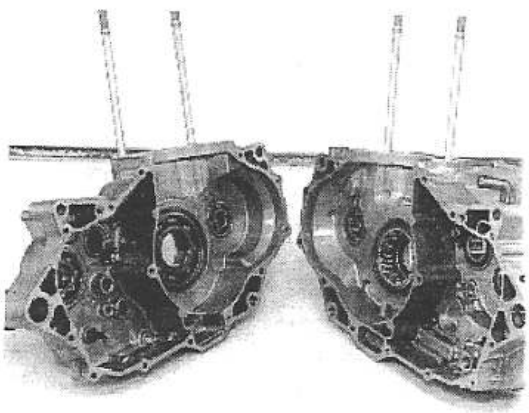


CRANKSHAFT/BALANCER INSTALLATION

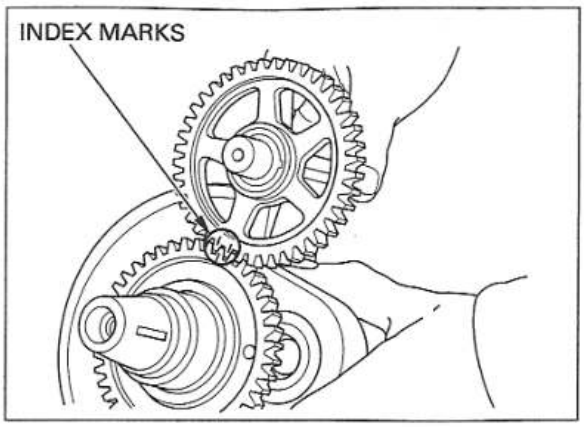
Clean both crankcase mating surfaces before assembling and check for wear or damage.

NOTE:

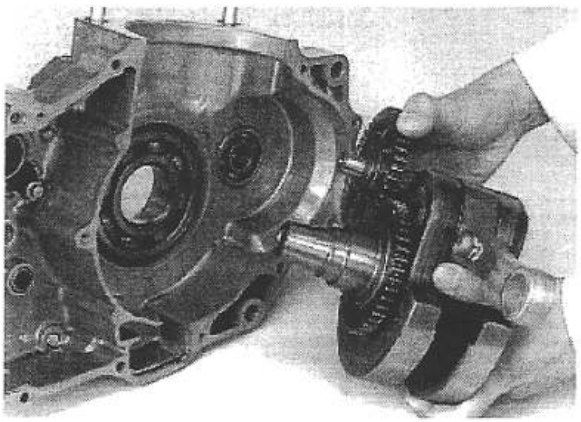
- If there is minor roughness or irregularities on the crankcase mating surfaces, dress them with an oil stone.
- After cleaning, lubricate the crankshaft bearings, balancer bearings and connecting rod big end with clean engine oil.



Align the index mark on the crankshaft gear with the index marks on the balancer gear as shown.



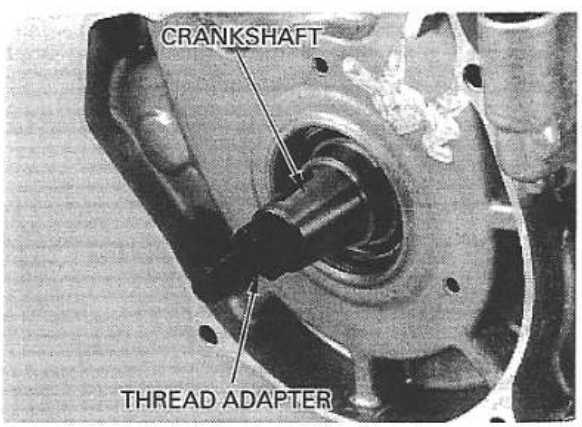
Temporarily install the crankshaft with the balancer into the left crankcase.



Install the thread adapter onto the crankshaft.

TOOL:

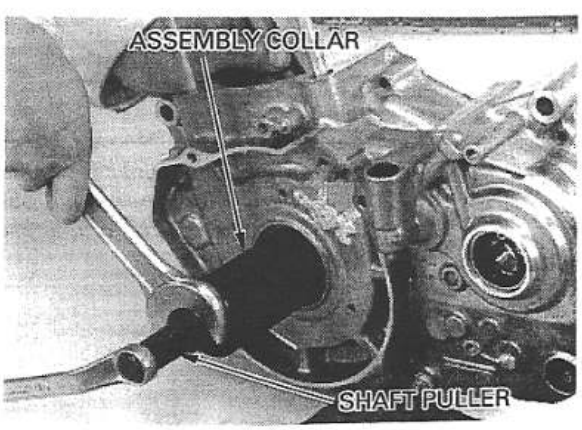
Thread adaptor	07931-KF00200



Install the crankshaft into the left crankcase using the special tools.

TOOLS:

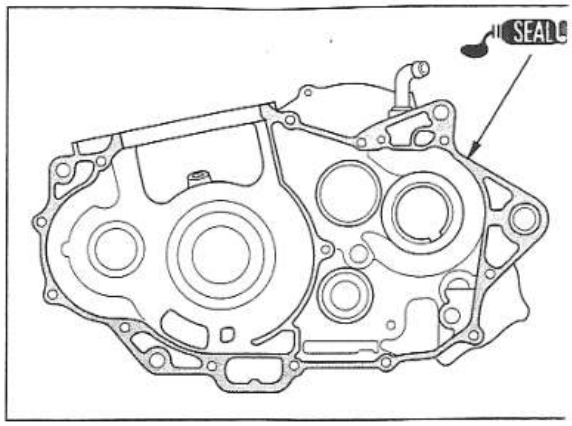
Assembly collar	07931-KF00100
Shaft puller	07931-ME40000



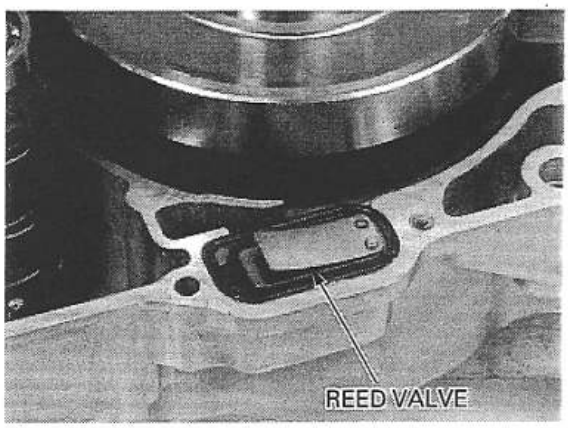
CRANKCASE ASSEMBLY

Install the crankshaft (page 12-12).
Install the transmission (page 13-6).

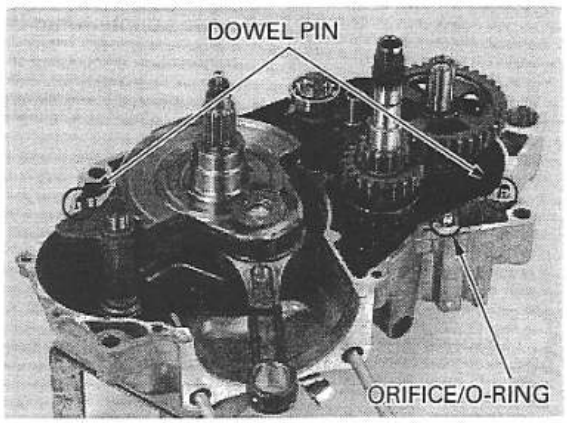
Apply a light but thorough coating of liquid sealant to all crankcase mating surfaces except the oil passage area.



Install the reed valve.



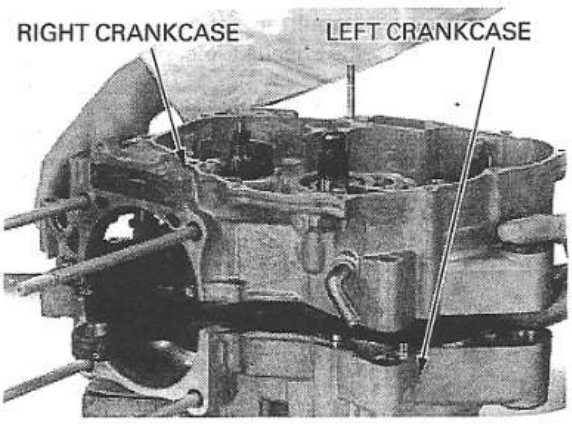
Install the dowel pins.
Install the orifice/O-ring with the large diameter orifice facing toward center of crankcase.



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

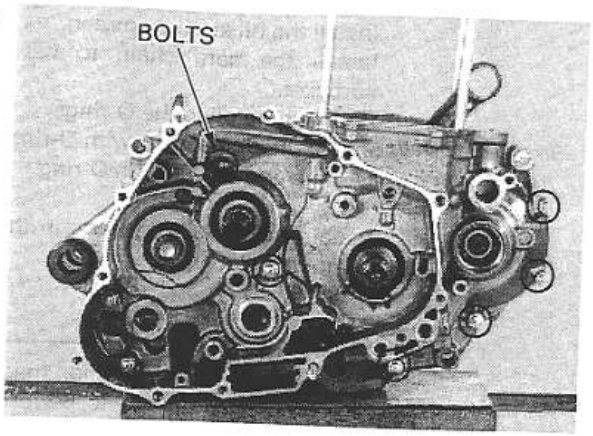
CAUTION:

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



Install and tighten the right crankcase bolts in a crisscross pattern in two or more steps.

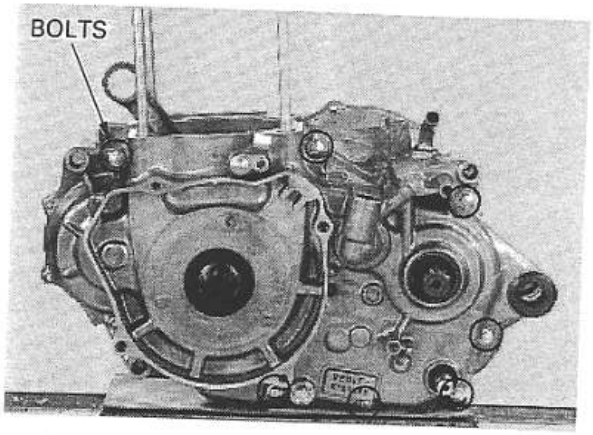
TORQUE: 12 N·m (1.2 kgf·m , 9 lbf·ft)



Install and tighten the left crankcase bolts in a crisscross pattern in two or more steps.

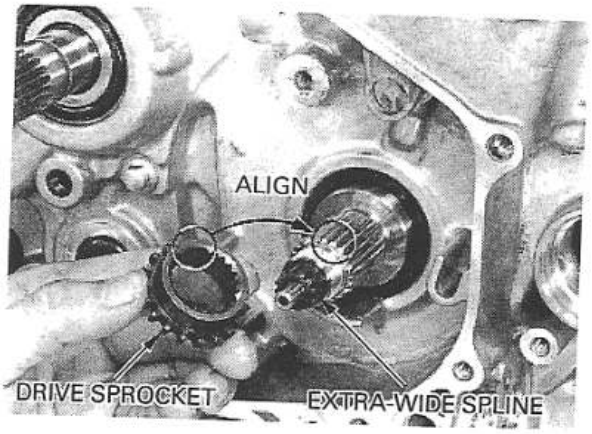
TORQUE: 12 N·m (1.2 kgf·m , 9 lbf·ft)

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



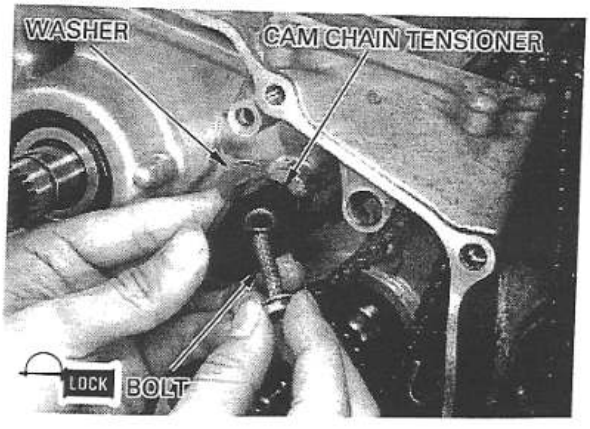
The cam chain drive sprocket goes on only one way because of an extra-wide aligning spline.

Install the cam chain drive sprocket.



Clean the cam chain tensioner bolt threads and apply a locking agent to the bolt threads.
Install the washer, cam chain tensioner and bolt.
Tighten the bolt to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m , 9 lbf·ft)

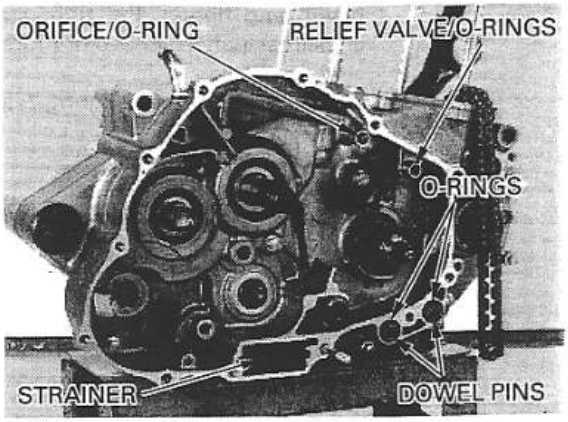


Install the oil strainer screen.
Install the cam chain to the cam chain drive sprocket.
Coat engine oil to the O-rings.

Be sure to install the relief valve through the cam chain.

Install the dowel pins with O-rings, relief valve with O-rings and orifice with O-ring.

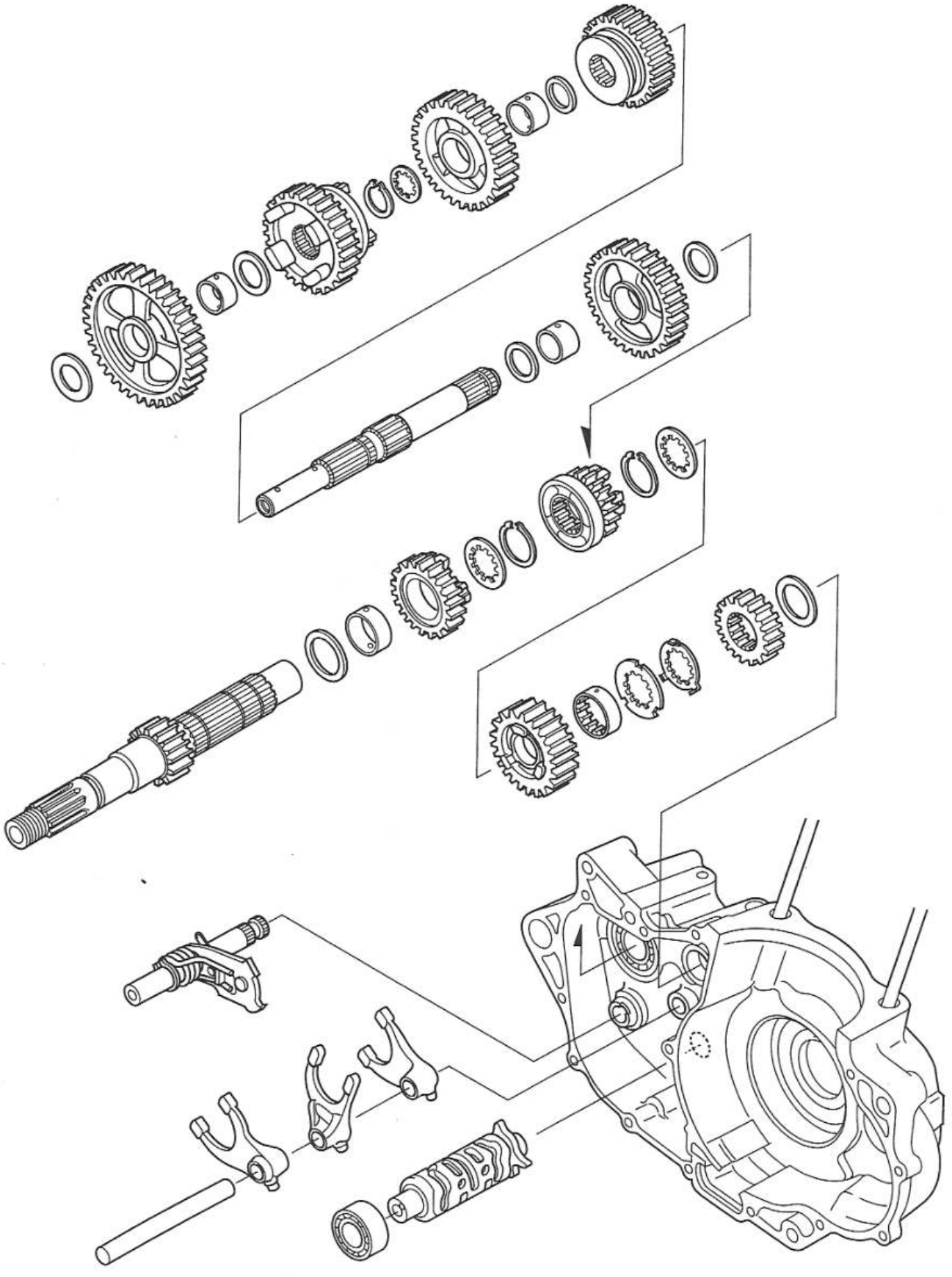
Install the remaining parts in the reverse order of removal.



NOTE:

Refer to Service Information (page 12-1) for installation of removed parts to perform crankcase/crankshaft/balancer service.

MEMO



13. TRANSMISSION

SERVICE INFORMATION	13-1	TRANSMISSION INSPECTION	13-4
TROUBLESHOOTING	13-2	TRANSMISSION ASSEMBLY/ INSTALLATION	13-6
TRANSMISSION REMOVAL/ DISASSEMBLY	13-3		

SERVICE INFORMATION

GENERAL

- The crankcase must be separated to service the transmission.

SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Transmission	Gear I.D.	M4, M5, C2	28.000–28.021 (1.1024–1.1032)	28.04 (1.104)
		C1	23.000–23.021 (0.9055–0.9063)	23.04 (0.907)
		C3	31.000–31.025 (1.2205–1.2215)	31.05 (1.222)
	Bushing O.D.	M4, M5	27.959–27.980 (1.1007–1.1016)	27.93 (1.100)
		C1	22.959–22.979 (0.9039–0.9047)	22.93 (0.903)
		C2	27.959–27.980 (1.1007–1.1016)	27.93 (1.100)
		C3	30.950–30.975 (1.2185–1.2195)	30.92 (1.217)
	Bushing I.D.	M4	24.985–25.006 (0.9837–0.9845)	25.02 (0.985)
		C1	20.000–20.021 (0.7874–0.7882)	20.04 (0.789)
		C2	25.000–25.021 (0.9843–0.9851)	25.04 (0.986)
		C3	27.995–28.016 (1.1022–1.1030)	28.04 (1.104)
	Gear-to-bushing clearance	M4, M5, C2	0.020–0.062 (0.0008–0.0024)	0.10 (0.004)
		C1	0.021–0.062 (0.0008–0.0024)	0.10 (0.004)
		C3	0.025–0.075 (0.0010–0.0030)	0.13 (0.005)
	Mainshaft O.D.	M4	24.967–24.980 (0.9830–0.9835)	24.94 (0.982)
		Clutch outer guide	21.967–21.980 (0.8648–0.8654)	21.94 (0.864)
	Countershaft O.D.	C1	19.980–19.993 (0.7866–0.7871)	19.94 (0.785)
		C2	24.972–24.993 (0.9831–0.9840)	24.95 (0.982)
		C3	27.959–27.980 (1.1007–1.1016)	27.93 (1.100)
		Starter idle gear	19.980–19.993 (0.7866–0.7871)	19.94 (0.785)
	Bushing-to-shaft clearance	M4	0.005–0.039 (0.0002–0.0015)	0.06 (0.002)
		C1	0.007–0.041 (0.0003–0.0016)	0.06 (0.002)
		C2	0.007–0.049 (0.0003–0.0019)	0.06 (0.002)
		C3	0.015–0.057 (0.0006–0.0022)	0.06 (0.002)
Shift fork, Shift fork shaft	Shift fork	I.D.	14.000–14.021 (0.5512–0.5520)	14.03 (0.552)
		Operation area thickness	5.93–6.00 (0.233–0.236)	5.9 (0.23)
	Shift fork shaft O.D.		13.957–13.968 (0.5495–0.5499)	13.95 (0.549)
Shift drum	O.D. at right crankcase bearing side		19.959–19.980 (0.7858–0.7866)	19.93 (0.785)
	O.D. at left side journal side		11.966–11.984 (0.4711–0.4718)	11.95 (0.470)

TROUBLESHOOTING

HARD TO SHIFT

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

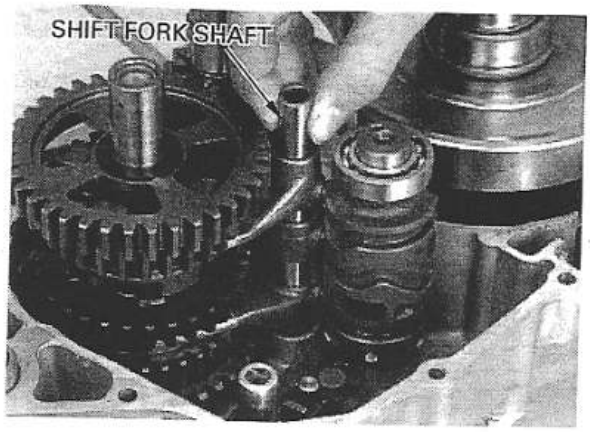
TRANSMISSION JUMPS OUT OF GEAR

- Gear dogs worn
- Shift shaft bent
- Shift drum stopper broken
- Shift forks bent

TRANSMISSION REMOVAL/ DISASSEMBLY

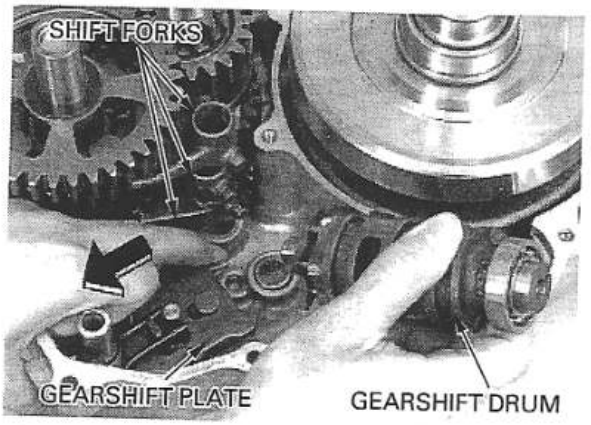
Separate the crankcase (section 12).

Remove the shift fork shaft.

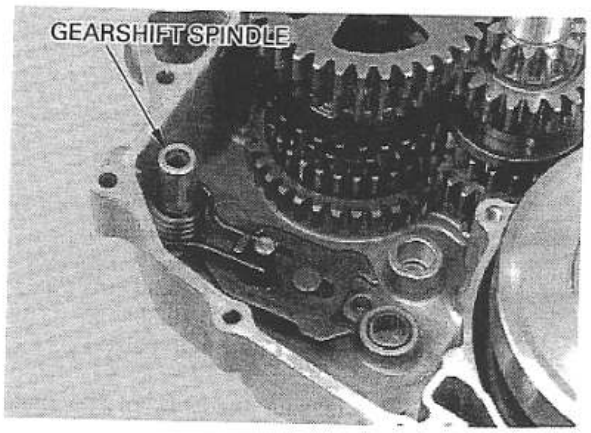


Pull the gearshift plate toward the spindle and remove the gearshift drum.

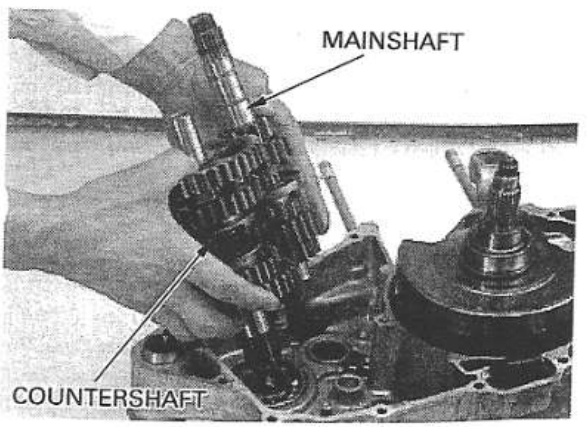
Remove the shift forks.



Remove the gearshift spindle.

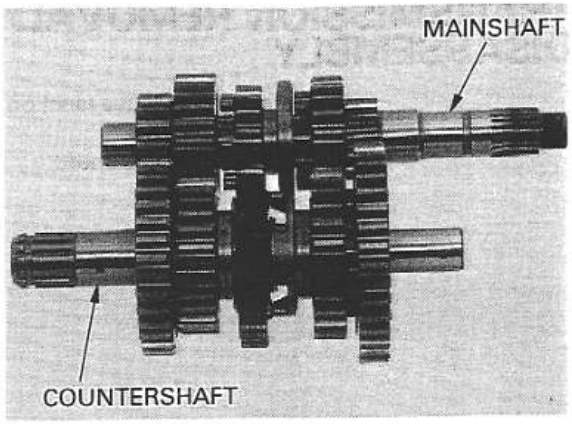


Remove the mainshaft and countershaft as an assembly.



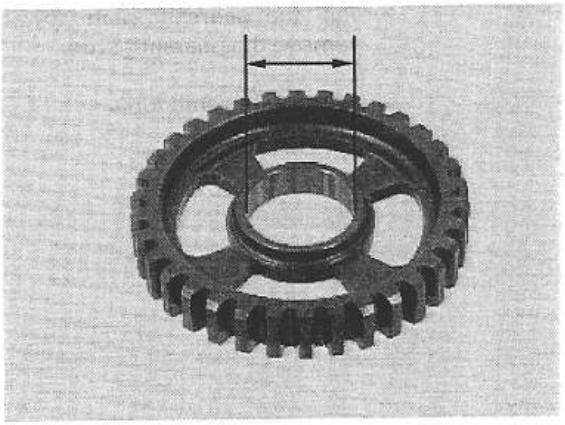
TRANSMISSION INSPECTION

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



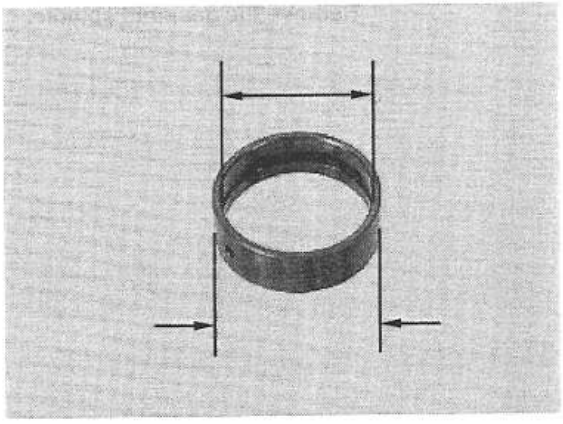
Measure the I.D. of each spinning gear.

SERVICE LIMITS:
M4: 28.04 mm (1.104 in)
M5: 28.04 mm (1.104 in)
C1: 23.04 mm (0.907 in)
C2: 28.04 mm (1.104 in)
C3: 31.05 mm (1.222 in)



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

SERVICE LIMITS:
I.D. : M4: 25.02 mm (0.985 in)
C1: 20.04 mm (0.789 in)
C2: 25.04 mm (0.986 in)
C3: 28.04 mm (1.104 in)
O.D. : M4: 27.93 mm (1.100 in)
M5: 27.93 mm (1.100 in)
C1: 22.93 mm (0.903 in)
C2: 27.93 mm (1.100 in)
C3: 30.92 mm (1.217 in)

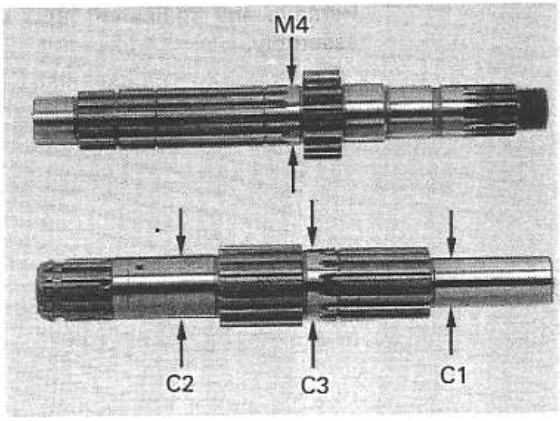


Calculate the clearances between the gears and bushings.

SERVICE LIMITS:
M4: 0.10 mm (0.004 in)
M5: 0.10 mm (0.004 in)
C1: 0.10 mm (0.004 in)
C2: 0.10 mm (0.004 in)
C3: 0.13 mm (0.005 in)

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

SERVICE LIMITS:
M4 bushing: 24.94 mm (0.982 in)
C1 bushing: 19.94 mm (0.785 in)
C2 bushing: 24.95 mm (0.982 in)
C3 bushing: 27.93 mm (1.100 in)



Calculate the clearances between the shafts and bushings.

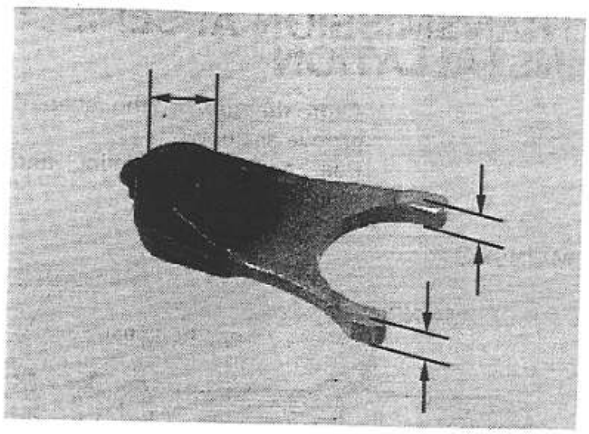
SERVICE LIMITS:
M4 bushing: 0.06 mm (0.002 in)
C1 bushing: 0.06 mm (0.002 in)
C2 bushing: 0.06 mm (0.002 in)
C3 bushing: 0.06 mm (0.002 in)

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

SERVICE LIMIT: 14.03 mm (0.552 in)

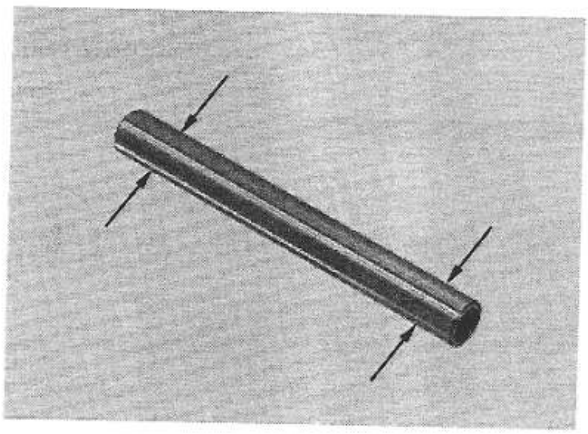
Measure the thickness of the shift fork operation area.

SERVICE LIMIT: 5.9 mm (0.23 in)



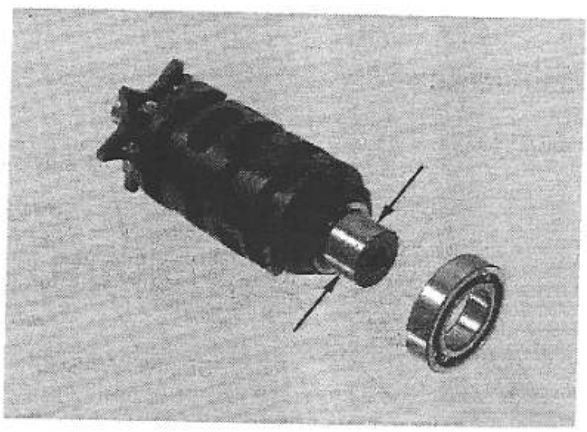
Inspect the shift fork shaft and replace the shift fork shaft if it is bent or damaged.
Measure the O.D. of the shift fork.

SERVICE LIMIT: 13.95 mm (0.549 in)



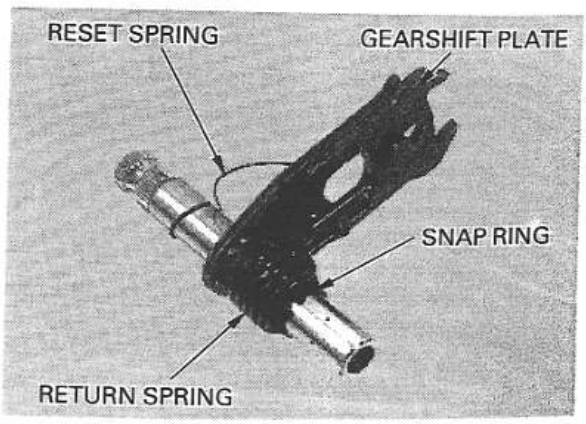
Inspect the shift drum grooves and replace the drum if they damaged or worn.
Measure the O.D. of the shift drum-to-right crankcase bearing rolling area.

SERVICE LIMIT: 19.93 mm (0.785 in)



GEARSHIFT SPINDLE INSPECTION

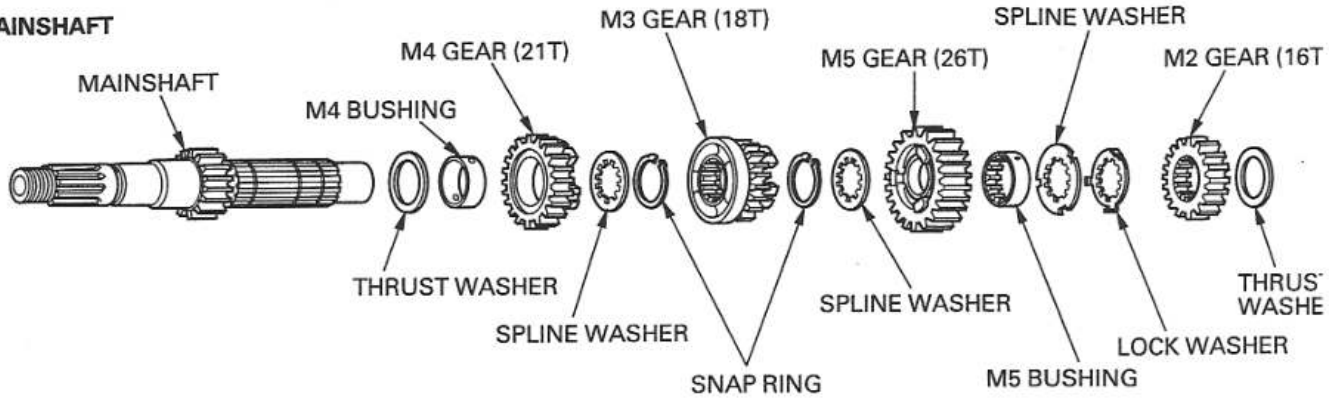
Remove the snap ring and spring.
Inspect the gearshift spindle and gearshift plate claw wear or damage.
Replace if it is worn or damaged.
Inspect the return spring and replace if it is damaged.
Inspect the reset spring and replace if it is damaged.

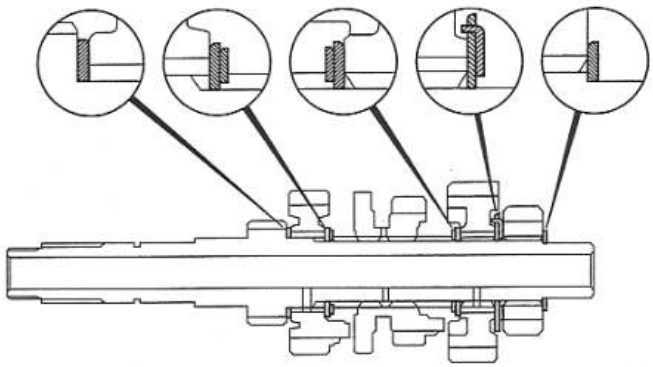


TRANSMISSION ASSEMBLY/ INSTALLATION

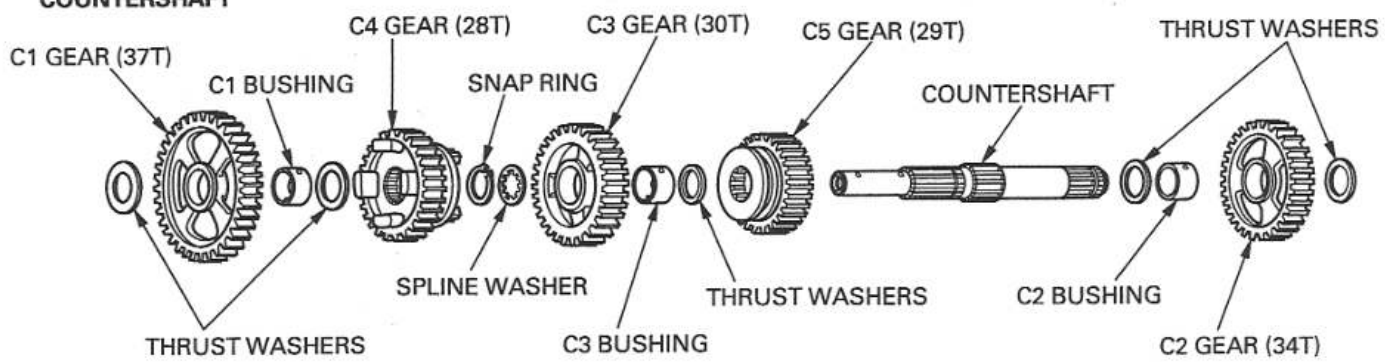
Align the gap in the snap ring with the spline groove as shown.
Coat each gears rolling and sliding area with molybdenum solution.

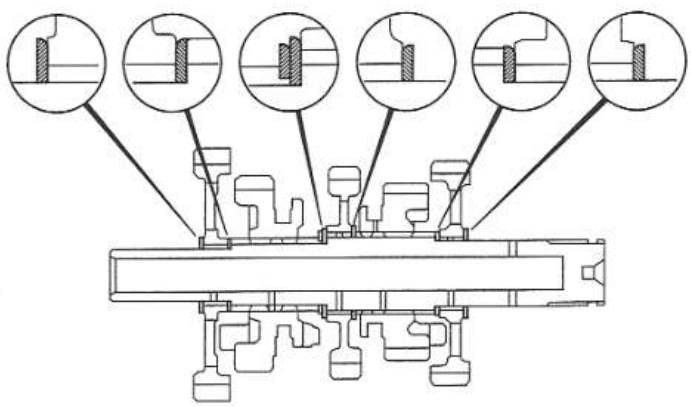
MAINSHAFT





COUNTERSHAFT



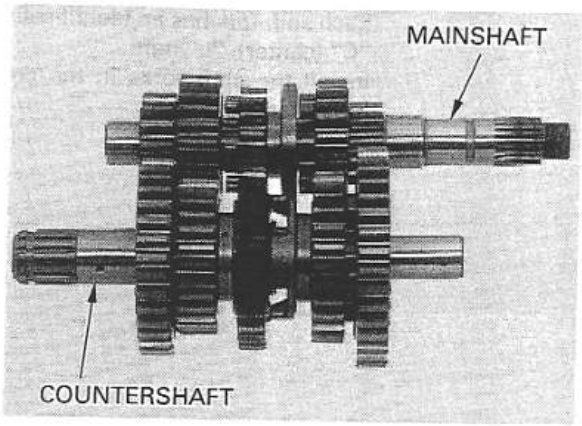


Apply engine oil to the following.
- Mainshaft bearing
- Countershaft bearing
- Shift drum bearing

Apply molybdenum solution to the shift fork grooves of the M3, C4 and C5 gears.
Assemble the transmission.

NOTE:

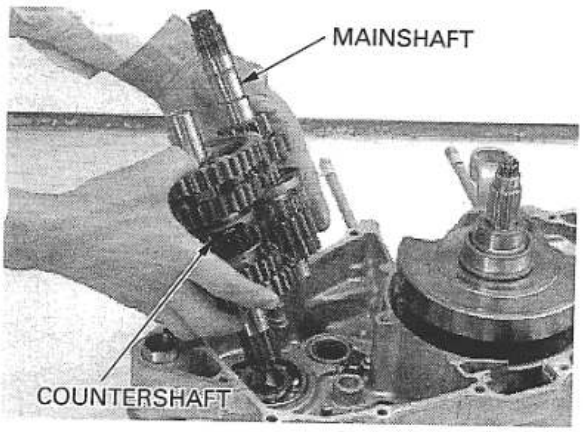
Install the M5 gear bushing with its oil hole aligning with the hole in the mainshaft.



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

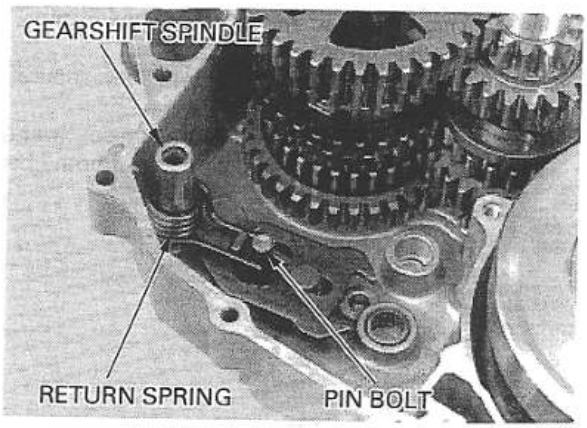
NOTE:

Be careful not to dislodge the countershaft oil seal lip in the left crankcase when installing the countershaft.

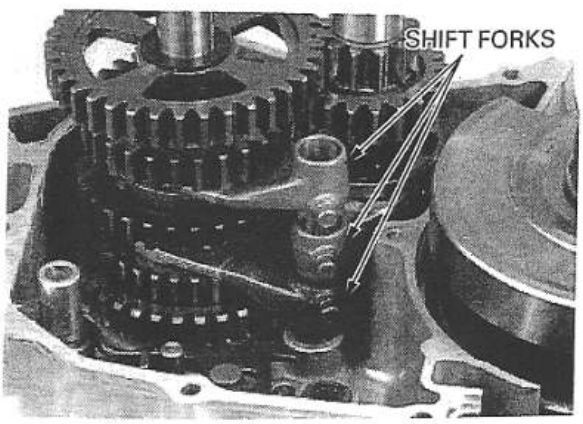


Apply molybdenum solution to the shift fork, fork shaft, shift drum, gearshift spindle and other rotating/sliding area.

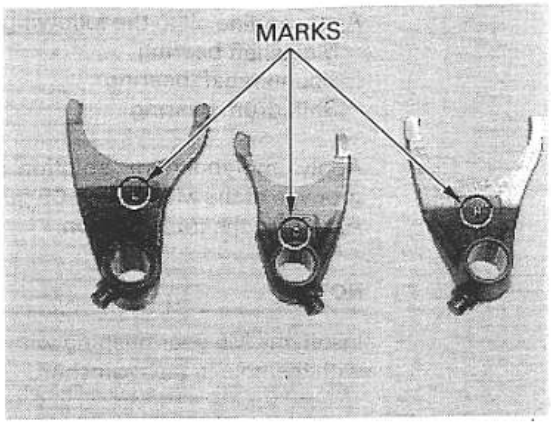
Align the return spring with the pin bolt and install the gearshift spindle.



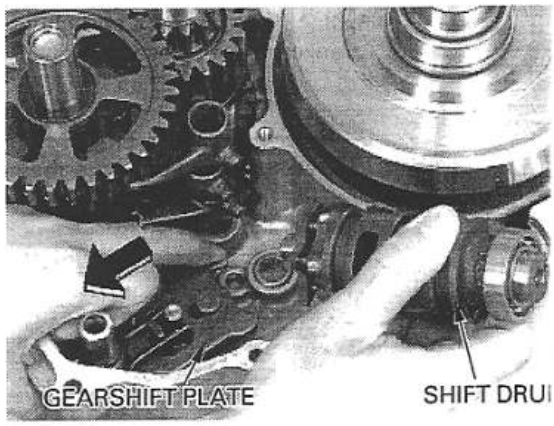
Install the shift forks.



Each shift fork has an identification mark "R" (right), "C" (center), "L" (left).
Install the shift forks in the correct position with their marks facing up.



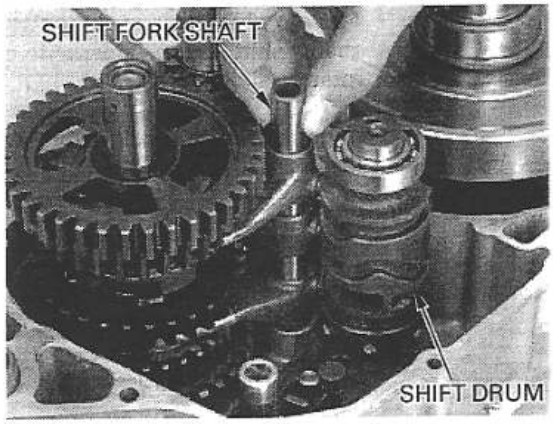
Install the shift drum while pulling the shift plate toward the spindle.



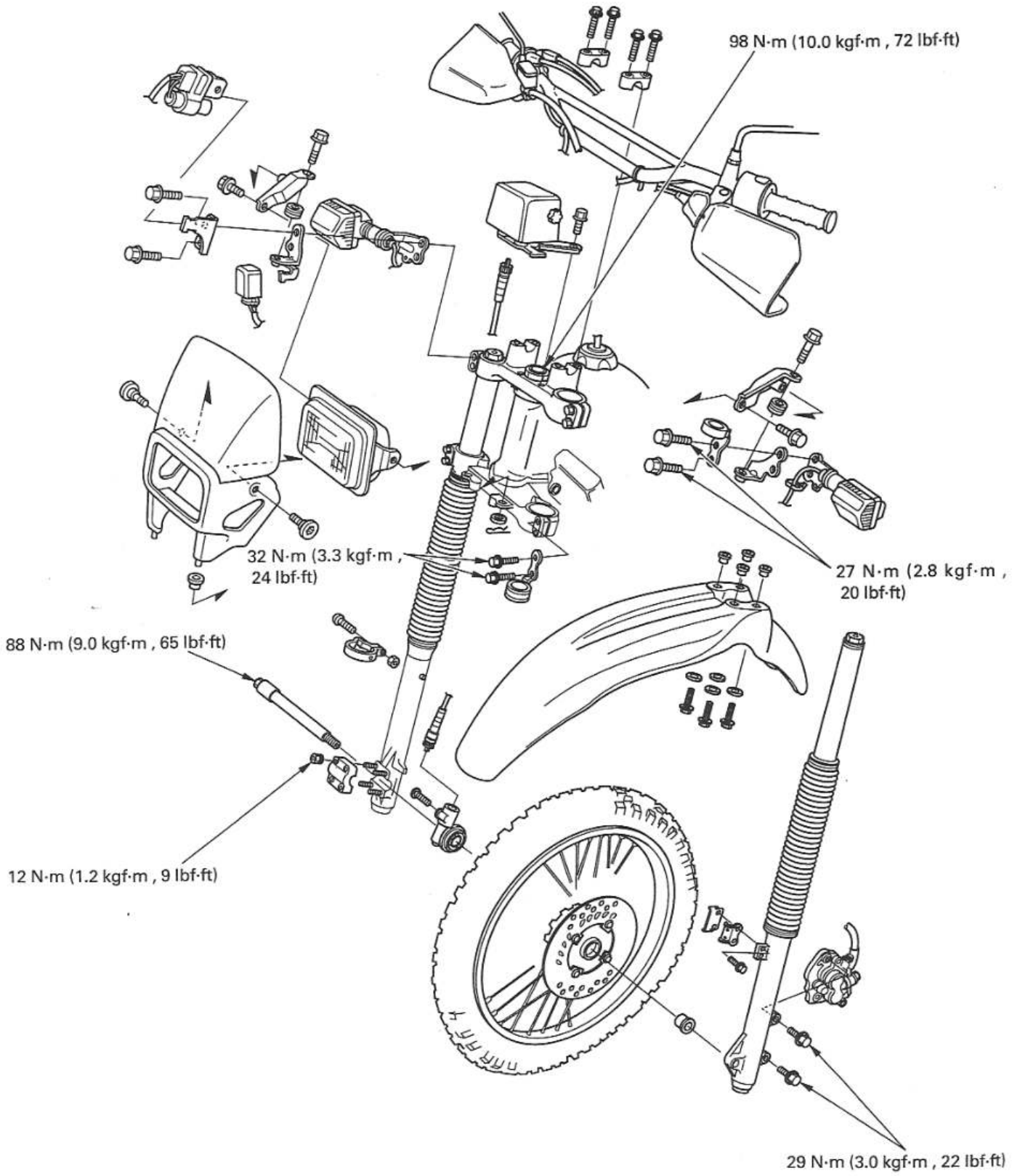
Be careful not to turn over the gearshift spindle oil seal lip in the left crankcase when installing the gearshift spindle.

Insert the shift fork guide pins into the shift drum grooves.
Install the shift fork shaft securely.

Assemble the crankcases (page 12-14) and check the transmission for smooth operating.



MEMO


98 N·m (10.0 kgf·m , 72 lbf·ft)
32 N·m (3.3 kgf·m , 24 lbf·ft)
27 N·m (2.8 kgf·m , 20 lbf·ft)
88 N·m (9.0 kgf·m , 65 lbf·ft)
12 N·m (1.2 kgf·m , 9 lbf·ft)
29 N·m (3.0 kgf·m , 22 lbf·ft)

14. FRONT WHEEL/SUSPENSION/STEERING

SERVICE INFORMATION	14-1	FORK	14-9
TROUBLESHOOTING	14-3	HANDLEBAR	14-21
FRONT WHEEL	14-4	STEERING STEM	14-25

SERVICE INFORMATION

GENERAL

Keep grease off of brake pads and disc.

⚠WARNING

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

- This section covers maintenance of the front wheel, fork and steering stem.
When servicing the front wheel, fork or steering stem, support the motorcycle using a work stand.
- Refer to Section 16 for brake system information.

SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Cold tire pressure		175 kPa (1.75 kgf/cm², 25 psi)	—
Axle runout		—	0.2 (0.01)
Wheel rim runout	Radial	—	2.0 (0.08)
	Axial	—	2.0 (0.08)
Wheel hub-to-rim distance		20.3 (0.80)	—
Fork	Spring free length	506 (19.9)	496 (19.5)
	Tube runout	—	0.2 (0.01)
	Recommended suspension oil	Fork fluid	—
	Fluid level	120 (4.7)	—
	Fluid capacity	637 cm³ (21.5 US oz, 22.4 Imp oz)	—
Compression damping adjuster standard position		11 clicks out from full in	—
Rebound damping adjuster standard position		9 clicks out from full in	—

TORQUE VALUES

Spoke	4 N·m (0.4 kgf·m , 2.9 lbf·ft)	
Rim lock	13 N·m (1.3 kgf·m , 9 lbf·ft)	
Brake disc bolt	20 N·m (2.0 kgf·m , 14 lbf·ft)	Apply a locking agent to the threads.
Front axle	88 N·m (9.0 kgf·m , 65 lbf·ft)	
Front axle holder nut	12 N·m (1.2 kgf·m , 9 lbf·ft)	
Fork center bolt	54 N·m (5.5 kgf·m , 40 lbf·ft)	Apply a locking agent to the threads.
Fork cap (to damper rod)	15 N·m (1.5 kgf·m , 11 lbf·ft)	
Fork cap bolt	30 N·m (3.1 kgf·m , 22 lbf·ft)	
Top bridge pinch bolt	27 N·m (2.8 kgf·m , 20 lbf·ft)	
Bottom bridge pinch bolt	32 N·m (3.3 kgf·m , 24 lbf·ft)	
Tripmeter mounting bolt	12 N·m (1.2 kgf·m , 9 lbf·ft)	
Front master cylinder holder bolt	10 N·m (1.0 kgf·m , 7 lbf·ft)	
Clutch lever bracket holder bolt	10 N·m (1.0 kgf·m , 7 lbf·ft)	
Steering head adjusting nut	see page 14-30	
Steering stem nut	98 N·m (10.0 kgf·m , 72 lbf·ft)	

TOOLS

Spoke wrench, 5.8 × 6.1 mm	07701-0020300
Attachment, 32 × 35 mm	07746-0010100
Attachment, 42 × 47 mm	07746-0010300
Inner driver, 30 mm	07746-0030300
Pilot, 17 mm	07746-0040400
Bearing remover shaft	07746-0050100
Bearing remover head, 17 mm	07746-0050500
Ball race remover	07946-3710500
Driver	07749-0010000
Steering stem socket	07916-KA50100
Steering stem driver	07946-MB00000
Ball race remover attachment	07953-MJ10100
Ball race remover shaft	07953-MJ10200
Fork seal driver	07TMD-MAC0100
Bearing race installer	07VMF-KZ30100
Bearing installer shaft	07VMF-KZ30200
Fork damper holder, 27 mm	07PMB-KZ40101

TROUBLESHOOTING

HARD STEERING
- Steering stem nut too tight
- Faulty or damaged steering head bearings
- Insufficient tire pressure

STEERS TO ONE SIDE OR DOES NOT TRACK STRAIGHT
- Bent fork tube
- Bent axle
- Wheel installed incorrectly
- Unequal oil quantity in each fork tube
- Faulty steering head bearings
- Bent frame
- Worn wheel bearing
- Worn swingarm pivot components
- Unevenly adjusted right and left fork legs

FRONT WHEEL WOBBLING
- Bent rim
- Worn front wheel bearings
- Bent or loose spokes
- Faulty tire
- Axle not tightened properly
- Unbalanced tire and wheel

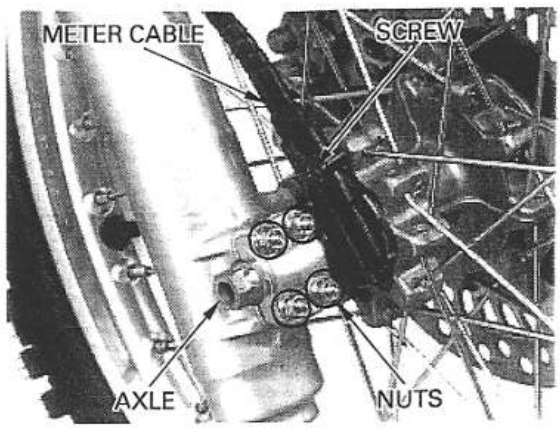
WHEEL TURNS HARD
- Faulty wheel bearing
- Bent front axle
- Brake drag

SOFT SUSPENSION
- Insufficient fluid in fork
- Fork oil viscosity too high
- Weak fork springs
- Tire pressure too low

HARD SUSPENSION
- Fork oil level too much
- Fork oil viscosity too thick
- Bent or damage fork tubes
- Clogged fork fluid passage

FRONT SUSPENSION NOISY
- Insufficient fluid in fork
- Loose fork fasteners

FRONT WHEEL



⚠WARNING

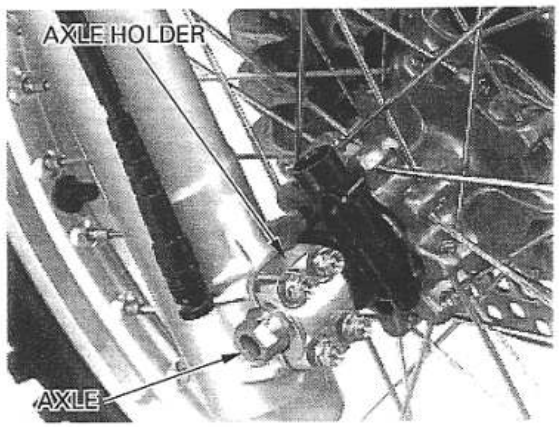
A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.

REMOVAL

Raise the front wheel off the ground by placing a work stand under the engine.

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

Remove the front axle and front wheel.



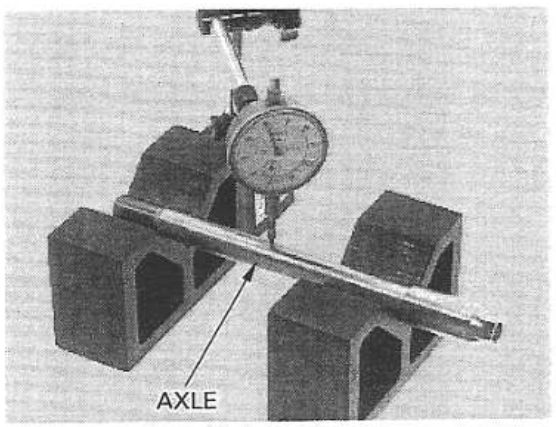
NOTE:

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

INSPECTION

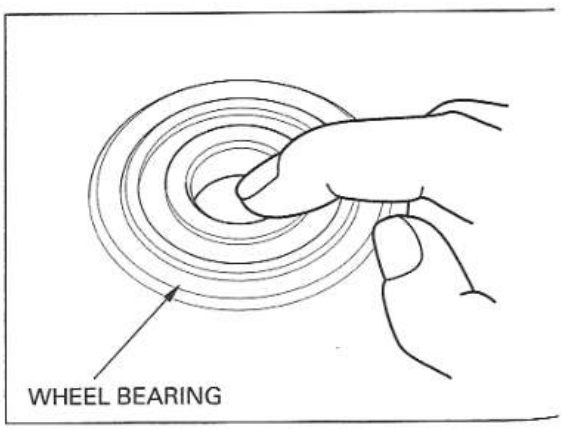
AXLE
Set the axle in V-blocks and measure the runout.
Turn the axle and measure the runout using a dial indicator.
Actual runout is 1/2 the total indicator reading.

SERVICE LIMIT: 0.2 mm (0.01 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, or if they fit loosely in the hub.

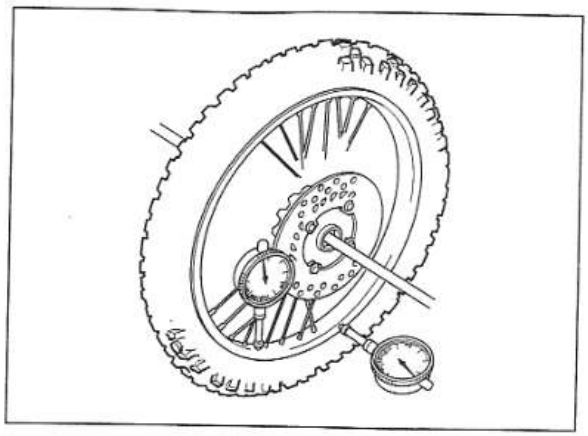


WHEEL RIM

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

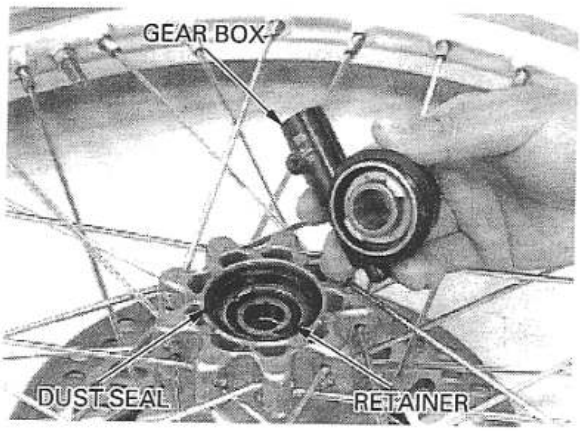
SERVICE LIMITS: Radial: 2.0 mm (0.08 in)
Axial: 2.0 mm (0.08 in)

Check the spokes and tighten as necessary.

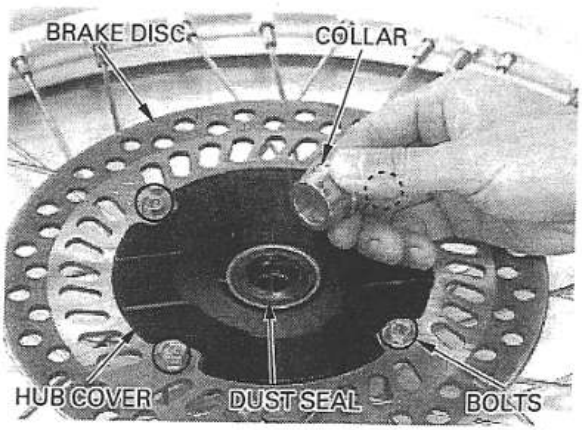


DISASSEMBLY

Remove the following:
- Speedometer gear box
- Dust seal
- Speedometer gear retainer



- Left side collar
- Bolts and brake disc
- Hub cover
- Dust seal



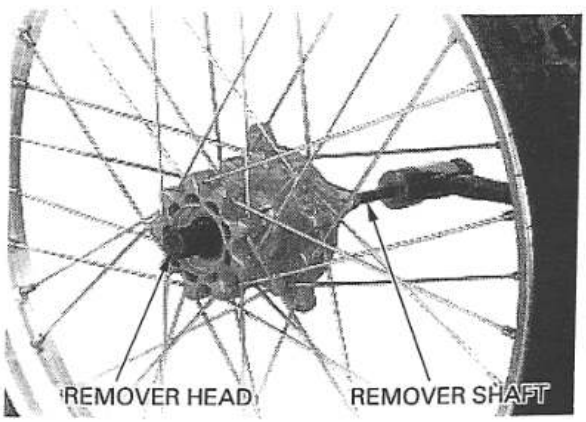
Remove the wheel bearings and distance collar.

TOOLS:

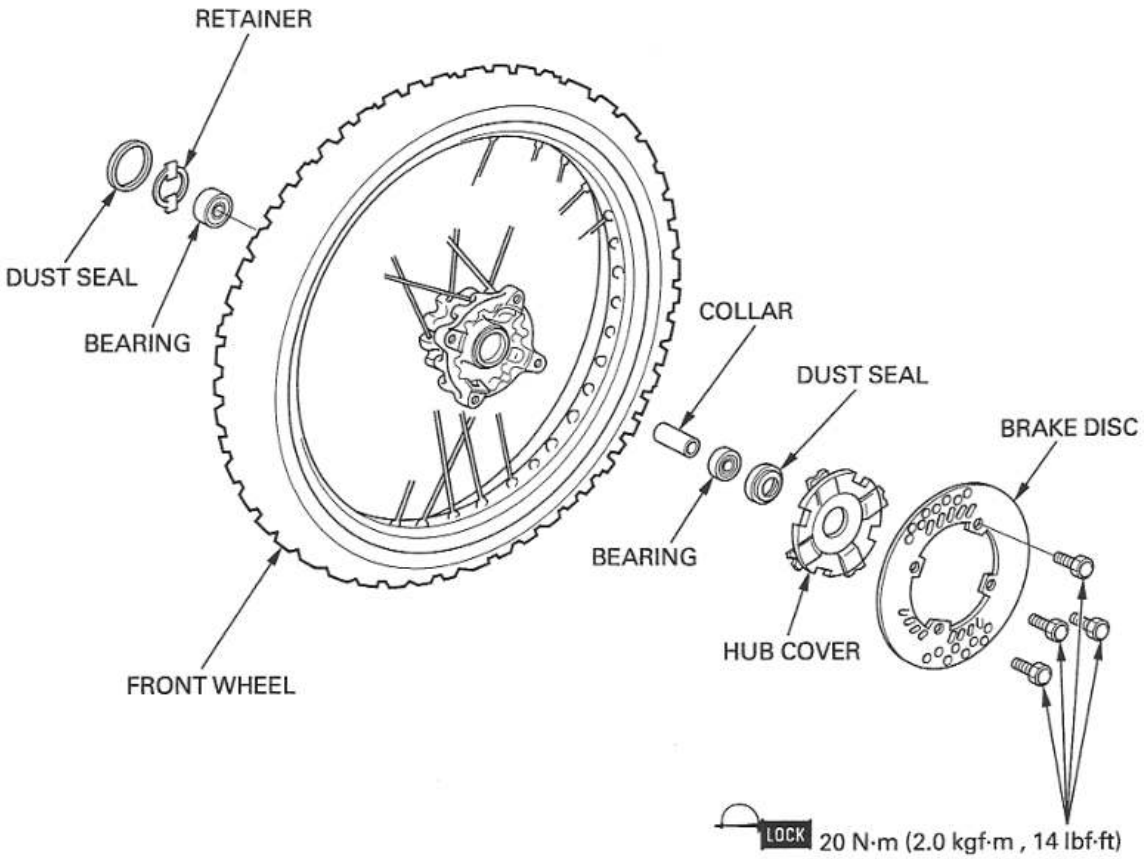
Bearing remover head, 17 mm	07746-0050500
Bearing remover shaft	07746-0050100

NOTE:

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



ASSEMBLY



Place the rim on the work bench.

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

Adjust the hub position so that the distance from the left end surface of the hub center to the side of rim is 20.3 mm (0.80 in) as shown.

Torque the spokes in 2 or 3 progressive steps.

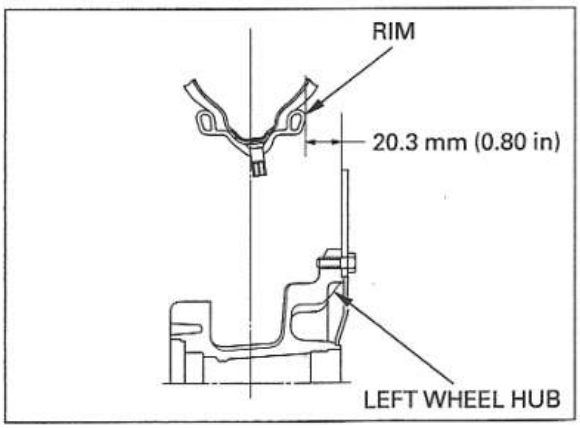
TOOL:
Spoke wrench, 5.8 × 6.1 mm 07701-0020300

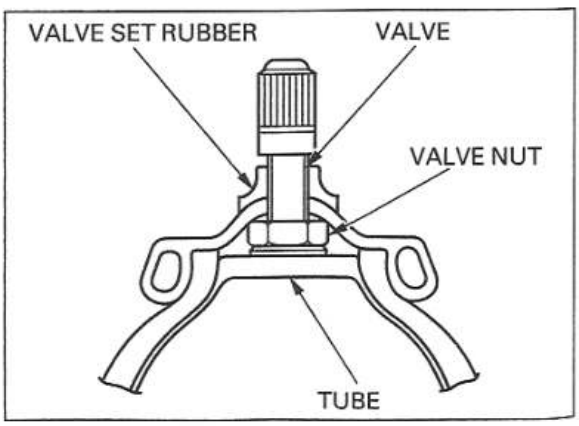
TORQUE: 4 N·m (0.4 kgf·m , 2.9 lbf·ft)

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

Torque the rim lock to the specified torque.

TORQUE: 13 N·m (1.3 kgf·m , 9 lbf·ft)





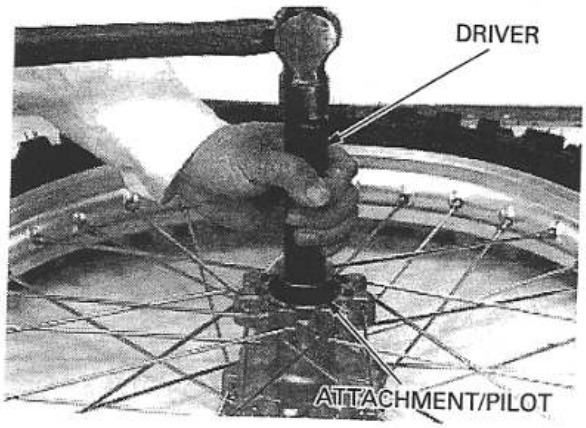
Pack all bearing cavities with grease.

Install the bearings with the seal side facing out.

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

TOOLS:

Driver	07749-0010000
Attachment, 32 × 35 mm	07746-0010100
Pilot, 17 mm	07746-0040400

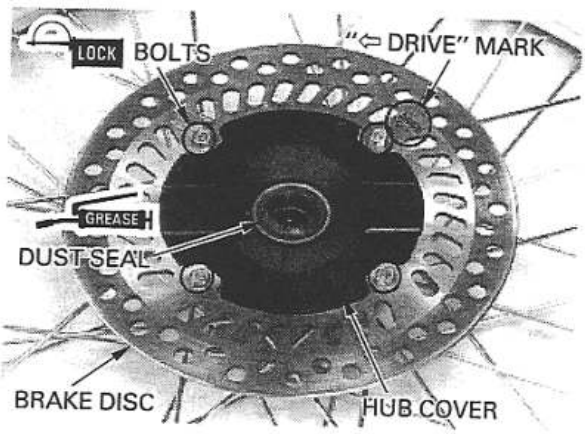


Install the brake disc with the "⇦ DRIVE " mark facing out.

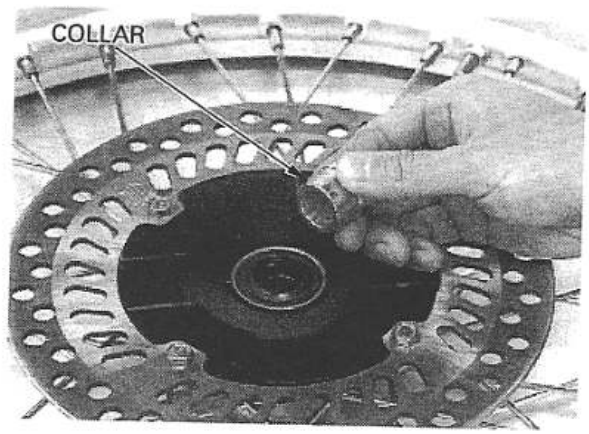
Install the hub cover and front brake disc.
Apply locking agent to the brake disc bolt threads.
Install and tighten the brake disc bolts to the specified torque.

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

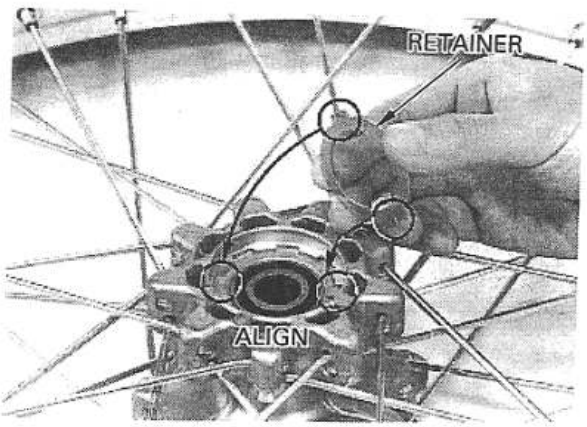
Apply grease to the left dust seal lip.
Install the left dust seal.



Install the left wheel collar.

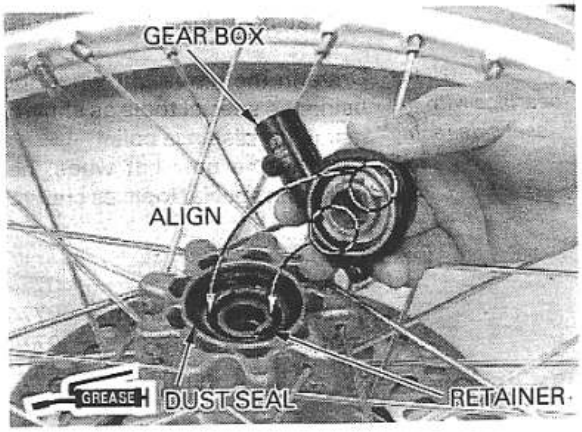


Apply grease to the speedometer gear retainer.
Install the speedometer gear retainer into the wheel hub, align the tangs with the slots.



Retainer will fall out if seal is not installed.

Apply grease to the right side dust seal lip and install the dust seal.
Apply grease to the speedometer gear box tangs and retainer tangs.
Install the speedometer gear box into the wheel hub, aligning the gear box tangs and retainer tangs.



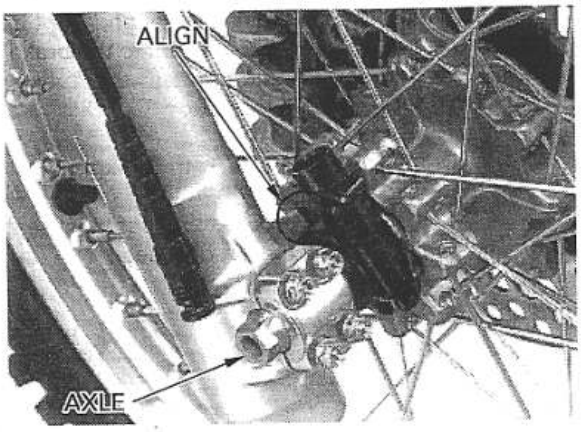
INSTALLATION

NOTE:

If you removed the axle holder, install with the "⇧" mark facing upward.

Clean the clamping and sliding surface of the axle shaft and axle holders.
Apply a thin coat of grease to the axle shaft.

Install the front wheel.



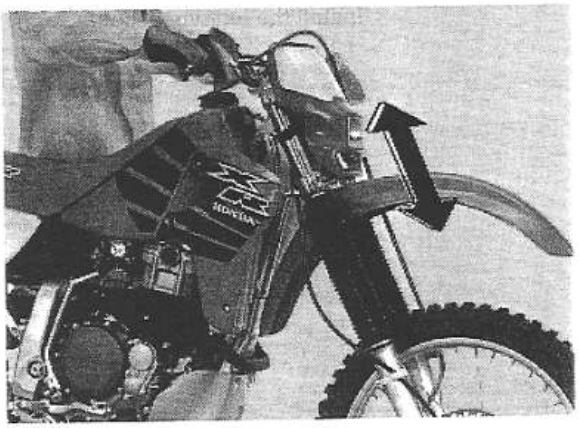
CAUTION:

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

Align the speedometer gear box with the tang on the right fork leg as shown.
Install and tighten the axle to the specified torque.

TORQUE: 88 N·m (9.0 kgf·m , 65 lbf·ft)

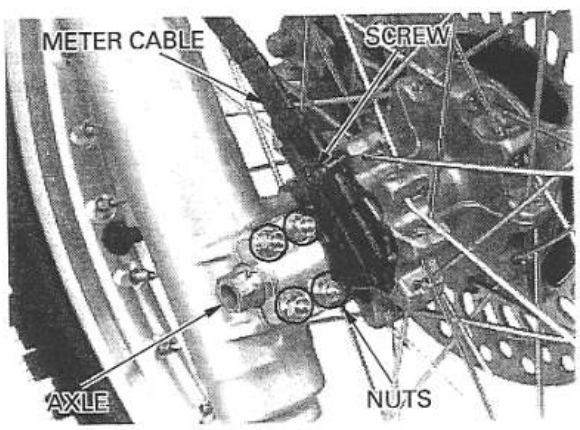
With the front brake applied, pump the front fork up and down several times to seat the axle and check the front brake operation.



Tighten the upper axle holder nuts, then tighten the lower nuts to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m , 9 lbf·ft)

Connect the speedometer cable to the gear box and tighten the screw securely.

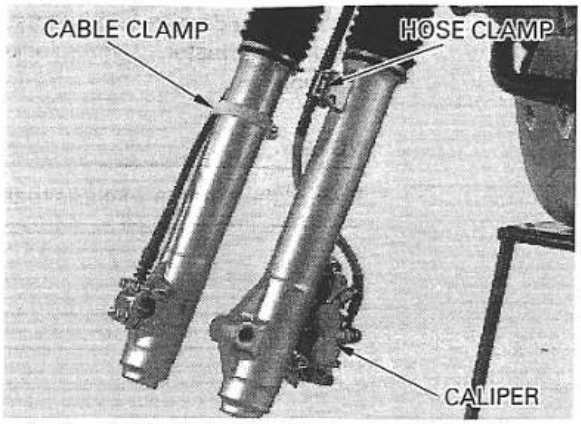


FORK

REMOVAL

Remove the following:
- Front visor (page 2-3)
- Front wheel (page 14-4)
- Brake hose clamp
- Front brake caliper (page 16-12) without disconnecting the brake hose
- Speedometer cable clamp

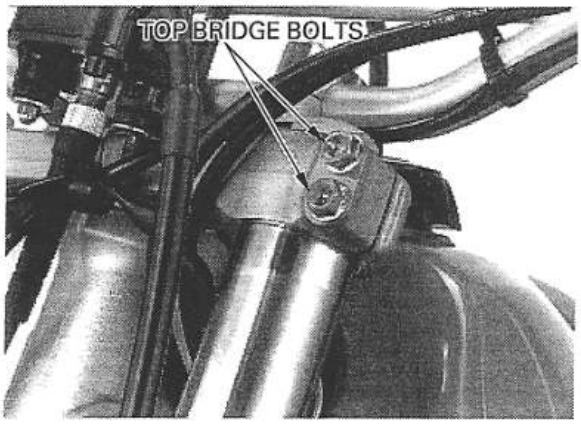
Do not hang the brake caliper by the brake hose.



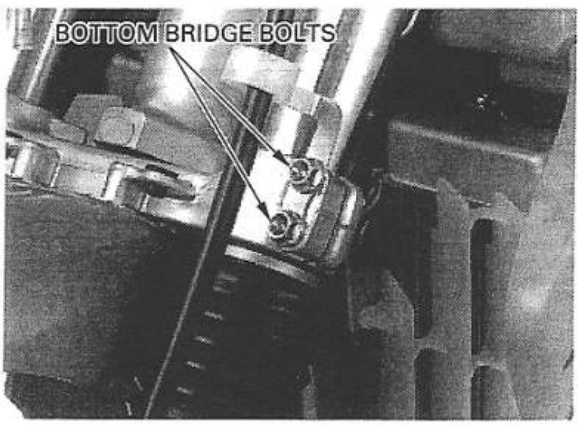
Loosen the top bridge pinch bolts.

NOTE:

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

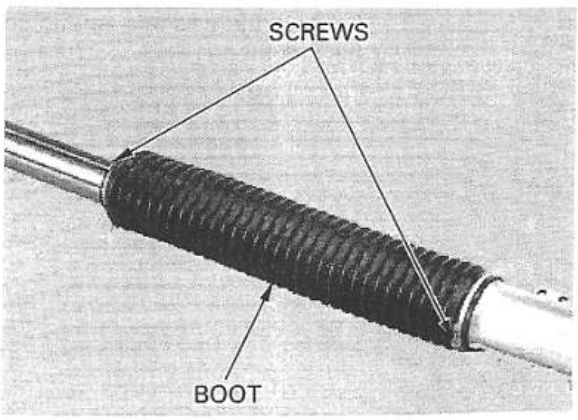


Loosen the bottom bridge pinch bolts.
Remove the front fork.



DISASSEMBLY

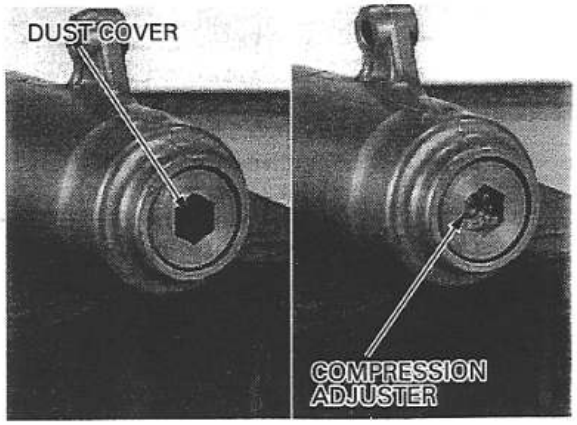
Loosen the fork boot screws.
Remove the fork boot from the front fork.



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

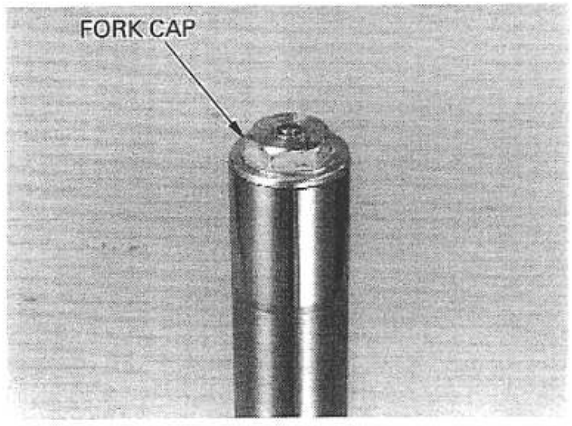
NOTE:

Record the number of clicks to the softest position.

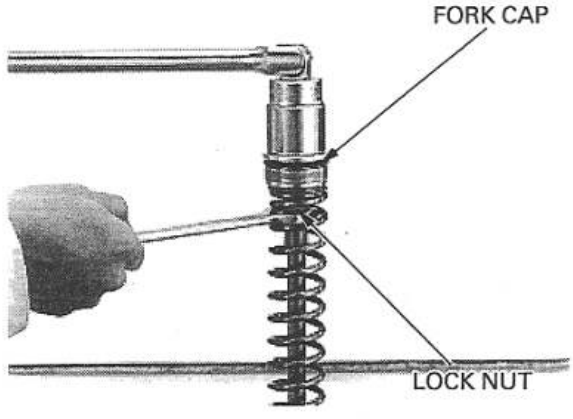


The fork cap is under spring pressure. Use care when removing and wear eye and face protection.

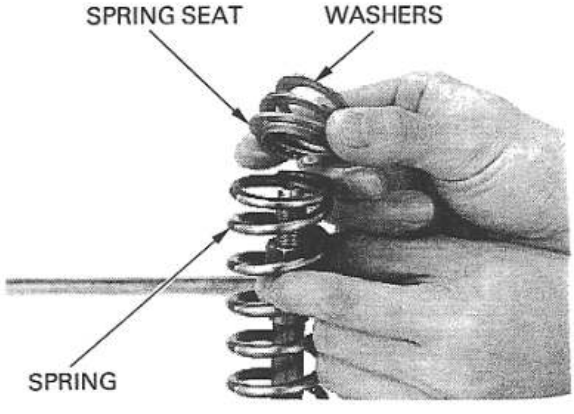
Remove the fork cap from the fork tube.



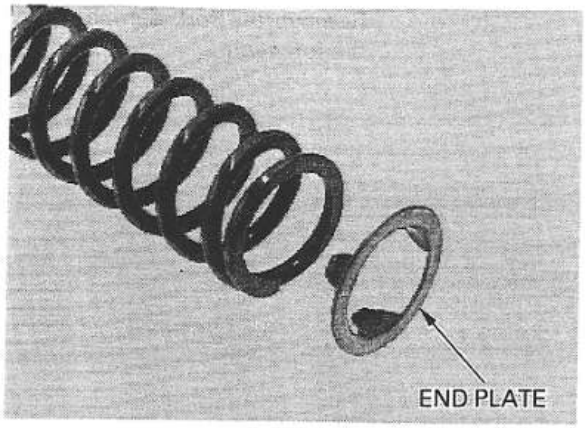
Hold the lock nut and remove the fork cap from the piston rod.



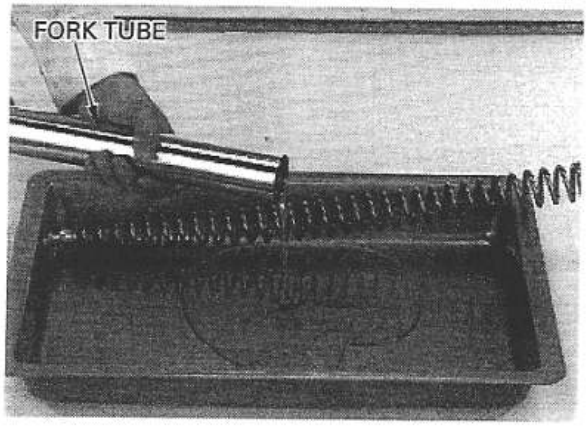
Remove the washers, spring seat and spring from the fork tube.



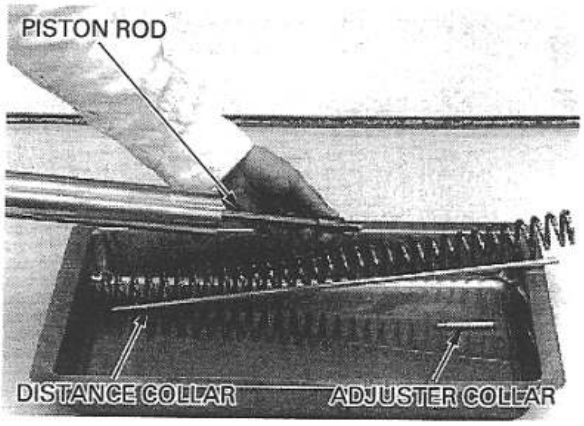
Remove the end plate from the fork spring's bottom side.



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



Remove the rebound adjuster collar and distance collar from the piston rod.
Empty the fork oil from the fork damper by pumping the piston rod 8—10 times.



Hold the caliper bracket or axle holder of the fork slider in a vise protected with a piece of wood or soft jaws.

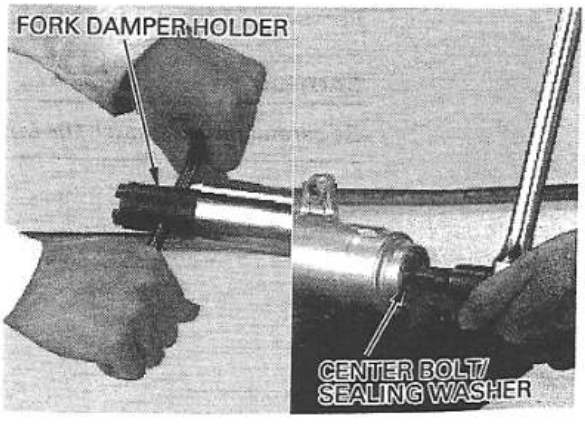
CAUTION:

Do not overtighten the vise. You may deform or break the fork slider.

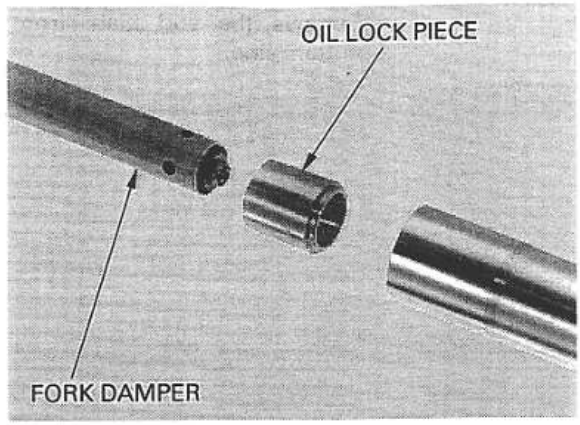
Loosen the center bolt and sealing washer.

TOOLS:
Fork damper holder, 27 mm 07PMB-KZ40101

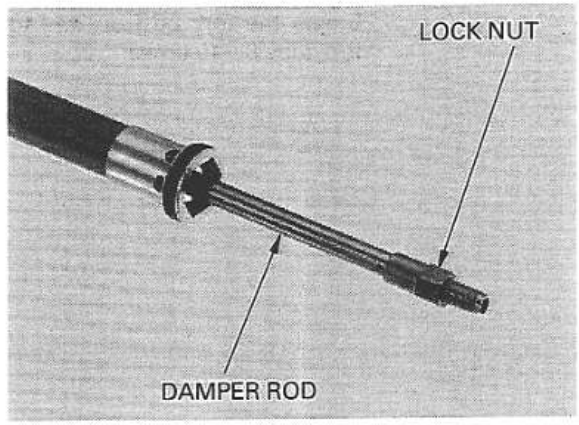
Remove the center bolt and sealing washer.



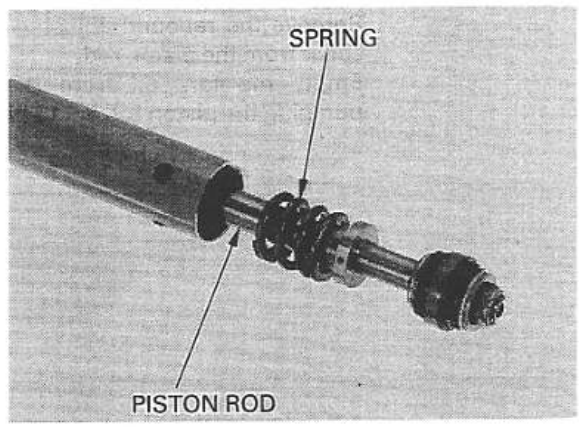
Remove the fork damper and oil lock piece from the fork tube.



Remove the lock nut from the damper rod.



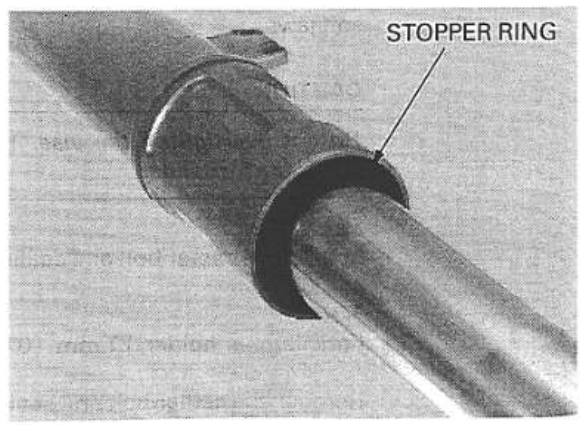
Remove the rebound spring and piston rod from the fork damper.



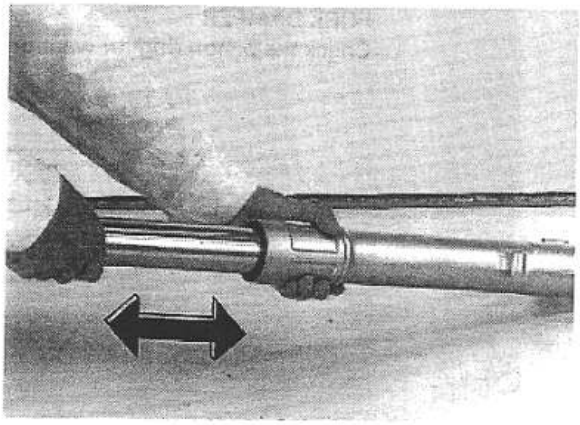
Remove the stopper ring from the fork slider.

CAUTION:

Be careful not to scratch the fork tube.



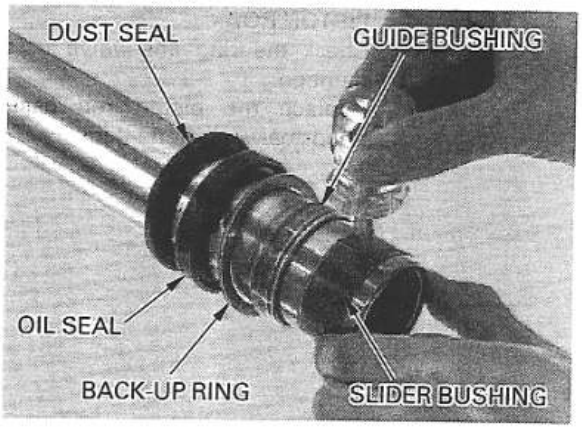
In quick successive motions, pull the fork tube out of the fork slider.



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

CAUTION:

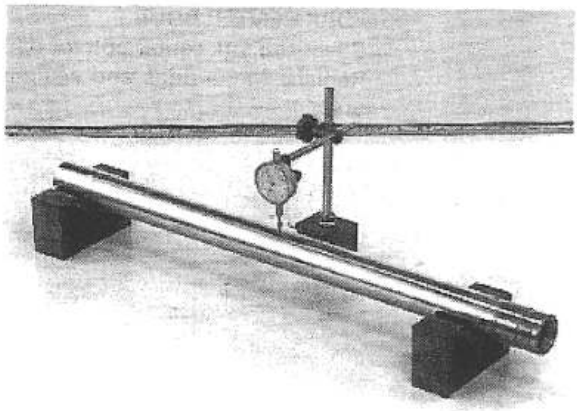
Do not remove the seals from the fork tube lower side, because it may damage the lips.



CAUTION:

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

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



INSPECTION

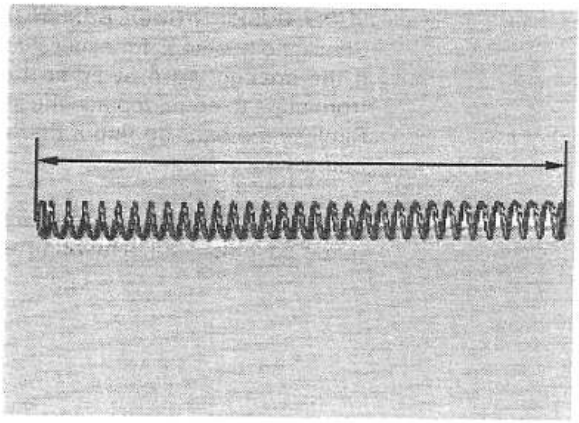
FORK TUBE/FORK SLIDER
Check the fork tube for score marks, scratches and excessive or abnormal wear.
Check the fork slider for damage or deformation.

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

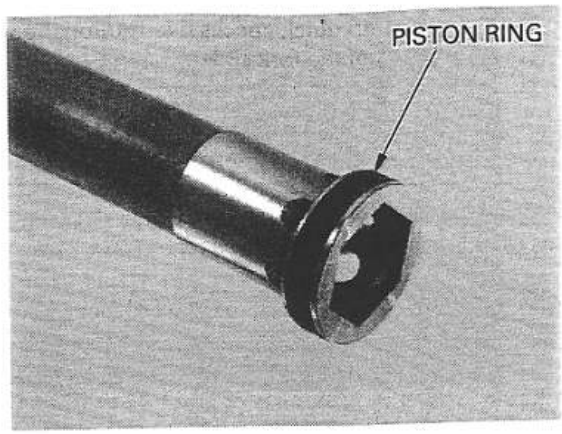
SERVICE LIMIT: 0.2 mm (0.01 in)

FORK SPRING
Measure the fork spring free length.

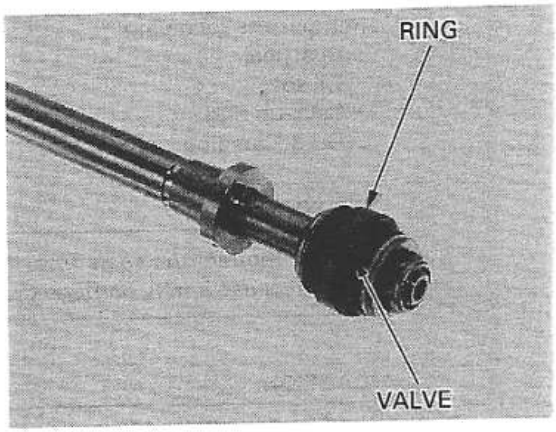
SERVICE LIMIT: 496 mm (19.5 in)



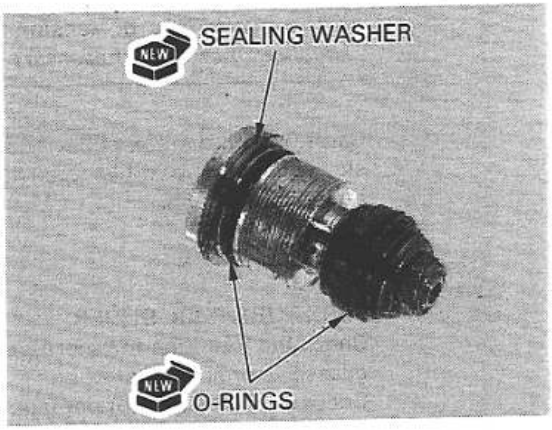
FORK DAMPER
Check the piston ring for wear or damage.



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

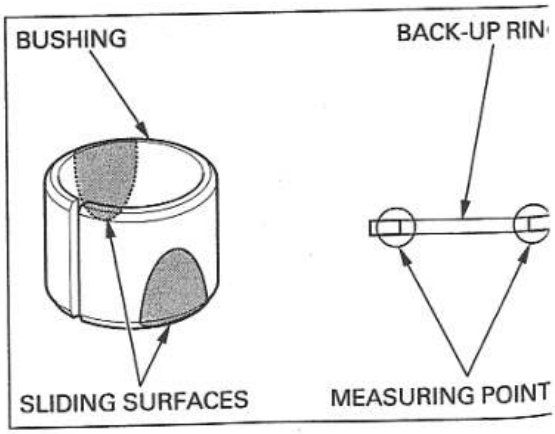


FORK CENTER BOLT
Check the fork center bolt for damage.
Replace the O-rings and sealing washer with new ones.



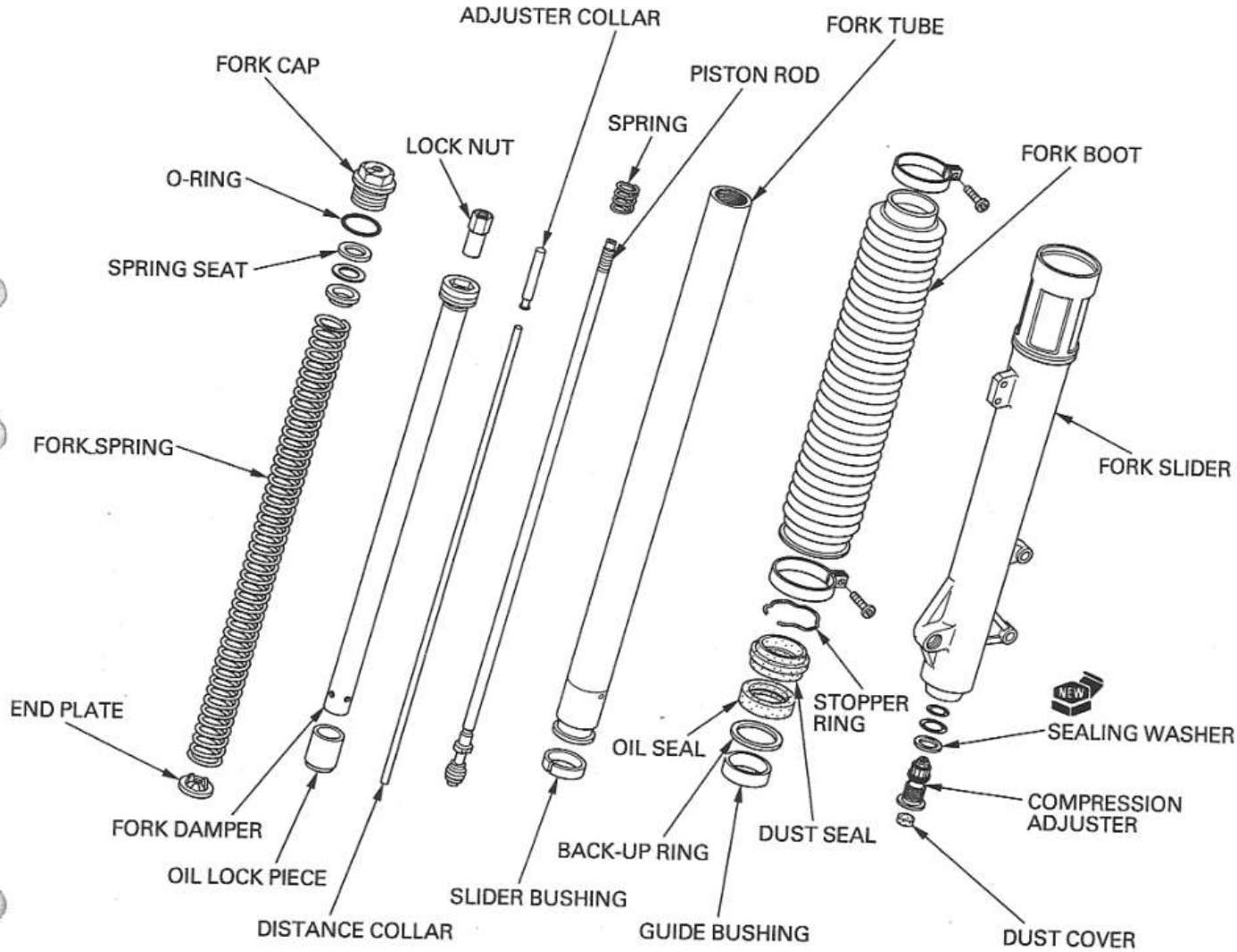
SLIDER BUSHING/GUIDE BUSHING/BACK-UP RING
Check the bushings for excessive wear or scratches. If the coating worn away so that copper appears from edge to edge, replace the slider bushing.
Replace the back-up ring if there is distortion at the points shown.

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



ASSEMBLY

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



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

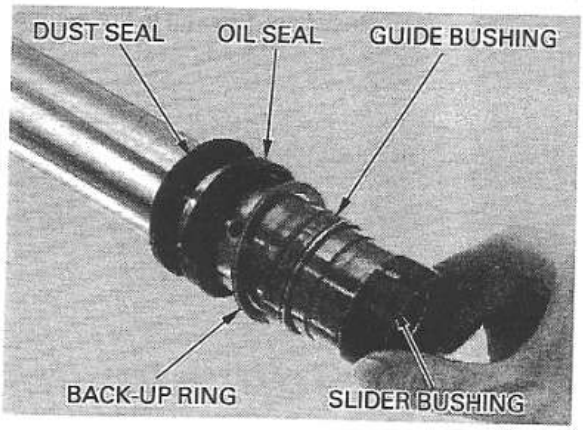
Install the following from the fork tube upper side:
- Oil seal
- Dust seal

CAUTION:

Do not install the seals from the fork tube lower side, because it may damage the lips.

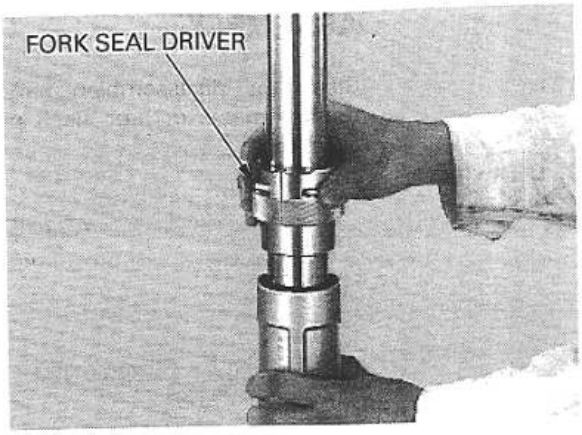
Remove any burrs from the slider bushing, taking care not to peel off its coating.

Install the following from the fork tube bottom side:
- Back-up ring
- Guide bushing
- Slider bushing

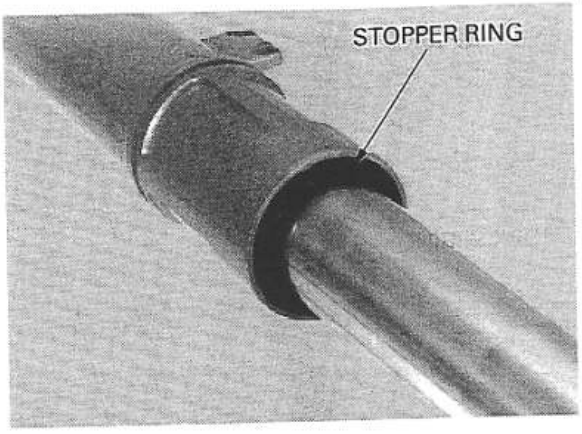


Coat the slider bushing and guide bushing with fork oil.
Install the slider to the outer tube.
Drive in the dust seal to just under the edge of the stopper ring groove, using the special tools.

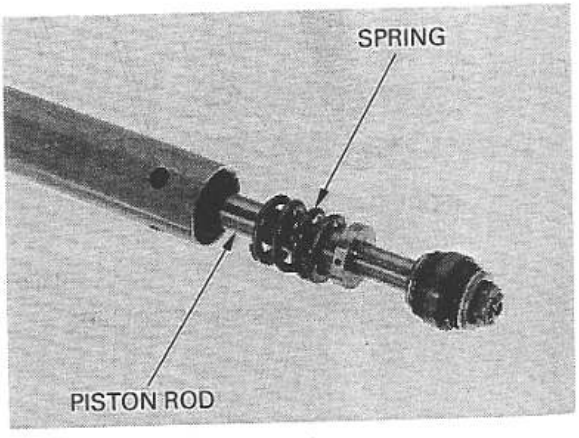
TOOL:
Fork seal driver 07TMD-MAC0100



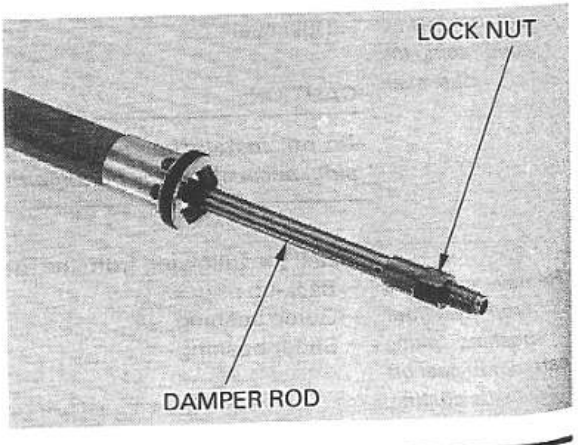
Install the stopper ring.



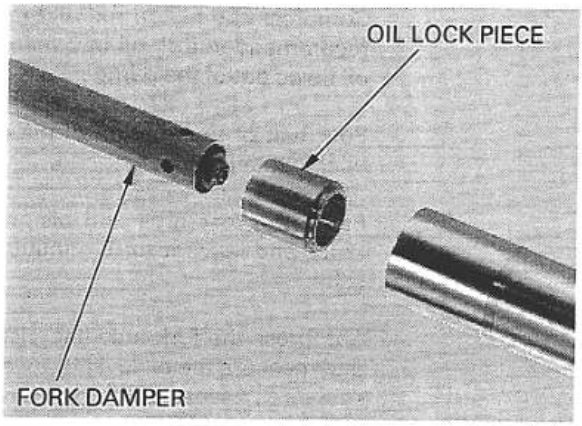
Install the rebound spring onto the piston rod, and then insert the piston rod through the fork damper.



Install the lock nut to the damper rod.



Install the oil lock piece onto the fork damper.
Insert the fork damper assembly into the fork tube.

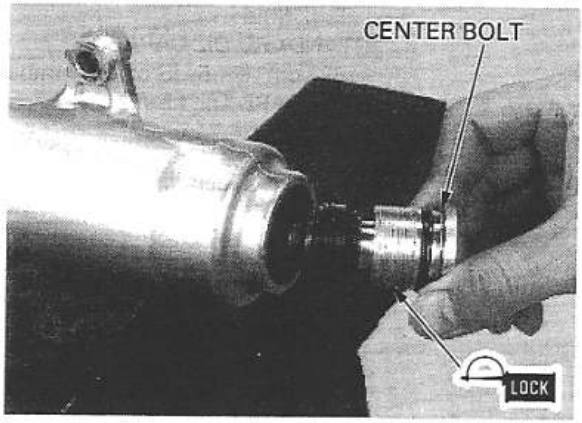


Hold the caliper bracket or axle holder of the fork slider in a vise protected with a piece of wood or soft jaws.

CAUTION:

Do not over tighten the vise. You may deform or break the fork slider.

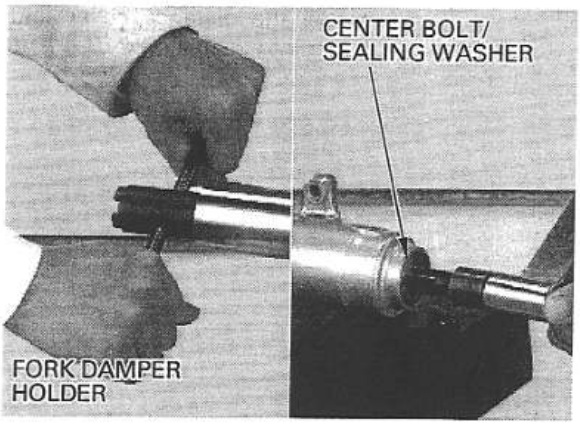
Clean and apply a locking agent to the center bolt threads.
Install a new sealing washer and install the center bolt.



Tighten the center bolt using a special tool as shown.

TOOLS:
Fork damper holder, 27 mm 07PMB-KZ40101

TORQUE: 54 N·m (5.5 kgf·m , 40 lbf·ft)

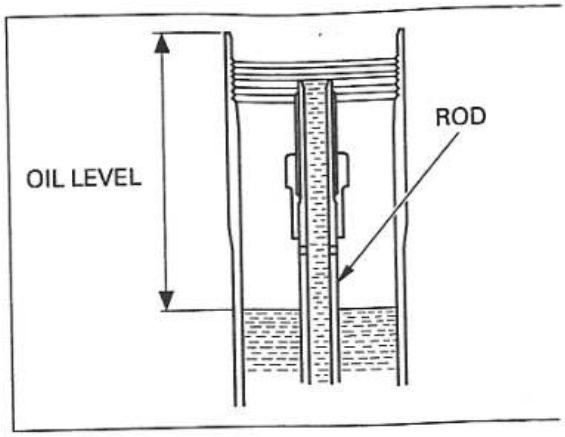


Compress the piston rod all the way and pour the recommended fork oil into the piston rod until the oil flows out of the damper rod end.

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

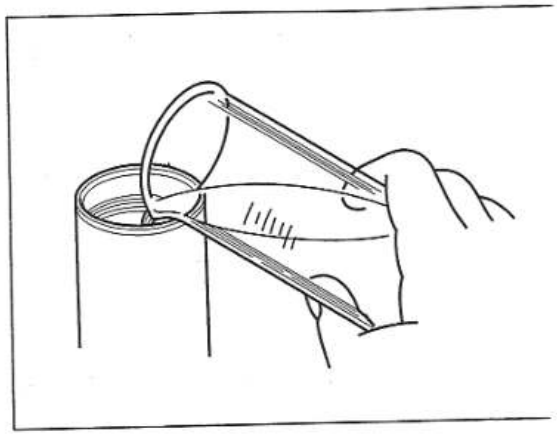
Pump the fork tube and piston rod slowly 8—10 times and leave it for 5 minutes to let the oil level settle.

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

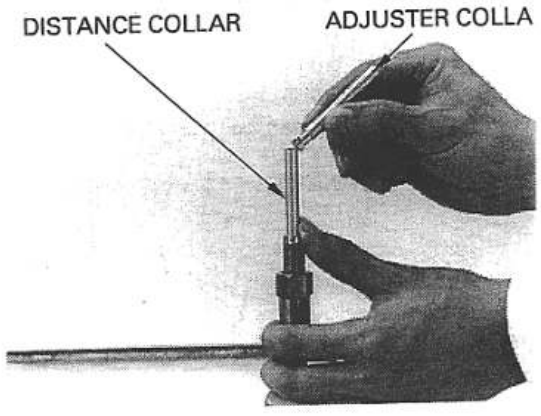


RECOMMENDED OIL:
Fork fluid
STANDARD OIL CAPACITY:
637 cm³ (21.5 US oz, 22.4 Imp oz)
STANDARD OIL LEVEL:
120 mm (4.7 in)

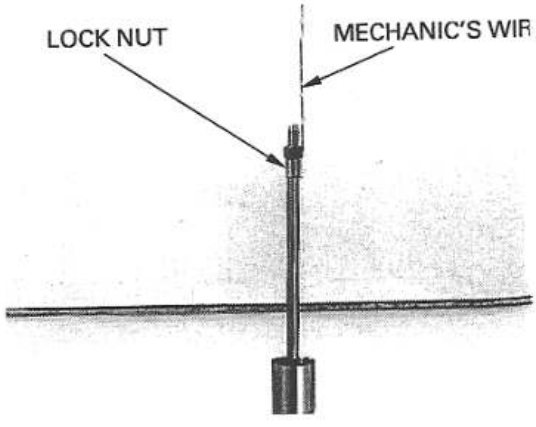
Be sure the oil level is the same in both fork legs.



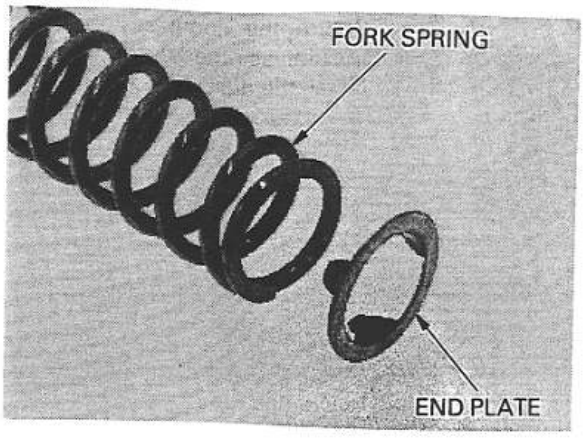
Install the distance collar and rebound adjuster collar into the piston rod.



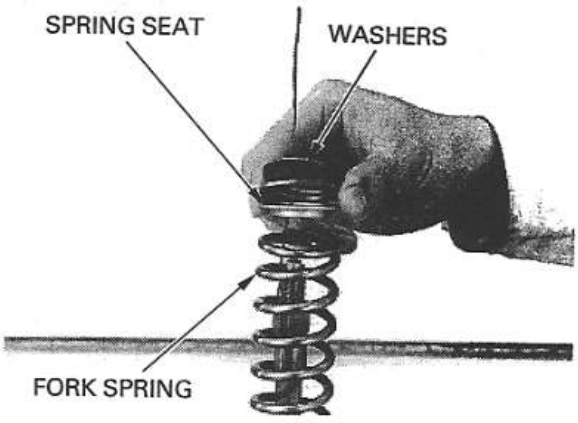
Screw the lock nut onto the piston rod by hand, to the end of the threads.
Attach a 600 mm (2 feet) length of mechanic's wire to the lock nut on the piston rod.



Install the end plate to the fork spring's bottom side.

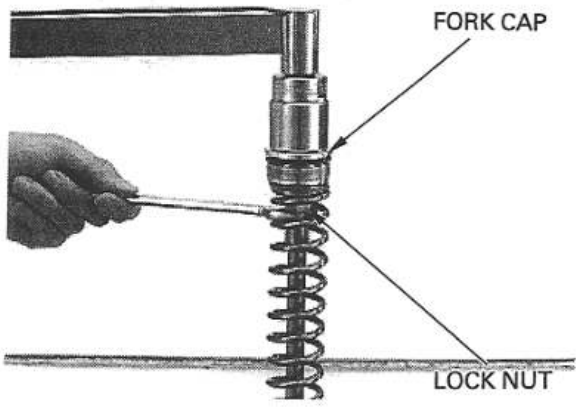


Wipe off any excessive oil from fork spring, then install it over the wire and into the slider.
Install the spring seat and washers.

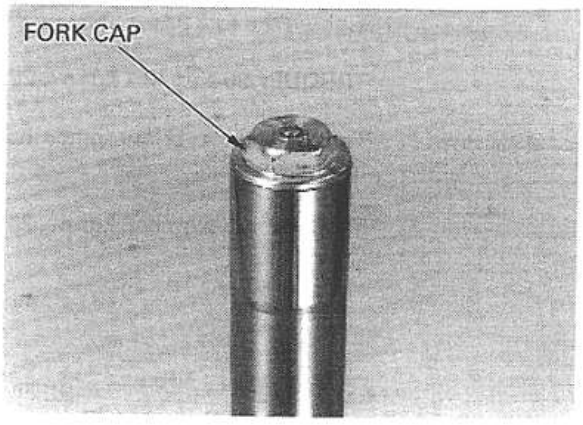


Remove the mechanic's wire while holding the lock nut.
Coat a new fork cap O-ring with fork oil and install it.
Hold the lock nut and tighten the fork cap to the specified torque.

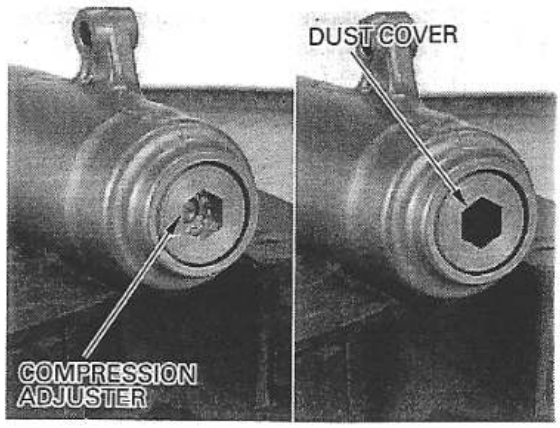
TORQUE: 15 N·m (1.5 kgf·m , 11 lbf·ft)



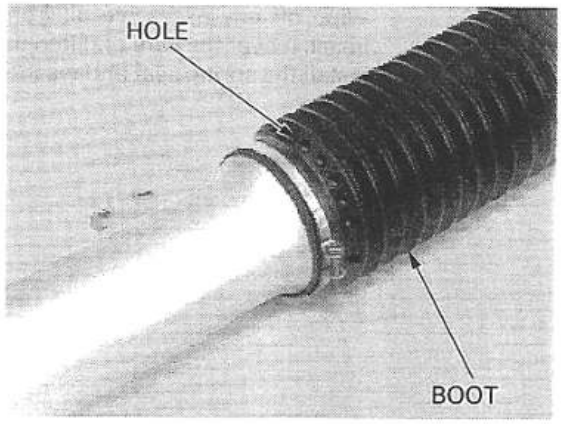
Install the fork cap into the fork tube.



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



Install the fork boot with the breather holes towards the bottom and outside.
Tighten the lower screw.

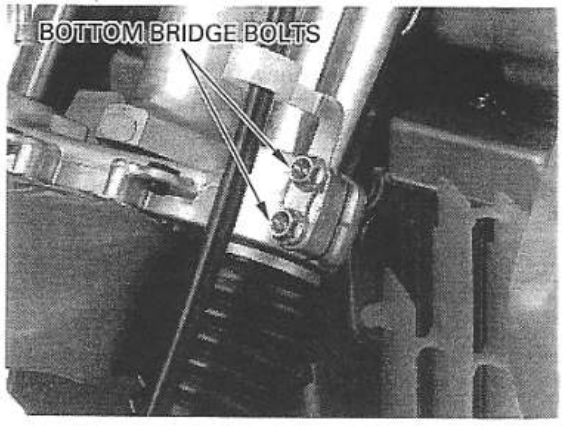


INSTALLATION

Align the top surface of the top bridge with the top surface of the fork slider.

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

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

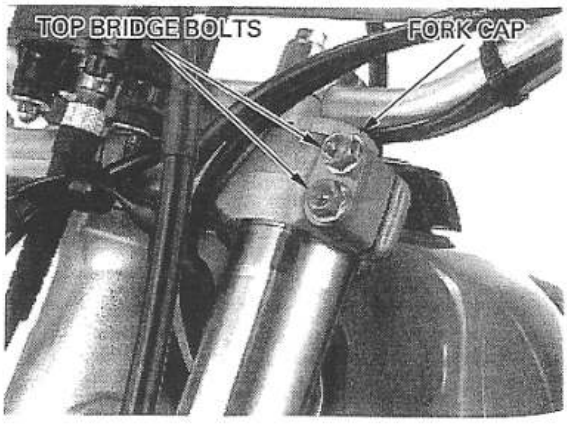


Tighten the fork cap to the specified torque.

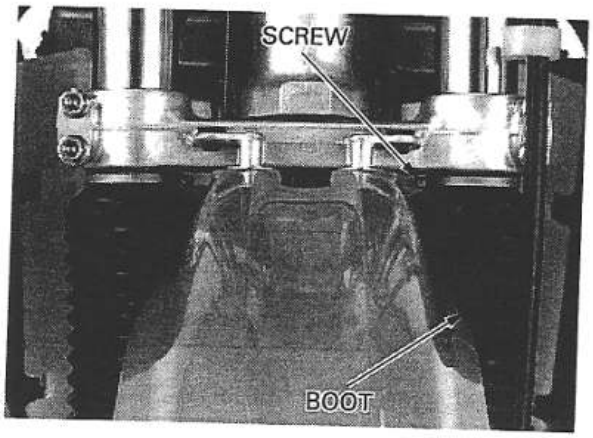
TORQUE: 30 N·m (3.1 kgf·m , 22 lbf·ft)

Tighten the top bridge pinch bolts to the specified torque.

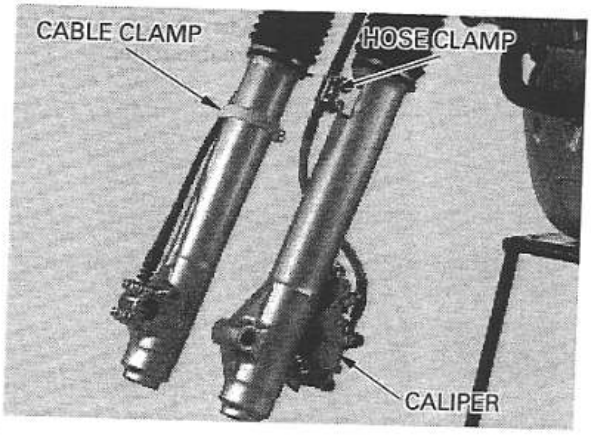
TORQUE: 27 N·m (2.8 kgf·m , 20 lbf·ft)



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



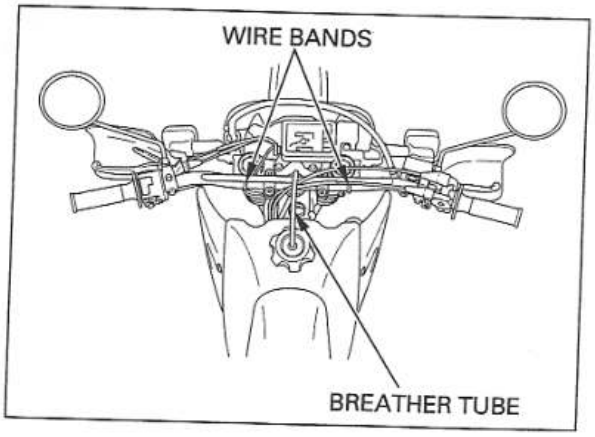
Install the following:
- Speedometer cable clamp
- Brake hose clamp
- Front brake caliper (page 16-15)
- Front wheel (page 14-8)
- Front visor (page 2-3)



HANDLEBAR

REMOVAL

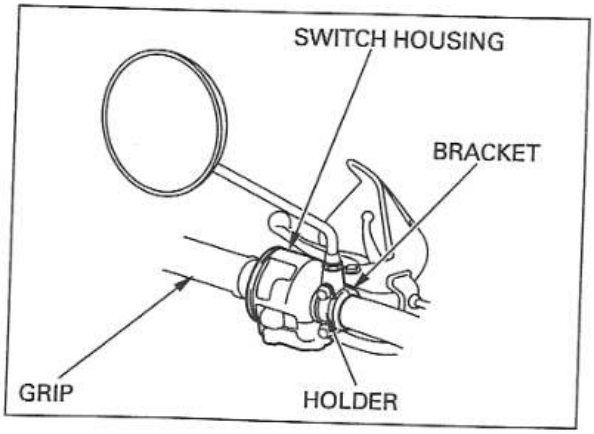
Pull the fuel tank breather tube from the steering stem nut.
Release the wire bands from the handlebar.



Remove the screws and left handlebar switch housing from the handlebar.

Remove the bolts, clutch lever holder and clutch lever bracket.

Remove the left handlebar grip.

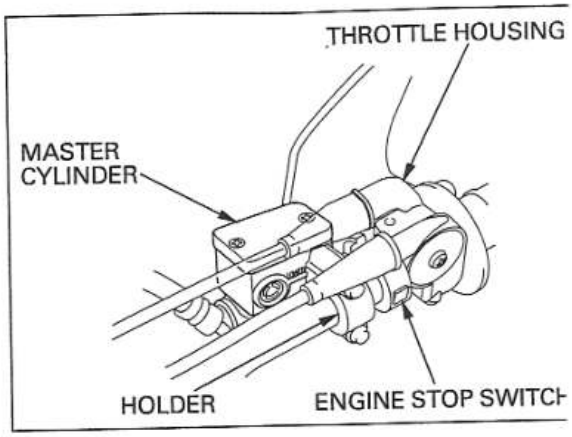


Remove the screws, bracket and engine stop switch.

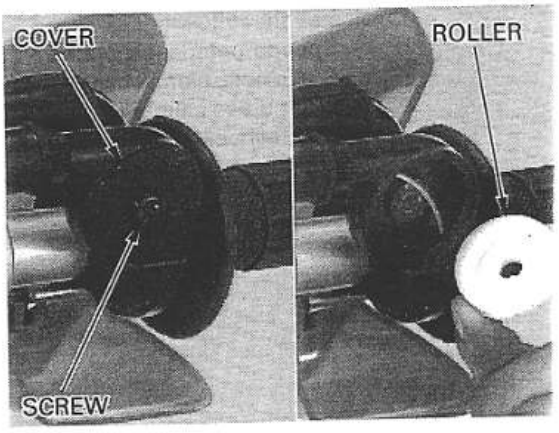
Remove the bolts, master cylinder holder and master cylinder from the handlebar.

NOTE:

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



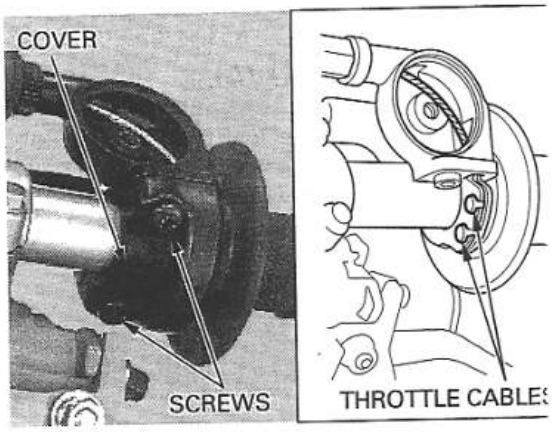
Remove the screw and throttle cable roller cover.
Remove the cable roller.



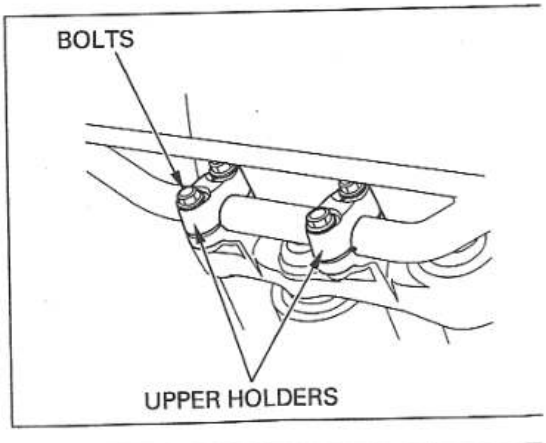
Remove the screws and throttle housing cover.

Slide the throttle adjuster cover down.
Loosen the throttle cable adjuster and disconnect the throttle cables from the throttle pipe.

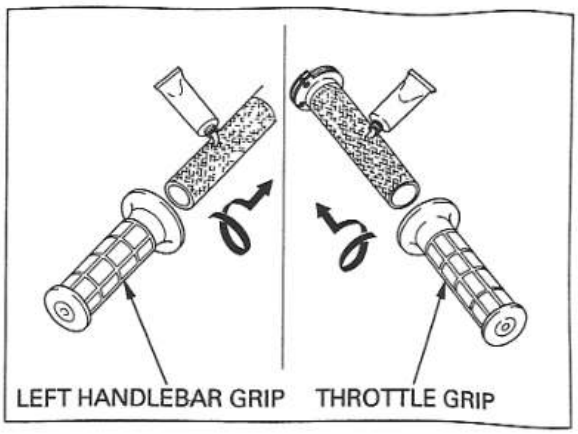
Remove the throttle grip from the handlebar.



Remove the handlebar holder bolts, upper holders and handlebar.



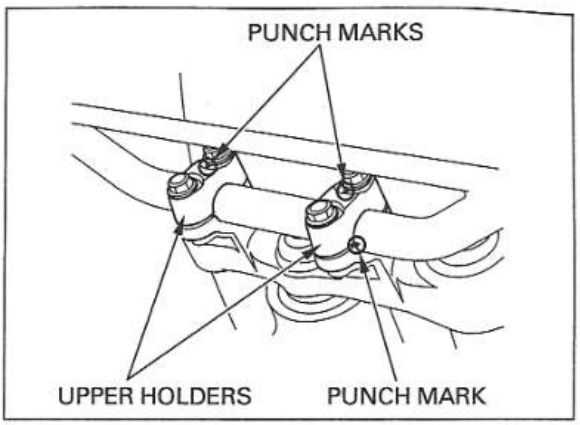
If replacing the handlebar grips:
Apply Honda Bond A or equivalent to the inside surface of the grips and to the clean surface of the left handlebar and the throttle pipe's outer surface.
Wait 3—5 minutes and install the grips.
Allow the adhesive to dry for an hour before using.
Rotate the grips for even application of the adhesive.



INSTALLATION

Place the handlebar onto the lower holder of the top bridge and align the punch mark on the handlebar with the top of the lower holder.

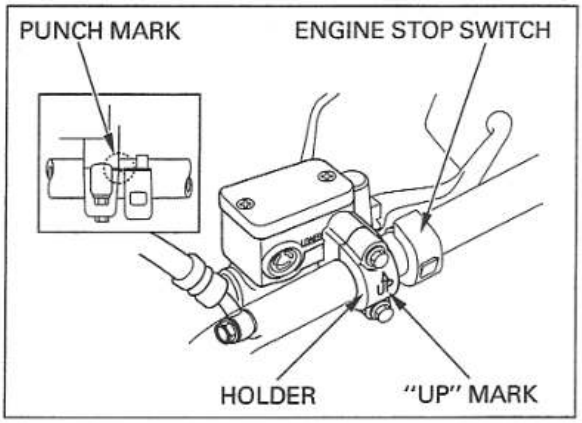
Install the upper holders with the punch marks facing forward.
Install the bolts and tighten the forward bolts first, then tighten the rear bolts.



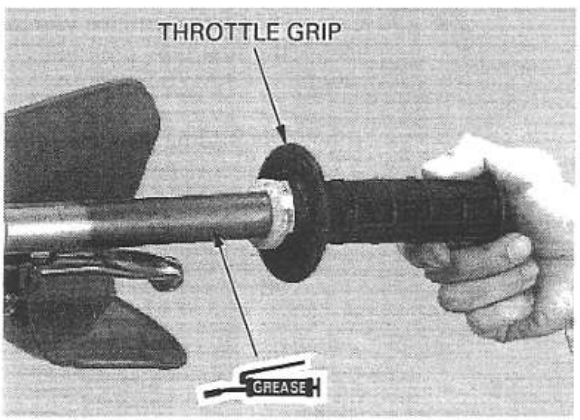
Install the master cylinder and holder with the "UP" mark facing up.
Align its slits with the punch mark on the handlebar and tighten the upper bolt first, then tighten the lower bolt.

TORQUE: 10 N·m (1.0 kgf·m , 7 lbf·ft)

Install the engine stop switch and holder; the end of the switch is keeping in line with the punch mark.
Tighten the engine stop switch screws securely.

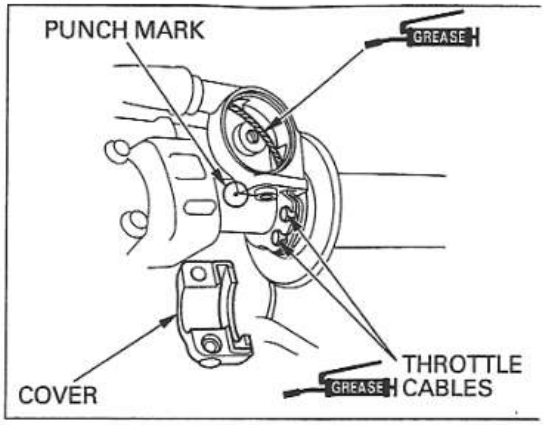


Apply a thin coat of grease to the sliding surface of the throttle grip.
Install the throttle grip to the handlebar.



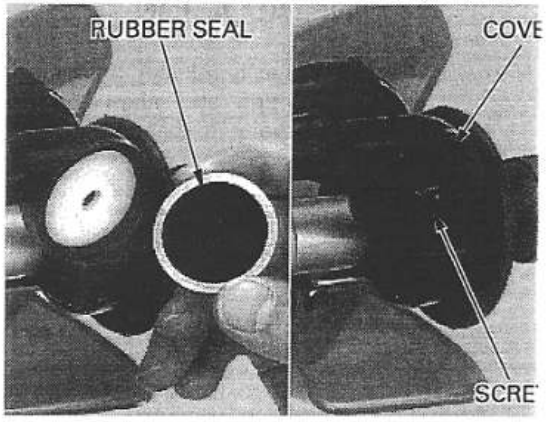
Apply grease to the sliding area of the throttle cable end and cable roller sliding area.
Connect the throttle cable to the throttle grip.

Install the throttle housing cover.
Align the sprit line of the throttle housing with the punch mark on the handlebar.
Tighten the forward screw first, then tighten the rear screw.



Apply grease to the sliding area of the cable roller and insert it into the throttle housing.

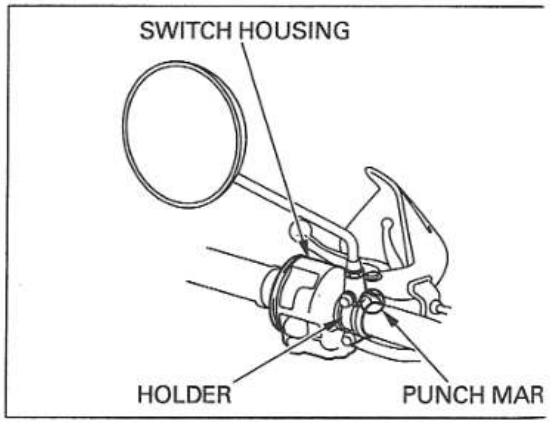
Check the rubber seal for fatigue or damage.
Install the throttle cable roller cover and tighten the screw.



Install the left handlebar switch housing onto the handlebar, aligning the locating pin with the hole in the handlebar.
Install the screws and tighten the forward screw first, then tighten the rear screw.

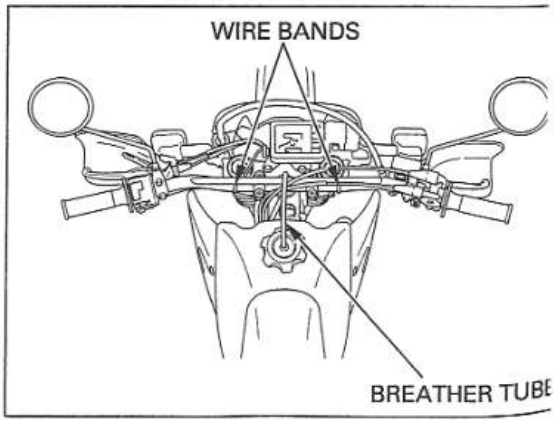
Install the clutch lever bracket and holder.
Align its slit with the punch mark on the handlebar and tighten the upper bolt first, the tighten the lower bolt.

TORQUE: 10 N·m (1.0 kgf·m , 7 lbf·ft)



Secure the wires with the wire bands.
Install the fuel tank breather tube into the steering stem.

Adjust the throttle grip free play (page 3-5).

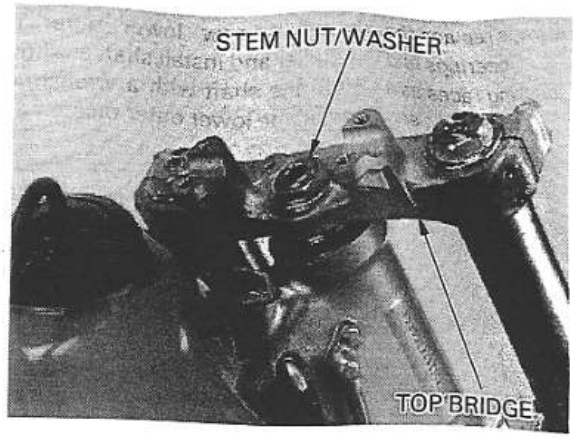


STEERING STEM

REMOVAL

Remove the following:
- Front wheel (page 14-4)
- Front fender (page 2-3)
- Front brake caliper (page 16-12) without disconnecting the brake hose
- Front visor (page 2-3)
- Speedometer (page 17-13)
- Handlebar (page 14-21)

Remove the steering stem nut and washer.

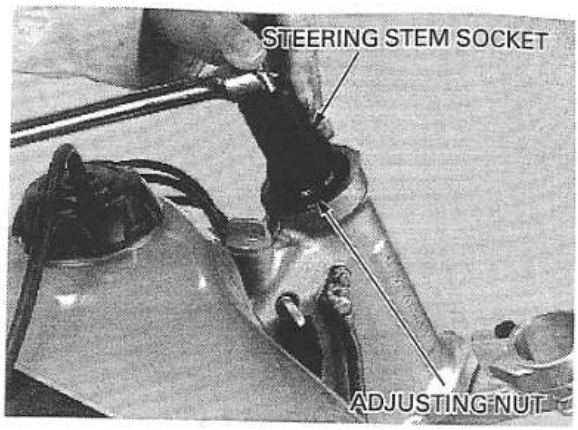


Remove the top bridge and fork legs (page 14-9).

Remove the steering stem adjusting nut.

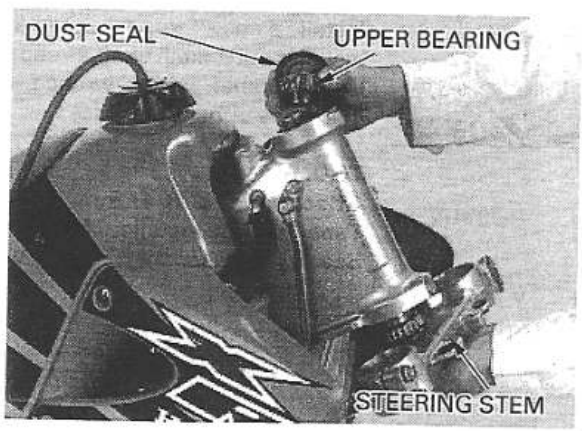
TOOL:

Steering stem socket	07916-KA50100



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

Check the head bearings, outer races for wear or damage.



BEARING REPLACEMENT

Remove the lower bearing outer race from the head pipe using a special tool.

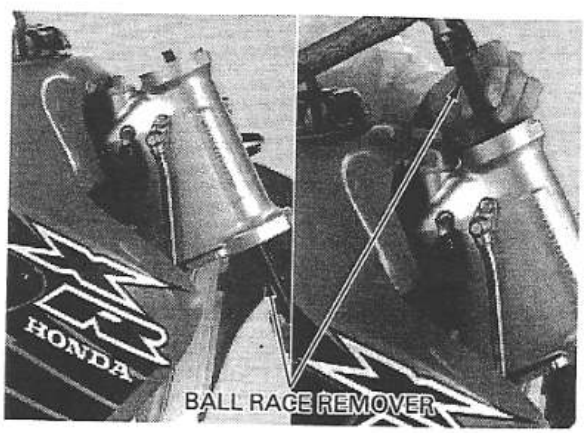
TOOL:

Ball race remover	07946-3710500

Remove the upper bearing outer race from the head pipe using a special tool.

TOOL:

Ball race remover attachment	07953-MJ10100
Ball race remover shaft	07953-MJ10200

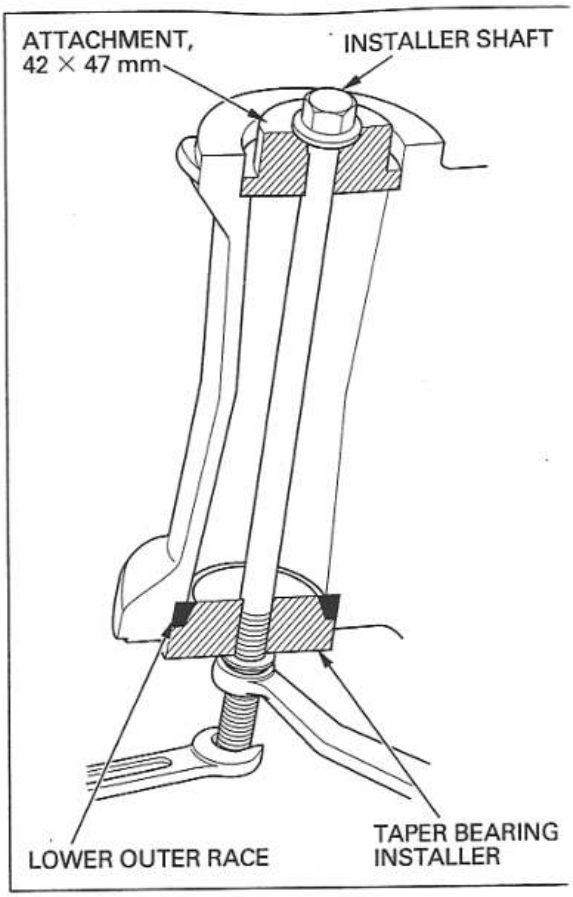


Always replace the bearings and bearing races as a set.

Install a new lower outer race, bearing race installer and install shaft as shown.
Hold the shaft with a wrench, turn the installer to install the lower outer race.

TOOLS:

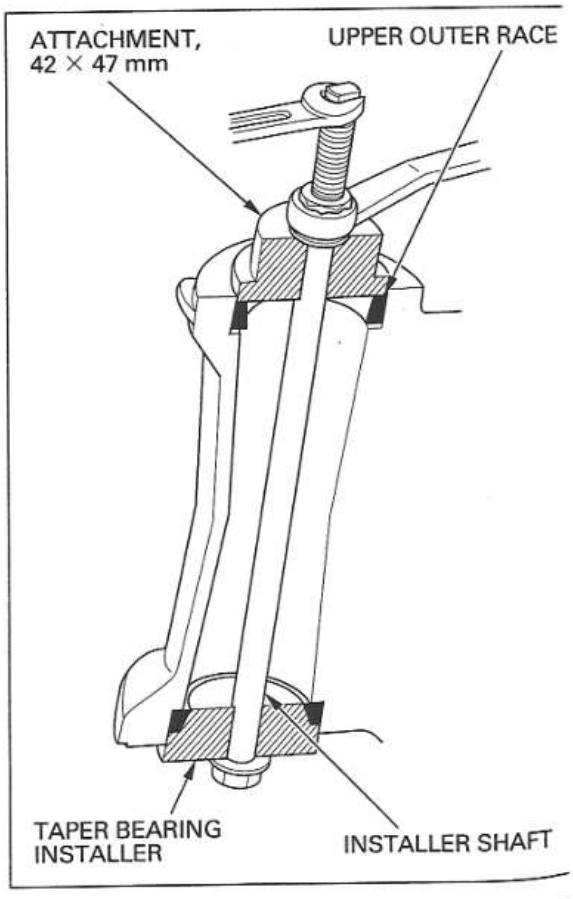
Attachment, 42 × 47 mm	07746-0010300
Taper bearing installer	07VMF-KZ30100
Bearing installer shaft	07VMF-KZ30200



Install a new upper outer race, bearing race installer and install shaft as shown.
Hold the shaft with a wrench, turn the installer to install the upper outer race.

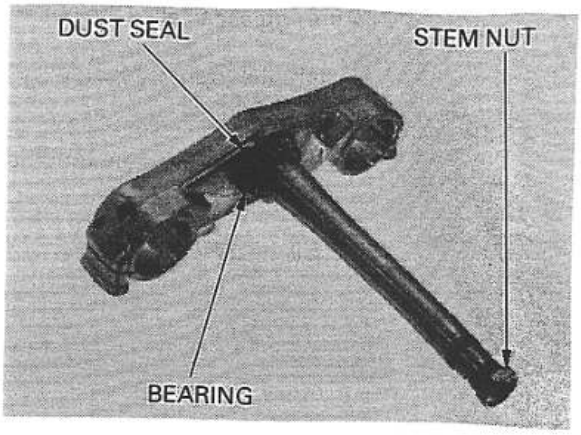
TOOLS:

Attachment, 42 × 47 mm	07746-0010300
Taper bearing installer	07VMF-KZ30100
Bearing installer shaft	07VMF-KZ30200



Temporarily install the stem nut to avoid damaging the steering stem threads.

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

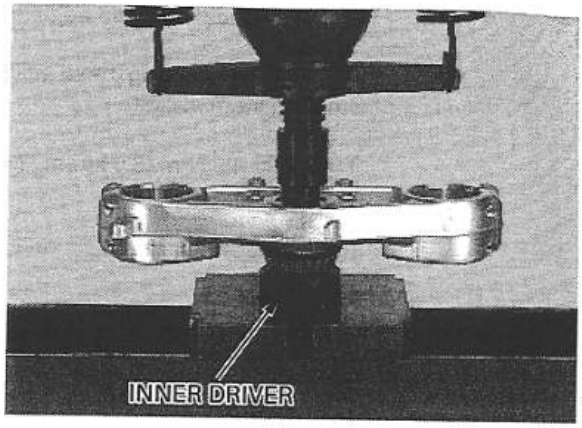


Install the new dust seal.

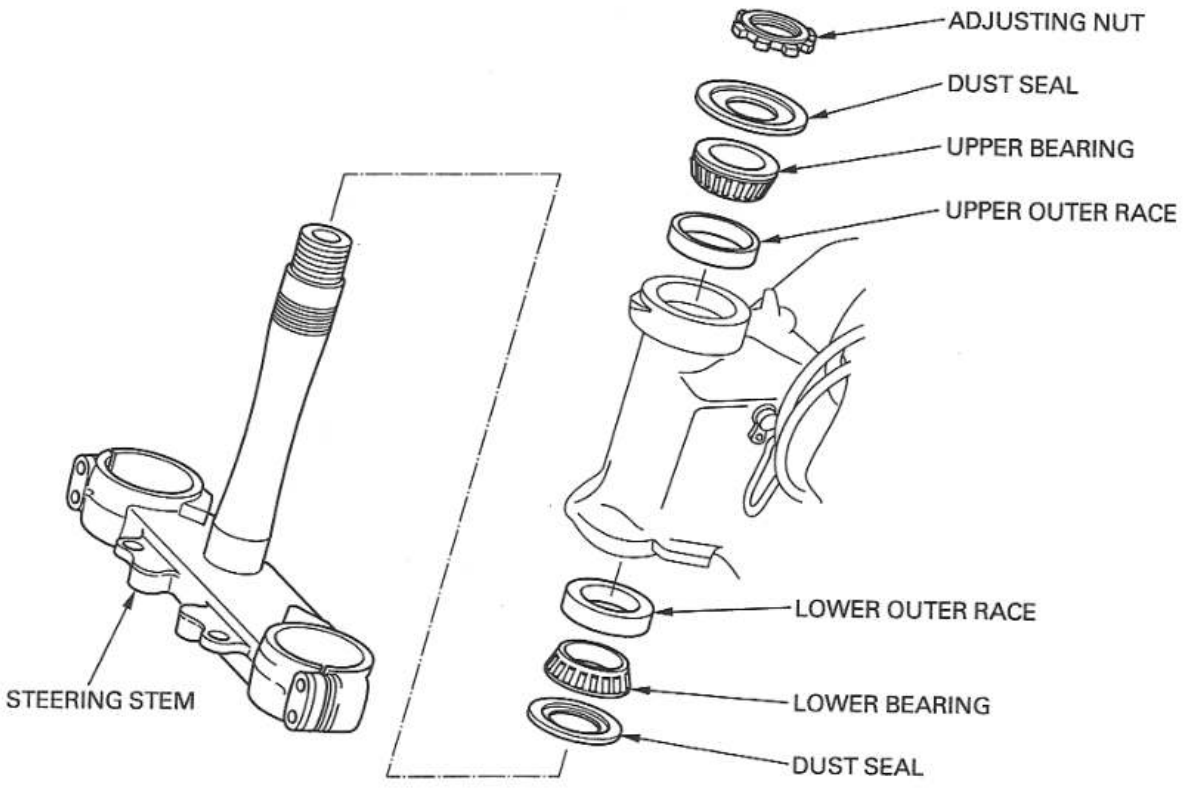
Pack the upper and lower tapered roller bearings with grease.

Install the lower bearing using a hydraulic press and special tool as shown.

TOOL:
Inner driver, 30 mm 07746-0030300



INSTALLATION

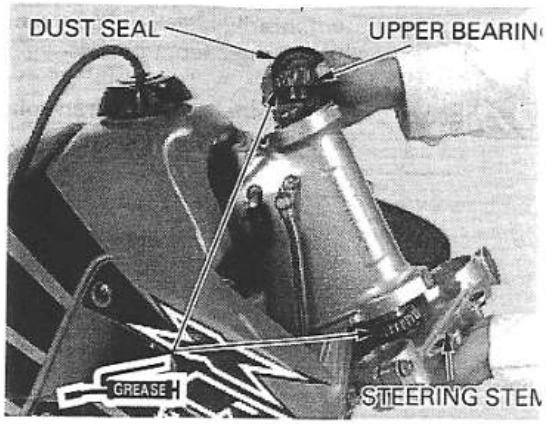


Apply grease to all of the bearing areas.

Install the upper tapered roller bearing in the steering head.

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

Install the dust seal.

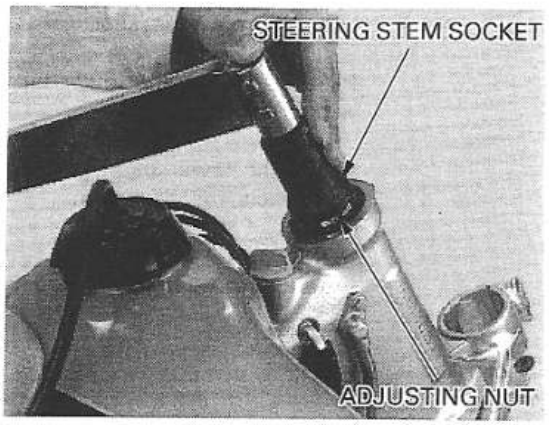


Install the steering head adjusting nut.

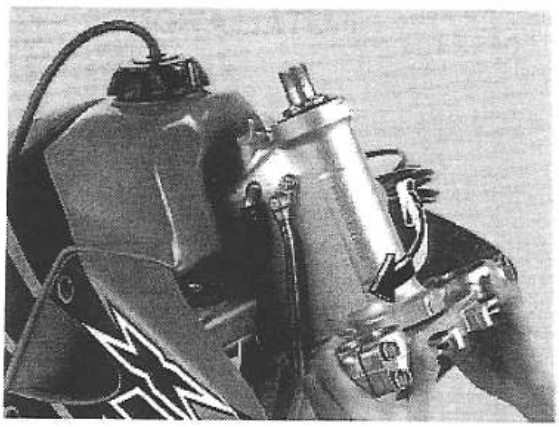
Tighten the steering head adjusting nut with the steering stem socket.

TORQUE: 29 N·m (3.0 kgf·m, 22 lbf·ft)

TOOL:
Steering stem socket 07916-KA50100

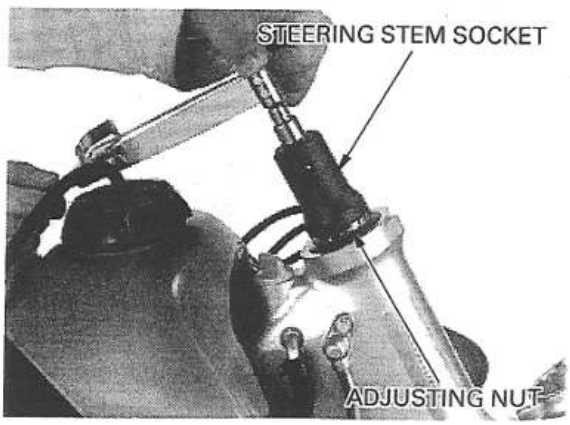


Turn the steering stem lock-to-lock enough times to seat the bearings.



Loosen the adjusting nut to torque of 0 N·m (0 kgf·m, 0 lbf·ft), and retighten to the specified torque.

TORQUE: 8 N·m (0.8 kgf·m , 5.8 lbf·ft)

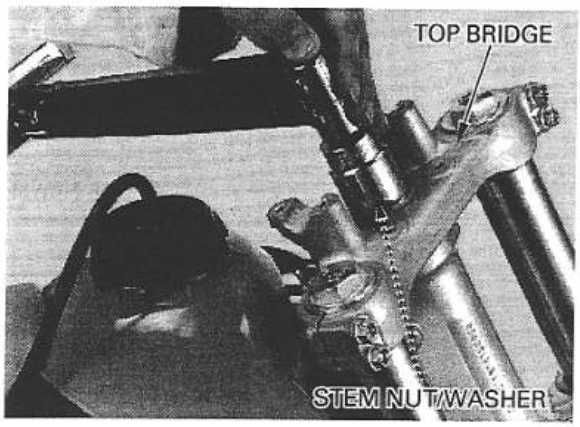


Install the top bridge and washer.
Loosely install the stem nut.
Insert the fork legs (page 14-20).

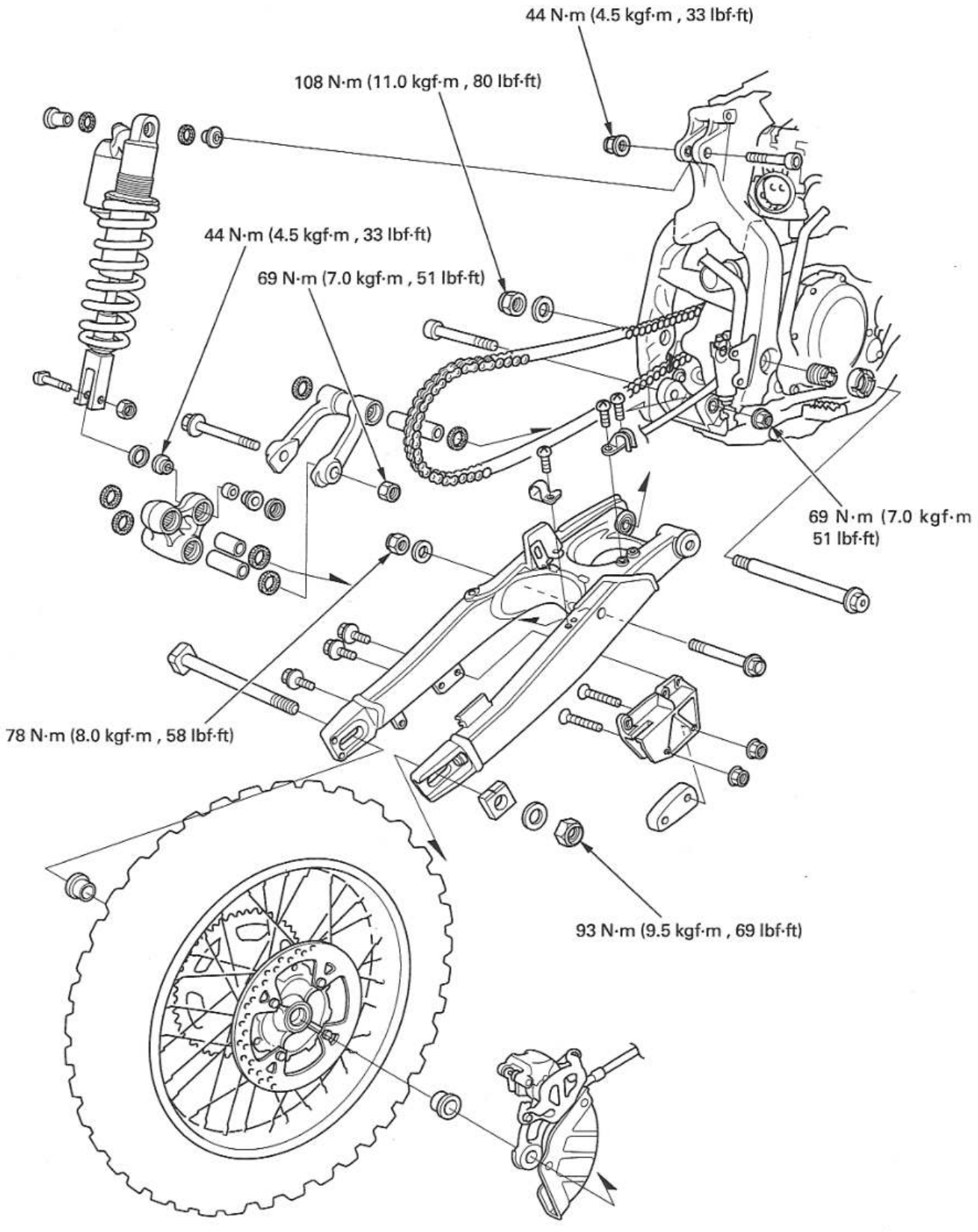
Tighten the stem nut to the specified torque.

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

Recheck the steering stem adjustment by turning bridge lock-to-lock and checking for smoothness. There should be no binding.



Install the following:
- Handlebar (page 14-23)
- Speedometer (page 17-13)
- Front visor (page 2-3)
- Front brake caliper (page 16-15)
- Front fender (page 2-3)
- Front wheel (page 14-8)


44 N·m (4.5 kgf·m , 33 lbf·ft)
108 N·m (11.0 kgf·m , 80 lbf·ft)
44 N·m (4.5 kgf·m , 33 lbf·ft)
69 N·m (7.0 kgf·m , 51 lbf·ft)
69 N·m (7.0 kgf·m
51 lbf·ft)
78 N·m (8.0 kgf·m , 58 lbf·ft)
93 N·m (9.5 kgf·m , 69 lbf·ft)

15. REAR WHEEL/SUSPENSION

SERVICE INFORMATION	15-1	SHOCK ABSORBER	15-9
TROUBLESHOOTING	15-3	SHOCK LINKAGE	15-24
REAR WHEEL	15-4	SWINGARM	15-29

SERVICE INFORMATION

GENERAL

⚠WARNING

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

Keep grease off of the brake pads and disc.

⚠WARNING

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

SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Cold tire pressure			125 kPa (1.25 kgf/cm², 18 psi)	———
Axle runout			———	0.2 (0.01)
Wheel rim runout	Radial		———	2.0 (0.08)
	Axial		———	2.0 (0.08)
Wheel hub-to-rim distance			19.0 (0.75)	———
Drive chain	Slack		20—30 (13/16—1 3/16)	———
	Length (at 41 pins/40 links)		———	638 (25.1)
	Size/link	ED, DK types	DID520VM-110LE or RK520KZO-110LE	———
		U type	DID520VM-108LE or RK520KZO-108LE	———
Drive chain slider thickness			———	To the indicator
Drive chain guide slider thickness			———	To the indicator
Shock absorber	Damper gas pressure		981 kPa (10.0 kgf/cm², 142 psi)	———
	Damper compressed gas		Nitrogen gas	———
	Recommended shock absorber oil		Fork fluid	———
	Spring direction		Narrow wound coil facing down	———
	Spring installed length (standard)		236.5 (9.31)	———
Compression damping adjuster standard position			6—10 clicks out from full in	———
Rebound damping adjuster standard position			11—15 clicks out from full in	———

TORQUE VALUES

Rear brake disc bolt		20 N·m (2.0 kgf·m, 14 lbf·ft)	Apply locking agent to the threads
Driven sprocket nut		42 N·m (4.3 kgf·m, 31 lbf·ft)	U-nut
Spoke		4 N·m (0.4 kgf·m, 2.9 lbf·ft)	
Rim lock		13 N·m (1.3 kgf·m, 9 lbf·ft)	
Drive chain slider screw		4 N·m (0.4 kgf·m, 2.9 lbf·ft)	Apply locking agent to the threads
Rear axle nut		93 N·m (9.5 kgf·m, 69 lbf·ft)	U-nut
Swingarm pivot nut		108 N·m (11.0 kgf·m, 80 lbf·ft)	U-nut
Shock absorber mounting bolt/nut	(upper)	44 N·m (4.5 kgf·m, 33 lbf·ft)	U-nut
	(lower)	44 N·m (4.5 kgf·m, 33 lbf·ft)	U-nut
Shock arm nut	(Swingarm side)	78 N·m (8.0 kgf·m, 58 lbf·ft)	U-nut
	(Shock link side)	69 N·m (7.0 kgf·m, 51 lbf·ft)	U-nut
Shock link nut		69 N·m (7.0 kgf·m, 51 lbf·ft)	U-nut
Shock absorber spring lock nut		29 N·m (3.0 kgf·m, 22 lbf·ft)	
Damper rod end nut		26 N·m (2.7 kgf·m, 20 lbf·ft)	Stake
Damping adjuster		20 N·m (2.0 kgf·m, 14 lbf·ft)	Stake
Swingarm pivot adjusting bolt		see page 15-33	
Swingarm pivot lock nut		64 N·m (6.5 kgf·m, 47 lbf·ft)	
Side stand mounting bolt	(8 mm)	26 N·m (2.7 kgf·m, 20 lbf·ft)	
	(10 mm)	39 N·m (4.0 kgf·m, 29 lbf·ft)	

TOOLS

Spoke wrench, 5.8 × 6.1 mm	07701-0020300	
Pin spanner	07702-0020001	2 required
Bearing remover weight	07741-0010201	
Attachment, 32 × 35 mm	07746-0010100	
Attachment, 37 × 40 mm	07746-0010200	
Attachment, 42 × 47 mm	07746-0010300	
Attachment, 24 × 26 mm	07746-0010700	
Attachment, 22 × 24 mm	07746-0010800	
Pilot, 15 mm	07746-0040300	
Pilot, 17 mm	07746-0040400	
Pilot, 20 mm	07746-0040500	
Pilot, 25 mm	07746-0040600	
Bearing remover shaft	07746-0050100	
Bearing remover head, 20 mm	07746-0050600	
Driver	07749-0010000	
Bearing remover assembly	07936-KC10500	
Bearing remover collets	07936-MK50100	
Attachment, 28 × 30 mm	07946-1870100	
Driver	07949-3710001	
Slider guide attachment	07974-KA50102	
Lock nut wrench	07KMA-KAB0100	
Slider guide, 16 mm	07PMG-KZ40100	
Lock nut wrench, 20 mm	07VMA-MBB0100	

TROUBLESHOOTING

SOFT SUSPENSION
- Weak shock absorber spring
- Incorrect suspension adjustment
- Oil leakage from damper unit
- Tire pressure too low

HARD SUSPENSION
- Damaged shock absorber mounting bearing
- Bent damper rod
- Damaged swingarm pivot
- Bent swingarm pivot
- Incorrect suspension adjustment
- Tire pressure too high

STEERS TO ONE SIDE OR DOES NOT TRACK STRAIGHT
- Bent rear axle
- Axle alignment/chain adjustment not equal on both sides

REAR WHEEL WOBBLING
- Bent rim
- Worn rear wheel bearings
- Faulty tire
- Tire pressure too low
- Faulty swingarm pivot bearings
- Loose or bent/broken spokes

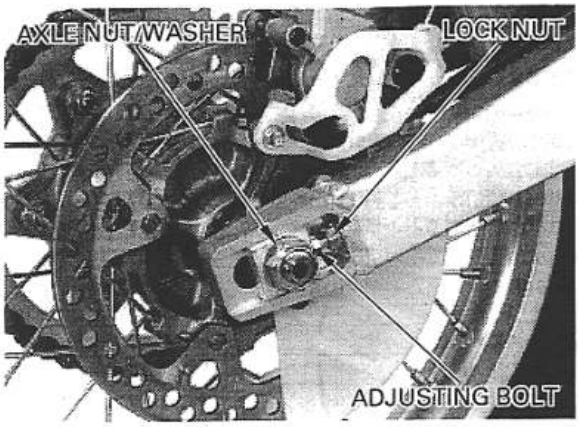
REAR WHEEL

REMOVAL

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

Remove the axle nut and washer.

Loosen the drive chain adjuster lock nut and turn the adjusting bolt counterclockwise fully.
Push the rear wheel forward to derail the drive chain from the driven sprocket.

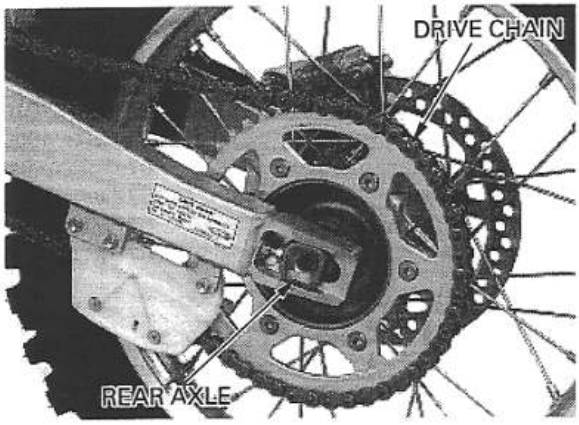


Be careful not to damage the brake pads with the disc.

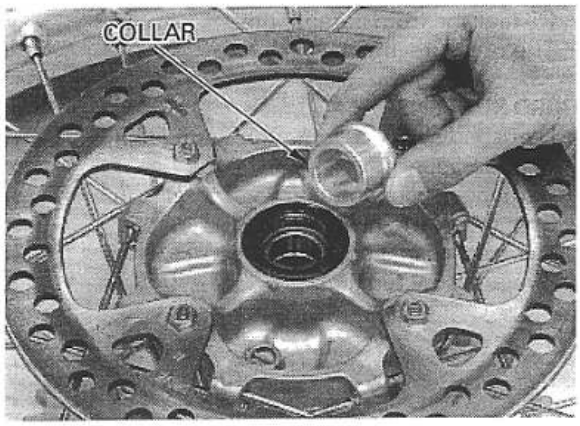
Remove the axle from the left side and remove the rear wheel.

NOTE:

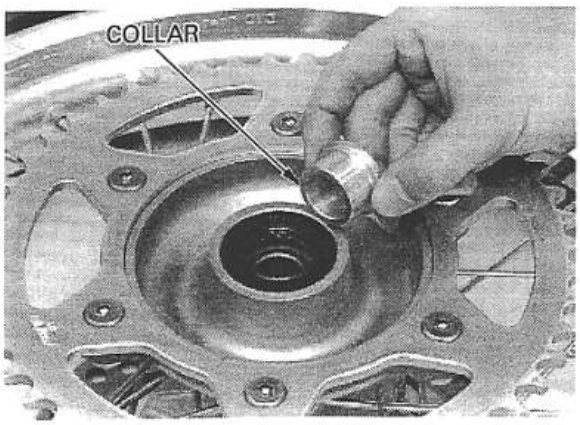
Do not depress the brake pedal after the rear wheel is removed. The caliper piston will move out and make reassembly difficult.



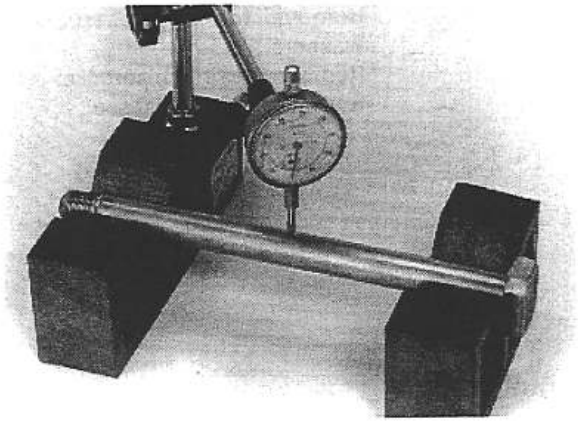
Remove the right side collar.



Remove the left side collar.



INSPECTION



AXLE

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

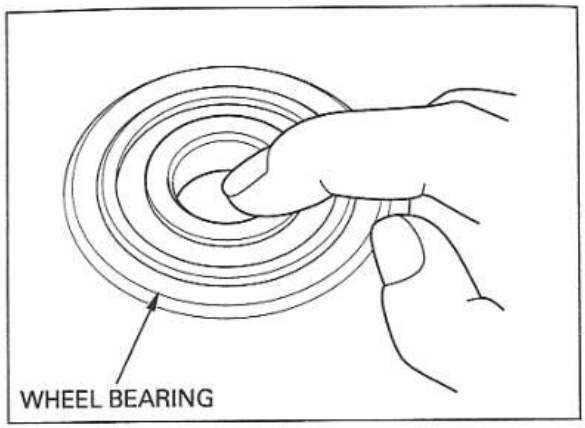
SERVICE LIMIT: 0.2 mm (0.01 in)

WHEEL BEARING

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

Replace the wheel bearings in pairs.

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

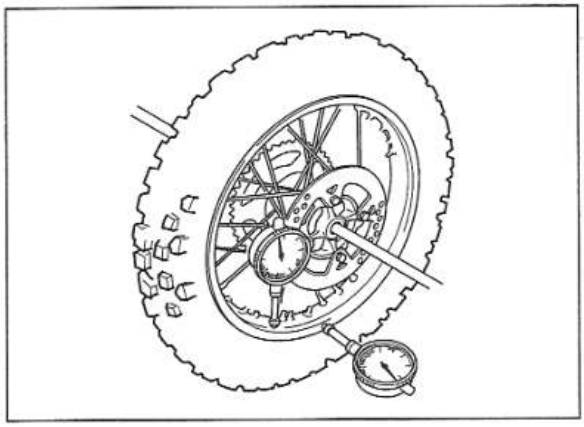


WHEEL RIM RUN OUT

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 1/2 the total indicator reading.

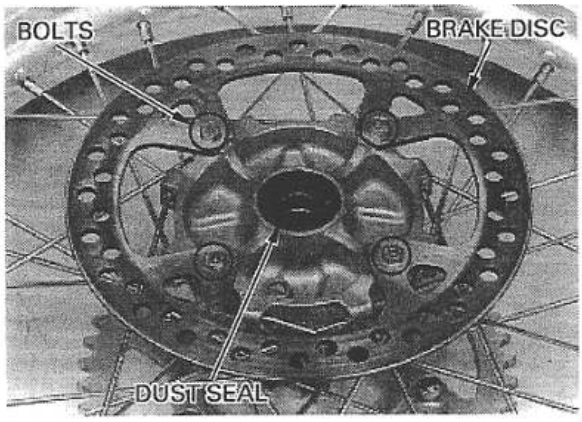
SERVICE LIMITS: **Radial:** 2.0 mm (0.08 in)
Axial: 2.0 mm (0.08 in)

Check the spokes and tighten any that are loose.

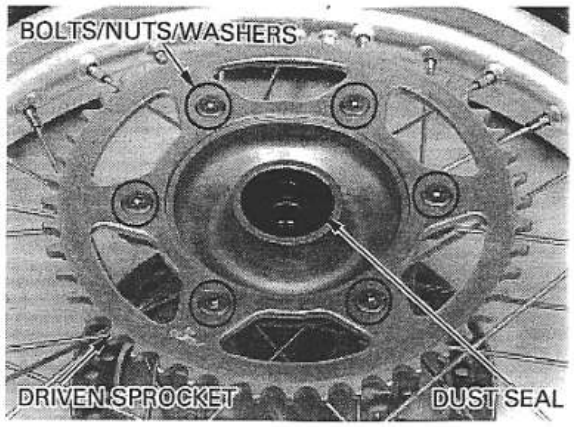


DISASSEMBLY

Remove the bolts and brake disc.
Remove the right dust seal.



Remove the driven sprocket bolts, nuts and washers.
Remove the driven sprocket.
Remove the left dust seal.



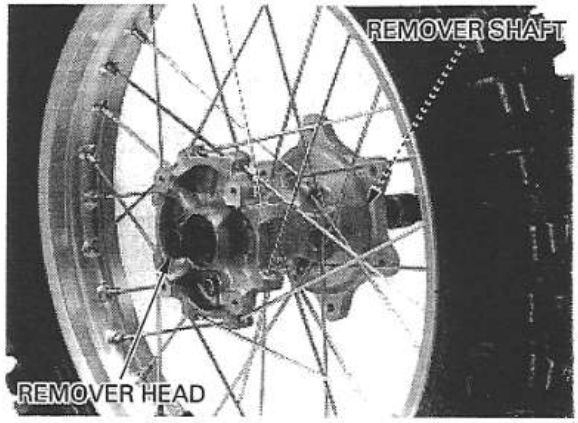
Remove the wheel bearings and distance collar.

TOOLS:

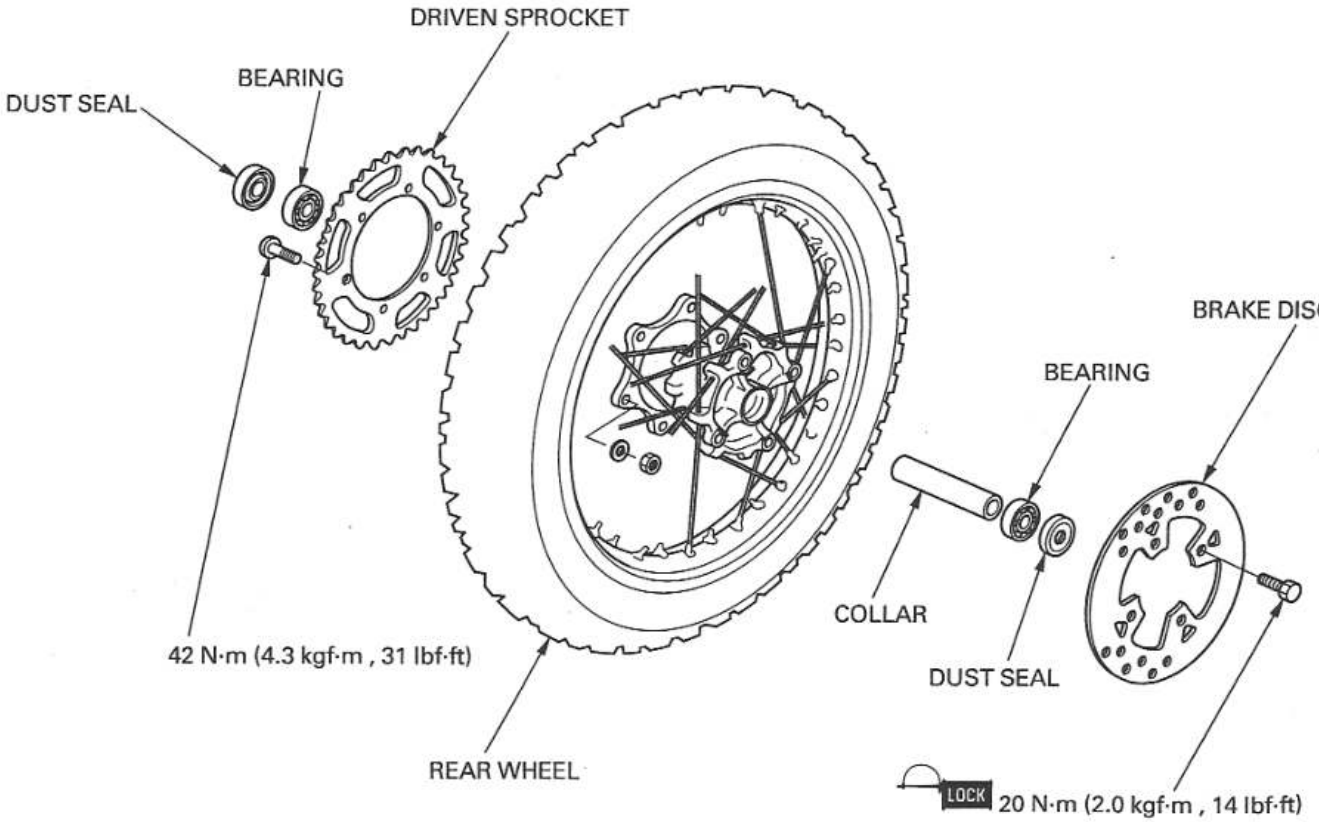
Bearing remover head, 20 mm	07746-0050600
Bearing remover shaft	07746-0050100

CAUTION:

- ***Never install the old bearings; once the bearings have been removed, the bearing must be replaced with a new once.***
- ***Replace the bearings in pairs.***



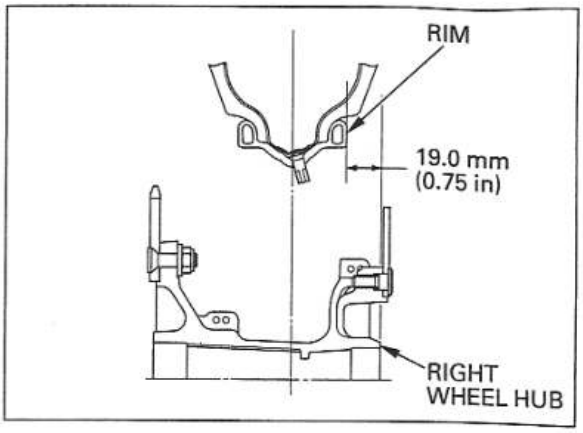
ASSEMBLY



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

Place the hub in the center of rim, and begin lacing with new spokes.

Adjust the hub position so that the distance from the hub right end surface to the side of rim is 19.0 mm (0.75 in) as shown.
Torque the spokes in 2 or 3 progressive steps.



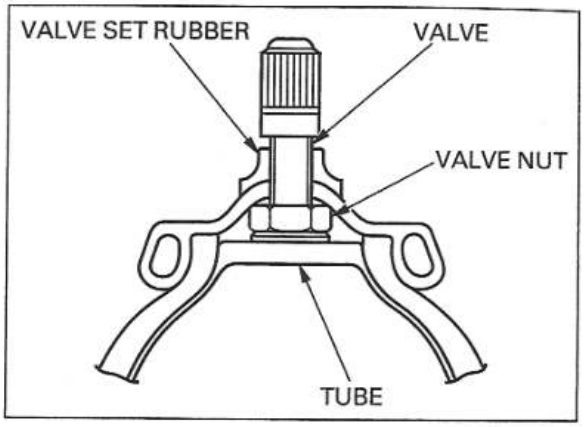
TOOL:
Spoke wrench, 5.8 × 6.1 mm 07701-0020300

TORQUE: 4 N·m (0.4 kgf·m , 2.9 lbf·ft)

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

Torque the rim lock to the specified torque.

TORQUE: 13 N·m (1.3 kgf·m , 9 lbf·ft)

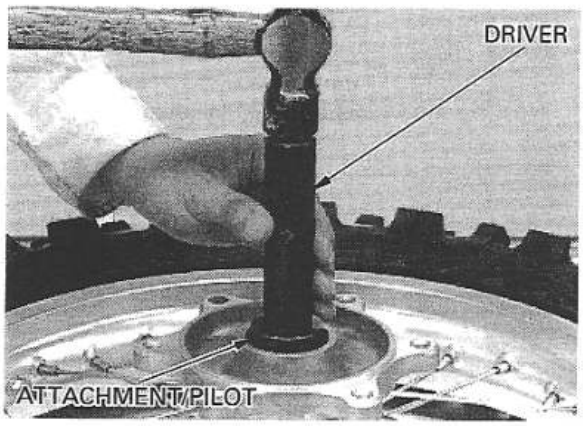


Pack the all bearing cavities with grease.

Drive in the new left bearing using the special tools as shown.

TOOLS:

Driver	07749-0010000
Attachment, 42 × 47 mm	07746-0010300
Pilot, 20 mm	07746-0040400

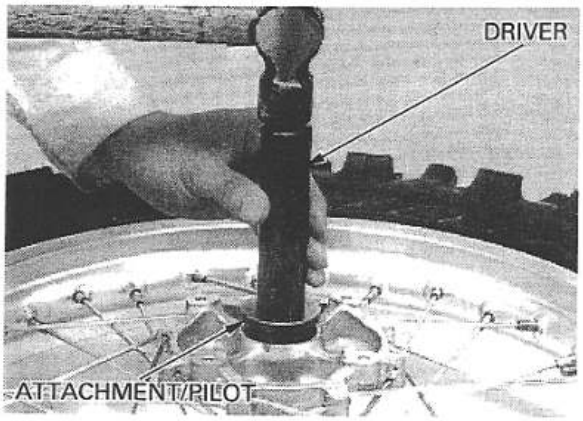


Install the distance collar.

Drive in the new right bearing using the special tools as shown.

TOOLS:

Driver	07749-0010000
Attachment, 42 × 47 mm	07746-0010300
Pilot, 20 mm	07746-0040400



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

TORQUE: 42 N·m (4.3 kgf·m , 31 lbf·ft)

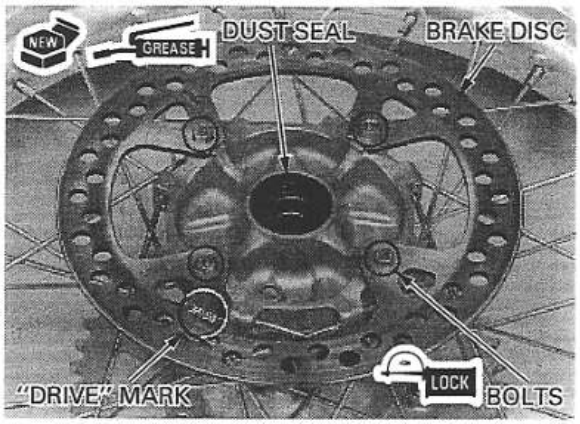
Apply grease to the new left dust seal lips, then install it.



Install the brake disc with its "DRIVE" mark facing out.
Apply locking agent to the brake disk bolt threads.
Install and tighten the brake disc bolts to the specified torque.

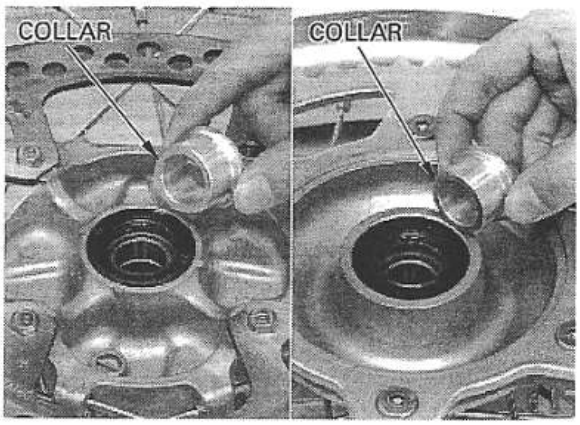
TORQUE: 20 N·m (2.0 kgf·m , 14 lbf·ft)

Apply grease to the new right dust seal lips, then install it.

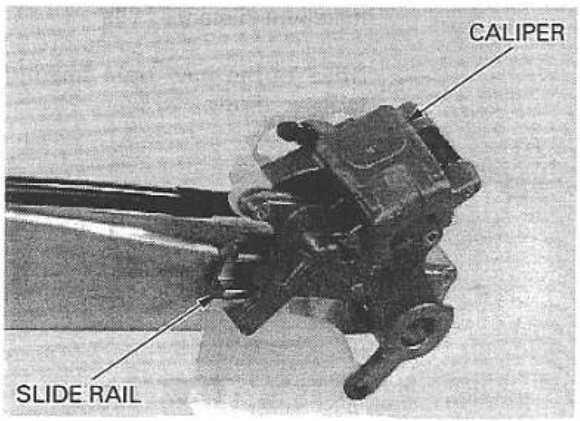


INSTALLATION

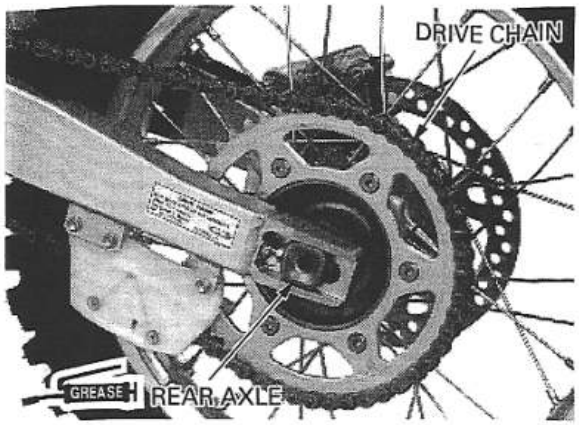
Apply grease to the inside of the side collars.
Install the side collars.



Install the rear brake caliper bracket onto the slide rail of the swingarm.



Place the rear wheel into the swingarm.
Apply thin coat of grease to the axle.
Install the axle from the left side.
Install the drive chain over the driven sprocket.

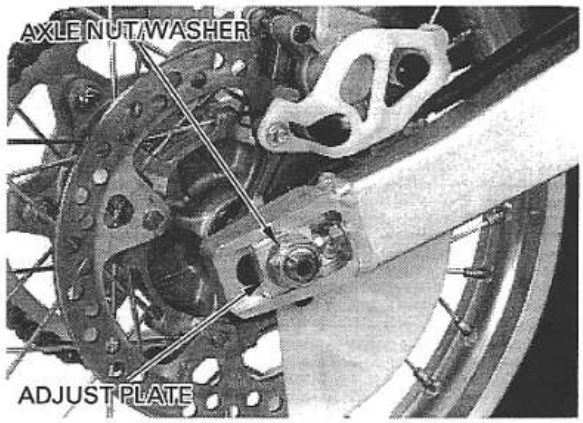


Install the right adjust plate, washer and loosely install the axle nut.

Adjust the drive chain slack (page 3-15).

Tighten the axle nut to the specified torque.

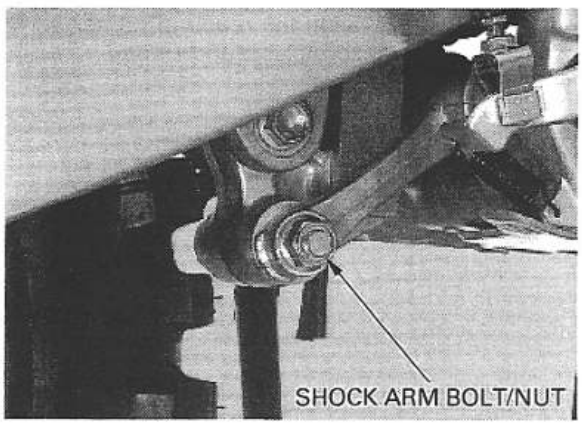
TORQUE: 93 N·m (9.5 kgf·m , 69 lbf·ft)



SHOCK ABSORBER

⚠WARNING

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



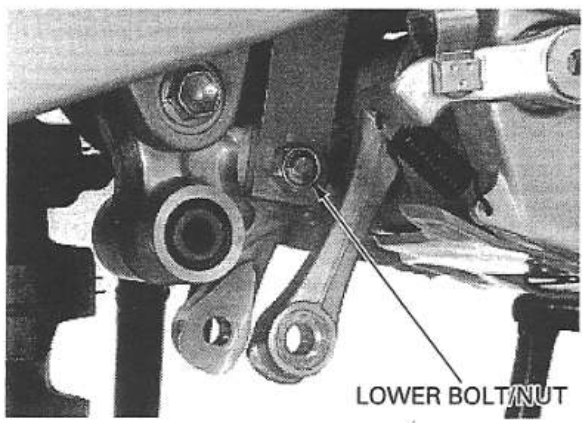
REMOVAL

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

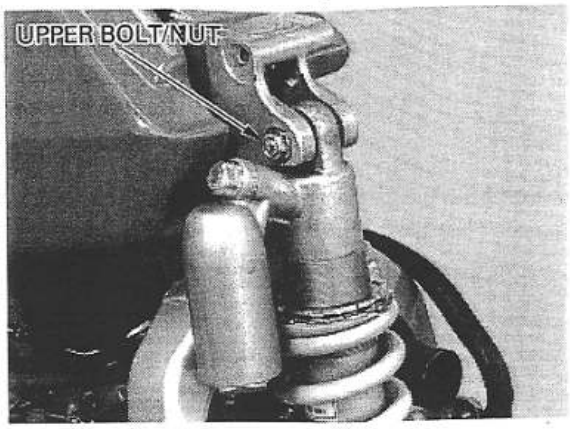
Remove the seat (page 2-2).
Remove the sub-frame (page 2-5).

Remove the shock arm-to-shock link bolt/nut.

Remove the shock absorber lower mounting bolt/nut.



Remove the upper mounting bolt/nut and shock absorber.



DISASSEMBLY

NOTE:

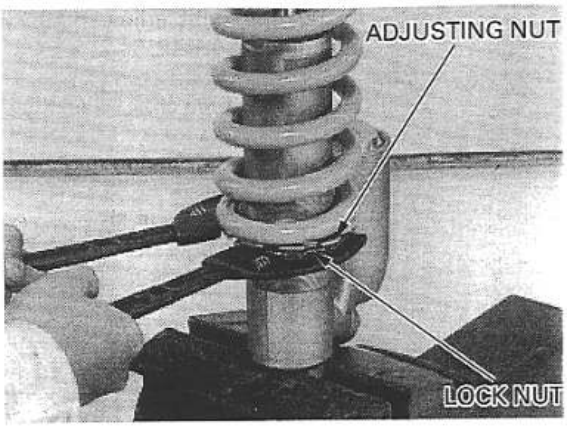
Measure the spring length for installation later.

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

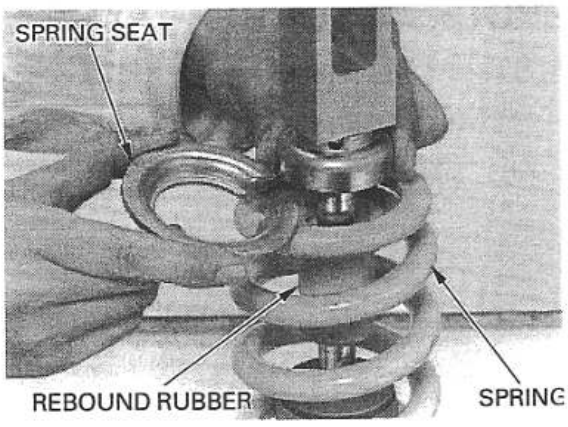
Loosen the lock nut and adjusting nut.

TOOLS:

Pin spanner	07702-0020001 (2 required)



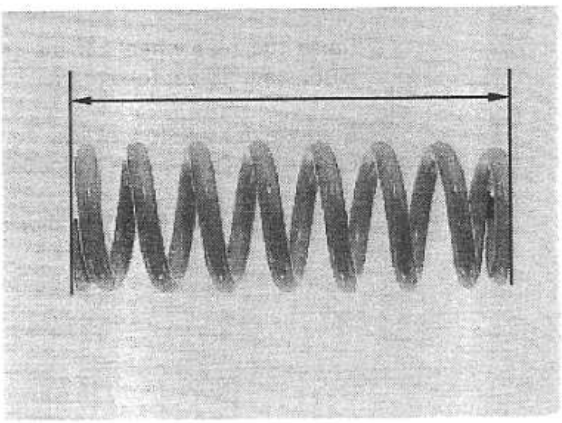
Slide the rebound rubber upward and remove the spring seat and spring.



SHOCK ABSORBER SPRING INSPECTION

Measure the shock absorber spring free length.

SERVICE LIMIT: 240 mm (9.4 in)



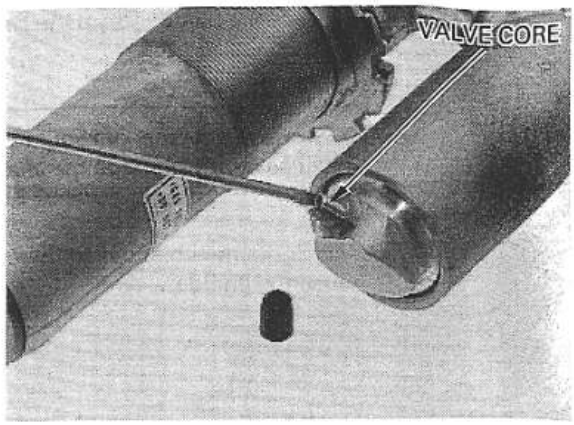
BLADDER REPLACEMENT

NOTE:

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

Point the valve away from you to prevent debris getting in your eyes.

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

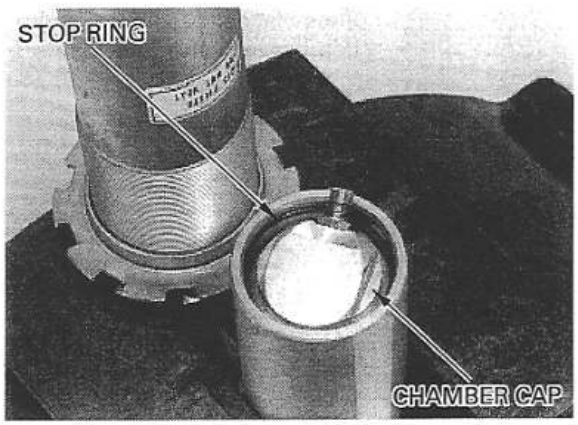


⚠WARNING

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

Depress the chamber cap just enough for stop ring access.

Hold the shock absorber in a vise protected with shop towel or pieces of wood.
Push the chamber cap in until you have good access to the stop ring.

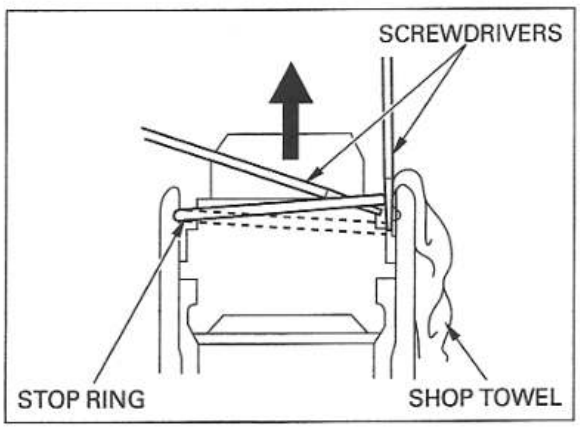


Two small screwdrivers and a shop towel are required to remove the stop ring.

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

CAUTION:

To avoid damaging the inside surfaces of the reservoir, cover the screwdriver with shop towel.

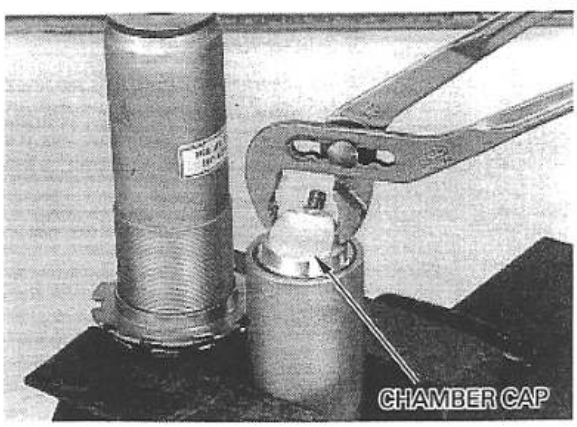


To remove the stop ring, first push one end of the stop ring out of its groove, then slip the second screwdriver between the stop ring and the reservoir to act as a ramp.

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

Check the stop ring groove for burrs. Remove any burrs with the fine emery cloth before pulling out the chamber cap.

Remove the chamber cap from the reservoir.

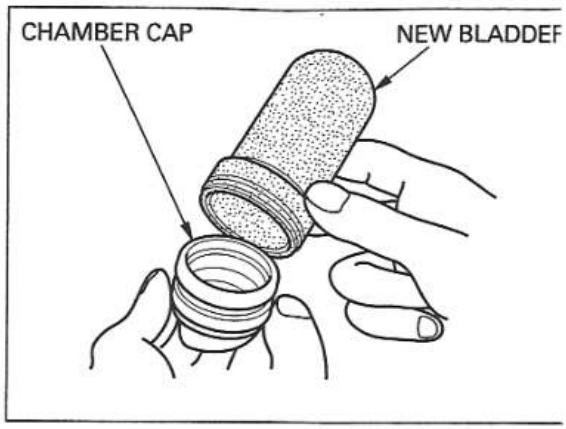


Remove the bladder from the chamber cap.

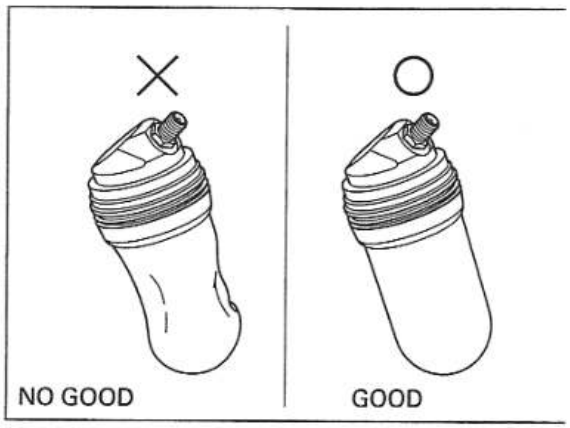
CAUTION:

Do not use any sort of tool to remove the bladder, because it may damage the chamber cap.

Attach the new bladder to the chamber cap; do not reuse the bladder.



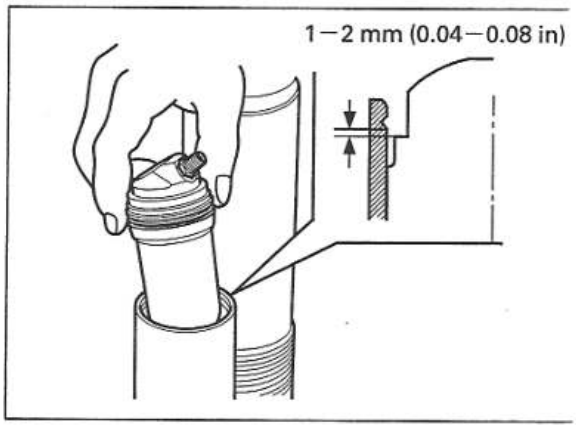
If the bladder becomes distorted during installation, depress the valve core to reform it.



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

RECOMMENDED OIL: Fork fluid

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



Be sure the stop ring is seated completely in the ring groove or the chamber cap can separate when riding the motorcycle.

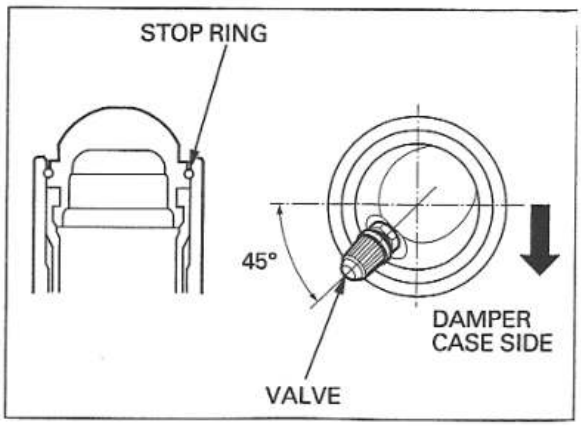
Install the stop ring in the groove of the reservoir securely.

Temporarily fill the reservoir with air slowly until the chamber cap seats against the stop ring.

⚠WARNING

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

Release the air from the reservoir by depressing the valve core.
Fill the reservoir with nitrogen to the specified pressure (page 15-21).



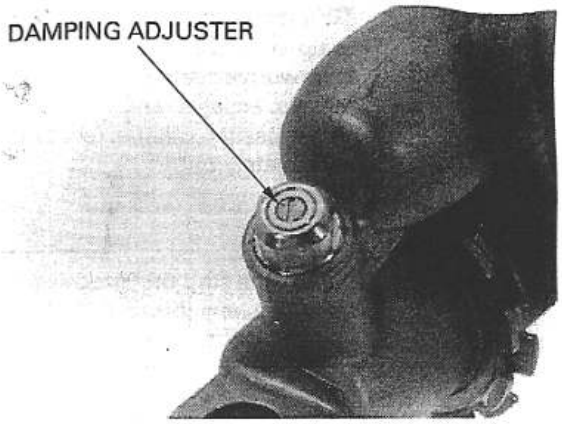
DAMPER DISASSEMBLY

Depress the valve core to release the nitrogen from the reservoir (page 15-11).

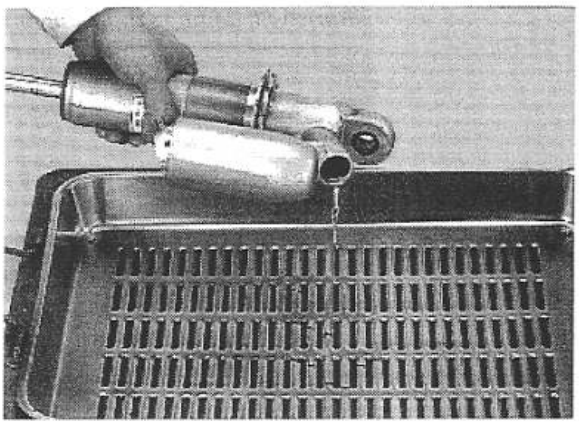
⚠WARNING

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

Remove the damping adjuster.

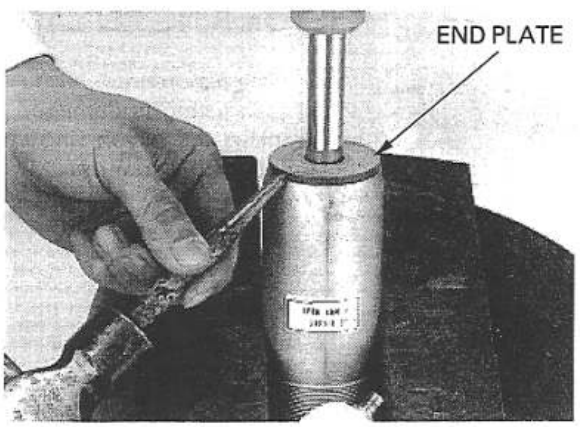


Drain most of the shock oil from the damper and reservoir, by pumping the damper rod in and out several times.

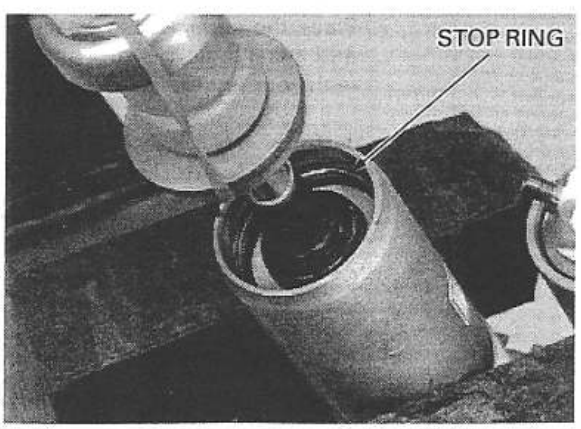


Clamp the shock absorber in a vise by the damper case protected on both sides by pieces of wood.

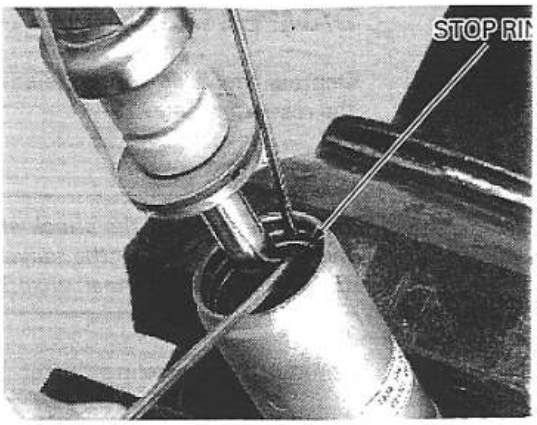
Remove the end plate and tape or tie it to the rubber stopper so it won't get in the way.



Push in the damper seal until you have good access to the stop ring.
Two small screwdrivers are required to remove the stop ring. The stop ring groove in the damper case is ramped towards the inside to give the stop ring a square shoulder on which to seat securely.



To remove the stop ring, first push one end of the stop ring out of its groove, then slip the second screwdriver between the stop ring and the damper case to act as a ramp.
Now, use the other screwdriver to pull the stop ring completely out.



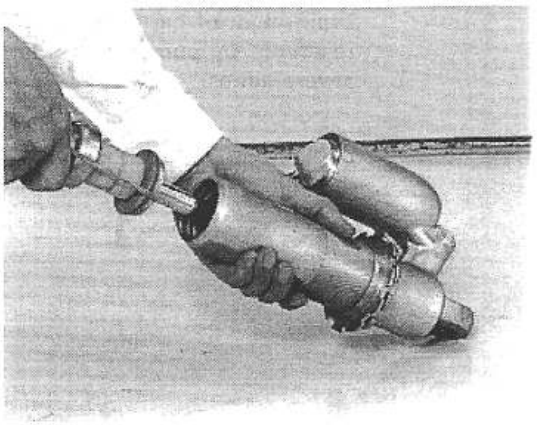
NOTE:

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

CAUTION:

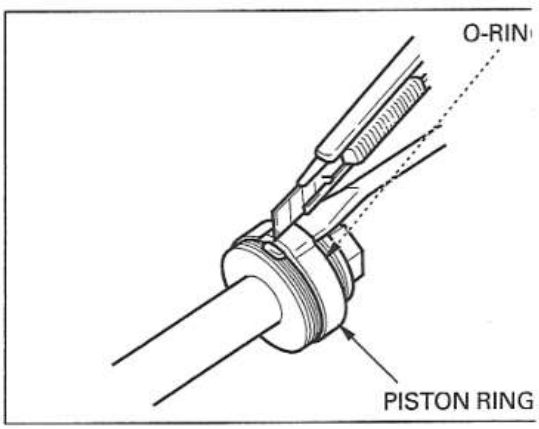
Burrs will damage the damper rod piston ring.

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



PISTON RING REPLACEMENT

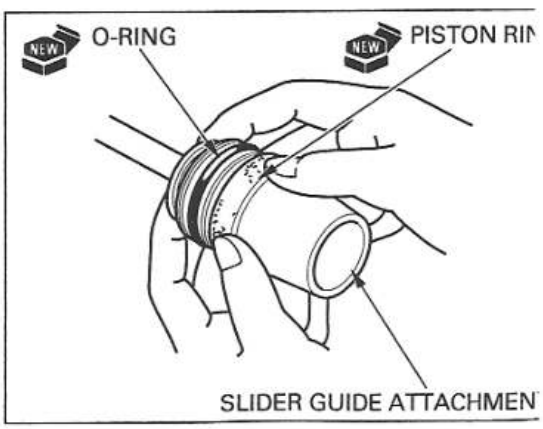
Inspect the piston ring.
If the piston ring is damaged, cut the piston ring and replace the piston ring and O-ring under the piston ring with a new one.



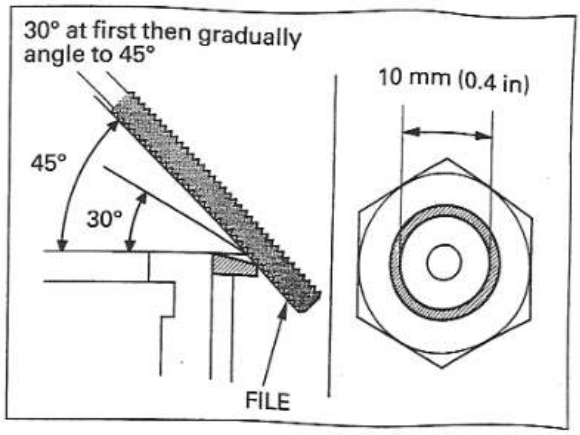
Place the slider guide attachment over the piston and install a new O-ring and piston ring onto place with your finger.

TOOL:
Slider guide attachment 07974-KA50102

Compress the piston ring against the ring groove, and seat the piston ring into the ring groove.



DAMPER ROD DISASSEMBLY

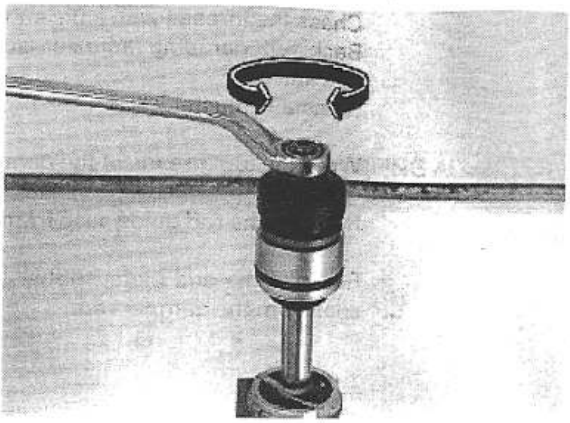


CAUTION:

- ***To keep lint or dirt from getting onto damper rod parts, do not wear gloves while working on the damper rod.***
- ***Be careful to file the end nut by hand so that the O.D. of the rod end is about 10 mm (0.4 in). Be careful not to over-file.***

Hold the lower shock mount in a vise protected with a piece of wood or shop towel, being careful not to distort the lower mount.

Unstake the damper rod end nut with a file as shown.



Turn the end nut back-and-forth in 1/4 turn increments until it loosens, then rotate another 1/4 turn and repeat the back-and-forth until nut loosens completely.

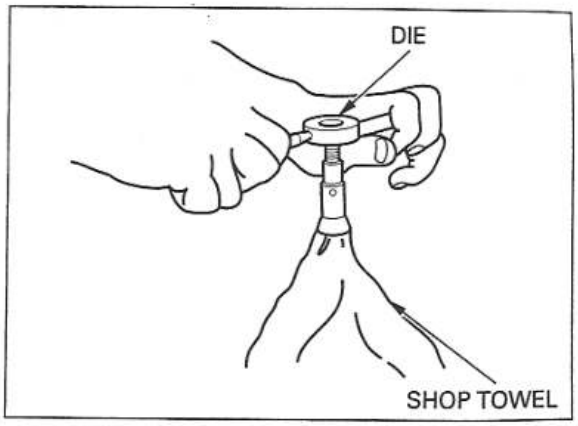
NOTE:

- If the damper rod is cracked or damaged when removing the end nut, replace the damper rod assembly with a new one.
- Remove all the burrs from the end of the damper rod. Lean thoroughly with solvent. If the threads cannot be repaired, replace the rob.

Make sure that filings are not stuck in the dampe rod I.D.

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

DIE: 12 × 1.5 mm

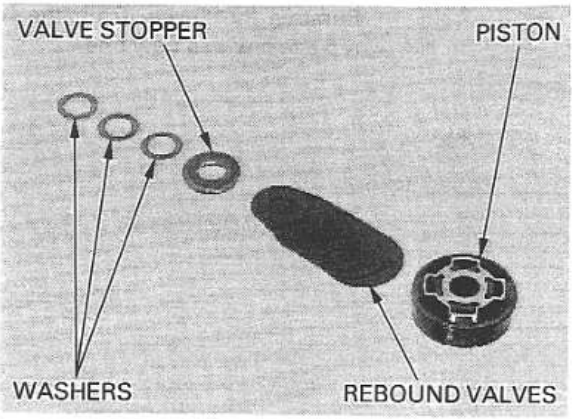


Clean the damper rod with solvent after correcting the threads.

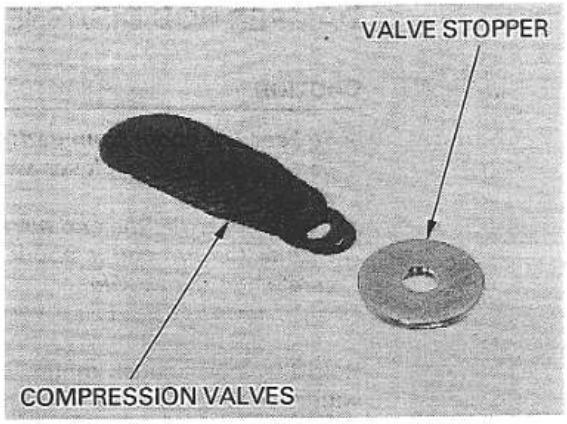
NOTE:

- Use a piece of mechanic's wire to keep the valves in the correct order.
- Keep dust and abrasives away from all damper rod parts.
- Thoroughly clean the valves in solvent and blow them dry with compressed air if they have been disassembled and separated.
- Be careful not to get solvent on the O-ring and piston ring.

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



Remove the compression valves and valve stopper.

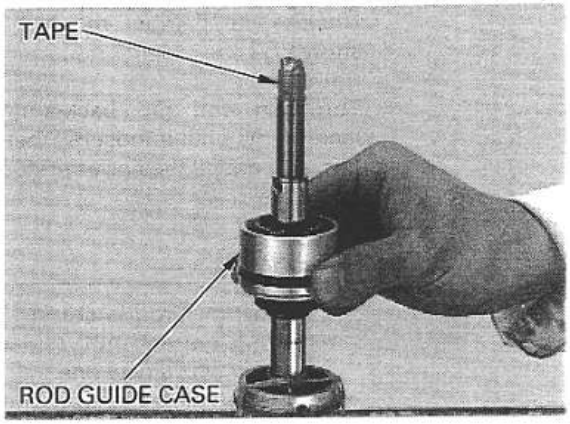


Chase the threads with a die and clean with oil.
Back out damping adjuster and back flush with solvent.
Reinstall adjuster.

Wrap the top threads of the damper rod with tape.

Remove the rod guide case from the damper rod.

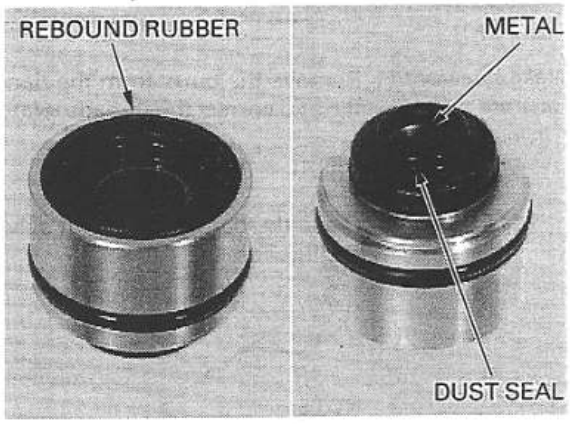
Remove the end plate, rubber stopper and rubber seat from the damper rod.



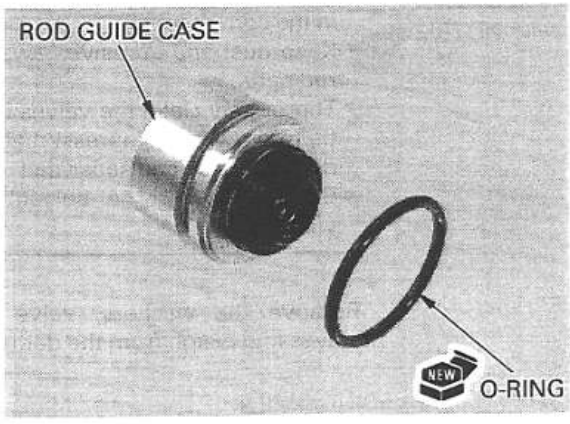
ROD GUIDE INSPECTION

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

Visually inspect the rod guide case metal.
If the metal is worn so that the copper surface appears, replace the rod guide case with a new one.

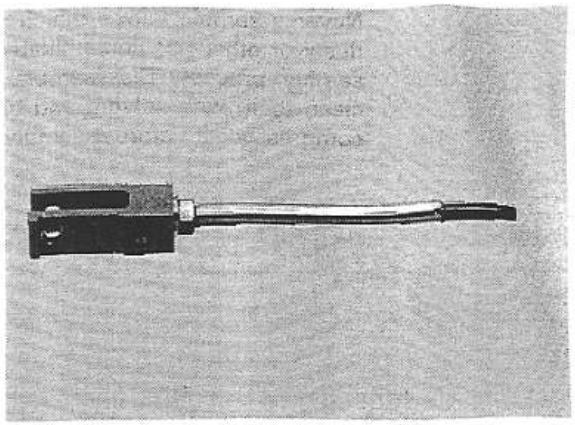


Remove the O-ring from the rod guide case and replace it with a new one.



DAMPER ROD INSPECTION

Inspect the damper rod sliding surface for damage or distortion.

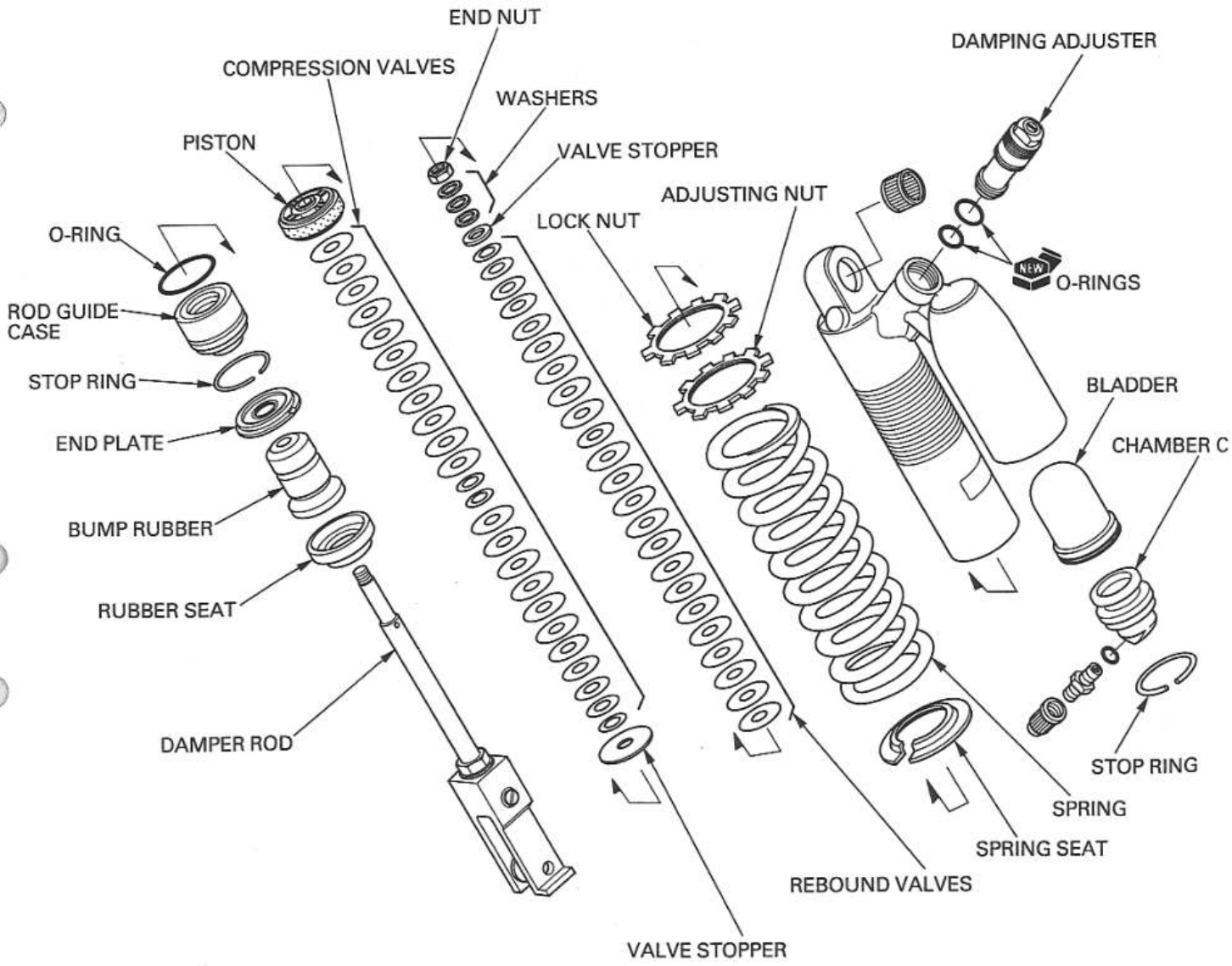


DAMPER ASSEMBLY

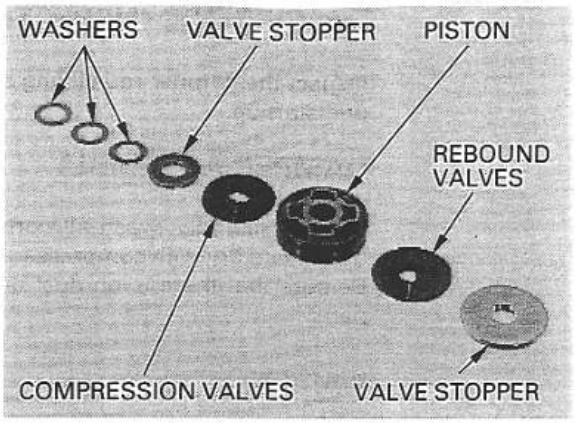
Before assembly, wash all parts with solvent and blow them dry with compressed air.
Be sure that there is no dust or lint on any of the parts.

CAUTION:

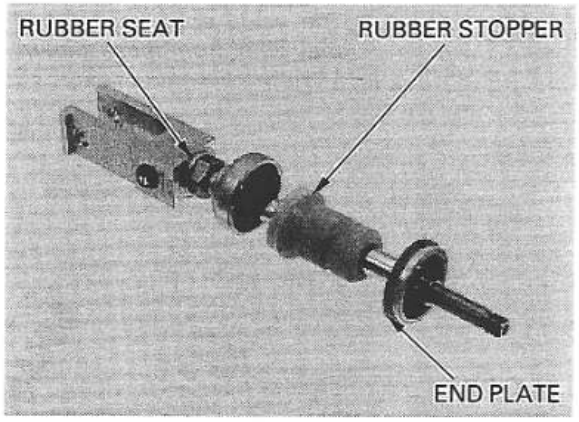
- ***Use added care to avoid getting solvent on the piston ring and O-ring.***
- ***The valve arrengement and number of valves may differ from those shown.***



Never assemble valves which may have become dusty or otherwise contaminated during the disassembly process. Disassemble them, thoroughly clean them with solvent and blow them dry with compressed air before assembly.



Install the rubber seat, rubber stopper and end plate.



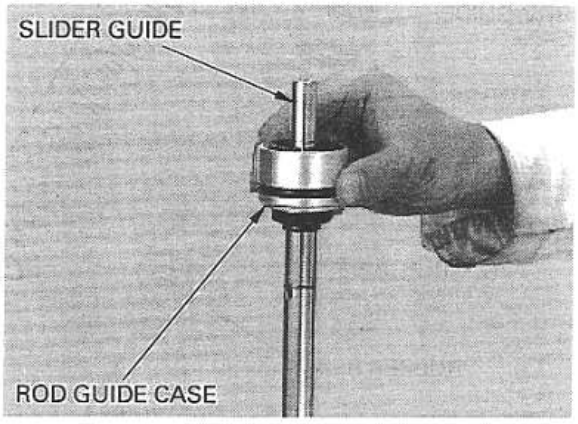
Install the special tool onto the damper rod.

TOOL:
Slider guide, 16 mm 07PMG-KZ40100

Carefully install the rod guide case with the rebound rubber facing up, over the damper rod.

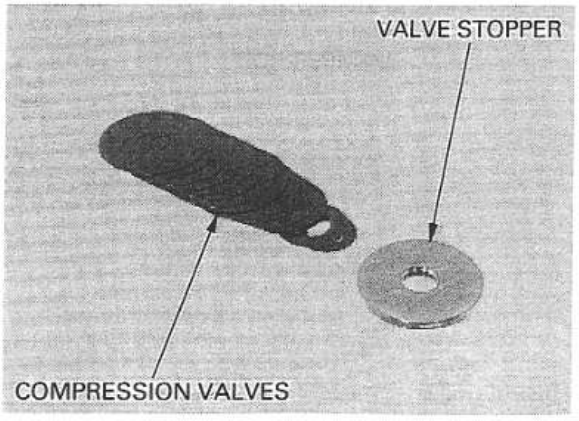
NOTE:

- The rod guide case oil seal is filled with grease.
- Be careful not to remove grease from the seal.
- Be careful not to damage the dust seal lip or turn it inside out.



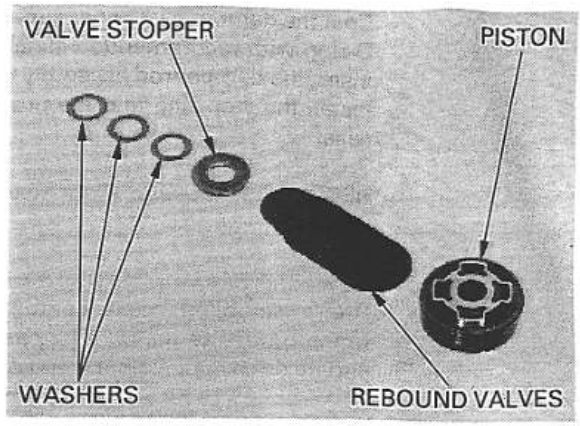
Remove the special tool.

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



Install the piston onto the damper rod.

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

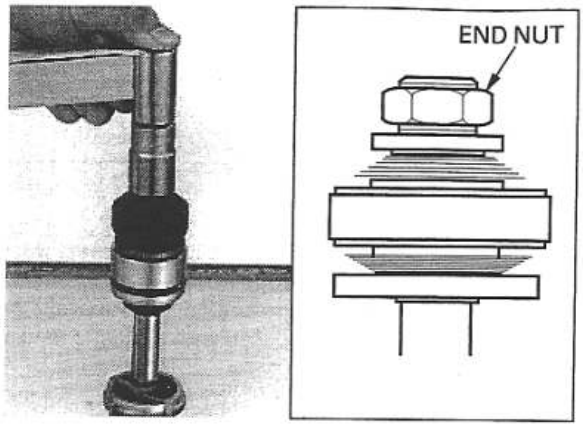


NOTE:

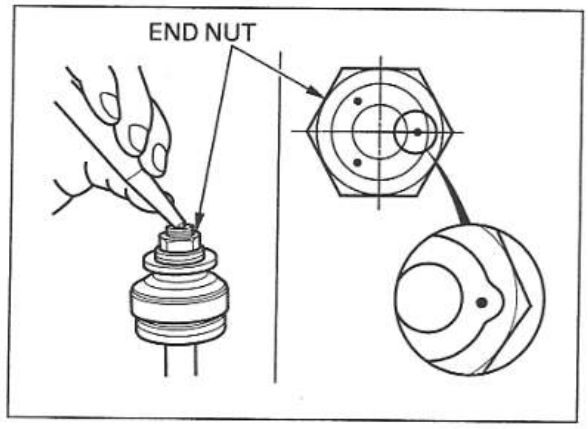
- Do not install the end washer unless you're using a new damper rod.
- Note the installation direction of the piston valves.
- Be careful not to bind the valves when installing the piston onto the damper rod. Also, check that they are concentric with the damper rod.

Hold the lower shock mount in a vice with soft jaws, piece of wood or shop towel.
Install and tighten a new end nut to the specified torque.

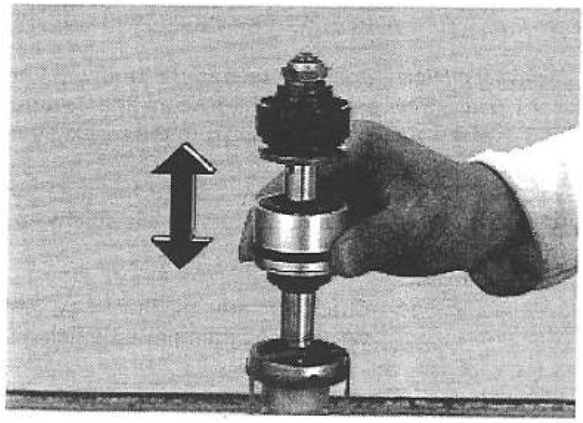
TORQUE: 26 N·m (2.7 kgf·m , 20 lbf·ft)



Stake the end of damper rod in three places as shown to secure the end nut.



Coat the damper rod with Pro-Honda HP Fork Oil 5W or equivalent. Check the rod guide case by sliding it up and down fully to be sure there is no restriction.

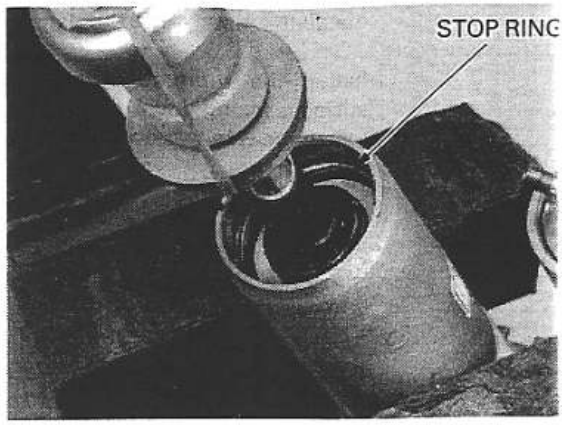


Coat the damper case inner surface, piston ring and O-ring with recommended shock absorber oil, and insert the damper rod assembly carefully.
Install the stop ring into the groove in the damper case.

RECOMMENDED OIL: Fork fluid

NOTE:

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

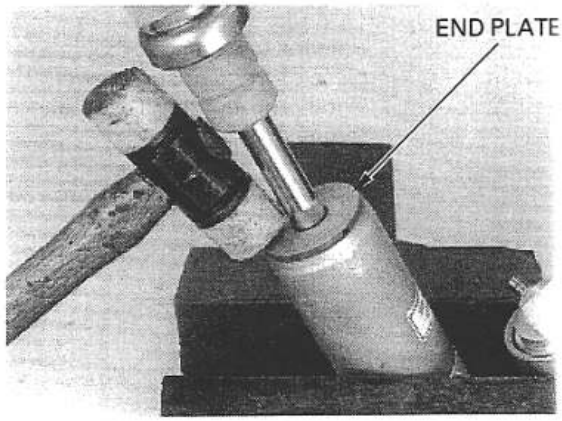


Hold the shock absorber gently in a vise by the damper case, protected on both sides by pieces of wood.

CAUTION:

Do not overtighten the vise and distort the damper case.

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



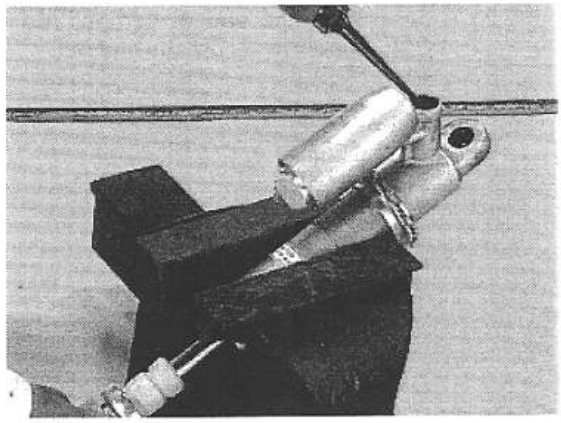
Fill the damper case and reservoir with recommended shock absorber oil through the damping adjuster hole.

RECOMMENDED OIL: Fork fluid

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

NOTE:

Make sure the rod guide case is seated against the stop ring by pulling the damper rod out all the way.



Remove the damper unit from the vise.

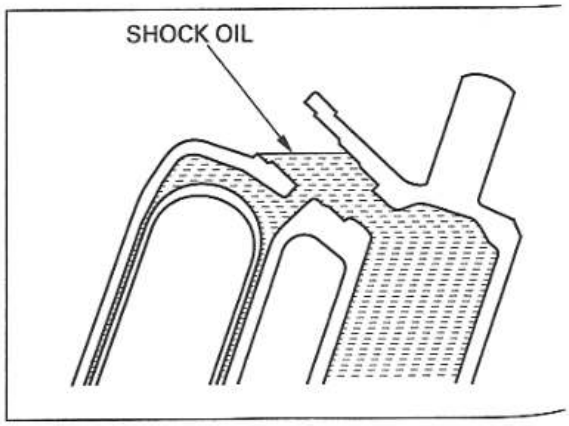
Do not let oil flow out of the reservoir.

Position the damper unit with the damping adjuster hole facing up. Turn the damper unit as shown to bleed the air from the reservoir completely.

Be sure that the reservoir pressure is correct with an accurate pressure gauge.

Temporarily charge the reservoir with 49 kPa (0.5 kgf/cm^2, 7.1 psi) of air slowly to inflate the bladder inside.

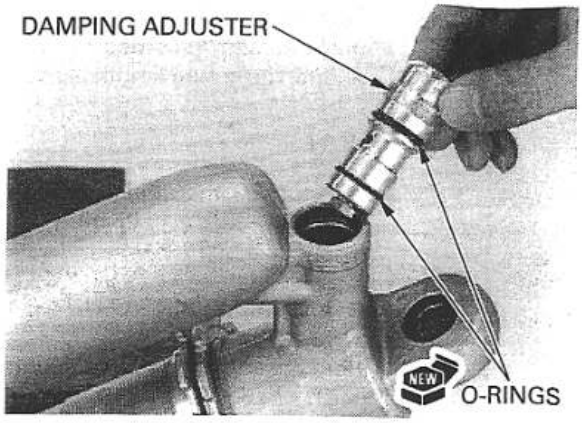
Check for any oil that may leak out of the valve while pressurising. Replenish oil as necessary.



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

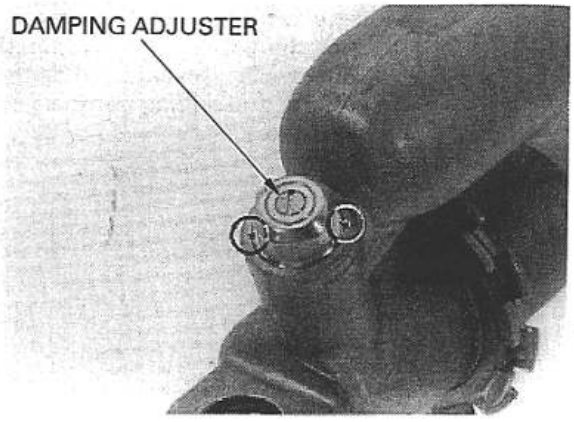
TORQUE: 20 N·m (2.0 kgf·m , 14 lbf·ft)

Wipe off all oil from the damper rod; oil left on the damper rod can lead to premature failure of the oil seal.



Stake the damping adjuster as shown.

Wipe off all oil from the damper rod; oil left on the damper rod can lead to premature failure of the oil seal.
Check for oil leaks.

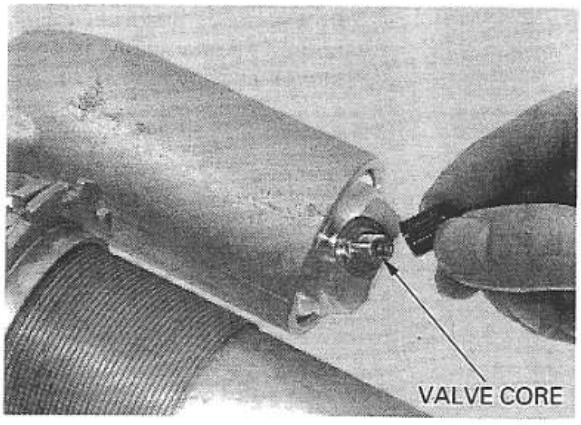


Release the air that was in the reservoir at precompression. Fill the reservoir with 981 kPa (10.0 kgf/cm², 142 psi) of nitrogen gas.

⚠WARNING

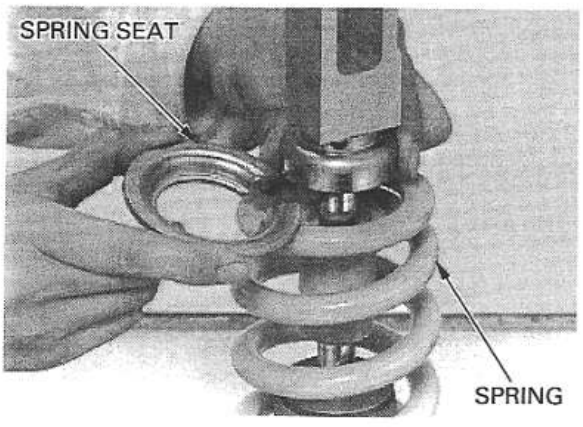
The shock absorber is fitted with a gas-filled reservoir. Use only nitrogen gas to pressurize the shock absorber. The use of an unstable gas can cause a fire or explosion resulting in serious injury.

Install the valve cap.

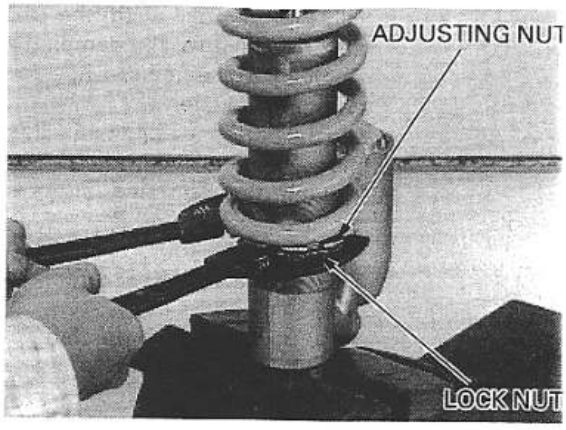


Install the spring (with the wider end sliding against the adjusting nut) and spring seat.

Temporarily tighten the adjusting nut and lock nut.



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



NOTE:

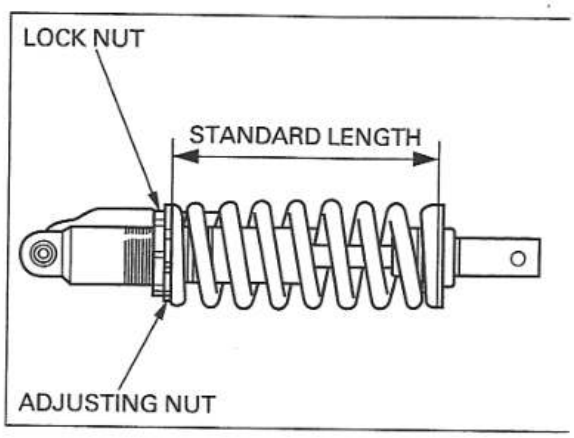
One turn of the adjusting nut changes the spring length by 1.5 mm (0.06 in).

STANDARD SPRING LENGTH: 236.5 mm (9.31 in)

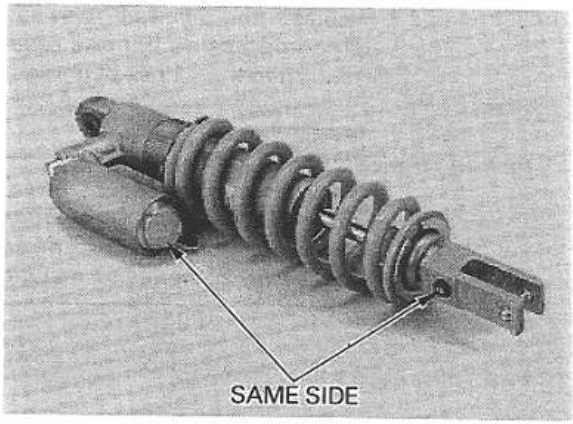
Hold the adjusting nut and tighten the lock nut.

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

Use this standard spring length is just as a baseline. See the Owner's Manual for detailed instructions on adjusting preload and damping setting for rider weight and setting damping for riding conditions and rider skill.



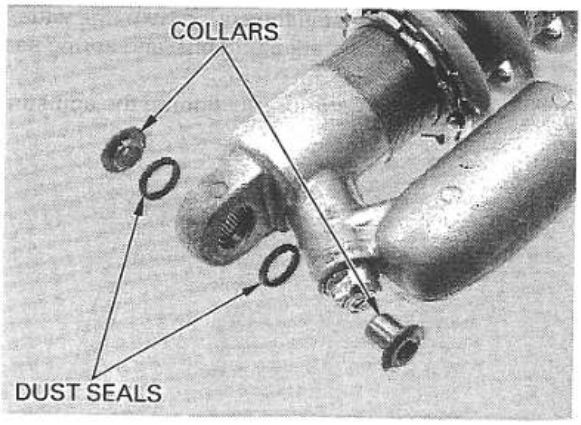
Turn the shock absorber lower mount so that the rebound adjuster screw is on the same side of the reservoir as shown.



NEEDLE BEARING REPLACEMENT

Check the needle bearing for wear or damage. If it is worn or damaged, it must be replaced.

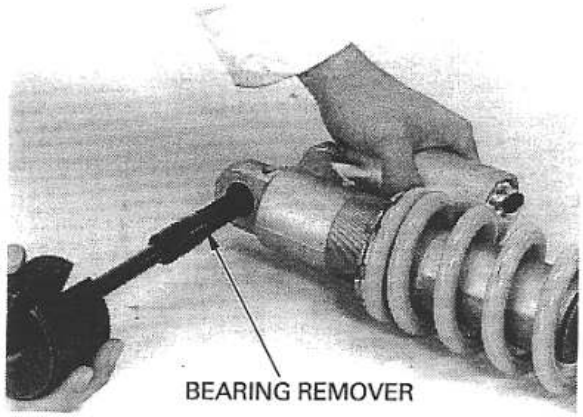
Remove the collars and dust seals.



Remove the needle bearing with using the special tools.

TOOLS:

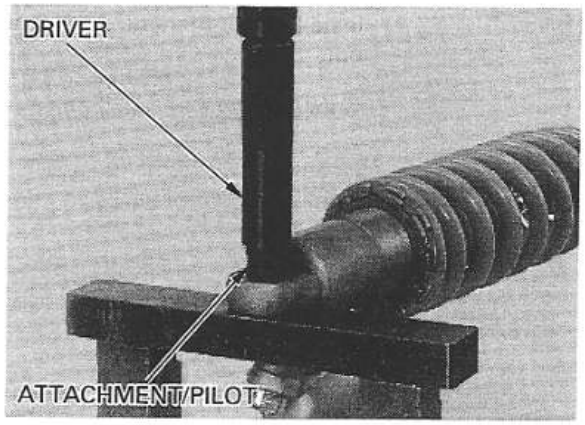
Bearing remover assembly	07936-KC10500
Bearing remover collets	07936-MK50100
Remover weight	07741-0010201



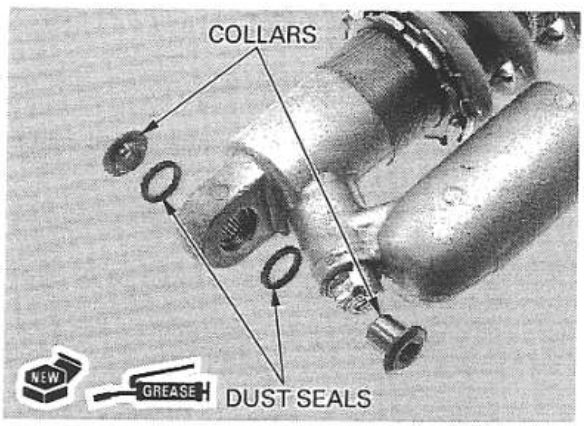
Apply grease to the new needle bearing rolling area.
Carefully press the needle bearing into the pivot to 3.5 mm (0.14 in) below the surface of the pivot on both sides using the special tools and a hydraulic press.

TOOLS:

Driver	07749-0010000
Attachment, 22 × 24 mm	07746-0010800
Pilot, 15 mm	07746-0040300



Apply grease to the lip of the new dust seals and install them.
Install the collars.

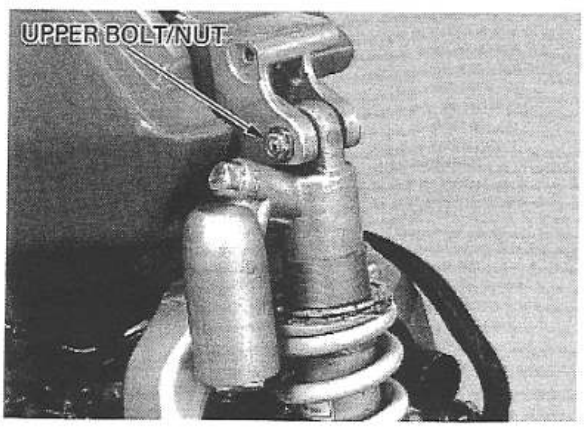


INSTALLATION

Set the shock absorber onto the shock arm with the rebound adjuster facing to the left.

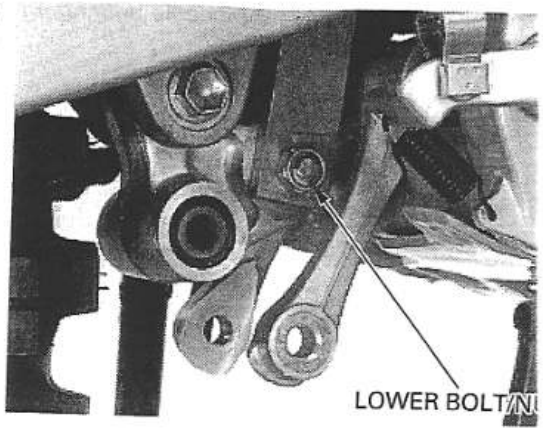
Install and tighten the shock absorber upper mounting bolt/nut.

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



Install the lower mounting bolt aligning the cut out of the bolt with the stopper on the shock absorber lower mount.
Install and tighten the lower mounting nut.

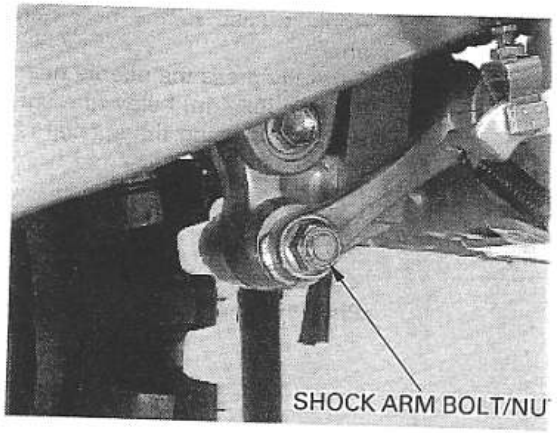
TORQUE: 44 N·m (4.5 kgf·m , 33 lbf·ft)



Install and tighten the shock link-to-shock arm bolt/nut.

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

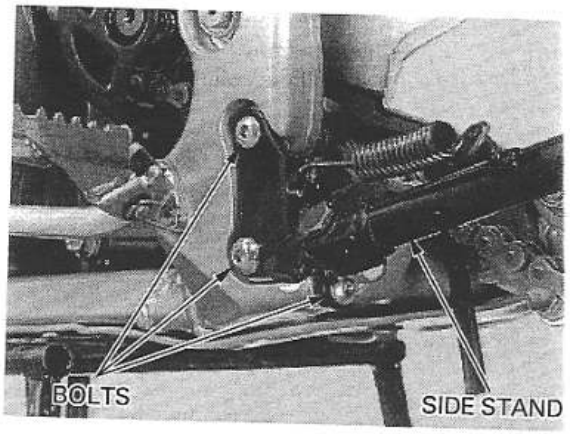
Install the sub-frame (page 2-7).
Install the seat (page 2-2).



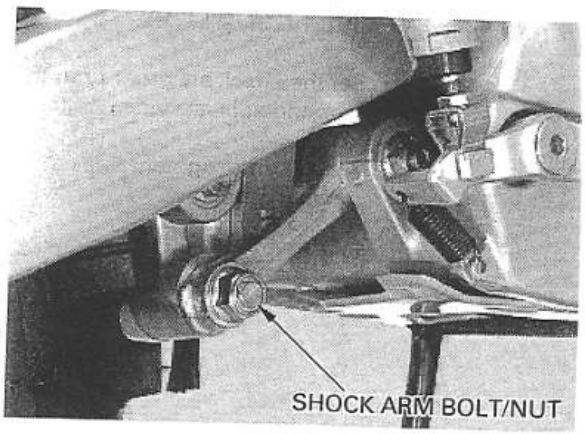
SHOCK LINKAGE

REMOVAL

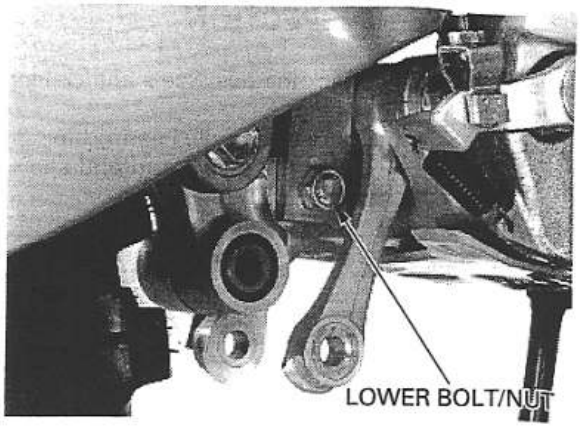
Remove the side stand mounting bolts and side stand.



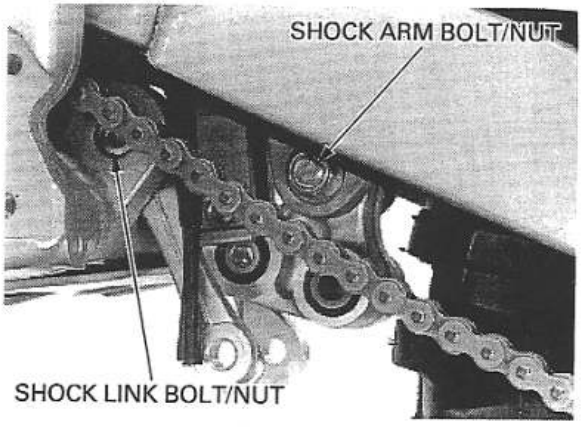
Remove the shock arm bolt/nut (shock link side).



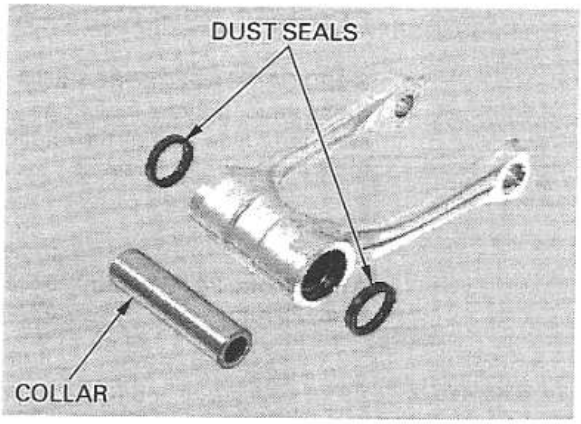
Remove the shock absorber lower mounting bolt/nut.



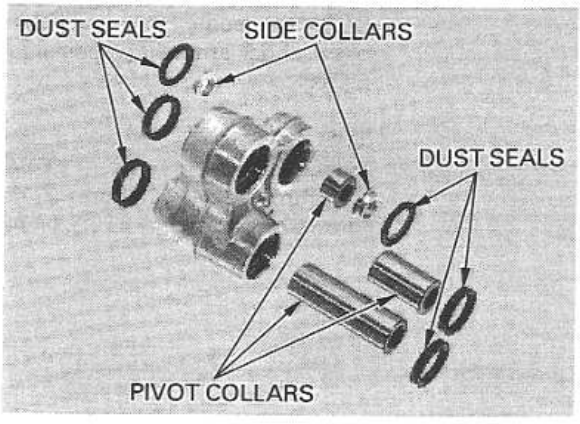
Remove the shock arm bolt/nut (swingarm side) and shock arm.
Remove the shock link bolt/nut (frame side) and shock link.



Remove the pivot collar and dust seals from the shock link.



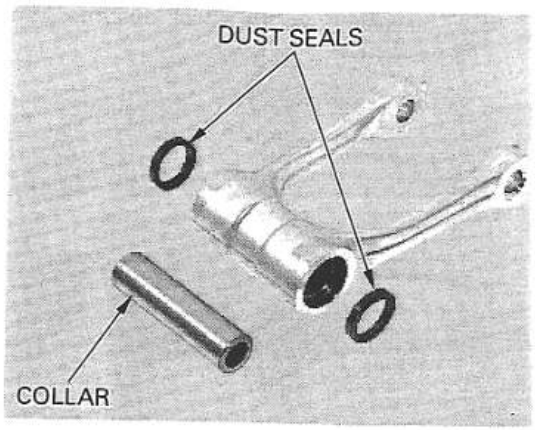
Remove the side collars (shock absorber side), dust seals and pivot collars from the shock arm.

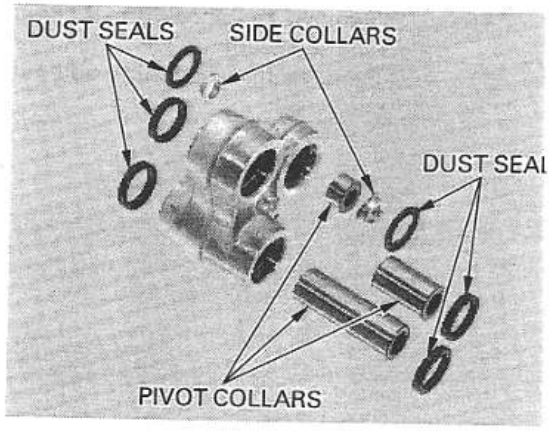


INSPECTION

Check the dust seals and collars for wear, damage or fatigue.
Check the needle bearings for damage or loose fit.
Check the shock arm and shock link for cracks or damage.

If the needle bearings are damaged, replace them.



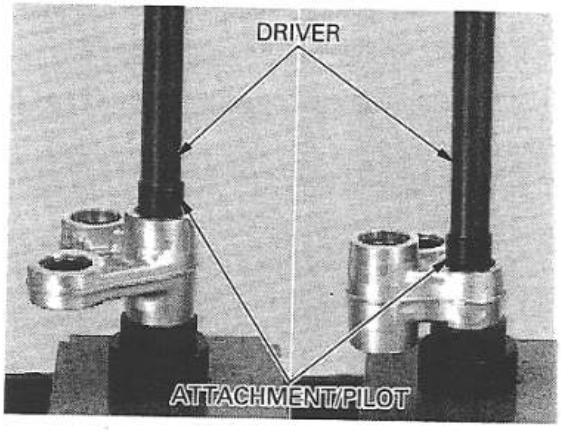


BEARING REPLACEMENT

SHOCK ARM NEEDLE BEARING
Press the needle bearings (shock link side, swingarm side) out of the shock arm using special tools and a hydraulic press.

TOOLS:

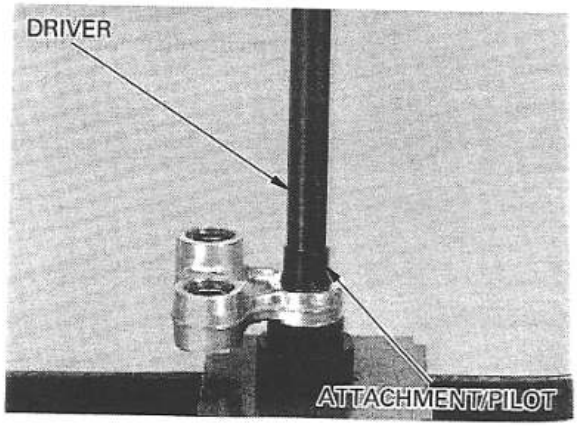
Driver	07949-3710001
Attachment, 24 × 26 mm	07746-0010700
Pilot, 20 mm	07746-0040500



Press the needle bearing (shock absorber side) out of the shock arm using special tools and a hydraulic press.

TOOLS:

Driver	07949-3710001
Attachment, 24 × 26 mm	07746-0010700
Pilot, 17 mm	07746-0040400

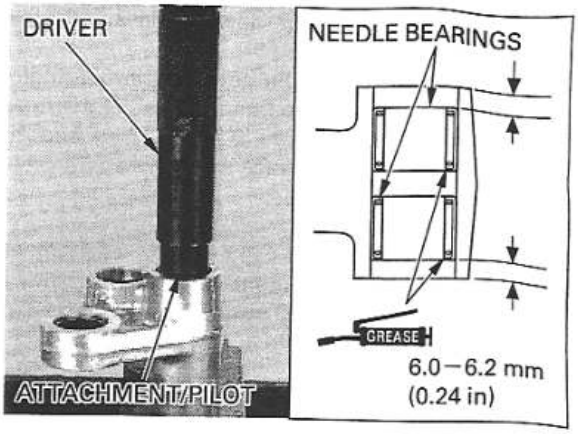


Press the needle bearings into the shock arm with the marked side facing out.

Pack the new needle bearings with multi-purpose grease.
Press the new needle bearings into the shock link side pivot so that the needle bearing surface is lower 6.0−6.2 mm (0.24 in) from the end of the shock arm surface.

TOOLS:

Driver	07749-0010000
Attachment, 24 × 26 mm	07746-0010700
Pilot, 20 mm	07746-0040500

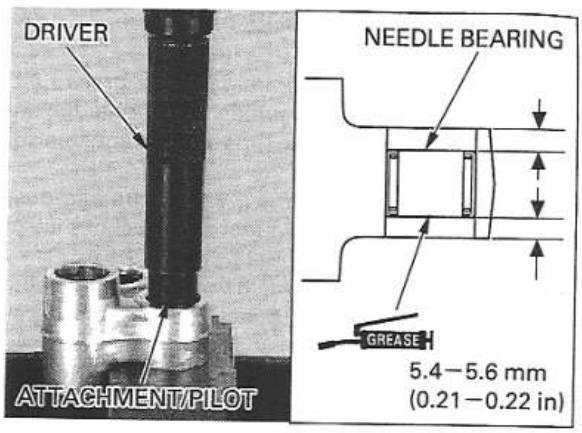


Press the needle bearings into the shock arm with the marked side facing out.

Pack the new needle bearing with multi-purpose grease.
Press a new needle bearing into the swingarm side pivot so that the needle bearing surface is lower 5.4 −5.6 mm (0.21−0.22 in) from the end of the shock arm surface.

TOOLS:

Driver	07749-0010000
Attachment, 24 × 26 mm	07746-0010700
Pilot, 20 mm	07746-0040500

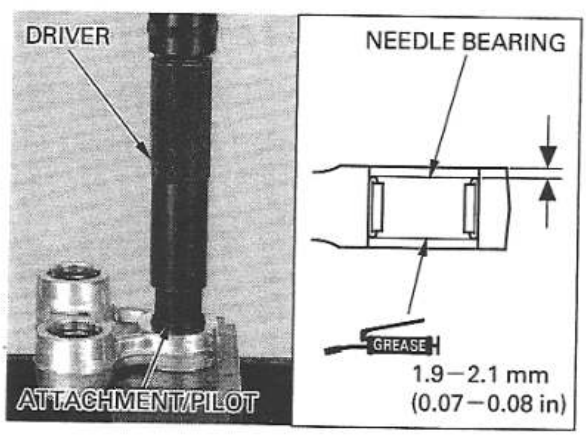


Press the needle bearings into the shock arm with the marked side facing out.

Pack a new needle bearing with multi-purpose grease.
Press a new needle bearing into the shock absorber side pivot so that the needle bearing surface is lower 1.9−2.1 mm (0.07−0.08 in) from the end of the shock arm surface.

TOOLS:

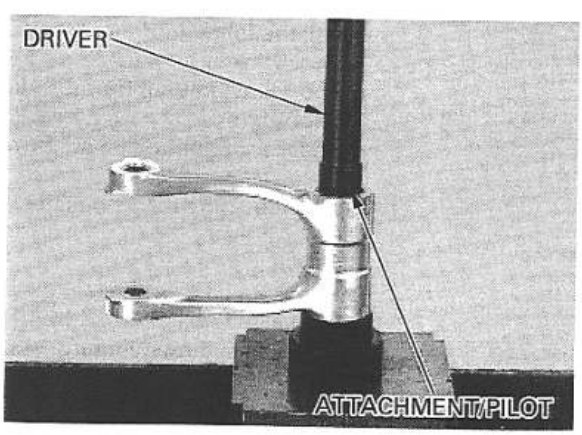
Driver	07749-0010000
Attachment, 24 × 26 mm	07746-0010700
Pilot, 17 mm	07746-0040400



SHOCK LINK NEEDLE BEARING
Press the needle bearing out of the shock link using special tools and a hydraulic press.

TOOLS:

Driver	07949-3710001
Attachment, 24 × 26 mm	07746-0010700
Pilot, 20 mm	07746-0040500



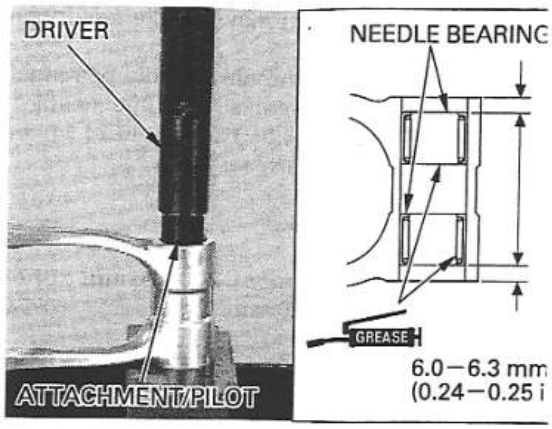
Press the needle bearings into the shock link with the marked side facing out.

Pack the new needle bearings with multi-purpose grease.

Press the new needle bearings into the shock link pivot so that the needle bearing surface is lower 6.0 −6.3 mm (0.24−0.25 in) from the end of the shock link surface.

TOOLS:

Driver	07749-0010000
Attachment, 24 × 26 mm	07746-0010700
Pilot, 20 mm	07746-0040500

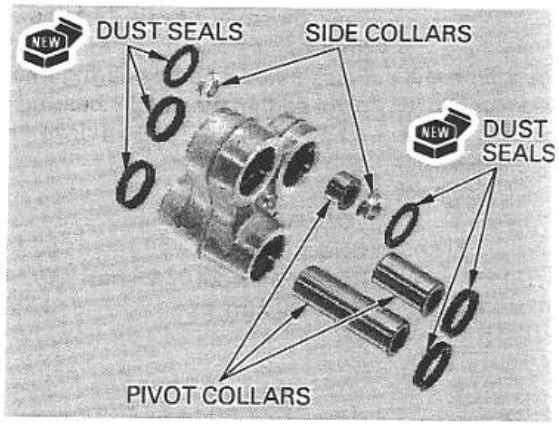


INSTALLATION

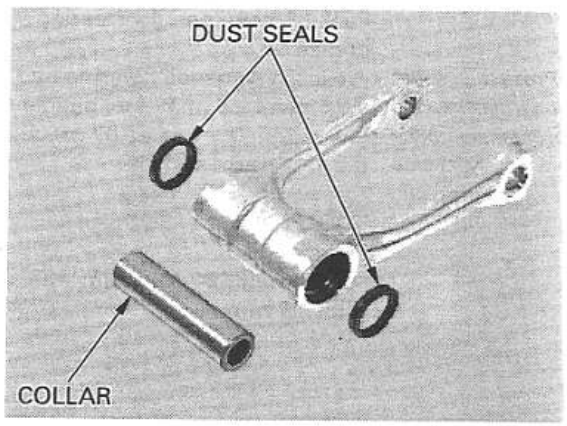
Apply multi-purpose grease NLGI No.2 (molybdenum disulfide additive) to the shock arm, shock link, dust seal lips, collars and bearings.

Install the pivot collars and dust seals to the shock arm (swingarm side, shock link side).

Install the pivot collar, side collars and dust seals to the shock arm (shock absorber side).



Install the pivot collar and dust seals to the shock link.



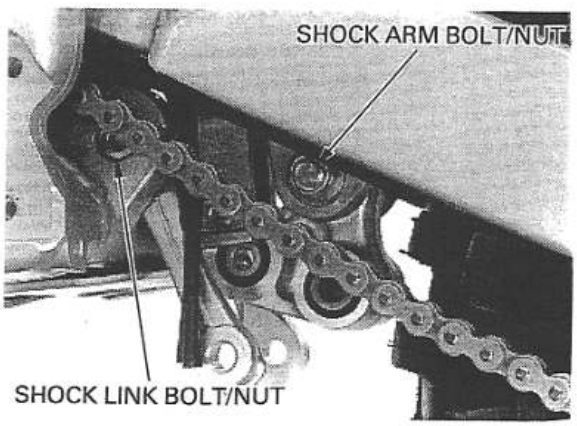
Install the following:
- Shock link
- Shock link bolt/nut (frame side)
- Shock arm
- Shock arm bolt/nut (swingarm side)

Tighten the nuts to the specified torque.

TORQUE:

Shock link nut (frame side):
69 N·m (7.0 kgf·m , 51 lbf·ft)

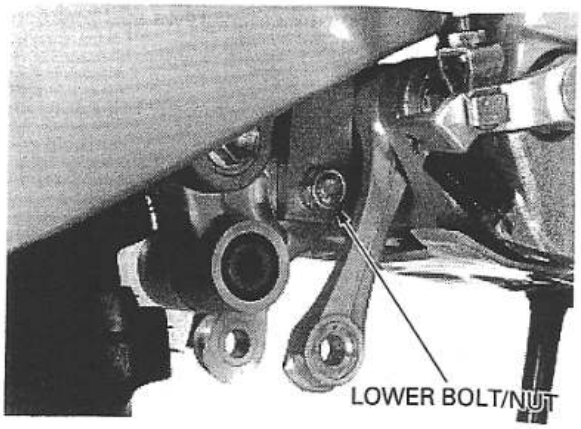
Shock arm nut (swingarm side):
78 N·m (8.0 kgf·m , 58 lbf·ft)



Install the shock absorber lower mounting bolt aligning the cut out of the bolt with the stopper on the shock absorber.

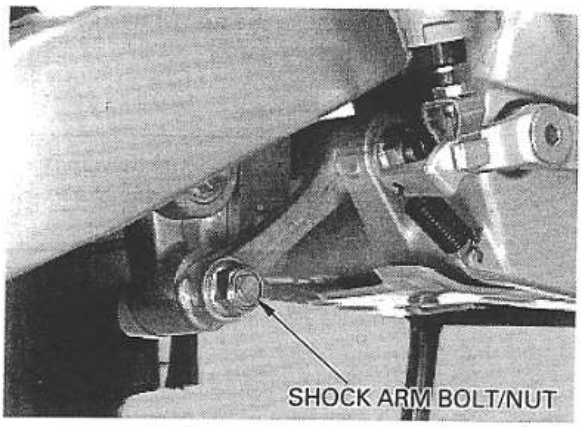
Tighten the nut to the specified torque.

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



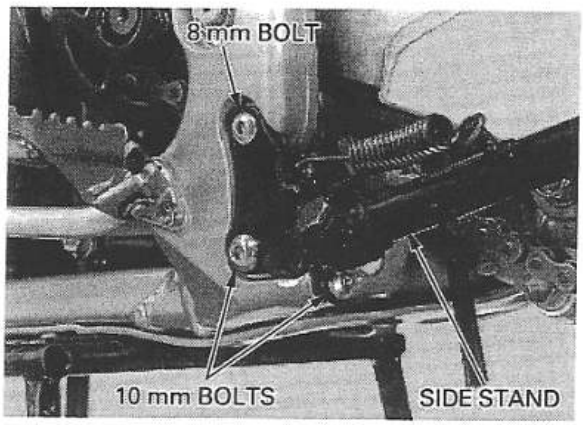
Install the shock arm bolt (shock link side) and tighten the nut to the specified torque.

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



Install the side stand and bolts.
Tighten the bolts to the specified torque.

TORQUE:
8 mm socket bolt: 26 N·m (2.7 kgf·m , 20 lbf·ft)
10 mm socket bolt:39 N·m (4.0 kgf·m , 29 lbf·ft)



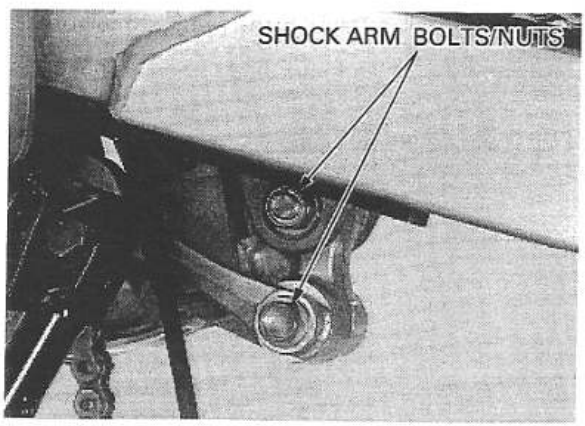
SWINGARM

REMOVAL

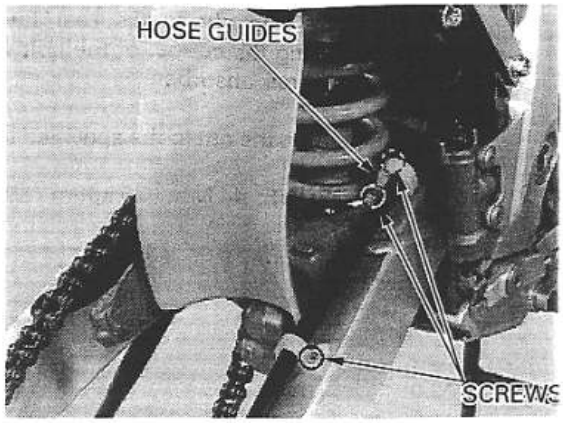
Raise the rear wheel off the ground by placing a work stand under the engine.

Remove the rear wheel (page 15-4).

Remove the shock arm bolts and nuts (swingarm side, shock link side).



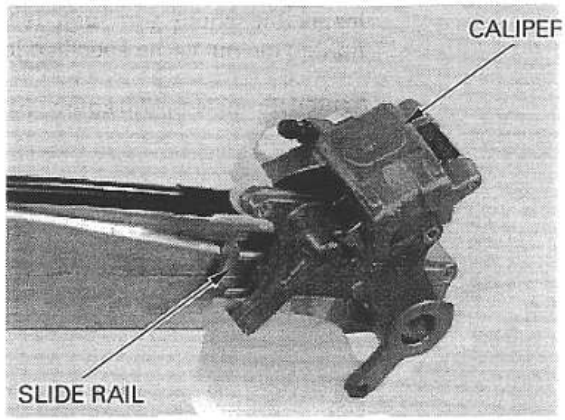
Remove the screws and brake hose guides.



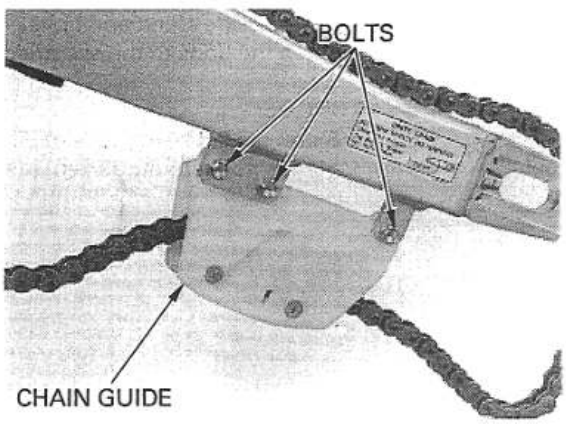
Remove the rear brake caliper from the slide rail on the swingarm.

CAUTION:

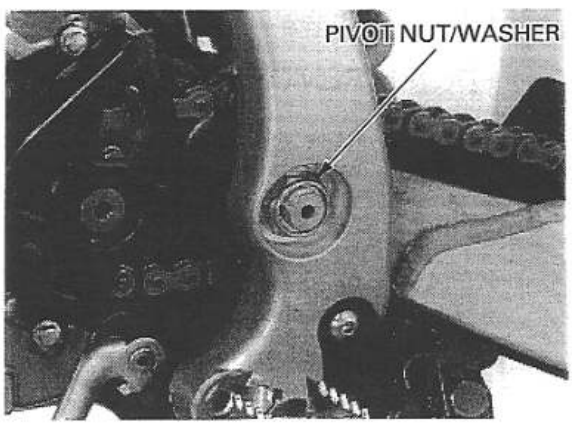
- ***Do not disconnect the hydraulic line.***
- ***Do not suspend the brake caliper from the brake hose.***



Remove the bolts and drive chain guide.



Remove the swingarm pivot nut and washer.



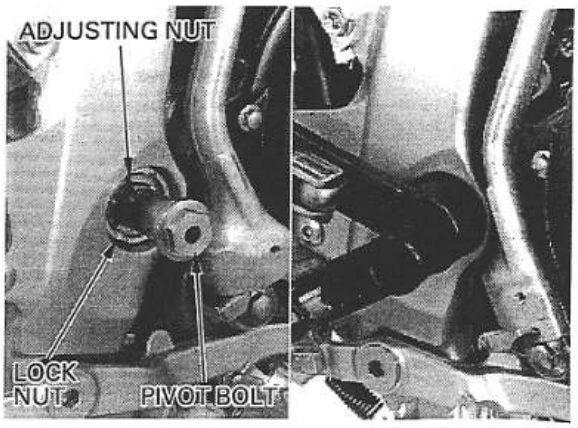
Remove the swingarm pivot bolt.

Remove the swingarm pivot lock nut, and then remove the adjusting nut using special tools.

TOOLS:

Lock nut wrench	07KMA-KAB0100
Lock nut wrench, 20 mm	07VMA-MBB0100

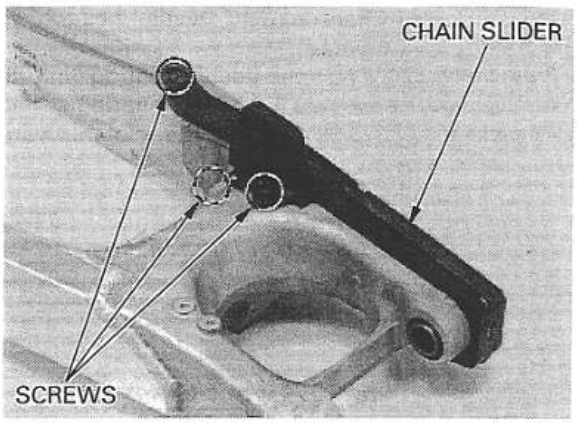
Remove the swingarm.



Check the chain slider for wear or damage (page 3-18).

DISASSEMBLY

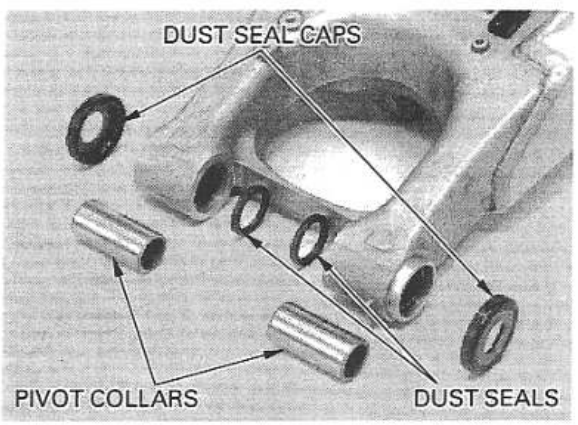
Remove the screws and chain slider.



Remove the following:
- Dust seal caps
- Pivot collars
- Dust seals

Check the dust seals and collars for wear, damage or fatigue.
Check the needle bearings for damage or loose fit.
Check the swingarm for cracks or damage.

Replace them, if necessary.

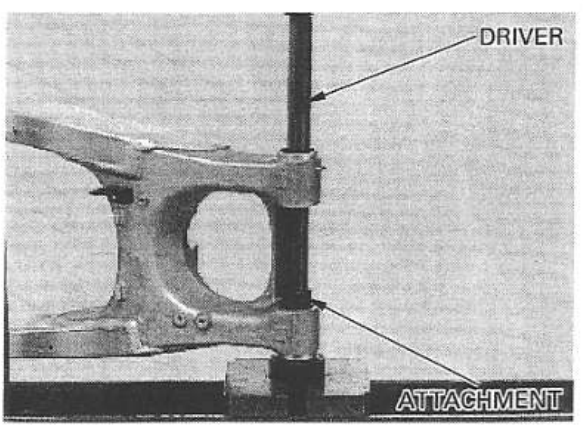


BEARING REPLACEMENT

Press the needle bearings out of the swingarm using special tools and a hydraulic press.

TOOLS:

Driver	07949-3710001
Attachment, 28 × 30 mm	07946-1870100
Pilot, 25 mm	07746-0040600

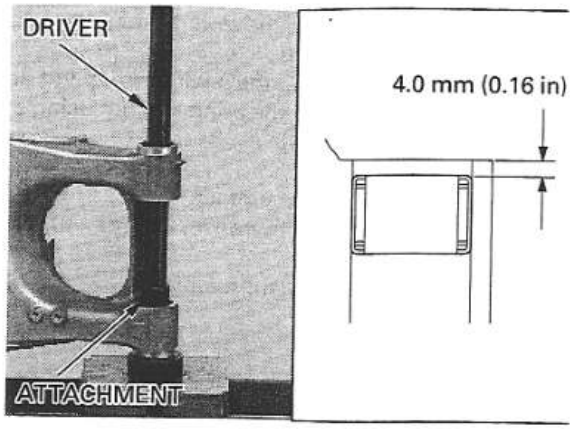


Press the needle bearings into the swingarm with the marked side facing out.

Pack a new needle bearing with multi-purpose grease.
Press the needle bearing into the swingarm pivot so that the needle bearing surface is lower 4.0 mm (0.16 in) from the end of the swingarm surface.

TOOLS:

Driver	07949-3710001
Attachment, 28 × 30 mm	07946-1870100
Pilot, 25 mm	07746-0040600

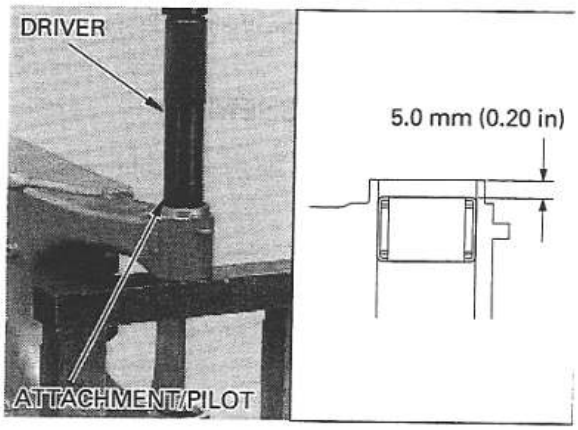


Press the needle bearings into the swingarm with the marked side facing out.

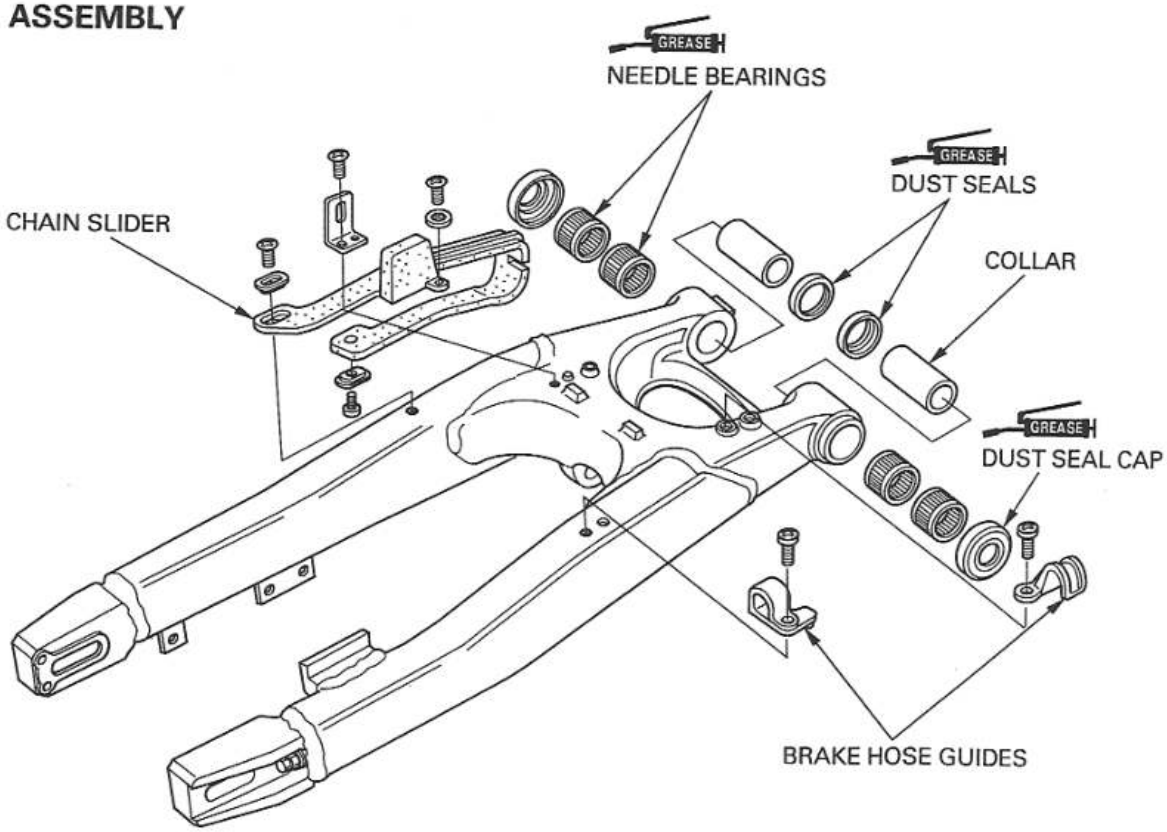
Pack a new needle bearing with multi-purpose grease.
Press the needle bearings into the swingarm pivot so that the needle bearing surface is lower 5.0 mm (0.20 in) from the end of the swingarm surface.

TOOLS:

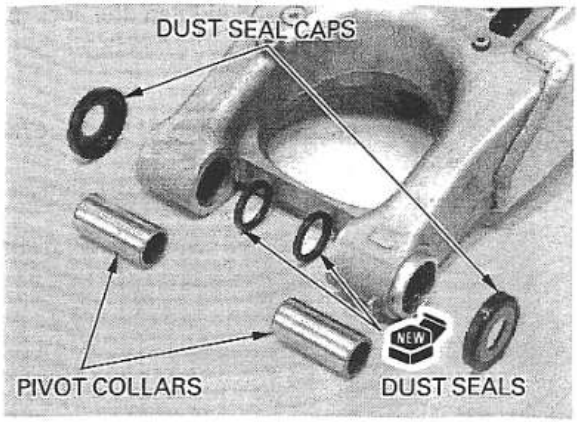
Driver	07749-0010000
Attachment, 32 × 35 mm	07746-0010100
Pilot, 25 mm	07746-0040600



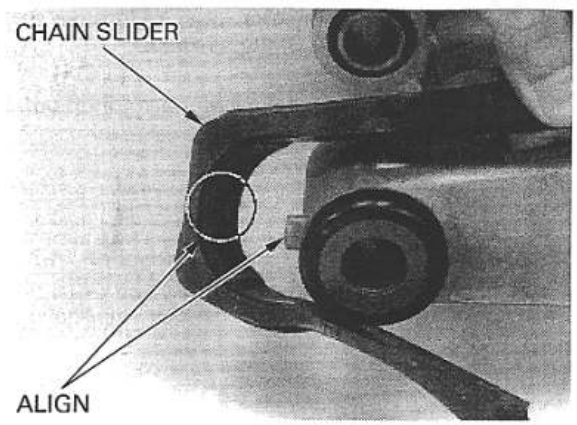
ASSEMBLY



Install the following:
- Dust seals
- Pivot collars
- Dust seal caps

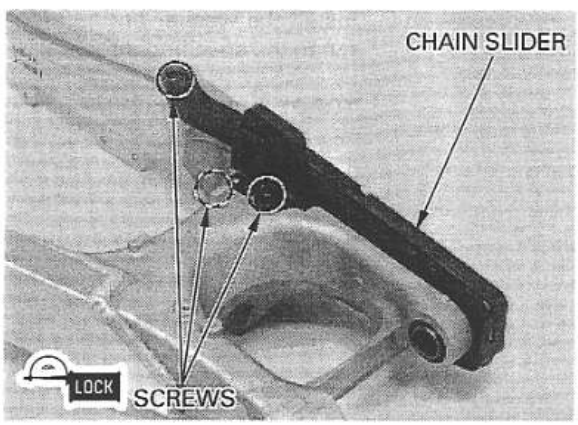


Install the chain slider with its cut-out and tab on the swingarm.



Clean and apply a locking agent to the screw threads.
Install and tighten the screws to the specified torque.

TORQUE: 4 N·m (0.4 kgf·m , 2.9 lbf·ft)



INSTALLATION

Install the swingarm onto the frame.
Temporarily install the swingarm pivot shaft from the left side.

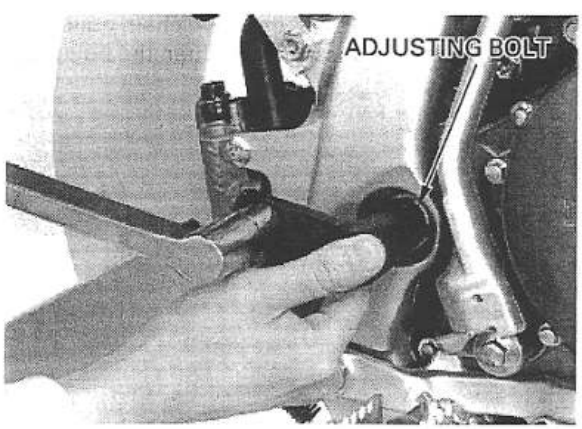
Install and tighten the adjusting bolt to the specified torque.

TOOL:
Lock nut wrench, 20 mm 07VMA-MBB0100

TORQUE: 12 N·m (1.2 kgf·m , 9 lbf·ft)

Loosen the adjusting bolt to the torque of 0 N·m (0 kgf·m, 0 lbf·ft), then retighten the bolt to the specified torque.

TORQUE: 7 N·m (0.7 kgf·m , 5.1 lbf·ft)

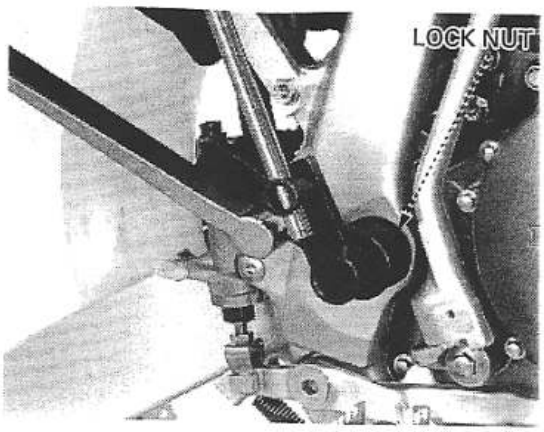


Install and tighten the lock nut to the specified torque.

TOOL:
Lock nut wrench 07KMA-KAB0100

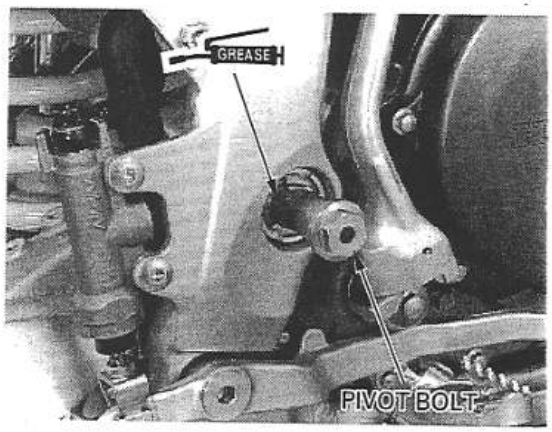
TORQUE: 64 N·m (6.5 kgf·m , 47 lbf·ft)

Remove the swingarm pivot shaft.



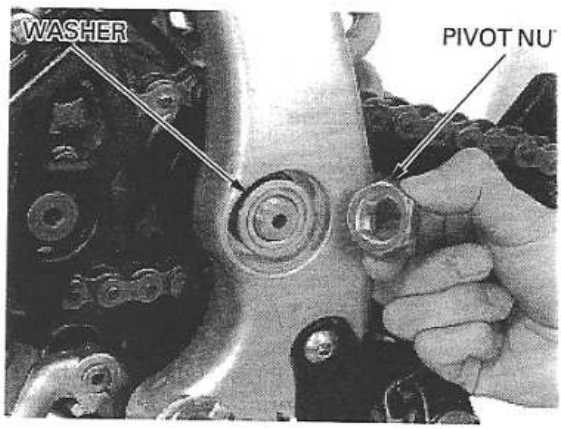
Apply thin coat of grease to the swingarm pivot bolt sliding surface.

Install the swingarm pivot bolt from the right side.

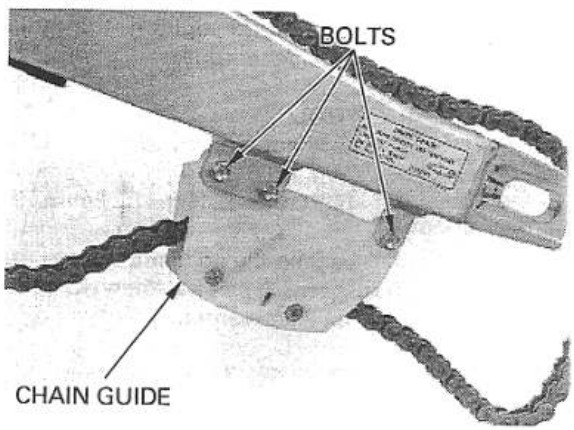


Install the washer and tighten the swingarm pivot nut to the specified torque.

TORQUE: 108 N·m (11.0 kgf·m , 80 lbf·ft)

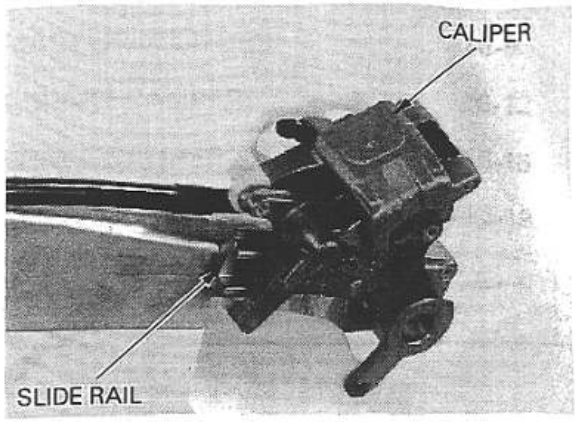


Install the drive chain guide.
Install and tighten the bolts securely.

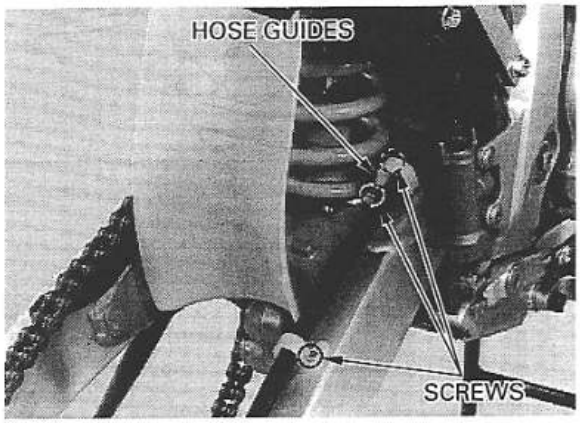


Do not twist the brake hose.

Install the rear brake caliper to the slide rail on the swingarm.



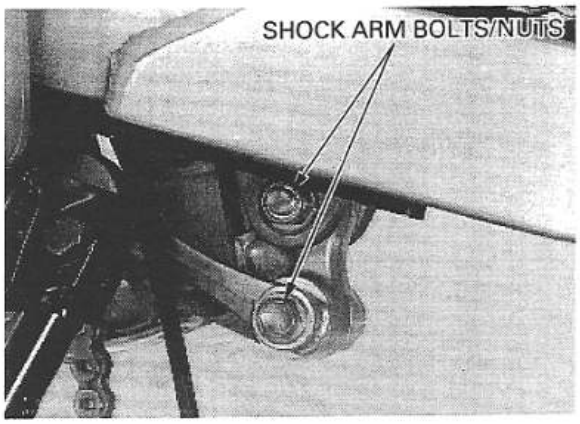
Install the brake hose guides.
Install and tighten the screws.

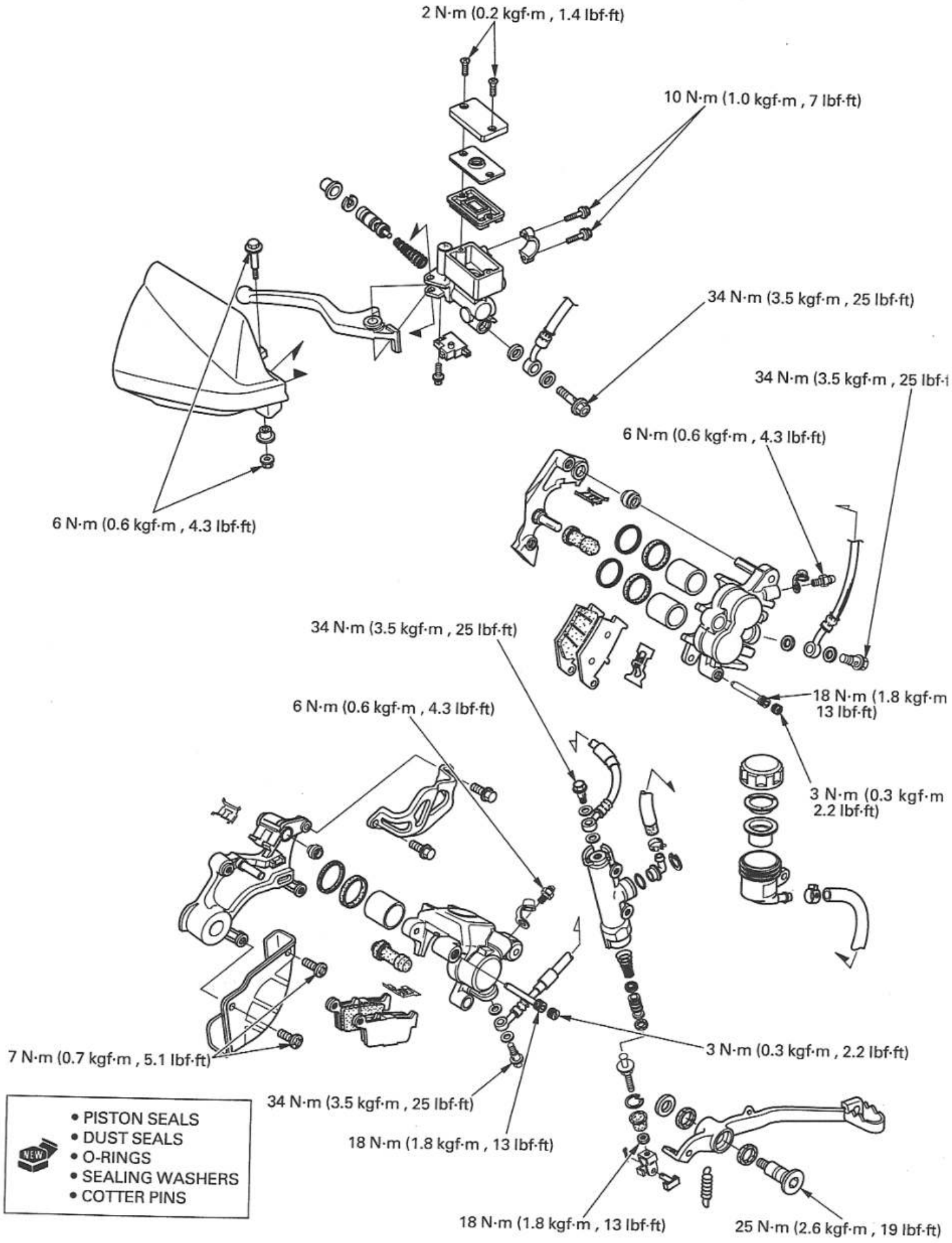


Install the shock arm bolts and nuts.
Tighten the nuts to the specified torque.

TORQUE:
Shock arm nut (shock link side):
69 N·m (7.0 kgf·m , 51 lbf·ft)
Shock arm nut (swingarm side):
78 N·m (8.0 kgf·m , 58 lbf·ft)

Install the rear wheel (page 15-8).




2 N·m (0.2 kgf·m , 1.4 lbf·ft)
10 N·m (1.0 kgf·m , 7 lbf·ft)
34 N·m (3.5 kgf·m , 25 lbf·ft)
34 N·m (3.5 kgf·m , 25 lbf·ft)
6 N·m (0.6 kgf·m , 4.3 lbf·ft)
6 N·m (0.6 kgf·m , 4.3 lbf·ft)
34 N·m (3.5 kgf·m , 25 lbf·ft)
18 N·m (1.8 kgf·m , 13 lbf·ft)
6 N·m (0.6 kgf·m , 4.3 lbf·ft)
3 N·m (0.3 kgf·m , 2.2 lbf·ft)
7 N·m (0.7 kgf·m , 5.1 lbf·ft)
3 N·m (0.3 kgf·m , 2.2 lbf·ft)
34 N·m (3.5 kgf·m , 25 lbf·ft)
18 N·m (1.8 kgf·m , 13 lbf·ft)
18 N·m (1.8 kgf·m , 13 lbf·ft)
25 N·m (2.6 kgf·m , 19 lbf·ft)
NEW
• PISTON SEALS
• DUST SEALS
• O-RINGS
• SEALING WASHERS
• COTTER PINS

16. HYDRAULIC BRAKE

SERVICE INFORMATION	16-1	REAR MASTER CYLINDER	16-9
TROUBLESHOOTING	16-2	FRONT BRAKE CALIPER	16-12
BRAKE FLUID REPLACEMENT/ AIR BLEEDING	16-3	REAR BRAKE CALIPER	16-15
BRAKE PAD/DISC	16-5	BRAKE PEDAL	16-19
FRONT MASTER CYLINDER	16-7		

SERVICE INFORMATION

GENERAL

- Keep grease off of brake pads and disc.

⚠WARNING

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

- Never allow contaminates (dirt, water, etc.) to get into an open reservoir.
- Once the hydraulic system has been opened, or if the brake feels spongy, the system must be bled.
- Always use fresh DOT 4 brake fluid from a sealed container when servicing the system. Do not mix different types of fluid they may not be compatible.

CAUTION:

Spilled brake fluid will severely damage instrument lenses and painted surfaces. It is also harmful to some rubber parts. Be careful whenever you remove the reservoir cap; make sure the front reservoir is horizontal first.

- Always check brake operation before riding the motorcycle.

SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Front	Specified brake fluid		DOT 4	———
	Brake pad wear		———	To the indicator
	Brake disc thickness	ED, DK types	2.8–3.2 (0.11–0.13)	2.5 (0.10)
		U type	3.3–3.7 (0.13–0.15)	3.0 (0.12)
	Brake disc runout		———	0.20 (0.008)
	Master cylinder I.D.		12.700–12.743 (0.5000–0.5017)	12.76 (0.502)
	Master piston O.D.		12.657–12.684 (0.4983–0.4994)	12.64 (0.498)
	Caliper cylinder I.D.		27.000–27.050 (1.0630–1.0650)	27.06 (1.065)
	Caliper piston O.D.	ED, DK types	26.900–26.950 (1.0591–1.0610)	26.89 (1.059)
		U type	26.935–26.968 (1.0604–1.0617)	26.91 (1.059)
Rear	Specified brake fluid		DOT 4	———
	Brake pad wear		———	To the indicator
	Brake disc thickness	ED, DK types	3.8–4.2 (0.15–0.17)	3.5 (0.14)
		U type	4.3–4.7 (0.17–0.19)	4.0 (0.16)
	Brake disc runout		———	0.30 (0.012)
	Master cylinder I.D.		12.700–12.743 (0.5000–0.5017)	12.76 (0.502)
	Master piston O.D.		12.657–12.684 (0.4983–0.4994)	12.64 (0.498)
	Caliper cylinder I.D.		27.000–27.050 (1.0630–1.0650)	27.06 (1.065)
	Caliper piston O.D.		26.935–26.968 (1.0604–1.0617)	26.89 (1.059)

TORQUE VALUES

Brake hose oil bolt	34 N·m (3.5 kgf·m , 25 lbf·ft)	
Brake lever pivot bolt/nut	6 N·m (0.6 kgf·m , 4.3 lbf·ft)	
Brake lever adjuster lock nut	6 N·m (0.6 kgf·m , 4.3 lbf·ft)	
Front master cylinder reservoir cover screw	2 N·m (0.2 kgf·m , 1.4 lbf·ft)	
Front master cylinder holder bolt	10 N·m (1.0 kgf·m , 7 lbf·ft)	
Front caliper mounting bolt	29 N·m (3.0 kgf·m , 22 lbf·ft)	Apply a locking agent to the threads
Caliper bleed valve	6 N·m (0.6 kgf·m , 4.3 lbf·ft)	
Rear brake disc cover screw	7 N·m (0.7 kgf·m , 5.1 lbf·ft)	Apply a locking agent to the threads
Rear master cylinder mounting bolt	12 N·m (1.2 kgf·m , 9 lbf·ft)	
Brake pad pin	18 N·m (1.8 kgf·m , 13 lbf·ft)	
Pad pin plug	3 N·m (0.3 kgf·m , 2.2 lbf·ft)	
Front caliper pin bolt A	23 N·m (2.3 kgf·m , 17 lbf·ft)	Apply a locking agent to the threads
Front caliper bracket pin bolt	23 N·m (2.3 kgf·m , 17 lbf·ft)	Apply a locking agent to the threads
Rear caliper pin bolt	27 N·m (2.8 kgf·m , 20 lbf·ft)	
Rear caliper bracket pin bolt	13 N·m (1.3 kgf·m , 9 lbf·ft)	Apply a locking agent to the threads
Brake pedal pivot bolt	25 N·m (2.6 kgf·m , 19 lbf·ft)	
Rear master cylinder push rod lock nut	18 N·m (1.8 kgf·m , 13 lbf·ft)	

TOOL

Snap ring pliers	07914-SA50001

TROUBLESHOOTING

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

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

Brake drags
- Contaminated brake pads/disc
- Misaligned wheel
- Clogged/restricted brake hose joint
- Warped/deformed brake disc
- Caliper not sliding properly
- Clogged/restricted brake hydraulic system
- Sticking/worn caliper piston
- Clogged master cylinder port

BRAKE FLUID REPLACEMENT/ AIR BLEEDING

⚠WARNING

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

CAUTION:

- ***Do not allow foreign material to enter the system when filling the reservoir.***
- ***Avoid spilling fluid on painted, plastic, or rubber parts. Place a rag over these parts whenever the system is serviced.***

NOTE:

- Once the hydraulic system has been opened, or if the brake feels spongy, the system must be bled.
- When using a commercially available brake bleeder, follow the manufacturer's operating instructions.

BRAKE FLUID DRAINING

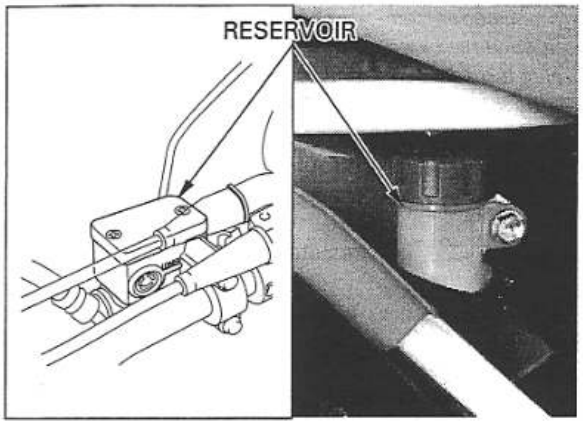
Make sure that the master cylinder or reservoir is parallel to the ground, before removing the reservoir cover and cap.

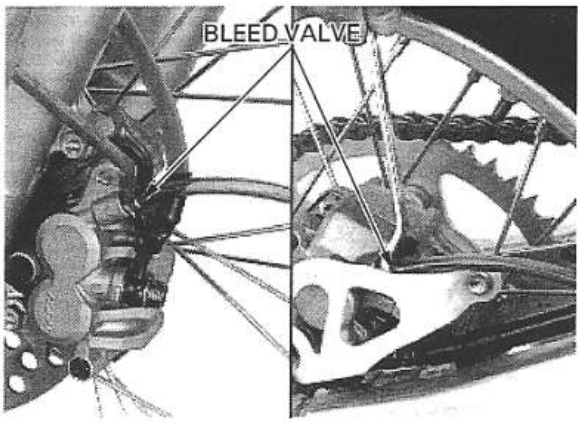
FRONT:
Remove the screws, master cylinder reservoir cover and diaphragm.

REAR:
Remove the right side cover (page 2-2).
Remove the reservoir cap, set plate and diaphragm.

Connect a bleed hose to the bleed valve.

Loosen the bleed valve and pump the brake lever (pedal).
Stop operating the brake when no more fluid flows out of the bleed valve.



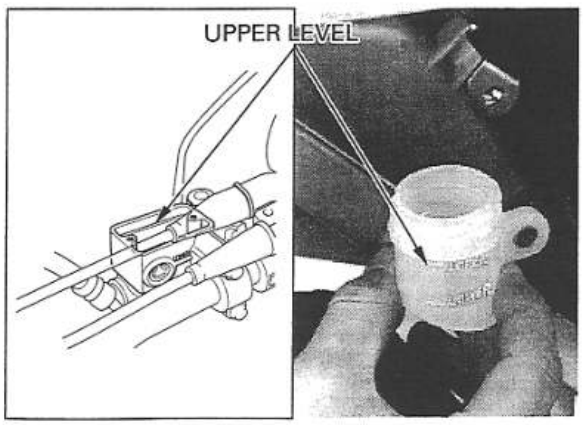


BRAKE FLUID FILLING/AIR BLEEDING

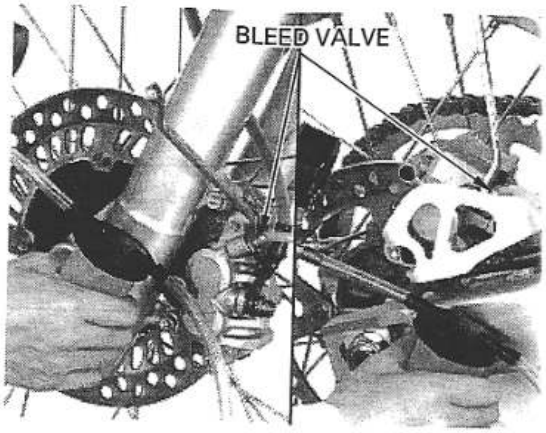
CAUTION:

Do not mix different types of fluid since they are not compatible.

Fill the master cylinder with DOT 4 brake fluid to the upper level.



Connect the Mityvac Brake Bleeder No. 6860 or equivalent to the bleed valve.



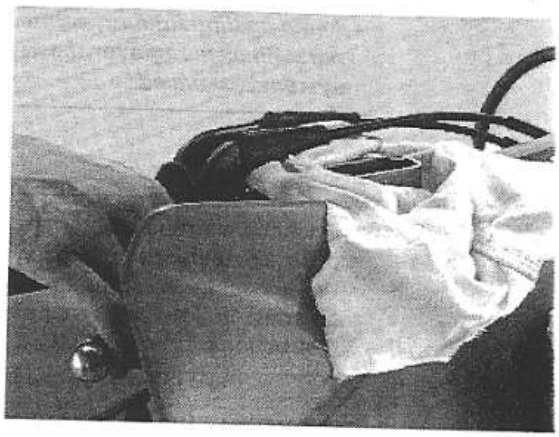
NOTE:

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

Pump the brake bleeder and loosen the bleed valve. Add fluid when the fluid level in the reservoir is low.

If air enters the bleeder from around the bleed valve threads, seal the threads with teflon tape.

Repeat the above procedures until no air bubbles appear in the plastic hose.



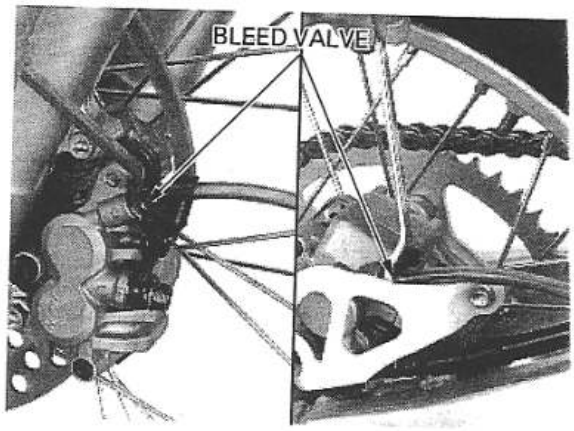
If the brake bleeder is not available, perform the following procedure.

Pump up the system pressure with the lever until these are not air bubbles in the fluid flowing out of the reservoir small hole and lever (pedal) resistance is felt.

1. Pump the brake lever or pedal several times, then squeeze the brake lever or pedal all the way and loosen the bleed valve 1/2 turn.
   Wait several seconds and close the bleed valve.

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

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



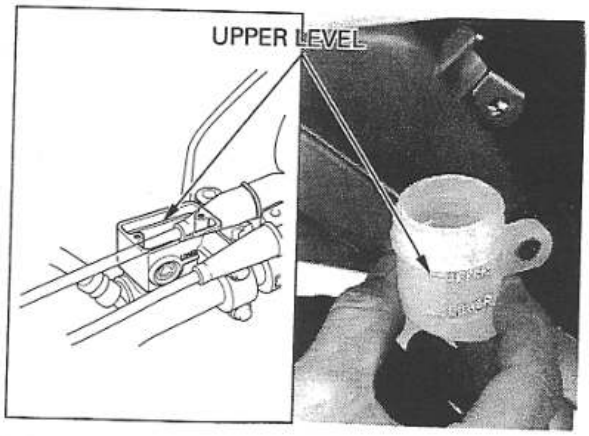
3. Repeat the steps 1−2 until there are no air bubbles in the bleed hose.

After bleeding air completely, tighten the bleed valves to the specified torque.

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

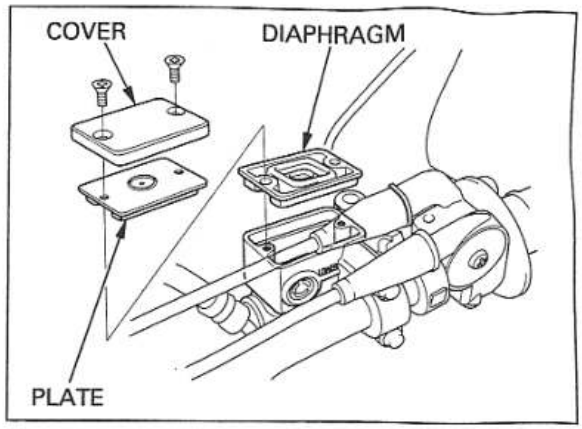
FRONT:
Fill the master cylinder reservoir with DOT 4 brake fluid from a sealed container to the top of the casting ledge.

REAR:
Fill the reservoir to the upper level line with DOT 4 brake fluid from a sealed container.

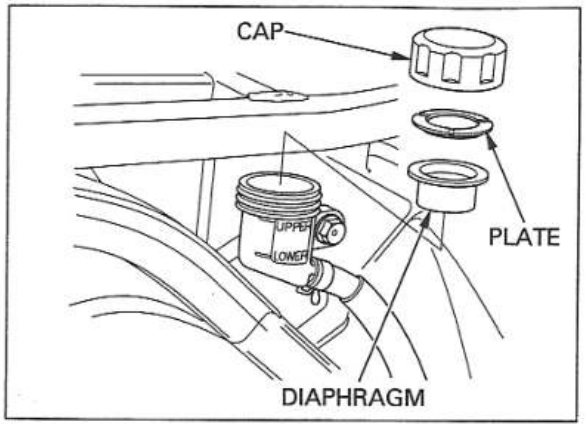


FRONT:
Install the diaphragm and reservoir cover.
Tighten the reservoir cover screws to the specified torque.

TORQUE: 2 N·m (0.2 kgf·m , 1.4 lbf·ft)



REAR:
Install the diaphragm, set plate and reservoir cap.
Install the reservoir and tighten the bolt securely.



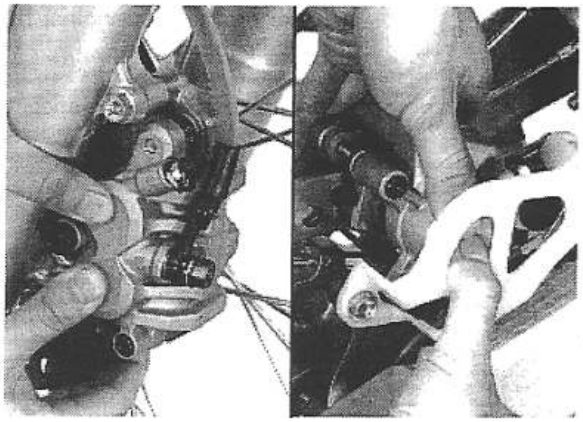
BRAKE PAD/DISC

BRAKE PAD REPLACEMENT

⚠WARNING

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

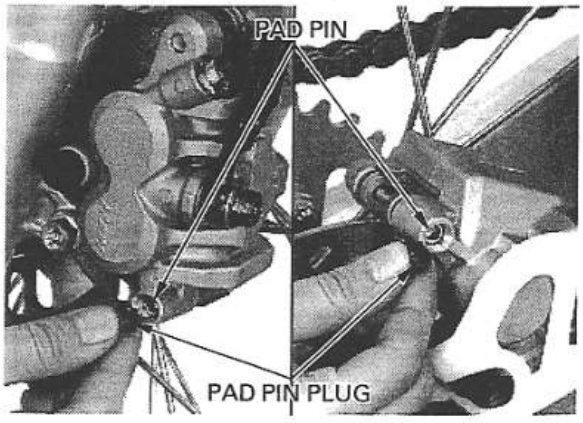
Push the caliper pistons all the way in to allow installation of new brake pads.



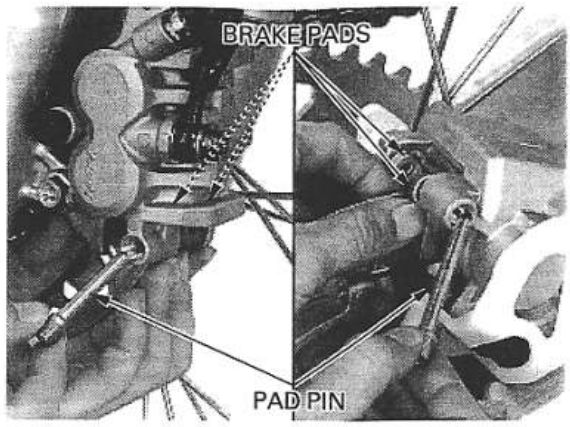
NOTE:

Check the brake fluid level in the brake master cylinder reservoir as this operation causes the level to rise.

Remove the pad pin plug and loosen the pad pin.

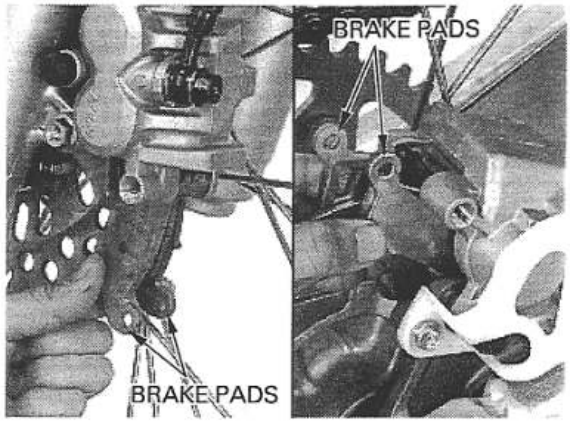


Remove the pad pin and brake pads.



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

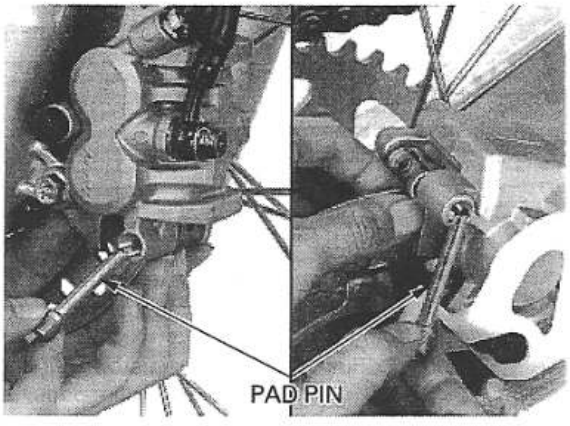
Install the new brake pads to the pad retainer securely.



Push the brake pads against the pad spring, then install the pad pin.

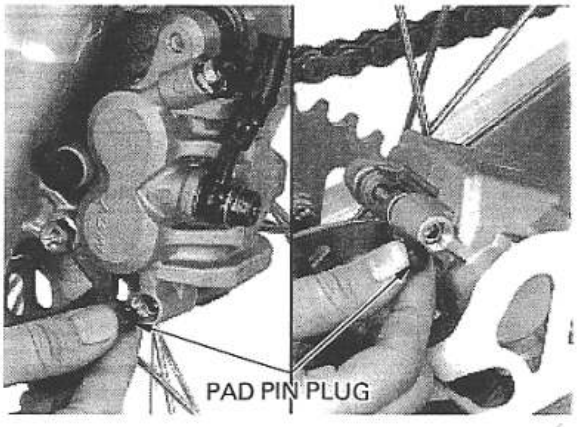
Tighten the pad pin to the specified torque.

TORQUE: 18 N·m (1.8 kgf·m , 13 lbf·ft)



Install and tighten the pad pin plug.

TORQUE: 3 N·m (0.3 kgf·m , 2.2 lbf·ft)



BRAKE DISC INSPECTION

Visually inspect the brake disc for damage or cracks.

Measure the brake disc thickness with a micrometer.

SERVICE LIMITS:

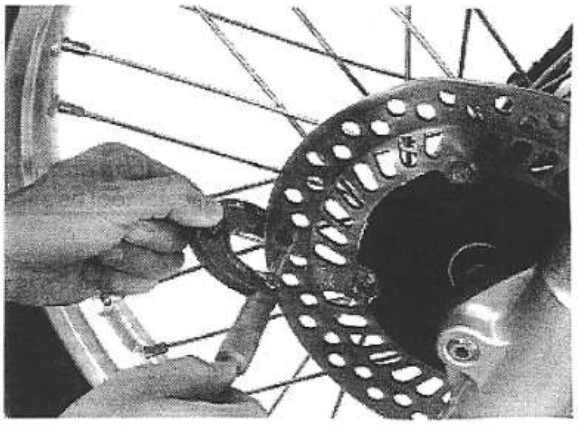
FRONT:	**ED, DK types:**	2.5 mm (0.10 in)
	U type:	3.0 mm (0.12 in)
REAR:	**ED, DK types:**	3.5 mm (0.14 in)
	U type:	4.0 mm (0.16 in)

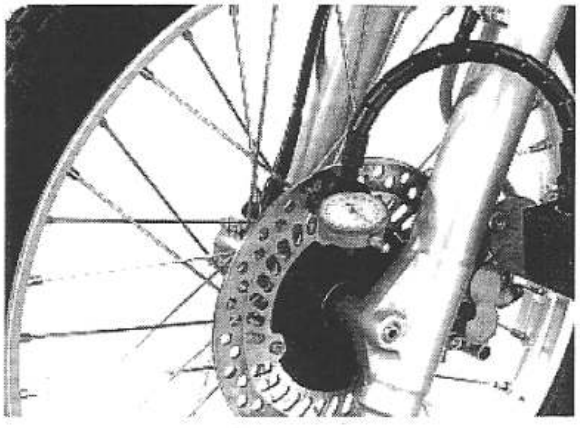
Replace the brake disc if the smallest measurement is less than the service limit.

Measure the brake disc warpage with a dial indicator.

SERVICE LIMIT: 0.15 mm (0.006 in)

Check the wheel bearings for excessive play, if the warpage exceeds the service limit.
Replace the brake disc if the wheel bearings are normal.





FRONT MASTER CYLINDER

REMOVAL

CAUTION:

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

NOTE:

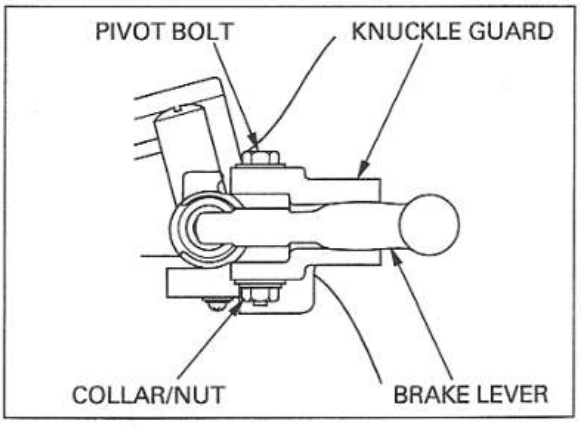
When removing the brake hose bolt, cover the end of the hose to prevent contamination. Secure the hose to prevent fluid from leaking out.

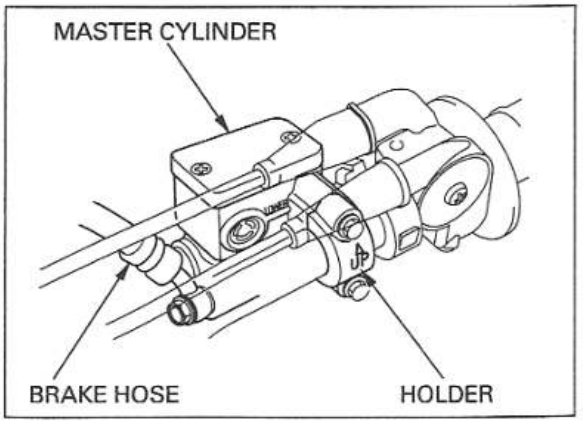
Drain the brake fluid from the front hydraulic system (page 16-3).

Remove the brake lever pivot bolt and nut while holding the brake lever, then remove the brake lever and knucle guard.

Disconnect the brake hose from the master cylinder by removing the oil bolt and sealing washers.

Remove the master cylinder holder bolts, holder and the master cylinder.





DISASSEMBLY

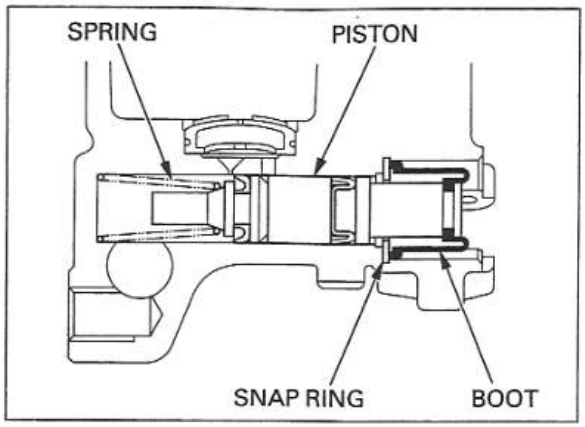
Remove the piston boot from the master piston and cylinder.

Remove the snap ring from the master cylinder body using a special tool as shown.

TOOL:
Snap ring pliers 07914-SA50001

Remove the master piston and spring.

Clean the inside of the cylinder and reservoir with clean brake fluid.



INSPECTION

Check the piston cups for wear, deterioration or damage.

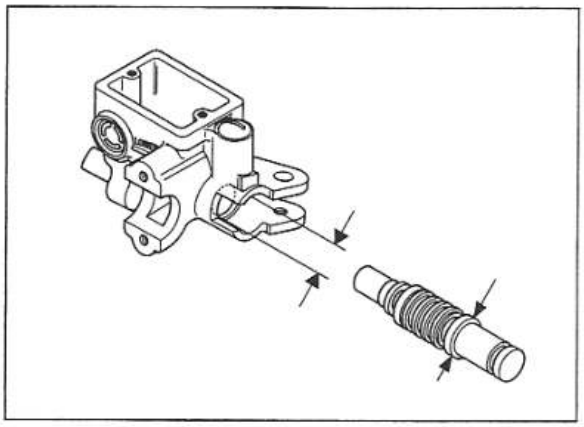
Check the master cylinder and piston for scoring or damage.

Measure the master cylinder I.D.

SERVICE LIMIT: 12.76 mm (0.502 in)

Measure the master piston O.D.

SERVICE LIMIT: 12.64 mm (0.498 in)



ASSEMBLY

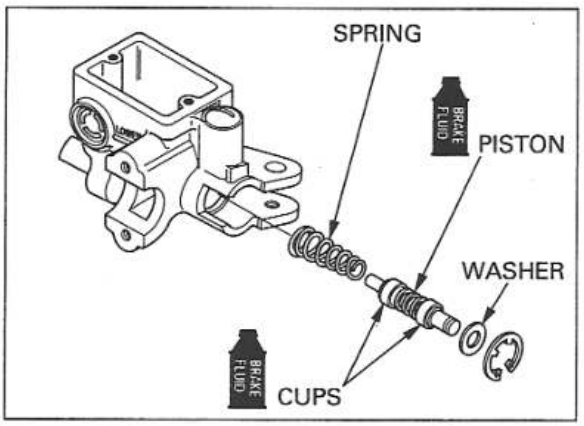
CAUTION:

Keep the piston, cups, spring, snap ring and boot as a set; do not substitute individual parts.

Coat all parts with clean brake fluid before assembly.
Dip the piston in brake fluid.
Install the spring to the piston.
Install the piston assembly into the master cylinder.

CAUTION:

When installing the cups, do not allow the lips to turn inside out.



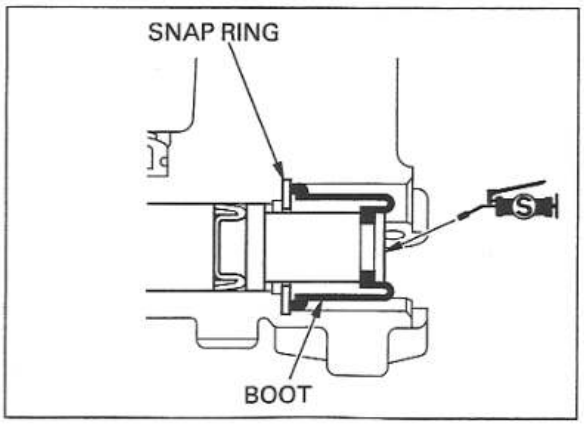
Install the snap ring using a special tool.

CAUTION:

Be certain the snap ring is firmly seated in the groove.

TOOL:
Snap ring pliers 07914-SA50001

Apply silicone grease to the inside of the boot.
Install the boot to the master cylinder.



INSTALLATION

Place the master cylinder assembly on the handlebar.
Align the end of the master cylinder with the punch mark on the handlebar.

Install the master cylinder holder with the "UP" mark facing up.
Tighten the upper bolt first, then tighten the lower bolt.

TORQUE: 10 N·m (1.0 kgf·m , 7 lbf·ft)

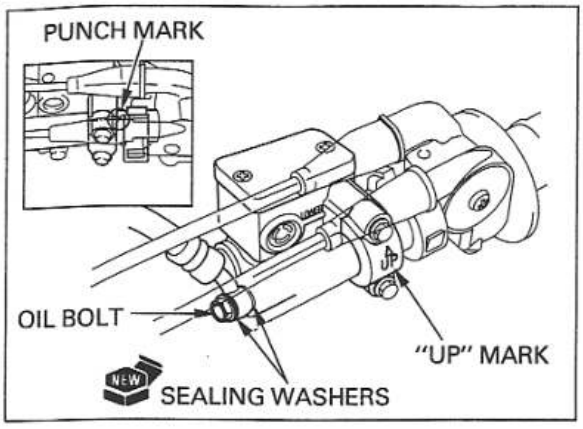
Connect the brake hose to the master cylinder with the oil bolt and new sealing washers, and tighten the oil bolt.

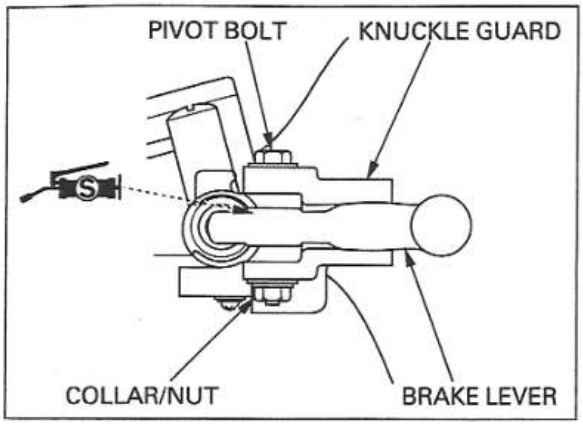
TORQUE: 34 N·m (3.5 kgf·m , 25 lbf·ft)

Apply silicone grease to the brake lever pivot.
Set the brake lever and knuckle guard onto the master cylinder and hold them, then install the pivot bolts aligning the bolt holes.
Install and tighten the pivot bolt and nut to the specified torque.

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

Fill the reservoir to the upper level and bleed the brake system (page 16-3).





REAR MASTER CYLINDER

REMOVAL

CAUTION:

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

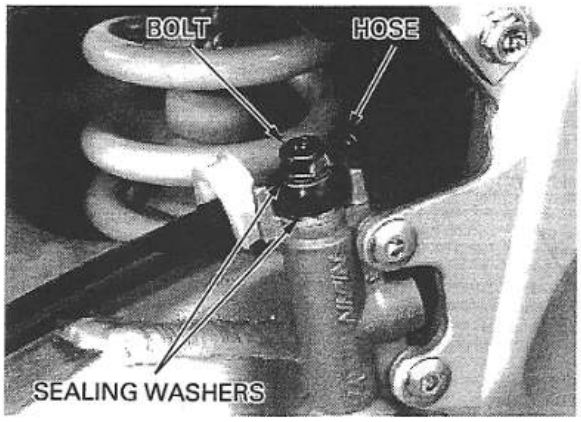
NOTE:

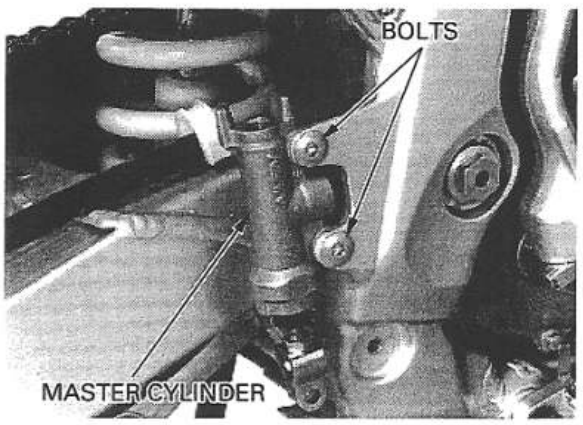
When removing the brake hose bolt, cover the end of the hose to prevent contamination. Secure the hose to prevent fluid from leaking out.

Drain the brake hydraulic system (page 16-3).
Remove the brake pedal (page 16-19).

Remove the brake hose oil bolt, sealing washers and brake hose.

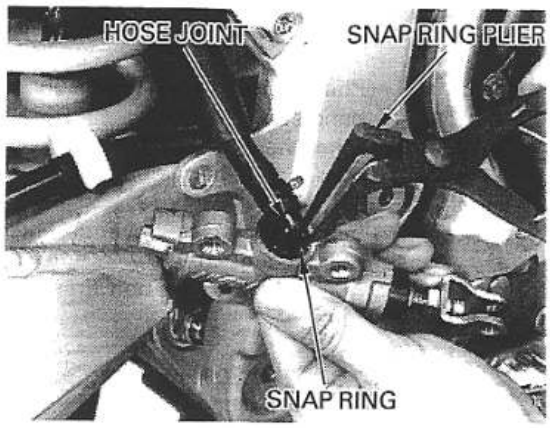
Remove the rear master cylinder mounting bolts.





Remove the snap ring and disconnect the reservoir hose joint from the master cylinder.

TOOL:
Snap ring pliers 07914-SA50001

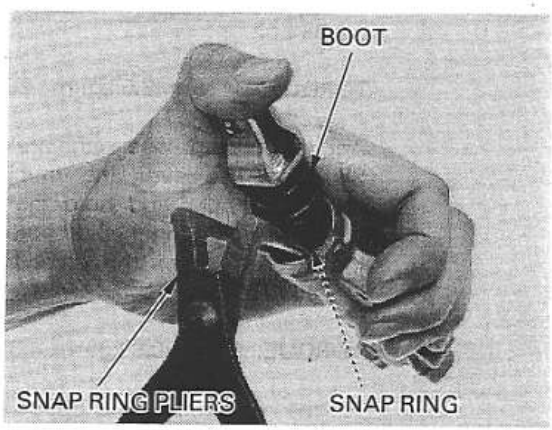


DISASSEMBLY

Remove the boot.

Remove the snap ring from the master cylinder body using a special tool as shown.

TOOL:
Snap ring pliers 07914-SA50001

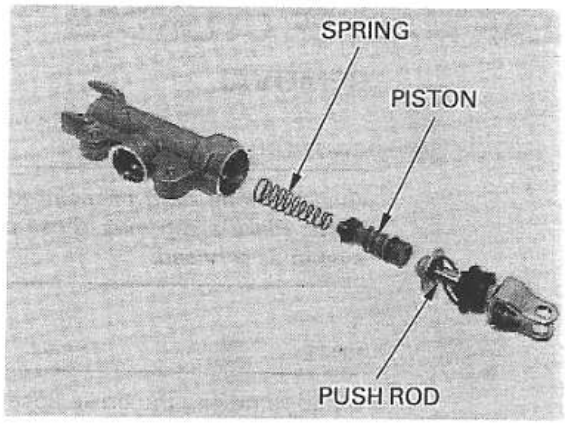


Remove the push rod, master piston and spring.

Clean the inside of the cylinder with brake fluid.

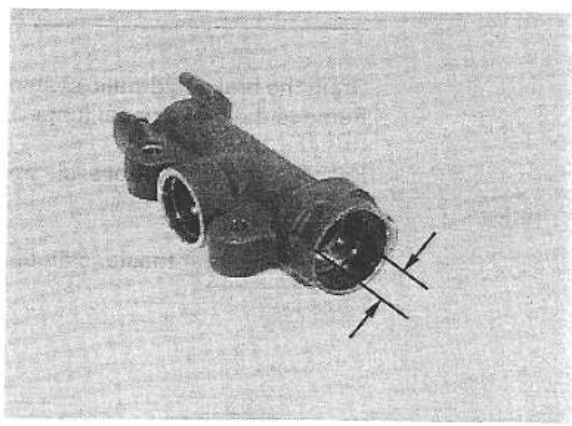
INSPECTION

Check the piston boot, primary cup and secondary cup for fatigue or damage.
Check the master cylinder and piston for abnormal scratches.



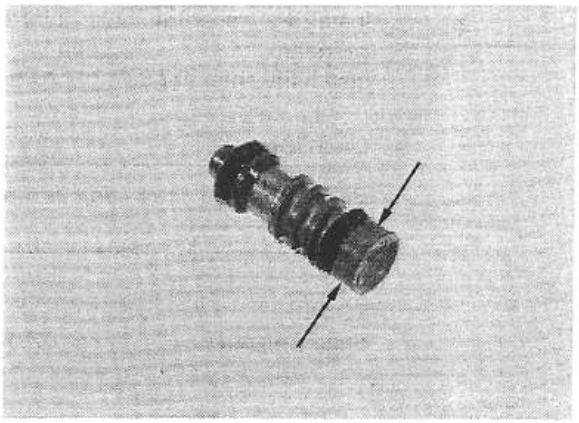
Measure the master cylinder I.D.

SERVICE LIMIT: 12.76 mm (0.502 in)



Measure the master cylinder piston O.D.

SERVICE LIMIT: 12.64 mm (0.498 in)

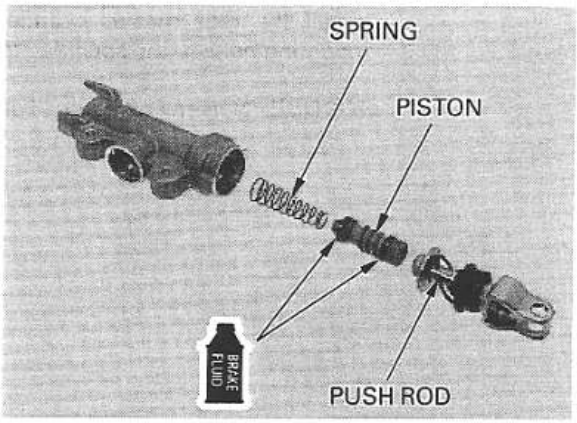


ASSEMBLY

CAUTION:

Keep the piston, cups, spring, snap ring and boot as a set; do not substitute individual parts.

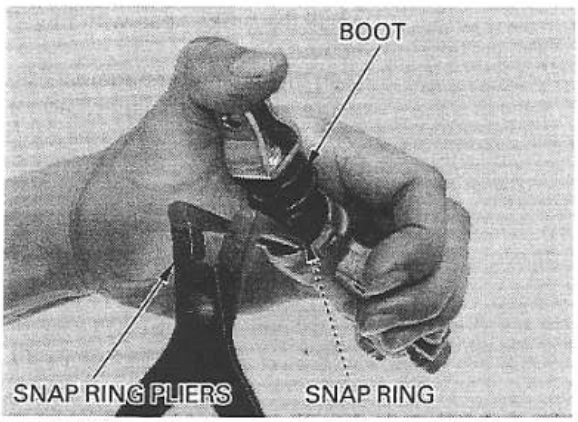
Coat all parts with clean brake fluid before assembly.
Dip the piston in brake fluid.
Install the spring to the piston.
Install the piston assembly.
Apply silicone grease to the piston contact area of the push rod.



CAUTION:

When installing the cups, do not allow the lips to turn inside out.

Install the push rod into the master cylinder.
Install the snap ring using a special tool.



CAUTION:

Be certain the snap ring is firmly seated in the groove.

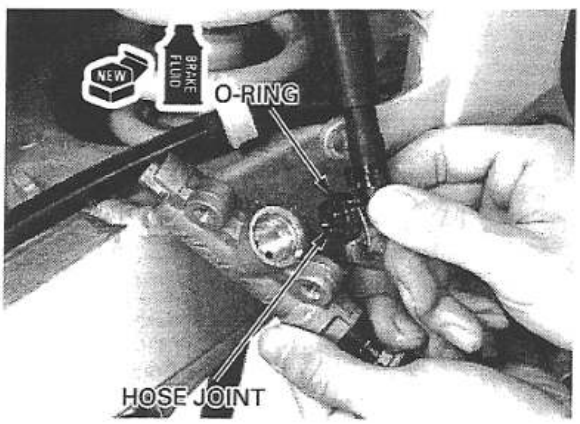
TOOL:

Snap ring pliers	07914-SA50001

Install the boot.

INSTALLATION

Apply brake fluid to a new O-ring and install it onto the reservoir hose joint.

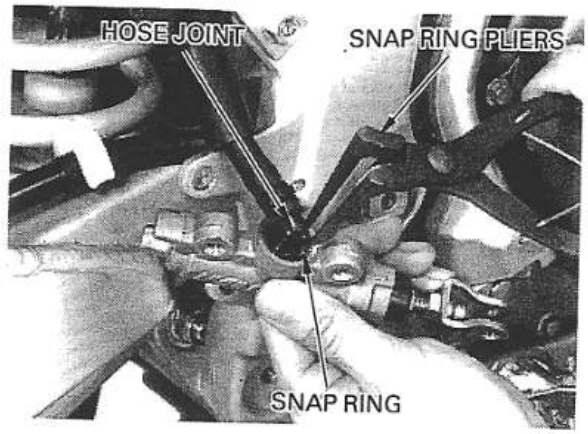


Install the reservoir hose joint to the rear master cylinder.
Install the snap ring using a special tool.

CAUTION:

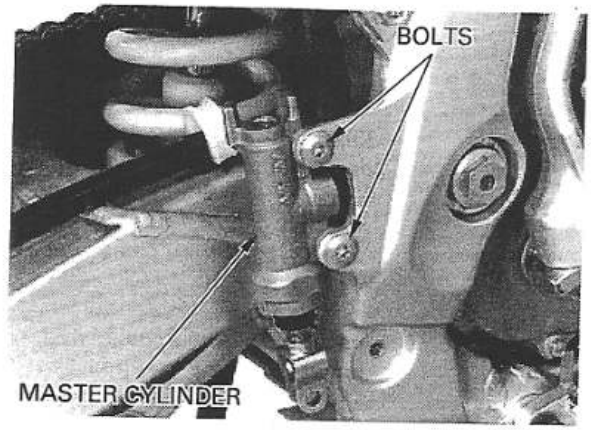
Be certain the snap ring is firmly seated in the groove.

TOOL:
Snap ring pliers 07914-SA50001



Install the rear master cylinder and tighten the mounting bolts to the specified torque.

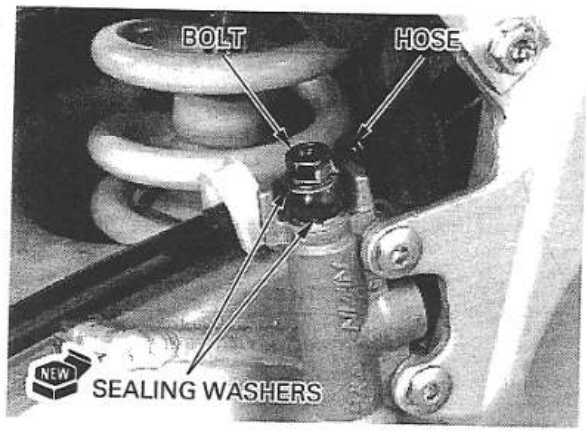
TORQUE: 12 N·m (1.2 kgf·m , 9 lbf·ft)



Install the brake hose with the oil bolt and new sealing washers.
Push the eyelet joint against the stopper, then tighten the oil bolt to the specified torque.

TORQUE: 34 N·m (3.5 kgf·m , 25 lbf·ft)

Install the brake pedal (page 16-19).
Fill the reservoir to the upper level and bleed the brake system (page 16-3).



FRONT BRAKE CALIPER

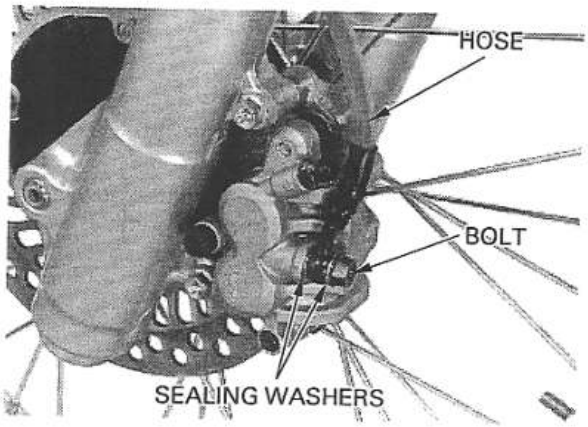
REMOVAL

CAUTION:

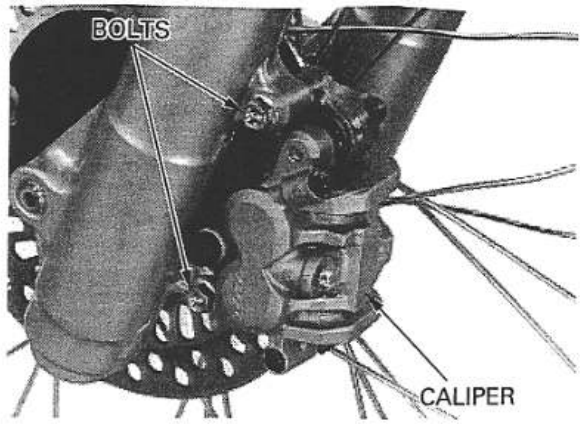
Avoid spilling fluid on painted, plastic, or rubber parts. Place a rag over these parts whenever the system is serviced.

Drain the front brake hydraulic system (page 16-3).
Remove the brake pads (page 16-5).

Remove the oil bolts, sealing washers and brake hose eyelet joint.



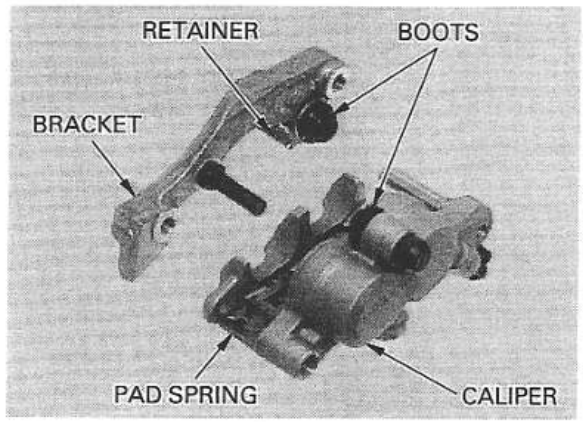
Remove the caliper mounting bolts, then remove the caliper and bracket as an assembly.



DISASSEMBLY

Remove the caliper bracket from the caliper body.

Remove the brake pad spring from the caliper body.
Remove the brake pad retainer from the caliper bracket.
Remove the caliper pin and bracket pin boots.

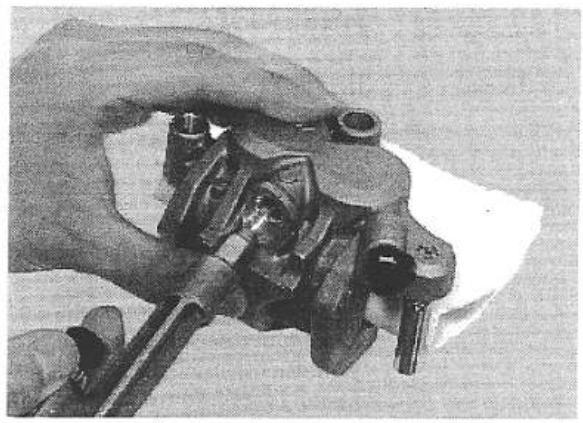


If necessary, lightly apply compressed air to the caliper fluid inlet to get the piston out.

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

⚠WARNING

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

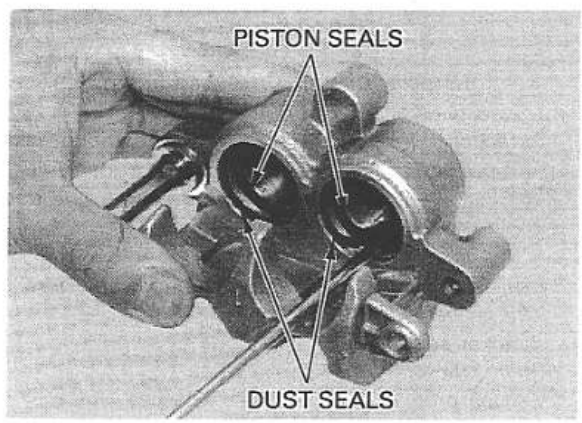


Push the dust seals and piston seals in and lift them out.

CAUTION:

Be careful not to damage the piston sliding surface.

Clean the seal grooves, caliper pistons and caliper piston sliding surfaces with clean brake fluid.

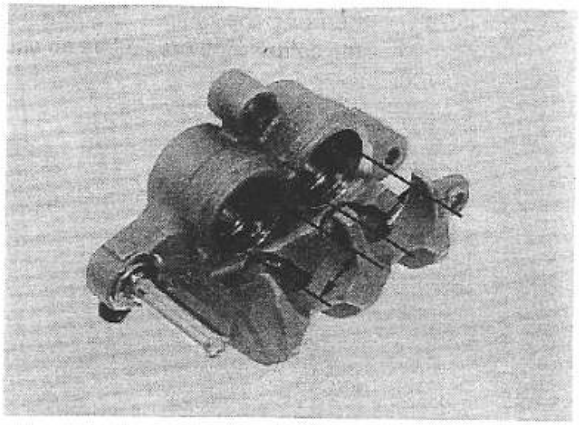


INSPECTION

Check the caliper cylinder and pistons for scoring, scratches or damage.

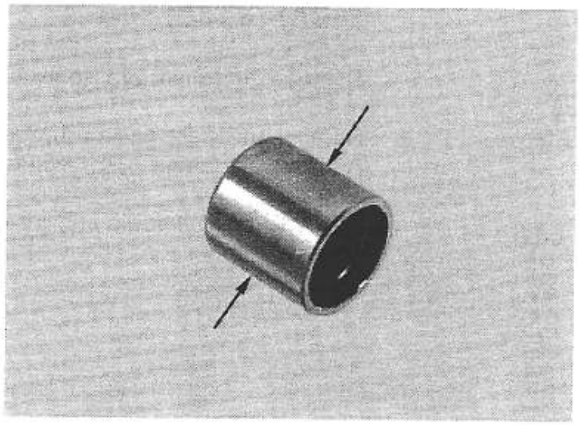
Measure the caliper cylinder I.D.

SERVICE LIMIT: 27.06 mm (1.065 in)



Measure the caliper piston O.D.

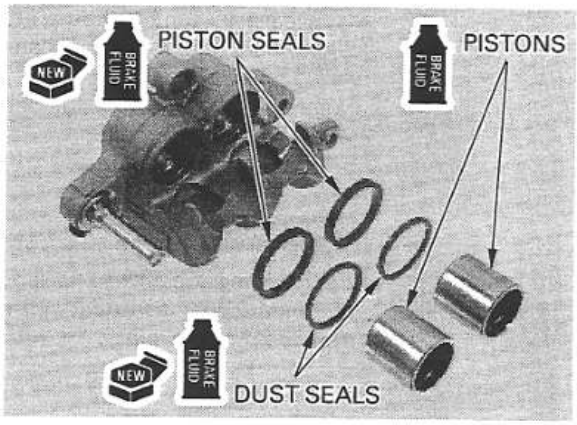
SERVICE LIMIT: ED, DK types: 26.89 mm (1.059 in)
U type: 26.91 mm (1.059 in)



ASSEMBLY

NOTE:

Be sure that each part is free from the dust or dirt before reassembly.



Coat the new piston seals and dust seals with clean brake fluid.
Install the new piston seals and dust seals into the groove of the caliper body.
Coat the caliper pistons with clean brake fluid and install them into the caliper cylinder with their open ends facing the pad.

Install the brake pad retainer onto the caliper bracket.

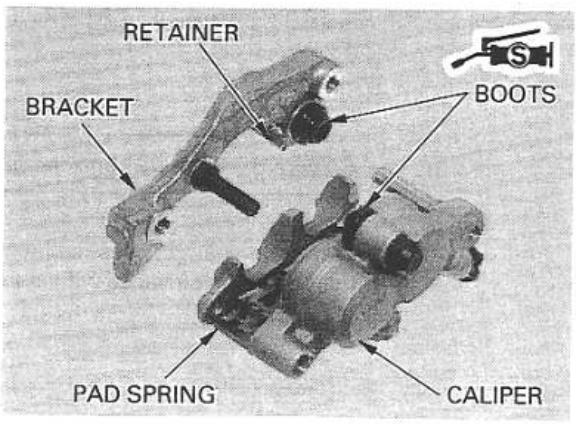
Note the installation direction of the pad spring.

Install the pad spring into the caliper body.

Replace the caliper and bracket pin boots if it is wear, deterioration or damage.
Apply silicone grease to the boot inside then install them.

When assembling the caliper and bracket, set the boot into the slide pin groove.

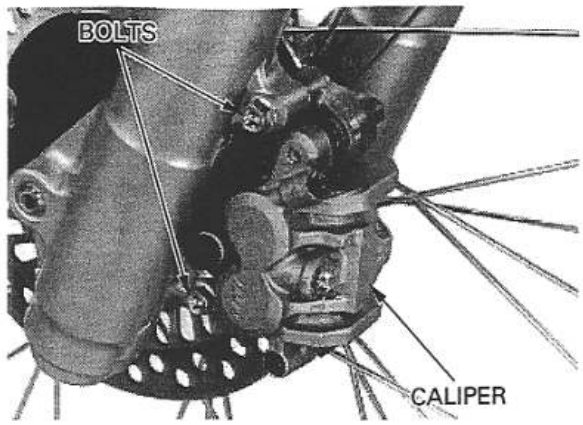
Assemble the caliper and bracket.



INSTALLATION

Install the caliper/bracket assembly to the fork leg.
Install and tighten the mounting bolts to the specified torque.

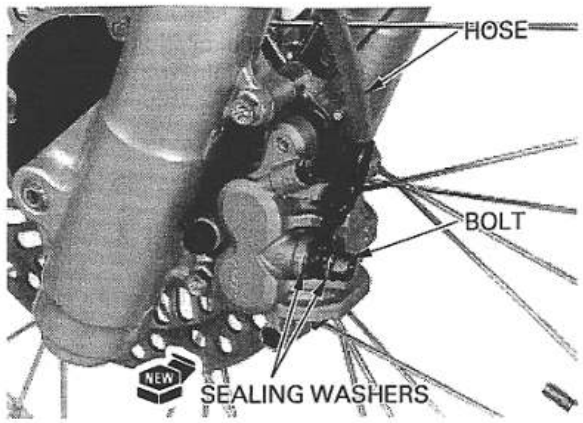
TORQUE: 29 N·m (3.0 kgf·m , 22 lbf·ft)



Install the brake hose eyelet to the caliper body with new sealing washers and oil bolt.
Push the brake hose eyelet to the stopper on the caliper, then tighten the oil bolt to the specified torque.

TORQUE: 34 N·m (3.5 kgf·m , 25 lbf·ft)

Install the brake pad (page 16-5)
Fill the reservoir to the upper level and bleed the brake system (page 16-3).



REAR BRAKE CALIPER

REMOVAL

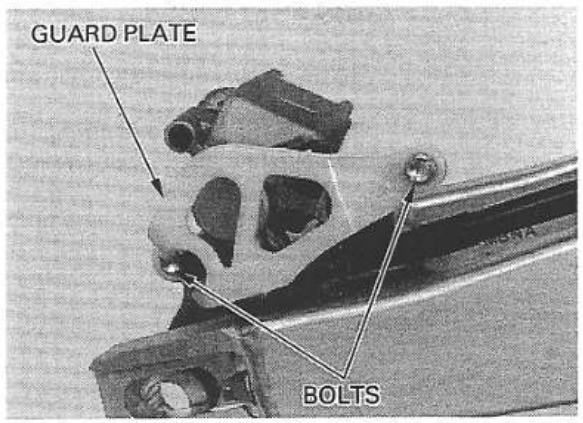
CAUTION:

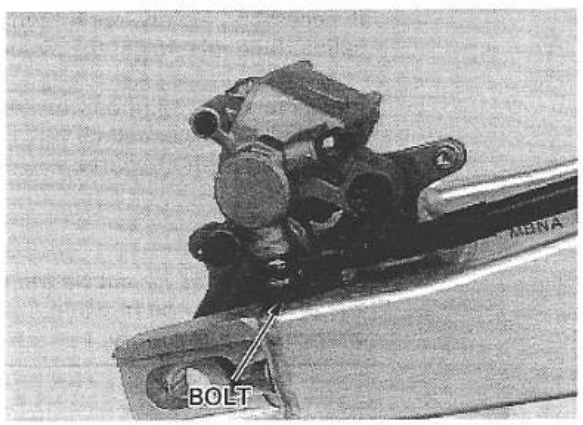
Avoid spilling fluid on painted, plastic, or rubber parts. Place a rag over these parts whenever the system is serviced.

Drain the rear brake hydraulic system (page 16-3).
Remove the brake pad (page 16-5).
Remove the rear wheel (page 15-4).

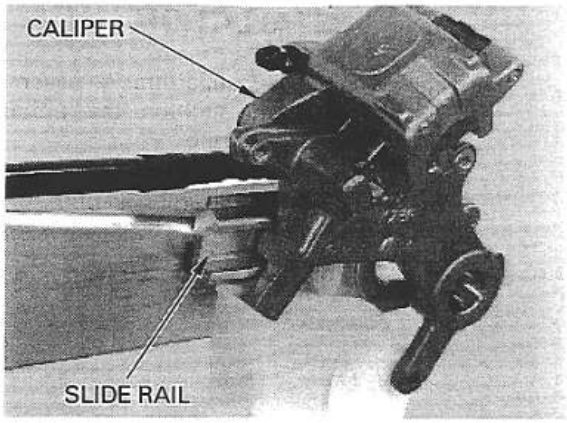
Remove the bolts and caliper guard plate.

Loosen the oil bolt.

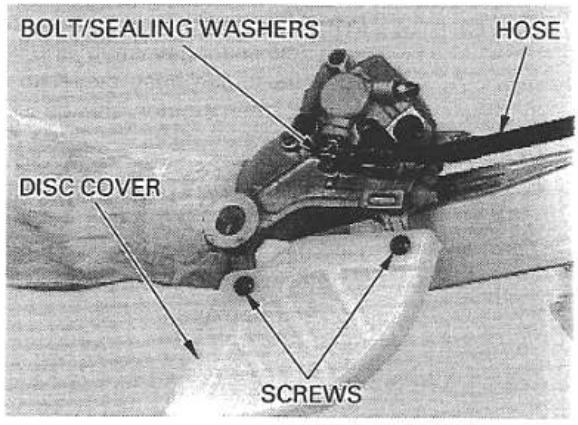




Slide the brake caliper rearward and pull it off of the slide rail on the swingarm.



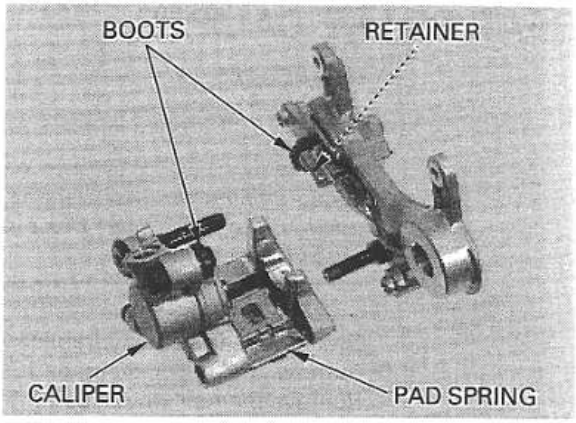
Remove the screws and brake disc cover.
Remove the oil bolt, sealing washers and brake hose eyelet joint from the caliper.



DISASSEMBLY

Remove the caliper bracket from the caliper body.

Remove the brake pad spring from the caliper body.
Remove the brake pad retainer from the caliper bracket.
Remove the caliper pin and bracket pin boots.

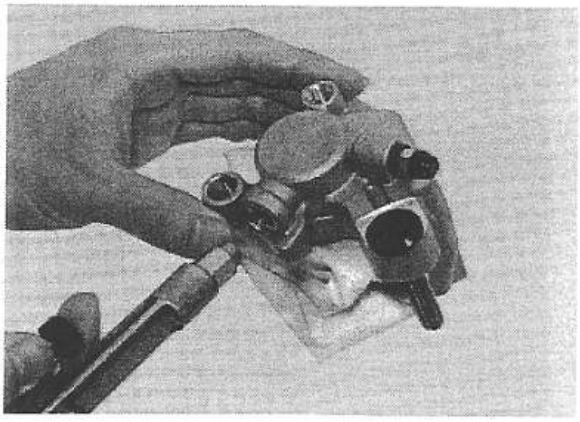


If necessary, lightly apply compressed air to the caliper fluid inlet to get the piston out.

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

⚠WARNING

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

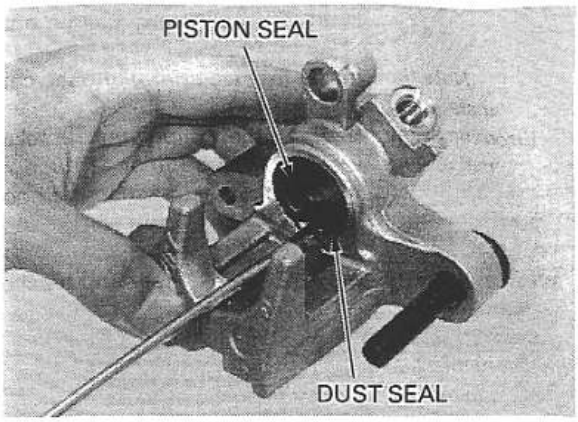


Push the dust seal and piston seal in and lift them out.

CAUTION:

Be careful not to damage the piston sliding surface.

Clean the seal grooves, caliper piston and caliper piston sliding surface with clean brake fluid.

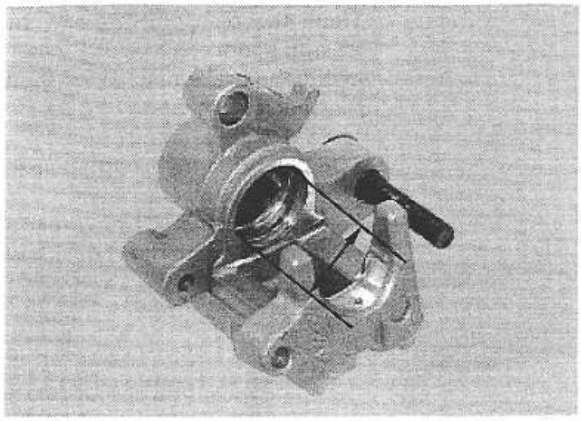


INSPECTION

Check the caliper cylinder and piston for scoring, scratches or damage.

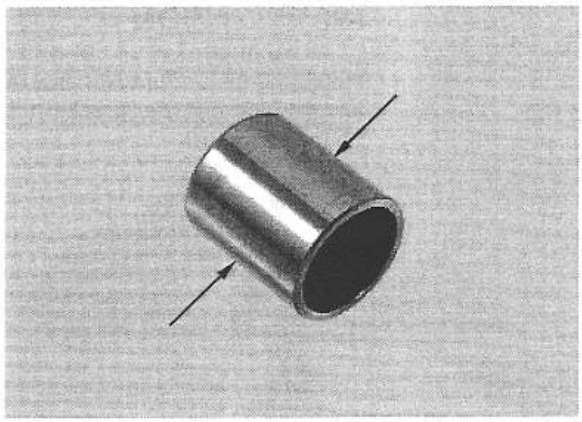
Measure the caliper cylinder I.D.

SERVICE LIMIT: 27.06 mm (1.065 in)



Measure the caliper piston O.D.

SERVICE LIMIT: 26.89 mm (1.059 in)

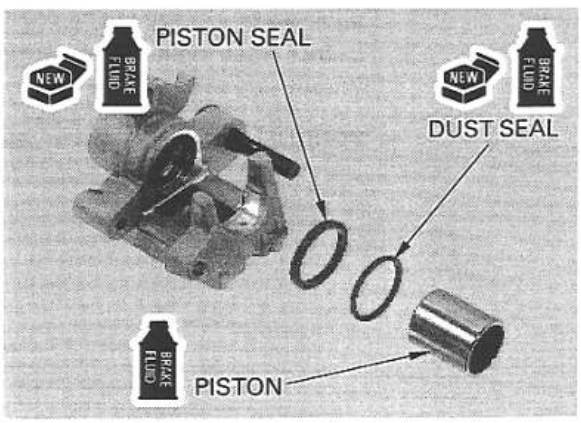


ASSEMBLY

NOTE:

Be sure that each part is free from the dust or dirt before reassembly.

Apply silicone grease to the boot inner surface.
Coat a new piston seal and dust seal with clean brake fluid.
Install the new piston seal and dust seal into the groove of the caliper body.
Coat a caliper piston with clean brake fluid and install it into the caliper cylinder with their open end facing the pad.



Install the brake pad retainer onto the caliper bracket.

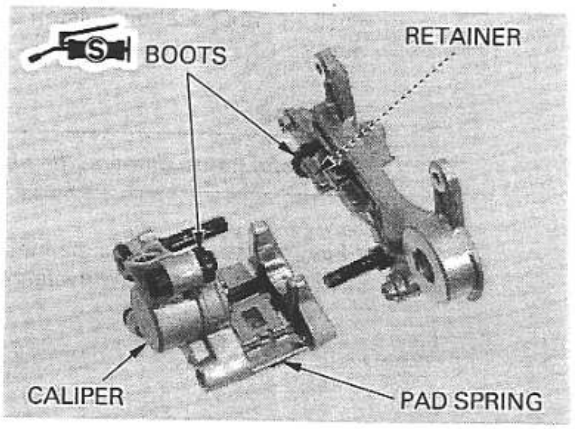
Note the installation direction of the pad spring.

Install the pad spring into the caliper body.

Replace the caliper and bracket pin boots if it is wear, deterioration or damage.
Apply silicone grease to the boot inside then install them.

When assembling the caliper and bracket, set the boot into the slide pin groove.

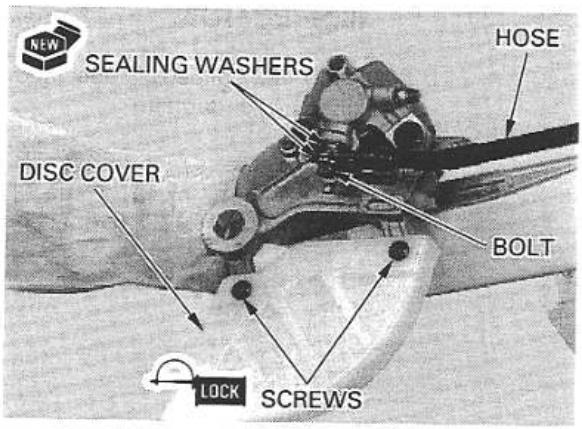
Assemble the caliper and bracket.



Clean the disc cover screw threads and apply a locking agent.
Install the brake disc cover and tighten the screw to the specified torque.

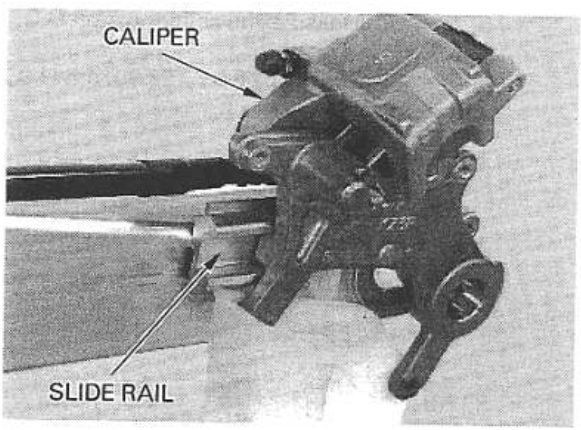
TORQUE: 7 N·m (0.7 kgf·m , 5.1 lbf·ft)

Temporarily install the brake hose eyelet to the caliper body with new sealing washers and oil bolt.



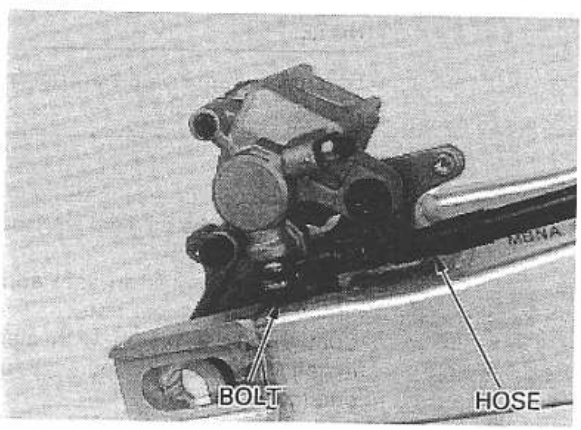
INSTALLATION

Install the caliper/bracket assembly onto the swingarm by aligning the bracket tab with the slide rail on the swingarm.



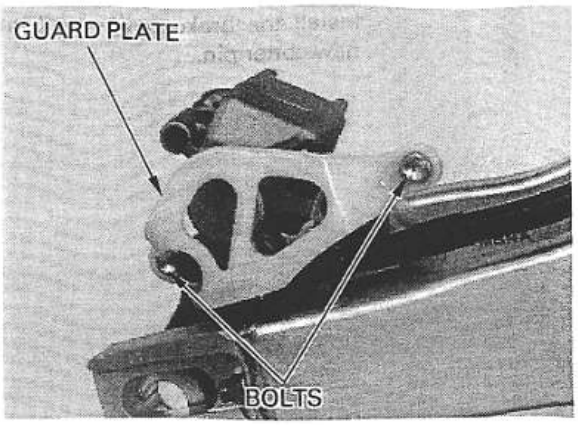
Push the brake hose eyelet to the stopper on the caliper, then tighten the oil bolt to the specified torque.

TORQUE: 34 N·m (3.5 kgf·m , 25 lbf·ft)



Install the caliper guard plate and tighten the bolts securely.

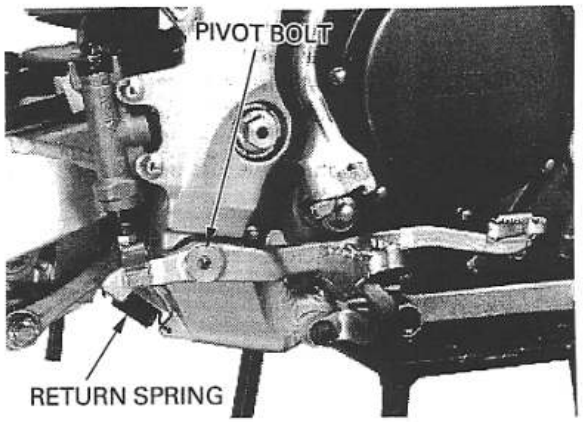
Install the rear wheel (page 15-8).
Install the brake pad (page 16-6).
Fill the rear brake reservoir to the upper level and bleed the brake system (page 16-3).



BRAKE PEDAL

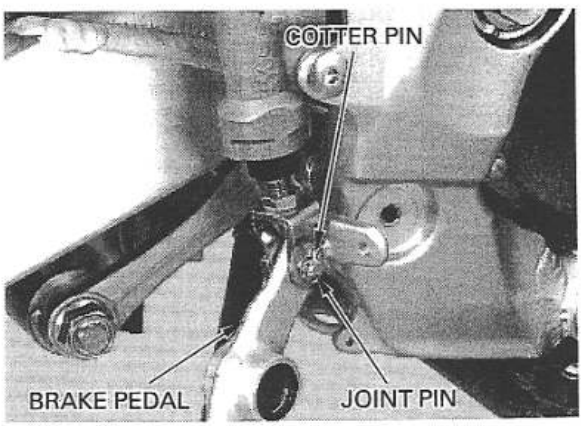
REMOVAL

Remove the rear brake pedal pivot bolt and return spring.



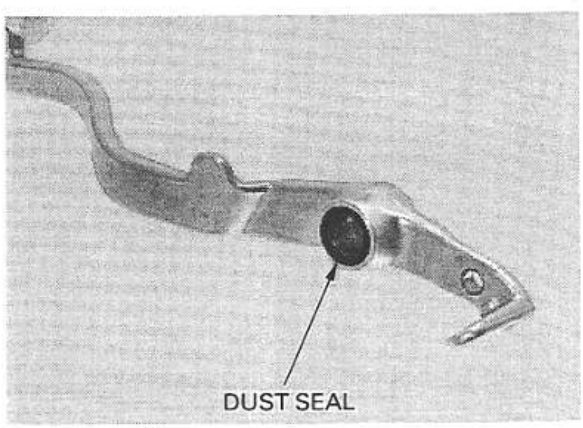
Remove and discard the cotter pin.
Remove the joint pin.

Remove the brake pedal.

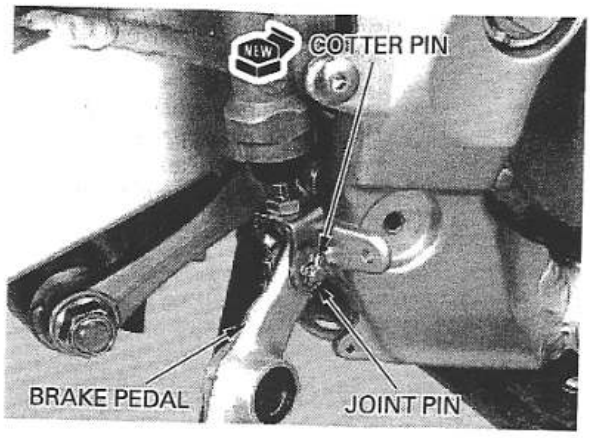


INSTALLATION

Check the dust seal and replace if necessary.



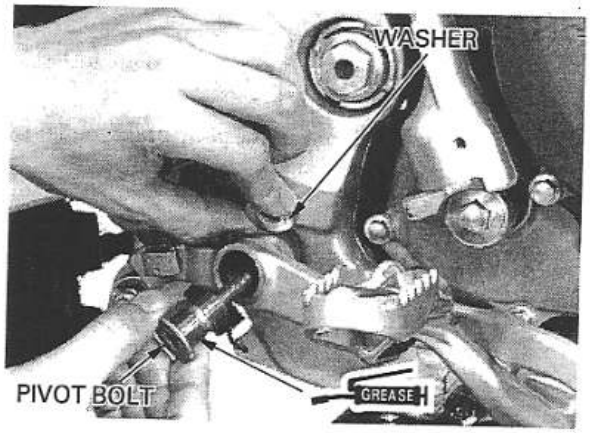
Install the brake pedal joint and secure it with a new cotter pin.



Apply grease to the sliding surface of the brake pedal and pivot bolt.
Install the washer between the frame and brake pedal, and then install the brake pedal pivot bolt.

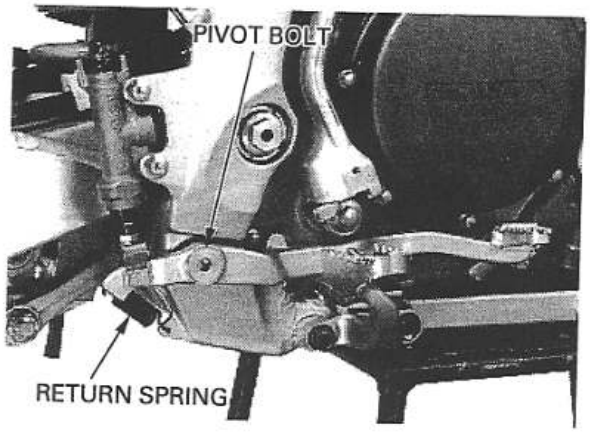
Tighten the brake pedal pivot bolt to the specified torque.

TORQUE: 25 N·m (2.6 kgf·m , 19 lbf·ft)

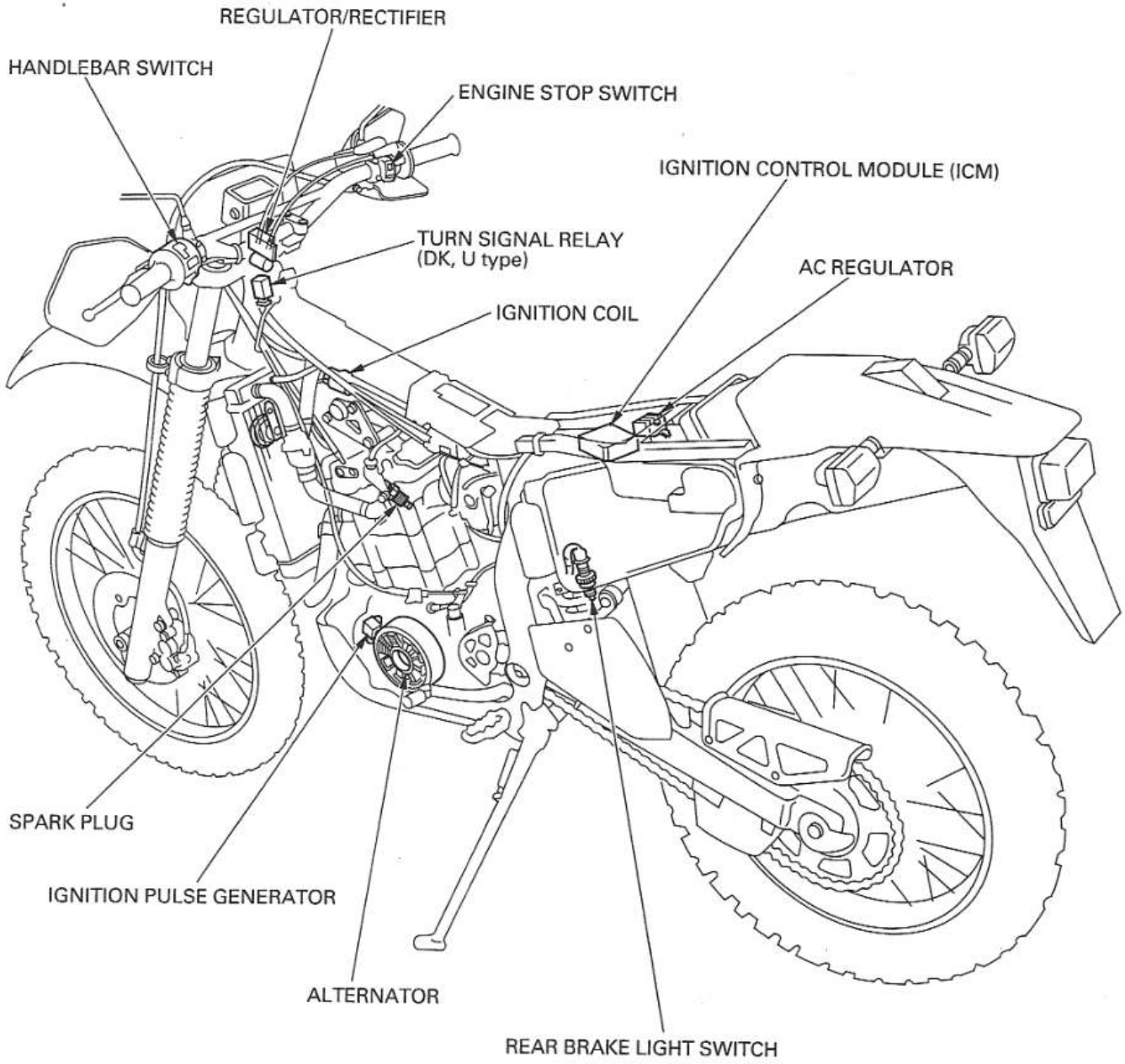


Install the return spring.

Adjust the brake pedal free play (page 3-20).



MEMO


REGULATOR/RECTIFIER
HANDLEBAR SWITCH
ENGINE STOP SWITCH
IGNITION CONTROL MODULE (ICM)
TURN SIGNAL RELAY
(DK, U type)
AC REGULATOR
IGNITION COIL
SPARK PLUG
IGNITION PULSE GENERATOR
ALTERNATOR
REAR BRAKE LIGHT SWITCH

17. ELECTRICAL SYSTEM

SERVICE INFORMATION	17-1	TAIL/BRAKE LIGHT	17-12
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IGNITION SYSTEM INSPECTION	17-5	SPEEDOMETER	17-13
IGNITION TIMING	17-8	HANDLEBAR SWITCHES	17-14
ICM (IGNITION CONTROL MODULE)	17-9	ENGINE STOP SWITCH	17-15
IGNITION COIL	17-9	FRONT BRAKE LIGHT SWITCH	17-15
ALTERNATOR	17-9	REAR BRAKE LIGHT SWITCH	17-15
AC REGULATOR	17-10	HORN	17-15
REGULATOR/RECTIFIER	17-10	TURN SIGNAL RELAY	17-16
HEADLIGHT	17-12		

SERVICE INFORMATION

GENERAL

⚠WARNING

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

- When servicing the ignition system, always follow the steps in the troubleshooting sequence on page 17-3.
- The ignition timing does not normally need to be adjusted since the Ignition Control Module (ICM) is factory preset.
- The ICM may be damaged if dropped. Also if the connector is disconnected when current is flowing, the excessive voltage may damage the module.
- A faulty ignition system is often related to poor connected or corroded connectors. Check those connections before proceeding.
- Use spark plug of the correct heat range. Using spark plug with an incorrect heat range can damage the engine.

For alternator removal and installation, refer to Section 11.

SPECIFICATIONS

ITEM			SPECIFICATIONS
Ignition system	Spark plug	Standard	BKR7E-11 (NGK)
			K22PR-U11 (DENSO)
		Optional	BKR8E-11 (NGK)
			K24PR-U11 (DENSO)
	Spark plug gap		1.00 – 1.10 mm (0.039 – 0.043 in)
	Ignition coil primary peak voltage		100 V minimum
	Ignition pulse generator peak voltage		0.7 V minimum
	Exciter coil peak voltage		100 V minimum
	Ignition timing	Initial	6° BTDC at 1,300 min^{-1} (rpm)
		Full advance	31° BTDC at 3,500 min^{-1} (rpm)
Lighting system	AC regulator regulated voltage		13.5 – 14.5V/4,500 min^{-1} (rpm)
	Lighting coil resistance (at 20°C/68°F)		0.1 – 1.0 Ω
	Regulator/rectifier regulated voltage		13.7 – 15.3V/4,500 min^{-1} (rpm)
	DC coil resistance (at 20°C/68°F)		0.2 – 1.2 Ω
Bulb	Headlight		12V 35/35W
	Position light (ED type)		12V5W
	Tail/brake light		12V 21/5W
	Turn signal light		12V 21W
	Meter light		12V3.4W

TORQUE VALUES

Timing hole cap	10 N·m (1.0 kgf·m , 7 lbf·ft)	Apply grease to the threads
Spark plug	18 N·m (1.8 kgf·m , 13 lbf·ft)	

TOOLS

Peak voltage adaptor	07HGJ-0020100 with Commercially available digital multimeter (impedance 10 MΩ/DCV minimum)

TROUBLESHOOTING

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

IGNITION SYSTEM

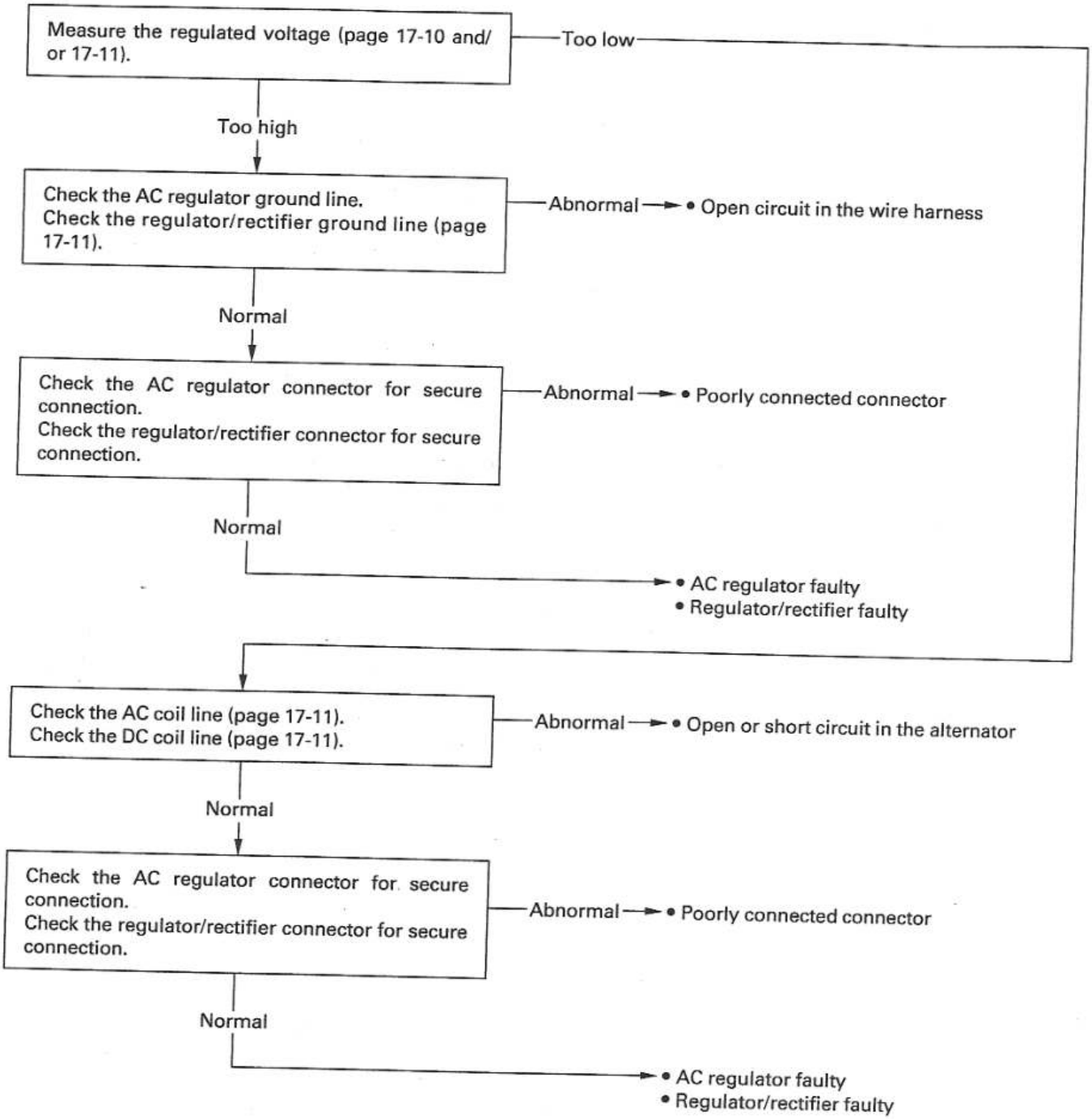
No spark at plug

Unusual condition		Probable cause (Check in numerical order)
Ignition coil primary voltage	Low peak voltage	1. Incorrect peak voltage adapter connections (System is normal if measured voltage is over the specifications with reverse connection). 2. The multimeter impedance is too low; below 10 MΩ/DCV. 3. Cranking speed too slow. • 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 standard voltage at least once). 5. Poorly connected connectors or an open circuit in ignition system. 6. Faulty exciter coil (measure the peak voltage). 7. Faulty ignition coil. 8. Faulty ICM (in case when above No. 1—7 are normal).
	No peak voltage	1. Incorrect peak voltage adapter connections (System is normal if measured voltage is over the specifications with reverse connection). 2. Short circuit in engine stop switch wire. 3. Faulty engine stop switch. 4. Loose or poorly connected ICM connector. 5. An open circuit or loose connection in Green wire. 6. Faulty exciter coil (measure the peak voltage). 7. Faulty ignition pulse generator (measure the peak voltage). 8. Faulty ICM (in case 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.
Exciter coil	Low peak voltage	1. The multimeter impedance is too low; below 10 MΩ/DCV. 2. Cranking speed too low. • Kickstarter is weak 3. The sampling timing of the tester and measured pulse were not synchronized (system is normal if measured voltage is over the standard voltage at least once). 4. Faulty exciter coil (in case when above No. 1—3 are normal).
	No peak voltage	1. Faulty peak voltage adapter. 2. Faulty exciter coil.
Ignition pulse generator	Low peak voltage	1. The multimeter impedance is too low; below 10 MΩ/DCV. 2. Cranking speed is too low. • Kickstarter is weak 3. The sampling timing of the tester and measured pulse were not synchronized (system is normal if measured voltage is over the standard voltage at least once). 4. Faulty ignition pulse generator (in case when above No. 1—3 are normal).
	No peak voltage	1. Faulty peak voltage adapter. 2. Faulty ignition pulse generator.

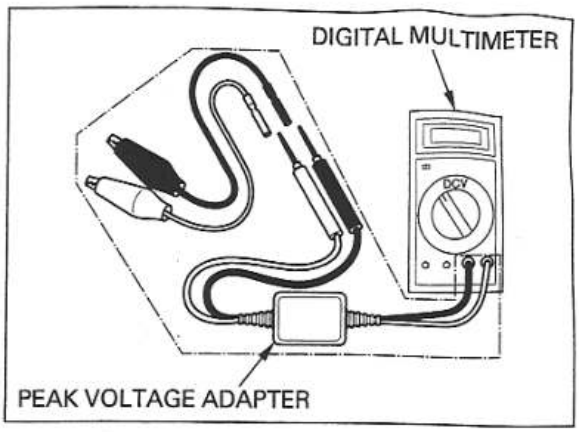
LIGHTING SYSTEM

Lighting Circuit Faulty

• Before inspection, check the bulbs for brown and the bulbs for improper rating.



IGNITION SYSTEM INSPECTION



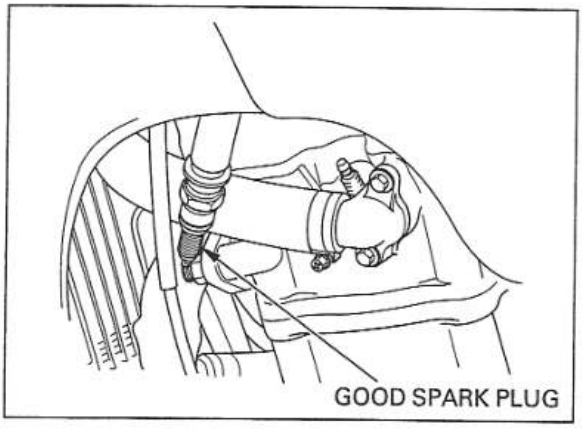
NOTE:

- If there is no spark at spark plug, check all connections for loose or poor contact before measuring each peak voltage.
- Use recommended digital multimeter or commercially available digital multimeter with an impedance of 10 MΩ/DCV minimum.
- The display value differs depending upon the internal impedance of the multimeter.

Connect the peak voltage adaptor to the digital multimeter.

TOOLS:
Peak voltage adaptor 07HGJ-0020100
with Commercially available digital multimeter (impedance 10 MΩ/DCV minimum)

IGNITION COIL PRIMARY PEAK VOLTAGE



⚠WARNING

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

NOTE:

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

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

Remove the fuel tank (page 2-5).

With the ignition coil primary wire connected, connect the peak voltage adapter to the ignition coil.

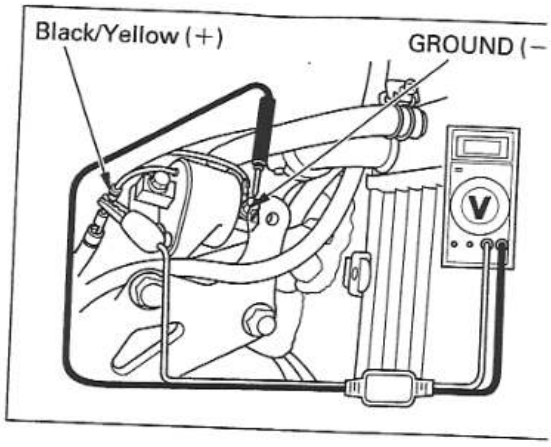
TOOLS:
Peak voltage adaptor 07HGJ-0020100
with Commercially available digital multimeter (impedance 10 MΩ/DCV minimum)

CONNECTION:
Black/Yellow (+) — Body ground (—)

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

PEAK VOLTAGE: 100 V minimum

If the peak voltage is abnormal, check for an open circuit or poor connection in Black/Yellow wires.
If not defects are found in the harness, refer to the troubleshooting chart on page 17-3.



EXCITER COIL PEAK VOLTAGE

⚠WARNING

Avoid touching the tester probes to prevent electric shock.

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

Remove the seat (page 2-2).

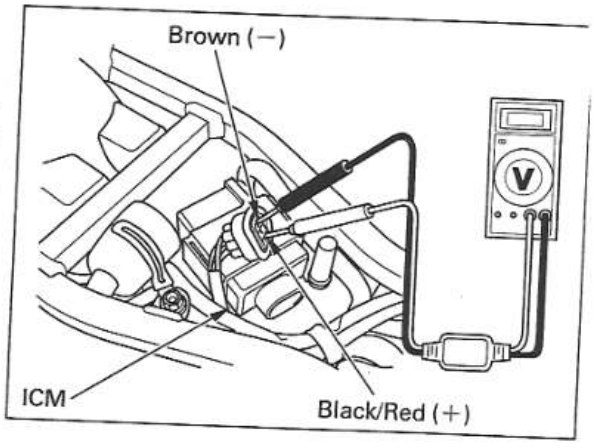
Disconnect the ICM connector.
Connect the peak voltage adaptor probe to the connector terminal of the wire harness side and body ground.

TOOLS:
Peak voltage adaptor 07HGJ-0020100
with Commercially available digital multimeter (impedance 10 MΩ/DCV minimum)

CONNECTION: Black/Red (+) —Brown (—)

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

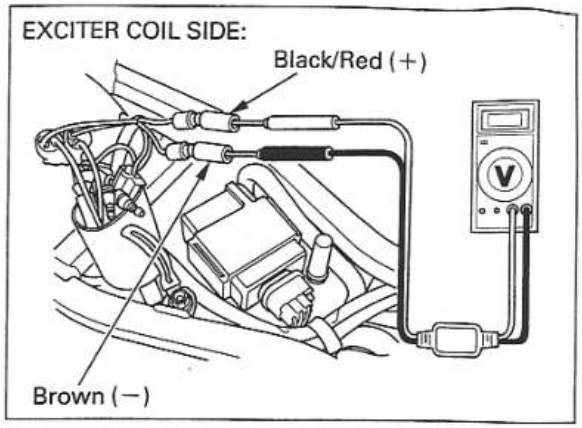
PEAK VOLTAGE: 100 V minimum



If the peak voltage measured is abnormal, recheck the following:

Disconnect the exciter coil black connector.
Connect the peak voltage adapter to the terminal of the exciter coil side and body ground, recheck the peak voltage.

If the peak voltage at the ICM connector is abnormal and peak voltage at the exciter coil connector is normal, check for poorly connected connectors or a broken wire harness.
If the peak voltage is abnormal at both connectors, follow the checks described in the troubleshooting on page 17-3).

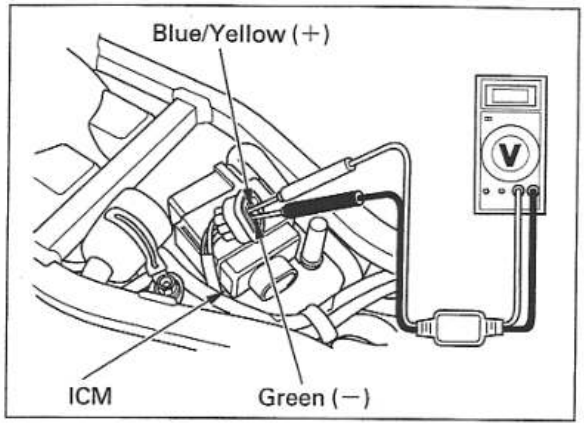


IGNITION PULSE GENERATOR PEAK VOLTAGE

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

Remove the seat (page 2-2).
Disconnect the ICM connector.
Connect the peak voltage adaptor probes to the connector terminals of the wire harness side.

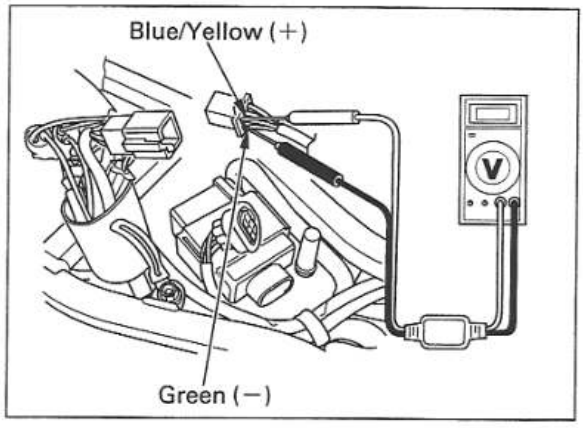
TOOLS:
Peak voltage adaptor 07HGJ-0020100
with Commercially available digital multimeter (impedance 10 MΩ/DCV minimum)



CONNECTION: Blue/Yellow (+) − Green (−)

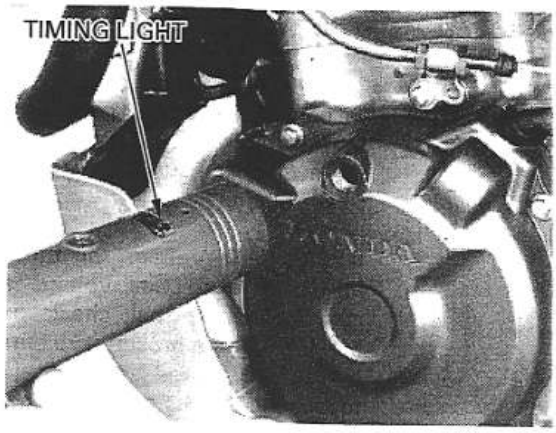
Crank the engine with the kickstarter and read the peak voltage.

PEAK VOLTAGE: 0.7 V minimum



If the peak voltage measured is abnormal, recheck the following:
Disconnect the ignition pulse generator 6P connector.
Connect the peak voltage adapter to the terminals of the ignition pulse generator side and recheck the peak voltage.
If the peak voltage at the ICM connector is abnormal and peak voltage at the ignition pulse generator connector is normal, check for poorly connected connectors or a broken wire harness.
If the peak voltage is abnormal at both connectors, follow the checks described in the troubleshooting on page 17-3.

IGNITION TIMING



⚠WARNING

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

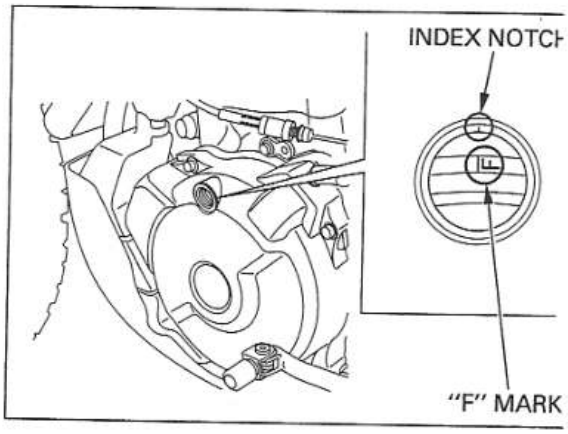
NOTE:

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

Warm up the engine to normal operating temperature.
Stop the engine.

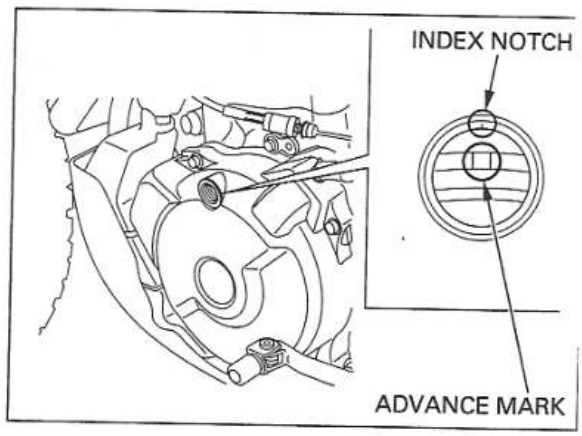
Remove the timing hole cap.
Attach the timing light and tachometer.

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



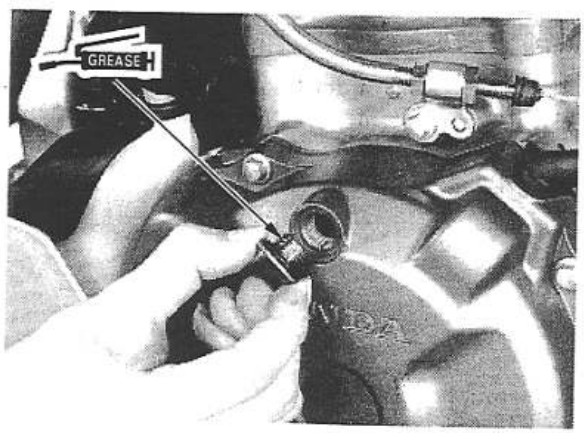
To check the advance, raise the engine speed to 3,500 min^{-1} (rpm); the index notch should be between the advance marks.

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



Apply grease to the timing hole cap threads.
Install the timing hole cap and tighten it to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m , 7 lbf·ft)



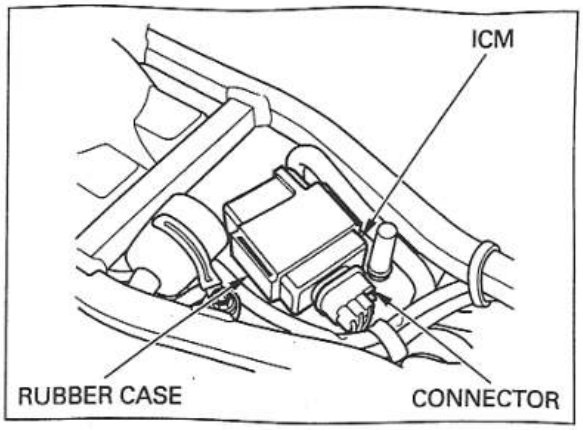
ICM (IGNITION CONTROL MODULE)

REMOVAL/INSTALLATION

Remove the seat (page 2-2).

Remove the ICM from the ICM holder.
Disconnect the connector from the ICM.
Remove the ICM from the rubber case.

Installation is in the reverse order of removal.



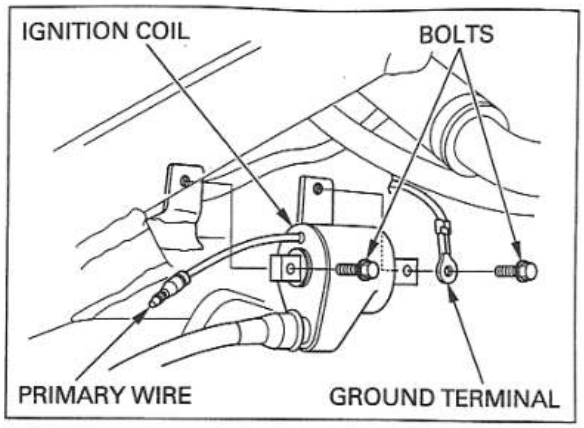
IGNITION COIL

REMOVAL/INSTALLATION

Remove the fuel tank (page 2-5).

Remove the spark plug cap.
Disconnect the ignition coil primary wire.
Remove the bolts, ground terminal and ignition coil.

Installation is in the reverse order of removal.



ALTERNATOR

INSPECTION

Remove the seat (page 2-2).

NOTE:

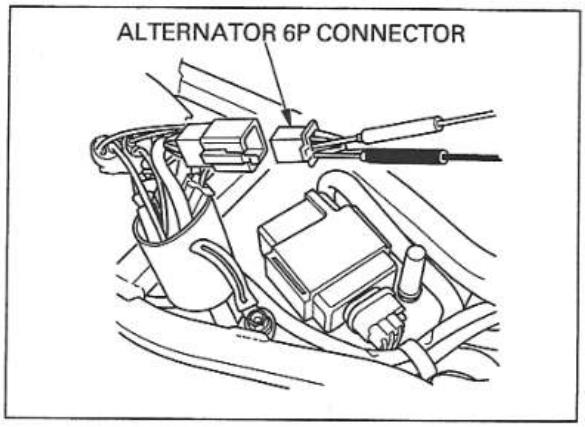
It is not necessary to remove the stator coil to make this test.

Disconnect the alternator 6P connector.
Measure the lighting coil resistance between the Pink wire and Yellow wire terminals of the alternator side connector.

STANDARD: 0.1—1.0 Ω (20°C/68°F)

Measure the resistance between the White/Yellow wire terminal and body ground.

STANDARD: 0.2—1.2 Ω (20°C/68°F)

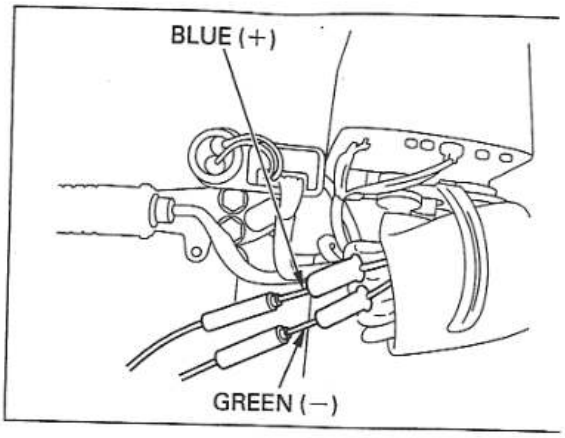


AC REGULATOR

VOLTAGE TEST

⚠WARNING

If the engine must be 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.



Warm up the engine.
Stop the engine and remove the front visor (page 2-3) with the headlight connectors connected.

Connect a voltmeter (+) probe to Blue wire terminal, and (−) probe to Green wire terminal.

Connect a tachometer.
Start the engine and check the tachometer reading while increasing engine speed slowly.

SPECIFIC VOLTAGE: 13.5−14.5V/4,500 min^{-1} (rpm)

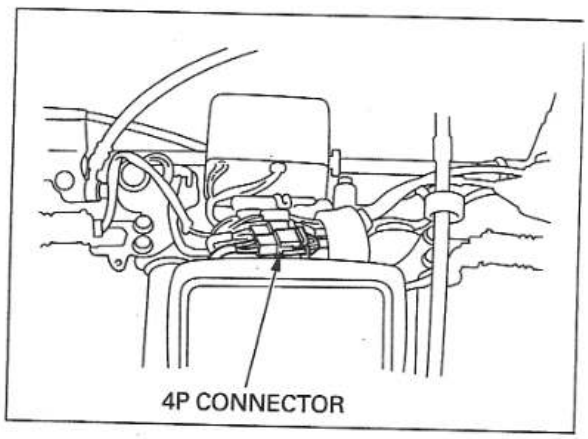
If the regulated voltage is out of the specifications, follow the checks described of the lighting system troubleshooting on page 17-4.

REGULATOR/RECTIFIER

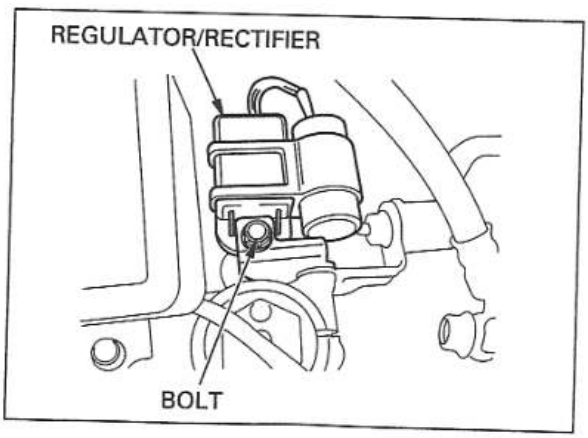
REMOVAL

Remove the front visor (page 2-3).

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



Remove the bolt and regulator/rectifier.



INSTALLATION

Installation is in the reverse order of removal.

REGULATED VOLTAGE INSPECTION

⚠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.

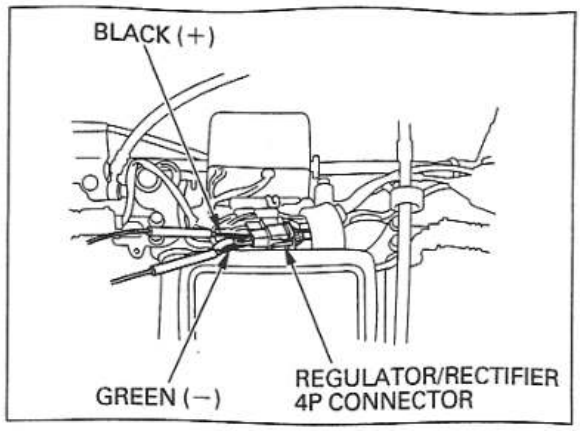
Start the engine and warm it up to the operating temperature.
Stop the engine.

Connect the voltmeter to the regulator/rectifier 4P connector with the connector connected.

CONNECTION: Black (+) — Green (−)

Connect a tachometer.
Start the engine, gradually increase the engine speed and read the lighting regulated voltage.

Regulated voltage: 13.7—15.3V/4,500 min^{-1} (rpm)



WIRE HARNESS INSPECTION

Remove the front visor (page 2-3).

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

Measure the lighting coil (DC) resistance between the Pink wire terminal and Yellow wire terminal.

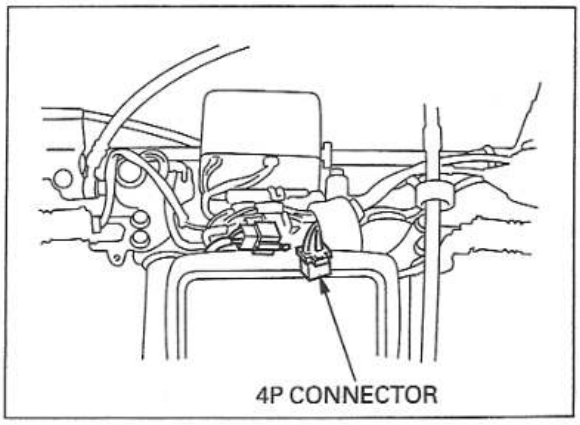
STANDARD: 0.2—1.2 Ω (20° C/68° F)

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

STANDARD: CONTINUITY

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

STANDARD: NO CONTINUITY

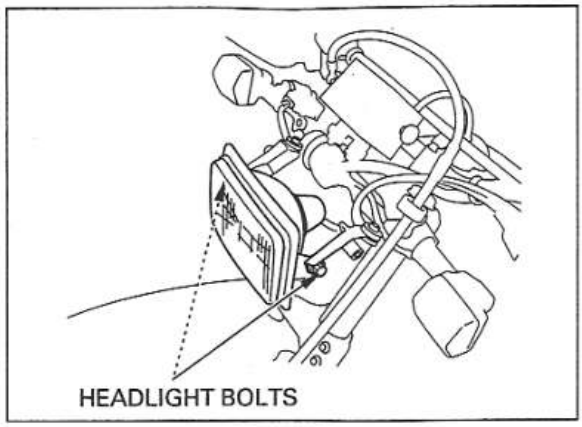


HEADLIGHT

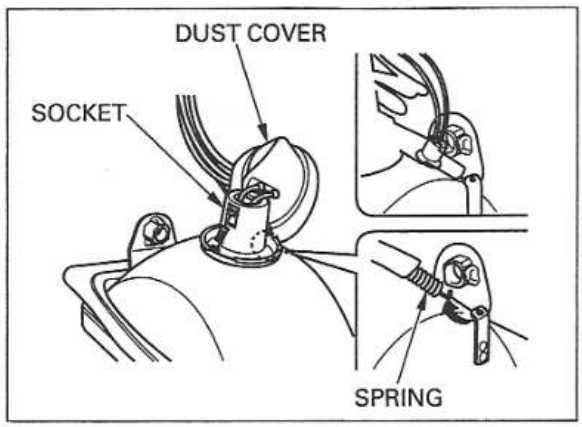
BULB REPLACEMENT

Remove the front visor (page 2-3).

Remove the bolts and headlight case.

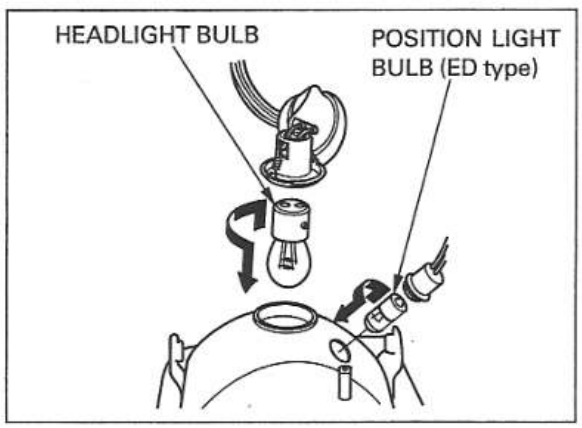


Remove the dust cover.
Remove the retainer spring.



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

Installation is in the reverse order of removal.



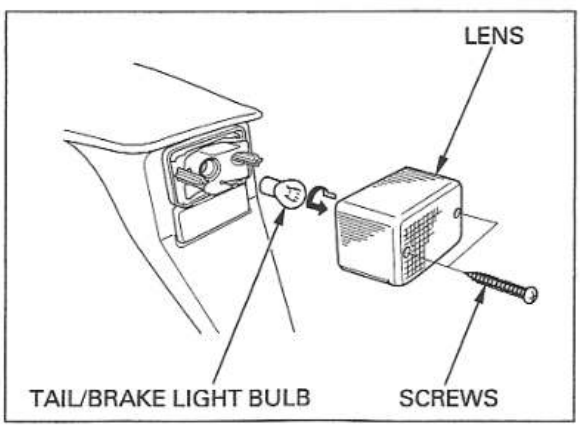
TAIL/BRAKE LIGHT

BULB REPLACEMENT

Remove the screws and taillight lens.

Remove the tail/brake light bulb and replace it.

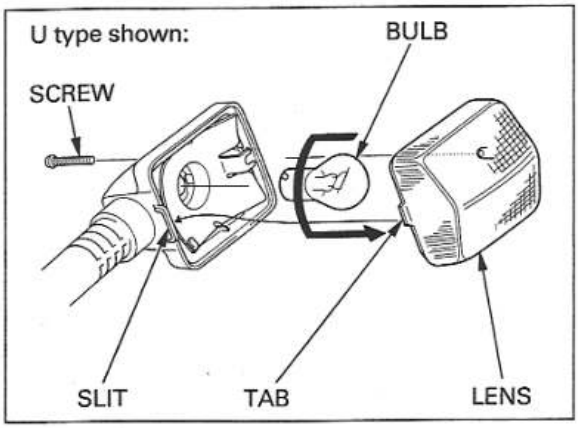
Install the taillight lens and tighten the screws securely.



TURN SIGNAL LIGHT

Remove the screw and lens.
While pushing in, turn the bulb counterclockwise to remove it and replace with a new one.

Installation is in the reverse order of removal.

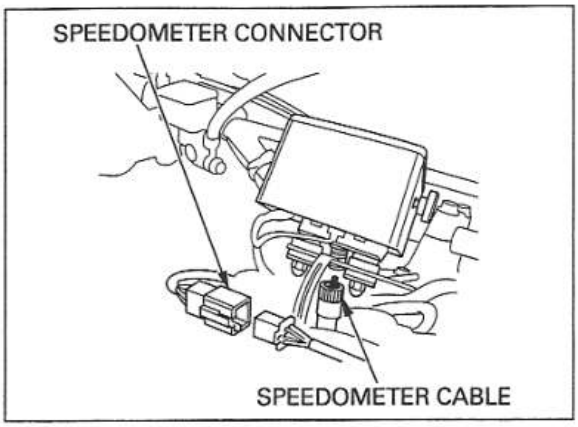


SPEEDOMETER

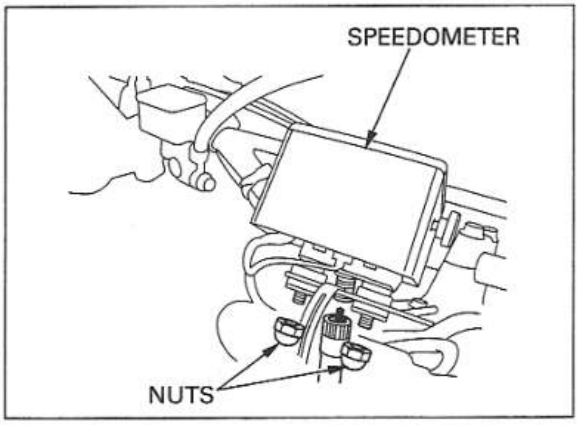
REMOVAL

Remove the front visor (page 2-3).

Disconnect the speedometer connector and speedometer cable.



Remove the two nuts and speedometer.



HANDLEBAR SWITCHES

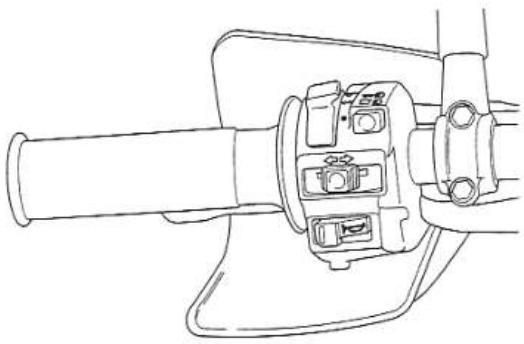
NOTE:

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

Remove the front visor (page 2-3).

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

ED type:



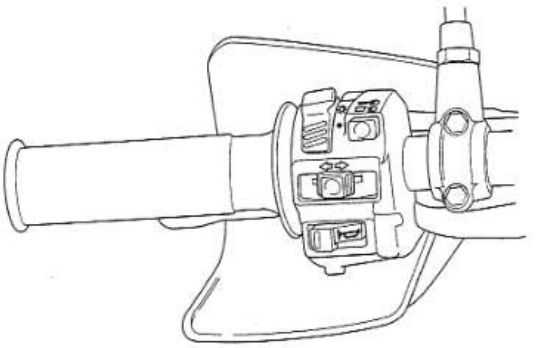
HORN SWITCH

	Lg	Bl
FREE		
PUSH	○—○	

ENGINE STOP SWITCH

	Bl/W	G
OFF	○—○	
RUN		

DK type:



LIGHTING/DIMMER SWITCH

ED type:

	—	W/Y	Bl	Br
•				
P			○—○	
H	○—○		○—○	

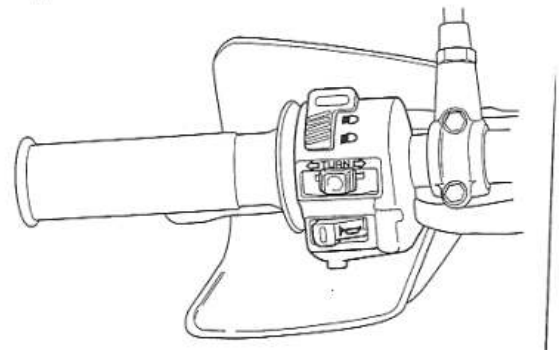
	Bu	—	W
HI	○—○		
(N)	○—○	○—○	
LO		○—○	

DK type:

	—	W/Y	Br
•			
H	○—○	○—○	

	Bu	—	W
HI	○—○		
(N)	○—○	○—○	
LO		○—○	

U type:



DK type:

	Bu	Br	W
HI	○—○		
(N)	○—○	○—○	
LO		○—○	

TURN SIGNAL SWITCH

DK, U type:

	O	Gr	Lb	O/W	Gr/W	Lb/W
L	○—○			○—○		
(N)						
R		○—○			○—○	

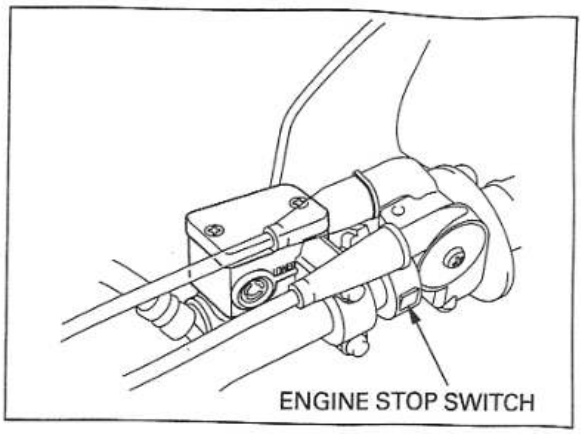
Bl	BLACK	Br	BROWN
Y	YELLOW	O	ORANGE
Bu	BLUE	Lb	LIGHT BLUE
G	GREEN	Lg	LIGHT GREEN
R	RED	P	PINK
W	WHITE	Gr	GRAY

ENGINE STOP SWITCH

INSPECTION

Remove the front visor (page 2-3).
Disconnect the Black/White and Green wire connectors inside the connector boot.

Check the switch for continuity when the switch is "OFF" position; and no continuity when the switch is "RUN" position.

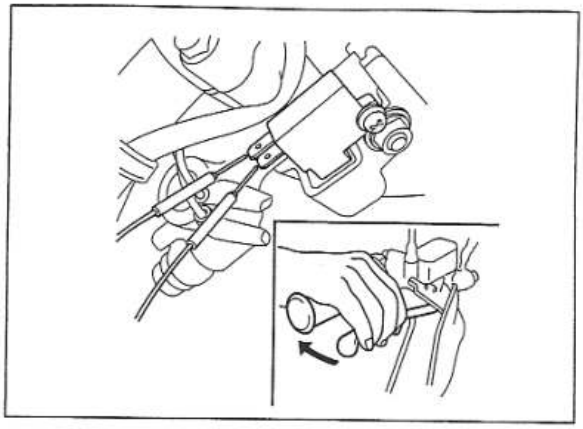


FRONT BRAKE LIGHT SWITCH

INSPECTION

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

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



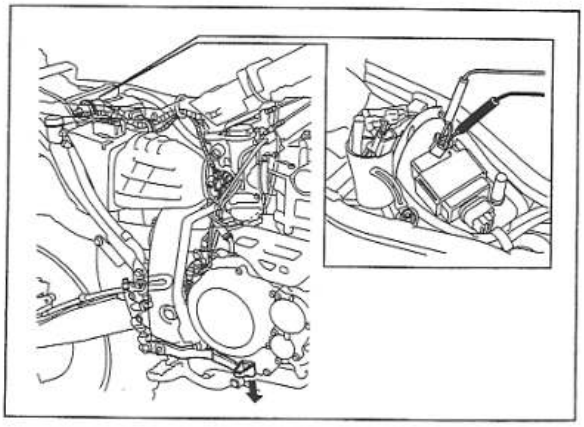
REAR BRAKE LIGHT SWITCH

INSPECTION

Remove the seat (page 2-2)

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

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

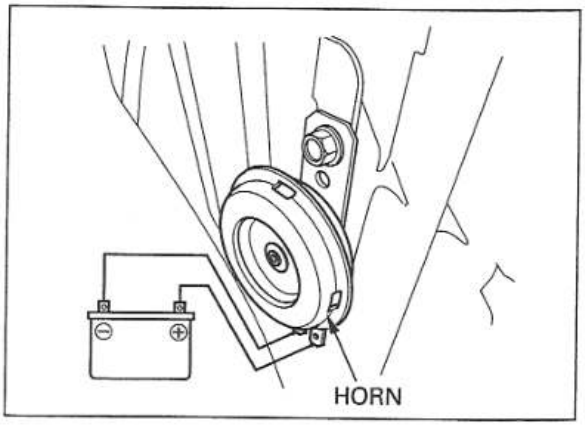


HORN

INSPECTION

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

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



TURN SIGNAL RELAY

PERFORMANCE TEST

Remove the front visor (page 2-2).

Disconnect the turn signal connector.

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

↓ Light comes on

↓ Light does not come on

↓

• Broken wire harness

2. Check for continuity between the green terminal of the relay connector and ground.

↓ Continuity

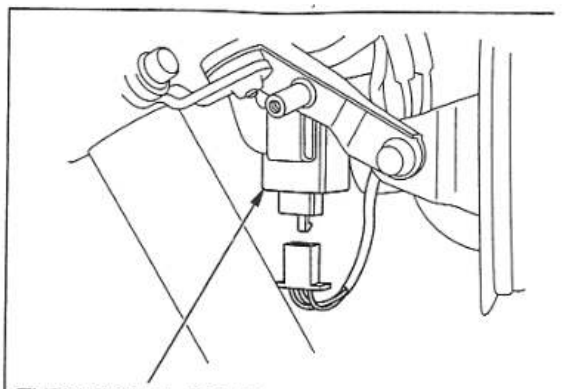
↓ No continuity

↓

• Broken ground wire

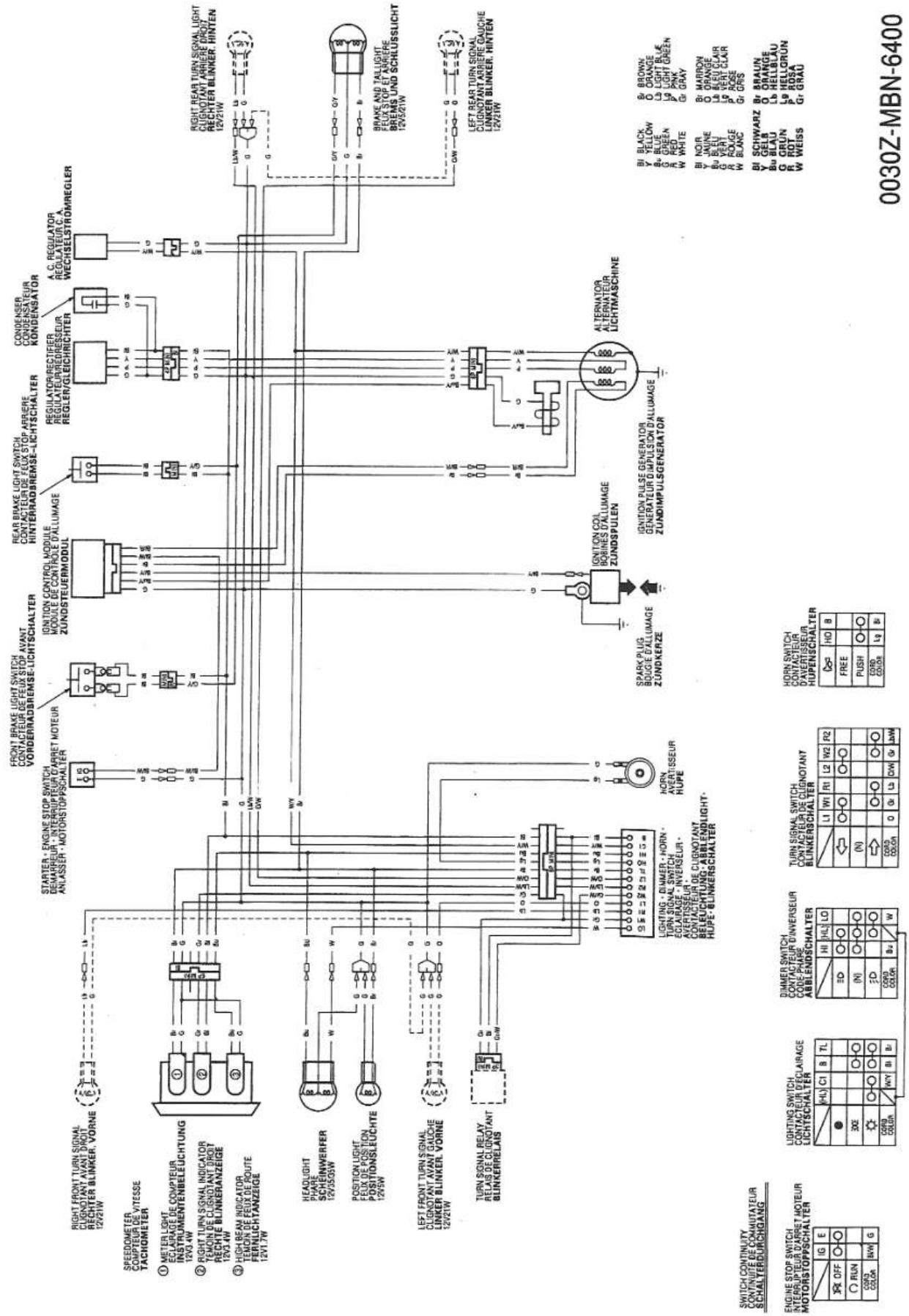
↓

• Faulty turn signal relay.
• Poor connection of the connector.

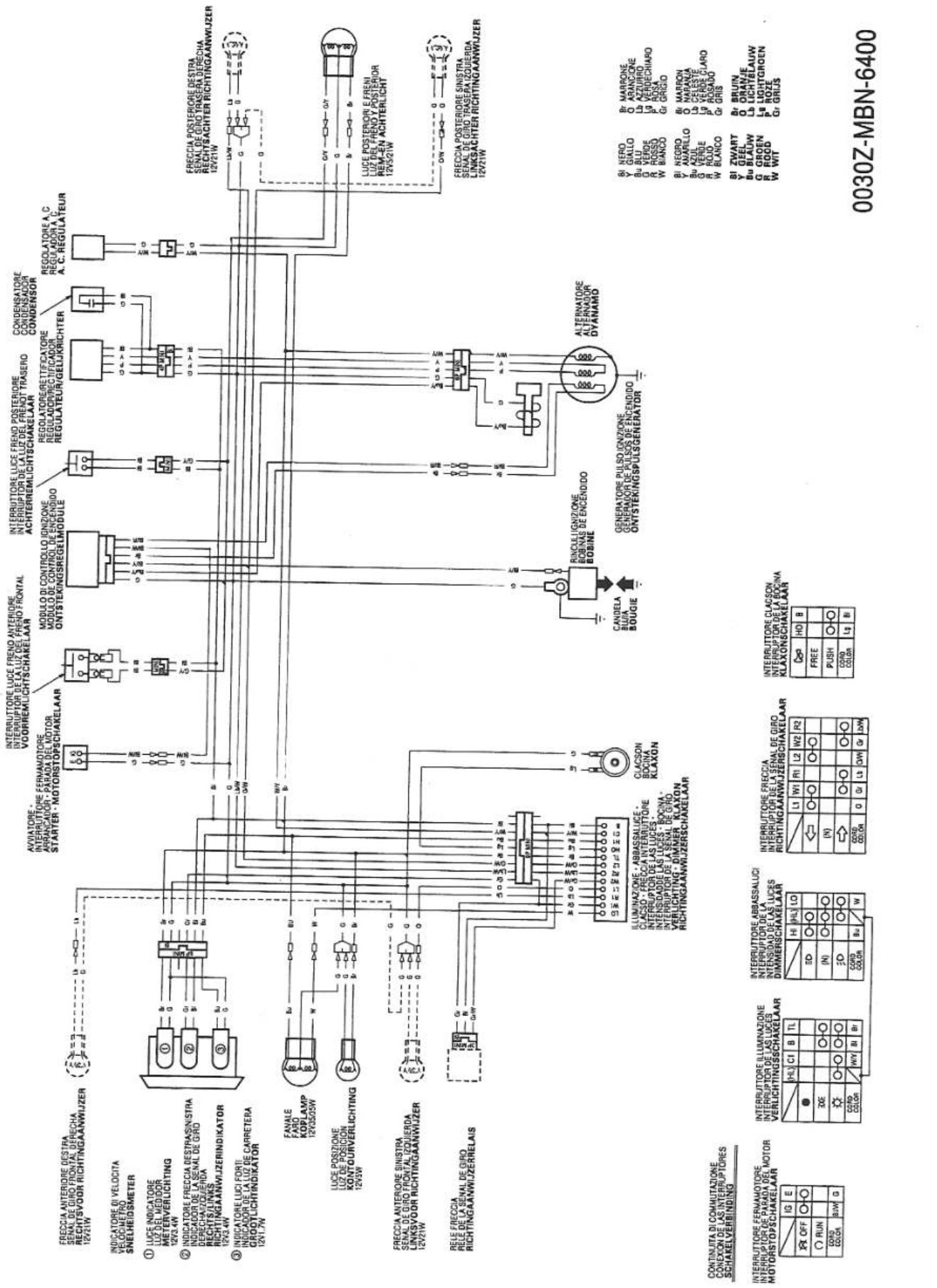


TURN SIGNAL RELAY

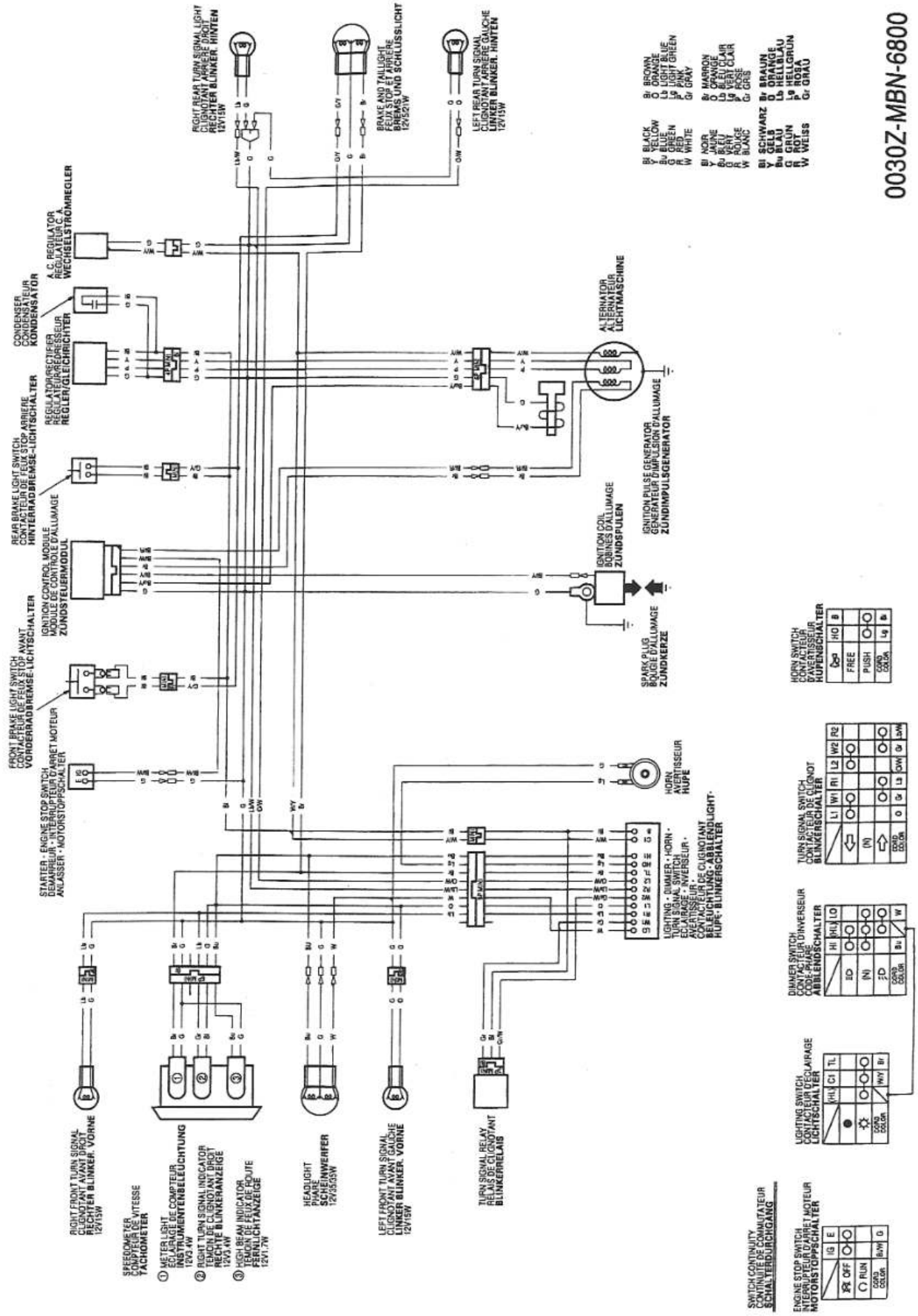
ED type:


0030Z-MBN-6400
RIGHT REAR TURN SIGNAL LIGHT
CLIGNOTANT ARRIÈRE DROIT
RECHTER BLINKER. HINTEN
12V21W
BRAKE AND TAILLIGHT
FEU STOP ARRIÈRE
BREMS UND SCHLUSSLICHT
12V5/21W
LEFT REAR TURN SIGNAL
CLIGNOTANT ARRIÈRE GAUCHE
LINKER BLINKER. HINTEN
12V21W
A.C. REGULATOR
RÉGULATEUR C.A.
WECHSELSTROMREGLER
CONDENSER
CONDENSATEUR
KONDENSATOR
REGULATOR/RECTIFIER
RÉGULATEUR/REDRESSEUR
REGLER/GLEICHRICHTER
ALTERNATOR
ALTERNATEUR
LICHTMASCHINE
REAR BRAKE LIGHT SWITCH
CONTACTEUR DE FEUX STOP ARRIÈRE
HINTERRADBREMSE-LICHTSCHALTER
IGNITION CONTROL MODULE
MODULE DE CONTRÔLE D'ALLUMAGE
ZÜNDSTEUERMODUL
IGNITION PULSE GENERATOR
GÉNÉRATEUR D'IMPULSION D'ALLUMAGE
ZÜNDIMPULSGENERATOR
IGNITION COIL
BOBINES D'ALLUMAGE
ZÜNDSPULEN
SPARK PLUG
BOUGIE D'ALLUMAGE
ZÜNDKERZE
FRONT BRAKE LIGHT SWITCH
CONTACTEUR DE FEUX STOP AVANT
VORDERRADBREMSE-LICHTSCHALTER
STARTER - ENGINE STOP SWITCH
DÉMARREUR - INTERRUPTEUR D'ARRÊT MOTEUR
ANLASSER - MOTORSTOPPSCHALTER
HORN
AVERTISSEUR
HUPE
LIGHTING - DIMMER - HORN -
TURN SIGNAL SWITCH
ÉCLAIRAGE - INVERSEUR -
AVERTISSEUR -
CONTACTEUR DE CLIGNOTANT
LICHT - ABBLENDLICHT -
HUPE - BLINKERSCHALTER
RIGHT FRONT TURN SIGNAL
CLIGNOTANT AVANT DROIT
RECHTER BLINKER. VORNE
12V21W
SPEEDOMETER
COMPTEUR DE VITESSE
TACHOMETER
① METER LIGHT
ÉCLAIRAGE DE COMPTEUR
INSTRUMENTENBELEUCHTUNG
12V3.4W
② RIGHT TURN SIGNAL INDICATOR
TÉMOIN DE CLIGNOTANT DROIT
RECHTE BLINKERANZEIGE
12V3.4W
③ HIGH BEAM INDICATOR
TÉMOIN DE FEUX DE ROUTE
FERNLICHTANZEIGE
12V1.7W
HEADLIGHT
PHARE
SCHEINWERFER
12V35/35W
POSITION LIGHT
FEU DE POSITION
POSITIONSLEUCHTE
12V5W
LEFT FRONT TURN SIGNAL
CLIGNOTANT AVANT GAUCHE
LINKER BLINKER. VORNE
12V21W
TURN SIGNAL RELAY
RELAIS DE CLIGNOTANT
BLINKERRELAIS
SWITCH CONTINUITY
CONTINUITÉ DE COMMUTATEUR
SCHALTERDURCHGANG
ENGINE STOP SWITCH
INTERRUPTEUR D'ARRÊT MOTEUR
MOTORSTOPPSCHALTER
LIGHTING SWITCH
CONTACTEUR D'ÉCLAIRAGE
LICHTSCHALTER
DIMMER SWITCH
CONTACTEUR D'INVERSEUR
CODE-PHARE
ABBLENDSCHALTER
TURN SIGNAL SWITCH
CONTACTEUR DE CLIGNOTANT
BLINKERSCHALTER
HORN SWITCH
CONTACTEUR
D'AVERTISSEUR
HUPENSCHALTER
Bl BLACK
Y YELLOW
Bu BLUE
G GREEN
R RED
W WHITE
Br BROWN
O ORANGE
Lb LIGHT BLUE
Lg LIGHT GREEN
P PINK
Gr GRAY
Bl NOIR
Y JAUNE
Bu BLEU
G VERT
R ROUGE
W BLANC
Br MARRON
O ORANGE
Lb BLEU CLAIR
Lg VERT CLAIR
P ROSE
Gr GRIS
Bl SCHWARZ
Y GELB
Bu BLAU
G GRÜN
R ROT
W WEISS
Br BRAUN
O ORANGE
Lb HELLBLAU
Lg HELLGRÜN
P ROSA
Gr GRAU

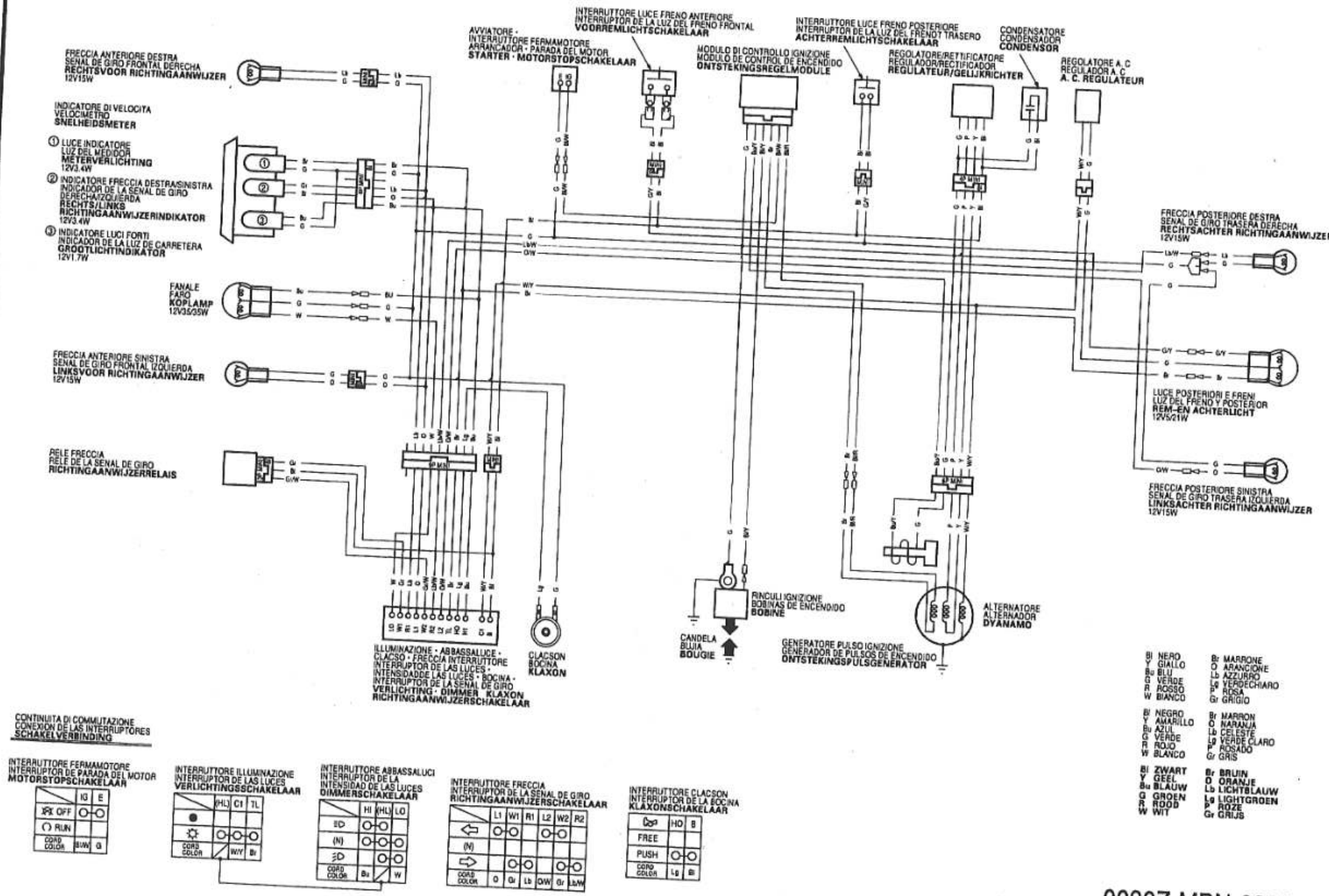
ED type:


0030Z-MBN-6400
FRECCIA POSTERIORE DESTRA
SEÑAL DE GIRO TRASERA DERECHA
RECHTSACHTER RICHTINGAANWIJZER
12V21W
LUCE POSTERIORI E FRENI
LUZ DEL FRENO Y POSTERIOR
REM- EN ACHTERLICHT
12V5/21W
FRECCIA POSTERIORE SINISTRA
SEÑAL DE GIRO TRASERA IZQUIERDA
LINKSACHTER RICHTINGAANWIJZER
12V21W
REGOLATORE A.C.
REGULADOR A.C.
A.C. REGULATEUR
CONDENSATORE
CONDENSADOR
CONDENSOR
REGOLATORE/RETTIFICATORE
REGULADOR/RECTIFICADOR
REGULATEUR/GELIJKRICHTER
ALTERNATORE
ALTERNADOR
DYANAMO
INTERRUTTORE LUCE FRENO POSTERIORE
INTERRUPTOR DE LA LUZ DEL FRENO TRASERO
ACHTERREMLICHTSCHAKELAAR
MODULO DI CONTROLLO IGNIZIONE
MODULO DE CONTROL DE ENCENDIDO
ONTSTEKINGSREGELMODULE
RINCOLI IGNIZIONE
BOBINAS DE ENCENDIDO
BOBINE
GENERATORE PULSI D'IGNIZIONE
GENERADOR DE IMPULSOS DE ENCENDIDO
ONTSTEKINGSPULSGENERATOR
CANDELA
BUJIA
BOUGIE
INTERRUTTORE LUCE FRENO ANTERIORE
INTERRUPTOR DE LA LUZ DEL FRENO DELANTERO
VOORREMLICHTSCHAKELAAR
AVVIATORE -
INTERRUTTORE FERMAMOTORE
ARRANCADOR - PARADA DEL MOTOR
STARTER - MOTORSTOPSCHAKELAAR
CLACSON
BOCINA
KLAXON
ILLUMINAZIONE - ABBASSALUCE -
CLACSO - FRECCIA INTERRUTTORE
INTERRUPTOR DE LAS LUCES -
INTENSIDAD DE LAS LUCES - BOCINA -
INTERRUPTOR DE LA SEÑAL DE GIRO
VERLICHTING - DIMMER - KLAXON
RICHTINGAANWIJZERSCHAKELAAR
FRECCIA ANTERIORE DESTRA
SEÑAL DE GIRO FRONTAL DERECHA
RECHTSVOOR RICHTINGAANWIJZER
12V21W
INDICATORE DI VELOCITA
VELOCIMETRO
SNELHEIDSMETER
① LUCE INDICATORE
LUZ DEL INDICADOR
METERVERLICHTING
12V3.4W
② INDICATORE FRECCIA DESTRA/SINISTRA
INDICADOR DE LA SEÑAL DE GIRO
DERECHA/IZQUIERDA
RICHTINGAANWIJZERINDIKATOR
12V3.4W
③ INDICATORE LUCI FORTI
INDICADOR DE LA LUZ DE CARRETERA
GROOTLICHTINDIKATOR
12V1.7W
FANALE
FARO
KOPLAMP
12V35/35W
LUCE POSIZIONE
LUZ DE POSICION
KONTOURVERLICHTING
12V3W
FRECCIA ANTERIORE SINISTRA
SEÑAL DE GIRO FRONTAL IZQUIERDA
LINKSVOOR RICHTINGAANWIJZER
12V21W
RELE' FRECCIA
RELE DE LA SEÑAL DE GIRO
RICHTINGAANWIJZERRELAIS
CONTINUITA DI COMMUTAZIONE
CONEXION DE LAS INTERRUPTORES
SCHAKELVERBINDING
INTERRUTTORE FERMAMOTORE
INTERRUPTOR DE PARADA DEL MOTOR
MOTORSTOPSCHAKELAAR
IG
OFF
RUN
E
B/W
G
INTERRUTTORE ILLUMINAZIONE
INTERRUPTOR DE LAS LUCES
VERLICHTINGSSCHAKELAAR
HI
LO
C1
B
TL
30E
WIT
BL
BR
INTERRUTTORE ABBASSALUCI
INTERRUPTOR DE LAS LUCES
DIMMERSCHAKELAAR
HI
LO
3D
2D
W
Bu
INTERRUTTORE FRECCIA
INTERRUPTOR DE LA SEÑAL DE GIRO
RICHTINGAANWIJZERSCHAKELAAR
L1
W1
R1
L2
W2
R2
Gr
B/W
INTERRUTTORE CLACSON
INTERRUPTOR DE LA BOCINA
KLAXONSCHAKELAAR
HO
B
FREE
PUSH
Lg
Bl
BI NERO
Y GIALLO
Bu AZZURRO
G VERDE
R ROSSO
W BIANCO
Br MARRONE
O ARANCIONE
Bu AZZURRO
P VIOLA/PORPORA
R ROSA
Gr GRIGIO
BI NEGRO
Y AJARILLO
Bu AZUL
G VERDE
R ROJO
W BLANCO
Br MARRON
NARANJA
CELESTE
VERDE CLARO
ROSADO
GRIS
BI ZWART
Y GEEL
Bu BLAUW
G GROEN
R ROOD
W WIT
Br BRUIN
O ORANJE
Lb LICHTBLAUW
Lg LICHTGROEN
P PAARS
Gr GRIJS

DK type:

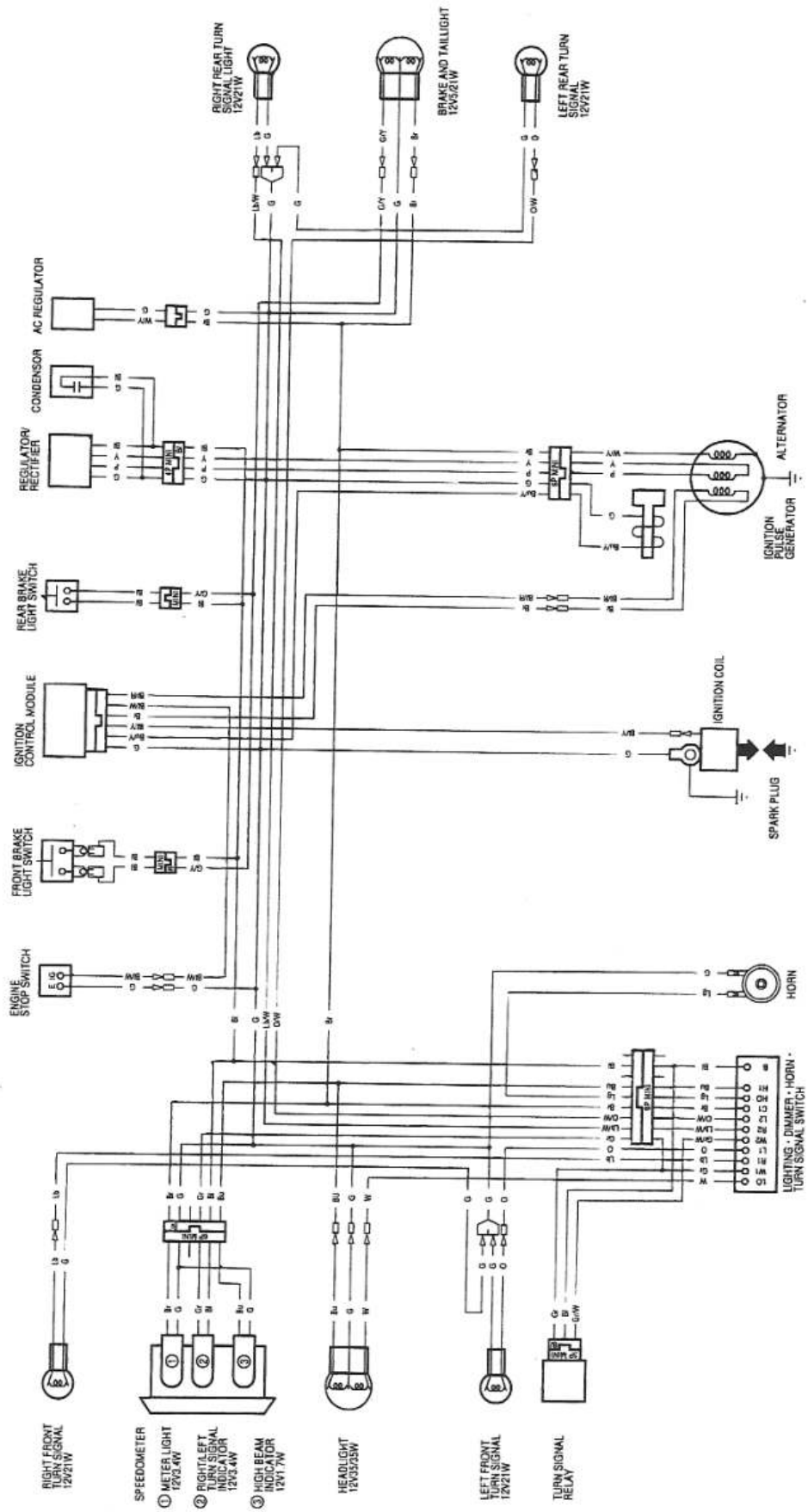

0030Z-MBN-6800
RIGHT REAR TURN SIGNAL LIGHT
CLIGNOTANT ARRIERE DROIT
RECHTER BLINKER. HINTEN
12V15W
BRAKE AND TAILLIGHT
FEU STOP ET FEU ARRIERE
BREMS- UND SCHLUSSLICHT
12V5/21W
LEFT REAR TURN SIGNAL
CLIGNOTANT ARRIERE GAUCHE
LINKER BLINKER. HINTEN
12V15W
A.C. REGULATOR
REGULATEUR C.A.
WECHSELSTROMREGLER
CONDENSER
CONDENSATEUR
KONDENSATOR
RECTIFIER
REDRESSEUR
GLEICHRICHTER
REGULATOR/RECTIFIER
REGULATEUR/REDRESSEUR
REGLER/GLEICHRICHTER
ALTERNATOR
ALTERNATEUR
LICHTMASCHINE
REAR BRAKE LIGHT SWITCH
CONTACTEUR DE FEUX STOP ARRIERE
HINTERRADBREMSE-LICHTSCHALTER
IGNITION CONTROL MODULE
MODULE DE CONTROLE D'ALLUMAGE
ZUNDSTEUERMODUL
IGNITION COIL
BOBINES D'ALLUMAGE
ZUNDSPULEN
IGNITION PULSE GENERATOR
GENERATEUR D'IMPULSION D'ALLUMAGE
ZUNDIMPULSGENERATOR
SPARK PLUG
BOUGIE D'ALLUMAGE
ZUNDKERZE
FRONT BRAKE LIGHT SWITCH
CONTACTEUR DE FEUX STOP AVANT
VORDERRADBREMSE LICHTSCHALTER
STARTER - ENGINE STOP SWITCH
DEMARREUR - INTERRUPTEUR D'ARRET MOTEUR
ANLASSER - MOTORSTOPPSCHALTER
HORN
AVERTISSEUR
HUPE
LIGHTING - DIMMER - HORN -
TURN SIGNAL SWITCH
ECLAIRAGE - INVERSEUR -
AVERTISSEUR -
CONTACTEUR DE CLIGNOTANT
BELEUCHTUNG - ABBLENDLICHT -
HUPE- BLINKERSCHALTER
RIGHT FRONT TURN SIGNAL
CLIGNOTANT AVANT DROIT
RECHTER BLINKER. VORNE
12V15W
SPEEDOMETER
COMPTEUR DE VITESSE
TACHOMETER
① METER LIGHT
ECLAIRAGE DU COMPTEUR
INSTRUMENTENBELEUCHTUNG
12V3.4W
② RIGHT TURN SIGNAL INDICATOR
TEMOIN DE CLIGNOTANT DROIT
RECHTE BLINKERANZEIGE
12V3.4W
③ HIGH BEAM INDICATOR
TEMOIN DE FEUX DE ROUTE
FERNLICHTANZEIGE
12V1.7W
HEADLIGHT
PHARE
SCHEINWERFER
12V35/35W
LEFT FRONT TURN SIGNAL
CLIGNOTANT AVANT GAUCHE
LINKER BLINKER. VORNE
12V15W
TURN SIGNAL RELAY
RELAIS DE CLIGNOTANT
BLINKERRELAIS
SWITCH CONTINUITY
CONTINUITE DE COMMUTATEUR
SCHALTERDURCHGANG
ENGINE STOP SWITCH
INTERRUPTEUR D'ARRET MOTEUR
MOTORSTOPPSCHALTER
IG E
OFF
RUN
COLOR
B/W G
LIGHTING SWITCH
CONTACTEUR D'ECLAIRAGE
LICHTSCHALTER
HU C1 TL
WY Br
DIMMER SWITCH
CONTACTEUR D'INVERSEUR
CODE-PHARE
ABBLENDSCHALTER
HI HU LO
W
TURN SIGNAL SWITCH
CONTACTEUR DE CLIGNOT
BLINKERSCHALTER
L1 W1 R1 L2 W2 R2
L Sb SW G SW
HORN SWITCH
CONTACTEUR
D'AVERTISSEUR
HUPENSCHALTER
HO B
FREE
PUSH
Lg B
Bl BLACK
Y YELLOW
Bu BLUE
G GREEN
R RED
W WHITE
Br BROWN
O ORANGE
Lb LIGHT BLUE
Lg LIGHT GREEN
P PINK
Gr GRAY
Bl NOIR
Y JAUNE
Bu BLEU
G VERT
R ROUGE
W BLANC
Br MARRON
O ORANGE
Lb BLEU CLAIR
Lg VERT CLAIR
P ROSE
Gr GRIS
Bl SCHWARZ
Y GELB
Bu BLAU
G GRUN
R ROT
W WEISS
Br BRAUN
O ORANGE
Lb HELLBLAU
Lg HELLGRUN
P ROSA
Gr GRAU

DK type:



0030Z-MBN-6800

U type:



B	BLACK	Br	BROWN
Y	YELLOW	O	ORANGE
Bu	BLUE	Lb	LIGHT BLUE
G	GREEN	Lg	LIGHT GREEN
R	RED	P	PINK
W	WHITE	Gr	GRAY

COLOR CODE : GROUND MARKING

0030Z-MBN-6500

SWITCH CONTINUITY

ENGINE STOP SWITCH

	IG	E
OFF		
RUN		
COLOR	B/W	G

DIMMER SWITCH

	HI	C1	LO
∃D			
(N)			
∃D			
COLOR	Bu	Br	W

TURN SIGNAL SWITCH

	L1	W1	R1	L2	W2	R2		
⇦								
(N)								
⇨								
COLOR	O	Gr	Lb	O/W	G	Lg/W		

HORN SWITCH

	HO	B
FREE		
PUSH		
COLOR	Lg	B

MEMO

19. TROUBLESHOOTING

ENGINE DOES NOT START OR IS HARD TO START	19-1	POOR PERFORMANCE AT HIGH SPEED	19-4
ENGINE LACKS POWER	19-2	POOR HANDLING	19-4
POOR PERFORMANCE AT LOW AND IDLE SPEED	19-3		

ENGINE DOES NOT START OR IS HARD TO START

		POSSIBLE CAUSE
1. Check to see if fuel is getting to the carburetor.	Not getting to carburetor	• No fuel in fuel tank • Clogged fuel line or fuel strainer • Clogged float valve • Clogged fuel tank cap breather tube
Getting to carburetor		
2. Try spark test.	Weak or no spark	• Faulty spark plug • Fouled spark plug • Faulty ignition control module • Broken or shorted spark plug wire • Faulty exciter coil • Broken or shorted ignition coil • Faulty ignition pulse generator • Faulty engine stop switch • Poorly connected, broken or shorted wires
Spark jumps		
3. Test cylinder compression.	Low compression	• Insufficient valve clearance • Valve stuck open • Worn cylinder and piston • Damaged cylinder head gasket • Improper valve timing • Improperly adjusted decompression mechanism • Seized valve
Compression normal		
4. Start by following normal starting procedure.	Engine fires but soon stops	• Choke open excessively • Carburetor pilot screw excessively closed • Air leaking past intake pipe • Improper ignition timing (ignition control module or ignition pulse generator faulty)
Engine does not fire		
5. Remove spark plug	Wet plug	• Carburetor flooded • Carburetor choke excessively closed • Throttle valve excessively open
Dry		
6. Start with choke applied.		

ENGINE LACKS POWER

		POSSIBLE CAUSE
1. Raise wheel off the ground and spin by hand	Wheels do not spin freely	• Brake dragging • Worn or damaged wheel bearing
Wheel pins freely		
2. Check tire pressure	Pressure too low	• Faulty tire valve • Punctured tire
Pressure normal		
3. Accelerate rapidly from low to second	Engine speed does not change accordingly when clutch is released	• Clutch slipping • Worn clutch discs/plates • Warped clutch discs/plates • Weak clutch spring • Additive in engine oil
Engine speed reduced when clutch is released		
4. Accelerate lightly	Engine speed does not increase	• SE valve ON position • Clogged air cleaner • Restricted fuel flow • Clogged muffler • Pinched fuel tank breather
Engine speed increase		
5. Check ignition timing	Incorrect	• Faulty ignition control module • Faulty ignition pulse generator
Correct		
6. Check valve clearance	Incorrect	• Valve stuck open • Worn cylinder and piston rings • Leaking head gasket • Improper valve timing
Correct		
7. Test cylinder compression	Too low	• Carburetor not serviced frequently enough
Normal		
8. Check carburetor for clogging	Clogged	• Plugs not serviced frequently enough • Spark plugs are the incorrect heat range
Not clogged		
9. Remove spark plug	Fouled or discolored	• Oil level too high • Oil level too low • Contaminated oil
Not fouled or discolored		
10. Check oil level and condition	Oil level incorrect	• Oil level too high • Oil level too low
Correct		

		POSSIBLE CAUSE
11. Remove valve hole cap and inspect lubrication Valve train lubricated properly	Oil level incorrect	• Clogged oil passage • Clogged oil control orifice • Contaminated oil • Faulty oil pump
12. Check for engine overheating Not overheating	Overheating	• Coolant level low • Thermostat stuck close • Excessive carbon build-up in combustion chamber • Use of poor quality fuel • Clutch slipping • Lean fuel/air mixture • Wrong type of fuel
13. Accelerate or run at high speed Engine does not knock	Engine knocks	• Worn piston and cylinder • Lean fuel/air mixture • Wrong type of fuel • Excessive carbon build-up in combustion chamber • Ignition timing to advanced (faulty ignition control module)

POOR PERFORMANCE AT LOW AND IDLE SPEED

		POSSIBLE CAUSE
1. Check ignition timing and valve clearance Correct	Incorrect	• Improper valve clearance • Improper ignition timing (Faulty ignition control module or ignition pulse generator)
2. Check carburetor pilot screw adjustment Correct	Incorrect	• Lean fuel/air mixture (To correct, screw out) • Rich fuel/air mixture (To correct, screw in)
3. Check if air is leaking past manifold Not leak	Leaking	• Deteriorated insulator O-ring • Loose carburetor
Try spark test Good spark	Weak or intermittent spark	• Faulty carbon or wet fouled spark plug • Faulty ignition control module • Faulty alternator • Faulty ignition coil • Faulty ignition pulse generator • Broken or shorted spark plug wire • Faulty engine stop switch • Loose or disconnected ignition system wires

POOR PERFORMANCE AT HIGH SPEED

		POSSIBLE CAUSE
1. Check ignition timing and valve clearance	Incorrect	• Improper valve clearance • Improper ignition timing (faulty ignition control module or ignition pulse generator)
Correct		
2. Disconnect fuel line at carburetor	Fuel flow restricted	• Lack of fuel in fuel tank • Clogged fuel line • Clogged fuel tank cap breather tube • Clogged fuel valve • Clogged fuel strainer
Fuel flows freely		
3. Remove the carburetor and check for clogging	Clogged	• Clean
Not clogged		
4. Check valve timing	Incorrect	• Cam sprocket not installed properly
Correct		
5. Check valve spring tension	Weak	• Faulty spring
Not weakened		
6. Check muffler plate for clogging	Clogged	• Remove and clean

POOR HANDLING — Check tire pressure

	POSSIBLE CAUSE
1. If steering is heavy	• Steering stem adjusting nut too tight • Damaged steering head bearings
2. If either wheel is wobbling	• Excessive wheel bearing play • Bent rim • Improper installed wheel hub • Swingarm pivot bearing excessively worn • Bent frame • Loose swingarm pivot nut
3. If the motorcycle pulled to one side	• Faulty shock absorber • Front and rear wheel not aligned • Bent fork • Bent swingarm • Bent axle • Bent frame

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