

IMPORTANT SAFETY NOTICE

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

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

NOTE: Gives helpful information.

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

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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 18 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 that section.

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

If you don't know the source of the trouble, go to section 18 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 BASE KNOWLEDGE OF MAINTENANCE ON HONDA MOTORCYCLES, MOTOR SCOOTERS OR ATVS.

HONDA MOTOR CO., LTD.
Service Publication Office

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SYMBOLS

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

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

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

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

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 bases, it is still advisable to thoroughly wash your hands with soap and water as soon as possible after handling used oil. KEEP OUT OF REACH OF CHILDREN.*

Brake dust

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

▲ WARNING

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

Brake fluid

CAUTION

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

GENERAL INFORMATION

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.*

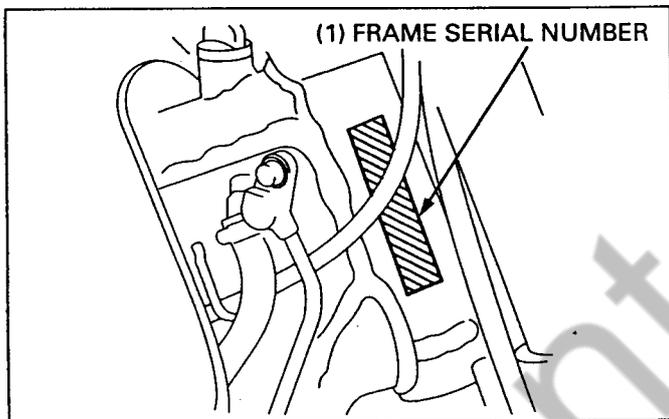
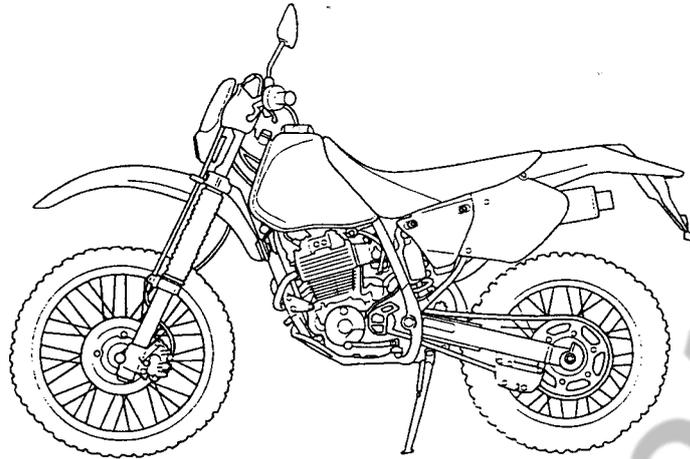
To prevent the possibility of an explosion, release the nitrogen by pressing the valve core. Then remove the valve stem from the shock absorber reservoir. Dispose of the oil in a manner acceptable to the Environmental Protection Agency (EPA).

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

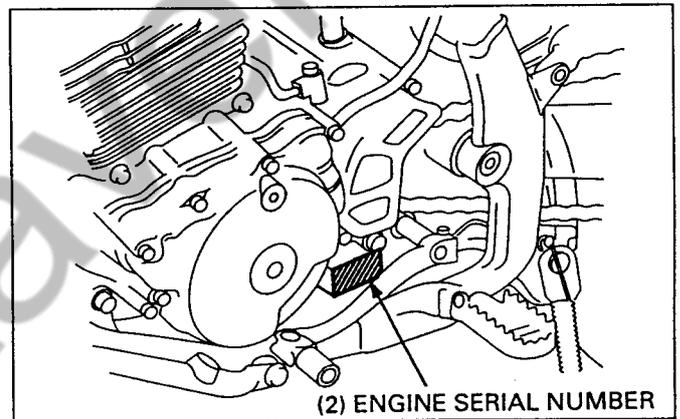
SERVICE RULES

1. Use genuine HONDA or HONDA-recommended parts and lubricants or their equivalents. Parts that do not meet HONDA's design specifications may damage the motorcycle.
2. Use the special tools designed for this product.
3. Use only metric tools when servicing this motorcycle. Metric bolts, nuts, and screws are not interchangeable with English fasteners. The use of incorrect tools and fasteners may damage the motorcycle.
4. Install new gaskets, O-rings, cotter pins, lock plates, etc. when reassembling.
5. When tightening a series of bolts or nuts, begin with the larger-diameter of inner bolts first, and tighten to specified torque diagonally in incremental steps, unless a particular sequence is specified.
6. Clean parts in cleaning solvent upon disassembly. Lubricate any sliding surfaces before reassembly.
7. After assembly, check all parts for proper installation and operation.
8. Route all electrical wires as shown on pages 1-21 through 1-23, Cable and Harness Routing.

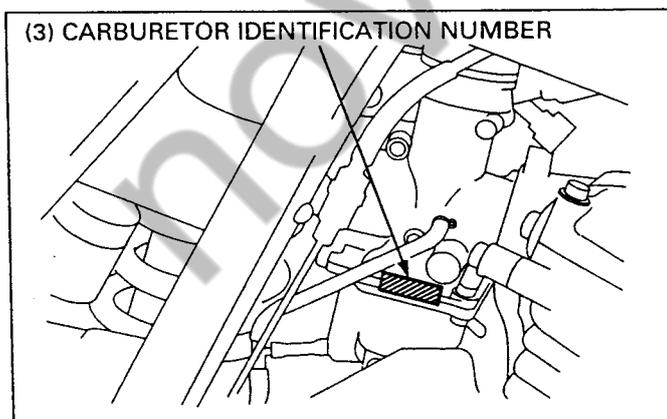
MODEL IDENTIFICATION



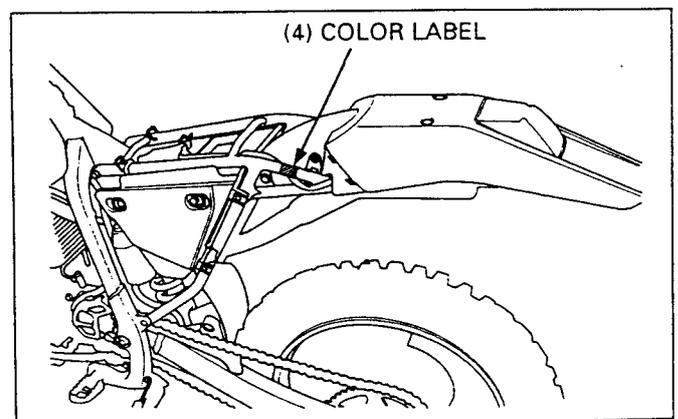
(1) FRAME SERIAL NUMBER
The frame serial number is stamped on the right side of the steering head.



(2) ENGINE SERIAL NUMBER
The engine serial number is stamped on the 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 on the left frame tube under the seat.

GENERAL INFORMATION

SPECIFICATIONS

GENERAL		
	ITEM	SPECIFICATION
DIMENSIONS	Overall length (ED, U types) (DK type)	2,155 mm (84.8 in) 2,145 mm (84.4 in)
	Overall width	820 mm (32.3 in)
	Overall height	1,245 mm (49.0 in)
	Wheelbase (ED, DK types) (U type)	1,400 mm (55.1 in) 1,410 mm (55.5 in)
	Seat height	915 mm (36.0 in)
	Ground clearance	305 mm (12.0 in)
	Dry weight (U, DK types) (ED type)	112 kg (246.9 lbs) 111 kg (244.7 lbs)
	Curb weight (ED, DK types) (U type)	121 kg (267.0 lbs) 123 kg (271.0 lbs)
	Maximum weight capacity	100 kg (220.5 lbs)
	FRAME	Frame type
Front suspension		Telescopic fork
Front wheel travel		270 mm (10.6 in)
Rear suspension		Pro-link
Rear wheel travel		270 mm (10.6 in)
Rear damper		Nitrogen gas filled damper with reserve tank
Front tire size (ED, DK types) (U type)		80/100-21 51M 3.00 - 21 51P
Rear tire size (ED, DK types) (U type)		100/100-18 59M 4.00 - 18 64P
Tire brand (ED, DK types) (Bridgestone) (U type) (IRC)		Front M23 Rear M22 Front TR8 Rear TR8
Front brake		Hydraulic single disc
Rear brake		Hydraulic single disc
Caster		24°45'
Trail		92.0 mm (3.6 in)
Fuel tank capacity	9.0 l (2.38 US gal, 1.98 Imp gal)	
Fuel tank reserve capacity	2.0 l (0.53 US gal, 0.44 Imp gal)	
ENGINE	Type	Gasoline, air cooled 4-stroke SOHC
	Cylinder arrangement	Single cylinder inclined 15°
	Bore x Stroke	73.0 x 59.5 mm (2.87 x 2.34 in)
	Displacement	249 cm ³ (15.2 cu-in)
	Compression ratio	10.2 : 1
	Valve train	4-valve, single chain driven SOHC
	Intake valve opens at 1 mm (0.04 in) lift	10° BTDC
	Intake valve closes at 1 mm (0.04 in) lift	40° ABDC
	Exhaust valve opens at 1 mm (0.04 in) lift	40° BBDC
	Exhaust valve closes at 1 mm (0.04 in) lift	10° ATDC
	Lubrication system	Forced pressure dry sump
Oil pump type	Trochoid	
Cooling system	Air cooled	
Air filtration	Oiled polyurethane foam	
Engine dry weight	33.7 kg (74.3 lbs)	
CARBURETOR	Carburetor type	Piston valve
	Venturi diameter	30 mm (1.18 in)

GENERAL INFORMATION

GENERAL (cont'd)

GENERAL (cont'd)		
	ITEM	SPECIFICATION
DRIVE TRAIN	Clutch System Clutch operating system Transmission Primary reduction Gear ratio 1st Gear ratio 2nd Gear ratio 3rd Gear ratio 4th Gear ratio 5th Gear ratio 6th Final reduction (ED, DK types) (U type) Gear shift pattern	Multi-plate, wet Cable operating 6-speed 3.100 (20/62) 2.769 (13/36) 1.941 (17/33) 1.450 (20/29) 1.173 (23/27) 0.960 (25/24) 0.814 (27/22) 3.692 (13/48) 3.000 (13/39) Left foot operated return system, 1 - N - 2 - 3 - 4 - 5 - 6
ELECTRICAL	Ignition system	CDI (Capacitive Discharge Ignition)

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GENERAL INFORMATION

Unit: mm in

LUBRICATION		STANDARD	SERVICE LIMIT
ITEM			
Engine oil capacity	at draining	1.3 liter (1.37 US qt, 1.14 Imp qt)	—
	at disassembly	1.7 liter (1.79 US qt, 1.50 Imp qt)	—
	at oil filter change	1.4 liter (1.47 US qt, 1.23 Imp qt)	—
Recommended engine oil		API Service Classification: SF or SG Viscosity: SAE 10W-40 or 20W-50	—
Oil pump rotor	Tip clearance	0.15 (0.006)	0.20 (0.008)
	Body clearance	0.15 – 0.22 (0.006 – 0.009)	0.25 (0.010)
	End clearance	0.02 – 0.09 (0.001 – 0.004)	0.12 (0.005)

FUEL SYSTEM		SPECIFICATIONS
ITEM		
Carburetor identification number	(ED, DK types)	PDG1A
	(U type)	PDG1B
Main jet	(ED, DK types)	#132
	(U type)	#75
Slow jet		#45
Jet needle clip position		3rd groove from top
Pilot screw initial opening		1-3/4 turns out
Float level		12.5 mm (0.49 in)
Idle speed		1,300 ± 100 min ⁻¹ (rpm)
Throttle grip free play		2 – 6 mm (1/12 – 1/4 in)

GENERAL INFORMATION

Unit: mm (in)

CYLINDER HEAD/VALVES				STANDARD	SERVICE LIMIT
ITEM					
Cylinder compression	Valve clearance at standard (Decompressor effected)			637 – 735 kPa (6.5 – 7.5 kgf/cm ² , 92 – 107 psi) at 600 min ⁻¹ (rpm)	—
	Valve clearance at 1 mm (0.04 in) (Decompressor not effected)			1,177 – 1,275 kPa (12.0 – 13.0 kgf/cm ² , 171 – 185 psi)	—
Cylinder head warpage				—	0.10 (0.004)
Valve and valve guide	Valve clearance	IN		0.10 ± 0.02 (0.004 ± 0.001)	—
		EX		0.12 ± 0.02 (0.005 ± 0.001)	—
	Valve stem O.D.	IN		4.975 – 4.990 (0.1959 – 0.1965)	4.96 (0.195)
		EX		4.955 – 4.970 (0.1951 – 0.1957)	4.94 (0.194)
	Valve guide I.D.	IN/EX		5.000 – 5.012 (0.1969 – 0.1973)	5.03 (0.198)
	Stem-to-guide clearance	IN		0.010 – 0.037 (0.0004 – 0.0015)	0.07 (0.003)
		EX		0.030 – 0.057 (0.0012 – 0.0022)	0.09 (0.004)
Valve seat width	IN/EX		1.1 – 1.2 (0.04 – 0.05)	2.0 (0.8)	
Valve spring	Free length	Inner	IN/EX	43.44 (1.710)	42.51 (1.673)
		Outer	IN/EX	44.03 (1.733)	42.83 (1.686)
Rocker arm	Rocker arm I.D.	IN/EX		11.500 – 11.518 (0.4528 – 0.4535)	11.53 (0.454)
	Rocker arm shaft O.D.	IN/EX		11.466 – 11.484 (0.4632 – 0.4521)	11.41 (0.449)
	Rocker arm-to-shaft clearance	IN/EX		0.016 – 0.052 (0.0006 – 0.0020)	0.10 (0.004)
Sub-rocker arm	Sub-rocker arm I.D.	IN/EX		7.000 – 7.015 (0.2756 – 0.2762)	7.05 (0.278)
	Sub-rocker arm shaft O.D.	IN/EX		6.972 – 6.987 (0.2745 – 0.2751)	6.92 (0.272)
	Sub-rocker arm-to-shaft clearance	IN/EX		0.013 – 0.043 (0.0005 – 0.0017)	0.10 (0.004)
Camshaft	Cam lobe height	IN		30.772 (1.2115)	30.583 (1.2041)
		EX		30.819 (1.2133)	30.629 (1.2059)
	Runout			—	0.03 (0.001)

GENERAL INFORMATION

CYLINDER/PISTON

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT	
Cylinder	I.D.	73.000 – 73.010 (2.8740 – 2.8744)	73.11 (2.878)	
	Taper	—	0.05 (0.002)	
	Out of round	—	0.05 (0.002)	
	Warpage	—	0.10 (0.004)	
Piston, piston ring and piston pin	Piston mark direction	"IN" mark facing to the intake side	—	
	Piston O.D.	72.965 – 72.985 (2.8726 – 2.8734) at 19 mm (0.7 in) from bottom of skirt	72.88 (2.869)	
	Piston pin hole I.D.	17.002 – 17.008 (0.6694 – 0.6696)	17.07 (0.672)	
	Cylinder-to-piston clearance	0.015 – 0.045 (0.0006 – 0.0018)	0.10 (0.004)	
	Piston pin O.D.	16.994 – 17.000 (0.6691 – 0.6693)	16.97 (0.668)	
	Piston-to-piston pin clearance	0.002 – 0.014 (0.0001 – 0.0006)	0.07 (0.003)	
	Piston ring-to-ring groove clearance	Top	0.015 – 0.050 (0.0006 – 0.0020)	0.12 (0.005)
		Second	0.015 – 0.050 (0.0006 – 0.0020)	0.12 (0.005)
	Piston ring end gap	Top	0.15 – 0.30 (0.006 – 0.012)	0.40 (0.016)
		Second	0.30 – 0.45 (0.012 – 0.018)	0.55 (0.022)
		Oil (side rail)	0.2 – 0.7 (0.01 – 0.03)	0.86 (0.034)
	Piston ring mark	Top	mark facing up	—
		Second	mark facing up	—
	Connecting rod small end I.D.	17.016 – 17.034 (0.6699 – 0.6706)	17.06 (0.672)	
Connecting rod-to-piston pin clearance	0.016 – 0.040 (0.0006 – 0.0016)	0.09 (0.004)		

GENERAL INFORMATION

CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT	
Clutch	Lever free play	10 – 20 (3/8 – 3/4)	—	
	Spring free length	37.2 (1.46)	33.5 (1.32)	
	Disc thickness	2.92 – 3.08 (0.115 – 0.121)	2.69 (0.106)	
	Plate warpage	—	0.30 (0.012)	
	Clutch outer I.D.	25.000 – 25.021 (0.9843 – 0.9851)	25.04 (0.986)	
	Outer guide	I.D.	19.990 – 20.010 (0.7870 – 0.7878)	20.03 (0.789)
		O.D.	24.959 – 24.980 (0.9826 – 0.9835)	24.17 (0.952)
	Mainshaft O.D. at clutch outer guide	19.959 – 19.980 (0.7858 – 0.7866)	19.91 (0.784)	
Kickstarter	Starter idle gear I.D.	19.010 – 19.034 (0.7484 – 0.7494)	19.13 (0.753)	
	Starter idle gear bushing	I.D.	15.000 – 15.018 (0.5906 – 0.5913)	15.04 (0.592)
		O.D.	18.959 – 18.980 (0.7464 – 0.7472)	18.92 (0.745)
	Kickstarter gear I.D.	25.020 – 25.041 (0.9850 – 0.9859)	25.12 (0.989)	
	Kickstarter gear bushing	I.D.	22.000 – 22.021 (0.8661 – 0.8670)	22.10 (0.870)
		O.D.	24.979 – 25.000 (0.9834 – 0.9843)	24.90 (0.980)
	Kickstarter spindle O.D.	21.959 – 21.980 (0.8645 – 0.8654)	21.91 (0.863)	
	Countershaft O.D. at starter idle gear	14.966 – 14.984 (0.5892 – 0.5899)	14.91 (0.587)	

GENERAL INFORMATION

Unit: mm (in)

CRANKSHAFT/TRANSMISSION

ITEM				STANDARD	SERVICE LIMIT	
Crankshaft, Connecting rod	Connecting rod big end side clearance			0.050 – 0.500 (0.0019 – 0.0197)	0.80 (0.031)	
	Connecting rod big end radial clearance			0.000 – 0.008 (0.0000 – 0.0003)	0.05 (0.002)	
	Crankshaft runout			—	0.05 (0.002)	
Transmission	Gear I.D.	M5		20.000 – 20.021 (0.7874 – 0.7882)	20.08 (0.791)	
		M6		23.000 – 23.021 (0.9055 – 0.9063)	23.07 (0.908)	
		C1		23.000 – 23.021 (0.9055 – 0.9063)	23.07 (0.908)	
		C2		25.020 – 25.041 (0.9850 – 0.9859)	25.09 (0.988)	
		C3		25.000 – 25.021 (0.9843 – 0.9851)	25.07 (0.987)	
		C4		22.000 – 22.021 (0.8661 – 0.8670)	22.07 (0.869)	
	Gear bushing	M6	O.D.	22.959 – 22.980 (0.9039 – 0.9047)	22.92 (0.902)	
			I.D.	18.000 – 18.018 (0.7087 – 0.7094)	18.08 (0.712)	
		C1	O.D.	22.959 – 22.980 (0.9039 – 0.9047)	22.90 (0.902)	
			I.D.	22.000 – 22.021 (0.8661 – 0.8670)	22.10 (0.870)	
		C2	O.D.	24.979 – 25.000 (0.9834 – 0.9843)	24.90 (0.980)	
			O.D.	24.959 – 24.980 (0.9826 – 0.9835)	24.90 (0.980)	
	Mainshaft O.D.	M5		19.959 – 19.980 (0.7858 – 0.7866)	19.91 (0.784)	
		Clutch outer guide		19.959 – 19.980 (0.7858 – 0.7866)	19.91 (0.784)	
	Countershaft O.D.	Starter idle gear		14.966 – 14.984 (0.5892 – 0.5899)	14.91 (0.587)	
		C1		17.966 – 17.984 (0.7073 – 0.7080)	17.91 (0.705)	
		C2, C4		21.959 – 21.980 (0.8645 – 0.8654)	21.91 (0.863)	
	Shift drum O.D. at right crankcase bearing portion				19.959 – 19.980 (0.7858 – 0.7866)	19.90 (0.783)
	Gear-to-bushing clearance	M6		0.020 – 0.062 (0.0008 – 0.0022)	0.10 (0.004)	
		C1		0.020 – 0.062 (0.0008 – 0.0022)	0.10 (0.004)	
		C2		0.020 – 0.062 (0.0008 – 0.0022)	0.10 (0.004)	
		C3		0.020 – 0.062 (0.0008 – 0.0022)	0.10 (0.004)	
	Gear-to-shaft clearance	M5, C4		0.020 – 0.062 (0.0008 – 0.0022)	0.15 (0.006)	
Bush-to-shaft clearance	C1		0.016 – 0.052 (0.0006 – 0.0020)	0.10 (0.004)		
	C2		0.020 – 0.062 (0.0008 – 0.0022)	0.10 (0.004)		
Shift fork, Shaft	Shift fork	I.D.		13.000 – 13.021 (0.5118 – 0.5126)	13.05 (0.514)	
		Operation area thickness	R, L	4.93 – 5.00 (0.194 – 0.197)	4.50 (0.177)	
			C	4.90 – 5.00 (0.193 – 0.197)	4.50 (0.177)	
	Shift fork shaft O.D.			12.966 – 12.984 (0.5105 – 0.5112)	12.90 (0.508)	

GENERAL INFORMATION

FRONT WHEEL/SUSPENSION/STEERING		Unit: mm (in)	
ITEM		STANDARD	SERVICE LIMIT
Cold tire pressure	(ED, DK types)	100 kPa (1.0 kgf/cm ² , 15 psi)	—
	(U type)	150 kPa (1.50 kgf/cm ² , 22 psi)	—
Axle runout		—	0.2 (0.01)
Wheel rim runout	Radial	—	2.0 (0.08)
	Axial	—	2.0 (0.08)
Wheel rim-to-hub distance		20.25 (0.797)	—
Fork spring free length		442.5 (17.42)	438.1 (17.25)
Fork tube runout		—	2.0 (0.08)
Recommended fork oil		Fork fluid (SS7)	—
Fork oil level		82 (3.2)	77 – 108 (3.0 – 4.2)
Fork oil capacity		477 cm ³ (16.13 US oz, 16.79 Imp oz)	—

REAR WHEEL/SUSPENSION		Unit: mm (in)	
ITEM		STANDARD	SERVICE LIMIT
Cold tire pressure	(ED, DK types)	100 kPa (1.0 kgf/cm ² , 15 psi)	—
	(U type)	125 kPa (1.25 kgf/cm ² , 18 psi)	—
Axle runout		—	0.2 (0.01)
Wheel rim runout	Radial	—	2.0 (0.08)
	Axial	—	2.0 (0.08)
Wheel rim-to-hub distance		22.75 (0.896)	—
Drive chain slack		30 – 40 (1-1/4 – 1-5/8)	—
Drive chain length	(ED, DK types)	—	1,659 (65.3)
	(U type)	—	1,611 (63.4)
Replacement drive chain		D.I.D. 520VC5 or RK 520MOZ9	—
Drive chain guide slider thickness		—	To the indicator
Drive chain slider thickness		—	4.0 (0.15)
Recommended shock oil		Fork fluid (SS8)	—
Damper gas pressure/compressed gas		981 kPa (10.0 kgf/cm ² , 142 psi)/Nitrogen	—
Shock absorber spring free length		190.0 (7.5)	186.2 (7.33)
Shock absorber spring preload length		181.5 (7.15)	173.5 – 185.5 (6.83 – 7.30)

GENERAL INFORMATION

Unit: mm (i)

BRAKE SYSTEM			STANDARD	SERVICE LIMIT
Specified brake fluid			DOT 4 brake fluid	—
Brake pad wear			—	To the groove
Brake disc thickness	FR	(ED, DK types)	3.0 (0.12)	2.5 (0.10)
		(U type)	3.5 (0.14)	3.0 (0.12)
	RR		4.5 (0.18)	4.0 (0.16)
Brake disc runout			—	0.25 (0.010)
Master cylinder I.D.	FR		12.700 – 12.743 (0.5000 – 0.5017)	12.76 (0.502)
	RR		14.000 – 14.043 (0.5512 – 0.5529)	14.06 (0.554)
Master piston O.D.	FR		12.657 – 12.684 (0.4983 – 0.4994)	12.68 (0.497)
	RR		13.957 – 13.984 (0.5495 – 0.5506)	13.95 (0.549)
Caliper cylinder I.D.	FR		27.000 – 27.050 (1.0630 – 1.0650)	27.06 (1.065)
	RR		27.000 – 27.050 (1.0630 – 1.0650)	27.06 (1.065)
Caliper piston O.D.	FR		26.900 – 26.950 (1.0591 – 1.0610)	26.89 (1.059)
	RR		26.935 – 26.968 (1.0604 – 1.0617)	26.89 (1.059)

GENERAL INFORMATION

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

GENERAL INFORMATION

TORQUE VALUES

STANDARD			
Fasteners Type	Torque N-m (kgf-m, lbf-ft)	Fasteners Type	Torque N-m (kgf-m, lbf-ft)
5 mm hex bolt and nut	5 (0.5, 3.6)	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)	12 (1.2, 9)
12 mm hex bolt and nut	54 (5.5, 40)	and nut	
		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. Stake.
 3. Apply oil to the threads and flange surface.
 4. Apply clean engine oil to the O-ring.
 5. Apply grease to the threads and flange surface.
 6. U-nut.
 7. ALOC bolt; Replace with a new one.

ENGINE				
Item	Q'ty	Thread dia. (mm)	Torque N-m (kgf-m, lbf-ft)	Remarks
Maintenance:				
Crankcase oil drain bolt	1	12	25 (2.5, 18)	
Oil filter cover bolt	2	6	12 (1.2, 9)	
Timing hole cap	1	14	10 (1.0, 7)	Note 5
Crankshaft hole cap	1	30	8 (0.8, 5.8)	Note 5
Valve hole cap	4	36	15 (1.5, 11)	Note 4
Valve adjust lock nut (IN)	2	7	24 (2.4, 17)	
(EX)	2	8	26 (2.6, 19)	
Spark plug	1	10	12 (1.2, 9)	
Lubrication:				
Oil pass pipe bolt (7 mm)	2	7	12 (1.2, 9)	
(8 mm)	1	8	12 (1.2, 9)	
Cylinder Head/Valves:				
Cylinder head cover bolt (6 mm)	13	6	12 (1.2, 9)	
(8 mm)	1	8	24 (2.4, 17)	
Rocker arm shaft	2	14	27 (2.8, 20)	Note 1
Sub-rocker arm shaft	4	12	23 (2.3, 17)	Note 1
Cam sprocket bolt	2	7	20 (2.0, 14)	Note 1
Cylinder head bolt (10 mm)	4	10	39 (4.0, 29)	Note 3
(6 mm)	2	6	10 (1.0, 7)	
Cam chain tensioner set plate bolt	2	6	10 (1.0, 7)	
Engine Removal/Installation:				
Drive sprocket cover bolt	2	6	12 (1.2, 9)	
Drive sprocket bolt	2	6	10 (1.0, 7)	

GENERAL INFORMATION

— ENGINE (Cont'd)

Item	Q'ty	Thread dia. (mm)	Torque N-m (kgf-m, lbf-ft)	Remarks
Cylinder/Piston:				
Cylinder bolt (10 mm)	4	10	39 (4.0, 29)	Note 3
(6 mm SH)	2	6	10 (1.0, 7)	
Clutch/Kickstarter/Gearshift Linkage:				
Right crankcase cover bolt	11	6	12 (1.2, 9)	Note 1 Note 2, 3 Note 3
Stopper arm pivot bolt	1	6	12 (1.2, 9)	
Gearshift cam bolt	1	10	24 (2.4, 17)	
Clutch center lock nut	1	16	108 (11.0, 80)	
Primary drive gear lock nut	1	18	88 (9.0, 65)	
Kickstarter pedal bolt	1	8	26 (2.7, 20)	
Alternator:				
Left crankcase cover bolt	8	6	12 (1.2, 9)	Note 3 Note 1 Note 1 Note 1
Flywheel bolt	1	12	103 (10.5, 76)	
Stator bolt	3	6	10 (1.0, 7)	
Ignition pulse generator bolt	2	5	5 (0.5, 3.6)	
Alternator wire clamp bolt	1	5	5 (0.5, 3.6)	
Gearshift pedal bolt	1	6	1.2 (1.2, 9)	
Crankcase/Crank Shaft/Balancer:				
Crankcase bolt	11	6	12 (1.2, 9)	Note 1
Cam chain tensioner bolt	1	6	12 (1.2, 9)	
Others:				
NSHF bolt	—	6	12 (1.2, 9)	
SH bolt	—	6	10 (1.0, 7)	

— FRAME

Item	Q'ty	Thread dia. (mm)	Torque N-m (kgf-m, lbf-ft)	Remarks	
Frame Body Panels/Exhaust System:					
Muffler mounting bolt	1	8	32 (3.3, 24)	Note 6	
Muffler clamp bolt	1	8	20 (2.0, 14)		
Exhaust pipe protector mounting bolt	2	6	12 (1.2, 9)		
Exhaust pipe joint nut	4	6	10 (1.0, 7)		
Maintenance:					
Fuel valve mounting bolt	2	6	9 (0.9, 6.5)		
Down tube oil drain bolt	1	10	39 (4.0, 29)		
Front brake lever adjust lock nut	1		6 (0.6, 4.3)		
Side stand pivot bolt	1	10	10 (1.0, 7)		
nut	1	10	39 (4.0, 29)		
Spoke nipple	68	BC3.2	3.8 (0.38, 2.7)		
Rim lock	2	8	15 (1.5, 11)		
Lubrication System:					
Down tube oil strainer	1	27	54 (5.5, 40)		
Oil pipe bolt (12 mm)	1	12	37 (3.8, 27)		
Engine Removal/Installation:					
Right foot peg mounting bolt	2	10	42 (4.3, 31)		
Engine hanger plate bolt (10 mm)	4	10	64 (6.5, 47)		
(8 mm)	6	8	26 (2.7, 20)		

GENERAL INFORMATION

FRAME (cont'd)				
Item	Q'ty	Thread dia. (mm)	Torque N·m (kgf·m, lbf·ft)	Remarks
Rear frame upper mounting bolt	1	8	26 (2.7, 20)	
Rear frame lower side mounting bolt	2	8	42 (4.3, 31)	
Front Wheel/Suspension/Steering:				
Handlebar holder bolt	4	8	26 (2.7, 20)	
Steering stem nut	1	24	98 (10.0, 72)	
Steering stem adjusting nut	1	26	5 (0.5, 3.6)	
Top bridge pinch bolt	4	8	32 (3.3, 24)	
Bottom bridge pinch bolt	4	8	26 (2.7, 20)	
Front axle	1	12	74 (7.5, 54)	
Front axle holder nut	4	6	12 (1.2, 9)	Note 6
Front brake disc plate bolt	4	6	20 (2.0, 14)	Note 7
Rear Wheel/Suspension:				
Rear axle nut	1	16	93 (9.5, 69)	Note 6
Driven sprocket nut	6	8	32 (3.3, 24)	Note 6
Rear brake disc plate bolt	4	8	42 (4.3, 31)	Note 7
Rear brake hose guide screw	2	5	4.3 (0.43, 3.1)	Note 1
Swingarm pivot nut	1	14	88 (9.0, 65)	Note 6
Rear shock absorber mounting bolt (upper)	1	10	44 (4.5, 33)	
(lower)	1	10	44 (4.5, 33)	Note 6
Shock arm-to-swing arm bolt/nut	1	12	69 (7.0, 51)	Note 6
Shock link-to-frame bolt/nut	1	10	49 (5.0, 36)	Note 6
Shock link-to-shock arm bolt/nut	1	10	44 (4.5, 33)	Note 6
Damper rod end nut	1	12	37 (3.8, 27)	Note 6
Damping adjuster	1	19	20 (2.0, 14)	Note 6
Brake System:				
Front master cylinder holder bolt	2	6	9 (0.9, 6.5)	
Front reservoir tank cover screw	2	4	2 (0.2, 1.4)	
Front brake lever pivot bolt	1	6	6 (0.6, 4.3)	
nut	1	6	6 (0.6, 4.3)	
Front brake caliper pad pin	1	10	18 (1.8, 13)	
Front brake caliper pin bolt A	1	8	23 (2.3, 17)	Note 1
B	1	8	13 (1.3, 9)	Note 1
Front brake caliper bracket bolt	2	8	30 (3.1, 22)	Note 1
Rear brake master cylinder holder bolt	2	6	14 (1.4, 10)	Note 1
Push rod lock nut	1	8	18 (1.8, 13)	
Rear brake caliper pad pin	1	10	10 (1.0, 7)	
Rear brake caliper pin bolt	1	12	27 (2.8, 20)	
Rear brake caliper bracket pin bolt	1	8	13 (1.3, 9)	Note 1
Pad pin plug	2	10	2.5 (0.25, 1.8)	
Bleed valve	2	8	6 (0.6, 4.3)	
Brake hose bolt	4	10	34 (3.5, 25)	

TOOLS

NOTE: Newly designed tool.

DESCRIPTION	TOOL NUMBER	REMARKS	REF. SEC.
Float level gauge	07401 - 0010000		5
Universal bearing puller	07631 - 0010000		11
Nipple wrench	07701 - 0020300		3, 13, 14
Gear holder	07724 - 0010100		9
Flywheel holder	07725 - 0040000		10
Flywheel puller	07733 - 0020001		10
Bearing remover weight	07741 - 0010201		11
Attachment, 32 x 35 mm	07746 - 0010100		11, 13
Attachment, 37 x 40 mm	07746 - 0010200		11, 14
Attachment, 42 x 47 mm	07746 - 0010300		11, 13, 14
Attachment, 52 x 55 mm	07746 - 0010400		11
Attachment, 72 x 75 mm	07746 - 0010600		11
Attachment, 24 x 26 mm	07746 - 0010700		14
Pilot, 15 mm	07746 - 0040300		11, 13
Pilot, 17 mm	07746 - 0040400		11, 14
Pilot, 20 mm	07746 - 0040500		11
Pilot, 22 mm	07746 - 0041000		11
Pilot, 28 mm	07746 - 0041100		11
Bearing remover shaft	07746 - 0050100		13, 14
Bearing remover head, 15 mm	07746 - 0050400		13
Bearing remover head, 17 mm	07746 - 0050500		14
Driver	07749 - 0010000		11, 13, 14
Valve spring compressor	07757 - 0010000		7
Valve seat cutter			7
— Seat cutter, 27.5 mm (45° EX)	07780 - 0010200		7
— Seat cutter, 33 mm (45° IN)	07780 - 0010800		7
— Flat cutter, 25 mm (32° EX)	07780 - 0012000		7
— Flat cutter, 30 mm (32° IN)	07780 - 0012200		7
— Interior cutter, 30 mm (60° IN/EX)	07780 - 0014000		7
Cutter holder, 5 mm	07781 - 0010400		7
Compression gauge attachment	07908 - KK60000		3
Snap ring pliers	07914 - 3230001		15
Steering stem socket	07916 - KA50100		13
Clutch center holder	07923 - KE10000		9
Needle bearing remover	07931 - MA70000		14
Bearing remover shaft	07936 - 1660120		11
Bearing remover set, 15 mm	07936 - KC10000		11
— remover weight	07741 - 0010201		
— remover shaft, 15 mm	07936 - KC10100		
— remover head, 15 mm	07936 - KC10200		
Valve guide driver	07942 - MA60000		7

GENERAL INFORMATION

DESCRIPTION	TOOL NUMBER	REMARKS	REF. SEC.
Steering stem driver	07946 - 4300101		13
Needle bearing remover	07946 - KA50000		14
Fork seal driver	07947 - KA50100		13
Fork seal driver attachment	07947 - KF00100		13
Oil seal remover	07948 - 4630100		13
Crankcase assembly tool	07965 - VM00000		11
— assembly collar	07965 - VM00100		
— assembly shaft	07965 - VM00200		
— thread adapter	07965 - VM00300		
Slider guide, 14 mm	07974 - KA40001		14
Slider guide attachment	07974 - KA50102		14
Valve guide reamer (5.010 mm)	07984 - MA60001		7
Bushing driver pin	07GMD - KT80100		14
Spherical bearing driver	07HMF - KS60100		14
Peak voltage adapter	07HGJ - 0020100		16
Bearing remover head, 13 mm	07LMC - KZ10100		11
Fork damper holder	07PMB - KZ40101	NOTE	13

GENERAL INFORMATION

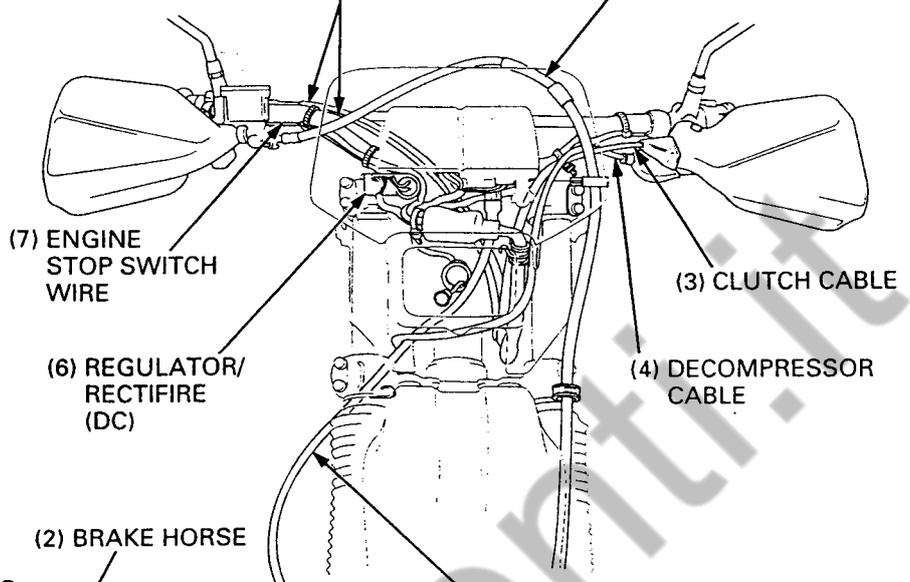
FRAME		
Location	Material	Remarks
Clutch lever pivot sliding surface Decompressor lever pivot sliding surface Throttle grip sliding surface and cable rolling area Throttle slider cable groove Steering stem bearing rolling area Steering stem bearing dust seal lip Wheel bearing dust seal lip Gearshift pedal movable area Kickstarter pedal movable area Shock arm pivot dust seal lip, spherical bearing rolling area and needle bearing rolling area Shock link pivot dust seal lip, needle bearing rolling area Shock link to frame bolt/nut threads Side stand pivot bolt sliding surface Brake pedal pivot sliding surface Swingarm pivot needle bearing rolling area and dust seal lip Rear shock absorber spherical bearing rolling area	Multi-purpose grease	Apply 5 g of grease
Fork tube bushing surface Guide bushing surface	Fork oil	
Brake master cylinder Brake caliper seals Caliper cylinder bore and pistons Master cylinder piston cups Master cylinder bore and piston	DOT 4 brake fluid	
Front brake master cylinder to brake lever adjusting bolt Brake lever pivot bolt sliding surface Brake caliper bracket pin boot Brake caliper pin boot Brake master cylinder boot Rear brake master cylinder piston to push rod contact area	Silicone grease	
Handlebar grip rubber inside	Honda bond A or Cemedine #540	
Drive chain slider mounting screw threads Rear brake hose guide mounting screw threads Rear brake master cylinder holder bolt threads	Locking agent	

LUBRICATION & SEAL POINTS

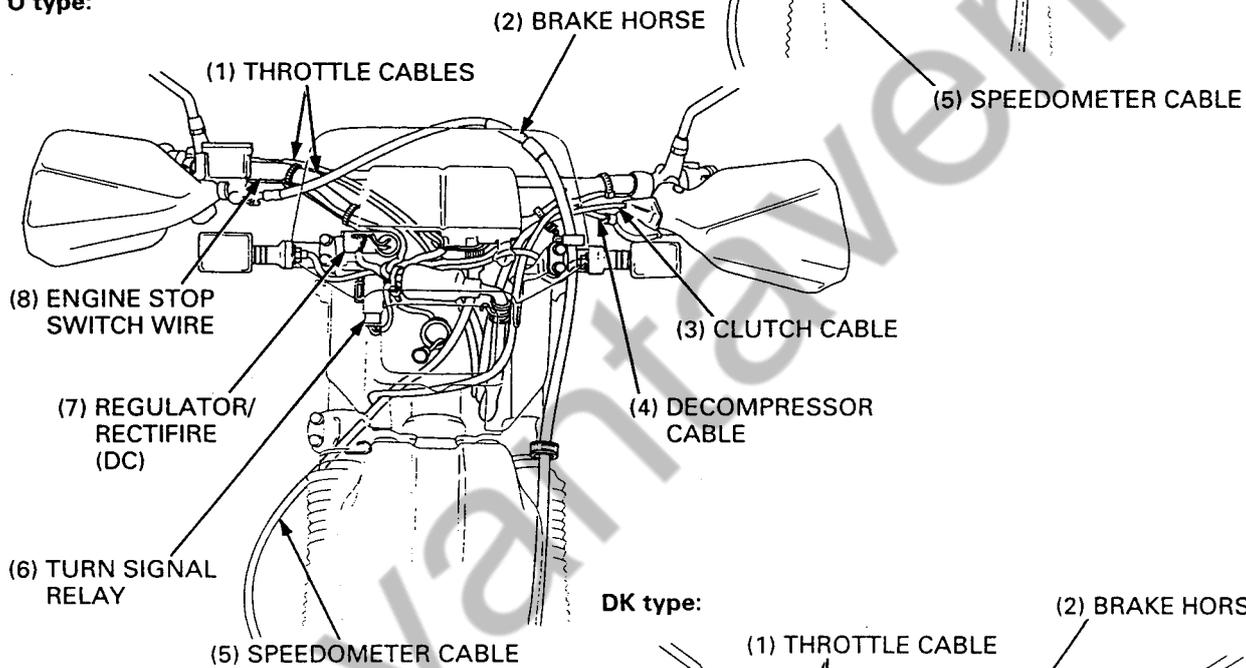
ENGINE	Location	Material	Remarks
	Cylinder inner surface Cylinder 10 mm bolt threads and seating surface Cylinder head 10 mm bolt threads and seating surface Piston outer surface Piston ring Cam chain Rocker arm shaft (rocker arm sliding surface) Sub-rocker arm shaft (sub rocker arm sliding surface) Valve adjust screw threads and lock nut seating surface Clutch disc Clutch center lock nut threads and seating surface Primary drive gear lock nut threads and seating surface Shift fork shaft Transmission gear teeth Kickstarter spindle bushing Each bearings rolling area Each O-rings surface Each oil seal lips and surface Flywheel bolt threads and seating surface	Engine oil	
	Piston pin Connecting rod piston pin hole Camshaft lobes and center journal Rocker arm slipper surface Sub-rocker arm slipper surface and adjusting screw contact area Valve guide sliding surface Valve stem sliding surface Clutch outer guide outer surface Transmission gear bearing surface M3/4, C5, C6 gear shift fork groove	Molybdenum disulfide oil (a mixture of 1/2 engine oil and 1/2 molybdenum disulfide grease)	
	Cam chain tensioner set plate bolt threads Cam sprocket bolt threads Rocker arm shaft threads Sub-rocker arm shaft threads Gearshift cam bolt threads Stator mounting bolt threads Ignition pulse generator mounting bolt and wire clamper bolt threads	Locking agent	Coating width 6.5 ± 1 mm from tip Coating width 5.0 ± 1 mm from tip (page 7-19) (page 7-20) Coating width 6.5 ± 1 mm from tip.
	Clutch lifter arm pivot Each oil seal lips	Multi-purpose grease	

CABLE & HARNESS ROUTING

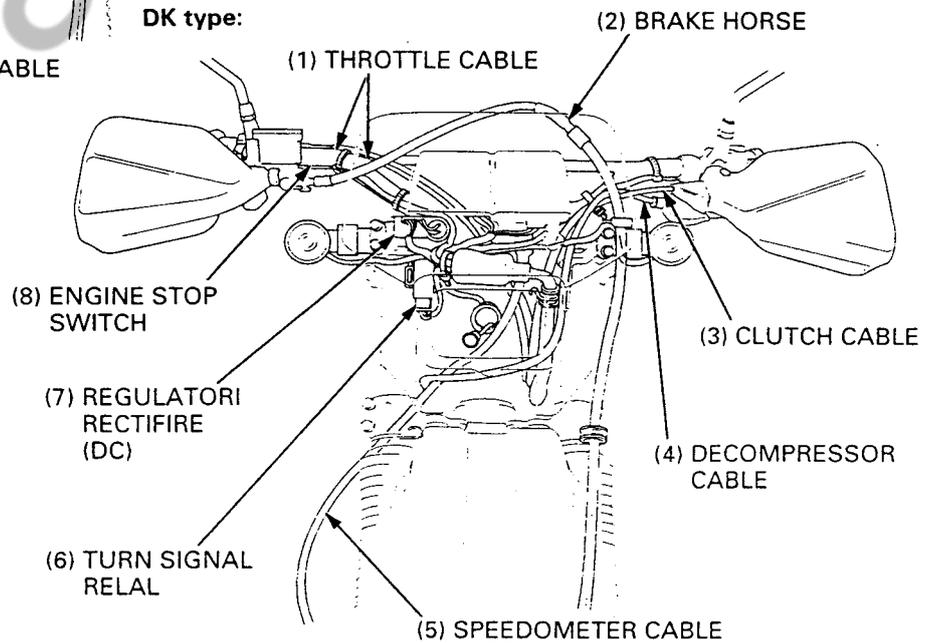
ED type: (1) THROTTLE CABLES (2) BRAKE HORSE



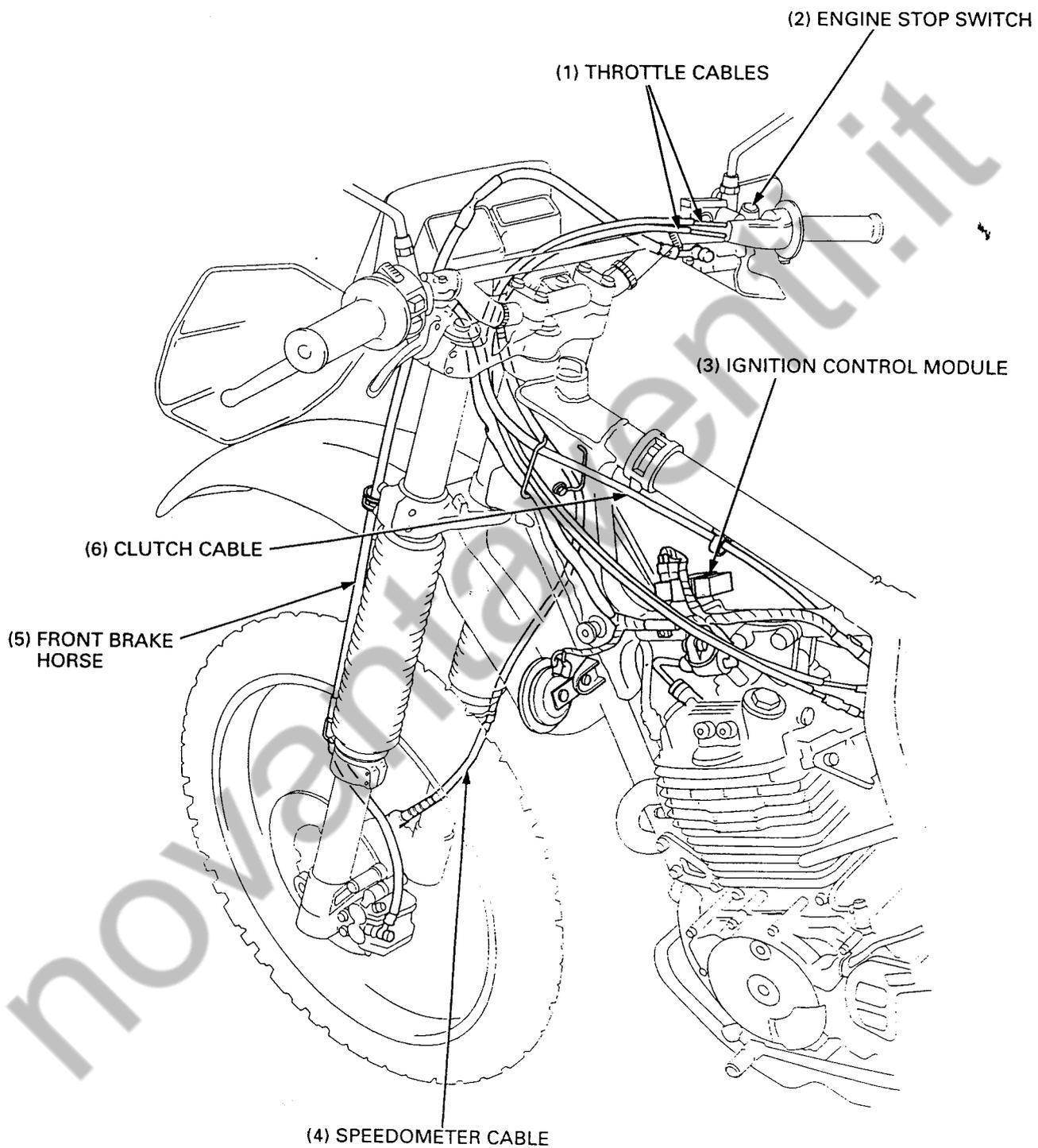
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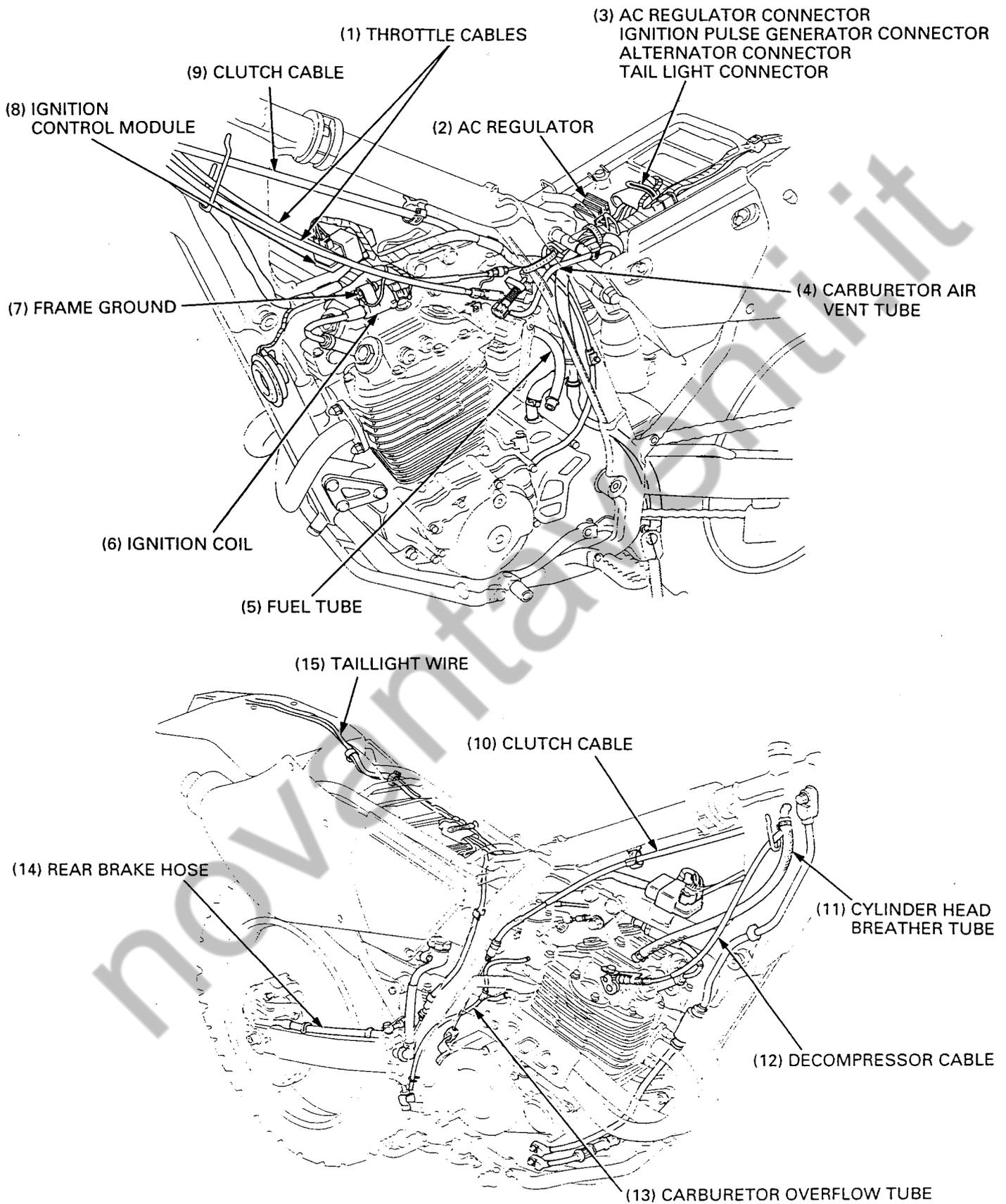


DK type:



GENERAL INFORMATION





MEMO

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2. FRAME/BODY PANELS/EXHAUST SYSTEM

SERVICE INFORMATION	2-1	SEAT	2-2
TROUBLESHOOTING	2-1	REAR FENDER/MUD GUARD	2-3
FRONT FENDER	2-2	UNDER GUARD	2-3
SIDE COVER	2-2	EXHAUST PIPE/MUFFLER	2-3

2

SERVICE INFORMATION

GENERAL

▲ WARNING

Gasoline is extremely flammable and is explosive under certain conditions. 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 working area or where gasoline is stored can cause a fire or explosion.

- This section covers removal and installation of the frame body panels and exhaust system.
- Always replace the exhaust pipe gaskets when removing the exhaust pipe from the engine. When installing the exhaust system, loosely install all of the exhaust pipe fasteners. Always tighten the exhaust pipe joint nuts at the engine first, then tighten the exhaust clamps, then 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

Muffler mounting bolt	32 N·m (3.3 kgf·m, 24 lbf·ft)
Muffler clamp bolt	20 N·m (2.0 kgf·m, 14 lbf·ft)
Exhaust pipe protector mounting bolt	12 N·m (1.2 kgf·m, 9 lbf·ft)
Exhaust pipe joint nut	10 N·m (1.0 kgf·m, 7 lbf·ft)
Spark arrester (U type)	2.2 N·m (0.2 kgf·m, 1.4 lbf·ft)

TROUBLESHOOTING

Excessive exhaust noise

- Broken exhaust system
- Exhaust gas leak

Poor performance

- Deformed exhaust system
- Exhaust gas leak
- Clogged muffler

FRAME/BODY PANELS/EXHAUST SYSTEM

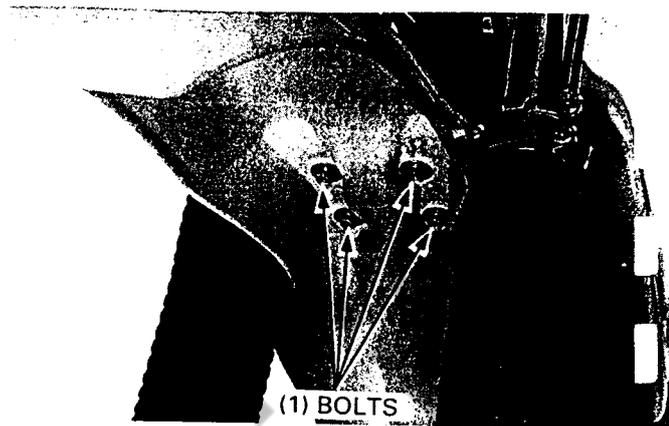
FRONT FENDER

REMOVAL

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

INSTALLATION

Installation is in the reverse order of removal.



SIDE COVER

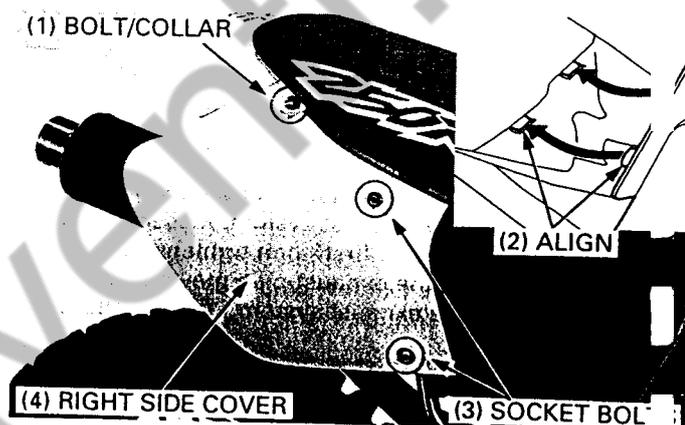
REMOVAL

Remove the bolt/collar and socket bolts.
Remove the side cover.

INSTALLATION

Install the side cover aligning its tabs with the grooves on the rear fender.

Install and tighten the bolts and socket bolts.



SEAT

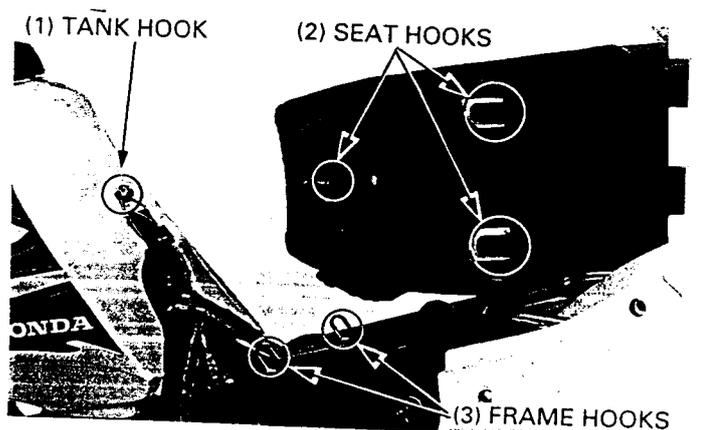
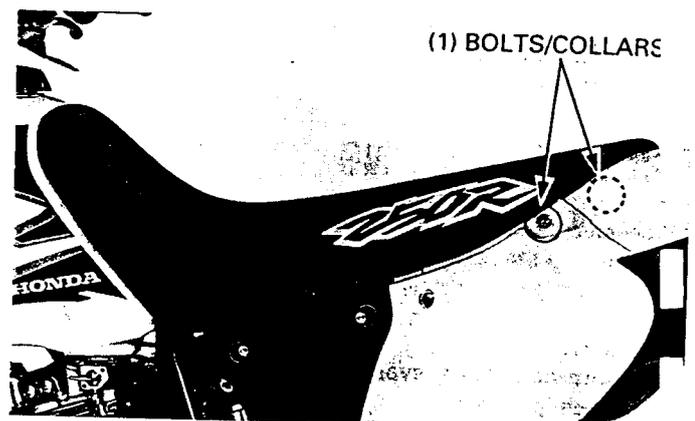
REMOVAL/INSTALLATION

Remove the bolts/collars.
Remove the seat.

Installation is in the reverse order of removal.

NOTE

- At installation, align the front hook of the seat with the fuel tank boss and both side hooks with the frame hooks.



REAR FENDER/MUD GUARD

REMOVAL/INSTALLATION

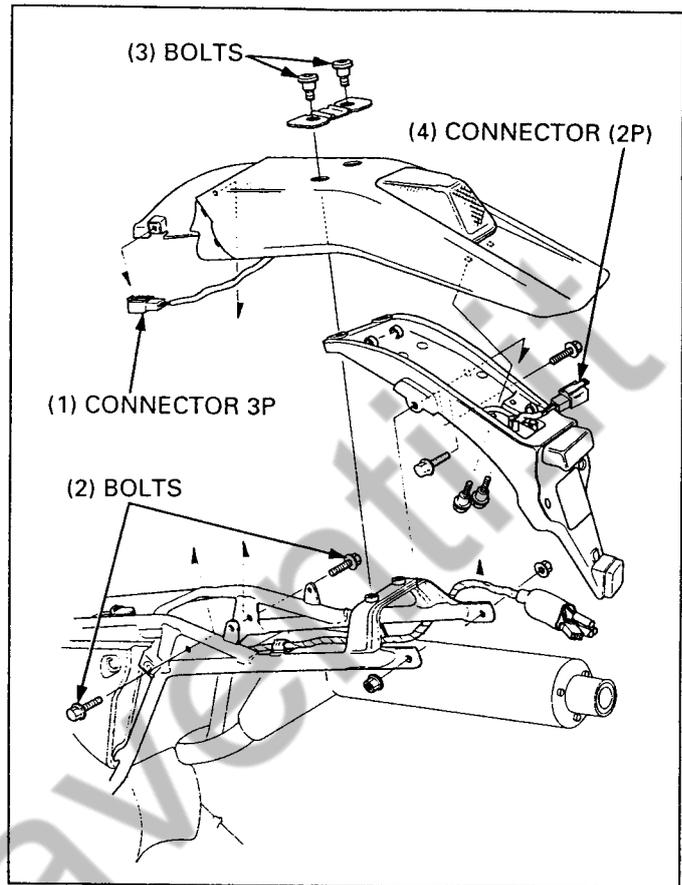
REAR FENDER:

Remove the seat and side covers (page 2-2).
Disconnect the taillight 3P (BI) connector.
Remove the bolts and rear fender.

MUD GUARD:

Disconnect the 2P (RED) connector.
Remove the bolts, nut and mud guard.

Installation is in the reverse order of removal.



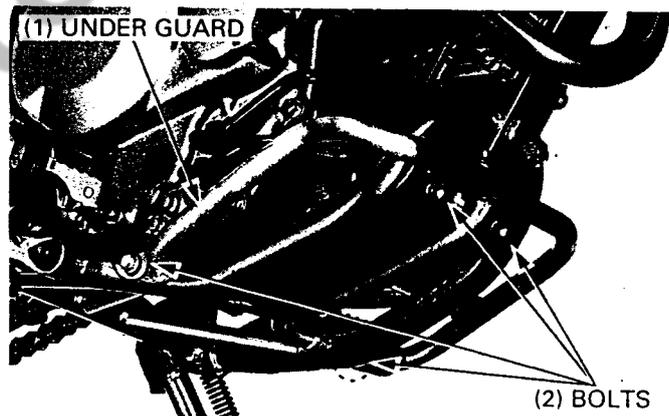
UNDER GUARD

REMOVAL

Remove the bolts and under guard.

INSTALLATION

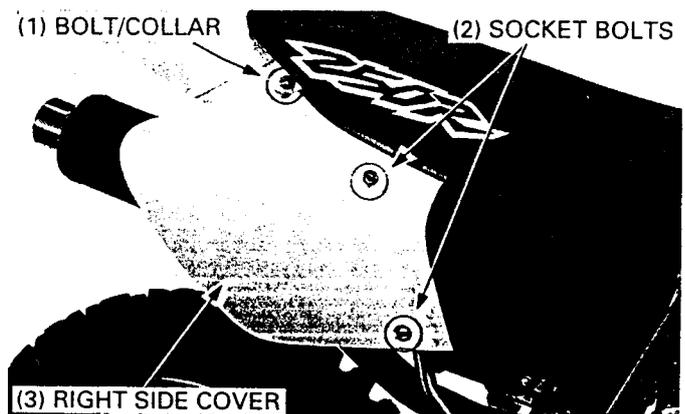
Installation is in the reverse order of removal.



EXHAUST PIPE/MUFFLER

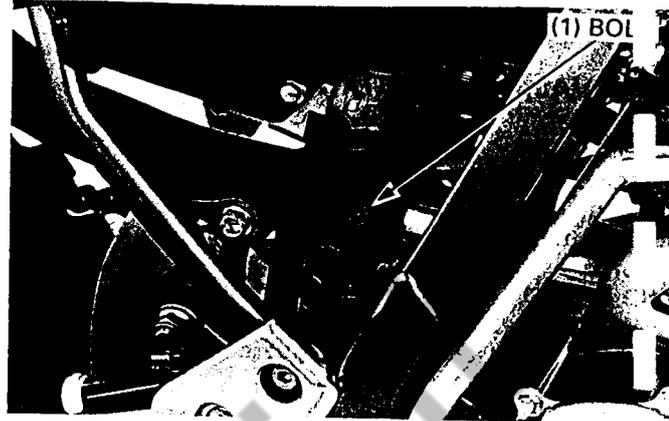
REMOVAL

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



FRAME/BODY PANELS/EXHAUST SYSTEM

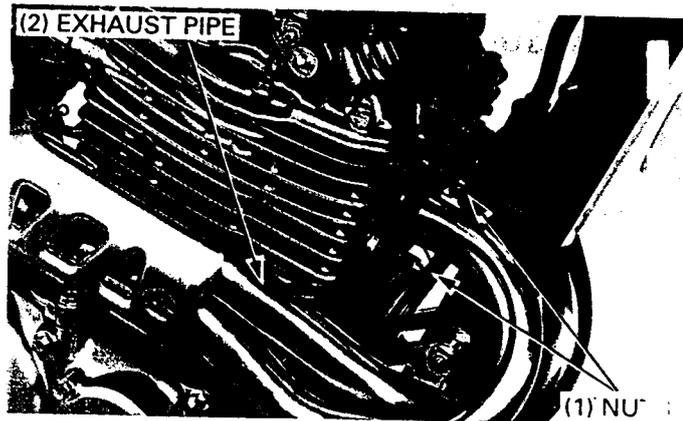
Loosen the muffler clamp bolt.



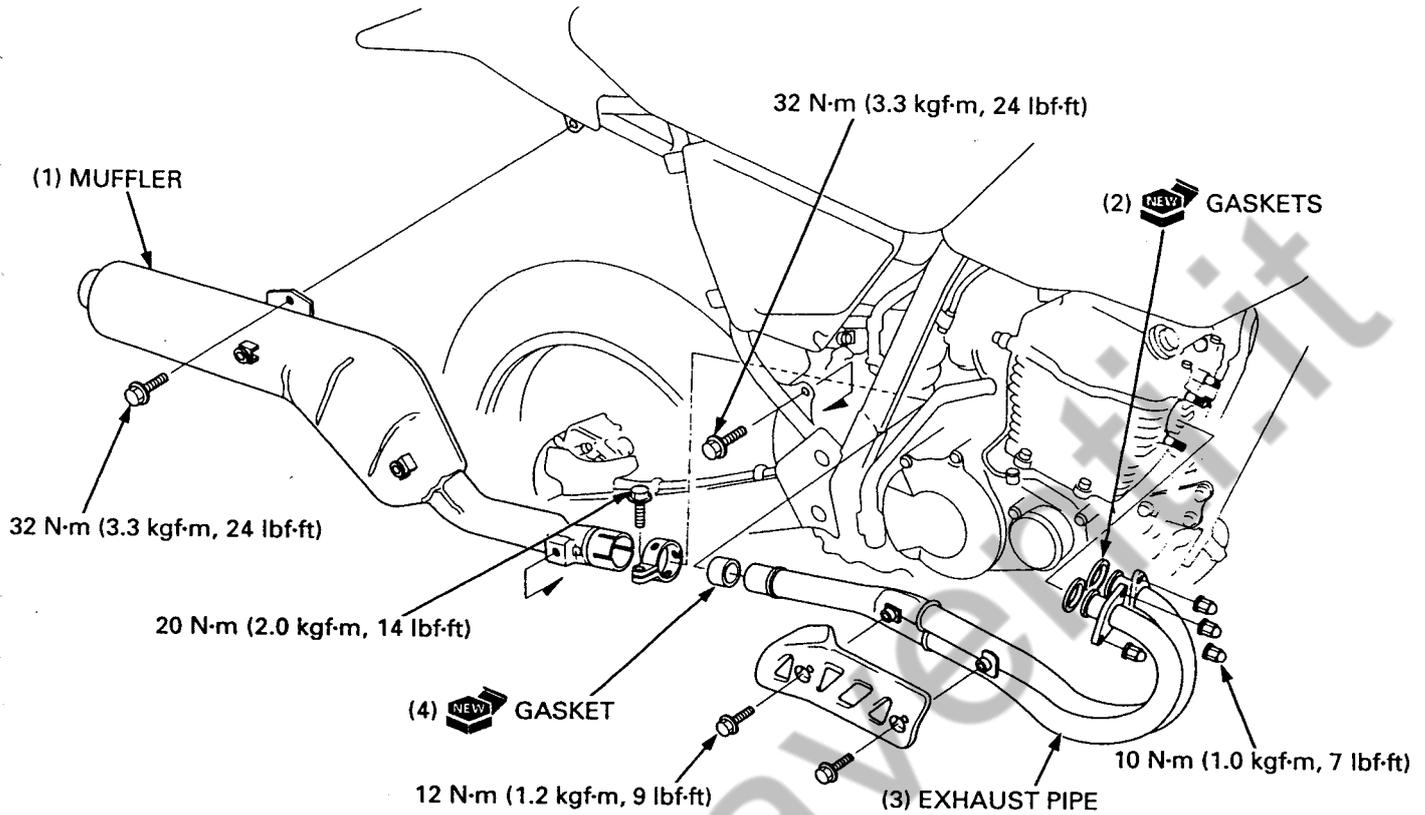
Remove the muffler mounting bolts and muffler.



Remove the exhaust pipe joint nuts and exhaust pipe.



INSTALLATION



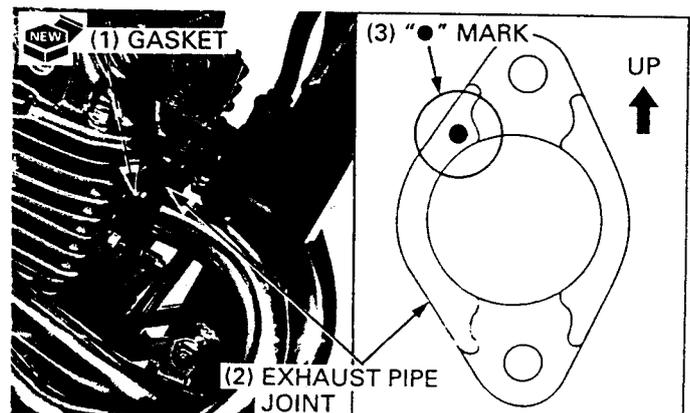
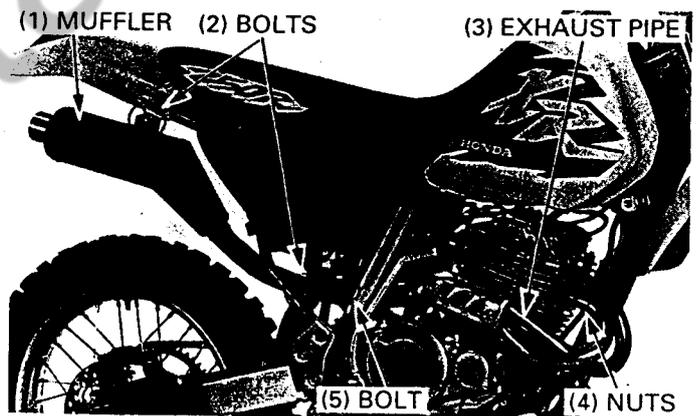
Installation is in the reverse order of removal.

TORQUE:

- Exhaust pipe joint nut: 10 N·m (1.0 kgf·m, 7 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)

NOTE

- Always replace the gaskets with new ones.
- Install the exhaust pipe joint with the "●" mark facing up.
- Loosely install all of the exhaust pipe 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.



MEMO

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3. MAINTENANCE

3

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SERVICE INFORMATION

SPECIFICATION

ITEM		SPECIFICATIONS		SERVICE LIMIT
Throttle grip free play		2 – 6 mm (1/12 – 1/4 in)		—
Spark plug		NGK	NIPPONDENSO	—
	Standard	CR9EH-9	U27FER9	—
	For cold climate (below 5°C/41°F)	CR8EH-9	U24FER9	—
Spark plug gap		0.8 – 0.9 (0.031 – 0.035)		—
Valve clearance	IN	0.10 ± 0.02 (0.004 ± 0.001)		—
	EX	0.12 ± 0.02 (0.005 ± 0.001)		—
Engine oil capacity	at draining	1.3 liter (1.37 US qt, 1.14 Imp qt)		—
	at disassembly	1.7 liter (1.79 US qt, 1.50 Imp qt)		—
	at oil filter change	1.4 liter (1.47 US qt, 1.23 Imp qt)		—
Recommended engine oil		API service Classification: SF or SG Viscosity: SAE 10W – 40 or 20W – 50		—
Decompressor lever free play		5 – 8 mm (3/16 – 5/16 in)		—
Carburetor idle speed		1,300 ± 100 min ⁻¹ (rpm)		—
Drive chain slack		30 – 40 mm (1-1/4 – 1-5/8 in)		—
Drive chain length	(ED, DK types)	—		1,659 mm (65.3 in)
	(U type)	—		1,611 mm (63.4 in)
Replacement drive chain		D.I.D. 520VC5 or RK 520MOZ9		—

MAINTENANCE

ITEM		SPECIFICATIONS	SERVICE I
Drive chain guide slider thickness		—	To the indicate
Drive chain slider thickness		—	4.0 mm (0. i
Recommended brake fluid		DOT 4	—
Rear brake pedal height		75 mm (3.0 in)	—
Clutch lever free play		10 – 20 mm (3/8 – 3/4 in)	—
Tire size	Front	(ED, DK types)	80/100 – 21 51M
		(U type)	3.00 – 21 51P
	Rear	(ED, DK types)	100/100 – 18 59M
		(U type)	4.00 – 18 64 P
Tire brand	Bridgestone (ED, DK types)	Front	M23
		Rear	M22
	IRC (U type)	Front	TR8
		Rear	TR8
Cold tire pressure	(ED, DK types)		100 kPa (1.0 kgf/cm ² , 15 psi)
	(U type)	Front	150 kPa (1.50 kgf/cm ² , 22 psi)
		Rear	125 kPa (1.25 kgf/cm ² , 18 psi)
Tire cleat depth		—	3 mm (0.8 in)
Cylinder compression	Valve clearance at standard (decompressor effected)		637 – 735 kPa (6.5 – 7.5 kgf/cm ² , 92 – 107 psi) at 600 min ⁻¹ (rpm)
	Valve clearance at 1 mm (0.04 in) (decompressor not effected)		1,177 – 1,275 kPa (12.0 – 13.0 kgf/cm ² , 171 – 185 psi)

TORQUE VALUES

Fuel valve mounting bolt	9 N·m (0.9 kgf·m, 6.5 lbf·ft)
Spark plug	12 N·m (1.2 kgf·m, 9 lbf·ft)
Valve adjust lock nut (IN)	24 N·m (2.4 kgf·m, 17 lbf·ft)
(EX)	26 N·m (2.6 kgf·m, 19 lbf·ft)
Crankshaft hole cap	8 N·m (0.8 kgf·m, 5.8 lbf·ft) Apply grease to the threads and flange surface.
Valve hole cap	15 N·m (1.5 kgf·m, 11 lbf·ft) Apply clean engine oil to the O-ring.
Timing hole cap	10 N·m (1.0 kgf·m, 7 lbf·ft) Apply grease to the threads and flange surface.
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) U-nut.
Front brake lever adjust lock nut	6 N·m (0.6 kgf·m, 4.3 lbf·ft)
Side stand pivot bolt	10 N·m (1.0 kgf·m, 7 lbf·ft)
nut	39 N·m (4.0 kgf·m, 29 lbf·ft) U-nut.
Spoke nipple	3.8 N·m (0.38 kgf·m, 2.7 lbf·ft)
Rim lock	15 N·m (1.5 kgf·m, 11 lbf·ft)

TOOLS

Special	
Compression gauge attachment	07908 – KK60000
Nipple 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.

R: Replace, C: Clean, L: Lubricate, A: Adjust

The following items require some mechanical knowledge. Certain items (particularly those marked * and **) may require more technical information and tools. Consult an authorized Honda dealer.

ITEM	FREQUENCY	NOTE	BREAK-IN MAINTENANCE	REGULAR SERVICE INTERVAL	Refer to page
			First week of operation-about 200 mi (350 km)	Every 30 operating days-about 1,000 mi (1,600 km)	
* FUEL LINE				I	3-5
** FUEL STRAINER SCREEN				C	3-5
* THROTTLE OPERATION				I	3-5
AIR CLEANER		NOTE 1		C	3-6
SPARK PLUG				I	3-7
* VALVE CLEARANCE			I	I	3-8
ENGINE OIL			R	R	3-9
ENGINE OIL FILTER			R	R	3-11
* ENGINE OIL STRAINER SCREEN IN DOWN TUBE				C	4-2
* DECOMPRESSOR SYSTEM			I	I	3-12
* ENGINE IDLE SPEED			I	I	3-13
DRIVE CHAIN		NOTE 1	I, L	NOTE 3	3-13
DRIVE CHAIN SLIDER			I	I	3-15
BRAKE FLUID		NOTE 2		I	3-15
BRAKE PAD WEAR				I	3-16
BRAKE SYSTEM			I	I	3-16
BRAKE LIGHT SWITCH				I	3-17
* HEADLIGHT AIM				I	3-17
CLUTCH SYSTEM			I	I	3-17
SIDE STAND				I	3-18
* SUSPENSION				I	3-19
* SPARK ARRESTER				NOTE 4	3-19
* NUTS, BOLTS, FASTENERS			I	I	3-20
** WHEELS/TIRES			I	I	3-20
** STEERING HEAD BEARINGS			I	I	3-21

* Should be serviced by an authorized Honda dealer, unless the owner has the 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 when riding in unusually wet or dusty area.
 2. Replace every 2 years, or at indicated odometer interval, whichever comes first. Replacement requires mechanical skill.
 3. Every 10 operating days-about 300 mi (500 km) : I, L
 4. 1,000 mi (1,600 km) or every 100 operating hours: C

MAINTENANCE

COMPETITION MAINTENANCE SCHEDULE

Check all items before each race.

Refer to the REGULAR MAINTENANCE SCHEDULE (page 3-3) for regular (non-competition use) service intervals.

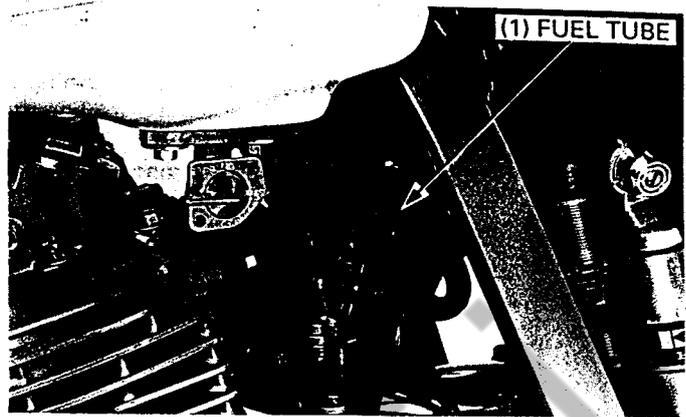
ITEM	INSPECT FOR	ACTION AS REQUIRED	REFER TO PAGE
ENGINE OIL	Oil level, leakage	Supply or change	3-9
FUEL TANK	Damage, leakage	Replace	3-5
BRAKE SYSTEM	Brake lever free play, brake pedal height, braking efficiency and wear beyond service limit	Adjust or replace	3-1
BRAKE FLUID	Fluid level, leakage	Supply or change	3-1
WHEELS/TIRES	Tire pressure, wear or damage, Spoke tightness and Rim lock tightness	Adjust, tighten or replace	3-20
DRIVE CHAIN	Slack, lubricate, retainer clip security Length: 1,691 mm (66.6 in) /107 pins max	Adjust, tighten or replace	3-13
SPROCKETS	Wear and secure installation	Tighten or replace	3-13
SEAT	Security	Tighten	2-2
CLUTCH DISCS	Proper operation, wear (Note 1)	Replace	3-17
AIR CLEANER ELEMENT	Contamination or tears	Clean or replace	3-6
ENGINE STOP SWITCH	Proper operation	Correct or replace	16-8
NUTS, BOLTS, FASTENERS	Tightness	Tighten	3-20
FUEL LINE	Deterioration, damage or leakage	Replace	3-5
VALVE CLEARANCE	Correct clearance	Adjust	3-8
CAM CHAIN	Excessive noise	Replace	11-3
ENGINE IDLE SPEED	Correct idle speed	Adjust	3-13
DECOMPRESSOR SYSTEM	Proper operation, lever free play	Adjust	3-12
SPARK PLUG	Tightness, proper heat range, spark plug wire looseness and damage	Tighten or replace	3-7
STEERING HEAD	Free rotation of handlebars and steering stem nut tightness	Adjust or tighten	3-21
FRONT SUSPENSION	Smooth operation, no oil leaks, good boot condition and proper oil volume	Adjust or Replace	3-19
REAR SUSPENSION	Smooth operation, oil leaks and spring length	Adjust or replace	3-19
SWINGARM BEARINGS	Smooth operation	Lubricate or replace	3-19
REAR SUSPENSION LINKAGE BEARINGS	Smooth operation	Lubricate or replace	3-19
CONTROL CABLES	Smooth operation, inner cable damage, kinks and correct routing	Lubricate or replace	1-21
ENGINE MOUNTING BOLTS	Tightness	Tighten	6-5
SPARK ARRESTER	Clogged	Clean	3-19

Note 1. Competition use necessitates more frequent service.

FUEL TANK

FUEL LINE

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



FUEL STRAINER SCREEN

⚠ WARNING

- Gasoline is extremely flammable and is explosive under certain conditions. Work in a well ventilated area with the engine stopped. Do not smoke or allow flames or sparks in the work area or where gasoline is stored.
- 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 5-3).

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.

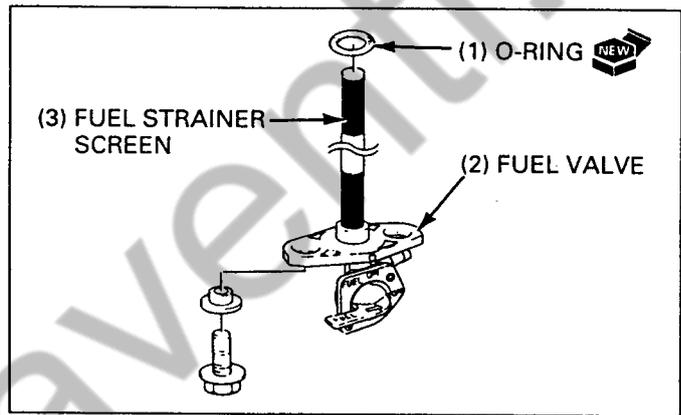
Install a new O-ring to the fuel valve.

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 fully closes, automatically, in all steering positions.

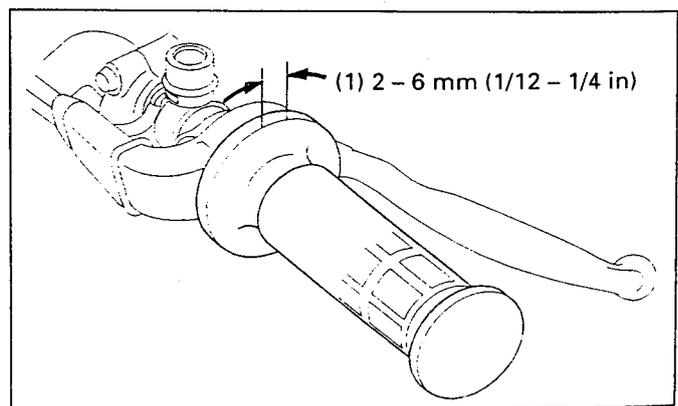
Make sure there is no deterioration, damage, or kinking in the throttle cables, and that the throttle grip free play is 2 – 6 mm (1/12 – 1/4 in) at the throttle grip flange.

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.



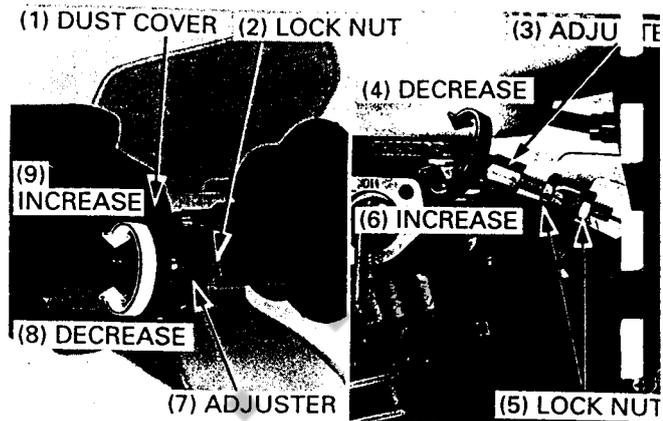
MAINTENANCE

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

Adjust free play by loosening the lock nut and turning the adjuster.

Tighten the lock nut.

Recheck throttle operation. Replace any damaged parts.



AIR CLEANER

Open the air cleaner housing maintenance lid.

Release the air cleaner element clamp and remove the element with the holder.

Separate the element from the holder.

⚠ WARNING

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

Wash the element in non-flammable or high flash point solvent.

Squeeze out the solvent thoroughly, and allow the element to dry.

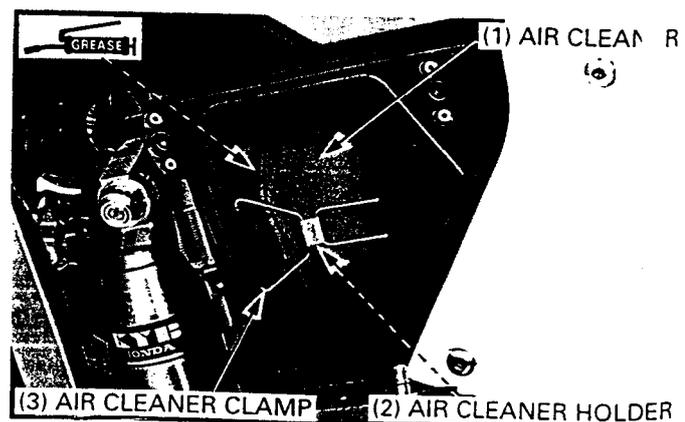
Apply approximately 32 – 37 cc (1.1 – 1.3 oz) of gear oil (SAE #80 – 90) from the inside of the element.



CAUTION

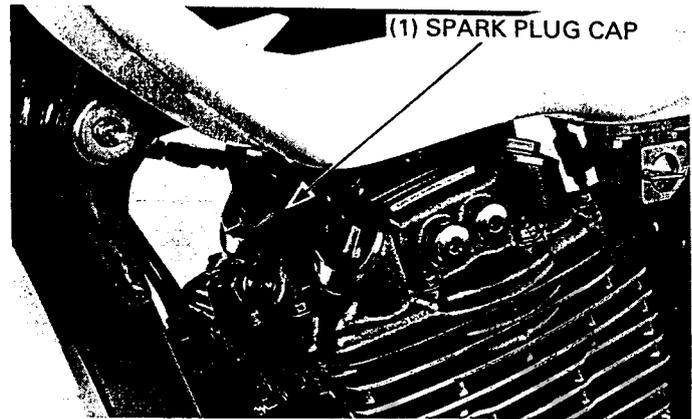
- *If the air cleaner assembly is not installed correctly, dirt and dust may enter the engine resulting in rapid wear of piston rings and cylinder.*

Install the air cleaner element to the element holder.
Apply grease to the air cleaner element to air cleaner housing contact area.



SPARK PLUG

Clean around the spark plug base with compressed air.
Disconnect the spark plug cap and remove the spark plug.



INSPECTION

Usually inspect the spark plug. Discard it if the insulator is cracked or chipped.

RECOMMENDED SPARK PLUG:

	NGK	NIPPONDENSO
Standard	CR9EH-9	U27FER9
For cold climate (below 5°C/41°F)	CR8EH-9	U24FER9

Measure the spark plug gap with a wire-type feeler gauge.
Adjust the gap by bending the side electrode carefully.

SPARK PLUG GAP: 0.8 – 0.9 mm (0.031 – 0.035 in)

Check the following and replace the spark plug if necessary.

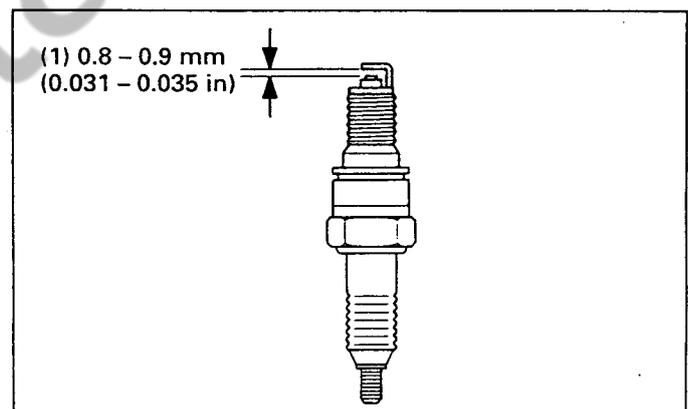
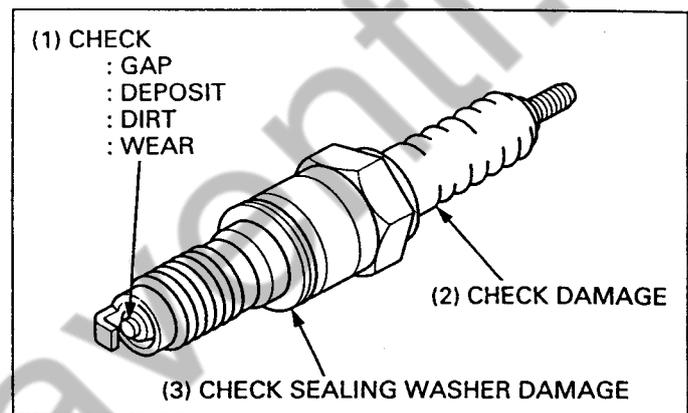
- Insulator for damage
- Electrodes for wear
 - Electrodes burning condition, coloration;
 - dark to light brown indicates good condition.
 - excessive lightness indicates malfunctioning ignition system or lean mixture.
 - wet or black sooty deposit indicates over-rich mixture.

REUSING A SPARK PLUG

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: 12 N·m (1.2 kgf·m, 9 lbf·ft)



MAINTENANCE

REPLACING A SPARK PLUG

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

CAUTION

- Do not overtighten the spark plug.

Install and 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 crankshaft hole cap and timing hole cap.
Remove the valve hole caps.

Rotate the flywheel counterclockwise 2 – 3 turn to align the "T" mark with the index notch on the left crankcase cover.
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.

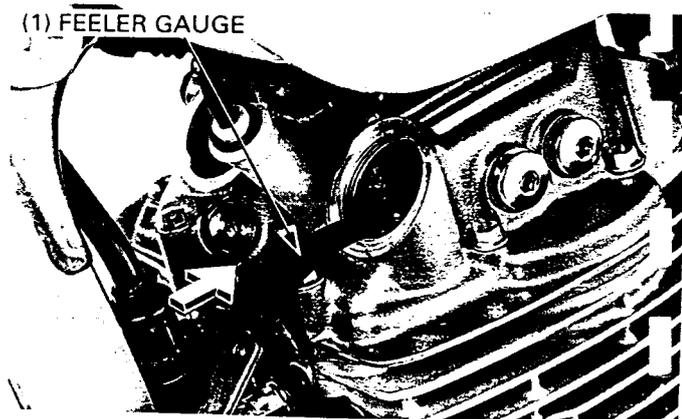
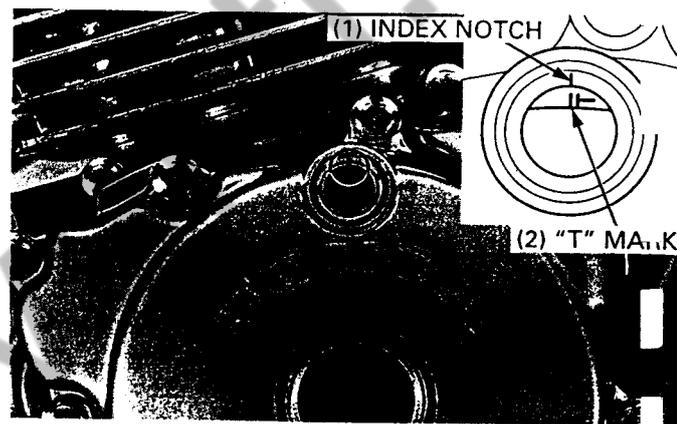
Check the clearance of all four valves by inserting a feeler gauge between the adjusting screw and the sub-rocker arm.

NOTE

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

VALVE CLEARANCE:

IN: 0.10 ± 0.02 mm (0.004 ± 0.001 in)
EX: 0.12 ± 0.02 mm (0.005 ± 0.001 in)

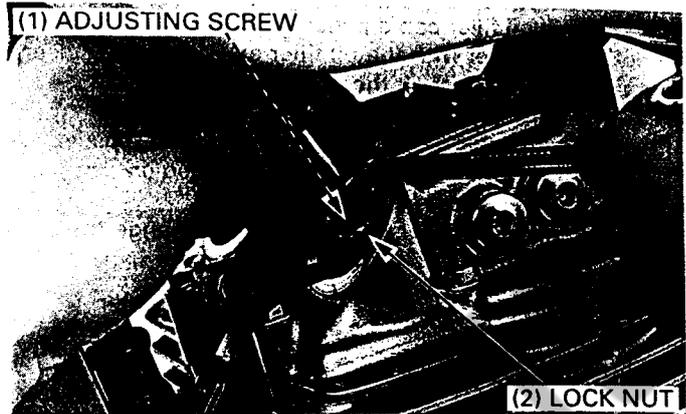


Adjust by loosening the lock nut and turning the adjusting screw until there is a slight drag on the feeler gauge. After tightening the valve adjuster lock nut, recheck the valve clearance.

Hold the adjusting screw and tighten the lock nut.

TORQUE: IN: 24 N·m (2.4 kgf·m, 17 lbf·ft)
EX: 26 N·m (2.6 kgf·m, 19 lbf·ft)

Adjust the decompressor lever free play (page 3-12).



Check that O-rings are in good condition, replace it if necessary.

Apply oil to the O-rings.

Install the valve hole caps and tighten to the specified torque.

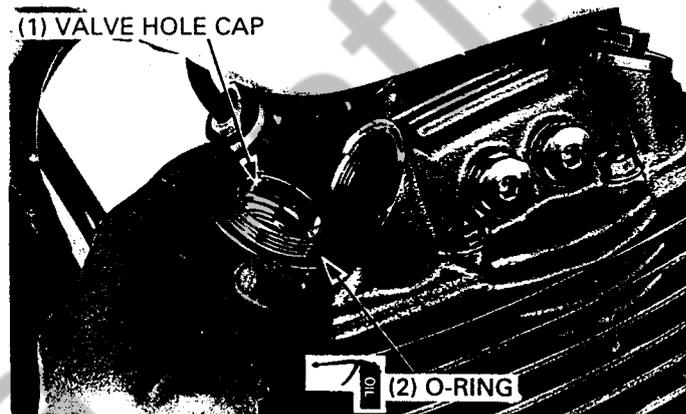
TORQUE: 15 N·m (1.5 kgf·m, 11 lbf·ft)

Install the crankshaft hole cap and tighten to the specified torque.

TORQUE: 8 N·m (0.8 kgf·m, 5.8 lbf·ft)

Install the timing hole cap and tighten to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)



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 lead to death.*

INSPECTION

At oil filler cap/dipstick

Support the motorcycle upright on level ground.

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 in when making this check.

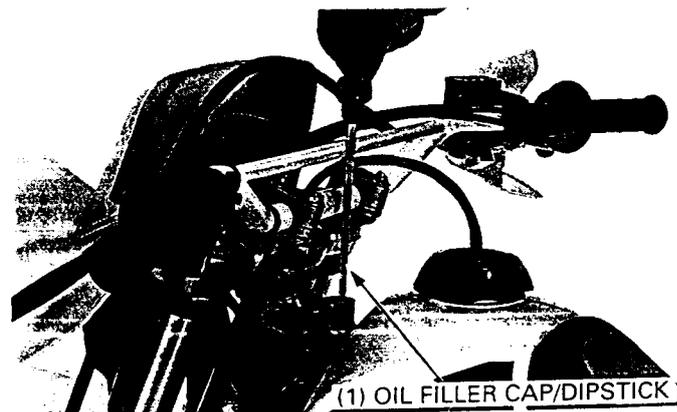
If the oil level is lower than the dipstick, check the oil level with the crankcase oil check bolt (page 3-10).

If the engine oil is to the dipstick or there is oil at the check bolt, check the following.

Support the motorcycle upright on level ground.

Start the engine and let it idle for 5 minutes.

Stop the engine. Check the oil level quickly.



MAINTENANCE

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.

(1) "UPPER" LEVEL MARK



(2) "LOWER" LEVEL MARK

At crankcase oil check bolt

Remove the crankcase oil check bolt and sealing washer.
Reinstall the bolt and washer.
If there is oil flow, start the engine and check the oil level with the oil filler cap/dipstick (page 3-9).

If there is no oil flow, fill to the upper level mark with the recommended oil.

Start the engine and recheck the oil level.



(1) OIL CHECK BOLT

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.

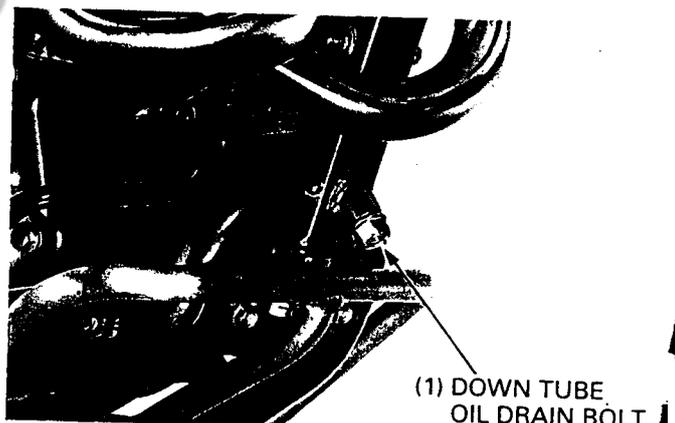
Start the engine and let it idle for a few minutes.
Stop the engine and remove the oil filler cap/dipstick (page 3-9).

Remove the down tube oil drain bolt and sealing washer.
Drain the engine oil.

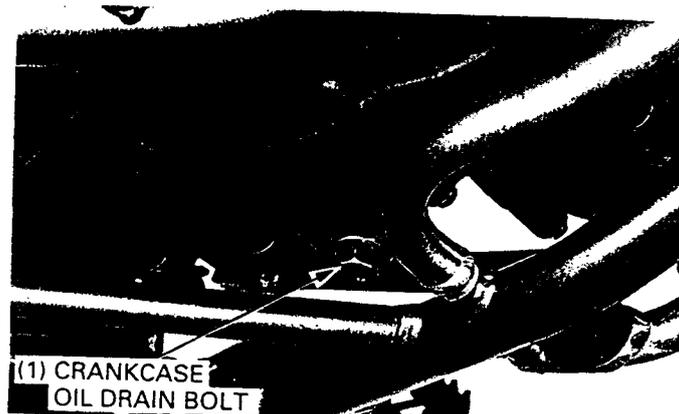
NOTE

- When draining the oil, avoid spilling oil on the front tire.

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



(1) DOWN TUBE OIL DRAIN BOLT



(1) CRANKCASE OIL DRAIN BOLT

Check the sealing washers 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 oil strainer screen (page 4-2).

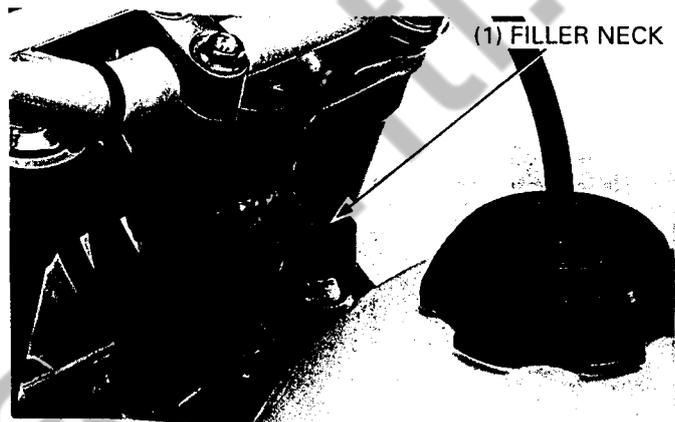
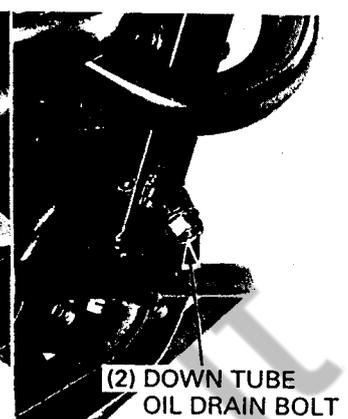
Fill to the filler neck with the correct quantity of the recommended engine oil.

RECOMMENDED ENGINE OIL:

API service classification: SF or SG
Viscosity: 10W - 40 or 20W - 50

OIL CAPACITY:

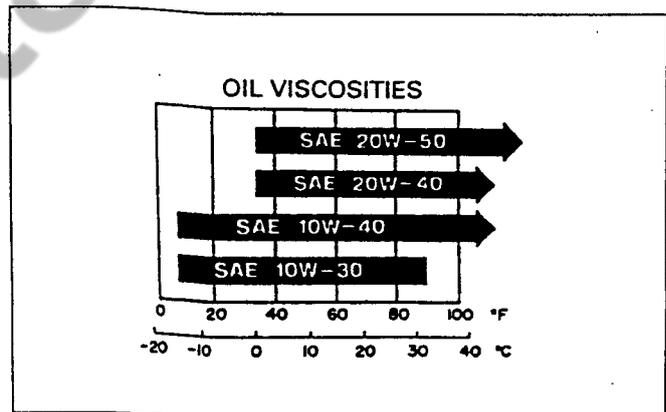
1.3 liter (1.37 US qt, 1.14 Imp qt) at draining
1.4 liter (1.47 US qt, 1.23 Imp qt) at oil filter change
1.7 liter (1.79 US qt, 1.50 Imp qt) at disassembly



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 3-9).



ENGINE OIL FILTER

Drain the engine oil (page 3-10).
Remove the oil filter cover bolts.
Remove the oil filter cover, oil filter, spring.
Remove the O-ring from the oil filter cover.



MAINTENANCE

Apply engine oil to a new O-ring and install it to the oil filter cover.

Install the following:

- Spring
- New oil filter with its "OUT SIDE" mark facing out

CAUTION

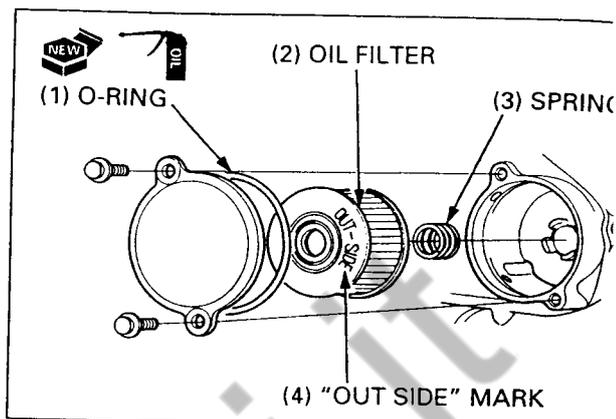
- *Installing the oil filter backwards will result in severe engine damage.*

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 3-9).



DECOMPRESSOR SYSTEM

NOTE

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

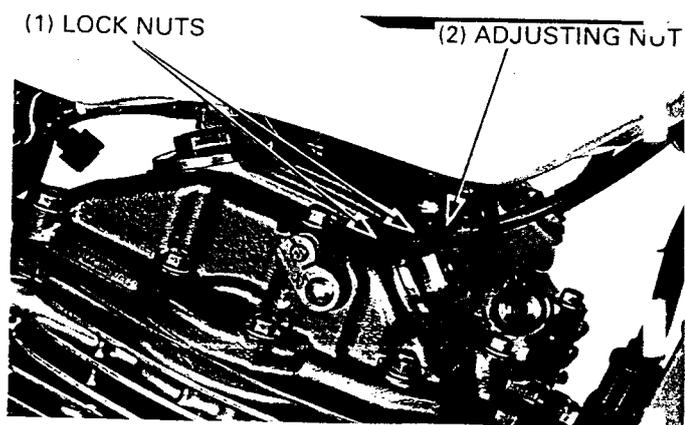
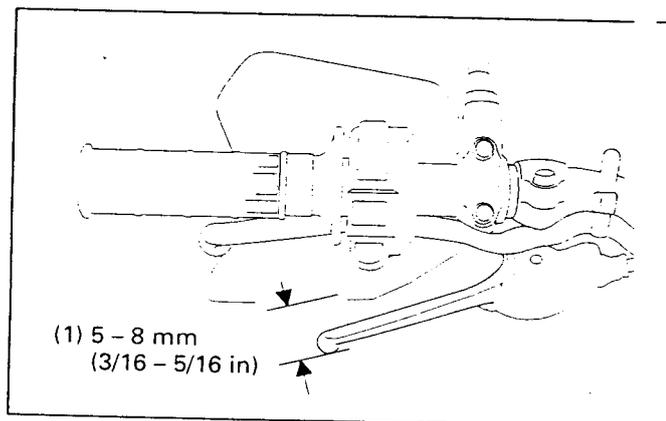
Remove the crankshaft hole cap and timing hole cap.

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 – 8 mm (3/16 – 5/16 in)

To adjust, 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.



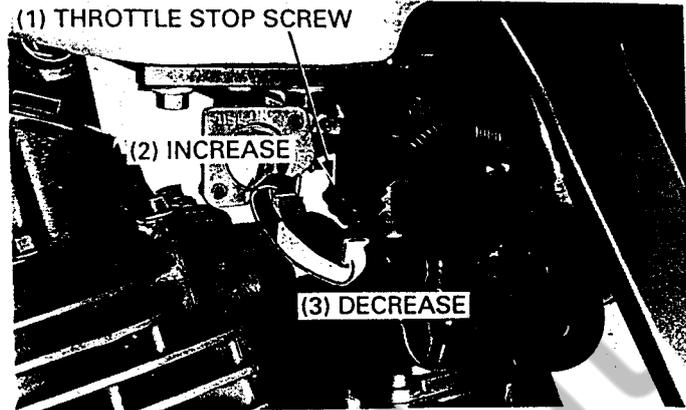
ENGINE IDLE SPEED

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 screw to obtain the specified idle speed.

IDLE SPEED: 1,300 ± 100 rpm



DRIVE CHAIN/SPROCKET

⚠ 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 or box under the engine. Shift the transmission into neutral. Measure the slack in the higher drive chain run midway between the sprockets.

STANDARD SLACK: 30 – 40 mm (1-1/4 – 1-5/8 in)

Adjust as follows:

Loosen the rear axle nut, then turn both adjusters equally until the chain slack is correct.

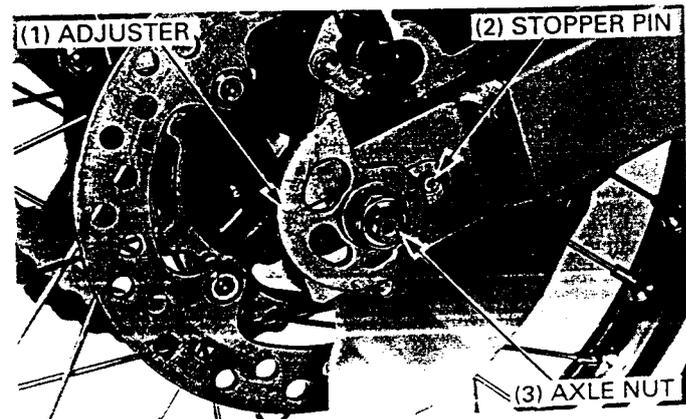
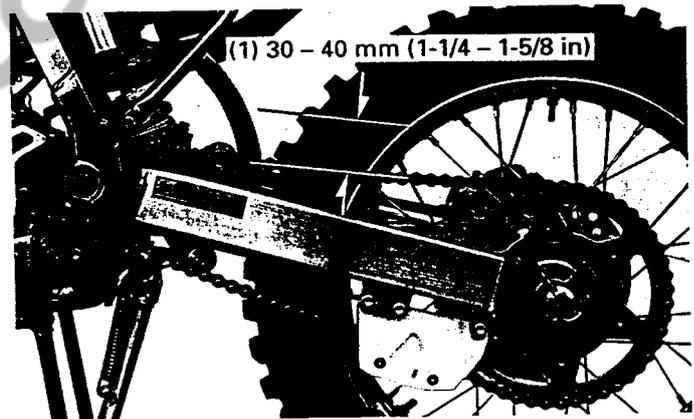
CAUTION

- *Be sure the same adjuster index marks align with the stopper pins on both sides of the swingarm.*

Tighten the axle nut.

TORQUE: 93 N·m (9.5 kgf·m, 69 lbf·ft)

Recheck chain slack and free wheel rotation.

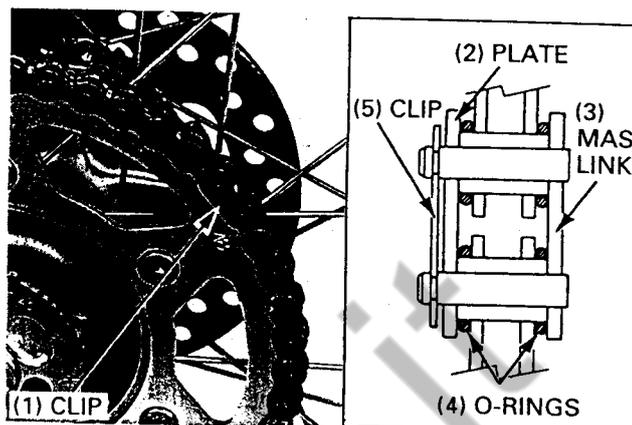


MAINTENANCE

When the drive chain becomes extremely dirty, it should be removed and cleaned prior to lubrication. Remove the drive sprocket cover. Remove the chain retainer clip carefully. Remove the master link and drive chain.

CAUTION

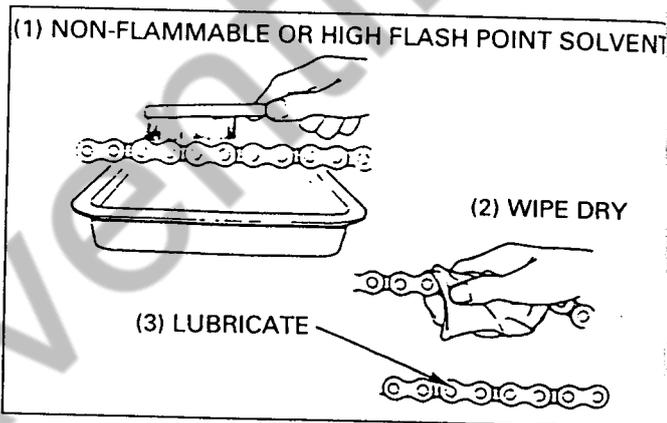
- *Be careful not to lose the O-rings when the clip and master link are removed.*



Clean the drive chain with a non-flammable or high flash point solvent or kerosene that will not damage the O-rings; wipe dry.

CAUTION

- *Do not use a steam cleaner or high pressure washer because these will damage the O-rings.*

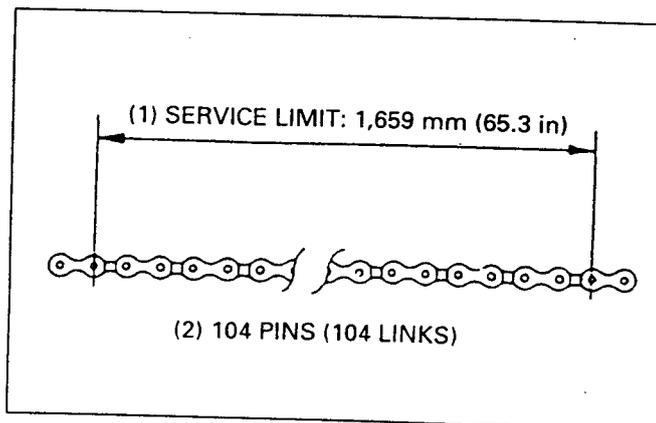


Inspect the drive chain and O-rings for possible wear or damage. Replace the chain if it is worn excessively or damaged.

Measure the drive chain length with the chain held so that all links are straight.

SERVICE LIMIT: 1,659 mm (65.3 in) at 104 pins
REPLACEMENT DRIVE CHAIN: D.I.D. 520VC5 or RK 520MOZ9

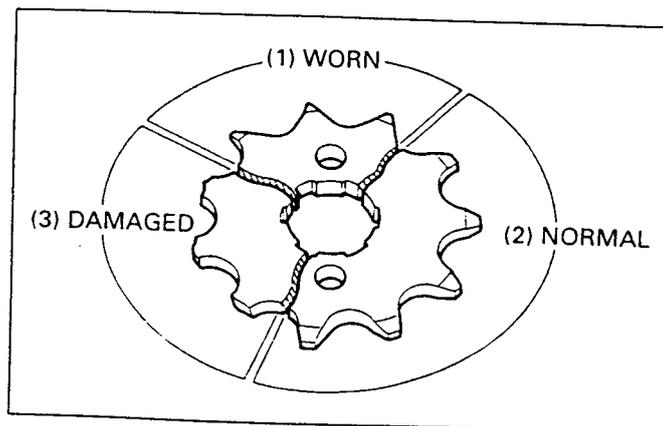
Lubricate the drive chain with SAE #80 - #90 gear oil.



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

NOTE

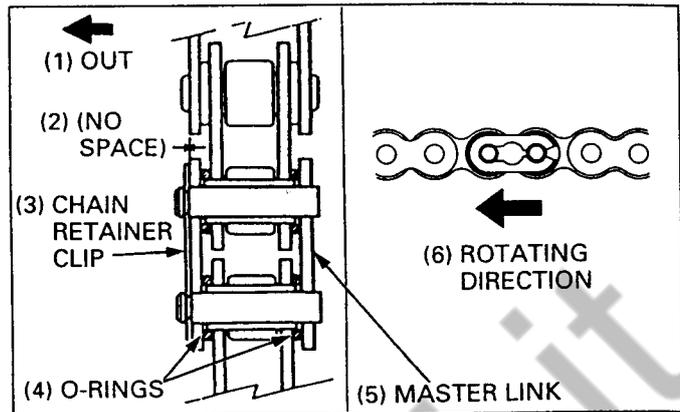
- *Never install a new drive chain on worn sprockets or a worn chain on new sprockets. Both chain and sprockets must be in good condition, or the new replacement parts will wear rapidly.*



Install a new drive chain.
 Install the master link with O-rings and a chain retaining clip.
 Adjust the drive chain (page 3-13).

CAUTION

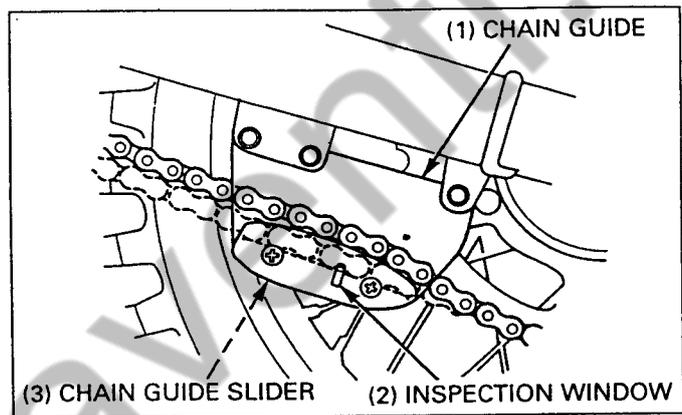
- Do not assemble the drive chain without the four master link O-rings.
- Be sure that there is no space between the master link and the chain retaining clip.



DRIVE CHAIN SLIDER

CHAIN GUIDE SLIDER

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



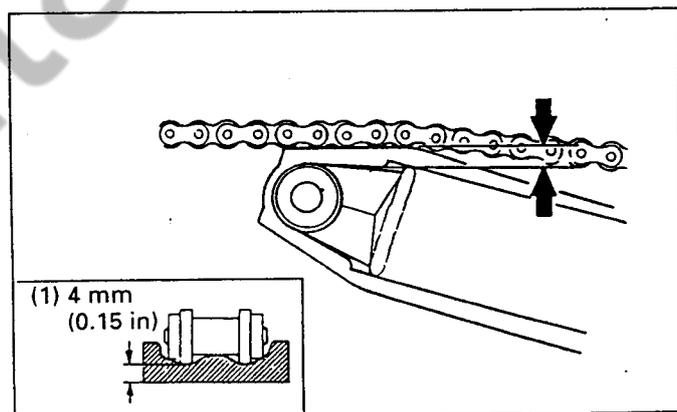
CHAIN SLIDER

Check the chain slider for wear.

SERVICE LIMIT:
 Chain slider (from upper surface): 4.0 mm (0.15 in)

CAUTION

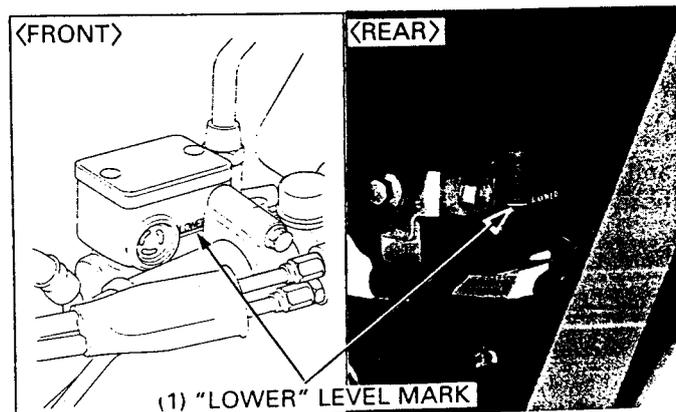
- If the chain slider becomes worn through to the swingarm, the chain will wear against the swingarm.



BRAKE SYSTEM

BRAKE FLUID

Check the brake fluid reservoir level for the front and rear brakes. If the level is near the lower level mark, check the brake pad wear and add brake fluid.



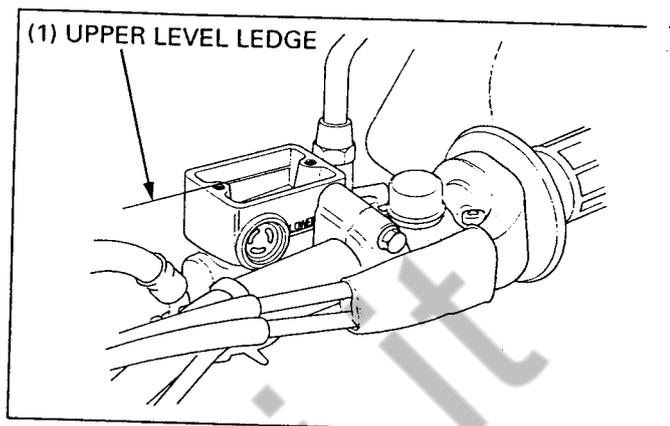
MAINTENANCE

Front brake:

Remove the reservoir cover and diaphragm.
Fill the reservoir with DOT4 Brake Fluid to the casting ledge.

Rear brake:

Remove the bolt and reservoir.
Remove the reservoir cap and diaphragm.
Fill the reservoir with DOT4 Brake Fluid to the upper level mark.



CAUTION

- Do not remove the cover until the handlebar has been turned so that the reservoir is level.
- Avoid operating the brake lever with the cap removed. Brake fluid will squirt out if the lever is pulled.
- Do not mix different fluid types, as they are not compatible.
- Avoid spilling fluid on painted, plastic or rubber parts. Place a rag over these parts whenever the system is serviced.

Refer to section 15, for brake bleeding procedure.



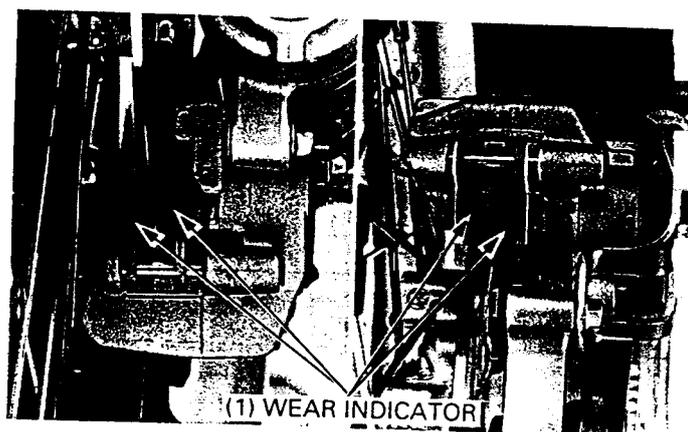
BRAKE PAD WEAR

Front brake:

Inspect the pads visually from under the caliper to determine the pad wear.
Replace the brake pad if the wear line on the pads reaches the edge of the brake disc (page 15-5).

Rear brake:

Inspect the pads visually from the rear of the caliper to determine the pad wear.
Replace the brake pad if the wear line on the pads reaches the edge of the brake disc (page 15-5).



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

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

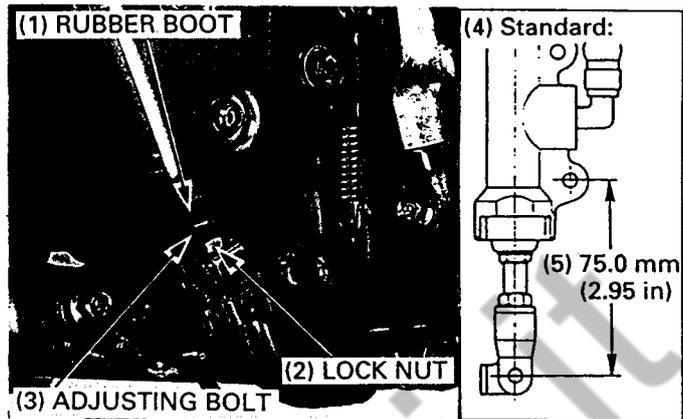
Refer to page 15-3 for brake bleeding procedures.

RAKE PEDAL HEIGHT

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

STANDARD: 75.0 mm (2.95 in)

Tighten the lock nut.

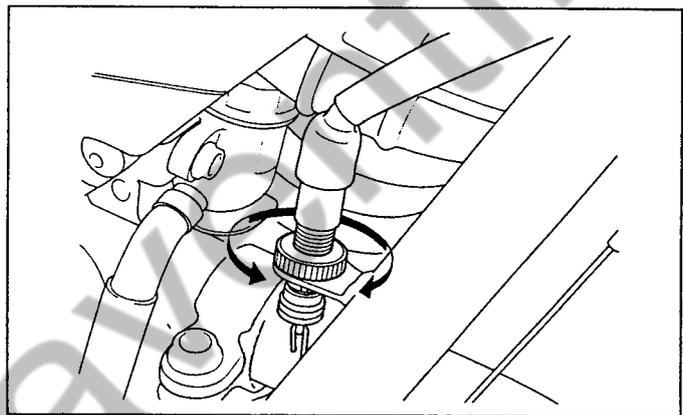


BRAKE LIGHT SWITCH

NOTE

- The front brake light switch does not require adjustment.

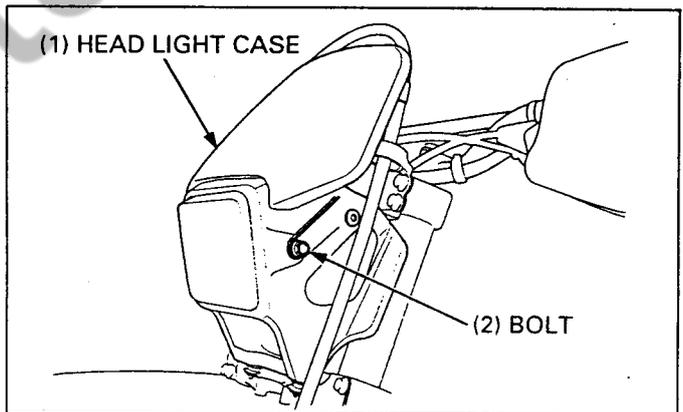
Adjust the brake light switch so that the brake light comes on just prior to the brake actually being engaged. If the light fails to come on, adjust the switch so that the light comes on at the proper time. Hold the switch body and turn the adjusting nut. Do not turn the switch body.



HEADLIGHT AIM

Remove the headlight case.

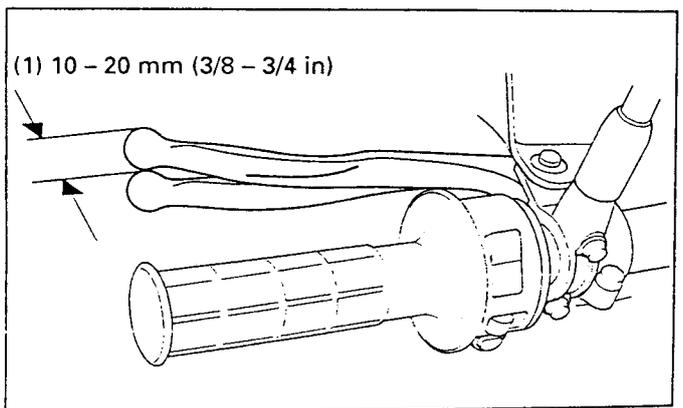
Adjust the vertical beam by moving the headlight upper or lower.



CLUTCH SYSTEM

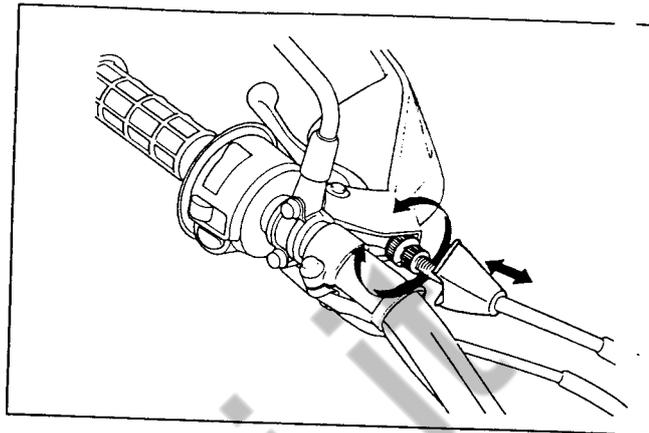
Measure the clutch lever free play at the lever end.

FREE PLAY: 10 - 20 mm (3/8 - 3/4 in)

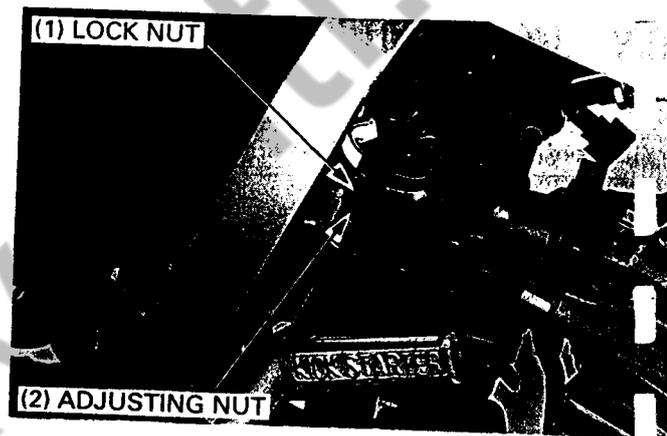


MAINTENANCE

Minor adjustments are made with the upper adjuster.
Pull the cover back.
Loosen the lock nut and turn the adjuster.
Tighten the lock nut and install the cover.



Adjust as follows:
Major adjustments are made with the lower adjuster.
If major adjustment is required, turn the upper adjuster all the way in and back out 1 turn.
Loosen the lower lock nut and turn the adjusting nut.
Tighten the lock nuts.
Check the clutch operation.



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.

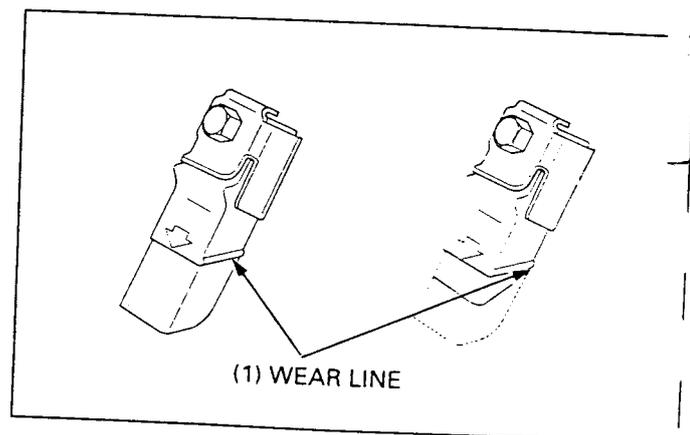
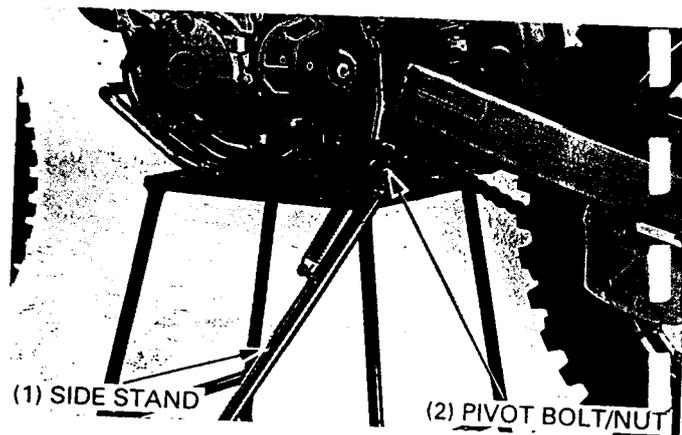
TORQUE: 10 N-m (1.0 kgf-m, 7.2 lbf-ft)

Then back it off 45 – 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 and wear. Replace if wear extends to the wear line.



SUSPENSION

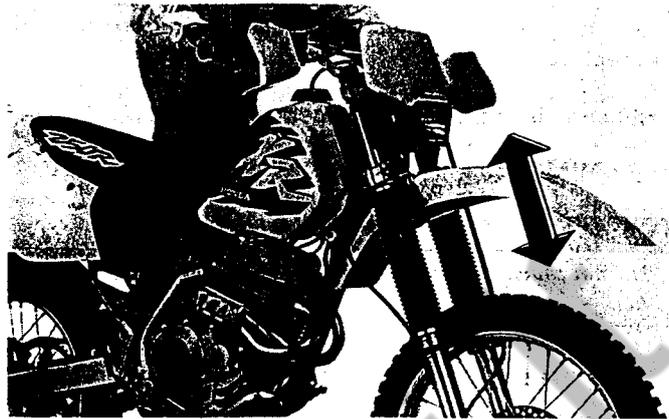
⚠ WARNING

Do not ride a vehicle with faulty suspension. Loose, worn, or damaged suspension parts may affect stability and rider control.

FRONT SUSPENSION

Check the action of the front forks by compressing them several times.

Check the entire fork assembly for signs of leaks or damage. Replace any components which are unreparable. Torque all nuts and bolts.



REAR SUSPENSION

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

Check the entire rear suspension being sure everything is securely mounted and not damaged or distorted.

Torque all nuts and bolts to their specified values (pages 1-14 - 16).

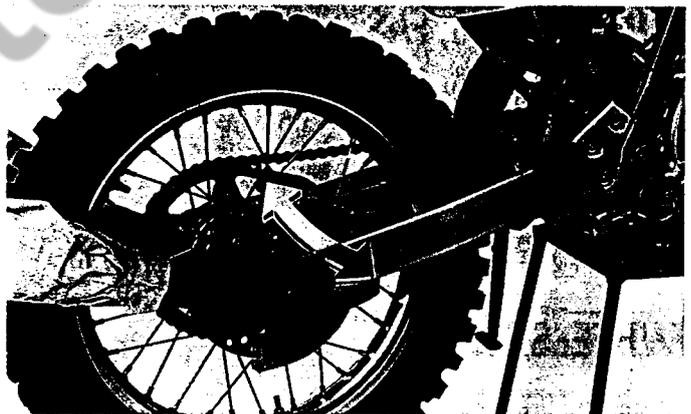


Place the motorcycle on a work stand or box to raise the rear wheel off the ground.

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

Replace if excessively worn (page 14-28).

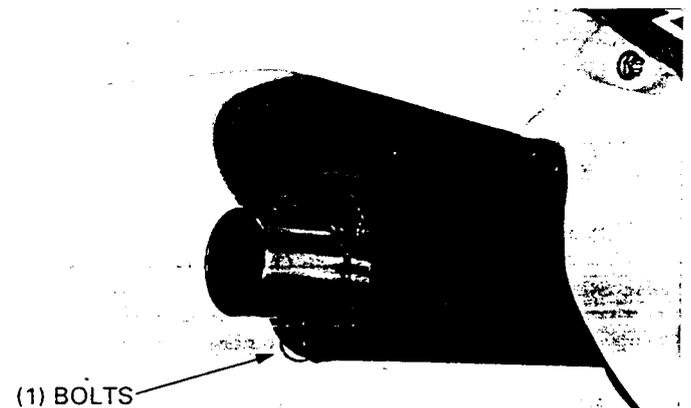
Check that the shock linkage, spherical bearing and needle bearings are damaged.



SPARK ARRESTER

INSPECTION

Remove the bolts and spark arrester.



MAINTENANCE

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

Installation is in the reverse order of removal.

CLEANING

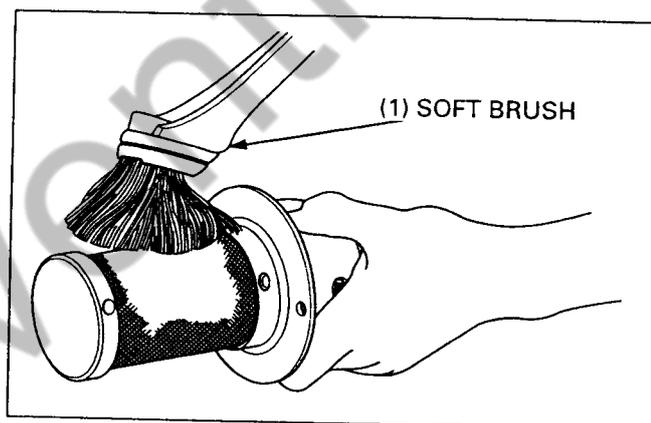
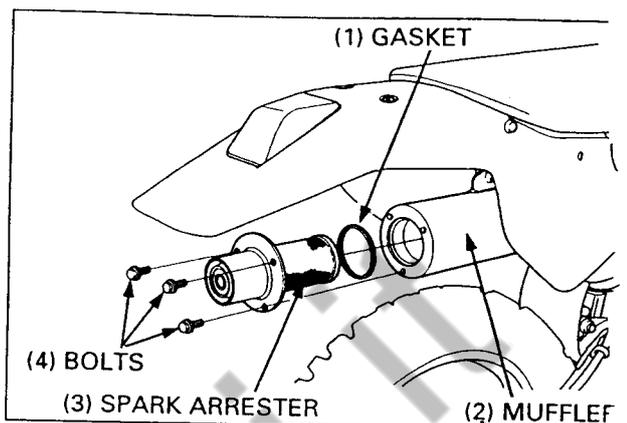
⚠ WARNING

- Do not touch exhaust components while the exhaust system is hot.

Remove the spark arrester (page 3-19).

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.

Install the spark arrester.



NUTS, BOLTS, FASTENERS

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

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

WHEELS/TIRES

Check the tire pressure.

NOTE

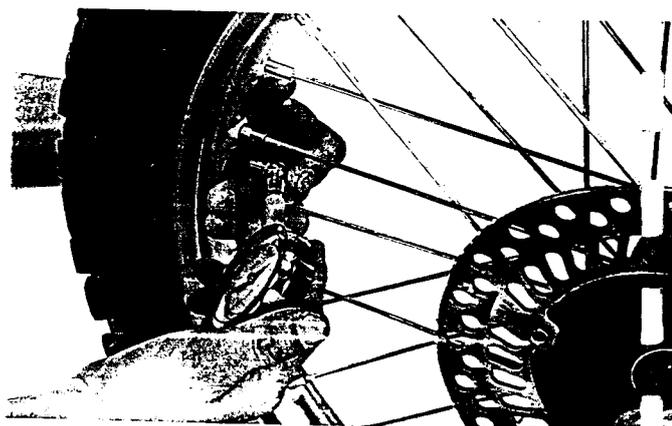
- The pressure should be checked when the tires are COLD.

STANDARD PRESSURE:

(ED, DK types) Front: 100 kPa (1.0 kgf/cm², 15 psi)
Rear: 100 kPa (1.0 kgf/cm², 15 psi)
(U type) Front: 150 kPa (1.50 kgf/cm², 22 psi)
Rear: 125 kPa (1.25 kgf/cm², 18 psi)

TIRE SIZE:

(ED, DK types) Front: 80/100-21 51M
Rear: 100/100-18 59M
(U type) Front: 3.00 - 21 51P
Rear: 4.00 - 18 64P



Check the tires for cuts, embedded nails or other sharp objects.
Check the tire tread depth.

SERVICE LIMIT: 3 mm (1/8 in)

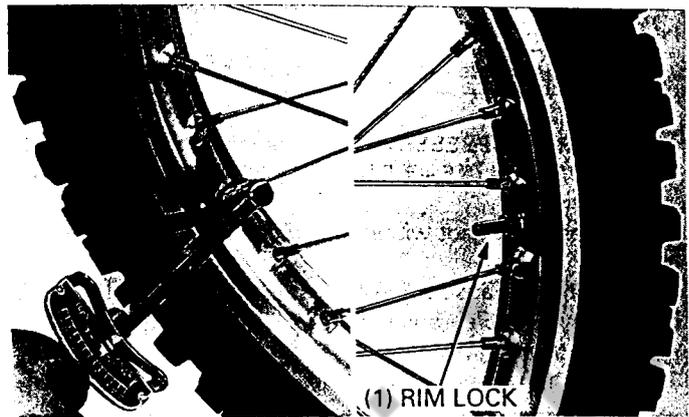
Tighten the spoke nipples and rim locks.

TORQUE:

Spoke nipple: 3.8 N-m (0.38 kgf-m, 2.7 lbf-ft)
Rim lock: 15 N-m (1.5 kgf-m, 11 lbf-ft)

TOOL:

Nipple wrench 07701 - 0020300



Push and pull the rear wheel side ways (in alignment with the axle) to check for play in the swingarm.
Check the tires for wear or damage.
Check the wheel rims for corrosion or damage (page 13-3, 14-4).

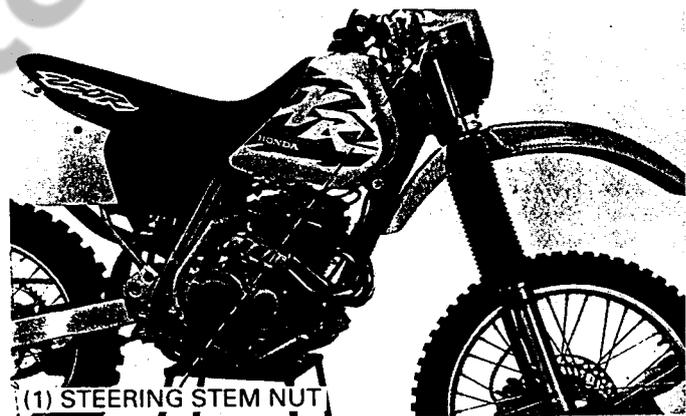


STEERING HEAD BEARINGS

Raise the front wheel off the ground and check that the fork rotates freely.

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

If the fork moves unevenly, binds or has vertical movement, check and adjust the steering head bearings by turning the steering stem nut (page 13-25).



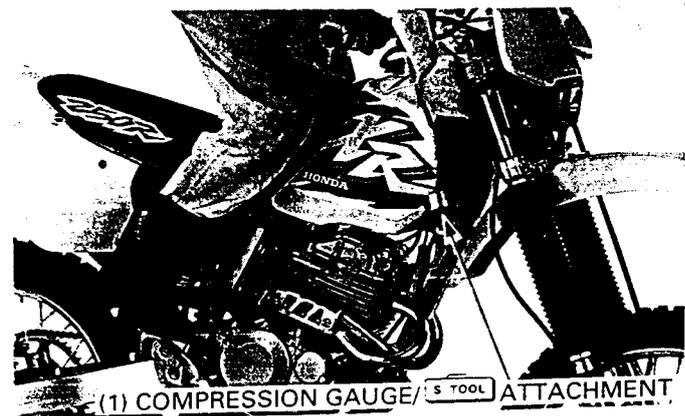
CYLINDER COMPRESSION

Remove the spark plug.
Connect the compression gauge.

TOOL:

Compression gauge attachment 07908 - KK60000

Open the choke lever and throttle grip all the way.
Operate the kick starter 5 - 6 times and check the gauge reading.



MAINTENANCE

NOTE

- Check that there are no leaks at the gauge connection.
-

CYLINDER COMPRESSION (with decompressor effected):
637 – 735 kPa (6.5 – 7.5 kgf/cm², 92 – 107 psi) at 600 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 (with decompressor not effected):
1,177 – 1,275 kPa (12.0 – 13.0 kgf/cm², 171 – 185 psi)

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

Low compression can be caused by:

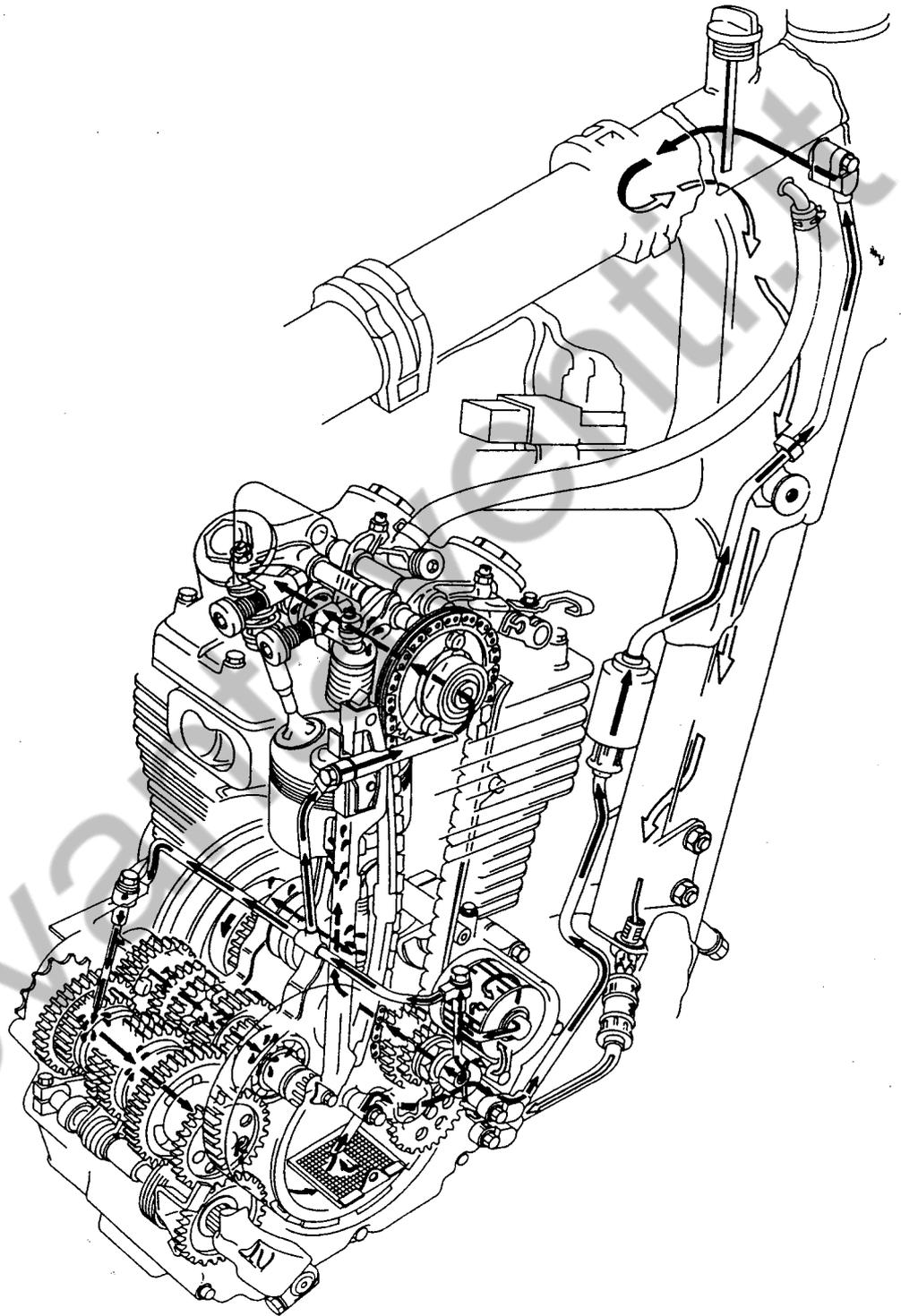
- Improper valve adjustment
- Valve leakage
- Leakage cylinder head gasket
- Worn piston ring or cylinder
- Improper decompressor adjustment

High compression can be caused by:

- Carbon deposits in combustion chamber, or on the piston crown

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4. LUBRICATION

SERVICE INFORMATION	4-1	OIL PUMP	4-3
TROUBLESHOOTING	4-1	OIL PASS PIPE	4-8
OIL STRAINER SCREEN CLEANING	4-2	OIL PIPES	4-9

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.*

SPECIFICATIONS

ITEM		SPECIFICATIONS	SERVICE LIMIT
Engine oil capacity	at draining	1.3 liter (1.37 US qt, 1.14 Imp qt)	—
	at disassembly	1.7 liter (1.79 US qt, 1.50 Imp qt)	—
	at oil filter change	1.4 liter (1.47 US qt, 1.23 Imp qt)	—
Recommended engine oil		API service Classification: SF or SG Viscosity: SAE 10W – 40 or 20W – 50	—
Oil pump rotor	Tip clearance	0.15 mm (0.006 in)	0.20 mm (0.008 in)
	Body clearance	0.15 – 0.22 mm (0.006 – 0.009 in)	0.25 mm (0.010 in)
	End clearance	0.02 – 0.09 mm (0.001 – 0.004 in)	0.12 mm (0.005 in)

TORQUE VALUES

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)
Down tube oil strainer	54 N·m (5.5 kgf·m, 40 lbf·ft)
Oil pipe bolt (12 mm)	37 N·m (3.8 kgf·m, 27 lbf·ft)
Oil pass pipe joint bolt (7 mm)	12 N·m (1.2 kgf·m, 9 lbf·ft)
(8 mm)	12 N·m (1.2 kgf·m, 9 lbf·ft)

TROUBLESHOOTING

Engine oil level too low – high oil consumption

- External oil leaks
- Worn piston rings
- Oil not changed often enough
- Faulty head gasket

Engine oil contamination

- Oil not changed often enough
- Head gasket faulty
- Worn piston rings

*Colins,
Filtros*
LUBRICATION

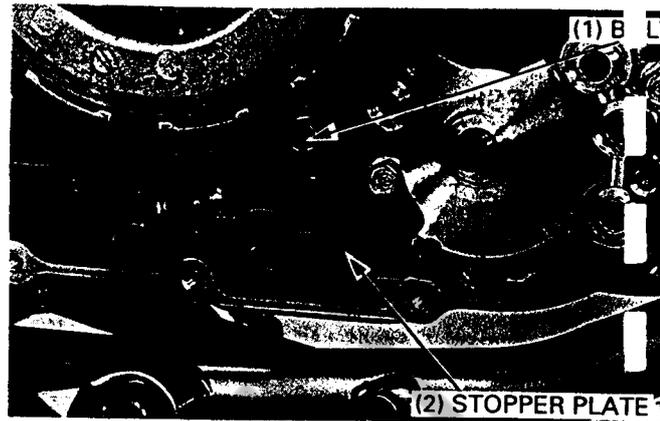
OIL STRAINER SCREEN CLEANING

At inside of right crankcase cover

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

Remove the oil pump driven gear and O-ring (page 4-3).

Remove the bolt and stopper plate.



Remove the oil strainer screen and clean it.
Install the oil strainer screen.

Install the right crankcase cover.



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 4-9).

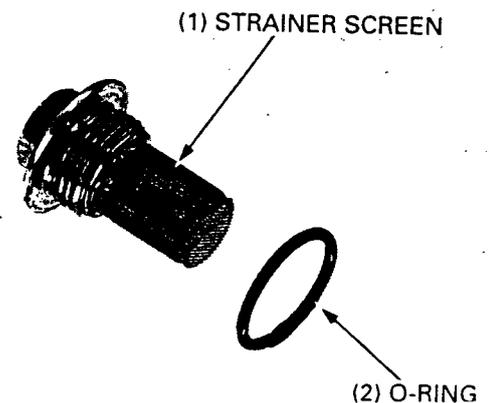
Remove the oil strainer screen and clean it.



Check the O-ring 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 4-11).

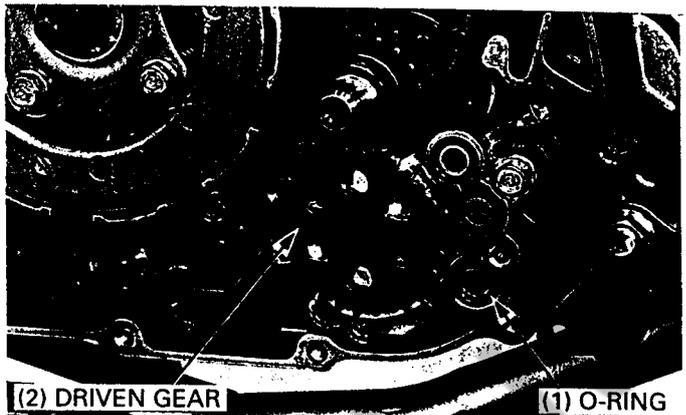


OIL PUMP

REMOVAL

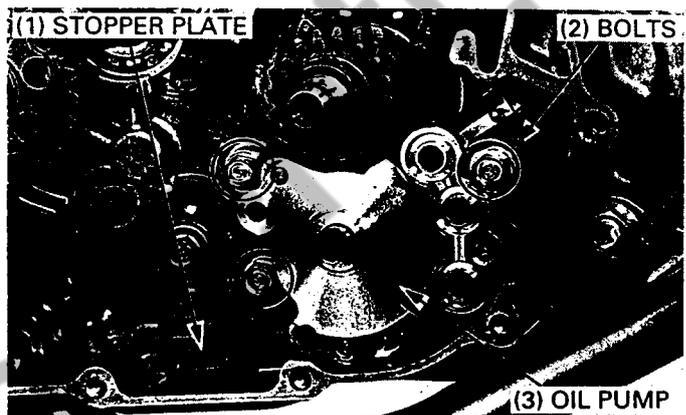
Remove the right crankcase cover (page 9-3).

Remove the O-ring.
Remove the oil pump driven gear.

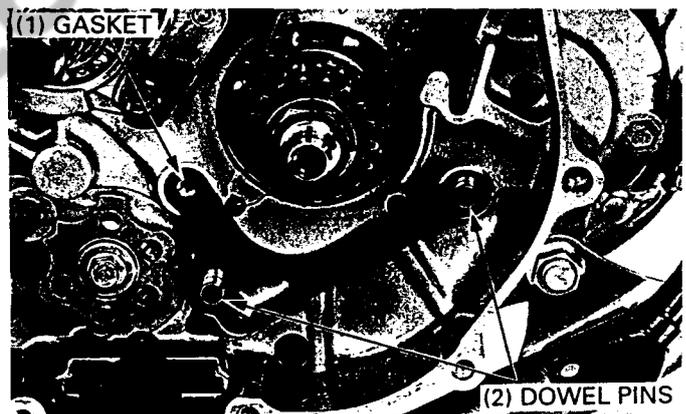


Remove the clutch (page 9-5).

Remove the oil pump bolts.
Remove the stopper plate and oil pump.

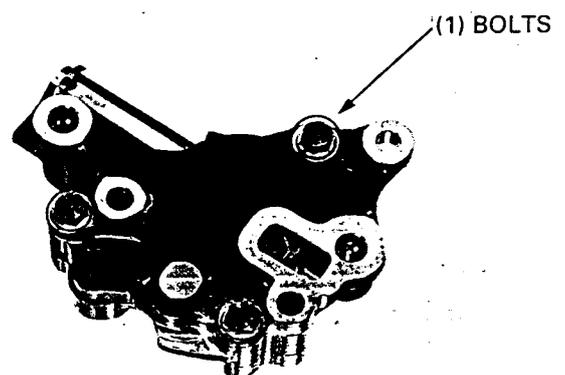


Remove the gasket and dowel pins.



DISASSEMBLY

Remove the bolts.



LUBRICATION

Remove the following:

NOTE

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

- Pump cover B
- Drive pin
- Spacer
- Outer rotor B
- Inner rotor B

- Pump cover A
- Outer rotor A
- Inner rotor A
- Drive pin
- Dowel pins
- Pump shaft

- Cotter pin
- Collar
- Spring
- Oil check valve
- Pump body

INSPECTION

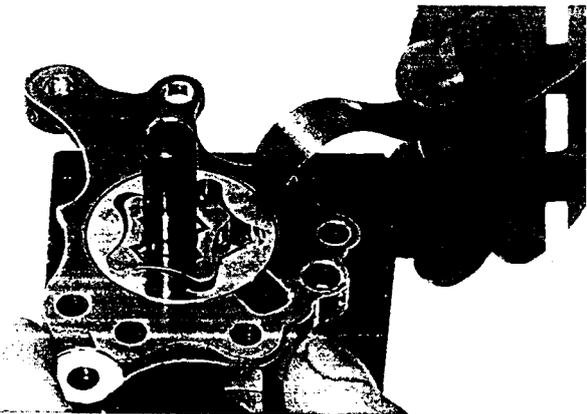
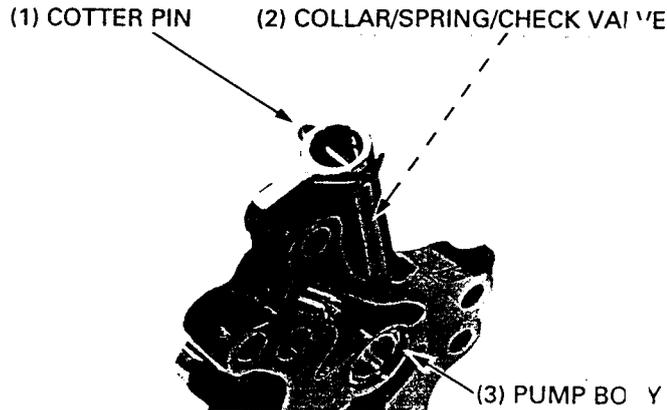
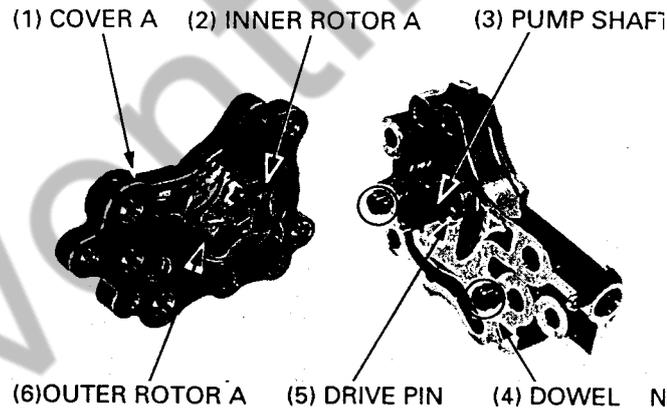
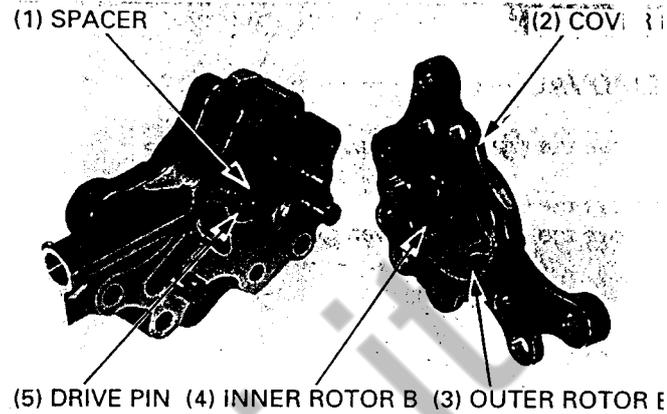
NOTE

- 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 as an assembly.

Pump A

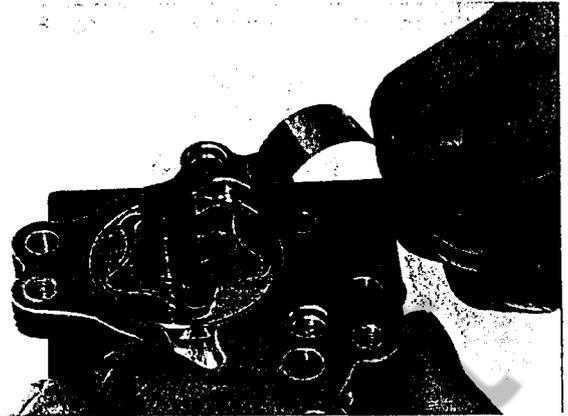
Install the inner rotor A and outer rotor A into the pump cover A.
Install the pump shaft securely.
Measure the body clearance.

SERVICE LIMIT: 0.25 mm (0.010 in)



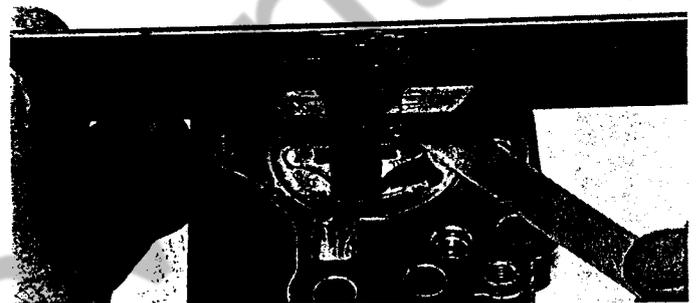
Install the inner rotor A and outer rotor A into the pump cover A.
 Install the pump shaft securely.
 Measure the tip clearance.

SERVICE LIMIT: 0.20 mm (0.008 in)



Install the inner rotor A and outer rotor A into the pump cover A.
 Install the pump shaft securely.
 Measure the end clearance.

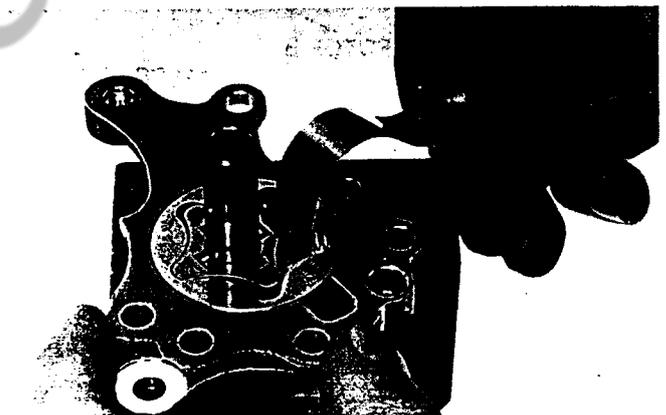
SERVICE LIMIT: 0.12 mm (0.005 in)



Pump B

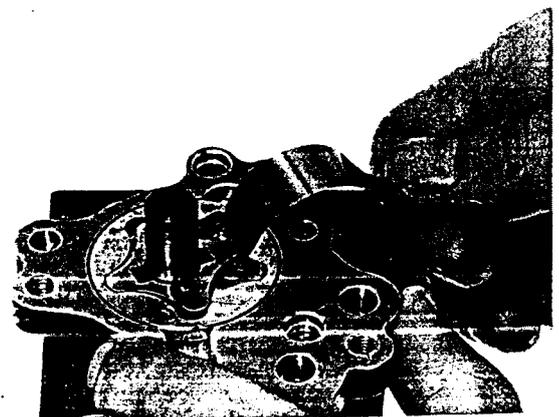
Install the inner rotor B and outer rotor B into the pump cover B.
 Install the pump shaft securely.
 Measure the body clearance.

SERVICE LIMIT: 0.25 mm (0.010 in)



Install the inner rotor B and outer rotor B into the pump cover B.
 Install the pump shaft securely.
 Measure the tip clearance.

SERVICE LIMIT: 0.20 mm (0.008 in)



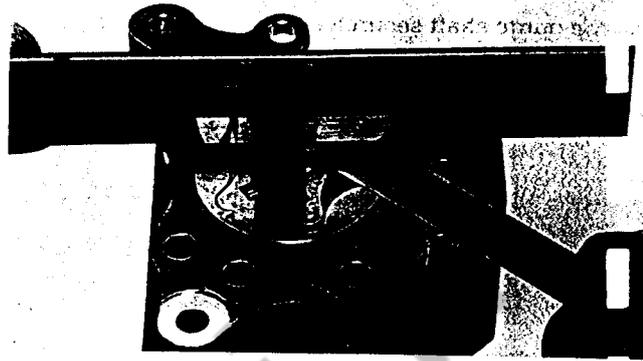
LUBRICATION

Install the inner rotor B and outer rotor B into the pump cover B.

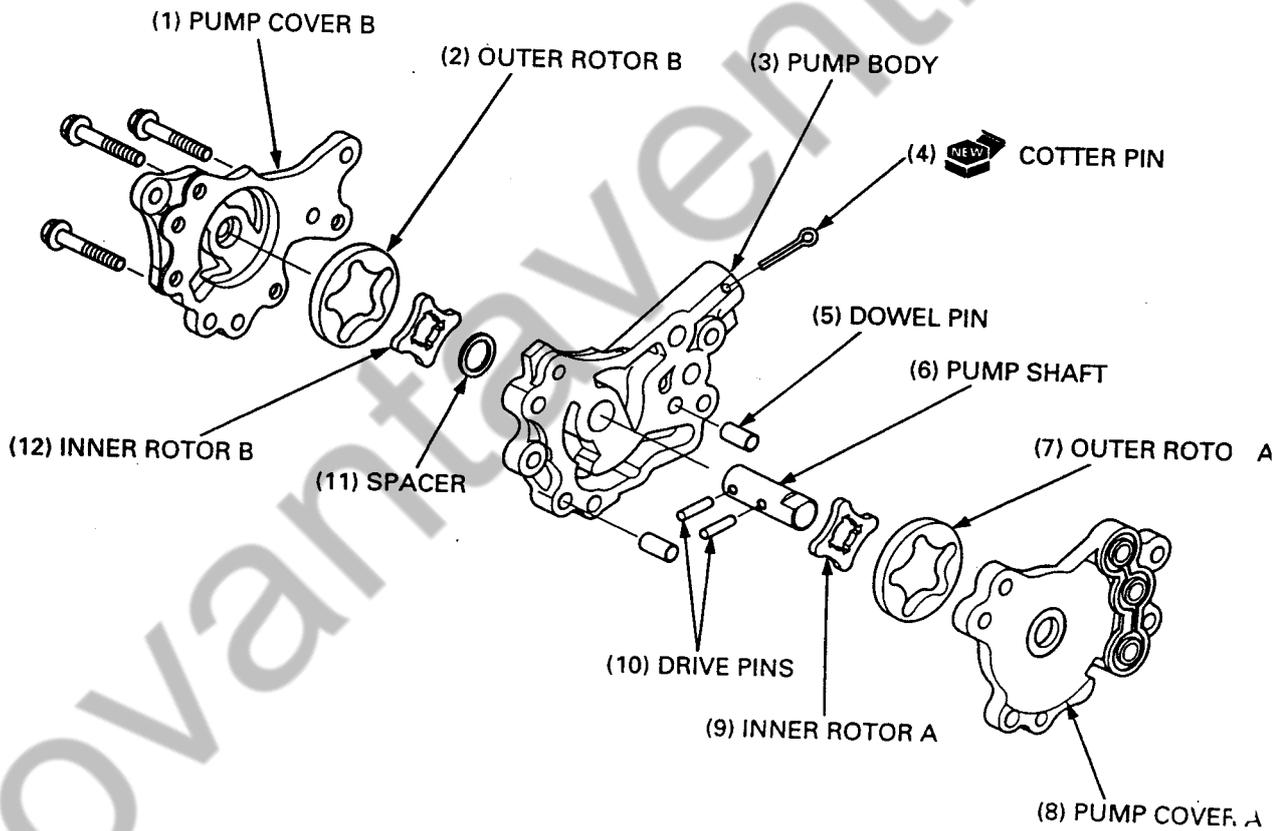
Install the pump shaft securely.

Measure the end clearance.

SERVICE LIMIT: 0.12 mm (0.005 in)

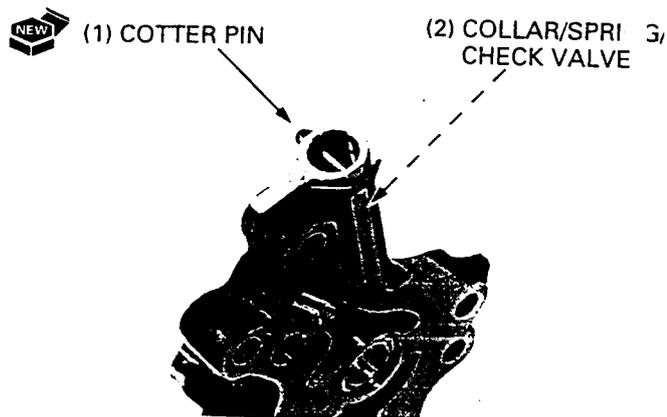


ASSEMBLY



Install the following to the pump body.

- Oil check valve
- Spring
- Collar
- New cotter pin



LUBRICATION

Install the following. Reinstall the parts in the same positions they were in.

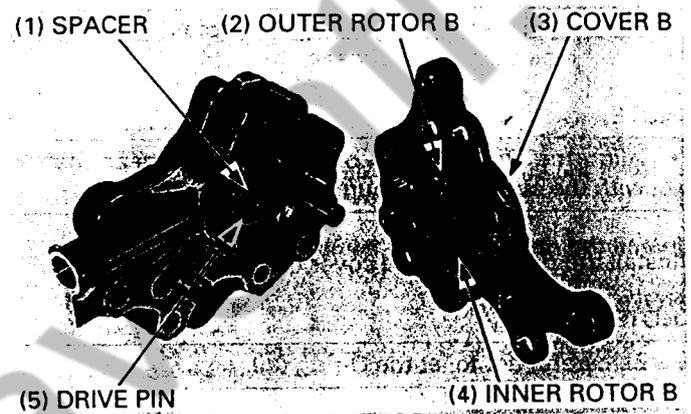
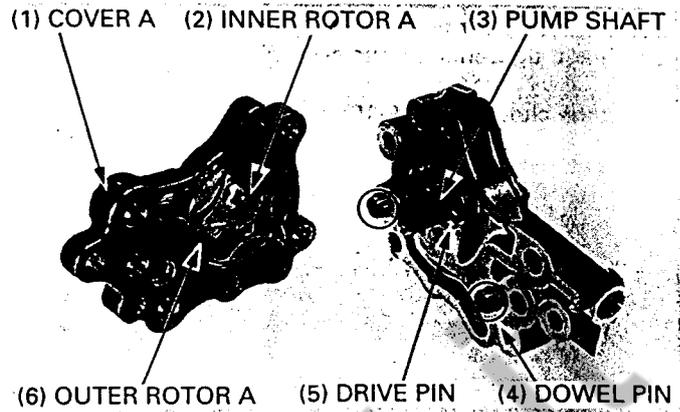
— Pump shaft

NOTE

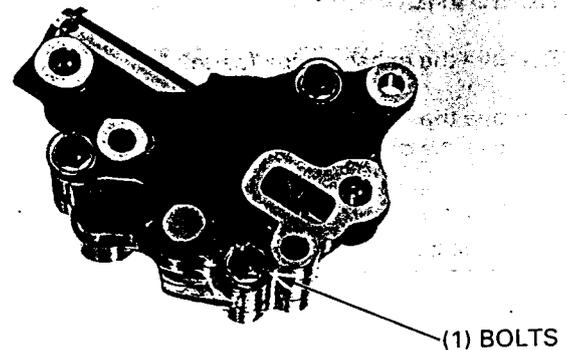
- Install the pump shaft with the cutout side toward pump cover A.

— Dowel pins
— Drive pin
— Inner rotor A
— Outer rotor A

— Inner rotor B
— Outer rotor B
— Spacer
— Drive pin
— Pump cover B

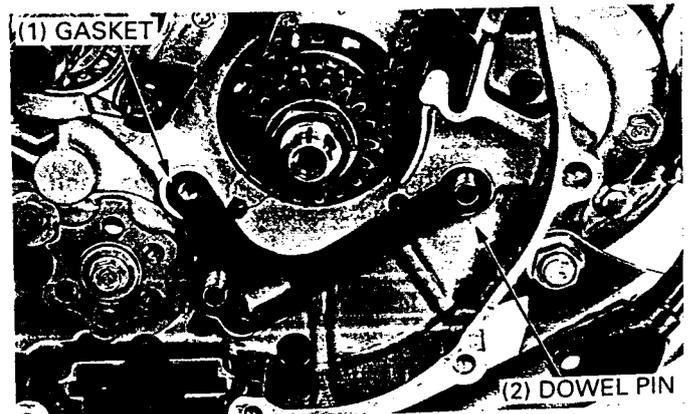


Tighten the bolts securely.



INSTALLATION

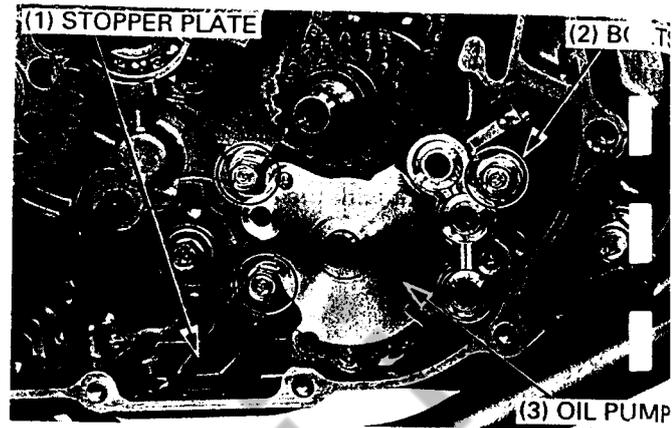
Install the gasket and dowel pins.



LUBRICATION

Install the stopper plate and oil pump.
Install and tighten the bolts securely.

Install the clutch (page 9-10).



Apply engine oil to a new O-ring and install it.
Install the oil pump driven gear.

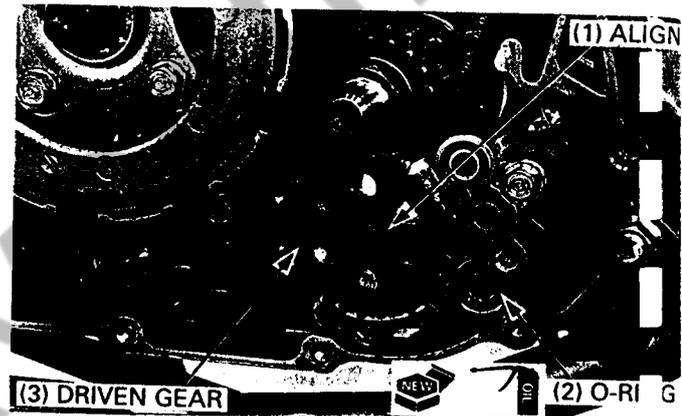
NOTE

- Align the cutout of the oil pump driven gear shaft hole with the cutout of the pump shaft.

Install the right crankcase cover (page 9-17).

NOTE

- Be careful not to let the O-ring fall.



OIL PASS PIPE

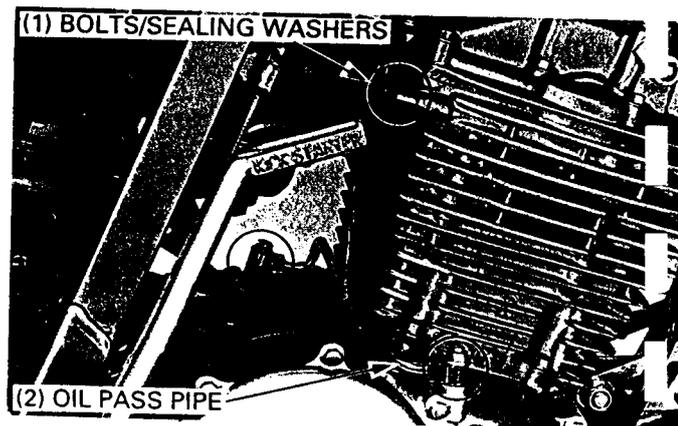
REMOVAL

Remove the exhaust pipe (page 2-3).

Remove the oil pass pipe bolts and sealing washers.
Remove the oil pass pipe.

NOTE

- Do not bend the oil pass pipe.



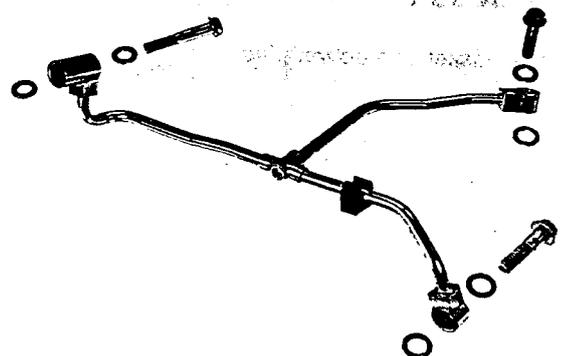
INSPECTION

Check the oil pass pipe and pipe bolts for damage or bends and 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 pass pipe. A fire or explosion could result.

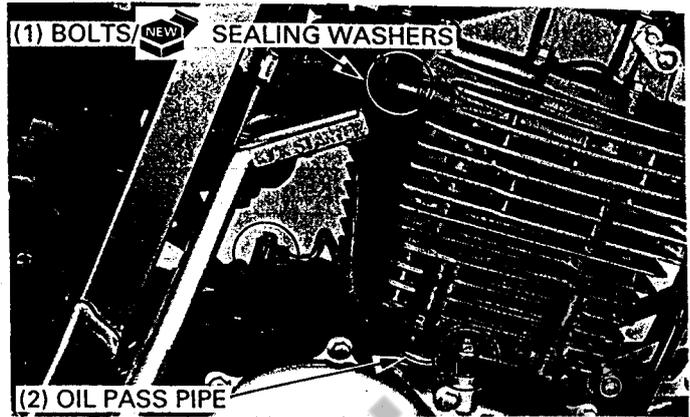


INSTALLATION

Install the oil pass pipe.
 Install new sealing washers and the oil pass pipe bolts.
 Tighten the bolts to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Install the exhaust pipe (page 2-4).



OIL PIPES

REMOVAL

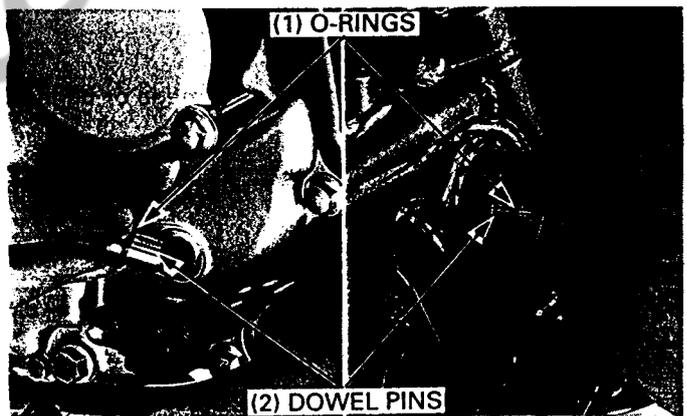
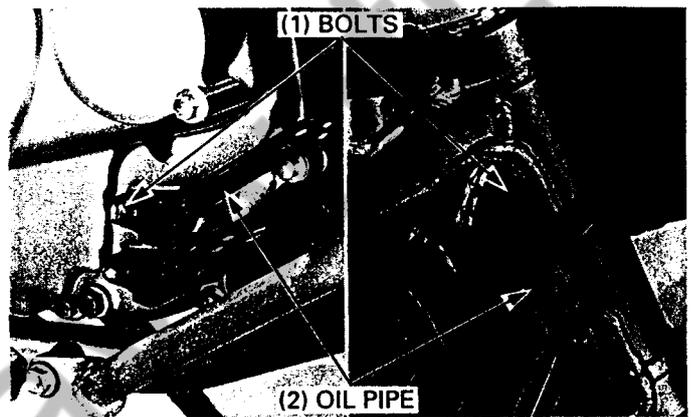
Outlet pipe

Remove the oil outlet pipe bolts and oil pass pipe.

NOTE

Do not bend the oil outlet pipe.

Remove the dowel pins and O-rings.



Inlet pipe

Remove the under guard (page 2-3).

Remove the oil inlet pipe bolt at the engine.

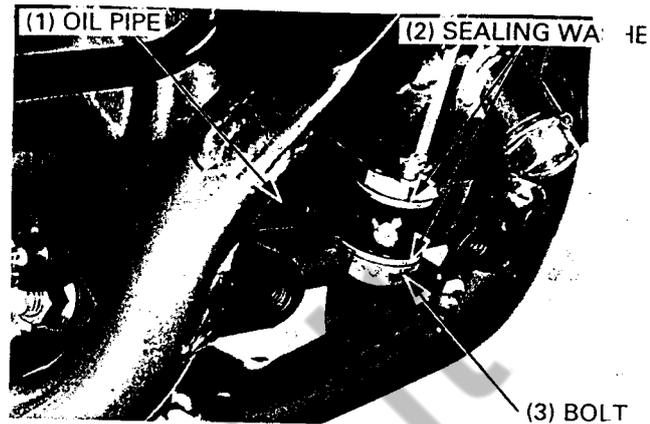


LUBRICATION

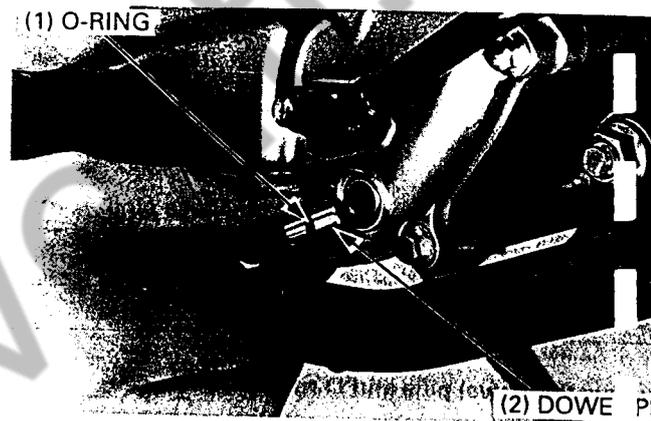
Remove the oil inlet pipe bolt and sealing washers at the frame.
Remove the oil inlet pipe.

NOTE

- Do not bend the oil inlet pipe.



Remove the dowel pin and O-ring.



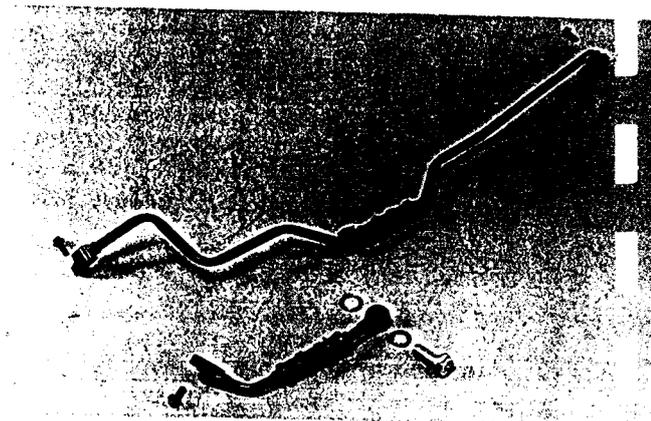
INSPECTION

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

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

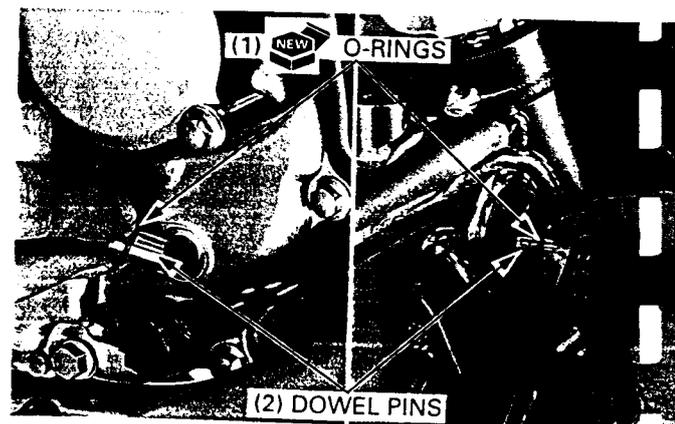
⚠ WARNING

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



INSTALLATION

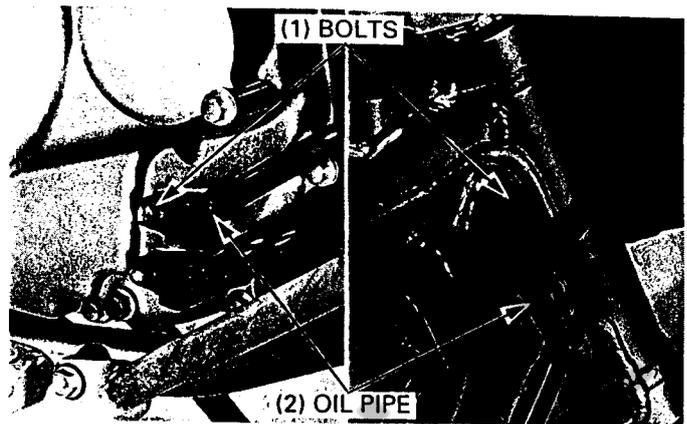
Outlet pipe
install the dowel pins and new O-rings.



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

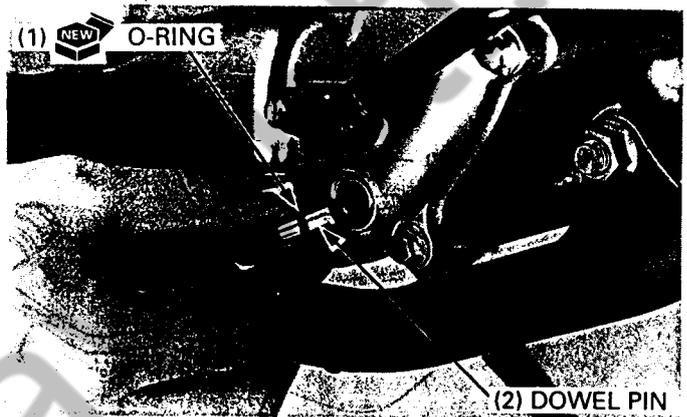
NOTE

- Do not bend the oil outlet pipe.



Inlet pipe

Install the dowel pin and a new O-ring.



Install the oil inlet pipe, new sealing washers and oil pipe bolts.
Tighten both bolts securely.

NOTE

- Do not bend the oil inlet pipe.



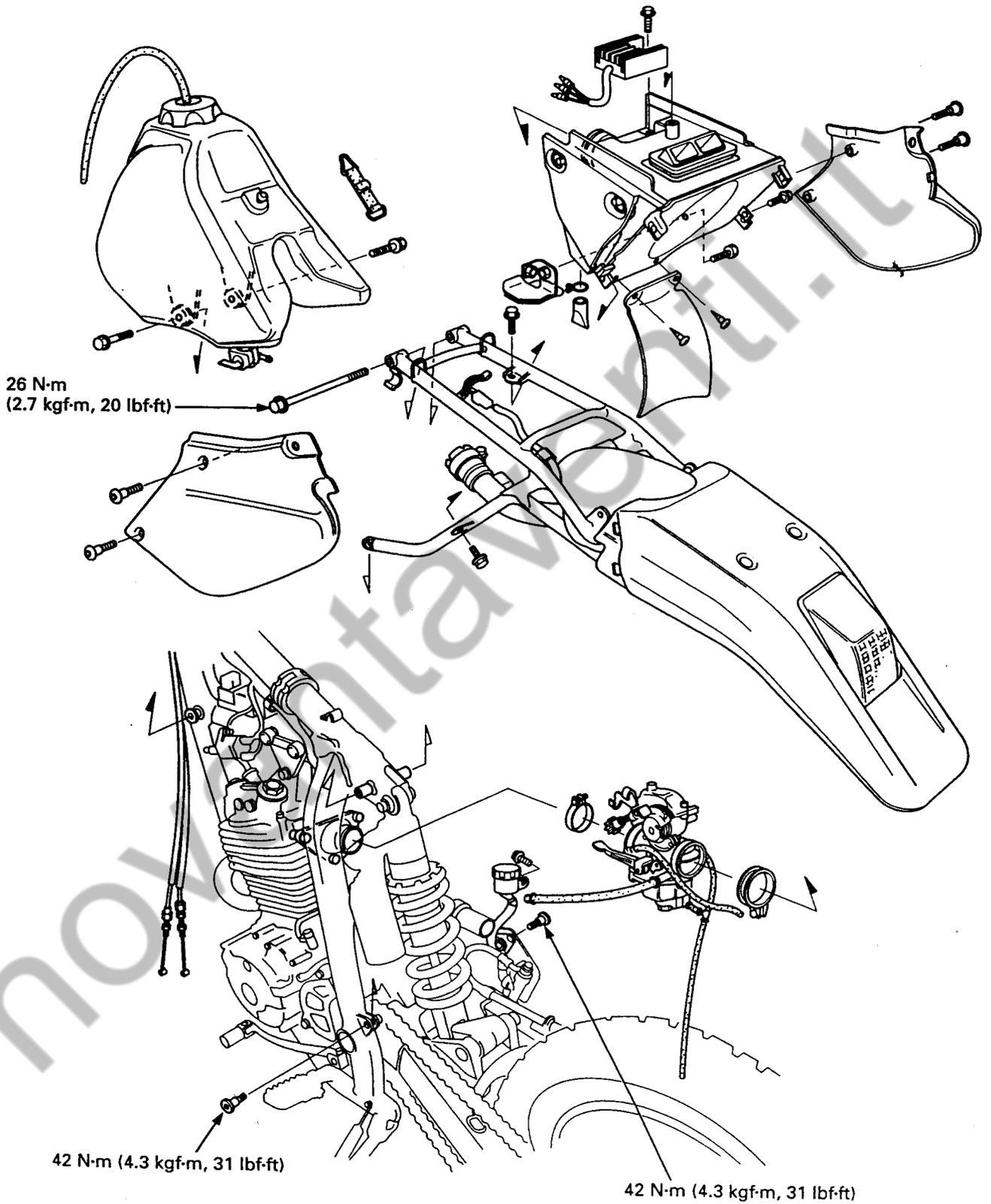
Tighten the oil inlet pipe bolt at the frame to the specified torque.

TORQUE: 37 N·m (3.8 kgf·m, 27 lbf·ft)

Install the under guard (page 2-3).



FUEL SYSTEM



5. FUEL SYSTEM

SERVICE INFORMATION	5-1	CRANKCASE BREATHER	5-5
TROUBLESHOOTING	5-2	CARBURETOR REMOVAL/ DISASSEMBLY	5-5
FUEL TANK REMOVAL/ INSTALLATION	5-3	CARBURETOR ASSEMBLY/ INSTALLATION	5-8
AIR CLEANER HOUSING REMOVAL/ INSTALLATION	5-3	PILOT SCREW ADJUSTMENT	5-11

SERVICE INFORMATION

GENERAL

▲ WARNING

- *Gasoline is extremely flammable and is explosive under certain conditions. KEEP OUT OF REACH CHILDREN.*
- *If the engine must be running to do some work, make sure the area is well ventilated. Never run the engine in an closed 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 more than one month, drain the float chamber. Fuel left in the float chamber 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 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 reinstalling the carburetor.

FUEL SYSTEM

SPECIFICATIONS

ITEM		SPECIFICATIONS
Carburetor identification number	(ED, DK types)	PDG1A
	(U type)	PDG1B
Main jet	(ED, DK types)	#132
	(U type)	#75
Slow jet		#45
Jet needle clip position		3rd groove from top
Pilot screw initial opening		1-3/4 turns out
Float level		12.5 mm (0.49 in)
Idle speed		1,300 ± 100 min ⁻¹ (rpm)
Throttle grip free play		2 - 6 mm (1/12 - 1/4 in)

TORQUE VALUES

Rear frame upper mounting bolt	26 N·m (2.7 kgf·m, 20 lbf·ft)
lower side mounting bolt	42 N·m (4.3 kgf·m, 31 lbf·ft)

TOOL

Common

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

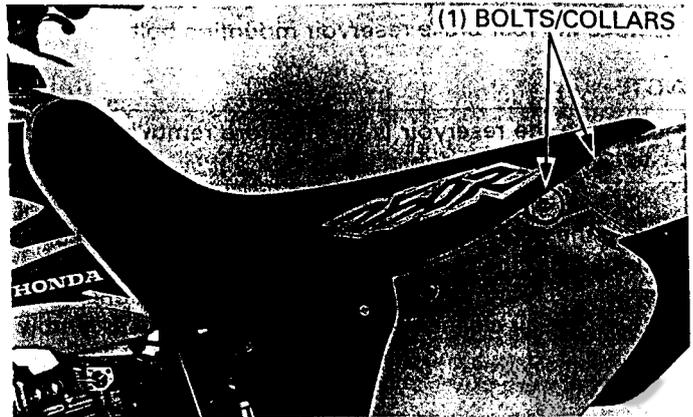
- Choke stuck open
- Worn piston rings

FUEL TANK REMOVAL/INSTALLATION

REMOVAL

WARNING

- Gasoline is extremely flammable and is explosive under certain conditions. Work in a well ventilated area with the engine stopped. Do not allow flames or sparks in your working area or where gasoline is stored.
- Wipe up spilled gasoline at once.



Remove the seat (page 2-2).
Turn the fuel valve OFF and disconnect the fuel line.
Remove the mounting strap, bolts and fuel tank.

Check that fuel flows out of the fuel valve freely.
If flow is restricted, clean the fuel strainer (page 3-5).

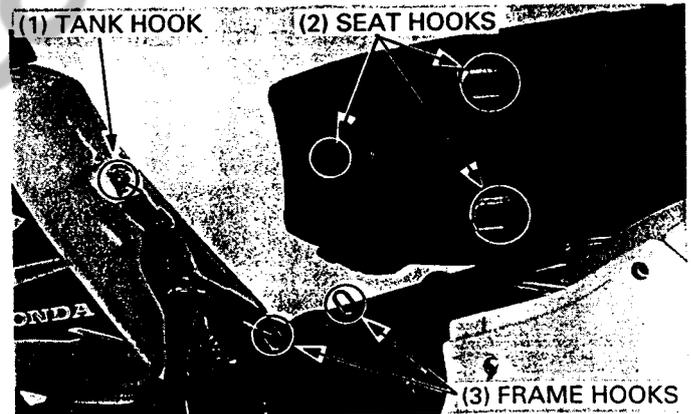
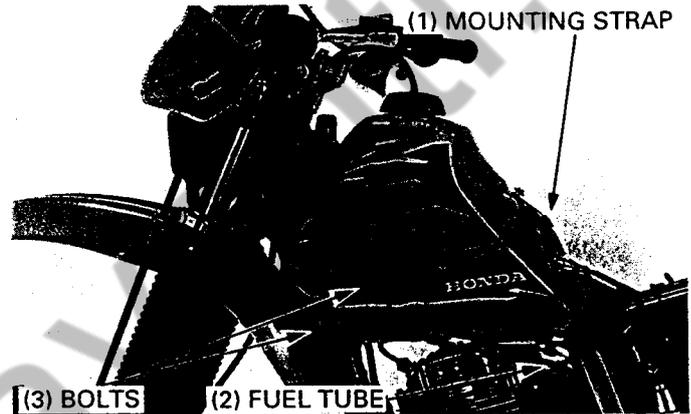
INSTALLATION

Install the fuel tank with the two mounting bolts and strap.
Connect the fuel line.

NOTE

- Do not overtighten the fuel valve screws.
- After assembling, make sure there are no fuel leaks.

Install the seat (page 2-2).



AIR CLEANER HOUSING REMOVAL/INSTALLATION

REMOVAL

Disconnect the alternator connector.
Disconnect the ignition pulse generator 2P connector.
Disconnect the AC regulator connector.
Remove the wire band.



FUEL SYSTEM

Remove the rear brake reservoir mounting bolt.

NOTE

- Be sure the reservoir is level before removing the reservoir, so the fluid doesn't spill.

Loosen the connecting tube clamp and remove the connecting tube from the carburetor.
Remove the rear frame upper and lower side mounting bolts.
Remove the air cleaner housing and rear frame assembly.

Remove the right and left side covers.

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

Remove the following:
— AC regulator

- Mud guard
- Rear brake reservoir bracket

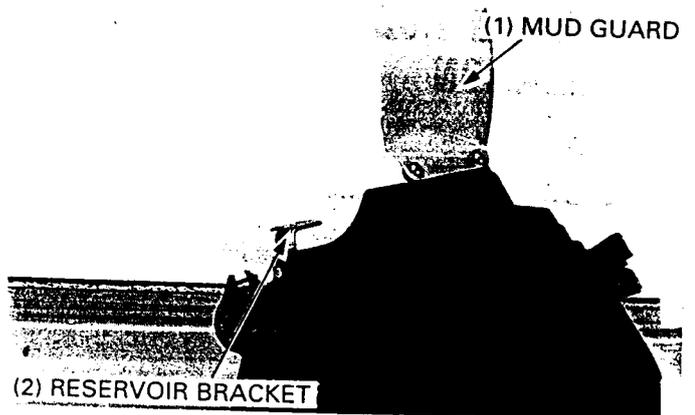
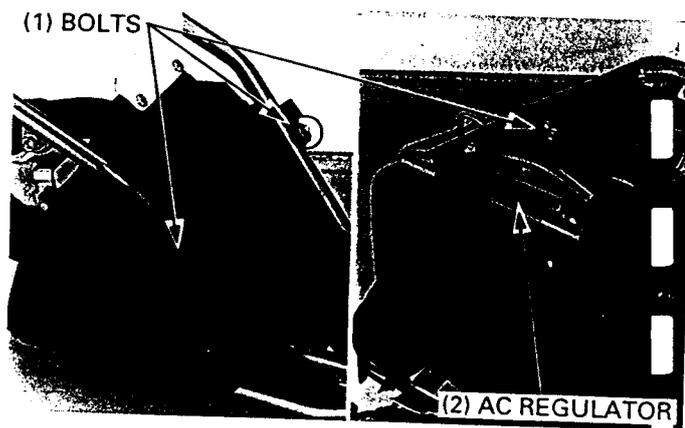
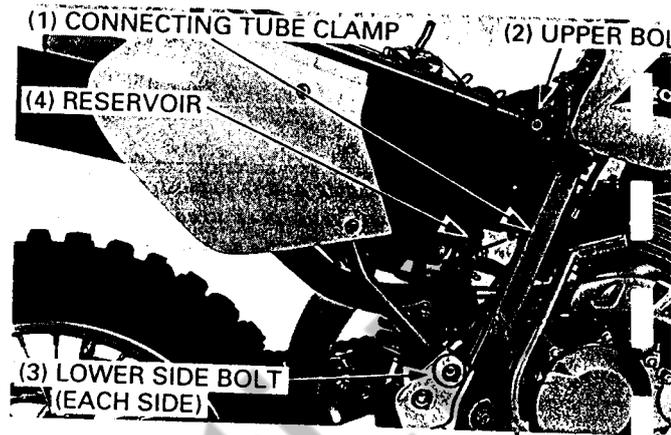
INSTALLATION

Installation is in the reverse order of removal.

TORQUE:

Rear frame lower side mounting bolt: 42 N-m (4.3 kgf-m, 31 lbf-ft)

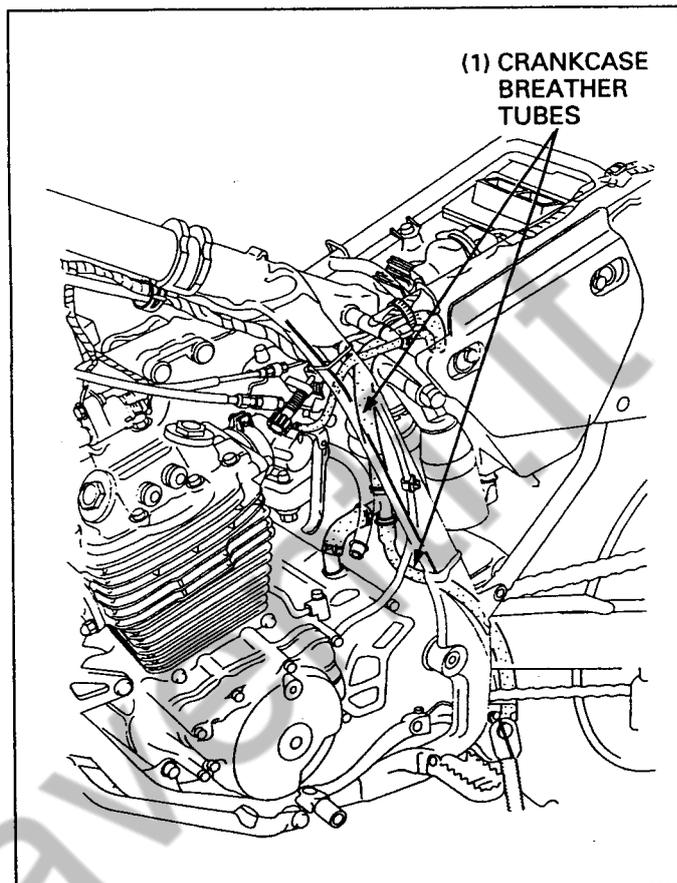
Upper mounting bolt: 26 N-m (2.7 kgf-m, 20 lbf-ft)



CRANKCASE BREATHER

INSPECTION

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



CARBURETOR REMOVAL/DISASSEMBLY

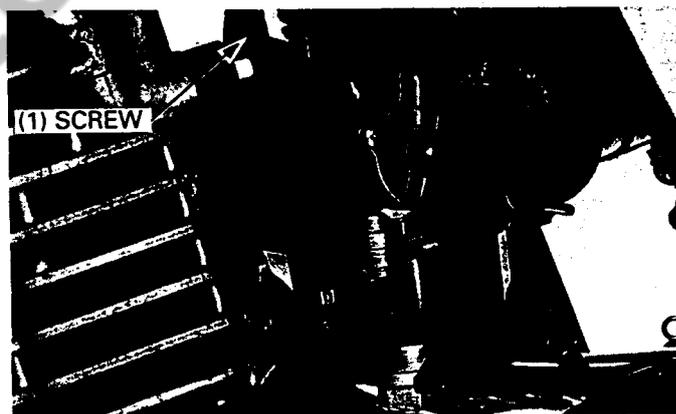
REMOVAL

⚠ WARNING

- Gasoline is extremely flammable and is explosive under certain conditions. Work in a well ventilated area with the engine stopped. Do not allow flames or sparks in your working area or where gasoline is stored.
- Wipe up spilled gasoline at once.

Turn the fuel valve OFF.
Place a suitable gasoline container under the drain tube and loosen the drain screw to drain the fuel.
Loosen the carburetor insulator clamp screw and connecting tube clamp screw.

Remove the carburetor to the left.



FUEL SYSTEM

Remove the over flow/drain tube, air vent tubes and fuel line from the carburetor.

Remove the throttle cables from the carburetor.



DISASSEMBLY

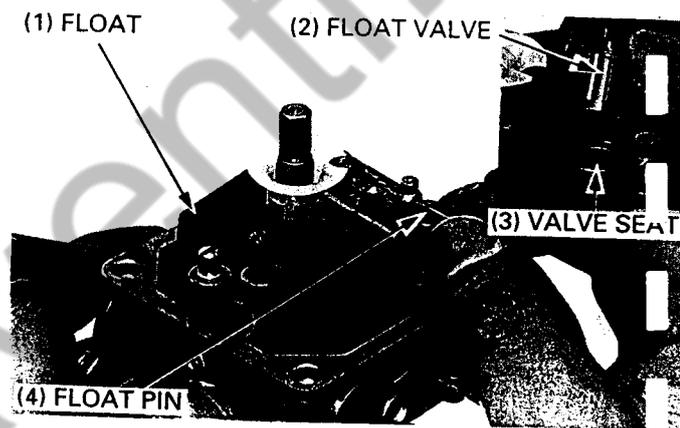
Remove the following:

- Float chamber screws
- Float chamber
- Float pin
- Float
- 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 following:

- Baffle plate
- Main jet
- Needle jet holder
- Needle jet

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.*

- Slow jet
- Pilot screw
- Spring, washer and O-ring

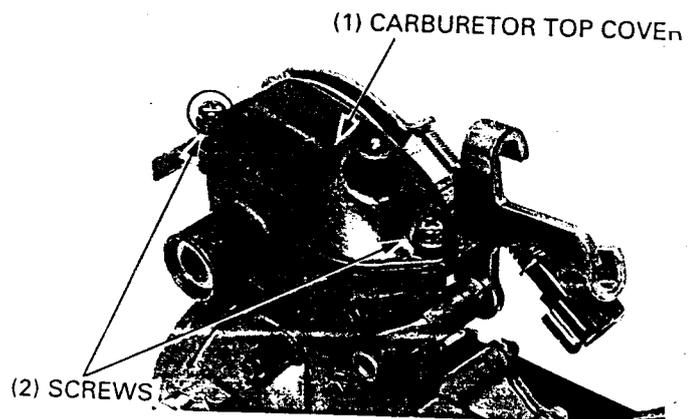
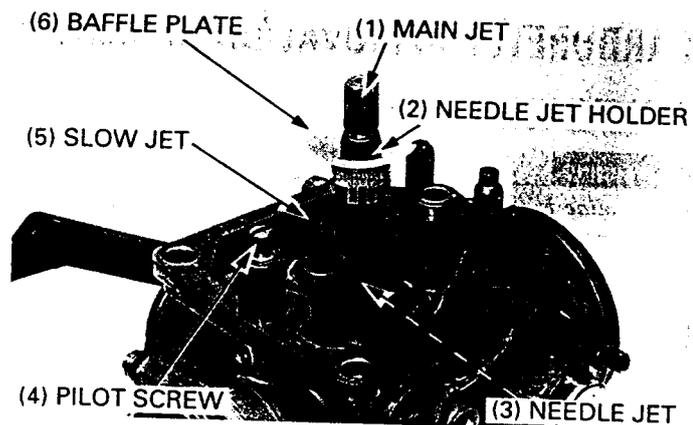
Inspect the following:

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

Blow open all jets with compressed air.

Remove the following:

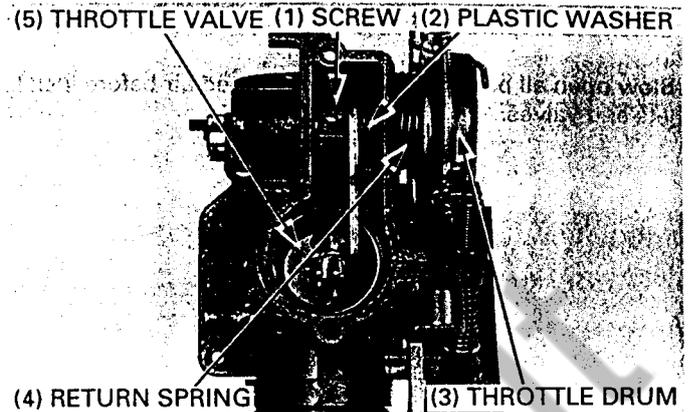
- Carburetor top cover screws
- Carburetor top cover



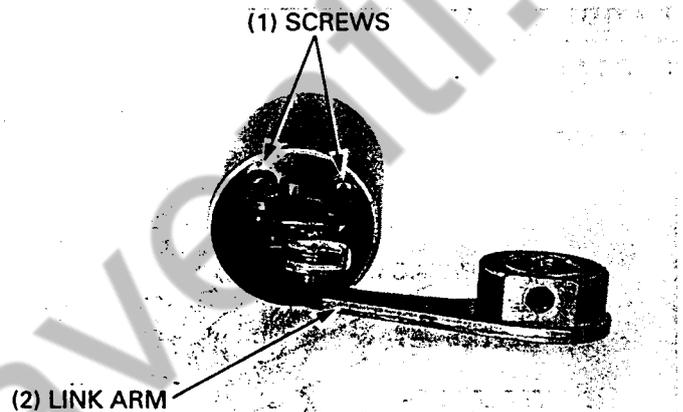
FUEL SYSTEM

Remove the following:

- Link arm set screw
- Throttle drum assembly
- Return spring
- Plastic washer
- Throttle valve assembly

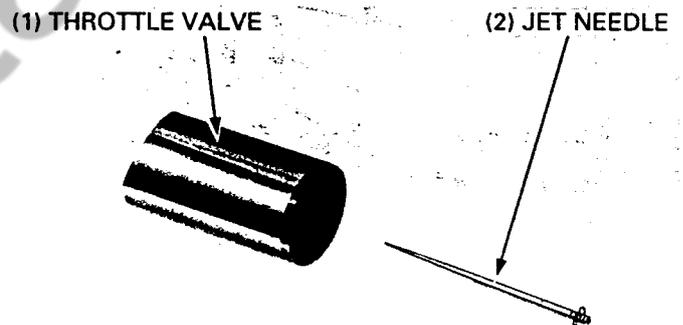


Remove the two screws attaching the link arm to the throttle valve and separate the link arm from the throttle valve.



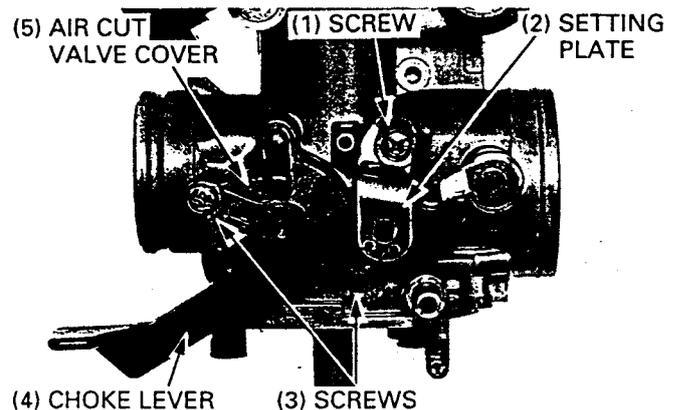
Remove the jet needle.

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



Remove the following:

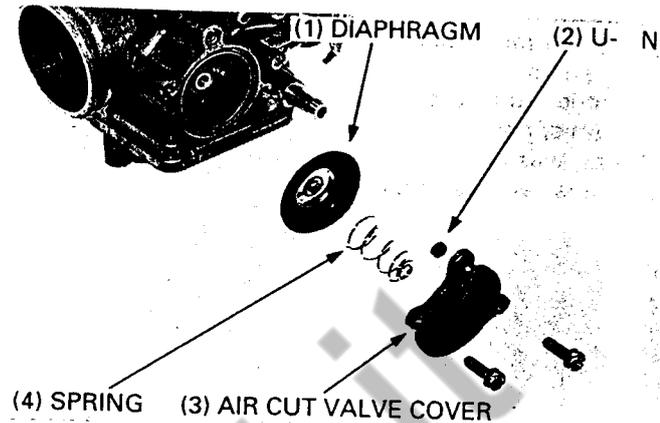
- Choke lever setting plate screw
- Choke lever setting plate
- Choke lever
- Air cut-off valve cover setting screws
- Air cut-off valve cover
- Spring
- Diaphragm and U-ring



FUEL SYSTEM

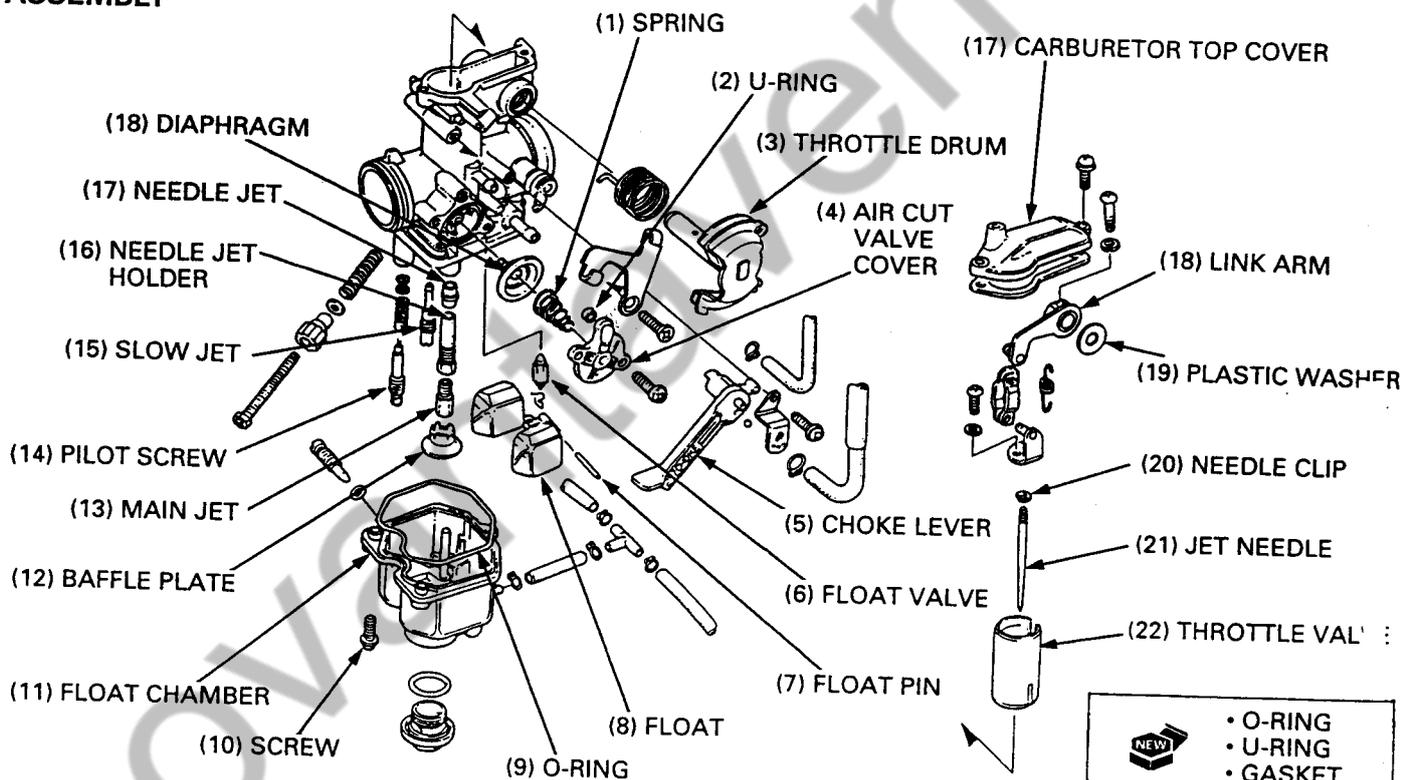
Check the diaphragm for damage.

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



CARBURETOR ASSEMBLY/ INSTALLATION

ASSEMBLY

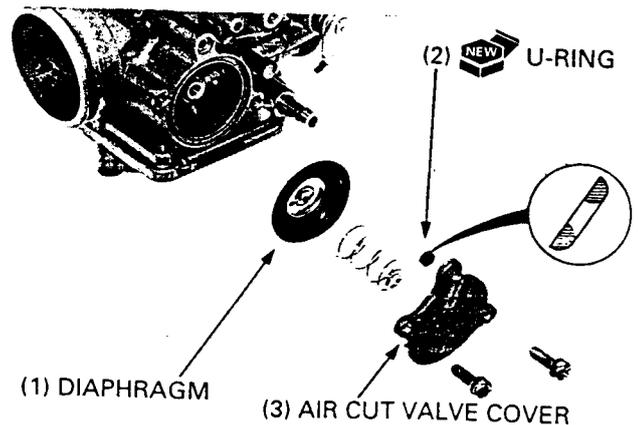


Install the following:
— Diaphragm and U-ring

NOTE

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

- Spring
- Air cut-off valve cover and screws
- Choke lever
- Setting plate and screw

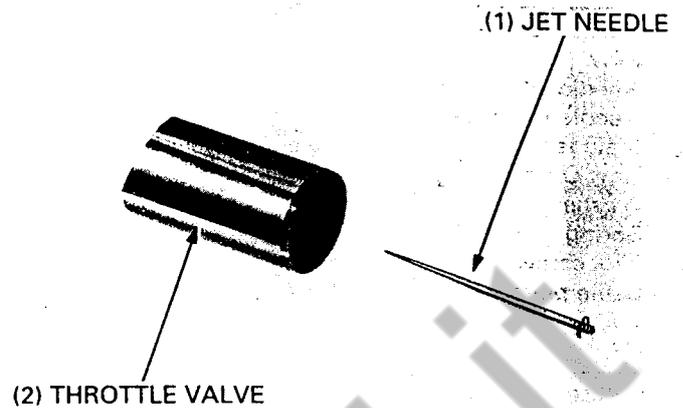


FUEL SYSTEM

Install the needle clip on the jet needle.

STANDARD: 3rd groove from top

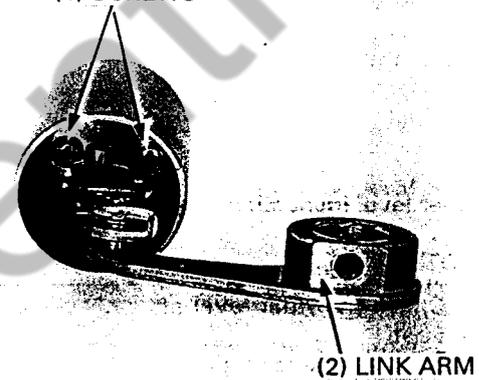
Install the jet needle in the throttle valve.



Assemble link arm to the throttle valve.
Tighten the two screws securely.

(1) SCREWS

(2) LINK ARM

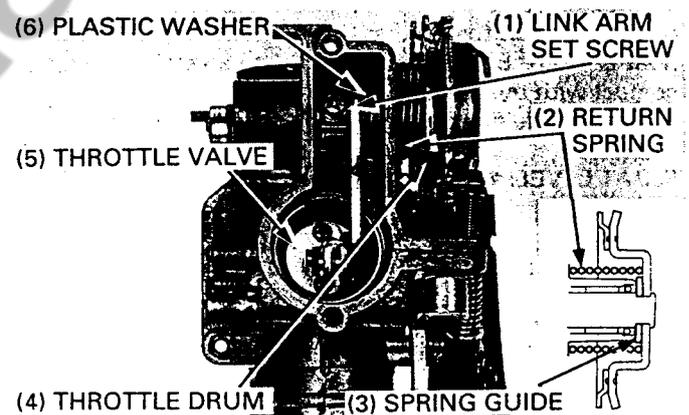


Install the following:

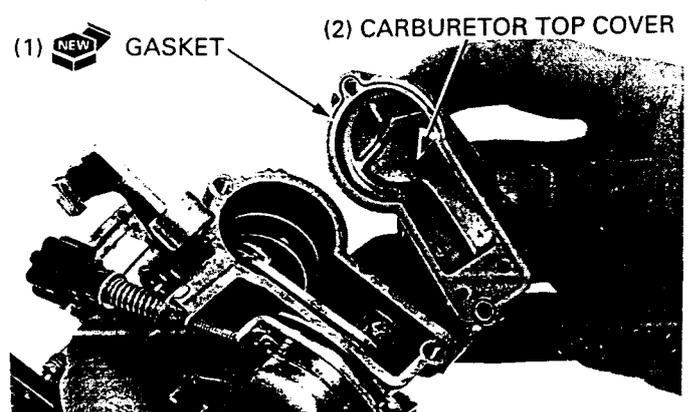
- Throttle valve assembly
- Plastic washer
- Return spring
- Throttle drum assembly
- Link arm set screw

NOTE

- Return spring shall not hang over spring guide on the throttle drum.
- Align the hole in the link arm with the threaded hole in the link arm shaft and install the set screw.



Install a new gasket and carburetor top cover.



FUEL SYSTEM

Install the following:

- Slow jet
- Needle jet
- Needle jet holder
- Main jet
- New O-ring
- Washer
- Spring
- Pilot screw
- Baffle plate

NOTE

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

STANDARD PILOT SCREW INITIAL OPENING: 1-3/4 turns out

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.

Make sure the float level with the float level gauge.

FLOAT LEVEL: 12.5 mm (0.49 in)

TOOL:

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.

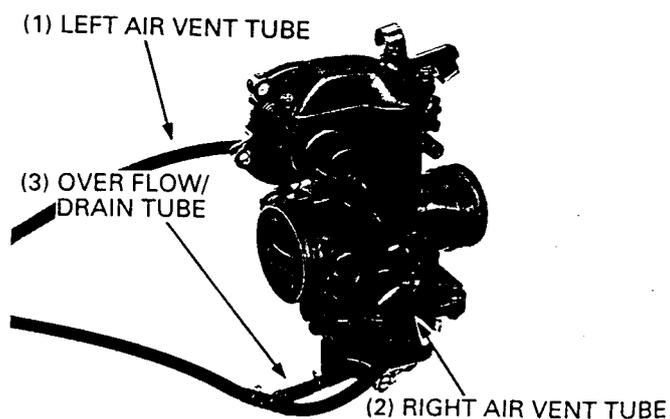
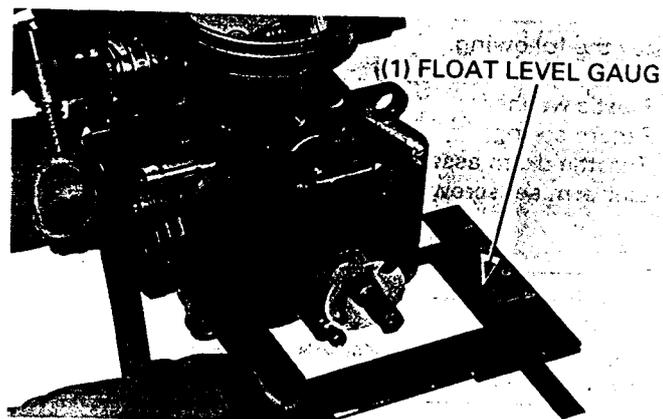
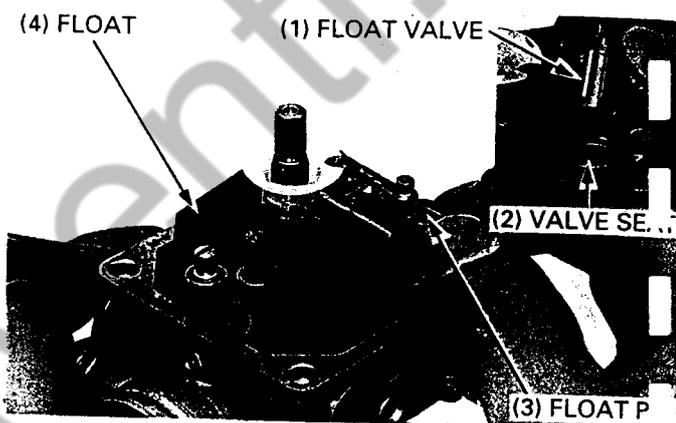
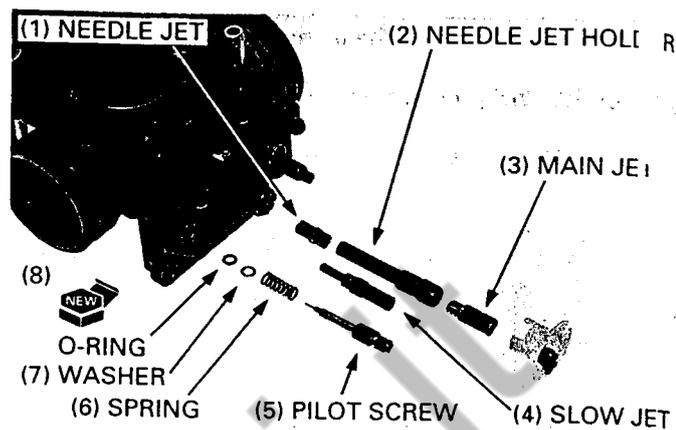
Install the float chamber with four screws and tighten it.

INSTALLATION

Install the over flow/drain tube, air vent tubes and fuel line. Connect the throttle cables to the carburetor.

NOTE

- Route the cables and tubes properly (page 1-21).



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



Perform the following inspections and adjustments.
 — Throttle operation (page 3-5)
 — Pilot screw adjustment below



PILOT SCREW ADJUSTMENT

NOTE

- The pilot screw is factory pre-set. Adjustment is not necessary unless the carburetor is overhauled or a new pilot screw is installed.

CAUTION

- *Tightening the pilot screw hard against its seat will damage the seat.*

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

PILOT SCREW OPENING: 1-3/4 turns out

2. Warm up the engine to operating temperature. Ten minutes of stop and go driving is sufficient.
3. Stop the engine and connect a tachometer according to the tachometer manufacturer's instructions.
4. Start the engine and adjust the idle speed with the throttle stop screw.

IDLE SPEED: $1,300 \pm 100 \text{ min}^{-1} \text{ (rpm)}$



FUEL SYSTEM

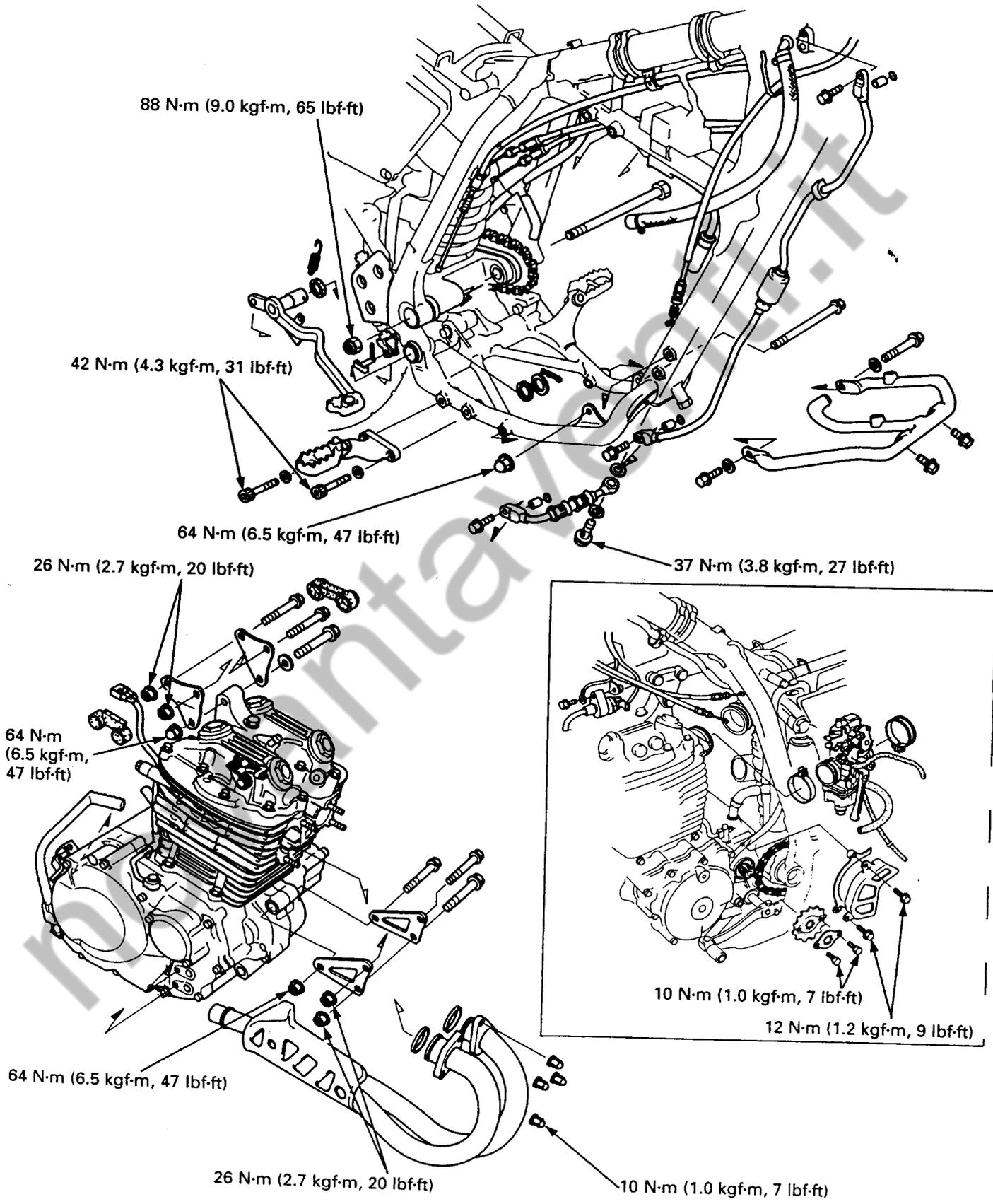
5. Turn the pilot screw in or out slowly to obtain the highest engine speed.
6. Readjust the idle speed to the specified value with the throttle stop screw.
7. Make sure that the engine does not miss or run erratically. Repeat steps 5 and 6 until engine speed increases smoothly.

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ENGINE REMOVAL/INSTALLATION



6. ENGINE REMOVAL/INSTALLATION

SERVICE INFORMATION	6-1	ENGINE INSTALLATION	6-5
DRIVE SPROCKET REMOVAL	6-2	DRIVE SPROCKET INSTALLATION	6-6
ENGINE REMOVAL	6-3		

SERVICE INFORMATION

GENERAL

- During removal and installation, support the motorcycle with a work stand or box.
- A jack or adjustable support is required to maneuver the engine.
- The following components can be serviced with the engine installed in the frame.
 - Oil pump (Section 4)
 - Cylinder head/valves (Section 7)
 - Cylinder/piston (Section 8)
 - Clutch/kickstarter/gearshift linkage (Section 9)
 - Alternator (Section 10)
- The following components require engine removal for service.
 - Crankshaft/balancer (Section 11)
 - Transmission/shift forks/shift drum (Section 12)

SPECIFICATIONS

ITEM		SPECIFICATIONS
Engine oil capacity	at draining	1.3 liter (1.37 US qt, 1.14 Imp qt)
	at disassembly	1.7 liter (1.79 US qt, 1.50 Imp qt)
	at oil filter change	1.4 liter (1.47 US qt, 1.23 Imp qt)
Engine dry weight		33.7 kg (74.3 lbs)

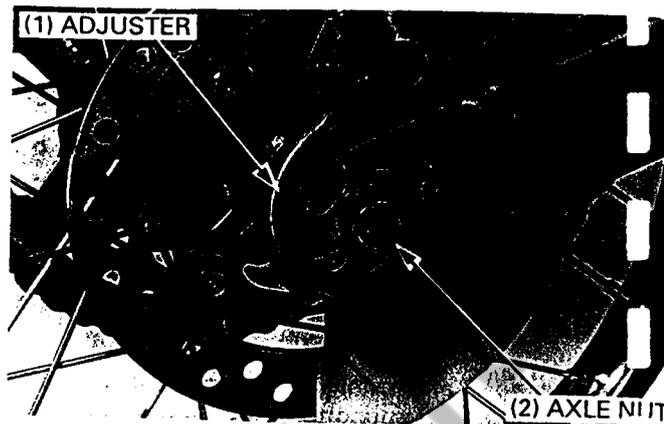
TORQUE VALUES

Swingarm pivot nut	88 N·m (9.0 kgf·m, 65 lbf·ft)
Engine hanger plate bolt (10 mm)	64 N·m (6.5 kgf·m, 47 lbf·ft)
(8 mm)	26 N·m (2.7 kgf·m, 20 lbf·ft)
Right foot peg mounting bolt	42 N·m (4.3 kgf·m, 31 lbf·ft)
Drive sprocket bolt	10 N·m (1.0 kgf·m, 7 lbf·ft)
Drive sprocket cover bolt	12 N·m (1.2 kgf·m, 9 lbf·ft)

ENGINE REMOVAL/INSTALLATION

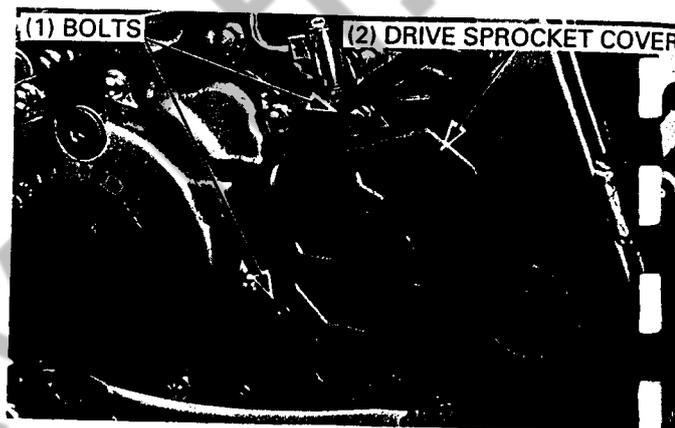
DRIVE SPROCKET REMOVAL

Loosen the rear axle nut and turn the drive chain adjusters to loosen the drive chain.

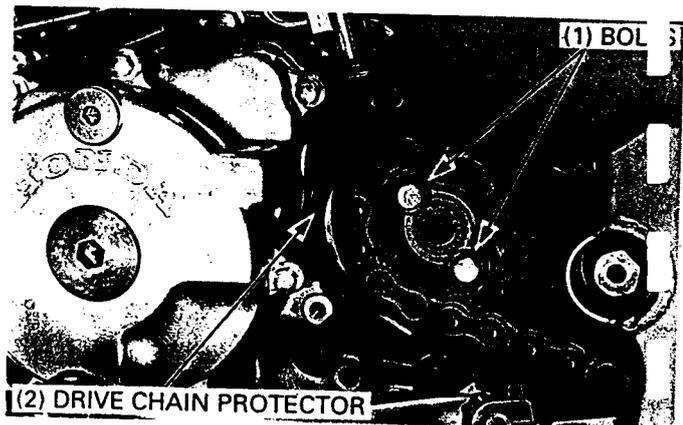


Remove the following:

- Drive sprocket cover bolts
- Drive sprocket cover



- Drive chain protector
- Drive sprocket bolts



- Fixing plate



— Drive sprocket

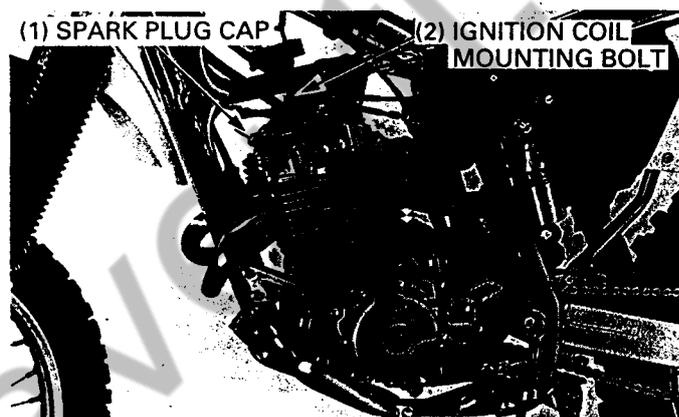


ENGINE REMOVAL

Drain the engine oil (page 3-10).

Remove the following:

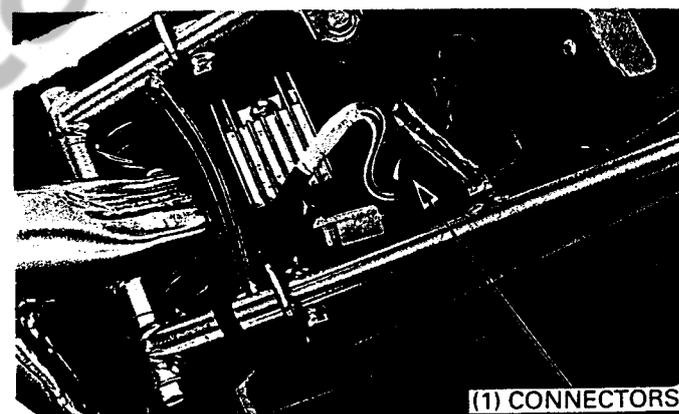
- Seat (page 2-3)
- Fuel tank (page 5-3)
- Drive sprocket (page 6-2)
- Carburetor (page 5-5)
- Spark plug cap
- Clutch cable (page 9-3)
- Decompressor cable (page 7-3)
- Ignition coil mounting bolt/ground cable



Disconnect the following:

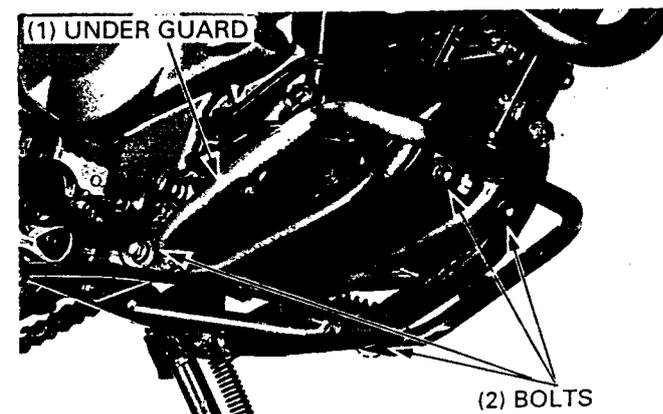
- Alternator connectors (P and Y wires)
- Ignition pulse generator 2P connector
- Exciter coil connector (BI/R wire)

Remove the wire band and unhook the harness clip from the frame down tube.



Remove the following:

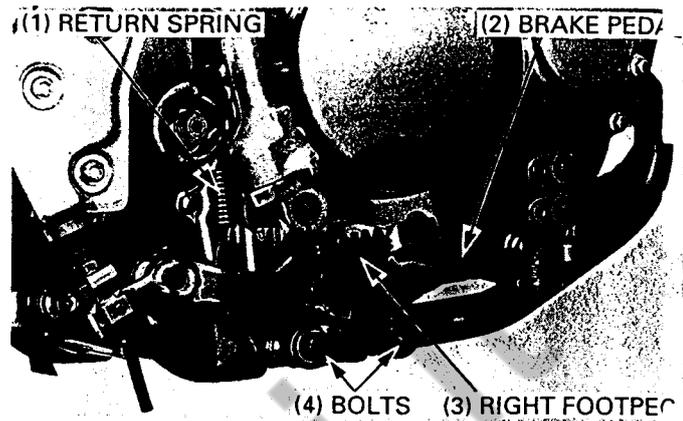
- Under guard bolts
- Under guard



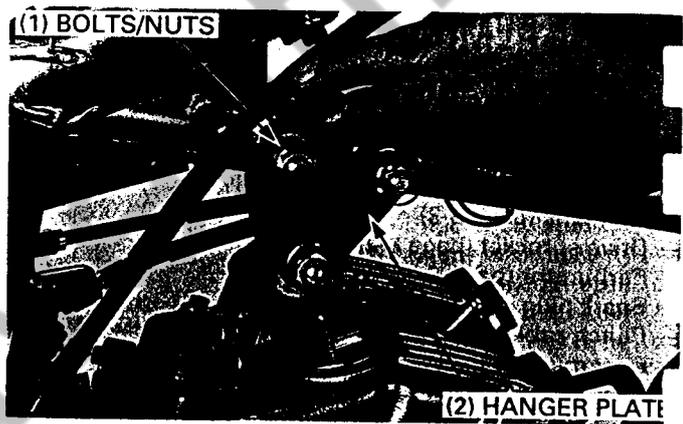
ENGINE REMOVAL/INSTALLATION

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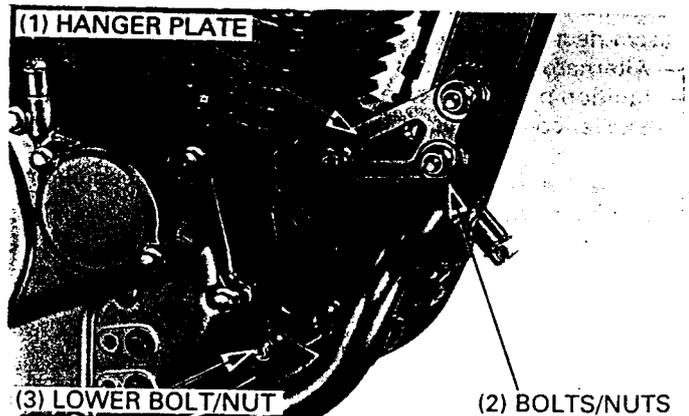
- Oil pipes (page 4-9)
- Brake pedal return spring
- Brake pedal (page 15-26)
- Right foot peg mounting bolts/washers
- Right foot peg



- Exhaust pipe (page 2-3)
- Breather tube (disconnect from crankcase)
- Rubber cap
- Upper engine hanger bolt/nut
- Upper engine hanger plate bolts/nuts
- Upper engine hanger plates

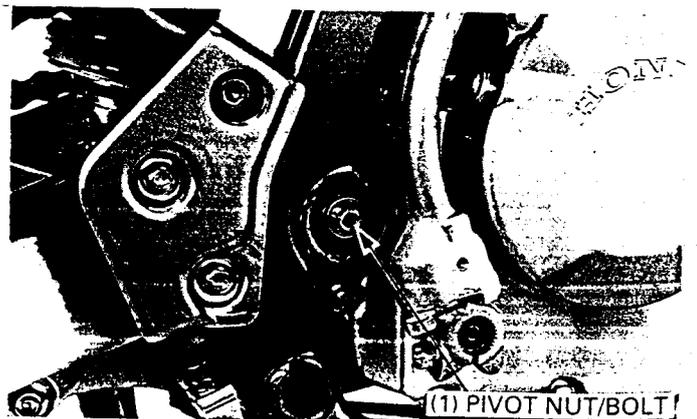


- Front engine hanger bolt/nut
- Front engine hanger plate bolts/nuts
- Front engine hanger plates
- Lower engine mounting bolt/nut



- Swingarm pivot nut/bolt

Pull the swingarm back.
Remove the engine to the right.



ENGINE INSTALLATION

- Install the engine from the right side.
- Apply a thin coat of grease to the swingarm pivot bolt sliding surface.
- Install the swingarm pivot bolt from the left side. Install the nut.
- Install the upper and front engine hanger plates.

NOTE

- Install the upper engine hanger plates with the marks facing out.
 - Right side: KCZ-R
 - Left side: KCZ-L

Install the three 10 mm bolts from the left side.

Tighten the bolts/nuts to the specified torque.

TORQUE:

- Swingarm pivot bolt/nut: 88 N-m (9.0 kgf-m, 65 lbf-ft)
- Engine hanger plate bolt/nut (10 mm): 64 N-m (6.5 kgf-m, 47 lbf-ft)
- Engine hanger plate bolt/nut (8 mm): 26 N-m (2.7 kgf-m, 20 lbf-ft)

Install the rubber cap.

Install the following:

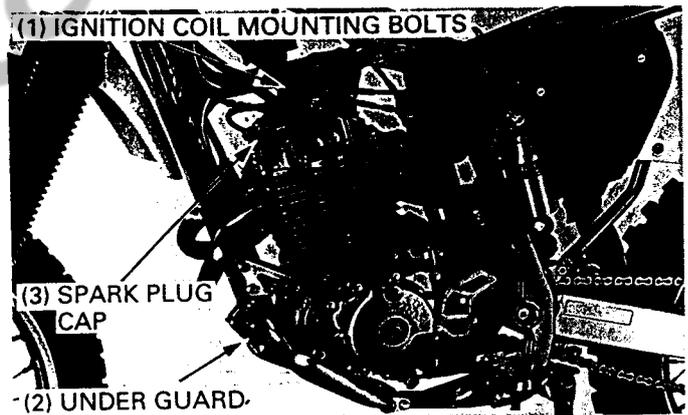
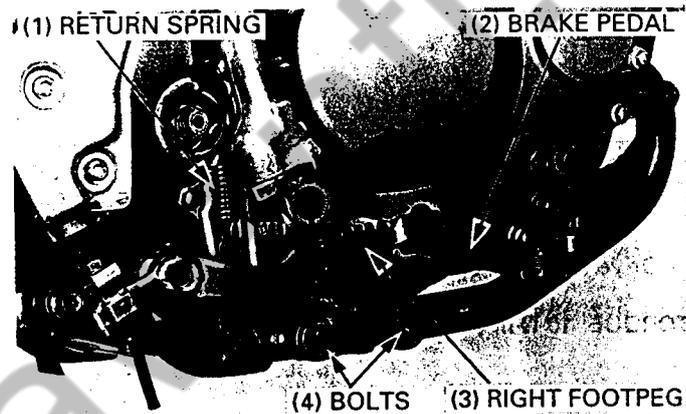
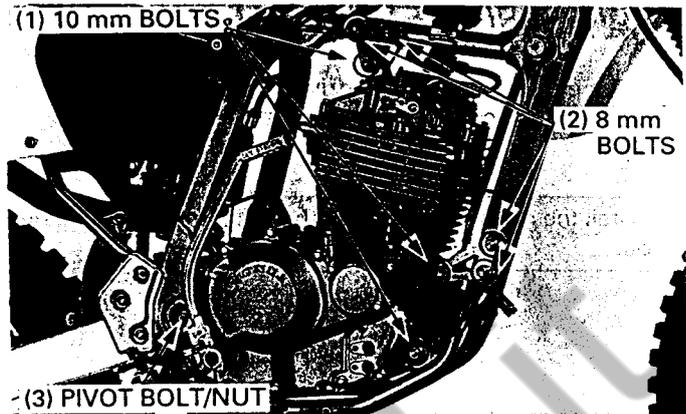
- Breather tube (page 7-22)
- Exhaust pipe (page 2-5)
- Right foot peg
- Right foot peg mounting bolts/washers

TORQUE: 42 N-m (4.3 kgf-m, 31 lbf-ft)

- Brake pedal (page 15-27)
- Brake pedal return spring
- Oil pipe (page 4-10)
- Under guard
- Under guard bolts
- Ignition coil mounting bolt/ground cable
- Decompressor cable (page 7-22)
- Clutch cable (page 9-18)
- Spark plug cap

- Carburetor (page 5-10)
- Alternator connectors (P and Y wires)
- Ignition pulse generator 2P connector
- Exciter coil connector (BI/R wire)

Fill to the filler neck with the correct quantity of the recommended engine oil (page 3-11).



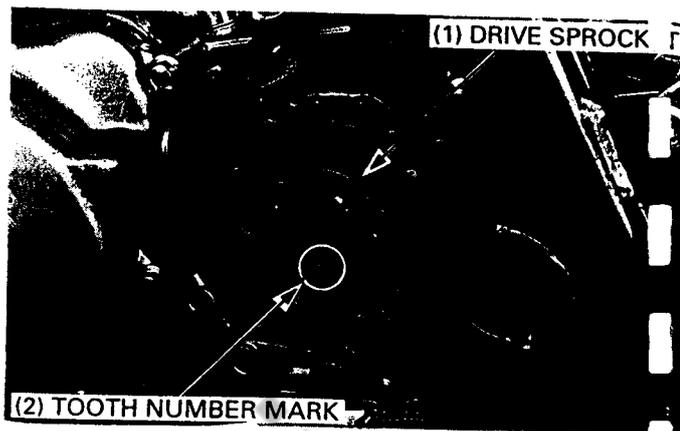
ENGINE REMOVAL/INSTALLATION

DRIVE SPROCKET INSTALLATION

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

NOTE

- Install the drive sprocket with the tooth number mark facing out.



Install the following:
— Fixing plate

NOTE

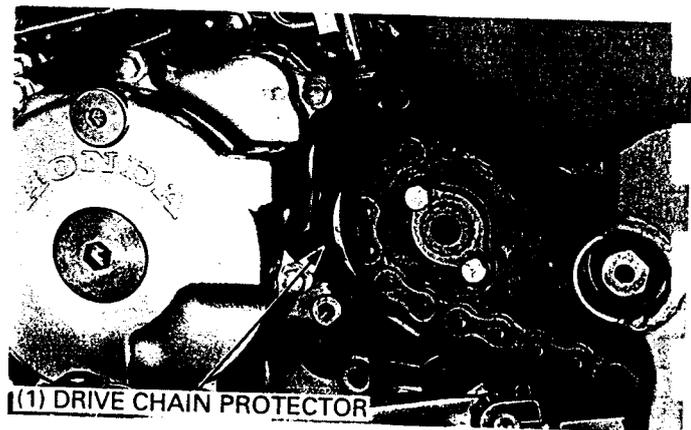
- Install the fixing plate onto the countershaft and align the bolt holes on the plate with the holes of the sprocket.

— Drive sprocket bolts

TORQUE: 10 N·m (1.0 kgf·m, 7.2 lbf·ft)



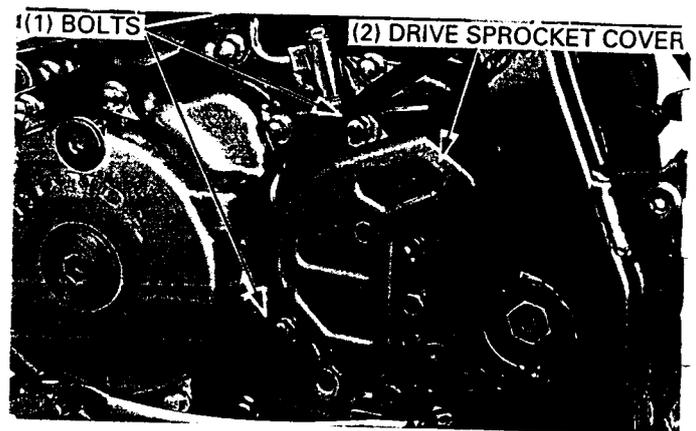
— Drive chain protector



— Drive sprocket cover
— Bolts

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

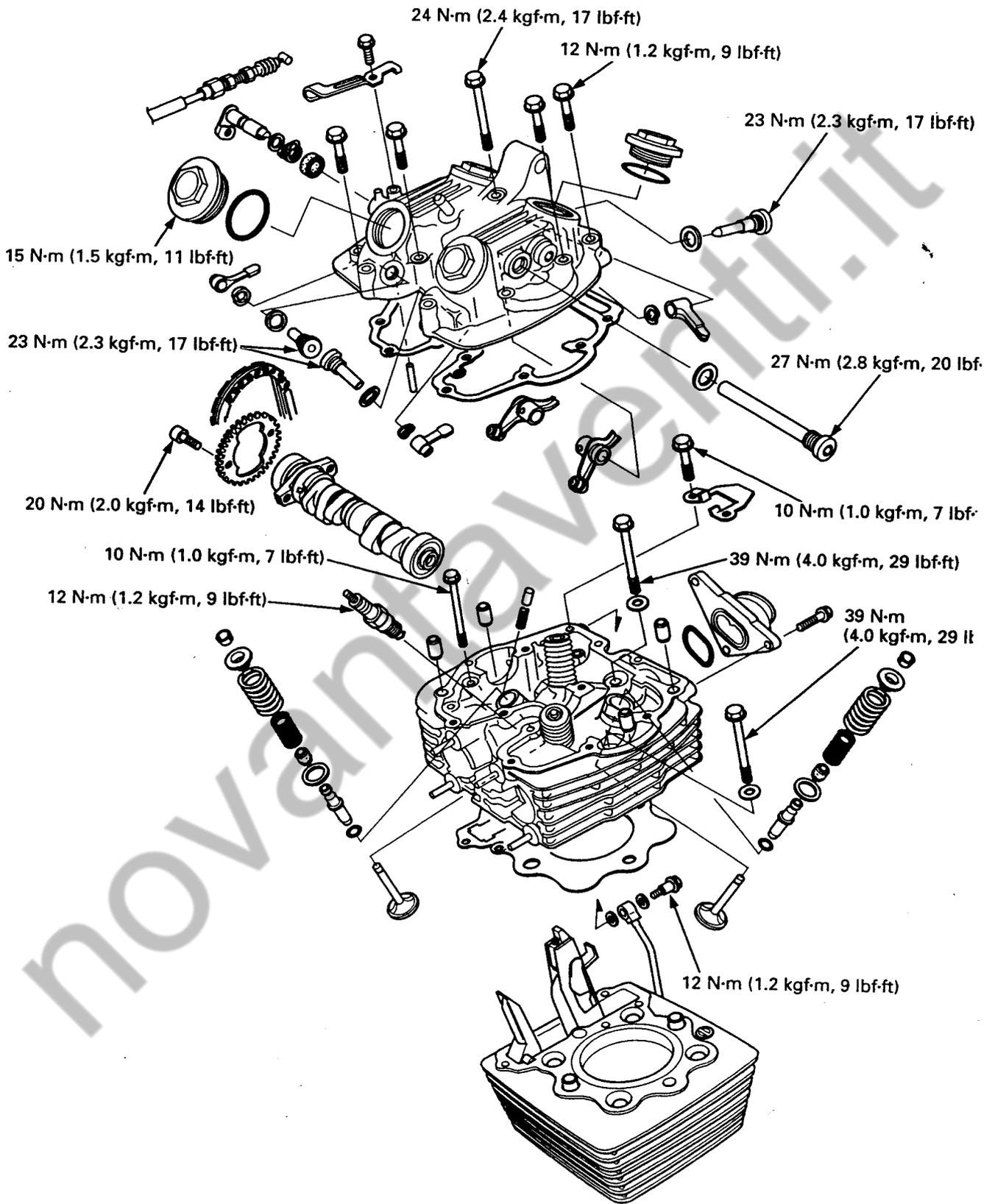
After installation, adjust the drive chain slack (page 3-13).



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CYLINDER HEAD/VALVES



7. CYLINDER HEAD/VALVES

SERVICE INFORMATION	7-1	VALVE GUIDE REPLACEMENT	7-10
TROUBLESHOOTING	7-2	VALVE SEAT INSPECTION AND REFACING	7-11
CYLINDER HEAD COVER REMOVAL	7-3	CYLINDER HEAD ASSEMBLY	7-14
CYLINDER HEAD COVER DISASSEMBLY	7-3	CYLINDER HEAD INSTALLATION	7-15
CAMSHAFT REMOVAL	7-5	CAMSHAFT INSTALLATION	7-16
CYLINDER HEAD REMOVAL	7-7	CYLINDER HEAD COVER ASSEMBLY	7-18
CYLINDER HEAD DISASSEMBLY	7-8	CYLINDER HEAD COVER INSTALLATION	7-20

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			SPECIFICATIONS	SERVICE LIMIT
Cylinder compression	Valve clearance at standard (decompressor effected)		637 – 735 kPa (6.5 – 7.5 kgf/cm ² , 92 – 107 psi) at 600 min ⁻¹ (rpm)	—
	Valve clearance at 1 mm (0.04 in) (decompressor not effected)		1,177 – 1,275 kPa (12.0 – 13.0 kgf/cm ² , 171 – 185 psi)	—
Cylinder head warpage			—	0.10 (0.004)
Valve and valve guide	Valve clearance	IN	0.10 ± 0.02 (0.004 ± 0.001)	—
		EX	0.12 ± 0.02 (0.005 ± 0.001)	—
	Valve stem O.D.	IN	4.975 – 4.990 (0.1959 – 0.1965)	4.96 (0.195)
		EX	4.955 – 4.970 (0.1951 – 0.1957)	4.94 (0.194)
	Valve guide I.D.	IN/EX	5.000 – 5.012 (0.1969 – 0.1973)	5.03 (0.198)
	Stem-to-guide clearance	IN	0.010 – 0.037 (0.0004 – 0.0015)	0.07 (0.003)
EX		0.030 – 0.057 (0.0012 – 0.0022)	0.09 (0.004)	
Valve seat width	IN/EX	1.1 – 1.2 (0.04 – 0.05)	2.0 (0.08)	
Valve spring	Free length	Inner	43.44 (1.710)	42.51 (1.673)
		Outer	44.03 (1.733)	42.83 (1.686)
Rocker arm	Rocker arm I.D.	IN/EX	11.500 – 11.518 (0.4528 – 0.4535)	11.53 (0.454)
	Rocker arm shaft O.D.	IN/EX	11.466 – 11.484 (0.4632 – 0.4521)	11.41 (0.449)
	Rocker arm-to-shaft clearance	IN/EX	0.016 – 0.052 (0.0006 – 0.0020)	0.10 (0.004)
Sub rocker arm	Sub-rocker arm I.D.	IN/EX	7.000 – 7.015 (0.2756 – 0.2762)	7.05 (0.278)
	Sub-rocker arm shaft O.D.	IN/EX	6.972 – 6.987 (0.2745 – 0.2751)	6.92 (0.272)
	Sub-rocker arm-to-shaft clearance	IN/EX	0.013 – 0.043 (0.0005 – 0.0017)	0.10 (0.004)
Camshaft	Cam lobe height	IN	30.772 (1.2115)	30.583 (1.2041)
		EX	30.819 (1.2133)	30.629 (1.2059)
	Runout		—	0.03 (0.001)

CYLINDER HEAD/VALVES

TORQUE VALUES

Cylinder head cover bolt (6 mm)	12 N·m (1.2 kgf·m, 9 lbf·ft)
(8 mm)	24 N·m (2.4 kgf·m, 17 lbf·ft)
Rocker arm shaft	27 N·m (2.8 kgf·m, 20 lbf·ft) Apply a locking agent to the threads.
Sub-rocker arm shaft	23 N·m (2.3 kgf·m, 17 lbf·ft) Apply a locking agent to the threads.
Cam sprocket bolt	20 N·m (2.0 kgf·m, 14 lbf·ft) Apply a locking agent to the threads.
Cylinder head bolt (10 mm)	39 N·m (4.0 kgf·m, 29 lbf·ft) Apply oil to the threads and flange surface.
(6 mm)	10 N·m (1.0 kgf·m, 7 lbf·ft)
Cam chain tensioner set plate bolt	10 N·m (1.0 kgf·m, 7 lbf·ft)
Oil pass pipe bolt (7 mm)	12 N·m (1.2 kgf·m, 9 lbf·ft)
Valve hole cap	15 N·m (1.5 kgf·m, 11 lbf·ft) Apply clean engine oil to the O-ring.
Engine hanger plate bolt (10 mm)	64 N·m (6.5 kgf·m, 47 lbf·ft)
(8 mm)	26 N·m (2.7 kgf·m, 20 lbf·ft)

TOOLS

Special

Valve guide driver	07942 – MA60000
Valve guide reamer (5.010 mm)	07984 – MA60001

Common

Valve spring compressor	07757 – 0010000
-------------------------	-----------------

Optional

Cutter holder, 5 mm	07781 – 0010400
Valve seat cutter	
— Flat cutter, 25 mm (32° EX)	07780 – 0012000
— Flat cutter, 30 mm (32° IN)	07780 – 0012200
— Interior cutter, 30 mm (60° IN/EX)	07780 – 0014000
— Seat cutter, 27.5 mm (45° EX)	07780 – 0010200
— Seat cutter, 33 mm (45° IN)	07780 – 0010800

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 white smoke in the crankcase breather tube. If the tube is smokey, check for a seized piston ring (Section 8)

Low compression

- Valves:
 - Incorrect valve adjustment
 - Burned or bent valve
 - Incorrect valve timing
 - Weak valve spring
- Cylinder head:
 - Leaking or damaged head gasket
 - Warped or cracked cylinder head
- Decompressor system
 - Decompressor out of adjustment

Excessive smoke

- Worn valve stem or valve guide
- Damaged stem seal

Excessive noise

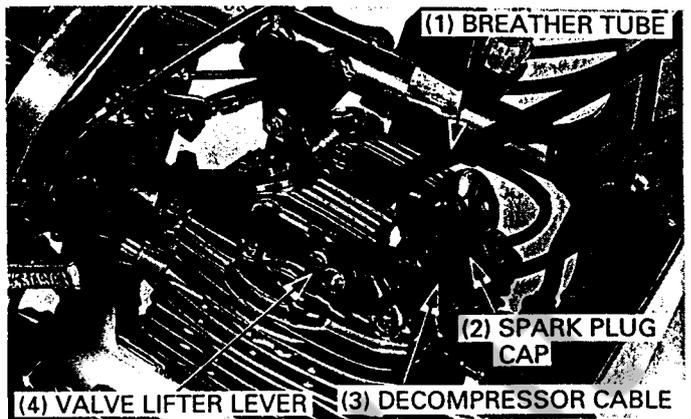
- Incorrect valve adjustment
- Sticking valve or broken valve spring
- Worn or damaged rocker arm or camshaft
- Loose or worn cam chain
- Worn or damaged cam chain tensioner
- Worn cam sprocket teeth

Rough idle

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

CYLINDER HEAD COVER REMOVAL

- Remove the seat (page 2-2).
- Remove the fuel tank (page 5-3).
- Remove the decompressor cable from the valve lifter lever.
- Remove the breather tube.
- Remove the spark plug cap.



Remove the rubber caps and upper hanger plates.

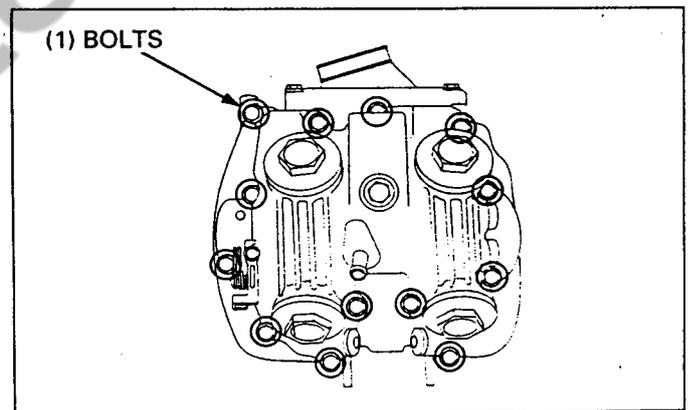


Remove the crankshaft hole cap and timing hole cap. Rotate the flywheel counterclockwise to align the "T" mark with the index notch. Make sure that the piston is at TDC (Top Dead Center) on the compression stroke. Remove the cylinder head cover bolts and cylinder head cover.

NOTE

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

Remove the gasket and dowel pins.



CYLINDER HEAD COVER DISASSEMBLY

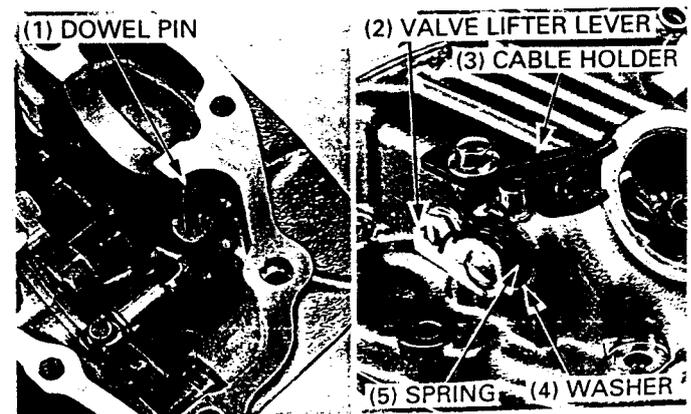
Remove the valve hole caps. Cut a groove in the dowel pin with a grinder and remove the dowel pin using the special tools.

TOOLS:

- Pin puller 07936 - MA70100
- Remover weight 07936 - 3710200

Remove the following:

- Valve lifter lever
- Spring
- Washer
- Seal
- Decompressor cable holder



CYLINDER HEAD/VALVES

- Remove the following:
- Sub-rocker arm shafts
 - Sealing washers

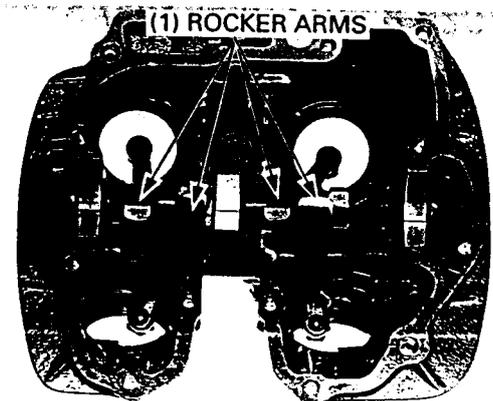
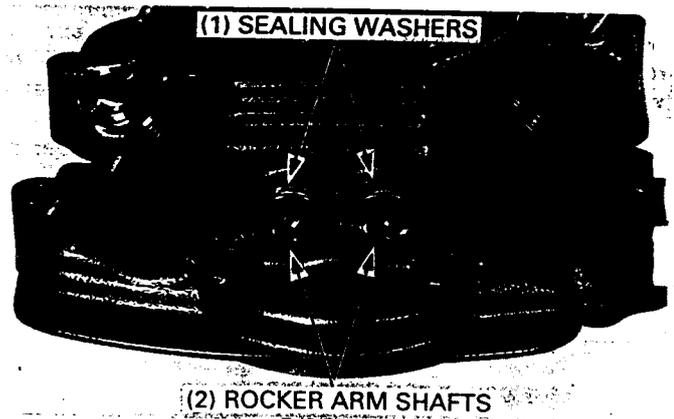
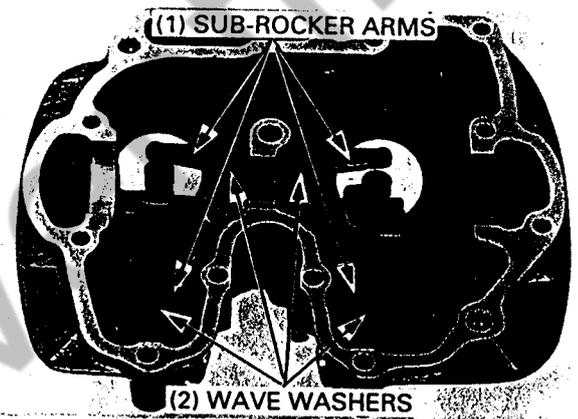
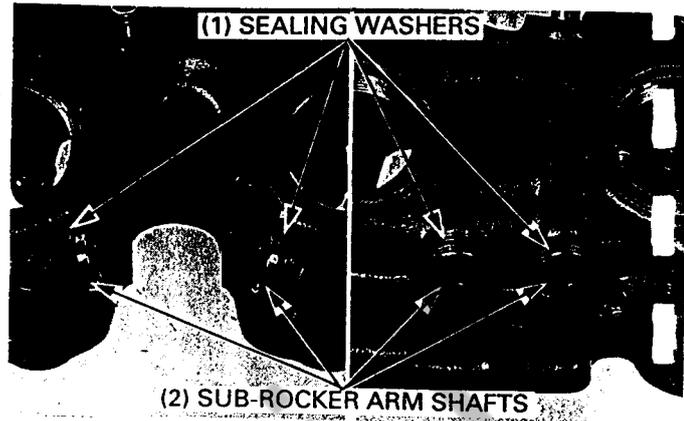
NOTE

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

- Sub-rocker arms
- Wave washers

- Rocker arm shafts
- Sealing washers

Remove the rocker arms from the cylinder head cover.



ROCKER ARM AND SUB-ROCKER ARM INSPECTION

Inspect the rocker arms and sub-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 and sub-rocker arms.

SERVICE LIMITS:

- Rocker arm (IN/EX): 11.53 mm (0.454 in)
- Sub-rocker arm (IN/EX): 7.05 mm (0.278 in)

ROCKER ARM SHAFT AND SUB-ROCKER ARM SHAFT INSPECTION

Inspect the rocker arm shafts and sub-rocker arm shafts for wear or damage.

Measure the O.D. of the rocker arm shafts and sub-rocker arm shafts.

SERVICE LIMITS:

- Rocker arm shaft (IN/EX): 11.41 mm (0.449 in)
- Sub-rocker arm shaft (IN/EX): 6.92 mm (0.272 in)

Calculate the rocker arm-to-shaft and sub-rocker arm to shaft clearance.

SERVICE LIMIT: 0.10 mm (0.004 in)

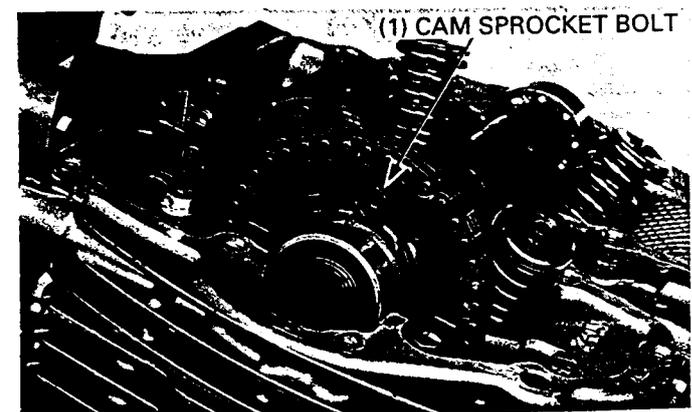
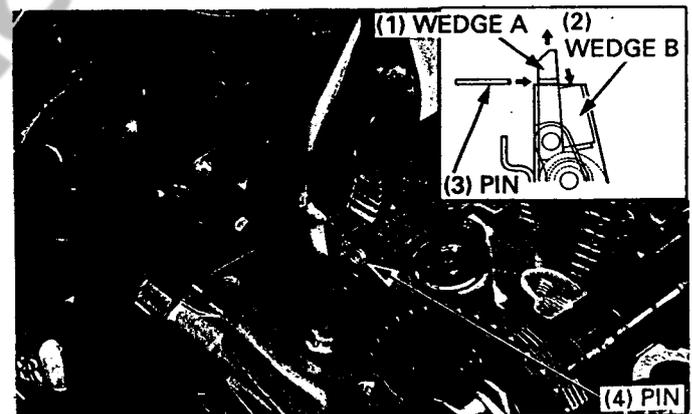
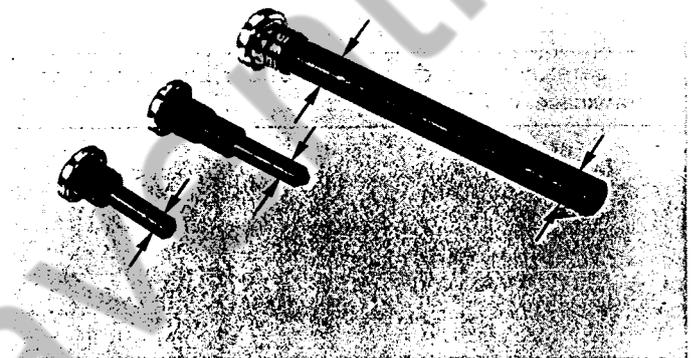
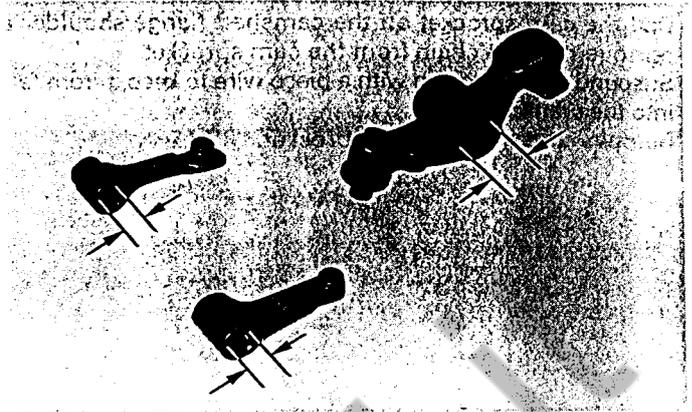
CAMSHAFT REMOVAL

Remove the cylinder head cover (page 7-3).
To release the cam chain tensioner, push down wedge B, then pull up on wedge A with pliers.
Insert a pin (or paper clip) into the hole in wedge A, as shown.

Remove the crankshaft hole cap.
Turn the crankshaft and remove a cam sprocket bolt.
Rotate the crankshaft, then remove the other cam sprocket bolt.

NOTE

- Be careful not to drop the bolts into the crankcase.



CYLINDER HEAD/VALVES

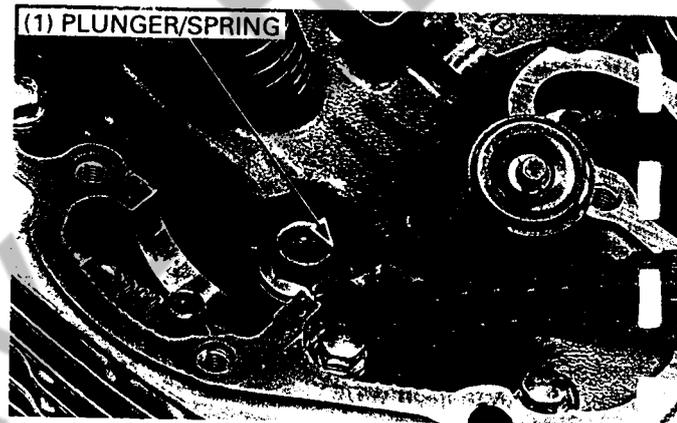
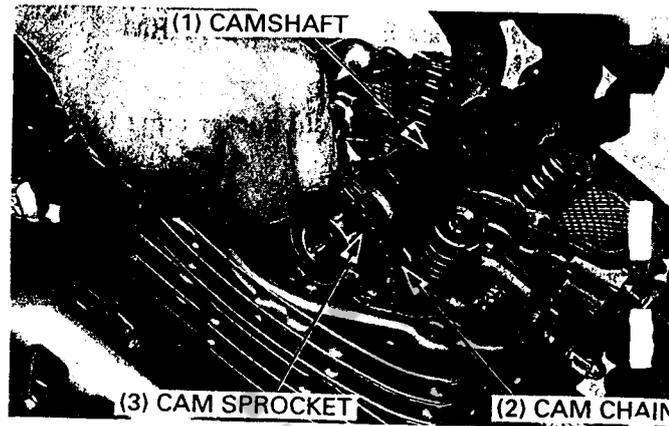
Pull the cam sprocket off the camshaft flange shoulder and remove the cam chain from the cam sprocket. Suspend the cam chain with a piece wire to keep it from falling into the crankcase. Remove the camshaft and sprocket.

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P. 1100 re*

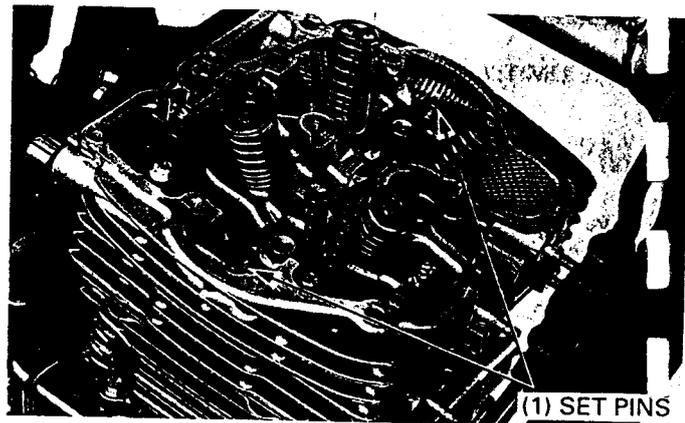
Remove the plunger and spring.

NOTE

- Be careful not to drop the plunger and spring into the crankcase.

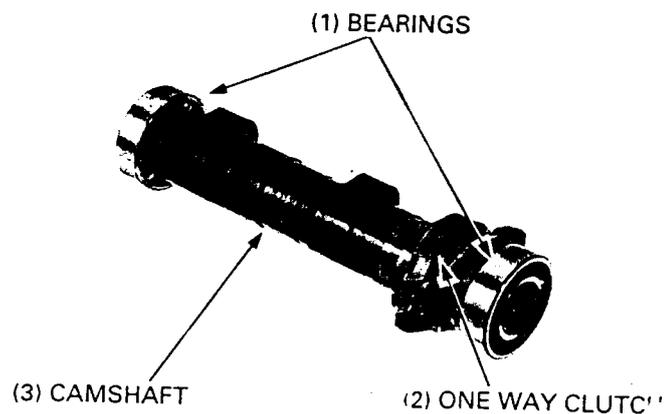


Remove the camshaft bearing set pins.



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

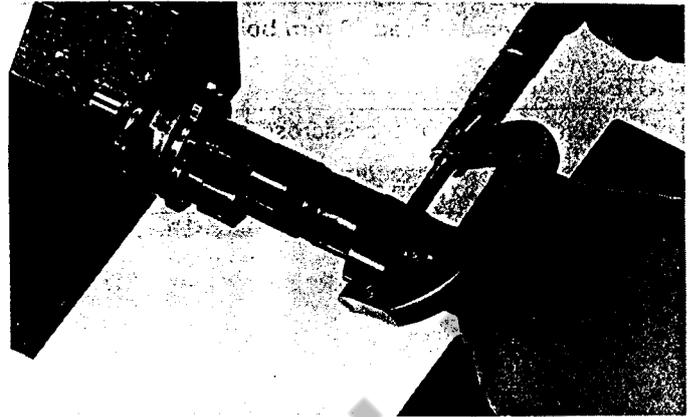
- Inspect the rocker arm sliding surface if the cam lobe is worn or damaged.

Measure the cam lobe height.

SERVICE LIMITS: INTAKE: 30.583 mm (1.2041 in)
EXHAUST: 30.629 mm (1.2059 in)

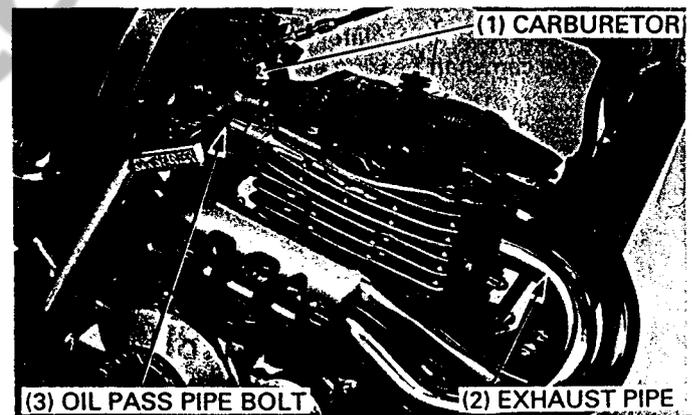
Check the camshaft runout with a dial indicator.
Support both ends of the camshaft with V-blocks.
Actual runout is 1/2 of the total indicator reading.

SERVICE LIMIT: 0.03 mm (0.001 in)

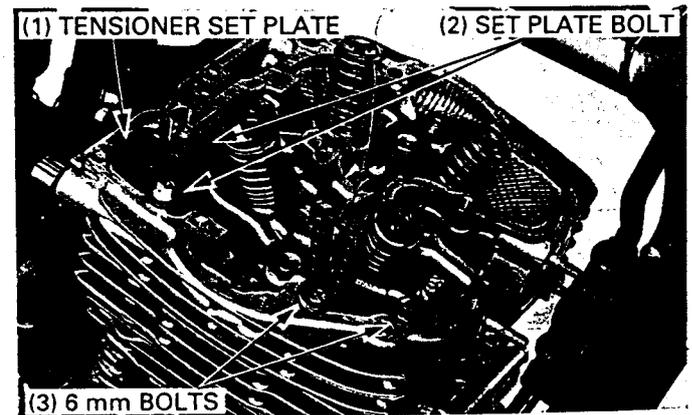


CYLINDER HEAD REMOVAL

- Remove the cylinder head cover (page 7-3).
- Remove the cam shaft and cam sprocket (page 7-5).
- Remove the exhaust pipe (page 2-3).
- Remove the oil pass pipe joint bolts and two sealing washers from the cylinder head.
- Remove the carburetor from the insulator (page 5-5).



- Remove the two cam chain tensioner set plate bolts.
- Remove the set plate.
- Remove the cylinder head 6 mm bolts.

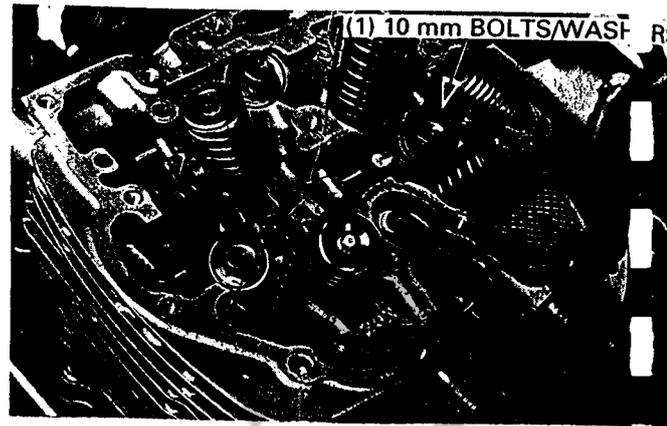


CYLINDER HEAD/VALVES

Remove the cylinder head 10 mm bolts and washers.

NOTE

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

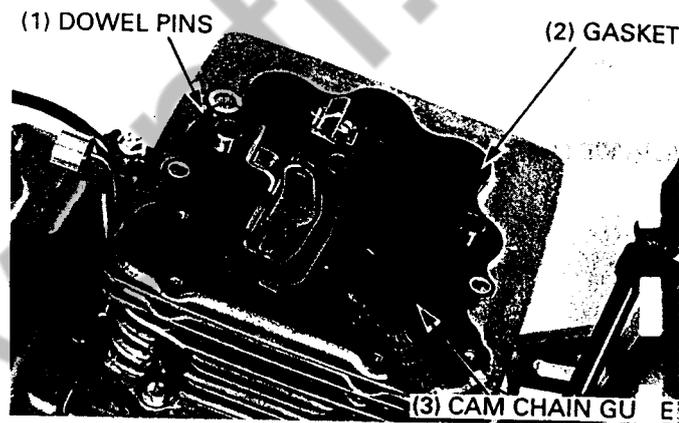


Remove the cylinder head.

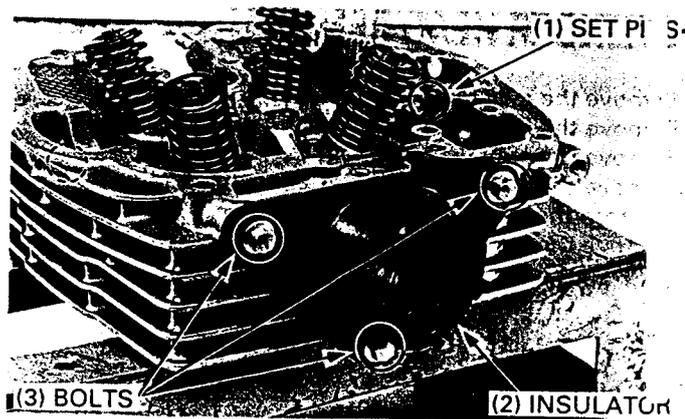
CAUTION

- Be careful not to damage the cylinder head mating surfaces.

Remove the gasket and dowel pins.
Remove the cam chain guide.



Remove the bolts and insulator from the cylinder head.
Remove the camshaft bearing set pins.



CYLINDER HEAD DISASSEMBLY

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

TOOL:

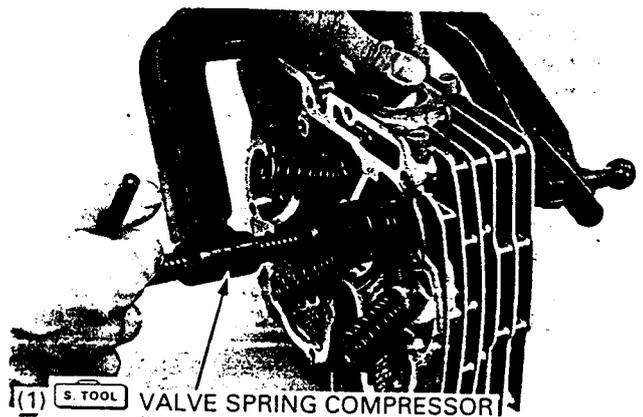
Valve spring compressor 07757 - 0010000

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.

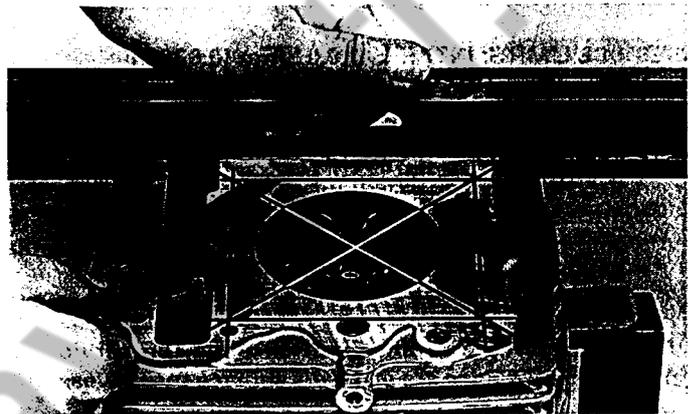
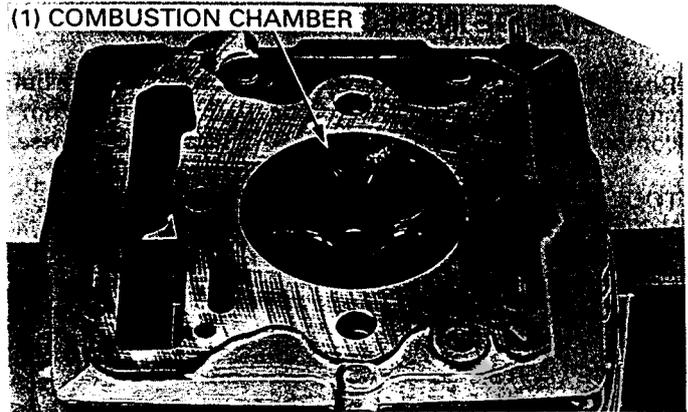
CAUTION

- 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 a 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: 42.51 mm (1.673 in)
OUTER: 42.83 mm (1.686 in)

(1) INNER SPRING

(2) OUTER SPRING

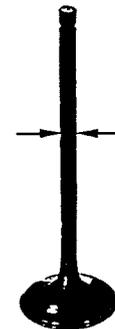


VALVE INSPECTION

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: 4.96 mm (0.195 in)
EXHAUST: 4.94 mm (0.194 in)



CYLINDER HEAD/VALVES

VALVE GUIDE INSPECTION

Ream the guides to remove the carbon build-up before checking the valve guide I.D.. Insert the reamer from the combustion chamber side and always rotate it clockwise.

TOOL:

Valve guide reamer (5.010 mm) 07984 – MA60001

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

SERVICE LIMITS:

INTAKE/EXHAUST: 5.03 mm (0.198 in)

Calculate the stem-to-guide clearance.

SERVICE LIMITS: INTAKE: 0.07 mm (0.003 in)
EXHAUST: 0.09 mm (0.004 in)

NOTE

- 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

- Reface valve seats whenever new valve guides are installed.

VALVE GUIDE REPLACEMENT

⚠ WARNING

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

CAUTION

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

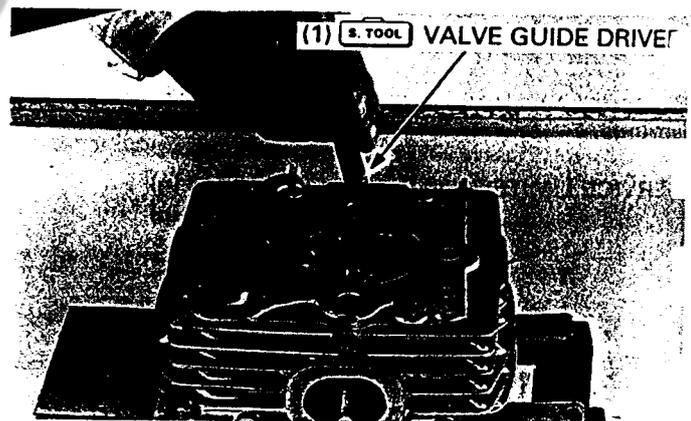
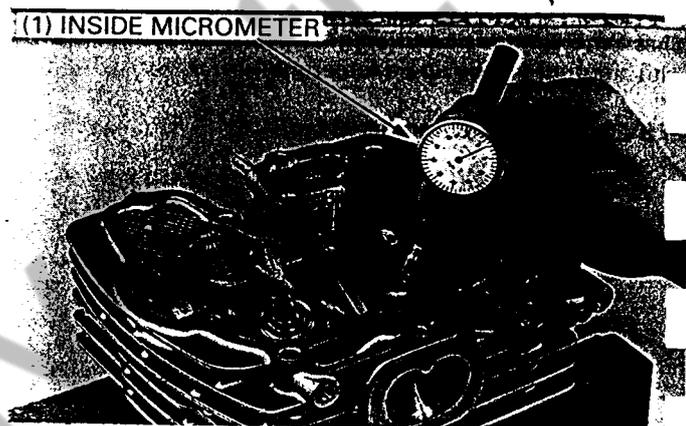
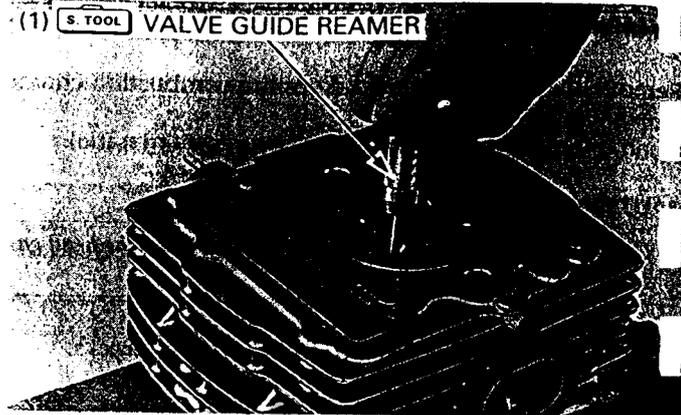
Heat the cylinder head to 100 – 150°C (212 – 300°F). Support the cylinder head and drive out the guides from the combustion chamber side.

TOOL:

Valve guide driver 07942 – MA60000

CAUTION

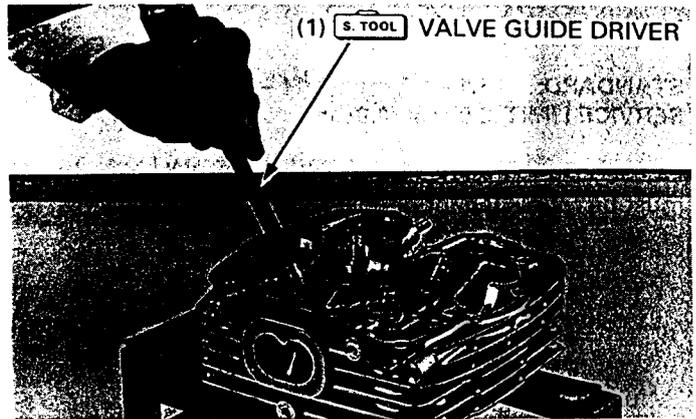
- Do not damage the cylinder head during guide removal.



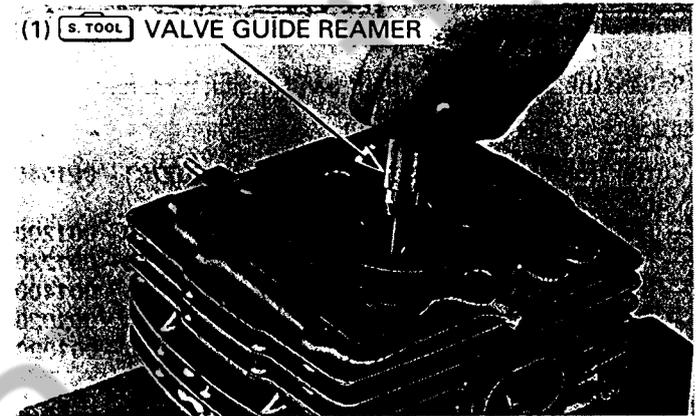
Install a new O-ring on a new valve guide.
Install a new valve guide from the top of the head, then check that it was not damaged during installation.

TOOL:
Valve guide reamer (5.010 mm) 07984 - MA60001

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



Ream the new valve guides after installation.
Insert the reamer from the combustion chamber side and always rotate the reamer clockwise.
Clean the cylinder head thoroughly to remove any metal particles.
Reface the valve seats (page 7-11).

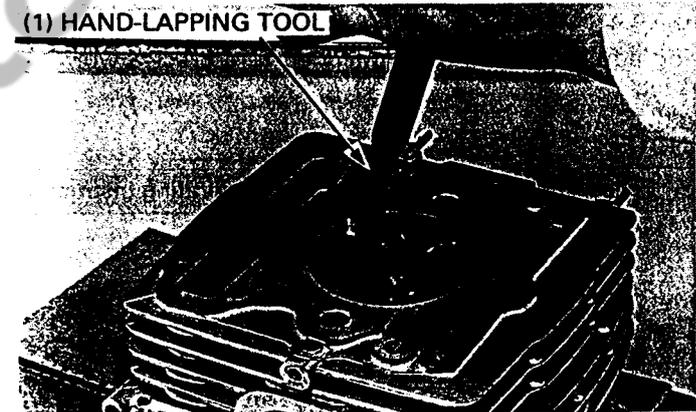


VALVE SEAT INSPECTION AND REFACING

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.

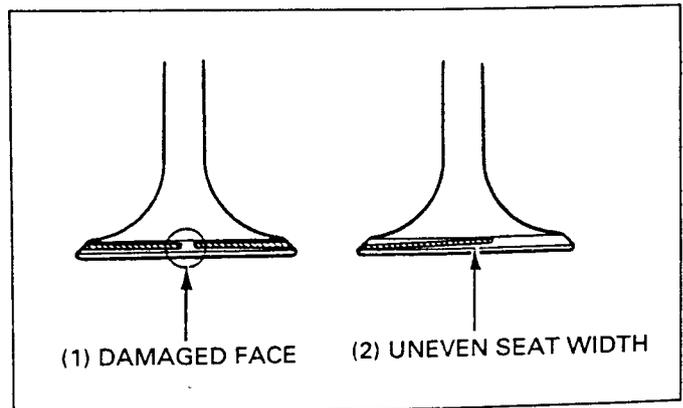
- NOTE**
- Valves cannot be ground. If the valve face is burned or badly worn or if it contacts the seat unevenly, replace the valve.



- 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.

SERVICE LIMIT: 2.0 mm (0.08 in)

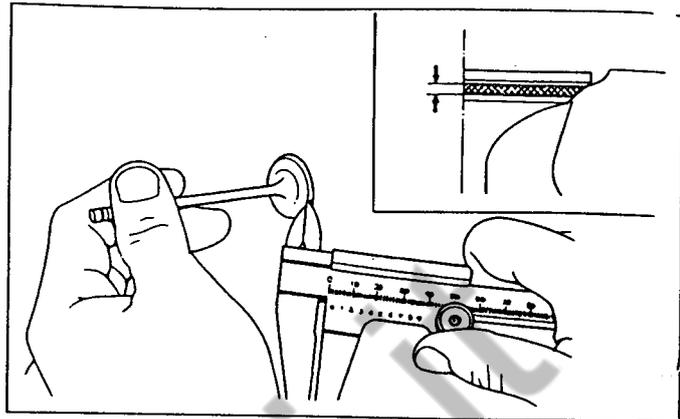


CYLINDER HEAD/VALVES

Measure the valve seat width.

STANDARD: 1.1 – 1.2 mm (0.04 – 0.05 in)
SERVICE LIMIT: 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.

TOOL:

Cutter holder, 5 mm

07781 - 0010400

Valve seat cutter

— Flat cutter, 25 mm (32° EX)

07780 - 0012000

— Flat cutter, 30 mm (32° IN)

07780 - 0012200

— Interior cutter, 30 mm (60° IN/EX)

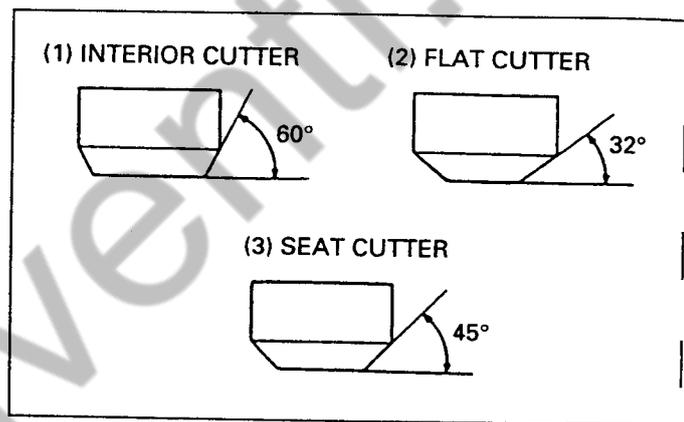
07780 - 0014000

— Seat cutter, 27.5 mm (45° EX)

07780 - 0010200

— Seat cutter, 33 mm (45° IN)

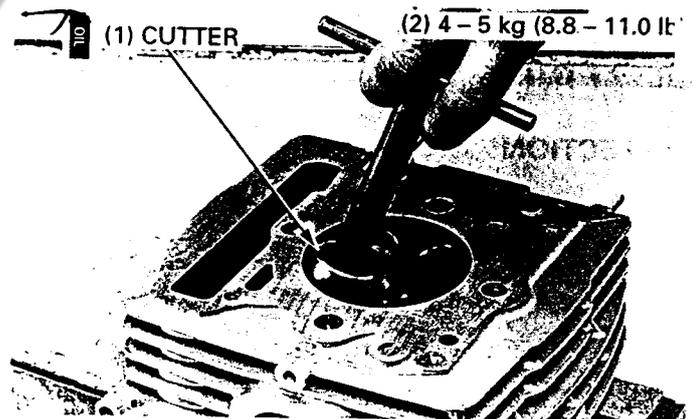
07780 - 0010800



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

NOTE

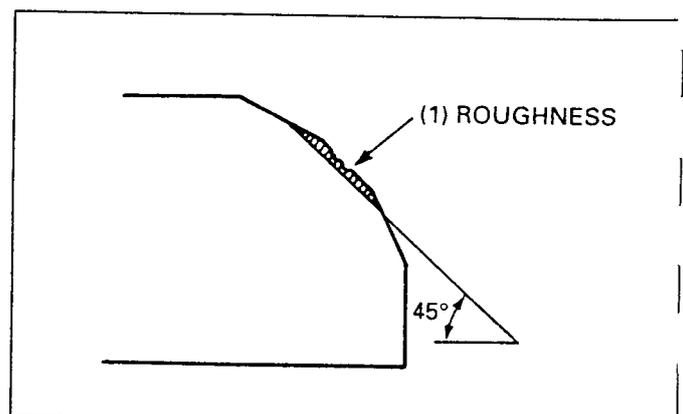
- Follow the refacing manufacturer's operating instructions.



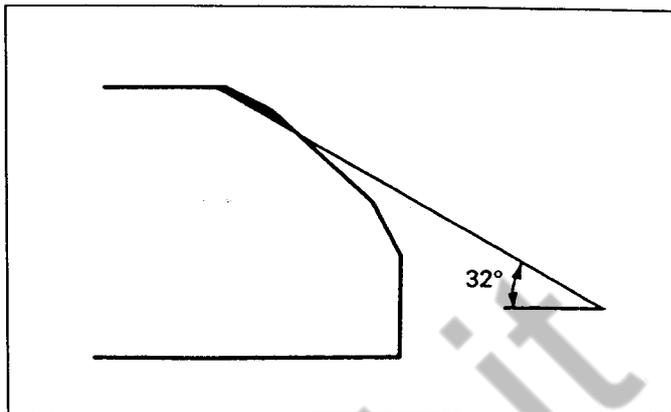
Use a 45 degree cutter to remove any roughness or irregularities from the seat.

NOTE

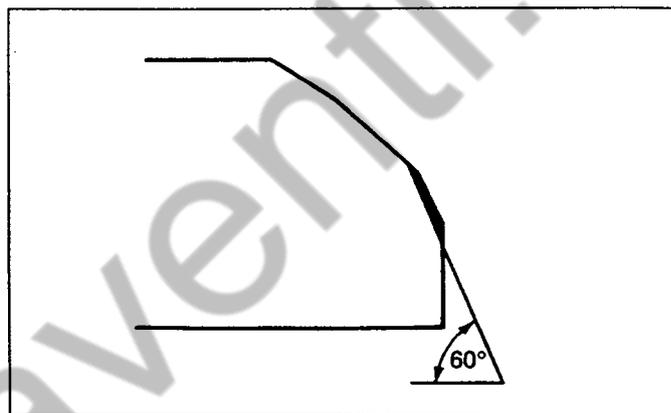
- Reface the seat with a 45 degree cutter whenever a valve guide is replaced.



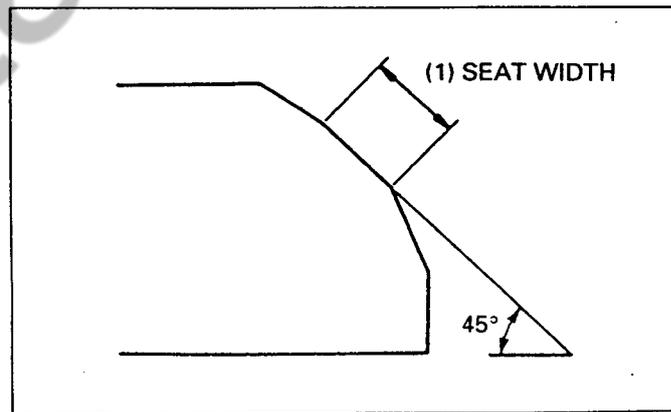
Use a 32 degrees cutter to remove the top 1/4 of the existing valve seat material.



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.



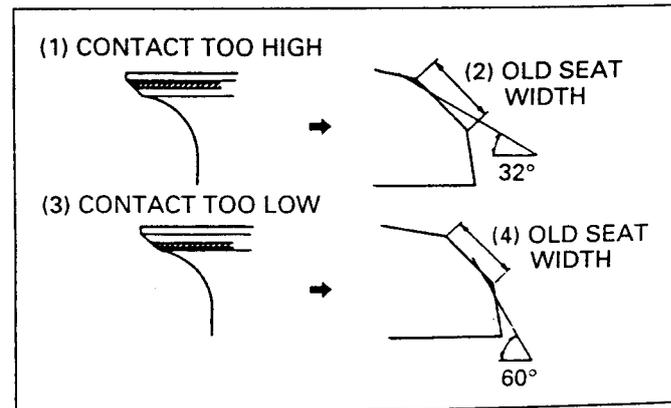
Apply a thin coating a Prussian Blue to the valve seat.
Press the valve through the valve guide and onto the seat to make a clear pattern.

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.



CYLINDER HEAD/VALVES

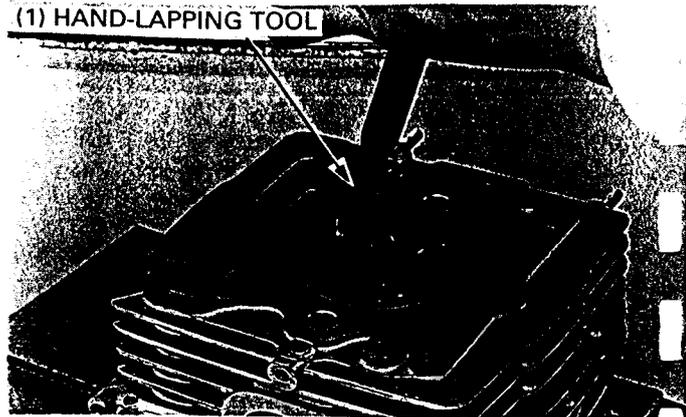
Refinish the seat to specifications, using a 45 degree finish cutter.

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.

NOTE

- Do not allow lapping compound to enter the guides.

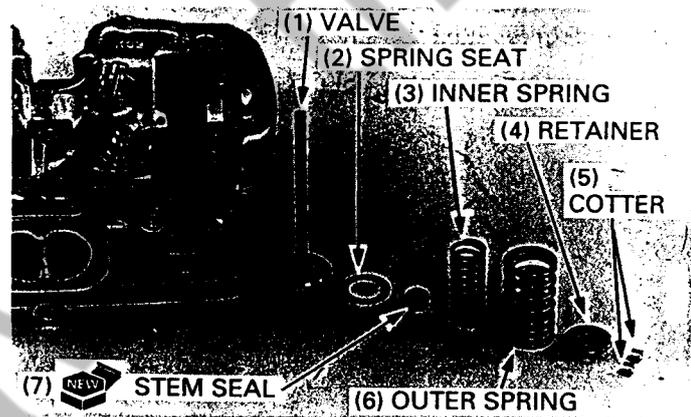


CYLINDER HEAD ASSEMBLY

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 combustion chamber and install the retainers.



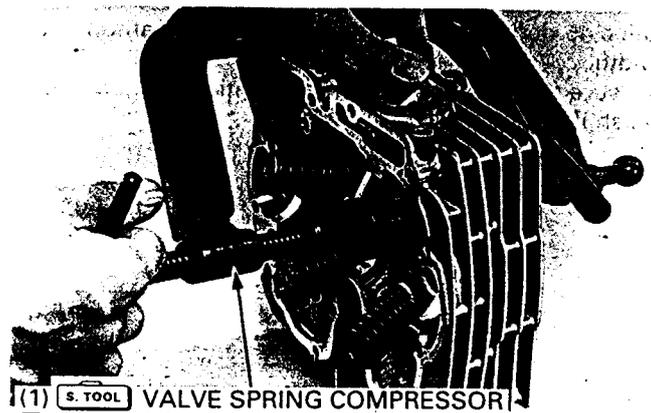
Compress the valve springs using the valve spring compressor, then install the valve cotters.

TOOL:

Valve spring compressor 07757 - 0010000

CAUTION

- To prevent loss of tension, do not compress the valve spring more than necessary.

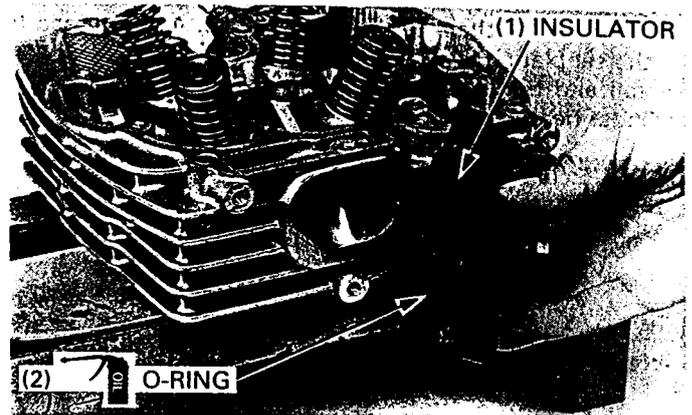


Support the cylinder head above the working bench surface to prevent possible valve damage, then gently tap the valve stems with two plastic hammers as shown to seat the cotters.



CYLINDER HEAD/VALVES

Check the O-ring in the insulator for wear or fatigue. Apply oil to the O-ring and install the carburetor insulator to the cylinder head.



CYLINDER HEAD INSTALLATION

Remove the cylinder gasket and thoroughly clean the gasket surface.

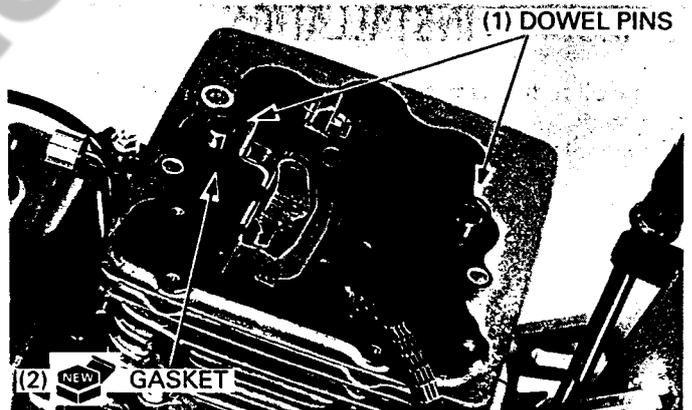
Install the cam chain guide.

NOTE

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



Install the dowel pins and new cylinder head gasket.



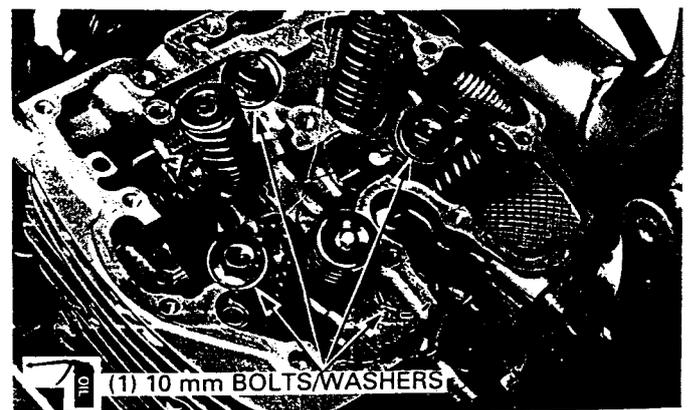
Install the cylinder head.

CAUTION

- *Be careful not to damage the cylinder head mating surfaces.*

Apply engine oil to all cylinder head bolts and tighten the four 10 mm cylinder head bolts in a crisscross pattern in two or more steps.

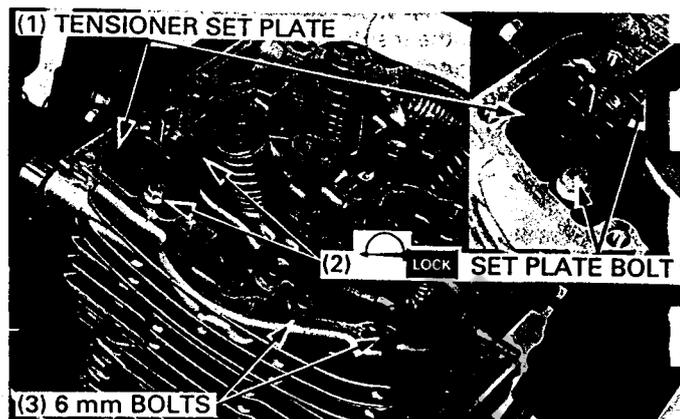
TORQUE: 39 N·m (4.0 kgf·m, 29 lbf·ft)



CYLINDER HEAD/VALVES

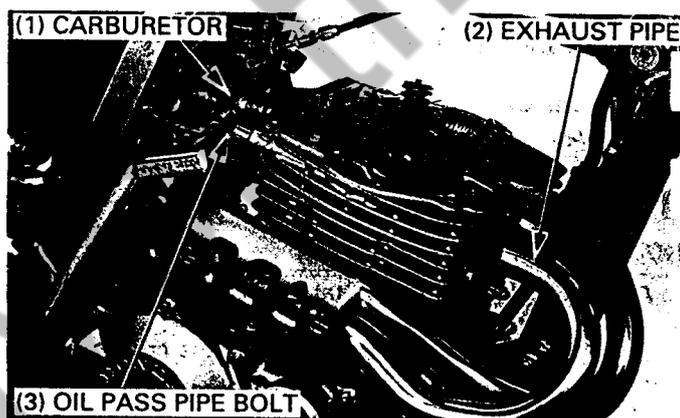
Install the cam chain tensioner set plate. Apply thread lock to the set plate bolts.
Install and tighten the two set plate bolts and two 6 mm cylinder head bolts to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7.2 lbf·ft)



Install the carburetor (page 5-10).
Install the oil pass pipe with the two 7 mm bolts and two new sealing washers.
Install the exhaust pipe (page 2-5).

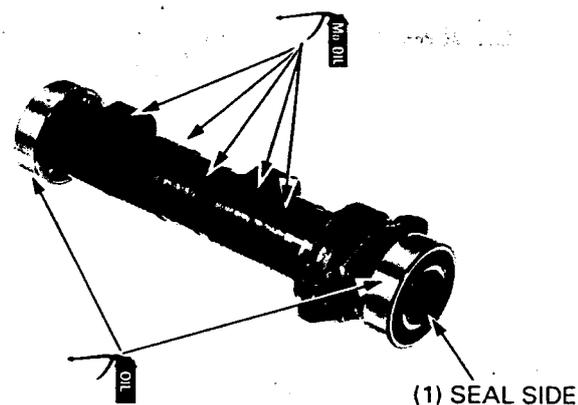
TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



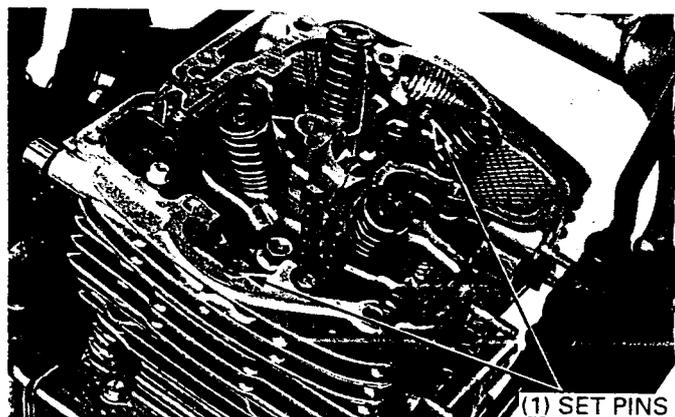
CAMSHAFT INSTALLATION

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

Superficie di appoggio di un albero



Install the camshaft bearing set pins.



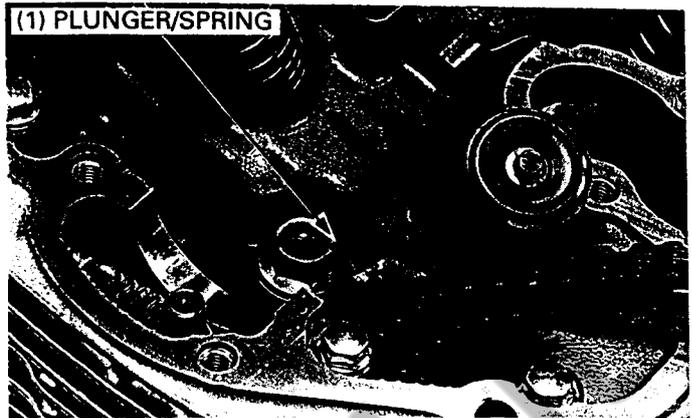
Stentuffo / Anzale vendino
Pinnone

CYLINDER HEAD/VALVES

Install the plunger and spring.

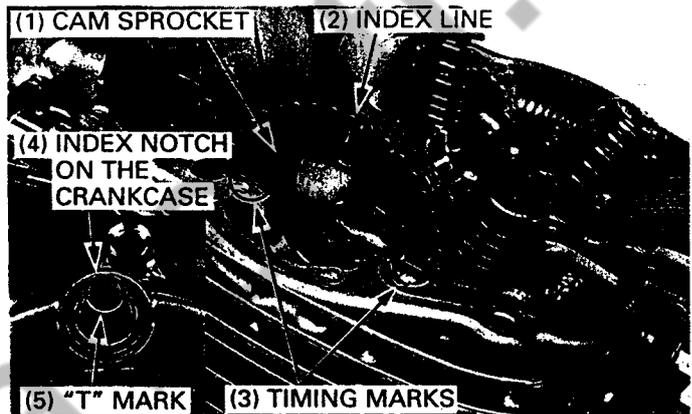
NOTE

- Be careful not to drop the plunger or spring into the crankcase.



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 its groove facing up; align the timing marks on the cam sprocket with the upper surface of the cylinder head and install the cam chain over the sprocket without rotating the sprocket.

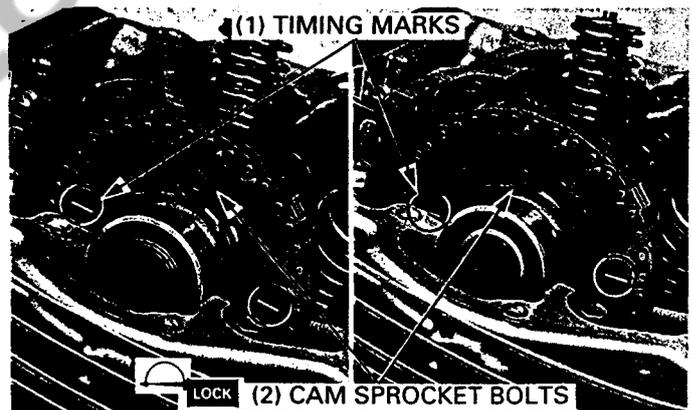


Install the camshaft through the sprocket. Apply thread lock to the cam sprocket bolts. Position the cam sprocket onto the shoulder of the camshaft and install a cam sprocket bolt.

Rotate the flywheel counterclockwise. Install the other sprocket bolt.

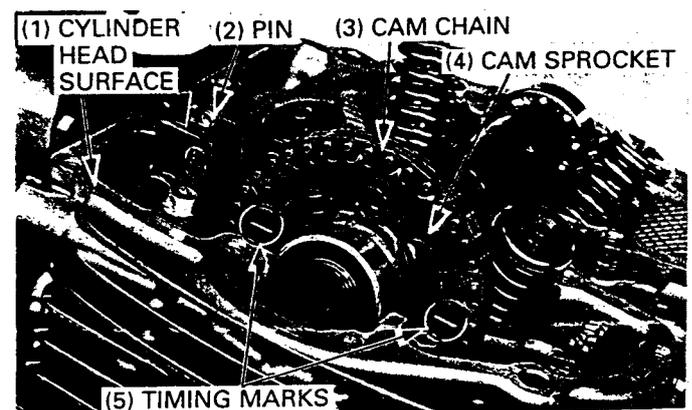
Tighten the cam sprocket bolt on the groove side, then tighten the other sprocket bolt, to the specified torque.

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.

Remove the pin from the cam chain tensioner.

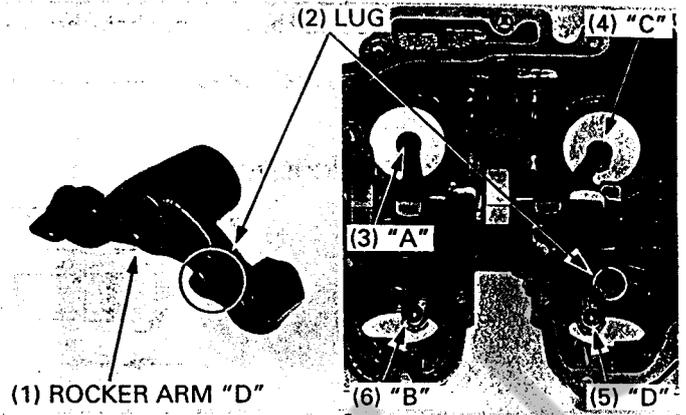


CYLINDER HEAD/VALVES

Install the rocker arms.

NOTE

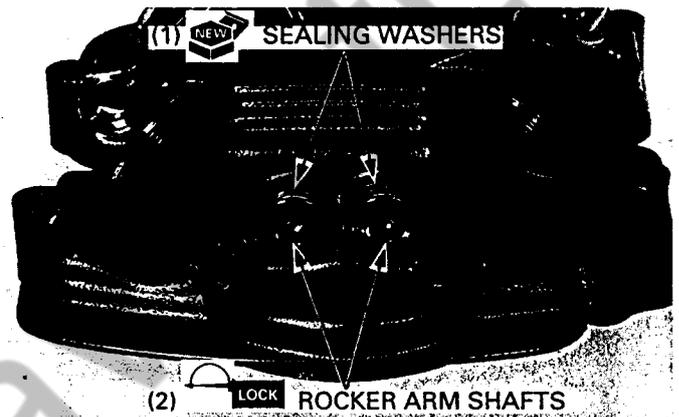
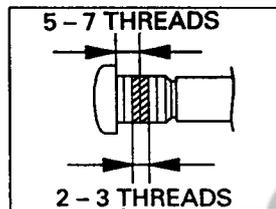
- Note the location of the rocker arm with a decompression lug.



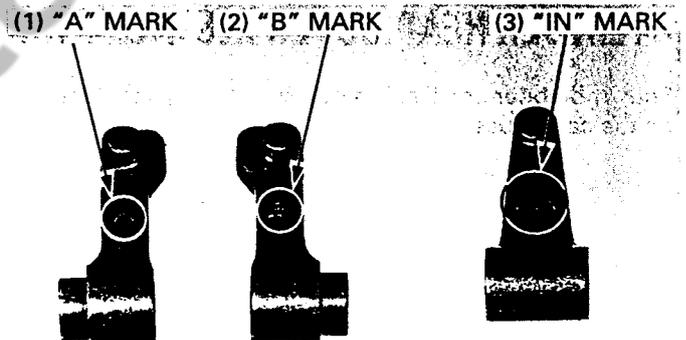
Apply locking agent to the rocker arm shaft threads as shown.

Install the rocker arm shafts and new sealing washers and tighten them.

TORQUE: 27 N·m (2.8 kgf·m, 20 lbf·ft)

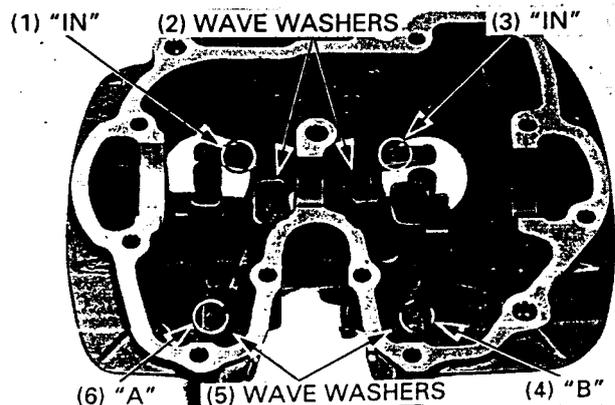


Install the sub-rocker arms and wave washers.



NOTE

- Install the intake sub-rocker arm with the "IN" marks facing the valve.
- Install the exhaust sub-rocker arm with the "A" mark to the left, "B" mark to the right.

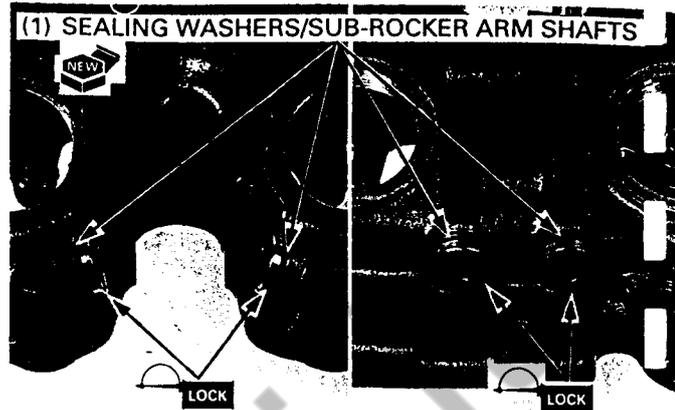
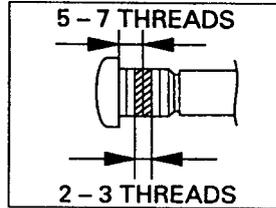


CYLINDER HEAD/VALVES

Apply locking agent to the sub-rocker arm shaft threads as shown.

Install the sub-rocker arm shafts and new sealing washers and tighten them.

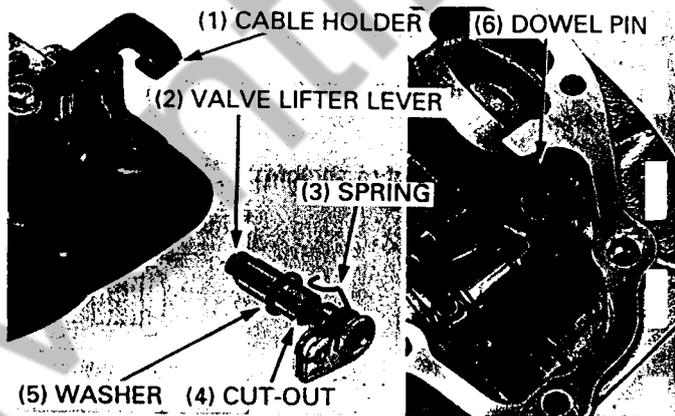
TORQUE: 23 N·m (2.3 kgf·m, 17 lbf·ft)



Install the decompressor cable holder, washer, spring and valve lifter lever into the cylinder head cover.

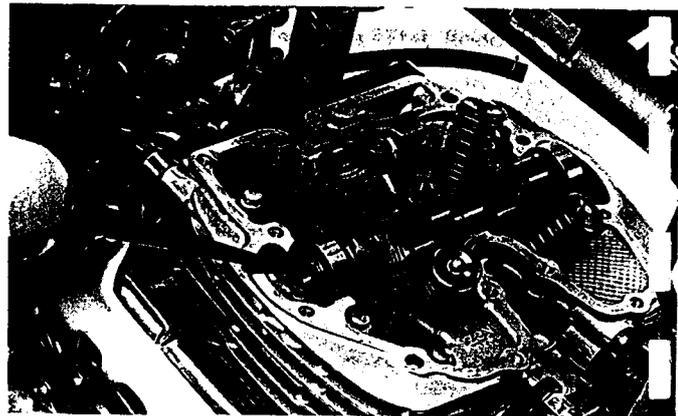
Align the cut-out of the lever shaft with the hole in the cylinder head cover.

Press the dowel pin into the cylinder head cover.



CYLINDER HEAD COVER INSTALLATION

Pour molybdenum disulfide oil into the cylinder head and on the cam lobes.

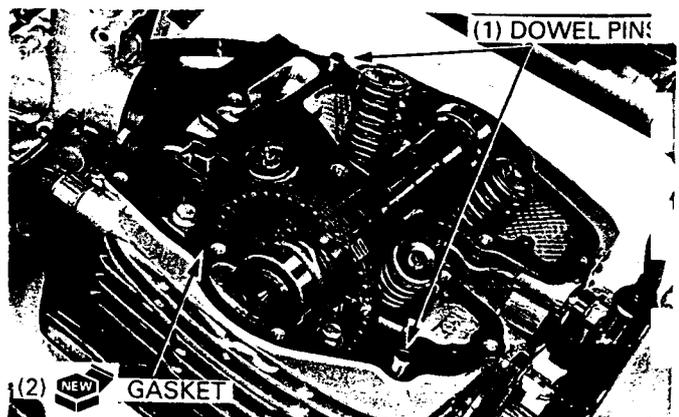


Install a new cylinder head cover gasket and dowel pins.

NOTE

- Be careful not to damage the silicone coating on the gasket surfaces.

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

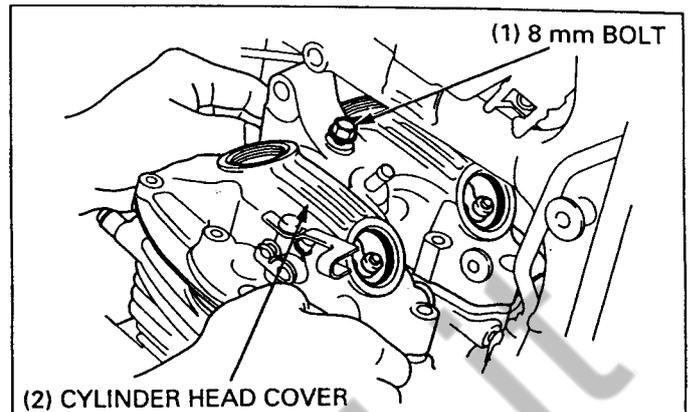


CYLINDER HEAD/VALVES

Loosen all valve adjusting screws.
Install the cylinder head cover and 8 mm bolt.

NOTE

- Make sure all the sub-rocker arms are properly positioned between the valve stem tops and the rocker arm adjusting screws.

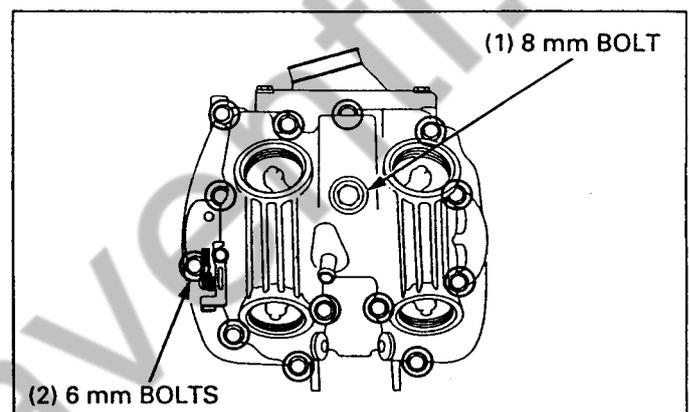


Install all cylinder head cover bolts.
Tighten the 8 mm cylinder head cover bolt, then tighten the 6 mm cylinder head cover bolts, to the specified torque.

TORQUE: 8 mm bolt: 24 N-m (2.4 kgf-m, 17 lbf-ft)
6 mm bolt: 12 N-m (1.2 kgf-m, 9 lbf-ft)

NOTE

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



Adjust the valve clearance (page 3-8).

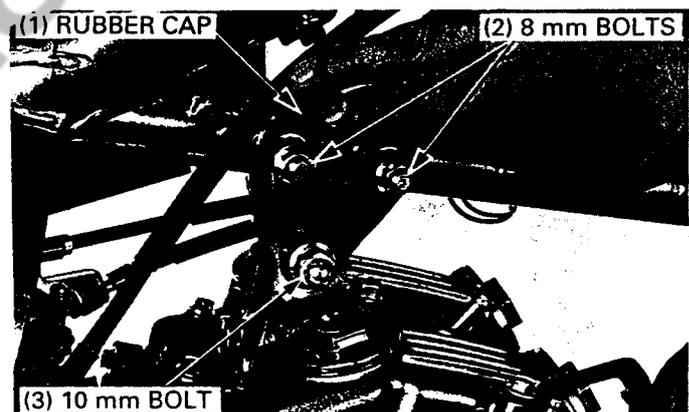
Install the upper hanger plates and bolts, tighten the nuts to the specified torque.

TORQUE: 8 mm bolt: 26 N-m (2.7 kgf-m, 20 lbf-ft)
10 mm bolt: 64 N-m (6.5 kgf-m, 47 lbf-ft)

NOTE

- Install the hanger plates with the marks facing out.

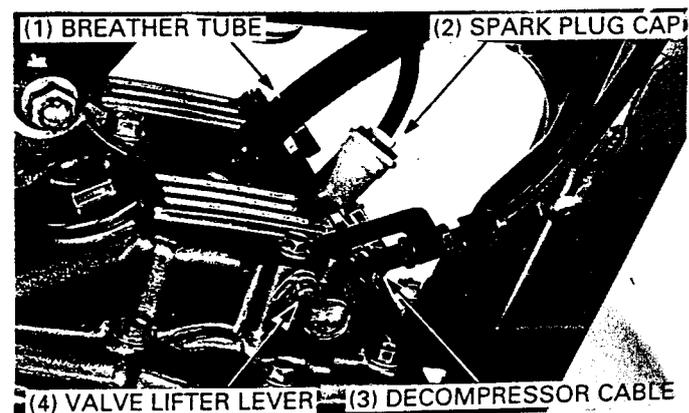
Install the rubber caps.



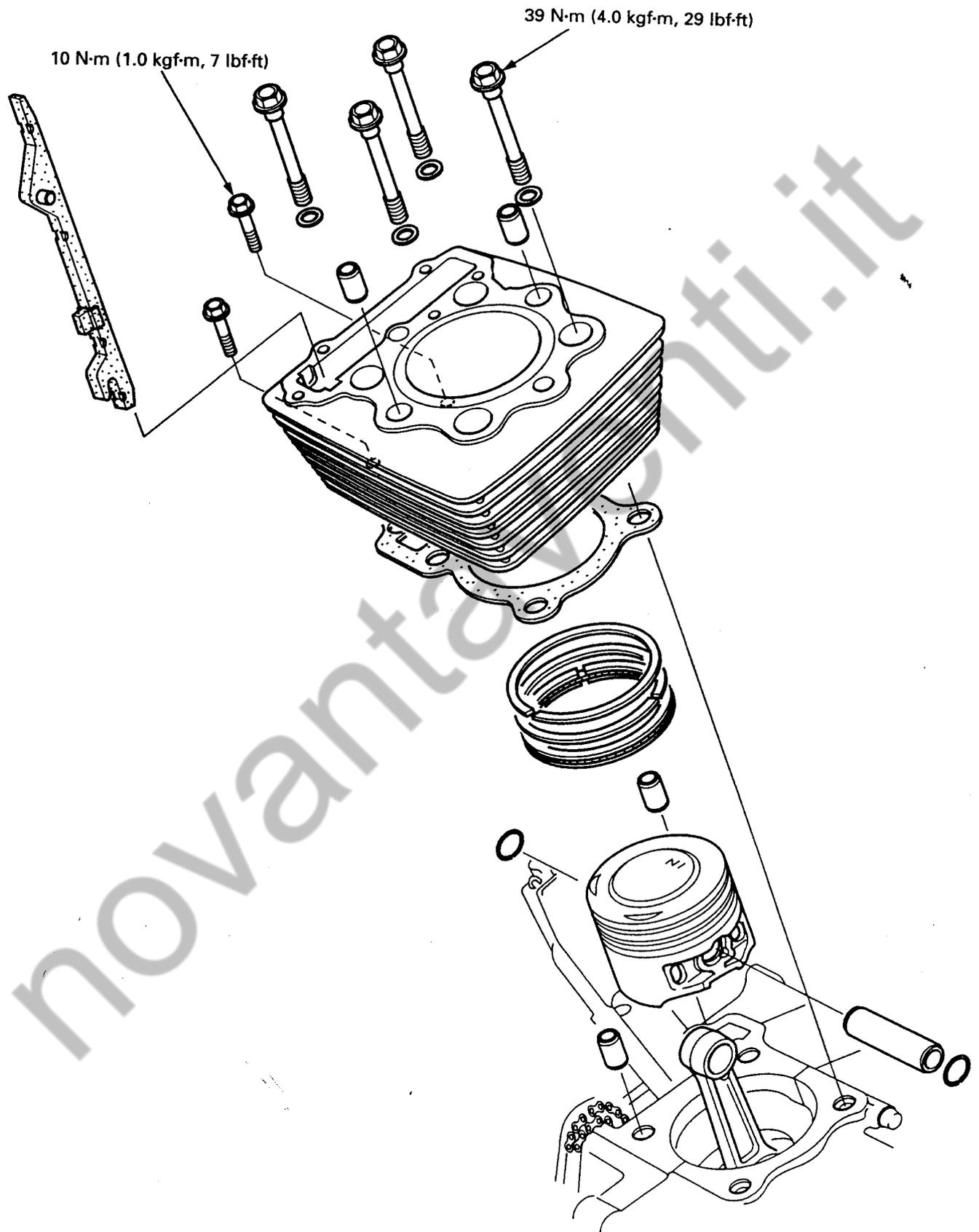
Install the breather tube.
Install the decompressor cable to the valve lifter lever.
Install the spark plug cap.

After installing, adjust the decompressor system (page 3-12).

Install the fuel tank (page 5-3).
Install the seat (page 2-2).



CYLINDER/PISTON



8. CYLINDER/PISTON

SERVICE INFORMATION	8-1	PISTON REMOVAL	8-4
TROUBLESHOOTING	8-2	PISTON INSTALLATION	8-6
CYLINDER REMOVAL	8-3	CYLINDER INSTALLATION	8-7

SERVICE INFORMATION

GENERAL

- This section covers maintenance of the cylinder and piston. 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 from the crankcase.

SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT	
Cylinder	I.D.	73.000 – 73.010 (2.8740 – 2.8744)	73.11 (2.878)	
	Taper	—	0.05 (0.002)	
	Out of round	—	0.05 (0.002)	
	Warpage	—	0.10 (0.004)	
Piston, piston ring and piston pin	Piston mark direction		"IN" mark facing to the intake side	
	Piston O.D.		72.965 – 72.985 (2.8726 – 2.8734) at 19 mm (0.7 in) from bottom of skirt	
	Piston pin hole I.D.		17.002 – 17.008 (0.6694 – 0.6696)	
	Cylinder-to-piston clearance		0.015 – 0.045 (0.0006 – 0.0018)	
	Piston pin O.D.		16.994 – 17.000 (0.6691 – 0.6693)	
	Piston-to-piston pin clearance		0.002 – 0.014 (0.0001 – 0.0006)	
	Piston ring-to-ring groove clearance	Top	0.015 – 0.050 (0.0006 – 0.0020)	0.12 (0.005)
		Second	0.015 – 0.050 (0.0006 – 0.0020)	0.12 (0.005)
	Piston ring end gap	Top	0.15 – 0.30 (0.006 – 0.012)	0.40 (0.016)
		Second	0.30 – 0.45 (0.012 – 0.018)	0.55 (0.022)
		Oil (side rail)	0.2 – 0.7 (0.01 – 0.03)	0.86 (0.034)
	Piston ring mark	Top	mark facing up	—
		Second	mark facing up	—
	Connecting rod small end I.D.		17.016 – 17.034 (0.6699 – 0.6706)	17.06 (0.672)
Connecting rod-to-piston pin clearance		0.016 – 0.040 (0.0006 – 0.0016)	0.09 (0.004)	

CYLINDER/PISTON

TORQUE VALUES

Cylinder bolt (10 mm)
(6 mm SH)

39 N·m (4.0 kgf·m, 29 lbf·ft) Apply oil to the thread and flange surface.
10 N·m (1.0 kgf·m, 7 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 white smoke in the crankcase breather tube. If the tube is smoky, check for a seized piston ring.

Low compression

- Worn cylinder or piston ring

High compression

- Excessive carbon build-up on piston crown or on combustion chamber

Excessive smoke

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

Rough idle

- Low cylinder compression

Over heating

- Excessive carbon build-up on the piston head or combustion chamber

Knocking or abnormal noise

- Worn piston and cylinder
- Excessive carbon build-up

CYLINDER REMOVAL

- Remove the cylinder head (page 7-7).
- Remove the cam chain guide.
- Remove the cylinder 6 mm bolts.
- Remove the cylinder 10 mm flange bolts and washers.

NOTE

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

Remove the cylinder.

Remove the gasket and dowel pins.

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: 73.11 mm (2.878 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)

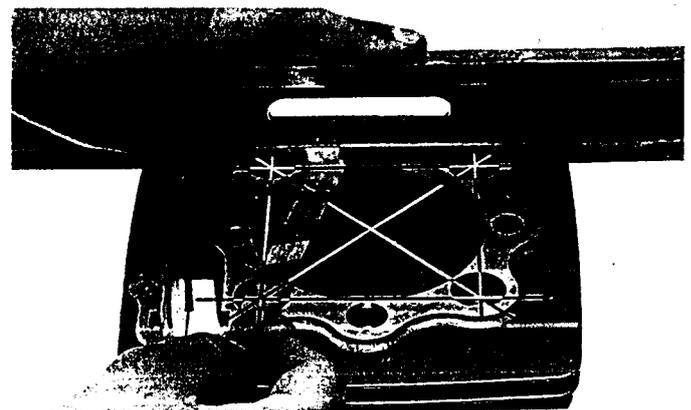
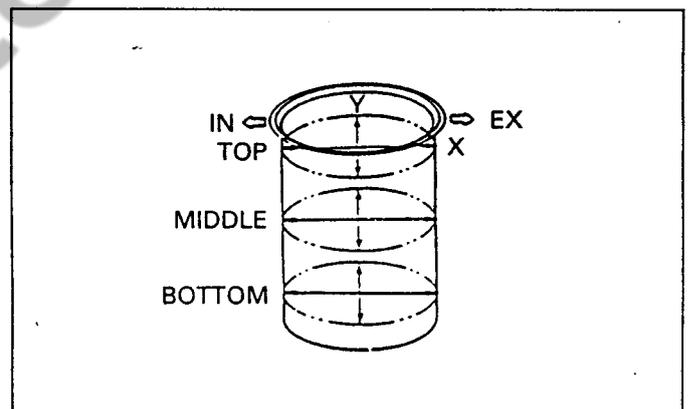
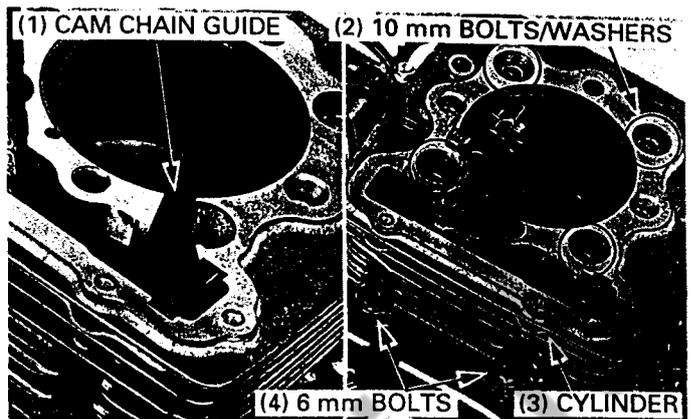
Calculate the cylinder for out-of-round at three levels in an X and Y axis.

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: 0.10 mm (0.004 in)



CYLINDER/PISTON

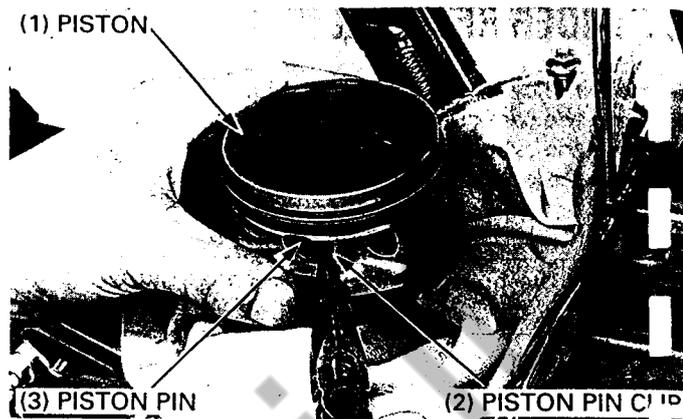
PISTON REMOVAL

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.

Press the piston pin out of the piston.

Remove the piston pin and piston.



PISTON/PISTON RING INSPECTION

Remove the piston rings.

Remove the carbon or deposits from the piston head or piston ring grooves.

Inspect the piston for damage and the ring grooves for wear.

CAUTION

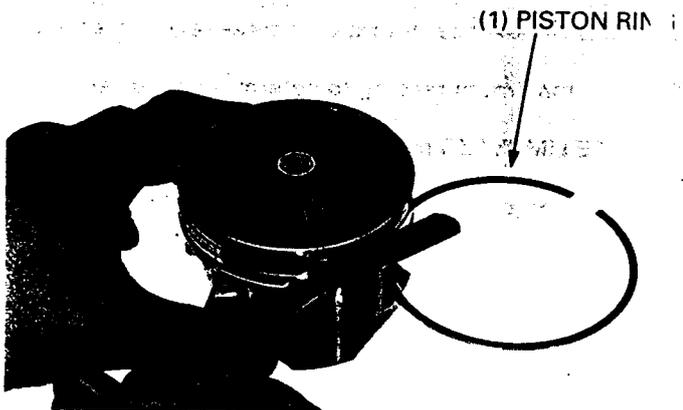
- *Piston rings are easily broken; take care not to damage them during removal.*



Install the piston ring as shown.

Measure the piston ring-to-groove clearance.

SERVICE LIMITS: TOP: 0.12 mm (0.005 in)
2nd: 0.12 mm (0.005 in)

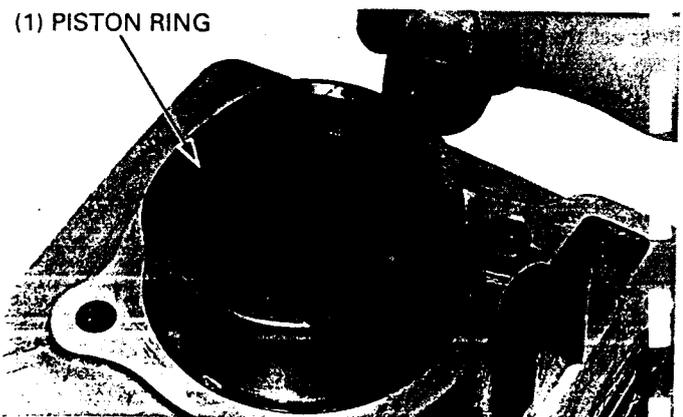


Insert each piston rings into the cylinder, about 20 mm (0.75 in) in from the bottom.

To ensure that it's square in the bore, use a piston to push it in.

Measure the ring end gap.

SERVICE LIMITS: TOP: 0.40 mm (0.016 in)
2nd: 0.55 mm (0.022 in)
OIL: 0.86 mm (0.034 in)

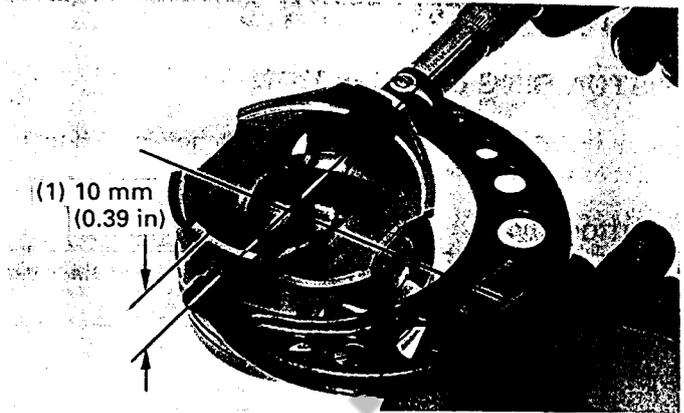


Measure the piston diameter 10 mm (0.39 in) from the bottom of the skirt and at a right angle to the piston hole.

SERVICE LIMIT: 72.88 mm (2.869 in)

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

SERVICE LIMIT: 0.10 mm (0.004 in)



Measure the piston pin bore.

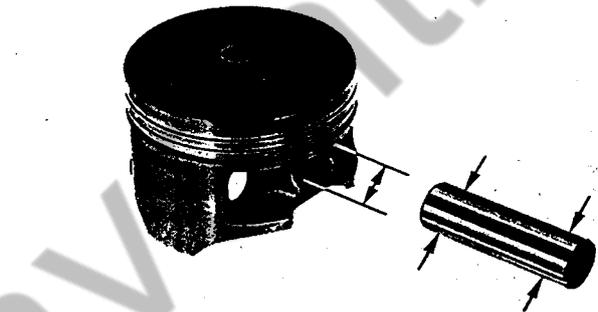
SERVICE LIMIT: 17.07 mm (0.672 in)

Measure the piston pin O.D..

SERVICE LIMIT: 16.97 mm (0.668 in)

Calculate the piston-to-piston pin clearance.

SERVICE LIMIT: 0.07 mm (0.003 in)



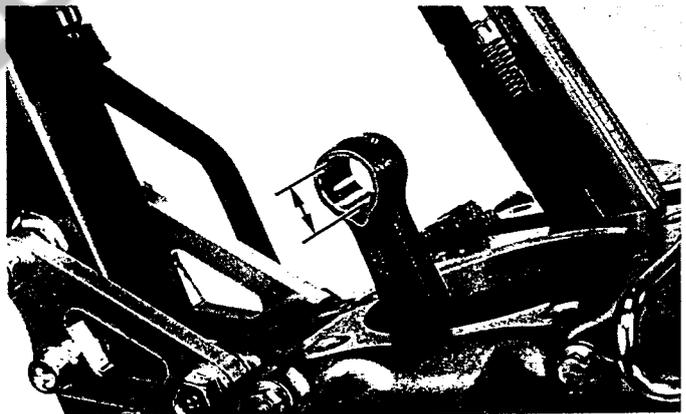
CONNECTING ROD SMALL END INSPECTION

Measure the connecting rod small end I.D..

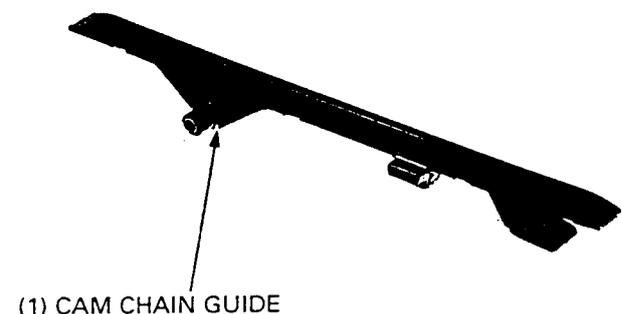
SERVICE LIMIT: 17.06 mm (0.672 in)

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

SERVICE LIMIT: 0.09 mm (0.004 in)



Inspect the cam chain guide for wear or damage.



(1) CAM CHAIN GUIDE

CYLINDER/PISTON

PISTON INSTALLATION

PISTON RING INSTALLATION

Clean the piston grooves thoroughly by holding a ring in the grooves while turning the piston.

CAUTION

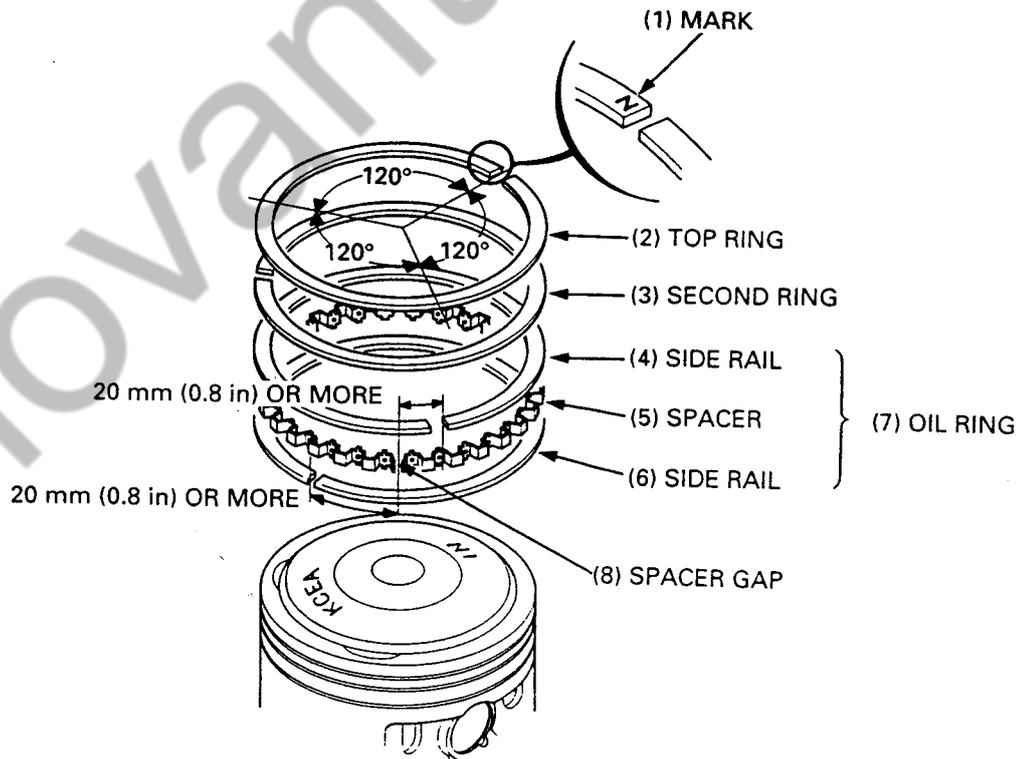
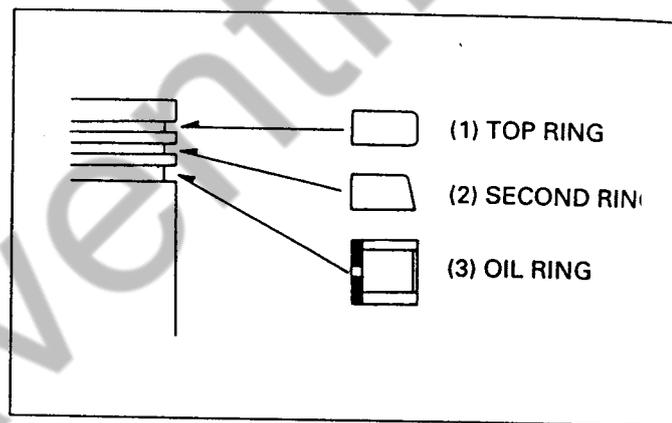
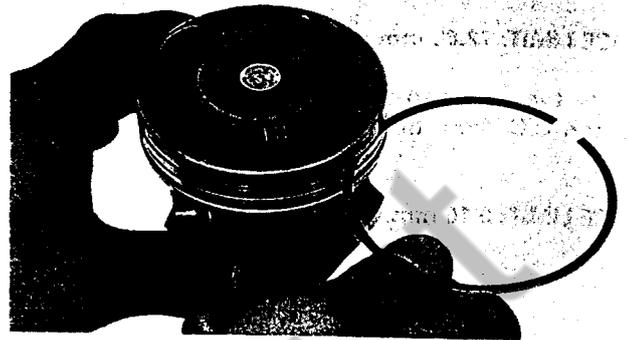
- Do not use a wire brush to clean ring lands, or cut lands deeper with a cleaning tool.

Apply engine oil to the piston rings.

Install the piston rings.

NOTE

- Be careful not to damage the piston and piston rings during assembly.
- Install the piston ring on the piston with the mark facing up.
- After installing the rings they should rotate freely, without sticking.
- 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.



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

NOTE

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

Install the piston with the "IN" mark facing the intake side.

Install the piston pin.

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.

Remove the shop towel.

CYLINDER INSTALLATION

Carefully clean any gasket material from the crankcase mating surface.

CAUTION

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

Apply liquid sealant to the crankcase mating area to prevent oil leaks.

Install the dowel pins and new gasket.

Coat the cylinder bore and piston with fresh engine oil. Install the cylinder.

Apply engine oil to the cylinder 10 mm flange bolts threads and flange surface and washers.

Install the bolts and washers.

Tighten the bolts to the specified torque.

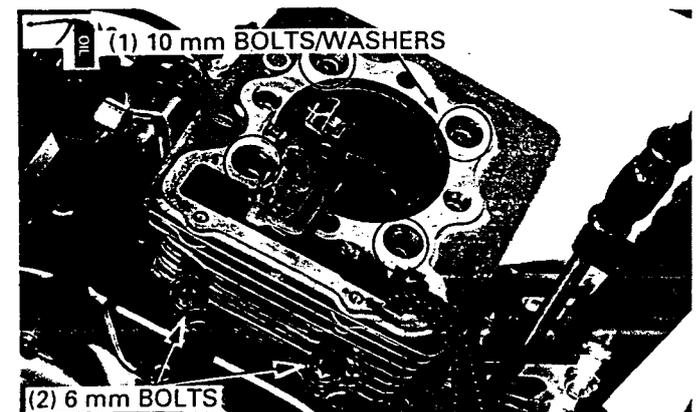
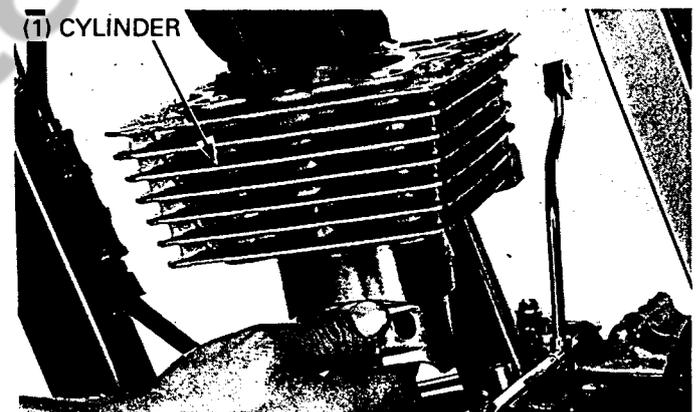
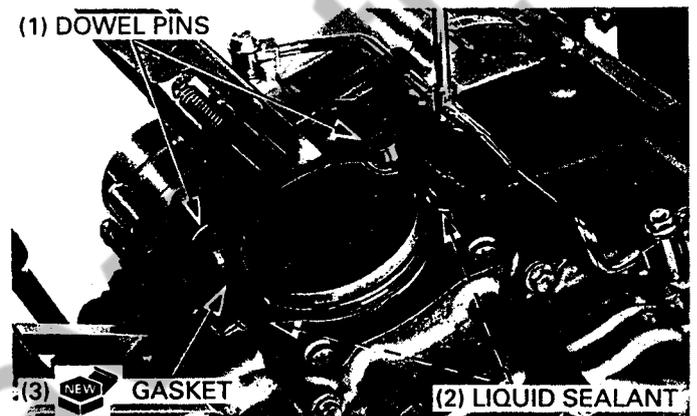
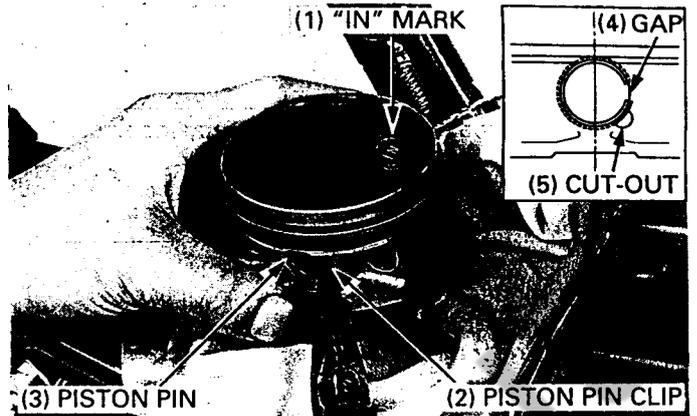
TORQUE: 39 N·m (4.0 kgf·m, 29 lbf·ft)

NOTE

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

Install the cylinder 6 mm bolts and tighten them.

TORQUE: 10 N·m (1.0 kgf·m, 7.2 lb·ft)



CYLINDER/PISTON

Install the cam chain guide.

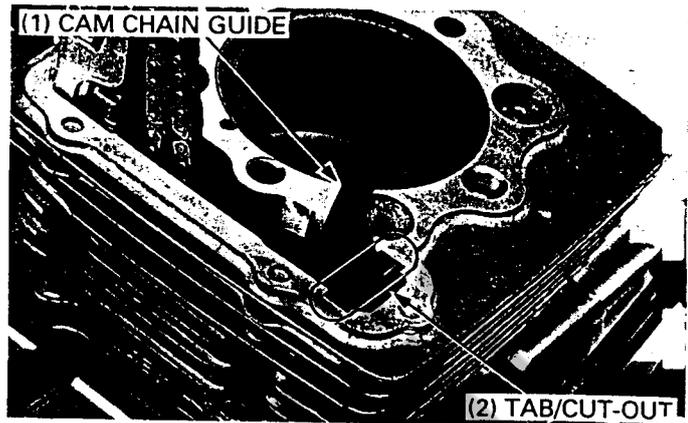
NOTE

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

Install the cylinder head (page 7-15).

Install the camshaft (page 7-16).

Install the cylinder head cover (page 7-20).

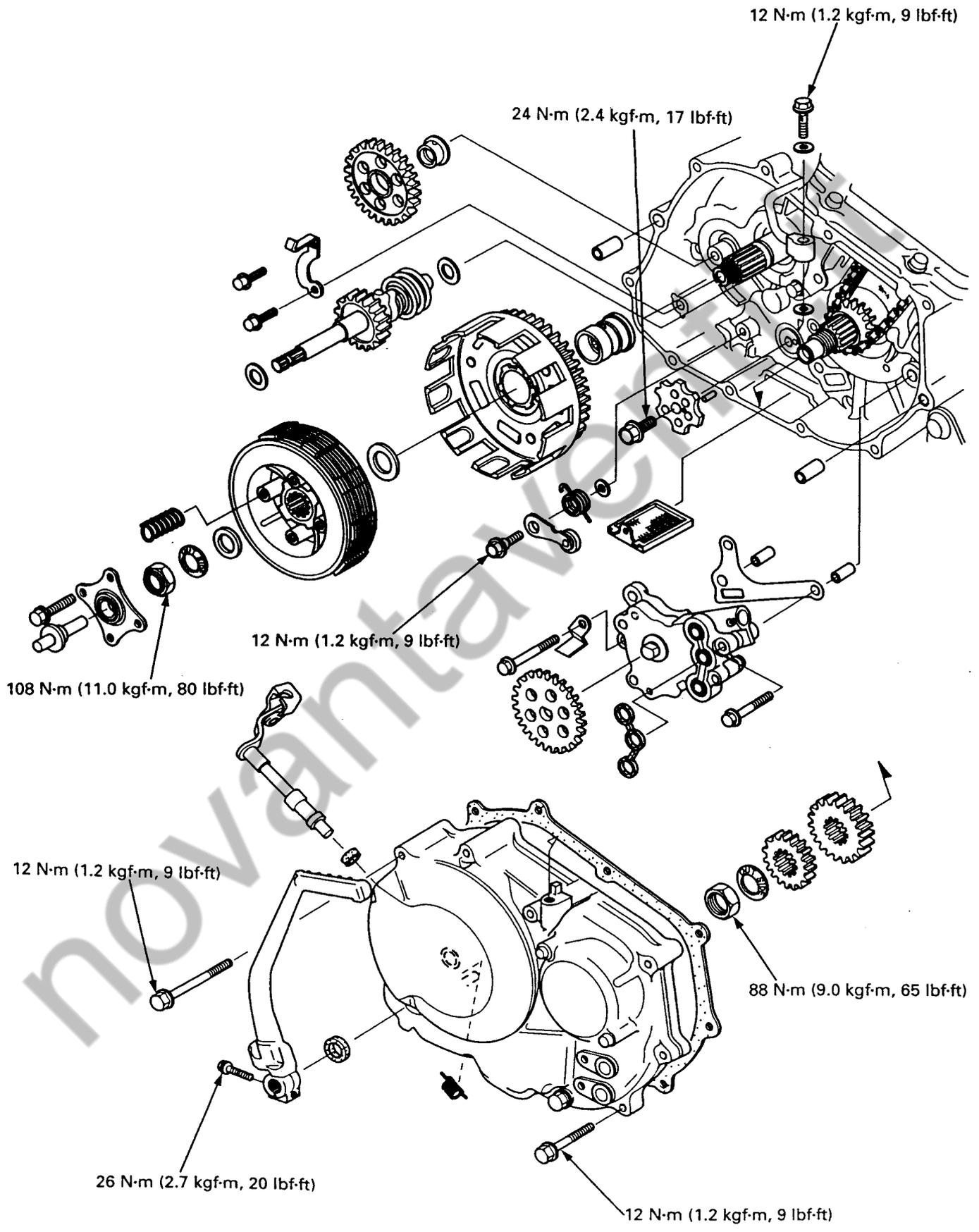


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CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE



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9. CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

SERVICE INFORMATION	9-1	KICKSTARTER REMOVAL/ DISASSEMBLY	9-12
TROUBLESHOOTING	9-2	KICKSTARTER ASSEMBLY/ INSTALLATION	9-14
RIGHT CRANKCASE COVER REMOVAL	9-3	GEARSHIFT CAM	9-16
CLUTCH REMOVAL	9-5	RIGHT CRANKCASE COVER INSTALLATION	9-17
PRIMARY DRIVE GEAR	9-8		
CLUTCH INSTALLATION	9-10		

SERVICE INFORMATION

GENERAL

- This section covers maintenance of the clutch, kickstarter, gearshift linkage and right crankcase cover. These services 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	Lever free play	10 – 20 (3/8 – 3/4)	—	
	Spring free length	37.2 (1.46)	33.5 (1.32)	
	Disc thickness	2.92 – 3.08 (0.115 – 0.121)	2.69 (0.106)	
	Plate warpage	—	0.30 (0.012)	
	Clutch outer I.D.	25.000 – 25.021 (0.9843 – 0.9851)	25.04 (0.986)	
	Outer guide	I.D.	19.990 – 20.010 (0.7870 – 0.7878)	20.03 (0.789)
		O.D.	24.959 – 24.980 (0.9826 – 0.9835)	24.17 (0.952)
Mainshaft O.D. at clutch outer guide		19.959 – 19.980 (0.7858 – 0.7866)	19.91 (0.784)	
Kickstarter	Starter idle gear I.D.	19.010 – 19.034 (0.7484 – 0.7494)	19.13 (0.753)	
	Starter idle gear bushing	I.D.	15.000 – 15.018 (0.5906 – 0.5913)	15.04 (0.592)
		O.D.	18.959 – 18.980 (0.7464 – 0.7472)	18.92 (0.745)
	Kickstarter gear I.D.	25.020 – 25.041 (0.9850 – 0.9859)	25.12 (0.989)	
	Kickstarter gear bushing	I.D.	22.000 – 22.021 (0.8661 – 0.8670)	22.10 (0.870)
		O.D.	24.979 – 25.000 (0.9834 – 0.9843)	24.90 (0.980)
Kickstarter spindle O.D.		21.959 – 21.980 (0.8645 – 0.8654)	21.91 (0.863)	
Countershaft O.D. at starter idle gear		14.966 – 14.984 (0.5892 – 0.5899)	14.91 (0.587)	

CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

TORQUE VALUES

Right crankcase cover bolt	12 N·m (1.2 kgf·m, 9 lbf·ft)
Stopper arm pivot bolt	12 N·m (1.2 kgf·m, 9 lbf·ft)
Gearshift cam bolt	24 N·m (2.4 kgf·m, 17 lbf·ft) Apply a locking agent to the threads.
Clutch center lock nut	108 N·m (11.0 kgf·m, 80 lbf·ft) Stake and apply oil to the threads and flange surface.
Primary drive gear lock nut	88 N·m (9.0 kgf·m, 65 lbf·ft) Apply oil to the threads and flange surface
Kickstarter pedal bolt	26 N·m (2.7 kgf·m, 20 lbf·ft)

TOOLS

Special

Clutch center holder 07923 – KE10000

Common

Gear holder 07724 – 0010100

TROUBLESHOOTING

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

Clutch slips when accelerating

- No free play
- Discs worn
- Springs weak

Clutch will not disengage

- Too much free play
- Plates warped

Motorcycle creeps with clutch disengaged

- Too much free play
- Plates warped

Excessive lever pressure

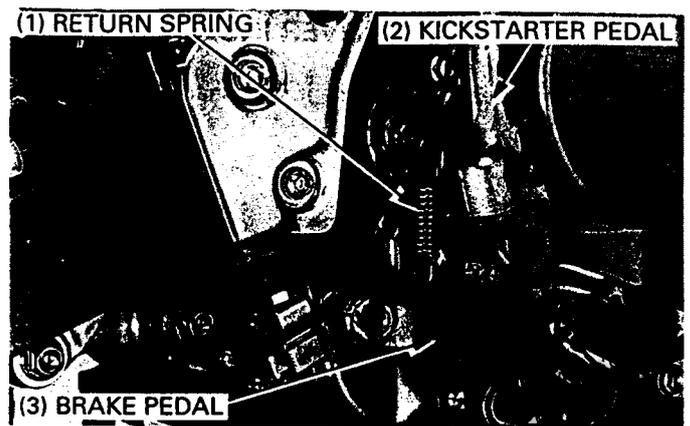
- Clutch cable kinked, damaged or dirty
- Lifter mechanism damaged

Clutch operation feels rough

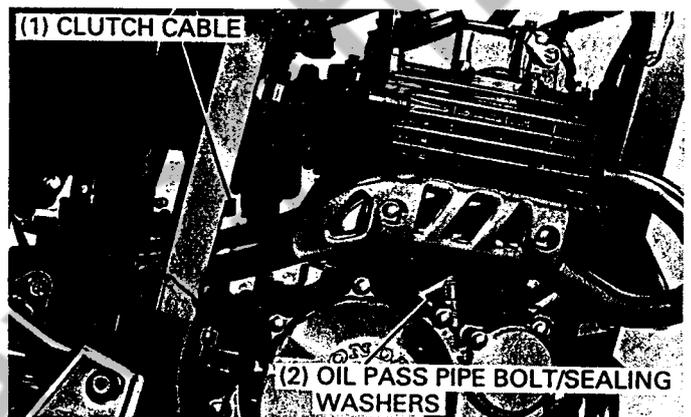
- Outer drum slots rough
- Dirty clutch cable

RIGHT CRANKCASE COVER REMOVAL

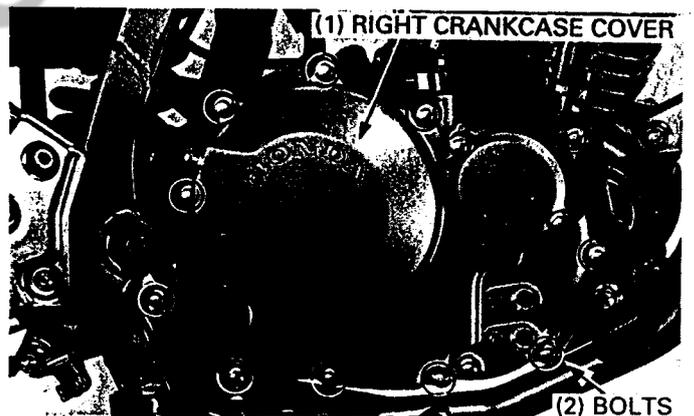
Drain the engine oil (page 3-10).
Remove the under guard (page 2-3).
Remove the oil pipes (page 4-9).
Remove the kickstarter pedal.
Remove the brake pedal return spring and brake pedal (page 15-26).
Remove the exhaust pipe (page 2-3).
Loosen the oil pass pipe joint bolt.
Remove the oil pass pipe joint bolt (right crankcase cover side) and sealing washers.



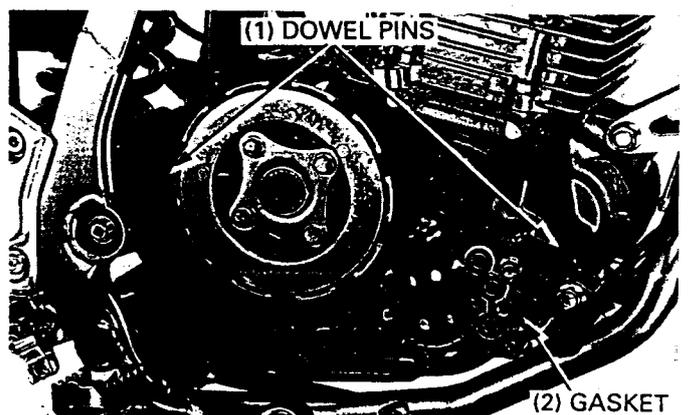
Loosen the clutch cable lock nut and adjusting nut.
Remove the clutch cable from the clutch arm.



Remove the bolts and right crankcase cover.



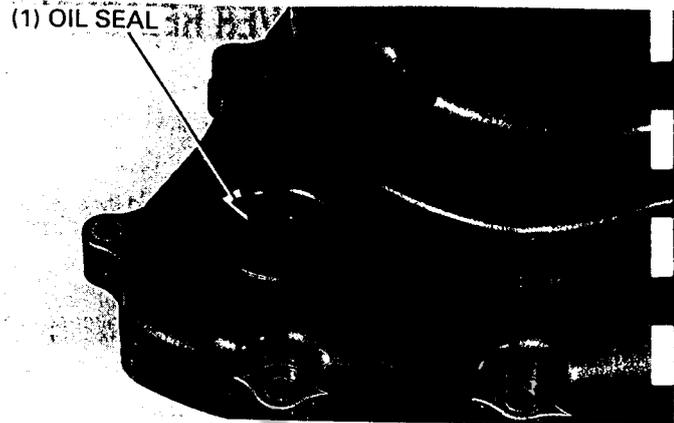
Remove the gasket and dowel pins.



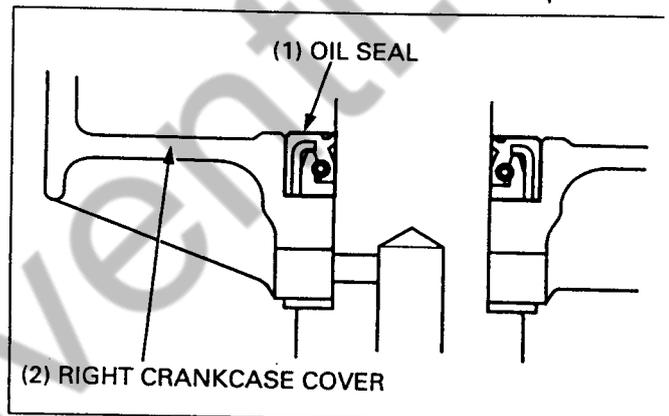
CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

RIGHT CRANKCASE COVER INSPECTION

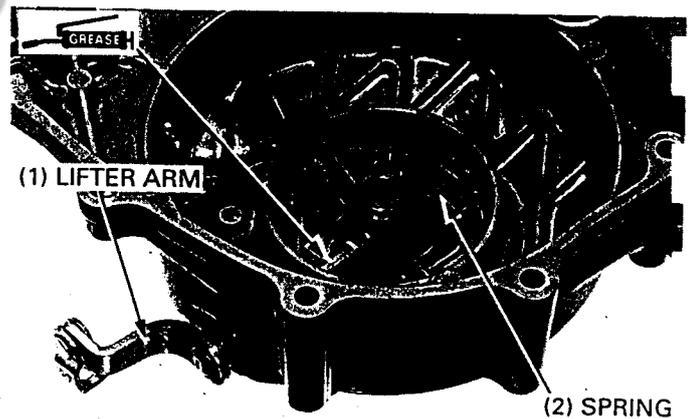
Inspect the oil seal and replace if necessary.



Install the new oil seal with the mark facing out. Press the oil seal into the crankcase even with the case surface as shown.

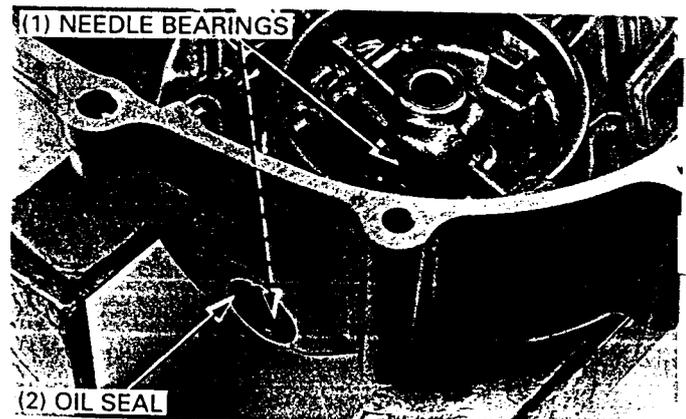


Remove the spring and clutch lifter arm. Inspect the lifter arm and replace if worn or damaged. Apply grease to the clutch lifter arm sliding surface.



Inspect the oil seal and replace if worn or damaged. Inspect the needle bearing and replace if worn or damaged.

Press the oil seal into the crankcase even with the case surface.

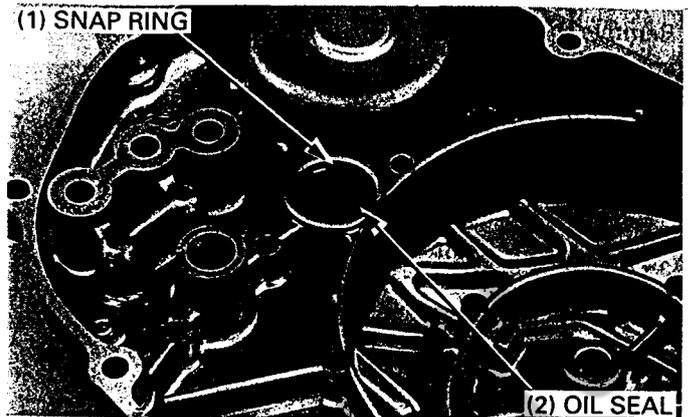


CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

Remove the snap ring and oil seal.
Inspect the oil seal and replace if worn or damaged.

Press the oil seal into the crankcase below the snap ring groove.

Install the snap ring.



CLUTCH REMOVAL

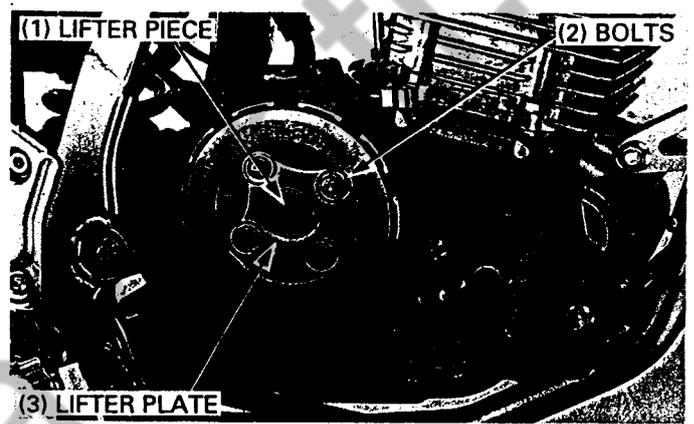
Remove the right crankcase cover (page 9-3).

Remove the clutch lifter piece.

Remove the clutch lifter plate bolts, clutch lifter plate, lifter bearing and clutch springs.

NOTE

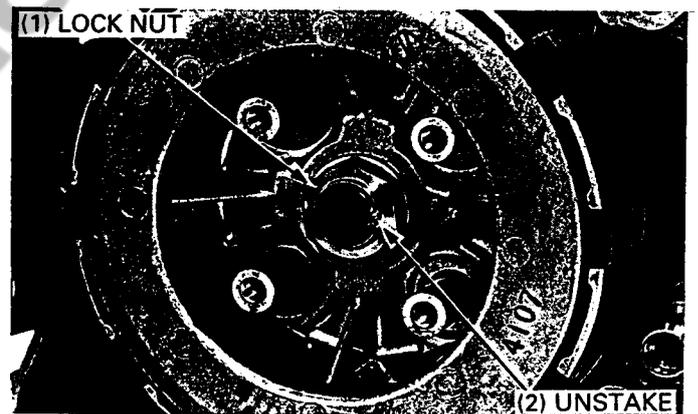
- Loosen the bolts in a crisscross pattern in 2-3 steps.



Unstake the lock nut with a drill or grinder.

NOTE

- Be careful that the threads on the main shaft are not damaged.
- Clean any metal sharings.

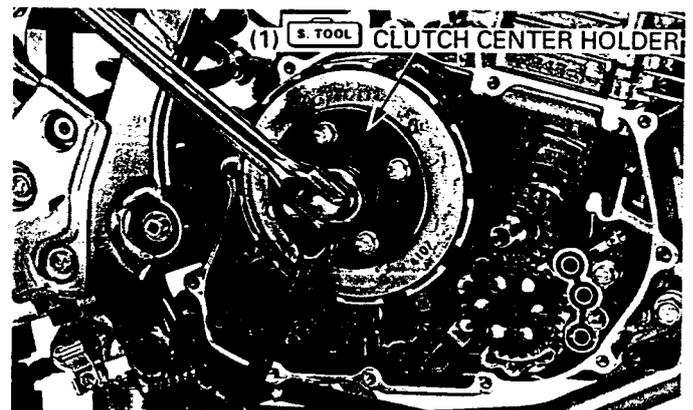


Attach the clutch center holder to the pressure plate with four clutch bolts and remove the lock nut, lock washer and thrust washer.

TOOL:

Clutch center holder

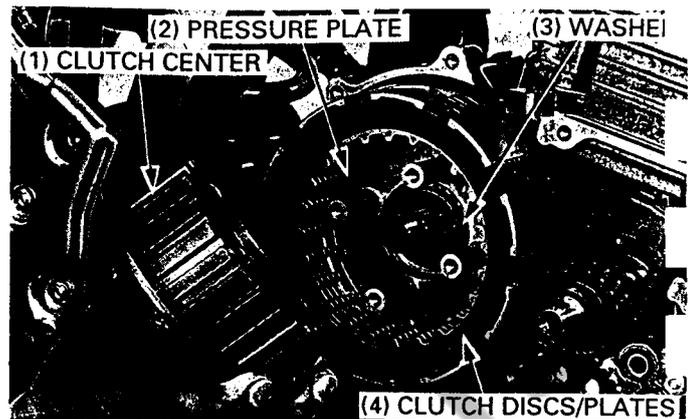
07923 - KE10000



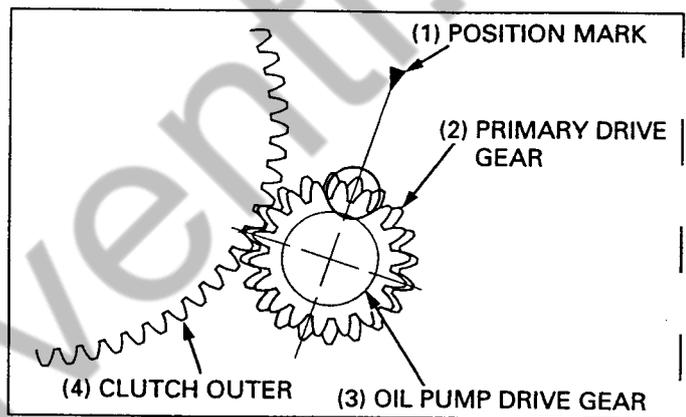
CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

Remove the following:

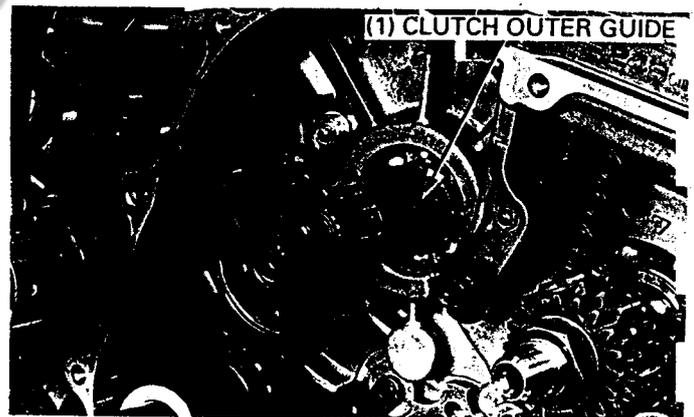
- Clutch center
- Washer
- Six clutch plates
- Five friction discs
- Pressure plate



Align the oil pump drive gear teeth and primary drive gear teeth with the position mark on the crankcase as shown. Remove the clutch outer.



Remove the clutch outer guide.



CLUTCH INSPECTION

Lifter plate bearing inspection

Check the bearing for wear, excessive play or damage and replace it if necessary.



CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

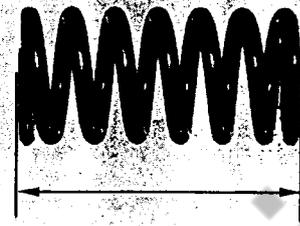
Clutch spring inspection

Measure the free length of each spring.

SERVICE LIMIT: 33.5 mm (1.32 in)

NOTE

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



Clutch disc inspection

Replace the discs if they show signs of scoring or discoloration. Measure the disc thickness.

SERVICE LIMIT: 2.69 mm (0.106 in)

NOTE

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



Friction plate inspection

Check for plate warpage on a surface plate, using a feeler gauge.

SERVICE LIMIT: 0.30 mm (0.012 in)

NOTE

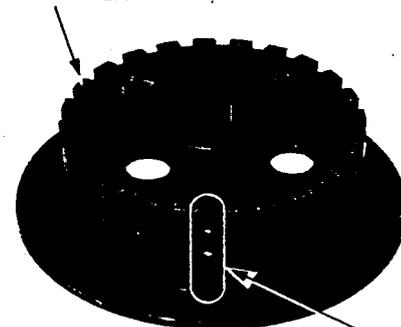
- Warped friction plates prevents the clutch from disengaging properly.



Clutch center inspection

Check the slots of the clutch center for wear, damage or cracks.

(1) CLUTCH CENTER



(2) SLOTS

CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

Clutch outer and outer guide inspection

Check the slots in the outer drum for nicks, cuts or indentations made by the clutch discs.

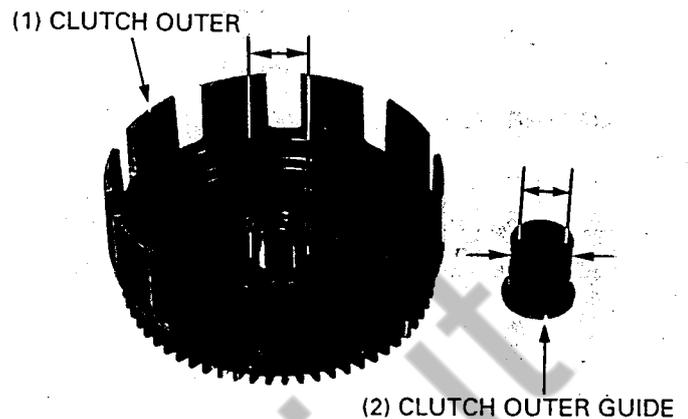
Measure the I.D. of the clutch outer.

SERVICE LIMIT: 25.04 mm (0.986 in)

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

SERVICE LIMIT: I.D.: 20.03 mm (0.789 in)

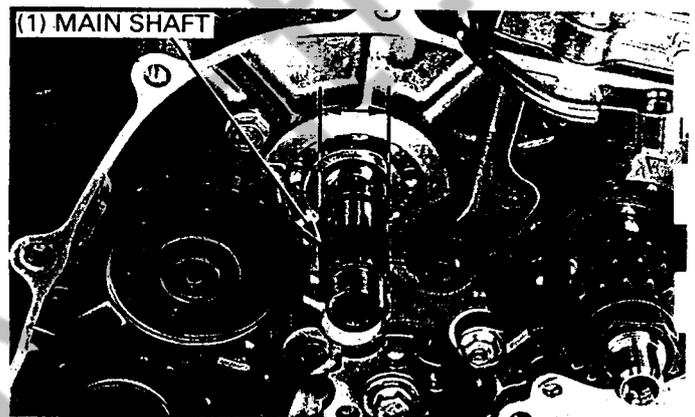
O.D.: 24.17 mm (0.952 in)



Mainshaft inspection

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

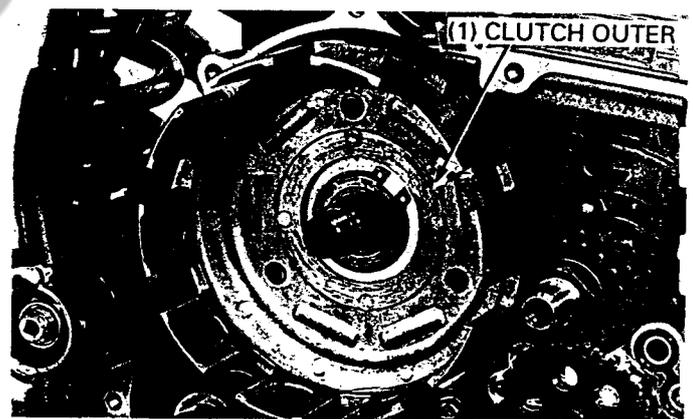
SERVICE LIMIT: 19.91 mm (0.784 in)



PRIMARY DRIVE GEAR

REMOVAL

Remove the clutch (page 9-5).
Remove the oil pump (page 4-3).
Install the clutch outer guide and clutch outer to the mainshaft.

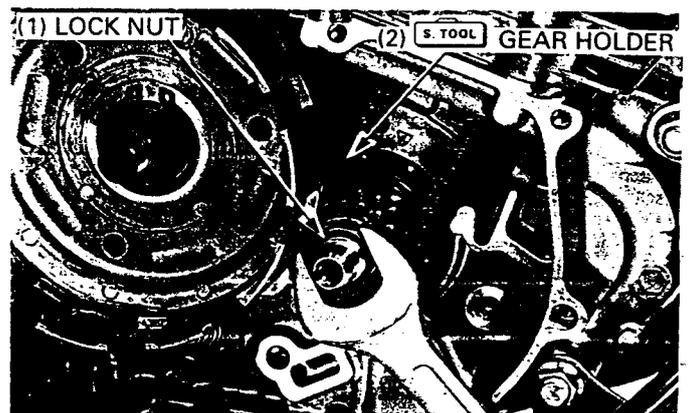


Place the gear holder between the primary drive gear and driven gear.
Remove the primary drive gear lock nut.

TOOL:

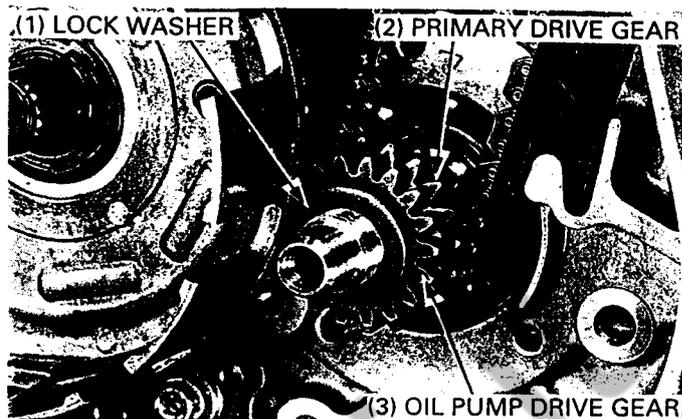
Gear holder

07724 - 0010100



CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

Remove the lock washer.
Remove the gear holder, clutch outer and outer guide.
Remove the oil pump drive gear and primary drive gear.



INSTALLATION

Install the primary drive gear.

NOTE

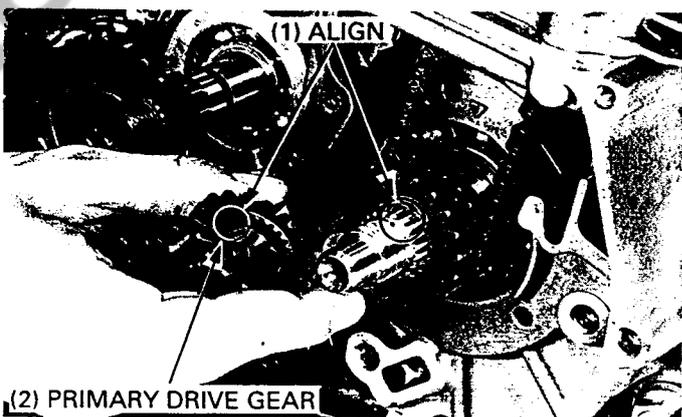
- Install the drive gear aligning the wide cutout with the crankshaft spindle.



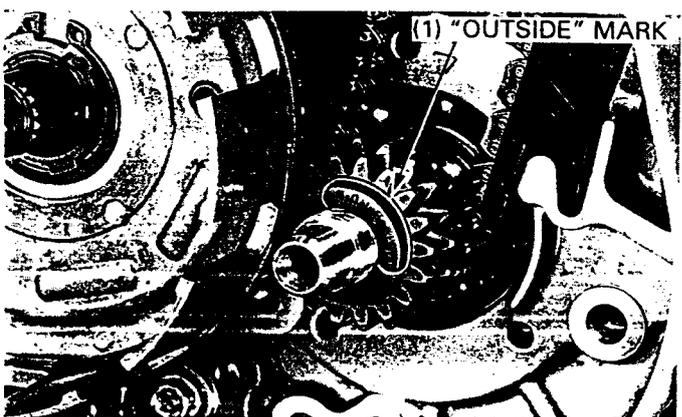
Install the oil pump drive gear.

NOTE

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



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



CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

Install the clutch outer guide and clutch outer (page 9-10).
Place the gear holder between the drive gear and driven gear.

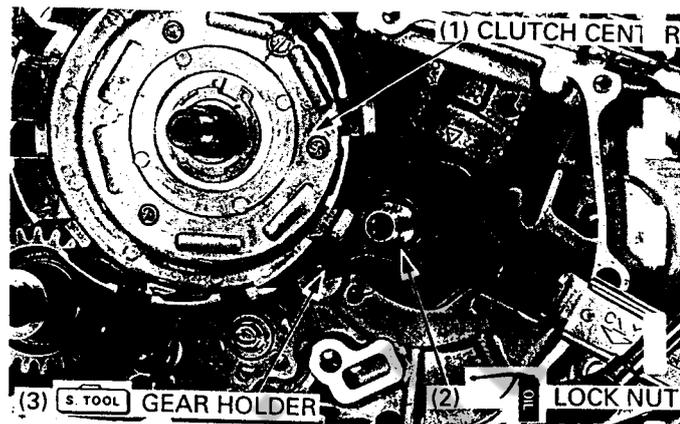
TOOL:

Gear holder 07724 - 0010100

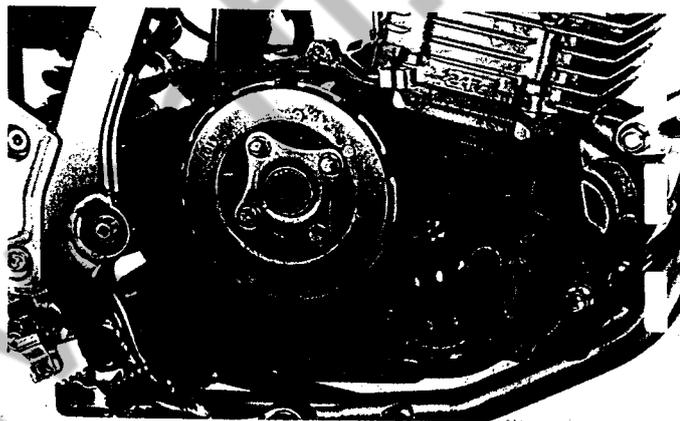
Apply engine oil to the primary lock nut threads and seating surface.

Install and tighten the primary drive gear lock nut.

TORQUE: 88 N·m (9.0 kgf·m, 65 lbf·ft)



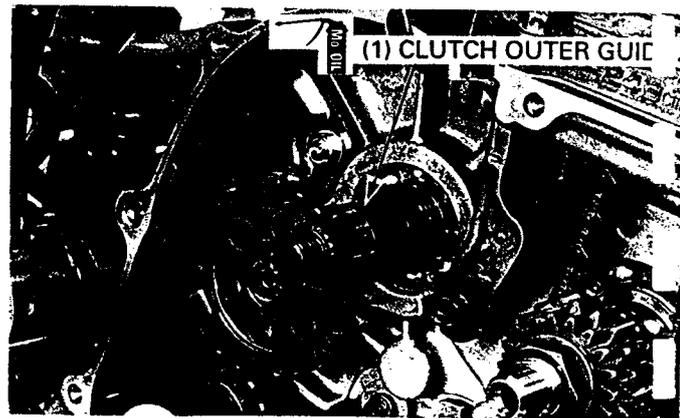
Remove the gear holder, clutch outer and outer guide.
Install the oil pump (page 4-7).
Install the clutch (page 9-10).
Install the right crankcase cover (page 9-17).



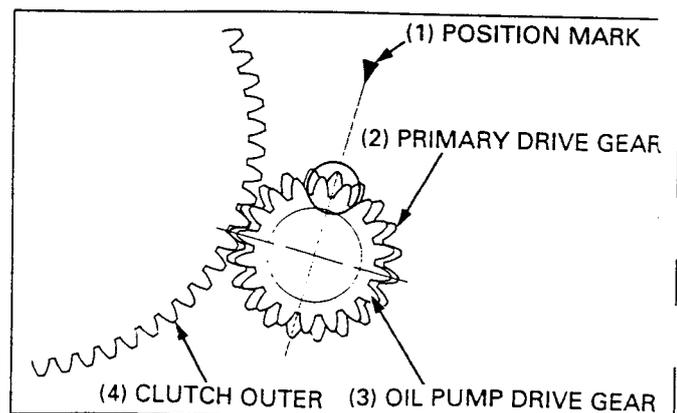
CLUTCH INSTALLATION

Apply molybdenum disulfide oil to the outer surface of the clutch outer guide.

Install the clutch outer guide to the mainshaft.

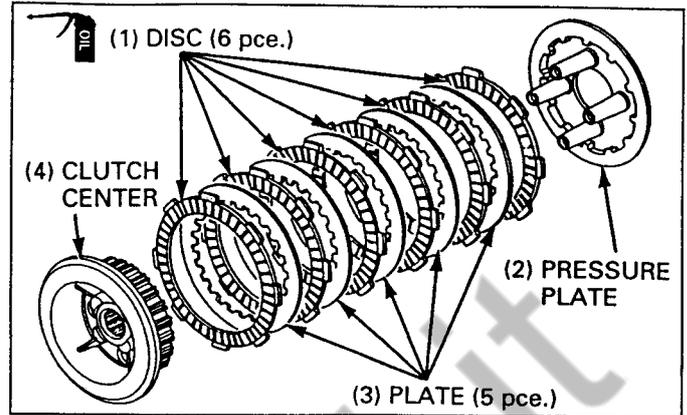


Align the oil pump drive gear teeth and primary drive gear teeth with the position mark on the crankcase as shown.
Install the clutch outer.



CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

Install the thrust washer.
Coat the clutch discs with engine oil.
Install the pressure plate in the clutch outer.
Install the six friction discs and five clutch plates alternately.
Install the discs and plates alternately, starting with a disc.
Install the clutch center.

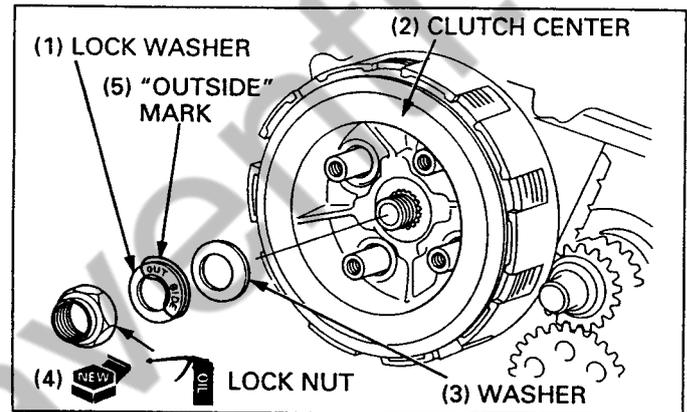


Install the thrust washer and lock washer.

NOTE

- Install the lock washer with the "OUT SIDE" marks facing out side.

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



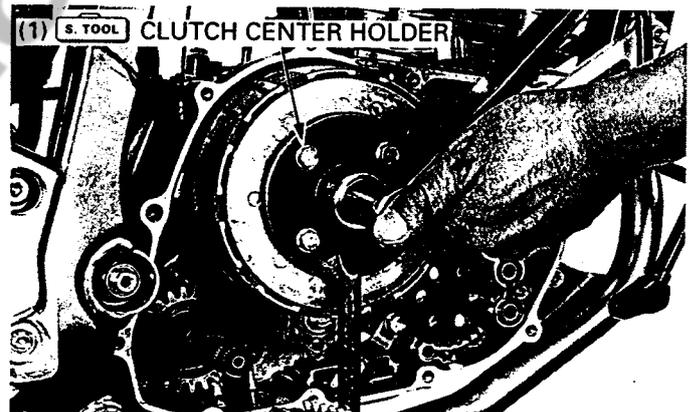
Install the clutch center holder to the clutch center.

TOOL:

Clutch center holder 07923 - KE10000

Tighten the clutch center lock nut to the specified torque.

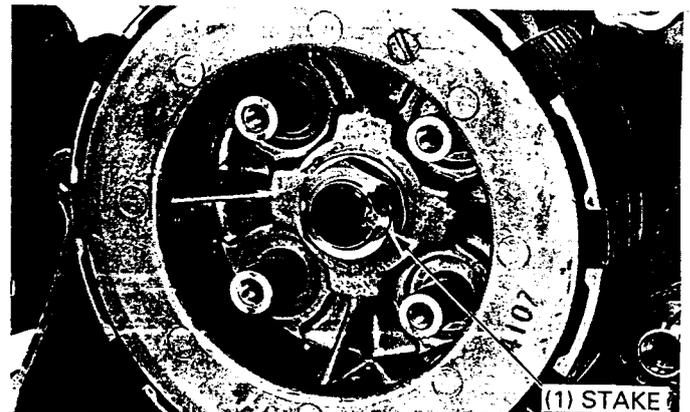
TORQUE: 108 N-m (11.0 kgf-m, 80 lbf-ft)



Remove the clutch center holder and stake the lock nut.

NOTE

- Be careful that the threads on the mainshaft are not damaged.



CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

Install the following:

- Clutch springs
- Clutch lifter plate
- Clutch lifter plate bolts

NOTE

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

- Clutch lifter piece

NOTE

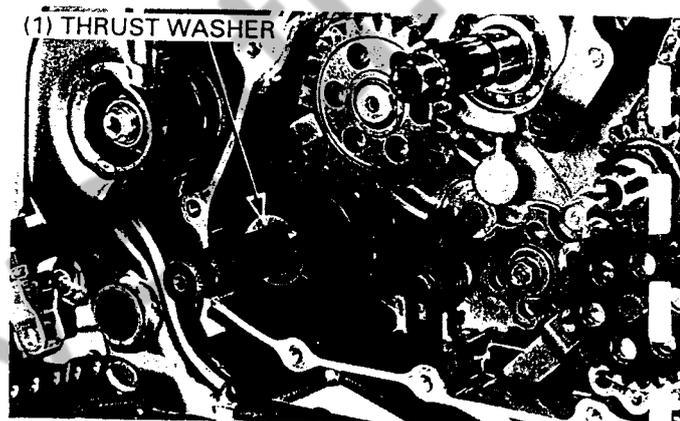
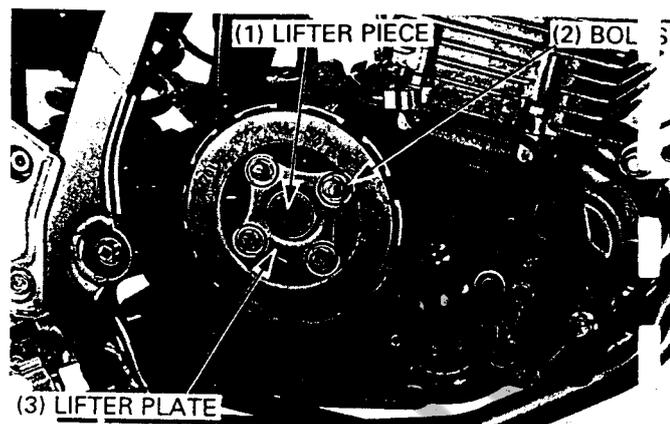
- After installation, check that the clutch lifter piece turns freely.

- Right crankcase cover (page 9-17).

KICKSTARTER REMOVAL/DISASSEMBLY

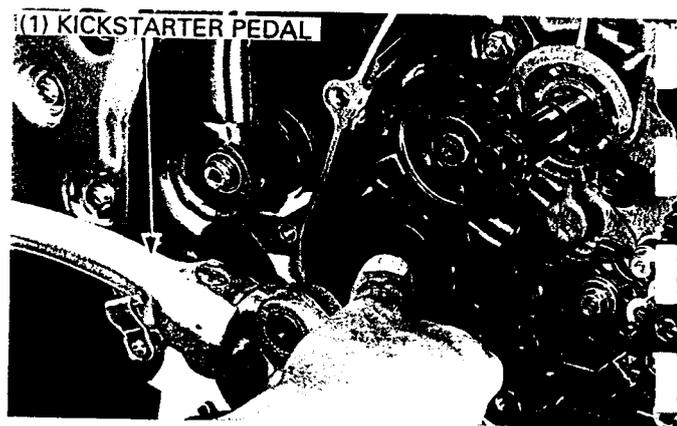
Remove the clutch (page 9-5).

Remove the thrust washer from the kickstarter spindle.



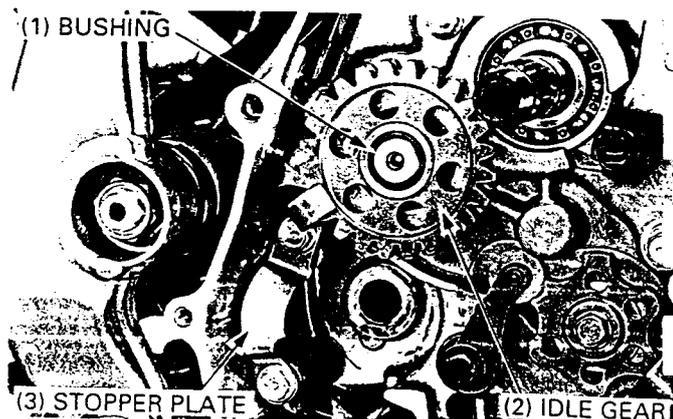
Install the kickstarter pedal to the kickstarter spindle.
Pull the pedal out while rotating it counterclockwise until the tab on the kickstarter ratchet is released from behind the stopper plate. Turn the spindle clockwise until it will no longer go.
Release the hook end of the return spring from the crankcase groove; remove the kickstarter spindle.

Remove the washer.
Remove the kickstarter pedal.



Remove the following from the countershaft:

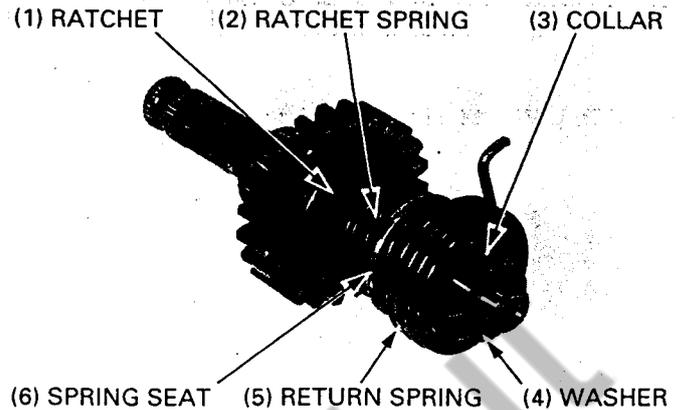
- Stopper plate
- Starter idle gear
- Idle gear bushing



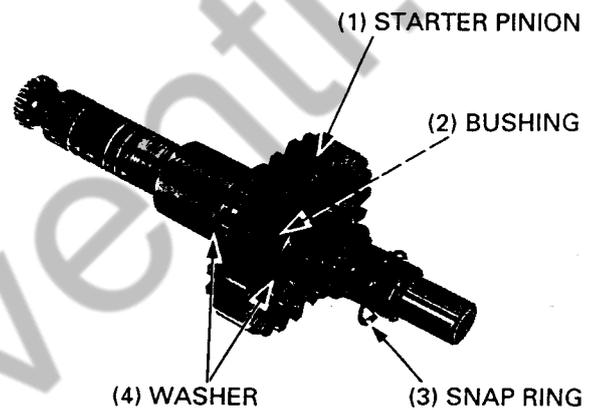
CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

Remove the following from the spindle:

- Thrust washer
- Spring collar
- Return spring
- Spring seat
- Ratchet spring
- Starter ratchet



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



KICKSTARTER INSPECTION

Measure the starter pinion gear I.D..

SERVICE LIMIT: 25.12 mm (0.989 in)

Measure the pinion bushing I.D. and O.D..

SERVICE LIMITS: I.D.: 22.10 mm (0.870 in)
O.D.: 24.90 mm (0.980 in)

Measure the kickstarter spindle O.D..

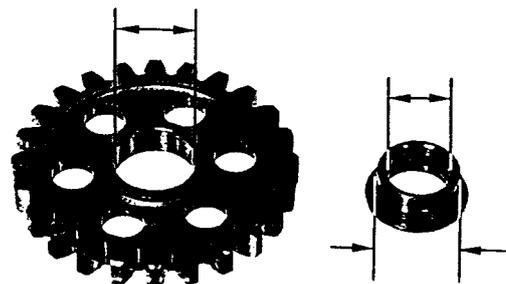
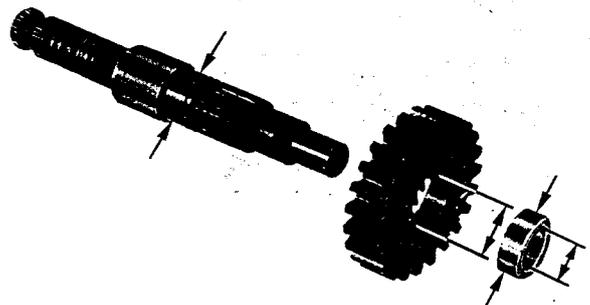
SERVICE LIMIT: 21.91 mm (0.863 in)

Measure the starter idle gear I.D..

SERVICE LIMIT: 19.13 mm (0.753 in)

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

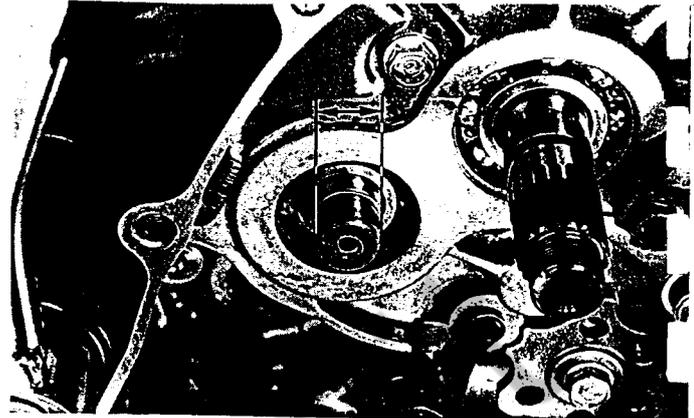
SERVICE LIMITS: I.D.: 15.04 mm (0.592 in)
O.D.: 18.92 mm (0.745 in)



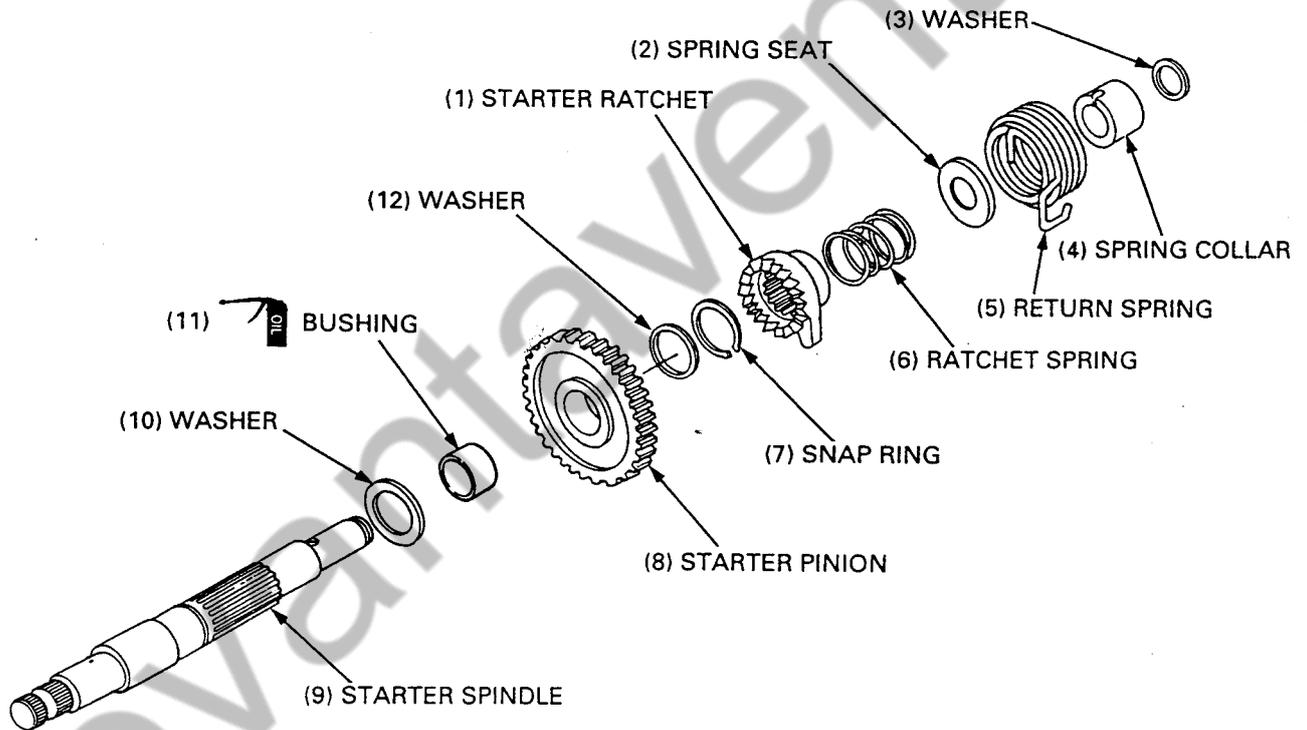
CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

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

SERVICE LIMIT: 14.91 mm (0.587 in)

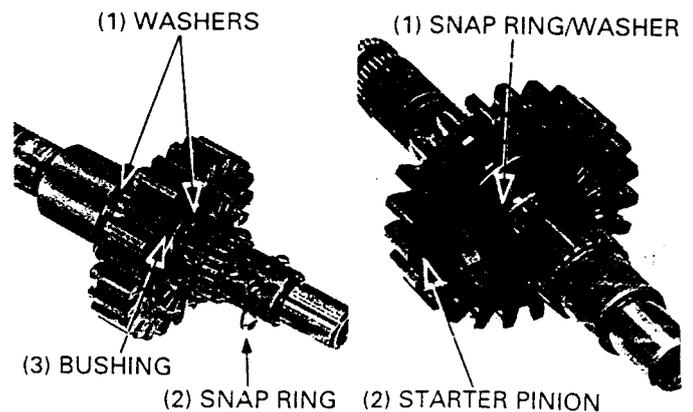


KICKSTARTER ASSEMBLY/ INSTALLATION



Coat the engine oil to the starter spindle bushing.
 Install the following to the starter spindle:

- Thrust washer
- Bushing
- Starter pinion
- Thrust washer
- Snap ring



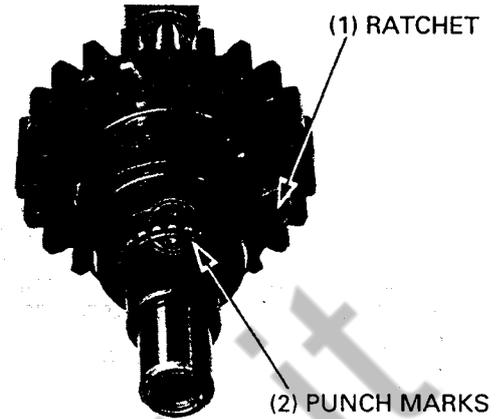
CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

Install the following:

- Starter ratchet

NOTE

- Align the punch marks on the spindle and ratchet.



- Ratchet spring
- Spring seat
- Return spring

NOTE

- Insert the spring end into the hole in the spindle.

- Spring collar

NOTE

- Align the cut-out on the collar with the spring end.

- Thrust washer

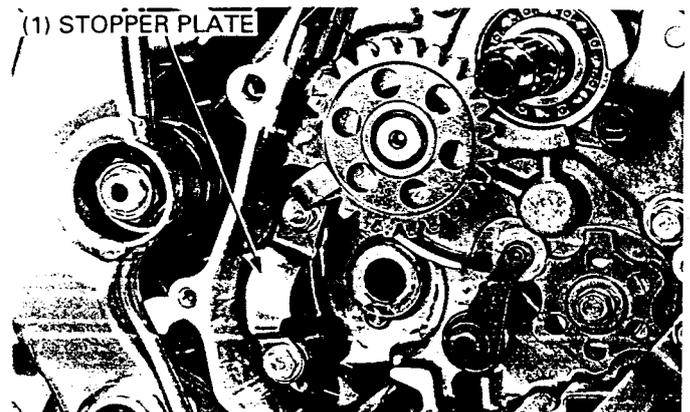
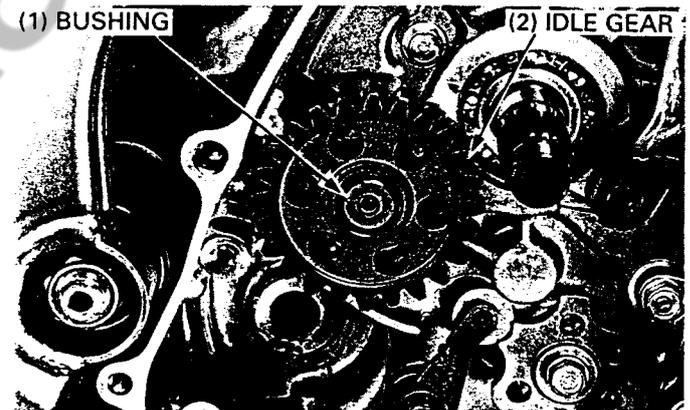
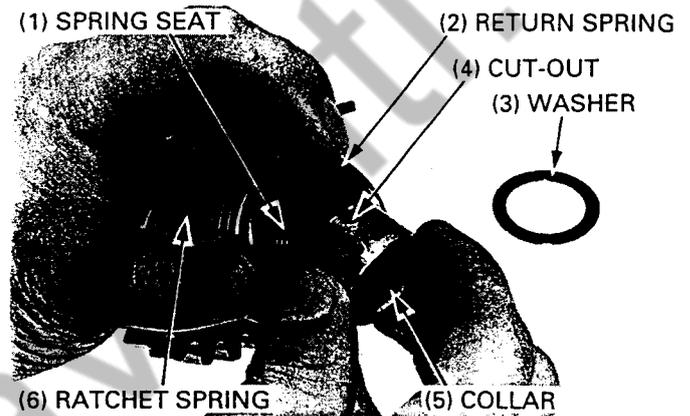
Install the following to the countershaft:

- Idle gear bushing
- Starter idle gear

NOTE

- Coat the bushing with engine oil and install it with the flange side facing toward the crankcase.

- Stopper plate



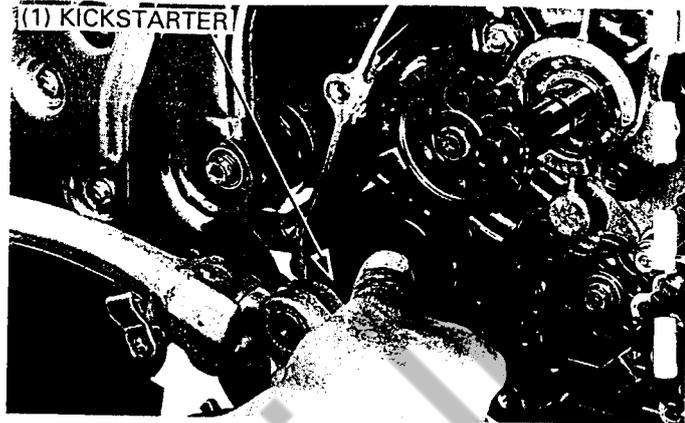
CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

Hook the kickstarter return spring on the crankcase. Temporarily install the kickstarter pedal on the starter spindle and rotate the spindle counterclockwise until the ratchet stub is clear of the stopper plate. Push the kickstarter assembly into the crankcase.

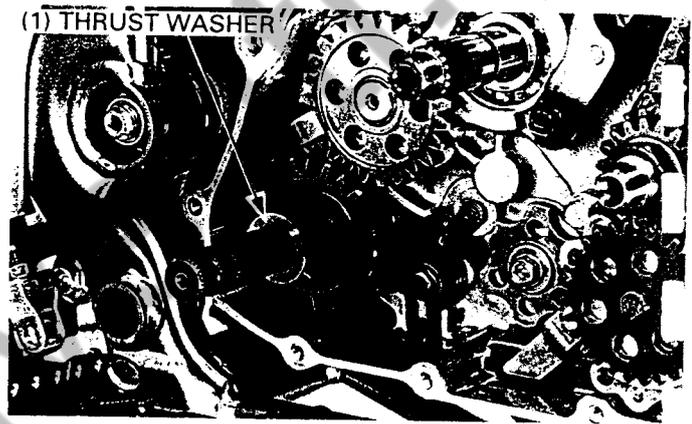
Remove the kickstarter pedal.

NOTE

- Be sure the rear thrust washer did not fall off the spindle during installation.



Install the thrust washer on the spindle. Install the clutch (page 9-10). Install the right crankcase cover (page 9-17).



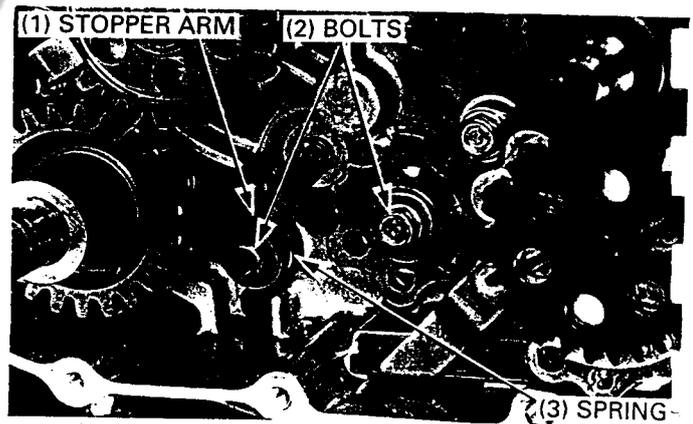
GEARSHIFT CAM

REMOVAL

Remove the clutch (page 9-5).

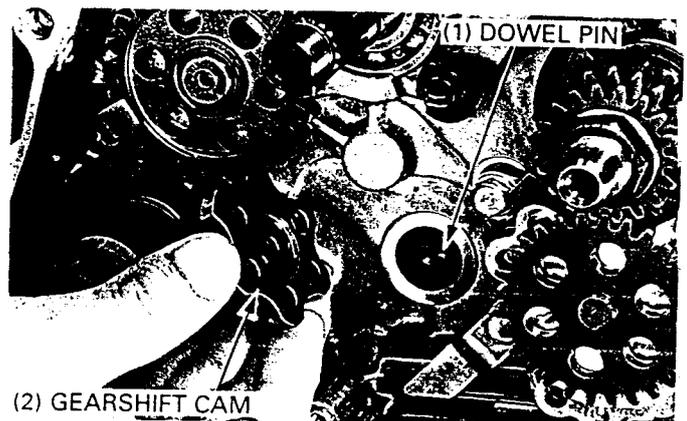
Remove the following:

- Center bolt
- Stopper arm pivot bolt
- Stopper arm
- Washer
- Spring



Gearshift

- Shift cam
- 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.

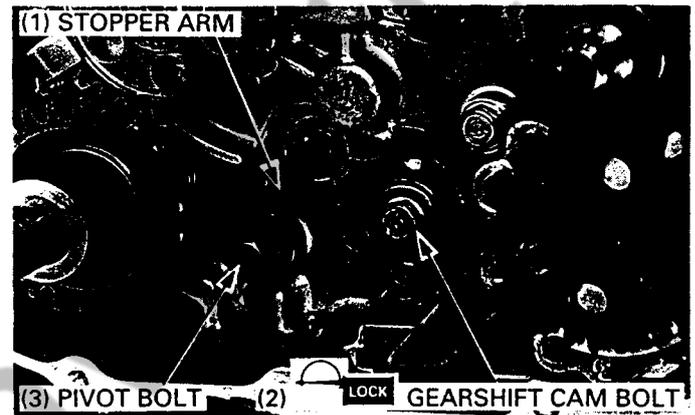
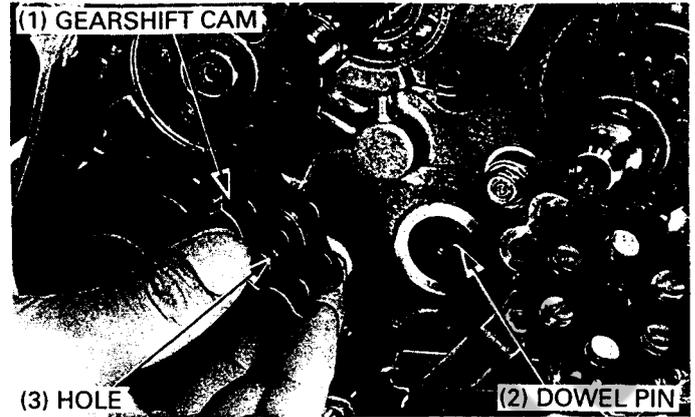
Apply the locking agent on the gearshift cam bolt threads, 6.5 ± 1.0 mm (0.26 \pm 0.04 in) from the tip.
Install and tighten the gearshift cam bolt.

TORQUE: 24 N-m (2.4 kgf-m, 17 lbf-ft)

Install the spring, washer 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 9-10).
Install the right crankcase cover (page 9-17).



RIGHT CRANKCASE COVER INSTALLATION

Install the gasket and dowel pins.

Install the right crankcase cover.

NOTE

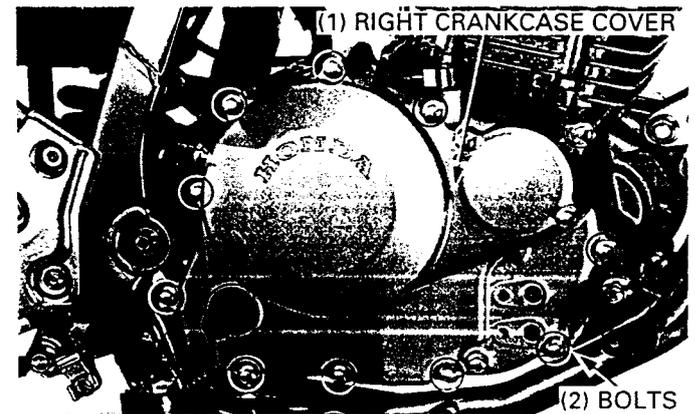
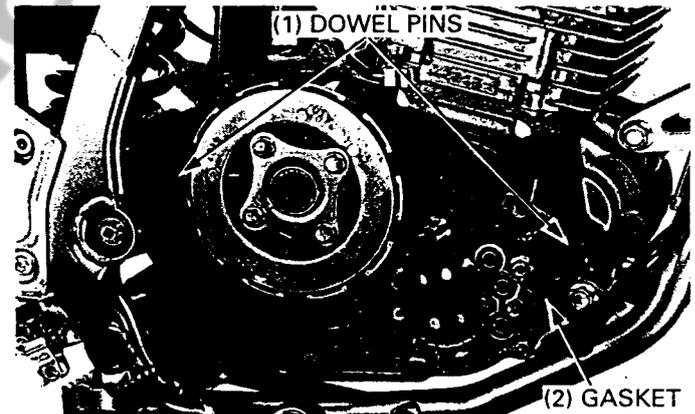
- Be careful not to damage the oil pass pipe when installing the cover.
- Be careful not to drop the oil pump O-ring when installing the cover.
- Be careful not to turn over the kickstarter spindle oil seal lip when installing the cover.

Install the right crankcase cover bolts.
Tighten the bolts to the specified torque.

NOTE

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

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

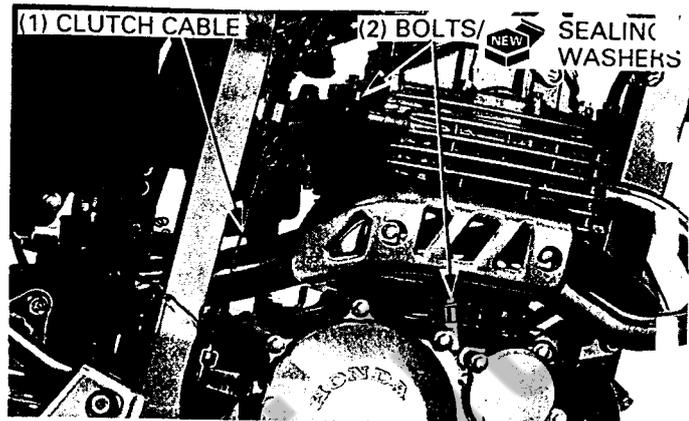


CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

Install the clutch cable to the clutch arm.
Install new sealing washers and the oil pass pipe bolt (right crankcase side).
Tighten the bolts to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Install the exhaust pipe (page 2-5).

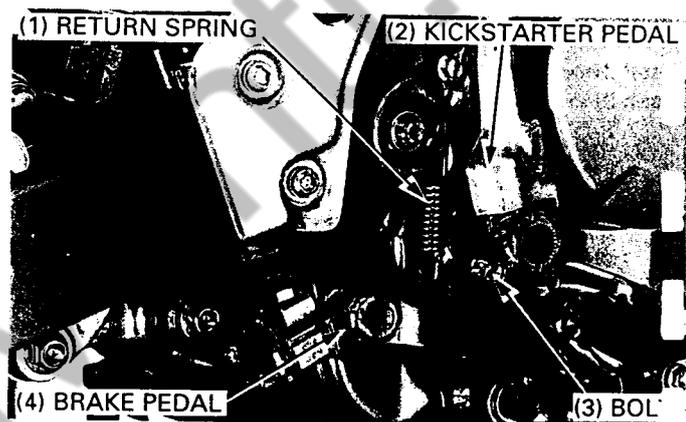


Install the brake pedal and return spring (page 14-25).
Install the kickstarter pedal and bolt.
Tighten the bolt to the specified torque.

TORQUE: 26 N·m (2.7 kgf·m, 20 lbf·ft)

Install the oil pipes (page 4-10).
Install the under guard (page 2-3).
Fill the engine with the recommended engine oil (page 3-11).

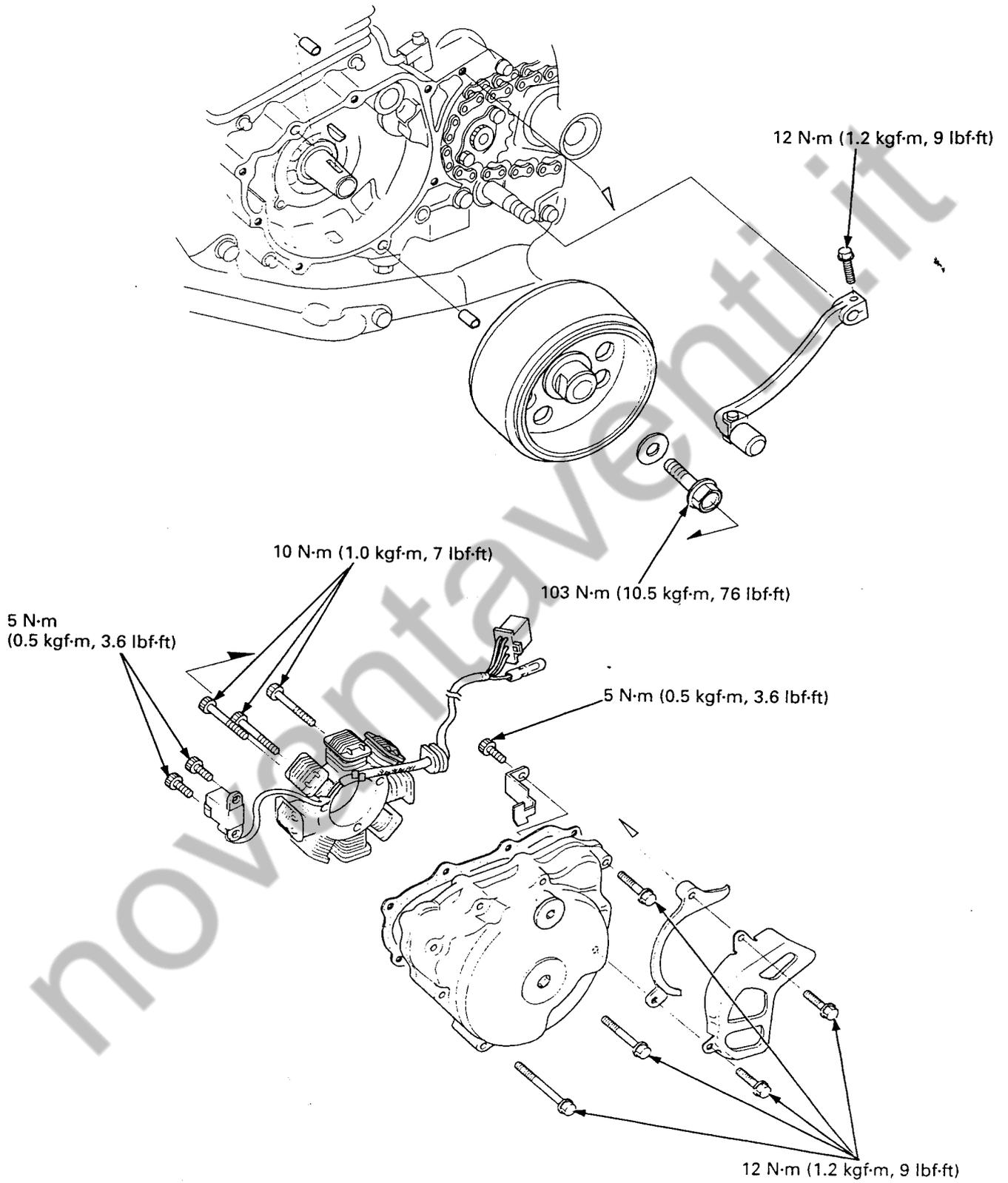
Perform the following inspection and adjustments.
— Clutch lever free play (page 3-17)
— Brake pedal height (page 3-17)



MEMO

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ALTERNATOR



10. ALTERNATOR

SERVICE INFORMATION	10-1	FLYWHEEL INSTALLATION	10-3
LEFT CRANKCASE COVER REMOVAL	10-2	LEFT CRANKCASE COVER INSTALLATION	10-4
FLYWHEEL REMOVAL	10-3		

SERVICE INFORMATION

GENERAL

- This section covers maintenance of the alternator. This service can be done with the engine installed in the frame.
- For alternator inspection, refer to section 16.

TORQUE VALUES

Left crankcase cover bolt	12 N·m (1.2 kgf·m, 9 lbf·ft)
Flywheel bolt	103 N·m (10.5 kgf·m, 76 lbf·ft) Apply oil to the threads and flange surface.
Stator bolt	10 N·m (1.0 kgf·m, 7 lbf·ft) Apply a locking agent to the threads.
Ignition pulse generator bolt	5 N·m (0.5 kgf·m, 3.6 lbf·ft) Apply a locking agent to the threads.
Alternator wire clamp bolt	5 N·m (0.5 kgf·m, 3.6 lbf·ft) Apply a locking agent to the threads.
Drive sprocket cover bolt	12 N·m (1.2 kgf·m, 9 lbf·ft)
Gearshift pedal bolt	12 N·m (1.2 kgf·m, 9 lbf·ft)

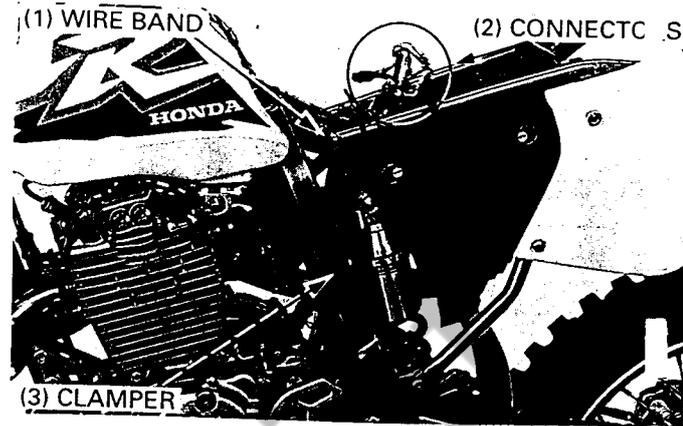
TOOLS

Common	
Flywheel holder	07725 - 0040000

ALTERNATOR

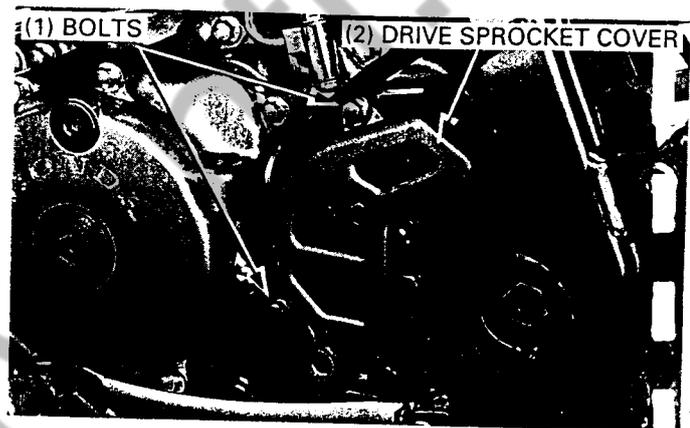
LEFT CRANKCASE COVER REMOVAL

Remove the seat (page 2-2).
Disconnect the alternator connectors and ignition pulse generator connector.
Remove the wire from the wire clamp and wire band.

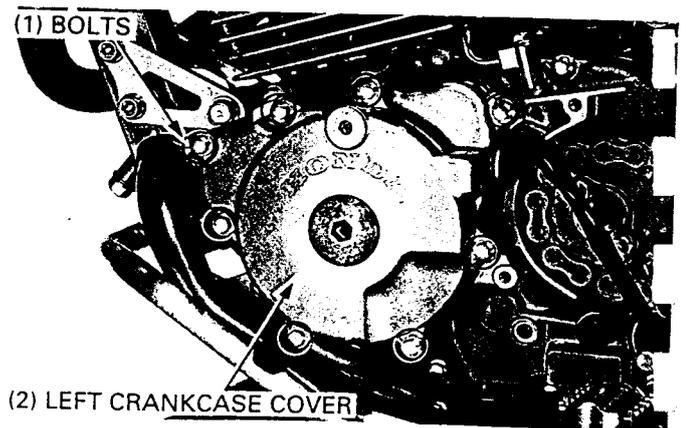


Remove the following:

- Gearshift pedal
- Drive sprocket cover
- Drive chain protector



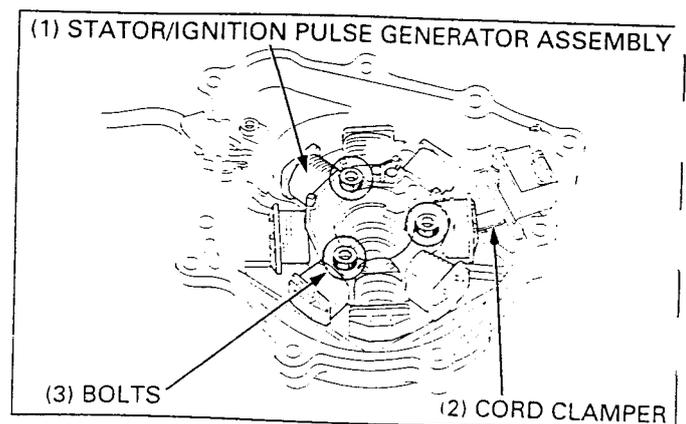
- Left crankcase cover bolts
- Left crankcase cover
- Dowel pins
- Gasket



STATOR/IGNITION PULSE GENERATOR REMOVAL

Remove the following:

- STATOR bolts
- Ignition pulse generator bolts
- Wire clamp
- STATOR/ignition pulse generator assembly

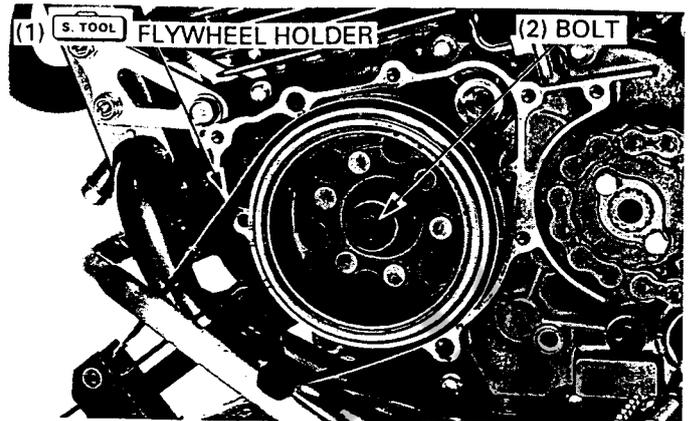


FLYWHEEL REMOVAL

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

TOOL:

Flywheel holder 07725 - 0040000

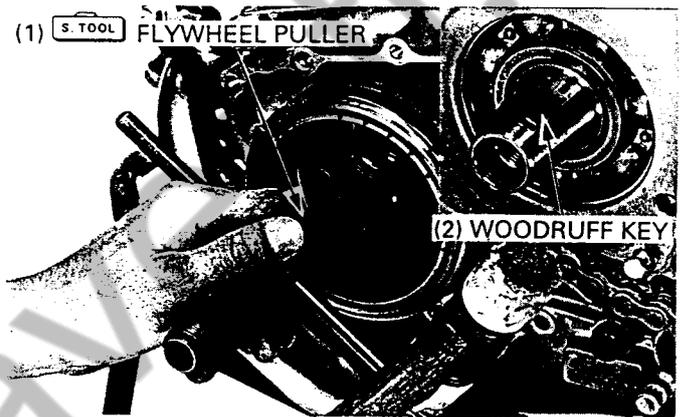


Remove the flywheel using the flywheel puller.

TOOL:

Flywheel puller 07733 - 0020001

Remove the woodruff key from the crankshaft.



FLYWHEEL INSTALLATION

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

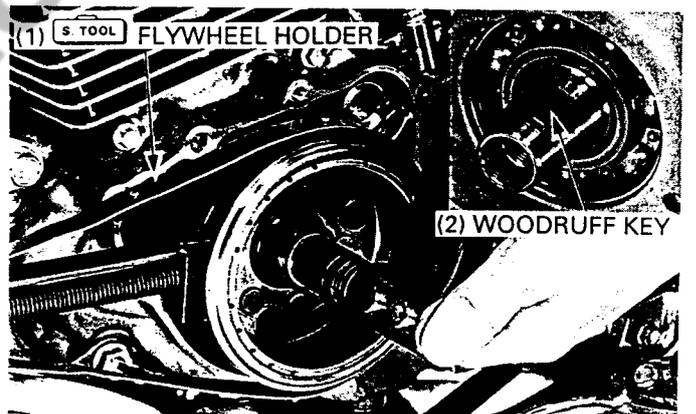
Install the flywheel by aligning the woodruff key on the crankshaft with the flywheel keyway.

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

TORQUE: 103 N·m (10.5 kgf·m, 76 lbf·ft)

TOOL:

Flywheel holder 07725 - 0040000



ALTERNATOR

LEFT CRANKCASE COVER INSTALLATION

Apply locking agent to the bolt threads of the stator bolts, ignition pulse generator bolt and alternator wire clamp bolt.

Install the following to the left crankcase cover:

- Stator/ignition pulse generator assembly
- Wire clamp/bolt

TORQUE: 5 N·m (0.5 kgf·m, 3.6 lbf·ft)

- Ignition pulse generator bolts

TORQUE: 5 N·m (0.5 kgf·m, 3.6 lbf·ft)

- Stator bolts

TORQUE: 10 N·m (1.0 kgf·m, 7.2 lbf·ft)

- Grommet

Install the following to the left crankcase:

- Dowel pins
- New gasket

- Left crankcase cover
- Left crankcase cover bolts

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

NOTE

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

- Drive chain protector
- Drive sprocket cover
- Drive sprocket cover bolts

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

- Gearshift pedal
- Gearshift pedal bolt

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

