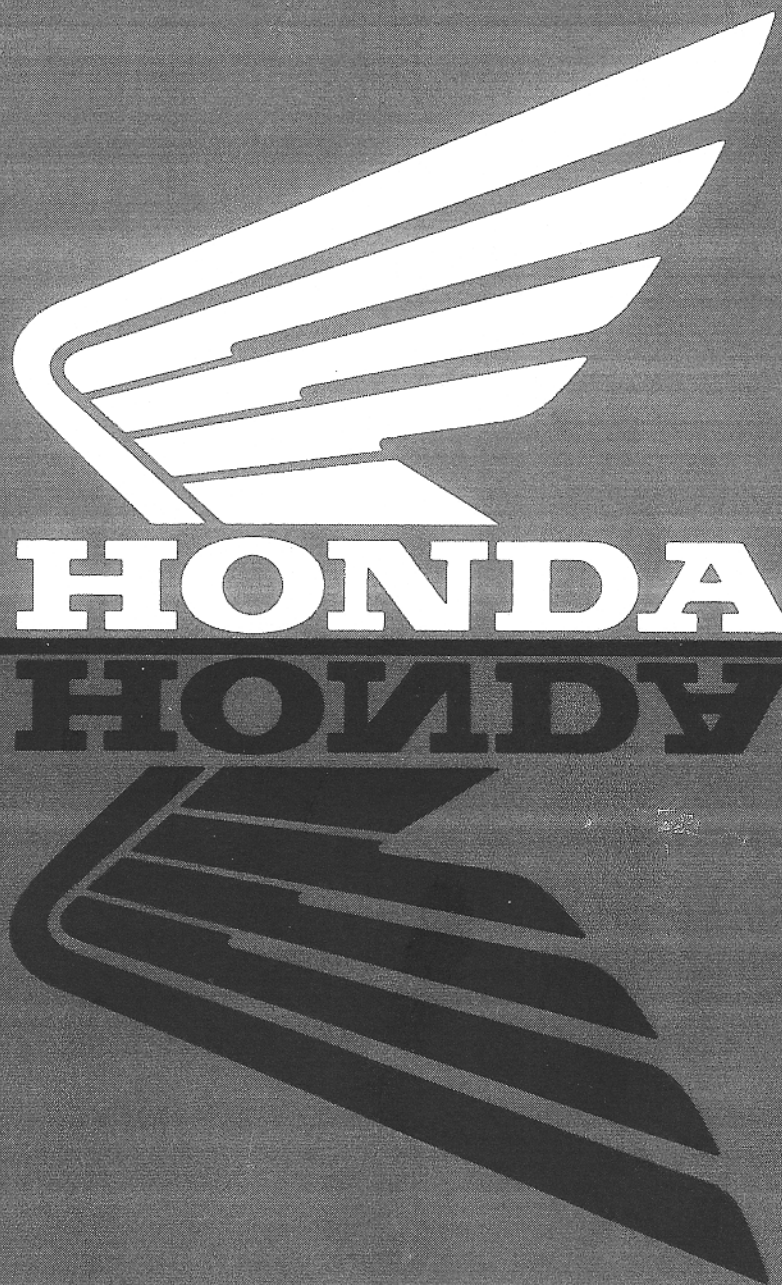
HONDA

SHOP MANUAL



XR650R$_Y$

HOW TO USE THIS MANUAL

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

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

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

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

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

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

HONDA MOTOR CO., LTD.
SERVICE PUBLICATION OFFICE

CONTENTS

IMPORTANT SAFETY NOTICE

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

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

NOTE: Gives helpful information.

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

Type Codes

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

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

SYMBOLS

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

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

1. GENERAL INFORMATION

GENERAL SAFETY

CARBON MONOXIDE

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

⚠WARNING

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

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

GASOLINE

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

⚠WARNING

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

HOT COMPONENTS

⚠WARNING

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

USED ENGINE OIL

⚠WARNING

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

BRAKE DUST

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

⚠WARNING

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

BRAKE FLUID

CAUTION:

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

NITROGEN PRESSURE

For shock absorber with a gas-filled reservoir:

⚠WARNING

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

COOLANT

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

⚠WARNING

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

CAUTION:

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

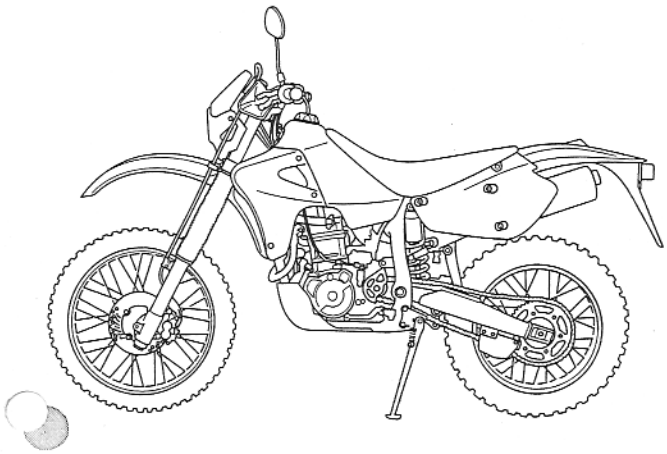
If it contacts your skin, wash the affected areas immediately with soap and water. If it contacts your eyes, flush them thoroughly with fresh water and get immediate medical attention. If it is swallowed, the victim must be forced to vomit, then rinse mouth and throat with fresh water before obtaining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

SERVICE RULES

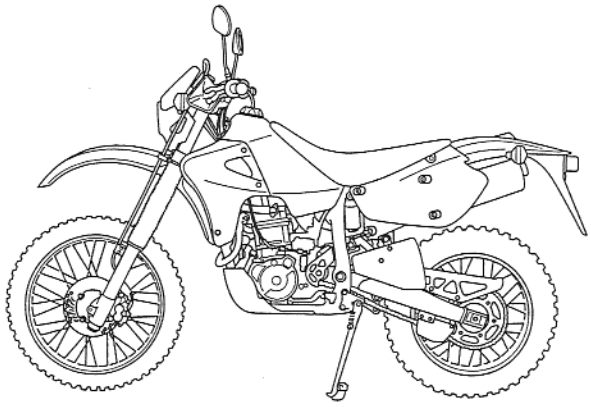
1. Use genuine HONDA or HONDA-recommended parts and lubricants or their equivalents. Parts that don't meet HONDA's design specifications may cause damage to the motorcycle.
2. Use the special tools designed for this product to avoid damage and incorrect assembly.
3. Use only metric tools when servicing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

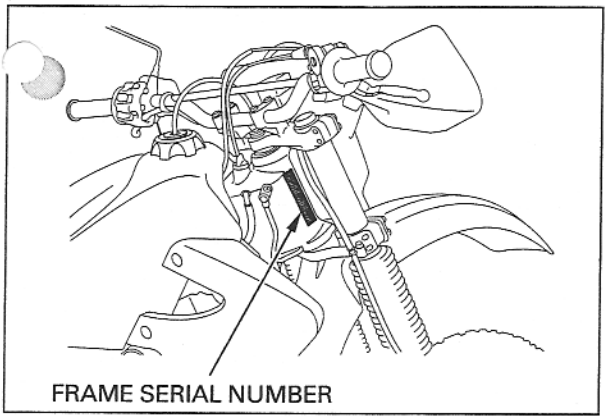
MODEL IDENTIFICATION

ED type:

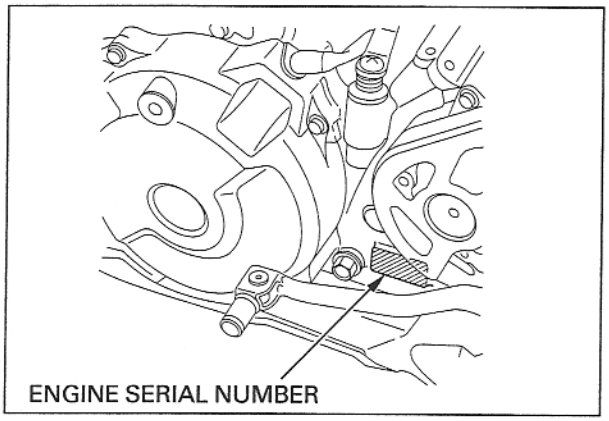


U type:

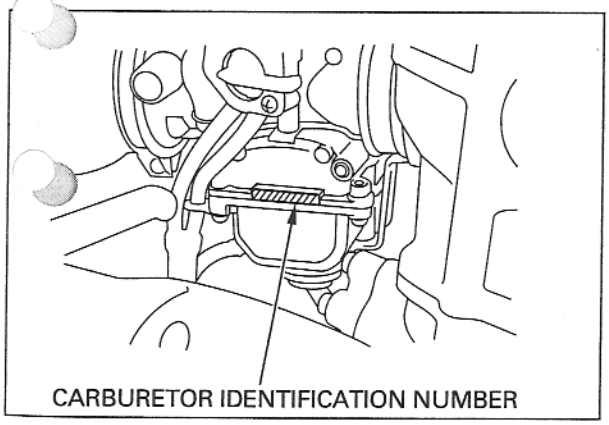




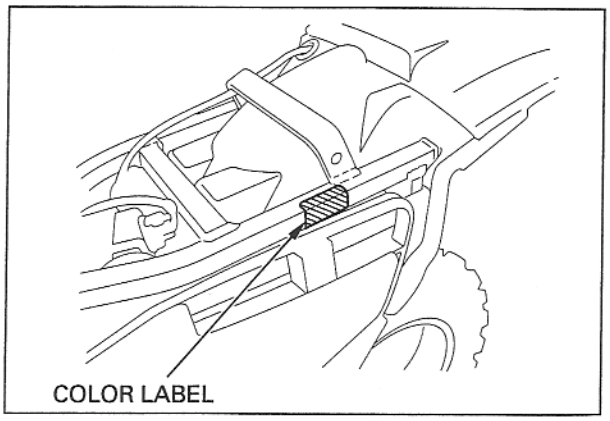
(1) FRAME SERIAL NUMBER
The frame serial number is stamped on the right side of the steering head.



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



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



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

SPECIFICATIONS

GENERAL

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

GENERAL (Cont'd)

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

LUBRICATION SYSTEM

Unit: mm (in)

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

FUEL SYSTEM

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

COOLING SYSTEM

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

CYLINDER HEAD/VALVES

Unit: mm (in)

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

CYLINDER/PISTON

Unit: mm (in)

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

CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

Unit: mm (in)

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

CRANKCASE/CRANKSHAFT/BALANCER

Unit: mm (in)

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

TRANSMISSION

Unit: mm (in)

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

FRONT WHEEL/SUSPENSION/STEERING

Unit: mm (in)

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

REAR WHEEL/SUSPENSION

Unit: mm (in)

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

HYDRAULIC BRAKE

Unit: mm (in)

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

ELECTRICAL SYSTEM

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

TORQUE VALUES

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

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

NOTES: 1. Apply a locking agent to the threads.
2. Apply grease to the threads.
3. Stake.
4. Apply oil to the threads and seating surface.
5. U-nut
6. CT bolt

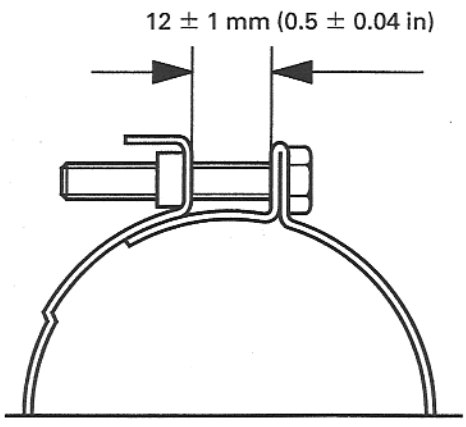
ENGINE

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

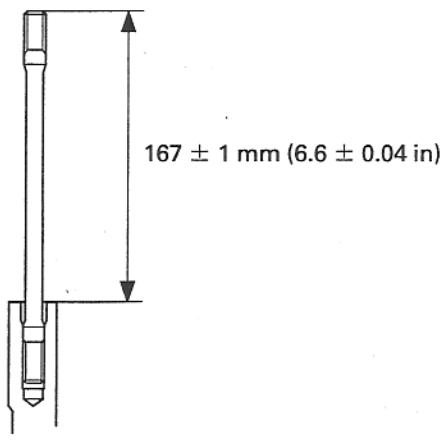
ENGINE (Cont'd)

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

Carburetor insulator clamp:



Cylinder stud bolt:



FRAME

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

FRAME (Cont'd)

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

TOOLS

NOTE: 1. Alternative tool.

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

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

LUBRICATION & SEAL POINTS

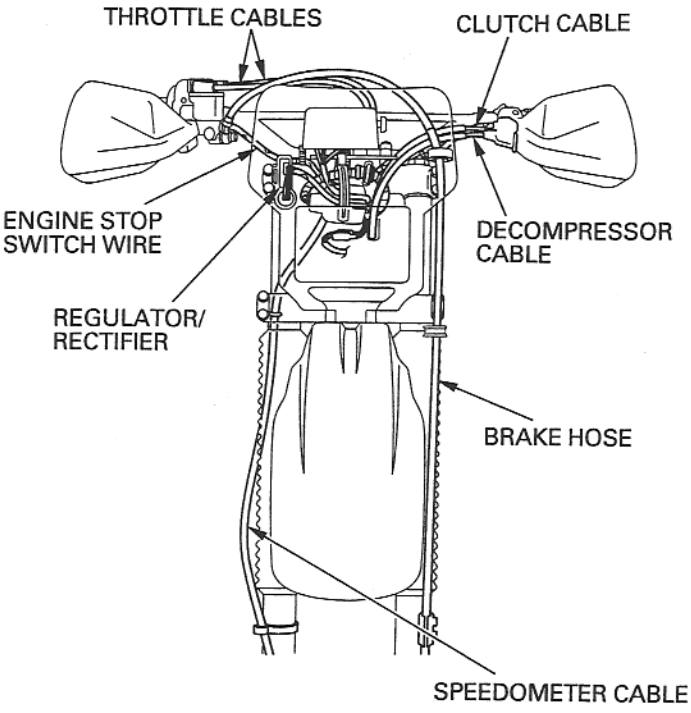
ENGINE LOCATION	MATERIAL	REMARKS
Cylinder head nut threads and seating surface Piston outer surface and piston pin hole Piston pin outer surface Piston ring whole surface Crankshaft big end Valve adjust screw lock nut threads Oil pump rotor sliding area Clutch disc lining surface Clutch center lock nut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

FRAME

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

CABLE & HARNESS ROUTING

ED type:



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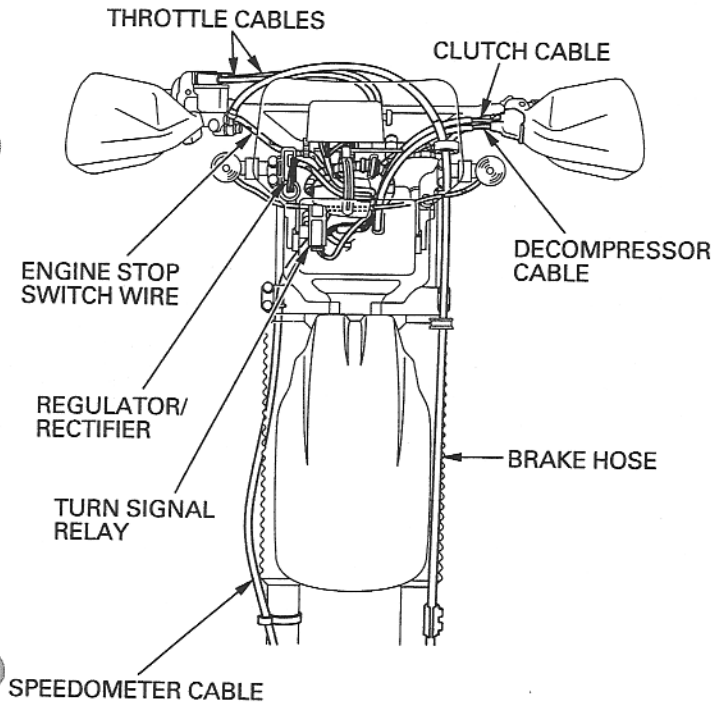

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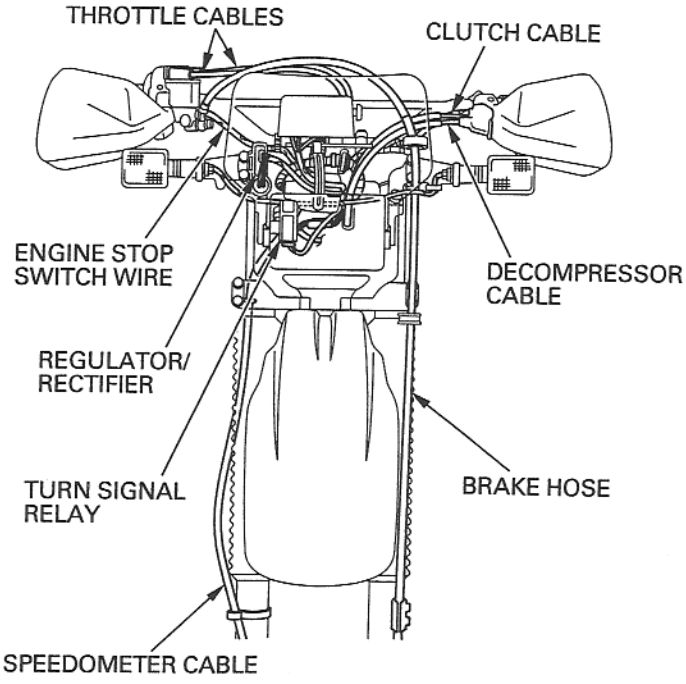
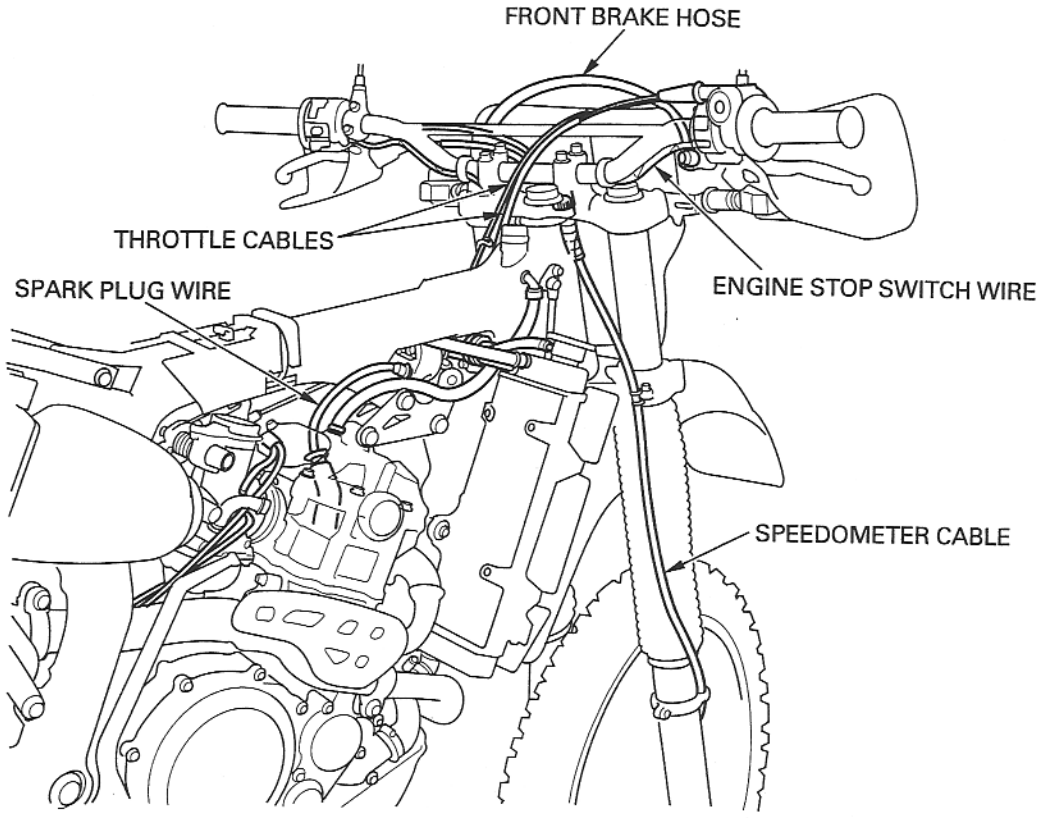
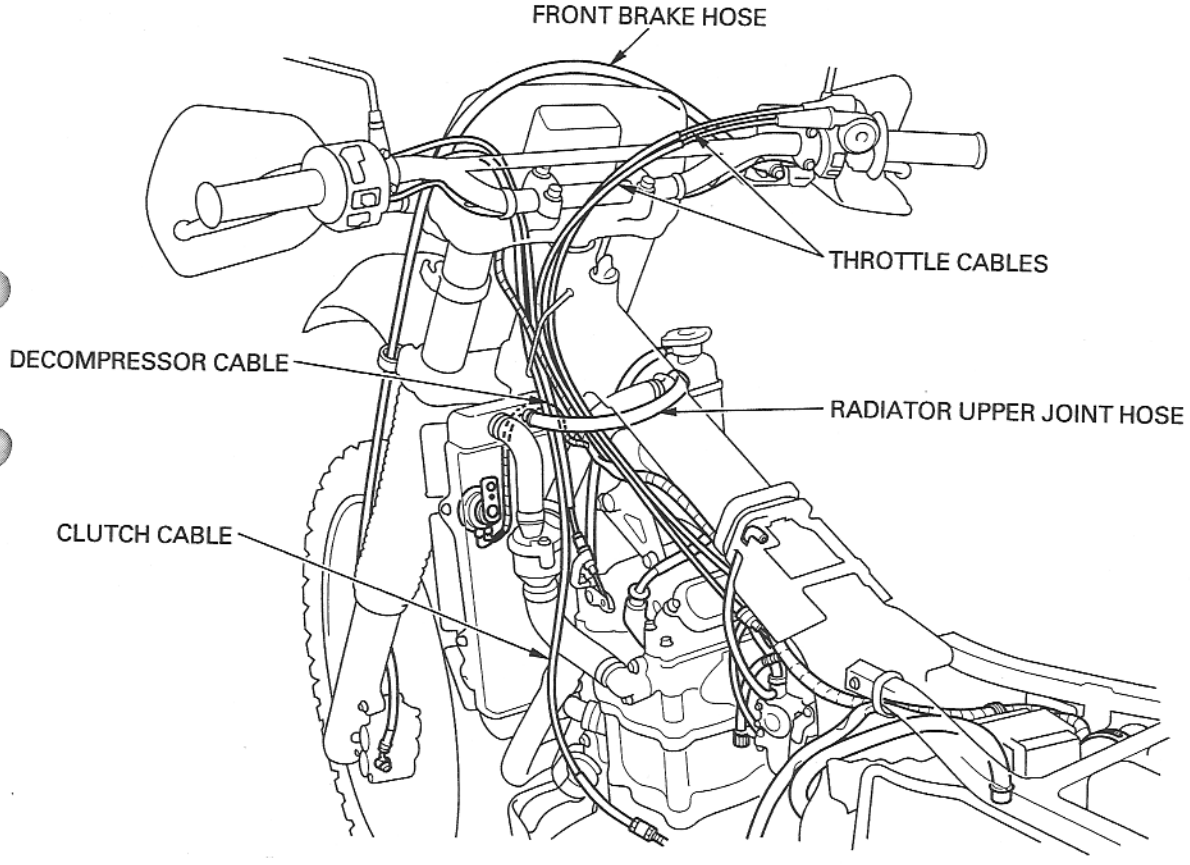
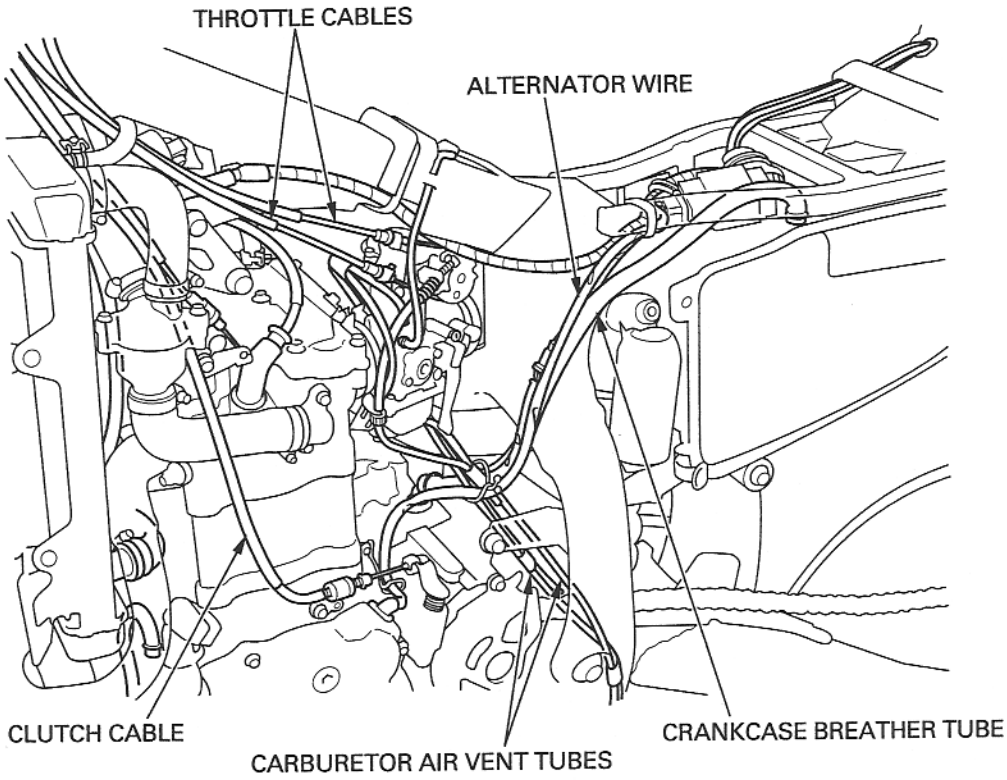
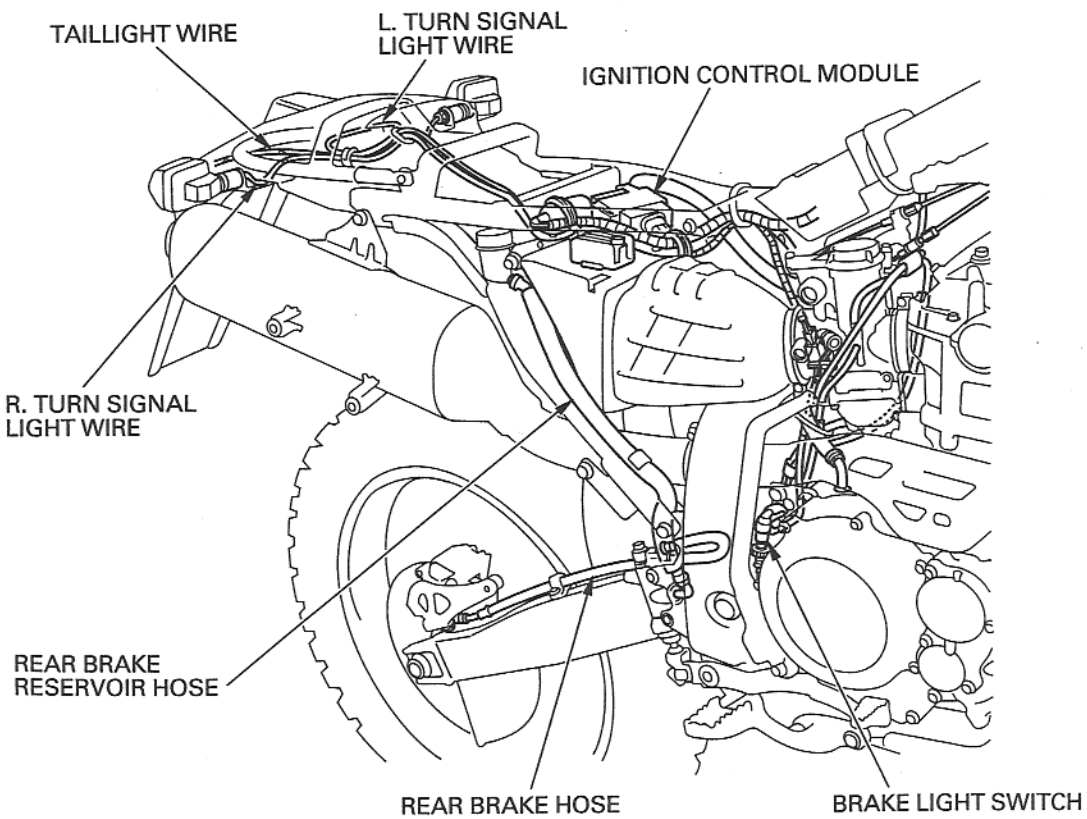



FRONT BRAKE HOSE
THROTTLE CABLES
SPARK PLUG WIRE
ENGINE STOP SWITCH WIRE
SPEEDOMETER CABLE


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


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


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

EMISSION CONTROL SYSTEM

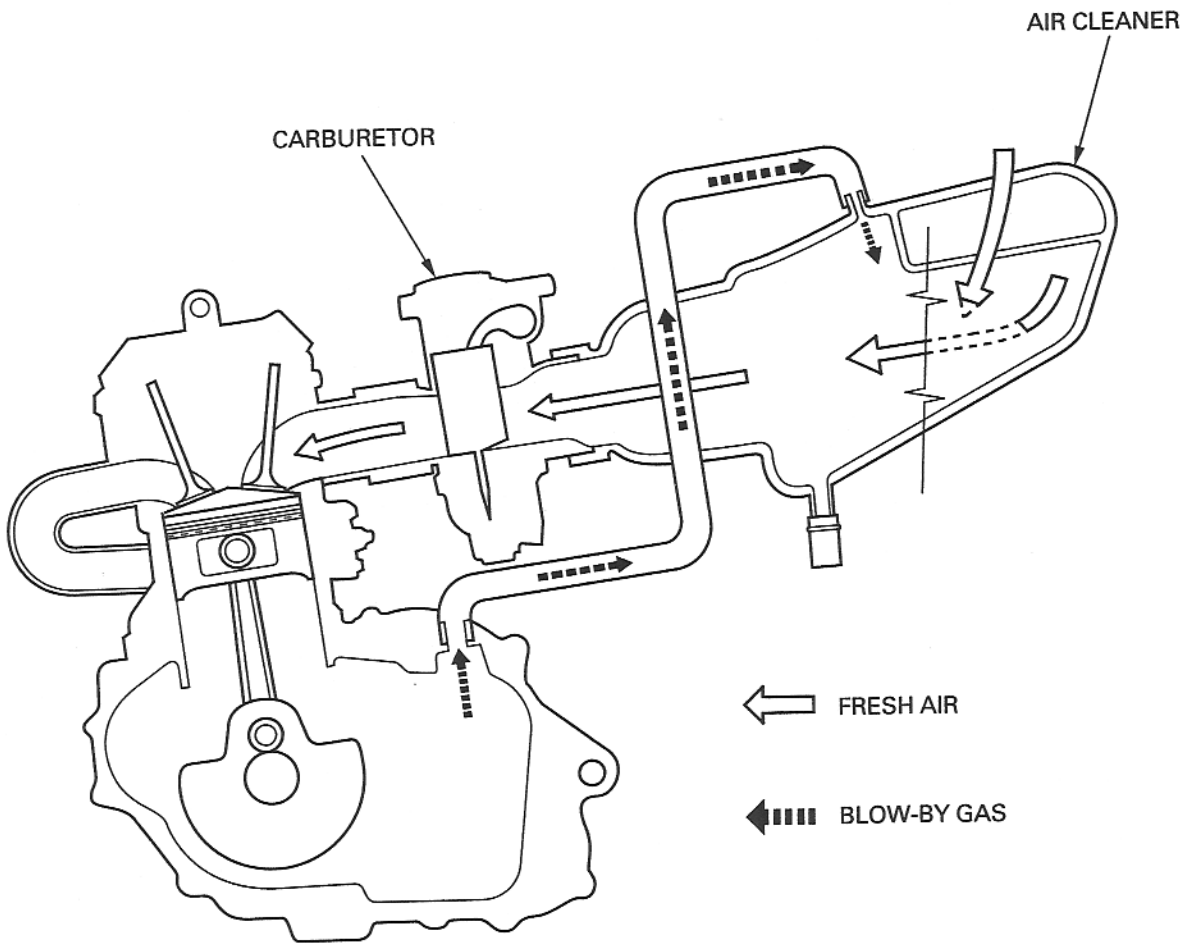
SOURCE OF EMISSIONS

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

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

CRANKCASE EMISSION CONTROL SYSTEM

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



MEMO

2. FRAME/BODY PANELS/EXHAUST SYSTEM

SERVICE INFORMATION

GENERAL

⚠WARNING

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

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

TORQUE VALUES

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

TROUBLESHOOTING

EXCESSIVE EXHAUST NOISE

- Broken exhaust system
- Exhaust gas leak

POOR PERFORMANCE

- Deformed exhaust system
- Exhaust gas leak
- Clogged muffler

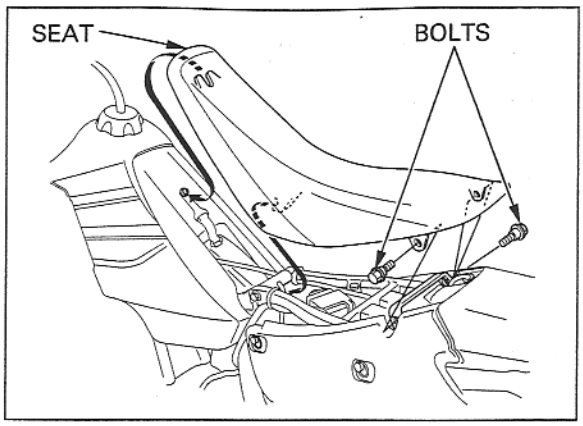
SEAT

REMOVAL

Remove the two bolts, collars and seat.

INSTALLATION

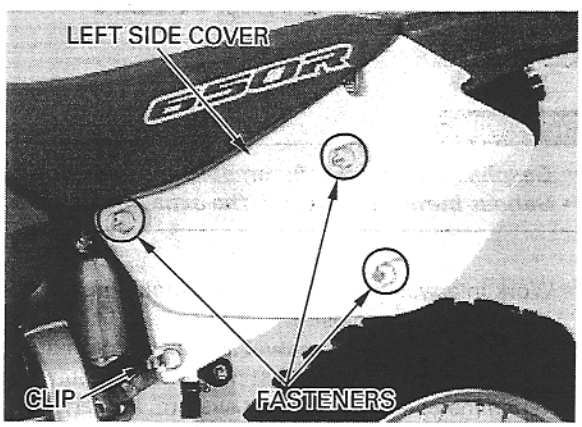
Align the hook of the seat with the mounting screw on the fuel tank and the seat prong with the sub-frame tab.
Install and tighten the seat mounting bolts.



SIDE COVERS

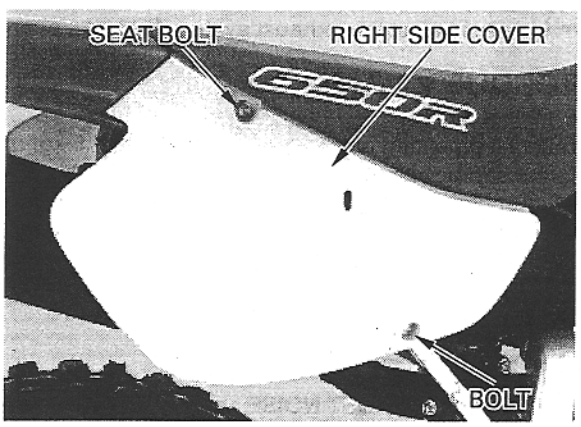
REMOVAL/INSTALLATION

LEFT SIDE:
Remove the fasteners and left side cover.



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

Installation is in the reverse order of removal.



RADIATOR SHROUD

REMOVAL/INSTALLATION

Remove the screws.
Remove the bolt and radiator shroud.

Installation is in the reverse order of removal.