

2005-2007



SERVICE MANUAL

CR250R

A Few Words About Safety

Service Information

The service and repair information contained in this manual is intended for use by qualified, professional technicians. Attempting service or repairs without the proper training, tools, and equipment could cause injury to you or others. It could also damage the vehicle or create an unsafe condition.

This manual describes the proper methods and procedures for performing service, maintenance, and repairs. Some procedures require the use of specially designed tools and dedicated equipment. Any person who intends to use a replacement part, service procedure or a tool that is not recommended by Honda, must determine the risks to their personal safety and the safe operation of the vehicle.

If you need to replace a part, use genuine Honda parts with the correct part number or an equivalent part. We strongly recommend that you do not use replacement parts of inferior quality.

For Your Customer's Safety

Proper service and maintenance are essential to the customer's safety and the reliability of the vehicle. Any error or oversight while servicing a vehicle can result in faulty operation, damage to the vehicle, or injury to others.

For Your Safety

Because this manual is intended for the professional service technician, we do not provide warnings about many basic shop safety practices (e.g., Hot parts—wear gloves). If you have not received shop safety training or do not feel confident about your knowledge of safe servicing practice, we recommended that you do not attempt to perform the procedures described in this manual.

Some of the most important general service safety precautions are given below. However, we cannot warn you of every conceivable hazard that can arise in performing service and repair procedures. Only you can decide whether or not you should perform a given task.

Important Safety Precautions

Make sure you have a clear understanding of all basic shop safety practices and that you are wearing appropriate clothing and using safety equipment. When performing any service task, be especially careful of the following:

- Read all of the instructions before you begin, and make sure you have the tools, the replacement or repair parts, and the skills required to perform the tasks safely and completely.
- Protect your eyes by using proper safety glasses, goggles or face shields any time you hammer, drill, grind, pry or work around pressurized air or liquids, and springs or other stored-energy components. If there is any doubt, put on eye protection.
- Use other protective wear when necessary, for example gloves or safety shoes. Handling hot or sharp parts can cause severe burns or cuts. Before you grab something that looks like it can hurt you, stop and put on gloves.
- Protect yourself and others whenever you have the vehicle up in the air. Any time you lift the vehicle, either with a hoist or a jack, make sure that it is always securely supported. Use jack stands.

Make sure the engine is off before you begin any servicing procedures, unless the instruction tells you to do otherwise. This will help eliminate several potential hazards:

- Carbon monoxide poisoning from engine exhaust. Be sure there is adequate ventilation whenever you run the engine.
- Burns from hot parts or coolant. Let the engine and exhaust system cool before working in those areas.
- Injury from moving parts. If the instruction tells you to run the engine, be sure your hands, fingers and clothing are out of the way.

Gasoline vapors and hydrogen gases from batteries are explosive. To reduce the possibility of a fire or explosion, be careful when working around gasoline or batteries.

- Use only a nonflammable solvent, not gasoline, to clean parts.
- Never drain or store gasoline in an open container.
- Keep all cigarettes, sparks and flames away from the battery and all fuel-related parts.

⚠ WARNING

Improper service or repairs can create an unsafe condition that can cause your customer or others to be seriously hurt or killed.

Follow the procedures and precautions in this manual and other service materials carefully.

⚠ WARNING

Failure to properly follow instructions and precautions can cause you to be seriously hurt or killed.

Follow the procedures and precautions in this manual carefully.

HOW TO USE THIS MANUAL

This service manual describes the service procedures for the CR250R.

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.

Section 4 through 14 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 procedures.

If you don't know the source of the trouble, go to Section 16 Troubleshooting.

Your safety, and the safety of others, is very important. To help you make informed decisions we have provided safety messages and other information throughout this manual. Of course, it is not practical or possible to warn you about all the hazards associated with servicing this vehicle.

You must use your own good judgement.

You will find important safety information in a variety of forms including:

- Safety Labels – on the vehicle
- Safety Messages – preceded by a safety alert symbol  and one of three signal words, DANGER, WARNING, or CAUTION.

These signal words mean:

DANGER

You WILL be KILLED or SERIOUSLY HURT if you don't follow instructions.

WARNING

You CAN be KILLED or SERIOUSLY HURT if you don't follow instructions.

CAUTION

You CAN be HURT if you don't follow instructions.

- Instructions – how to service this vehicle correctly and safely.

As you read this manual, you will find information that is preceded by a **NOTICE** symbol. The purpose of this message is to help prevent damage to your vehicle, other property, or the environment.

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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 will 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

1

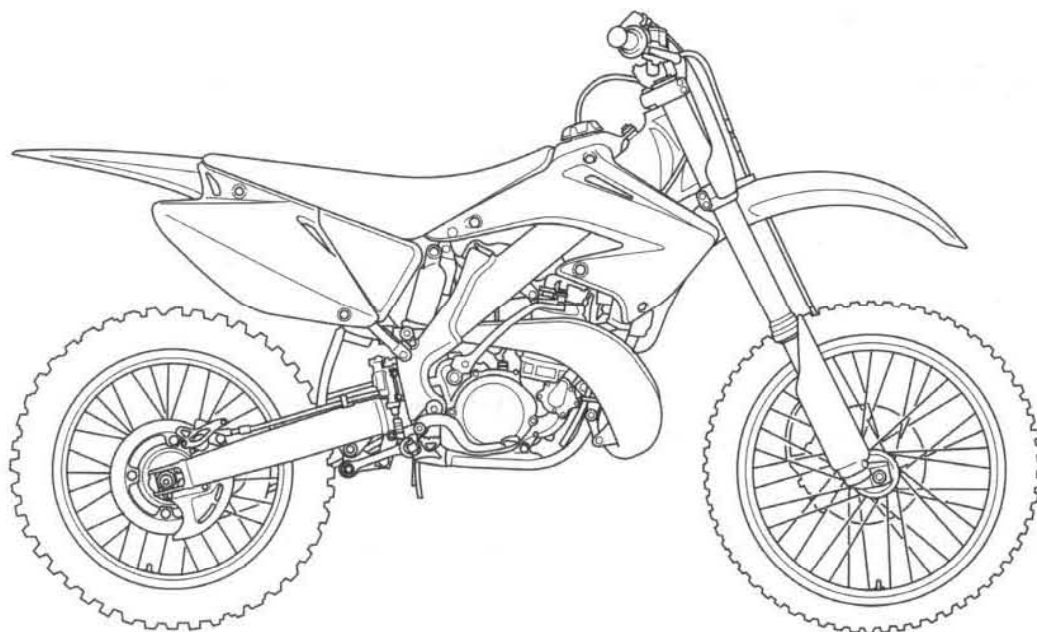
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GENERAL INFORMATION

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 shown on page 1-17, Cable and Harness Routing.

MODEL IDENTIFICATION

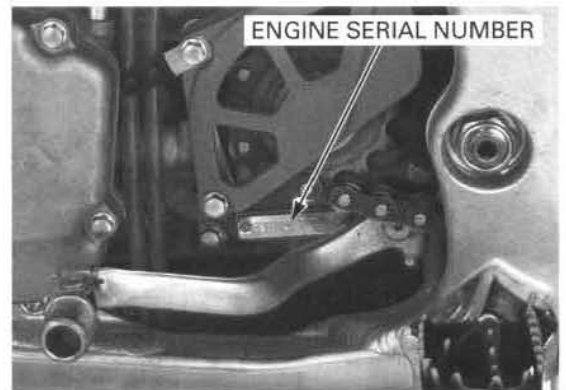


GENERAL INFORMATION

The Vehicle Identification Number (VIN) is stamped on the right side of the steering head.



The engine serial number is stamped on the left side of the crankcase.



The carburetor identification number is stamped on the right side of the carburetor body.



GENERAL INFORMATION

GENERAL SPECIFICATIONS

	ITEM	SPECIFICATION
DIMENSIONS	Overall length	2,185 mm (86.0 in)
	Overall width	821 mm (32.3 in)
	Overall height	1,275 mm (50.2 in)
	Wheelbase	1,487 mm (58.5 in)
	Seat height	950 mm (37.4 in)
	Footpeg height	429 mm (16.9 in)
	Ground clearance	347 mm (13.7 in)
	Dry weight	96.4 kg (212.5 lbs)
FRAME	Frame type	Twin-tube
	Front suspension	Telescopic fork
	Front wheel axle travel	280 mm (11.0 in)
	Front suspension cushion stroke	315 mm (12.4 in)
	Rear suspension	Swingarm/Pro-Link
	Rear wheel axle travel	316 mm (12.4 in)
	Rear damper	Decarbon type with nitrogen gas filled damper
	Front tire size	80/100-21 51M
	Rear tire size	110/90-19 62M
	Tire brand	D742F (Dunlop)
		D756 (Dunlop)
	Front brake	Hydraulic single disc
	Front brake swept area	334.5 cm ² (51.8 in ²)
	Rear brake	Hydraulic single disc
	Rear brake swept area	391.1 cm ² (60.6 in ²)
	Caster angle	27°08'
ENGINE	Trail length	111.7 mm (4.4 in)
	Fuel tank capacity	7.7 liter (2.0 US gal, 1.7 Imp gal)
	Bore and stroke	66.4 x 72.0 mm (2.61 x 2.83 in)
	Displacement	249.3 cm ³ (15.21 cu-in)
	Compression ratio	9.0 : 1
	Lubrication system	Fuel/oil mix
	Cooling system	Liquid cooled
	Air filtration	Oiled polyurethane foam
CARBURETOR	Carburetor type	Piston valve type
	Venturi diameter	38 mm (1.5 in)
DRIVE TRAIN	Clutch system	Multi-plate, wet
	Clutch operation system	Cable operated
	Transmission	Constant mesh, 5-speeds
	Primary reduction	3.000 (63/21)
	Final reduction	3.769 (49/13)
	Gear ratio	1.800 (27/15)
		1.470 (25/17)
		1.210 (23/19)
		1.000 (21/21)
		0.869 (20/23)
ELECTRICAL	Gearshift pattern	Left foot operated return system, 1 - N - 2 - 3 - 4 - 5
	Ignition system	CDI (Capacitive Discharge Ignition)

LUBRICATION SYSTEM SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Recommended engine oil		Pro Honda HP2 2-stroke oil or equivalent motor oil	—
Fuel/oil mixture ratio		32 : 1	—
Transmission oil capacity	At draining	0.65 liter (0.69 US qt, 0.57 Imp qt)	—
	At disassembly	0.70 liter (0.74 US qt, 0.62 Imp qt)	—
Recommended transmission oil		Pro Honda HP Trans Oil, Pro Honda GN4 or HP4 (without molybdenum additives) 4-stroke oil or equivalent motor oil API service classification: SG or higher except oils labeled as energy conserving on the circular API service label JASO T 903 standard: MA Viscosity: SAE 10W-40	—

FUEL SYSTEM SPECIFICATIONS

ITEM	SPECIFICATIONS
Carburetor identification number	TMX11A
Main jet	#420
Slow jet	#40
Jet needle	6DGY26-65
Jet needle clip position	3rd groove from top
Air screw initial opening	2 turns out
Float level	7.5 mm (0.30 in)
Throttle grip free play	3 – 5 mm (1/8 – 1/4 in)

COOLING SYSTEM SPECIFICATIONS

ITEM		SPECIFICATIONS
Coolant capacity	At change	0.97 liter (1.02 US qt, 0.85 Imp qt)
	At disassembly	1.10 liter (1.16 US qt, 0.97 Imp qt)
Radiator cap relief pressure		108 – 137 kPa (1.1 – 1.4 kg/cm ² , 16 – 20 psi)
Recommended antifreeze		Pro Honda HP Coolant or an equivalent high quality ethylene glycol antifreeze containing silica-free corrosion inhibitors
Standard coolant concentration		1 : 1 mixture with distilled water

GENERAL INFORMATION

CYLINDER HEAD/CYLINDER/PISTON SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Cylinder head warpage			—	0.05 (0.002)
Cylinder	I.D.	A	66.398 – 66.405 (2.6141 – 2.6244)	66.430 (2.615)
		B	66.390 – 66.398 (2.6138 – 2.6141)	66.428 (2.615)
	Out of round		—	0.05 (0.002)
	Taper		—	0.05 (0.002)
	Warpage		—	0.05 (0.002)
Piston, piston ring	Piston mark direction		"IN" mark facing toward the intake side	—
	Piston O.D.	A	66.340 – 66.348 (2.6118 – 2.6121)	66.320 (2.6110)
		B	66.333 – 66.340 (2.6115 – 2.6118)	66.313 (2.6107)
	Piston O.D. measurement point		13.5 - 28.5 mm (0.53 - 1.12 in) from bottom of skirt	—
	Piston pin bore I.D.		18.007 – 18.013 (0.7089 – 0.7092)	18.02 (0.709)
	Piston pin O.D.		17.994 – 18.000 (0.7084 – 0.7087)	17.98 (0.707)
	Piston-to-piston pin clearance		0.007 – 0.019 (0.0003 – 0.0007)	0.04 (0.0016)
	Piston ring end gap		0.40 – 0.55 (0.016 – 0.022)	0.65 (0.026)
Cylinder-to-piston clearance			0.050 – 0.065 (0.0020 – 0.0026)	0.085 (0.0033)
Connecting rod small end I.D.			21.997 – 22.009 (0.8660 – 0.8665)	22.02 (0.867)

CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Clutch lever free play		10 – 20 (3/8 – 3/4)	–
Clutch spring free length		45.7 (1.83)	44.7 (1.76)
Clutch outer guide I.D.		23.000 – 23.021 (0.9055 – 0.9063)	23.03 (0.907)
Clutch disc thickness		2.92 – 3.08 (0.114 – 0.121)	2.85 (0.112)
Clutch plate warpage		–	0.20 (0.008)
Kickstarter pinion gear I.D.		22.007 – 22.028 (0.8664 – 0.8672)	22.05 (0.868)
Kickstarter spindle O.D.		21.959 – 21.980 (0.8645 – 0.8654)	21.95 (0.864)
Kickstarter idle gear I.D.		20.020 – 20.041 (0.7882 – 0.7890)	20.07 (0.790)
Kickstarter idle gear bushing	I.D.	17.000 – 17.018 (0.6693 – 0.6700)	17.04 (0.671)
	O.D.	19.979 – 20.000 (0.7866 – 0.7874)	19.96 (0.786)
Countershaft O.D. at kickstarter idle gear		16.966 – 16.984 (0.6680 – 0.6687)	16.95 (0.667)

CRANKCASE/CRANKSHAFT/TRANSMISSION SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Crankshaft	Runout		—	0.05 (0.002)
	Connecting rod big end side clearance		0.4 – 0.8 (0.02 – 0.03)	0.9 (0.04)
	Connecting rod big end radial clearance		0.010 – 0.022 (0.0004 – 0.0009)	0.03 (0.001)
Transmission	Gear I.D.	M4	28.007 – 28.028 (1.1026 – 1.1035)	28.05 (1.104)
		M5	25.020 – 25.041 (0.9850 – 0.9859)	25.07 (0.987)
		C1	22.020 – 22.041 (0.8669 – 0.8678)	22.07 (0.869)
		C2	30.020 – 30.041 (1.1819 – 1.1827)	30.07 (1.184)
		C3	25.020 – 25.041 (0.9850 – 0.9859)	25.07 (0.987)
	Busing O.D.	M4	27.979 – 27.980 (1.1007 – 1.1015)	27.94 (1.100)
		C1	21.979 – 22.000 (0.8653 – 0.8661)	21.95 (0.864)
		C2	29.979 – 30.000 (1.1802 – 1.1811)	29.95 (1.179)
	Busing I.D.	C1	19.000 – 19.021 (0.7480 – 0.7489)	19.04 (0.750)
		C2	27.000 – 27.021 (1.0630 – 1.0638)	27.04 (1.064)
	Gear-to-bushing clearance	M4	0.027 – 0.069 (0.0011 – 0.0027)	0.11 (0.004)
		C1	0.020 – 0.062 (0.0008 – 0.0024)	0.12 (0.005)
		C2	0.020 – 0.062 (0.0008 – 0.0024)	0.12 (0.005)
	Mainshaft O.D.	at M5	24.959 – 24.980 (0.9826 – 0.9835)	24.94 (0.982)
		at clutch outer guide	22.959 – 22.980 (0.9039 – 0.9047)	22.95 (0.904)
	Counter-shaft O.D.	at C1 bushing	18.959 – 18.980 (0.7464 – 0.7472)	18.94 (0.746)
		at C2 bushing	26.959 – 26.980 (1.0614 – 1.0622)	26.94 (1.061)
		at C3	24.959 – 24.979 (0.9826 – 0.9834)	24.96 (0.983)
	Gear-to-shaft clearance	M5	0.040 – 0.082 (0.0016 – 0.0032)	0.13 (0.005)
		C3	0.041 – 0.082 (0.0016 – 0.0032)	0.11 (0.004)
	Bushing-to-shaft clearance	C1	0.020 – 0.062 (0.0008 – 0.0024)	0.12 (0.005)
		C3	0.020 – 0.062 (0.0008 – 0.0024)	0.12 (0.005)
Shift fork, shift fork shaft	Fork claw thickness		4.93 – 5.00 (0.194 – 0.197)	4.8 (0.19)
	Shift fork I.D.	C	11.003 – 11.024 (0.4332 – 0.4340)	11.04 (0.435)
		R/L	12.035 – 12.056 (0.4738 – 0.4746)	12.07 (0.475)
	Fork shaft O.D.	C	10.983 – 10.994 (0.4324 – 0.4328)	10.97 (0.432)
		R/L	11.966 – 11.984 (0.4711 – 0.4718)	11.95 (0.470)

GENERAL INFORMATION

FRONT WHEEL/SUSPENSION/STEERING SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Cold tire pressure		100 kPa (1.0 kgf/cm ² , 15 psi)	—
Axle runout		—	0.20 (0.008)
Wheel rim runout	Radial	—	2.0 (0.08)
	Axial	—	2.0 (0.08)
Wheel hub-to-rim distance		28 (1.1)	—
Fork	Spring free length	494 (19.45)	487 (19.17)
	Tube runout	—	0.20 (0.01)
	Recommended fork fluid	Pro Honda HP Fork Oil 5W or equivalent	—
	Fluid capacity	394 ± 4cm ³ (13.3 ± 0.14 US oz, 13.9 ± 0.14 Imp oz)	—
Compression damping adjuster standard position		10 clicks out from full in	—
Rebound damping adjuster standard position		14 clicks out from full in	—

REAR WHEEL/SUSPENSION SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Cold tire pressure		100 kPa (1.0 kgf/cm ² , 15 psi)	—
Axle runout		—	0.20 (0.008)
Wheel rim runout	Radial	—	2.0 (0.08)
	Axial	—	2.0 (0.08)
Wheel hub-to-rim distance		45.5 (1.79)	—
Drive chain slack		25 – 35 (1 – 1-3/8)	—
Drive chain size/link	DID	520DMA2 – 114	—
Drive chain slider thickness		—	5 (0.2)
Drive chain tensioner roller O.D.	Upper	—	25 (0.98)
	Lower	—	39 (1.54)
Shock absorber	Damper gas pressure	981 kPa (10.0 kgf/cm ² , 142 psi)	—
	Damper compressed gas	Nitrogen gas	—
	Damper rod compressed force at 10 mm compressed	20.0 – 24.0 kg (44.1 – 52.9 lbf)	—
	Spring direction	Narrow wound end of coil facing down	—
	Spring installed length	258.1 (10.16)	—
High speed compression damping adjuster standard position		2-5/12 – 2-11/12 turns out from full in	—
Low speed compression damping adjuster standard position		7 clicks out from full in	—
Rebound damping adjuster standard position		5 – 8 clicks out from full in	—

HYDRAULIC BRAKE SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Front	Specified brake fluid	DOT 4	—
	Brake pad wear indicator	—	1.0 (0.04)
	Brake disc thickness	3.0 (0.12)	2.5 (0.10)
	Brake disc runout	—	0.15 (0.006)
	Master cylinder I.D.	11.00 (0.433)	—
	Caliper cylinder I.D.	27.00 (1.063)	—
Rear	Specified brake fluid	DOT 4	—
	Brake pad wear indicator	—	1.0 (0.04)
	Brake disc thickness	4.0 (0.16)	3.5 (0.14)
	Brake disc runout	—	0.15 (0.006)
	Master cylinder I.D.	9.52 (0.375)	—
	Caliper cylinder I.D.	22.65 (1.892)	—

IGNITION SYSTEM/ALTERNATOR SPECIFICATIONS

ITEM		SPECIFICATION
Spark plug	Standard	BR9EG-N-8 (NGK)
Spark plug gap		0.7 – 0.8 mm (0.027 – 0.031 in)
Ignition coil resistance (at 20 °C/68 °F)	Primary	0.1 – 0.3 Ω
	Secondary with plug cap	9 – 16 k Ω
	Secondary without plug cap	4 – 8 k Ω
Ignition coil peak voltage		100 V minimum
Ignition pulse generator resistance (at 20 °C/68 °F)		180 – 280 Ω
Ignition pulse generator peak voltage		0.7 V minimum
Alternator charging coil resistance (at 20 °C/68 °F)		0.5 – 4.0 Ω
Throttle position sensor (TPS) resistance (at 20 °C/68 °F)		4 – 6 k Ω (Blue/green - Yellow/red)
Ignition timing ("F" mark) with the TPS 3P connector disconnected		13.5° BTDC/4,000 rpm

GENERAL INFORMATION

STANDARD 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)	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)

ENGINE & FRAME TORQUE VALUES

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

NOTE:

1. Apply a locking agent to the threads.
2. Apply oil to the threads and seating surface.
3. Stake.
4. U-nut.
5. UBS bolt/nut.

ENGINE

MAINTENANCE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Oil drain bolt	1	12	29 (3.0, 21)	
Spark plug	1	14	17 (1.7, 13)	
Oil check bolt	1	6	10 (1.0, 7)	

FUEL SYSTEM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Throttle cable holder	1	10	2.5 (0.25, 1.8)	
Float pin set screw	1	4	2.0 (0.2, 1.5)	
Main jet	1	5.3	2.0 (0.2, 1.5)	
Slow jet	1	4	1.0 (0.1, 0.7)	
Carburetor top screw	3	4	2.0 (0.2, 1.5)	
Throttle stop screw lock nut	1	5	2.0 (0.2, 1.5)	
Float chamber screw	3	5	3.4 (0.35, 2.5)	
Carburetor drain plug	1	22	3.9 (0.4, 2.9)	
Choke valve	1	—	3.4 (0.35, 2.5)	
Float valve seat set screw	1	3	1.0 (0.1, 0.7)	
Mesh filter plate bolt	1	4	2.0 (0.2, 1.5)	
Carburetor insulator bolt	6	6	12 (1.2, 9)	
Throttle position sensor torx bolt	1	4	2.0 (0.2, 1.5)	NOTE 1
Reed valve stopper screw	6	3	1.0 (0.1, 0.7)	

COOLING SYSTEM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Water pump impeller	1	7	12 (1.2, 9)	
Water pump cover bolt	5	6	12 (1.2, 9)	
Coolant drain bolt	1	6	10 (1.0, 7)	

GENERAL INFORMATION

CYLINDER HEAD/CYLINDER/PISTON

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Cylinder stud bolt	6	8	12 (1.2, 9)	NOTE 1
Cylinder head nut	6	8	27 (2.8, 20)	
Cylinder mounting nut	4	10	39 (4.0, 29)	

RC VALVE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
RC valve cover bolt	4	5	5.0 (0.5, 3.7)	
RC valve pulley nut	1	6	10 (1.0, 7)	
RC valve stopper plate bolt	1	6	10 (1.0, 7)	
Cylinder front cover bolt	7	6	9 (0.9, 6.6)	

CLUTCH/GEARSHIFT LINKAGE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Gearshift drum center pin	1	8	22 (2.2, 16)	NOTE 1
Gearshift drum stopper arm bolt	1	6	12 (1.2, 9)	
Guide plate bolt	3	8	27 (2.8, 20)	
Clutch center lock nut	1	18	80 (8.2, 59)	

CRANKCASE/CRANKSHAFT/TRANSMISSION

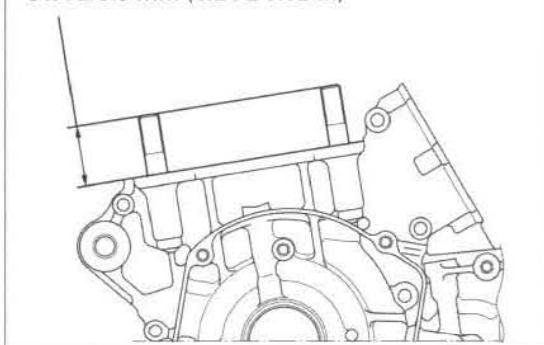
ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Countershaft bearing set plate bolt	2	6	10 (1.0, 7)	NOTE 1
Gearshift drum bearing set plate screw	2	6	10 (1.0, 7)	NOTE 1
Crankcase 7 mm bolt	7	7	16 (1.6, 12)	NOTE 5
Drive sprocket bolt	1	8	31 (3.2, 23)	
Primary drive gear bolt	1	10	64 (6.5, 47)	

ALTERNATOR

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Flywheel nut	1	12	54 (5.5, 40)	

Crankcase stud bolt:

31.4 ± 0.5 mm (1.24 ± 0.02 in)



GENERAL INFORMATION

FRAME

FRAME/BODY PANELS/EXHAUST SYSTEM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Seat mounting bolt	2	8	27 (2.8, 20)	
Sub-frame mounting bolt (upper)	1	8	30 (3.1, 22)	
Sub-frame mounting bolt (lower)	2	8	30 (3.1, 22)	
Seat bracket screw	1	5	5.9 (0.6, 4.4)	
Rear fender (front mounting bolt)	2	6	13 (1.3, 10)	
Rear fender (rear mounting bolt/nut)	2	6	13 (1.3, 10)	

MAINTENANCE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Drive chain adjusting bolt lock nut	2	8	27 (2.8, 20)	

ENGINE MOUNTING

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Engine hanger plate nut (frame side)	2	8	34 (3.5, 25)	
Engine hanger plate nut (engine side)	1	10	54 (5.5, 40)	
Engine front mounting nut	1	10	54 (5.5, 40)	
Engine lower mounting nut	1	10	54 (5.5, 40)	

CLUTCH/GEARSHIFT LINKAGE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Gearshift pedal pinch bolt	1	6	12 (1.2, 9)	
Kickstarter pedal bolt	1	8	38 (3.9, 28)	

FRONT WHEEL/SUSPENSION/STEERING

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Front axle nut	1	16	88 (9.0, 65)	
Front axle holder bolt	4	8	20 (2.0, 15)	
Front spoke nipple	36	BC 3.5	3.68 (0.4, 2.7)	
Front rim lock	1	8	12 (1.2, 9)	
Front brake disc nut	6	6	16 (1.6, 12)	NOTE 4
Steering stem nut	1	26	108 (11.0, 80)	
Steering stem adjusting nut	1	30	7 (0.7, 5.2)	
Fork tube top pinch bolt	4	8	22 (2.2, 16)	
Fork tube bottom pinch bolt	4	8	20 (2.0, 15)	
Fork cap	2	39	30 (3.1, 22)	
Fork center bolt	2	22	69 (7.0, 51)	
Fork center bolt lock nut	2	12	22 (2.2, 16)	
Fork air pressure release screw	2	5	1.2 (0.1, 0.9)	
Fork damper	2	50	34 (3.5, 25)	
Fork protector mounting bolt	6	6	7 (0.7, 5.2)	NOTE 1
Handlebar upper holder bolt	4	8	22 (2.2, 16)	
Handlebar lower holder nut	2	10	44 (4.5, 32)	NOTE 4
Clutch lever pivot bolt	1	6	2.0 (0.2, 1.5)	
Clutch lever pivot nut	1	6	10 (1.0, 7)	
Clutch lever bracket holder bolt	2	6	8.8 (0.9, 6.5)	
Throttle housing mounting bolt	2	6	8.8 (0.9, 6.5)	
Throttle housing cover screw	1	4	1.5 (0.2, 1.1)	
Engine stop button screw	1	4	1.5 (0.2, 1.1)	

GENERAL INFORMATION

REAR WHEEL/BRAKE/SUSPENSION

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Rear axle nut	1	22	128 (13.1, 94)	NOTE 4
Rear spoke nipple	32	4.5	3.7 (0.4, 2.7)	
Rear rim lock	1	8	12 (1.2, 9)	
Rear brake disc bolt	4	6	16 (1.6, 12)	
Final driven sprocket nut	6	8	32 (3.3, 24)	
Rear wheel bearing retainer	1	50	44 (4.5, 32)	
Swingarm pivot nut	1	14	88 (9.0, 65)	NOTE 4
Shock arm nut (swingarm side)	1	12	53 (5.4, 39)	NOTE 2, 4
Shock arm nut (shock link side)	1	12	53 (5.4, 39)	NOTE 2, 4
Shock link nut (frame side)	1	12	53 (5.4, 39)	NOTE 2, 4
Shock absorber mounting nut	2	10	44 (4.5, 32)	NOTE 4
Shock absorber spring lock nut	1	60	44 (4.5, 32)	
Upper drive chain roller bolt	1	8	12 (1.2, 9)	
Lower drive chain roller nut	1	6	12 (1.2, 9)	
Drive chain slider screw	2	5	4 (0.4, 3.0)	NOTE 4
Shock absorber damper rod end nut	1	12	37 (3.8, 27)	NOTE 3
Shock absorber damping adjuster	1	27	29 (3.0, 21)	
Step mounting bolt (upper)	2	12	55 (5.6, 41)	
Step mounting bolt (lower)	2	8	30 (3.1, 22)	

HYDRAULIC BRAKE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Brake hose oil bolt	4	10	34 (3.5, 25)	
Brake lever adjuster lock nut	1	5	5.9 (0.6, 4.4)	
Front brake hose guide bolt	1	6	5.2 (0.5, 3.8)	
Rear brake hose guide screw	2	5	1.2 (0.1, 0.9)	
Front master cylinder holder bolt	2	6	9.9 (1.0, 7.3)	
Front caliper mounting bolt	2	8	30 (3.1, 22)	NOTE 1
Brake lever pivot bolt	1	6	1.0 (0.1, 0.7)	
Brake lever pivot nut	1	6	5.9 (0.6, 4.4)	
Caliper bleeder valve	2	8	5.4 (0.6, 4.0)	
Rear brake disc guard mounting bolt	2	6	6.8 (0.7, 5.0)	
Rear master cylinder mounting bolt	2	6	13 (1.3, 10)	
Front caliper pin bolt	2	8	22 (2.2, 16)	NOTE 1
Brake caliper pad pin	2	10	18 (1.8, 13)	
Brake caliper pad pin plug	1	10	2 (0.2, 1.5)	
Rear caliper pin bolt	1	12	27 (2.8, 20)	
Rear caliper bracket pin bolt	1	8	12 (1.2, 9)	NOTE 1
Brake pedal pivot bolt	1	10	36 (3.7, 27)	
Rear master cylinder joint lock nut	1	6	5.9 (0.6, 4.4)	

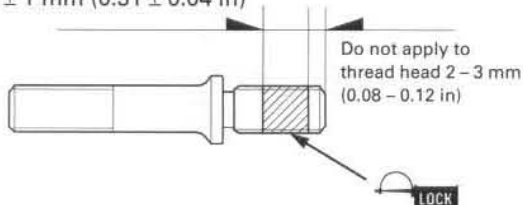
GENERAL INFORMATION

LUBRICATION & SEAL POINTS

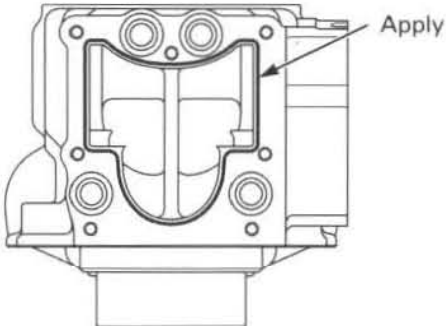
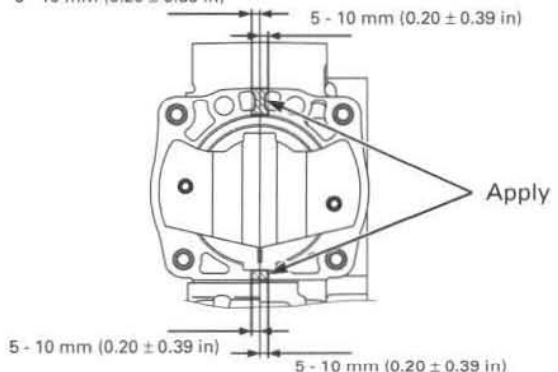
ENGINE

LOCATION	MATERIAL	REMARKS
Connecting rod big end Connecting rod small end and needle bearing Both crankshaft journal Piston outer surface Piston pin outer surface Piston ring and ring groove Cylinder bore	Pro Honda HP2 2-stroke Oil or equivalent	
RC valve 6 mm hole inner surface Exhaust valve shaft outer surface Mainshaft/countershaft spline and gear spinning area Kickstarter spindle serration Kickstarter spindle pinion gear spinning area Clutch lifter cam area Right crankcase outside bearing area (water pump, kickstarter) Gearshift spindle serration Gearshift drum groove Shift fork pawl Shift fork shaft surface Each gear teeth, rolling contact area Each bearing Clutch outer sliding surface Clutch lifter lever cam Clutch lifter sliding surface	Molybdenum oil solution (mixture of the engine oil and molybdenum disul- fide grease with the ratio 1 : 1)	
Oil seal lips Water seal lips	Multi-purpose grease	
Countershaft bearing set plate screw threads Gearshift drum bearing set plate bolt threads Shift drum guide plate bolt threads Cylinder stud bolt threads (stud 8 mm side)	Pro Honda Anaerobic Thread Lock or equivalent	Coating width: 6.5 ± 1 mm Coating width: 6.5 ± 1 mm Coating width: 6.5 ± 1 mm

8 ± 1 mm (0.31 ± 0.04 in)



GENERAL INFORMATION

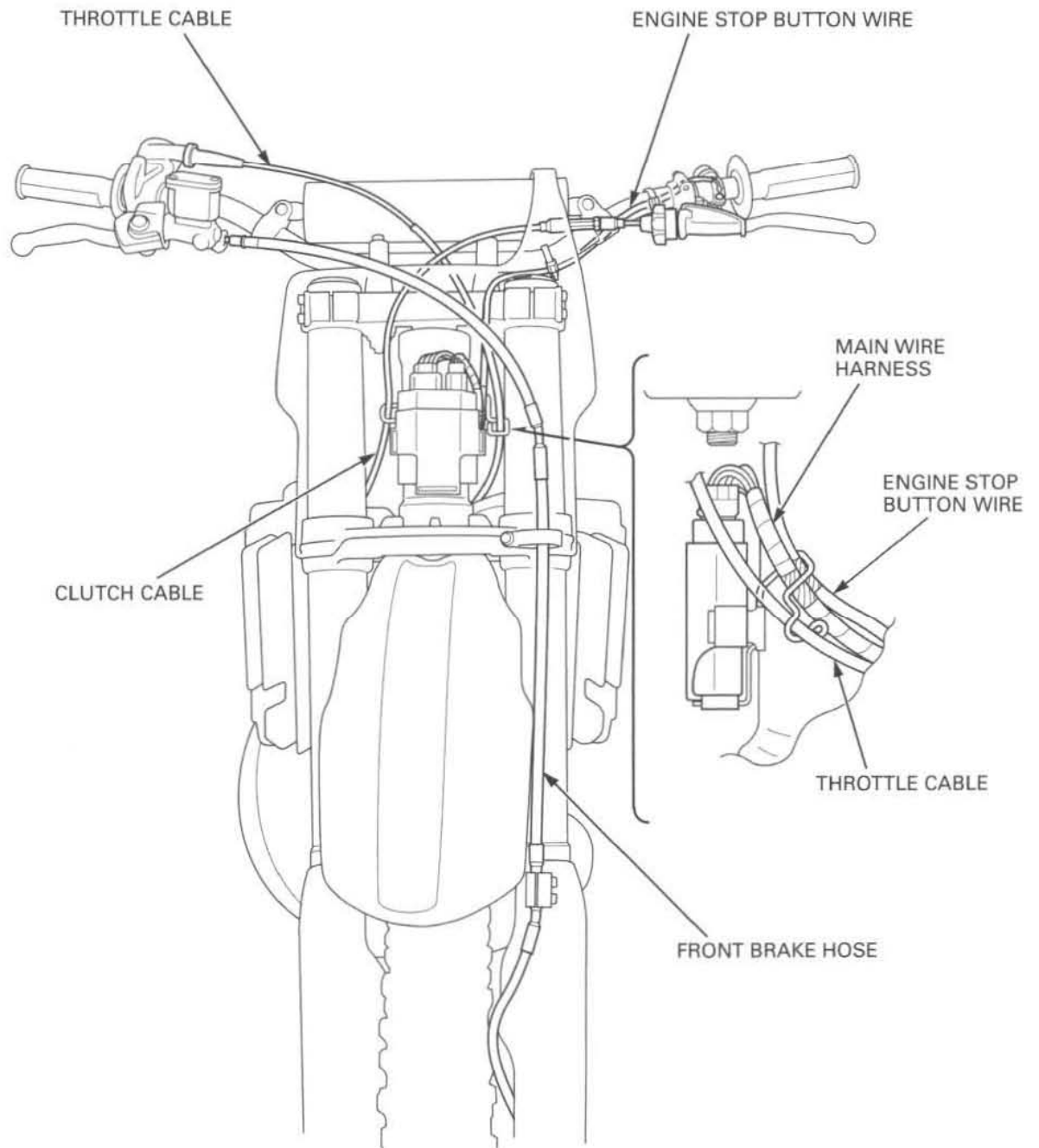
LOCATION	MATERIAL	REMARKS
Cylinder front cover mating surface 	Hondabond HT	
Crankcase mating surface 5 - 10 mm (0.20 ± 0.39 in)  5 - 10 mm (0.20 ± 0.39 in)		

GENERAL INFORMATION

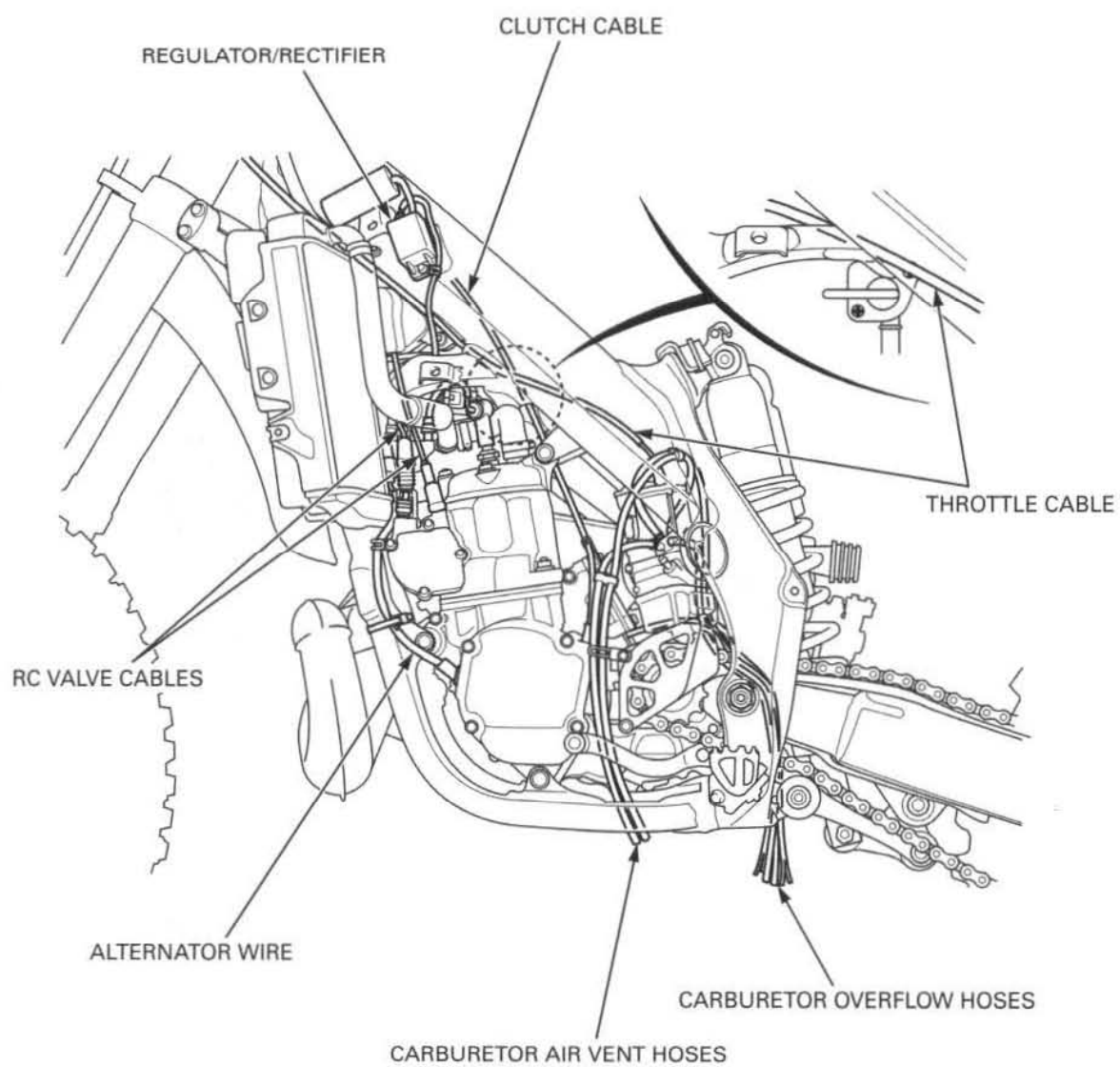
FRAME

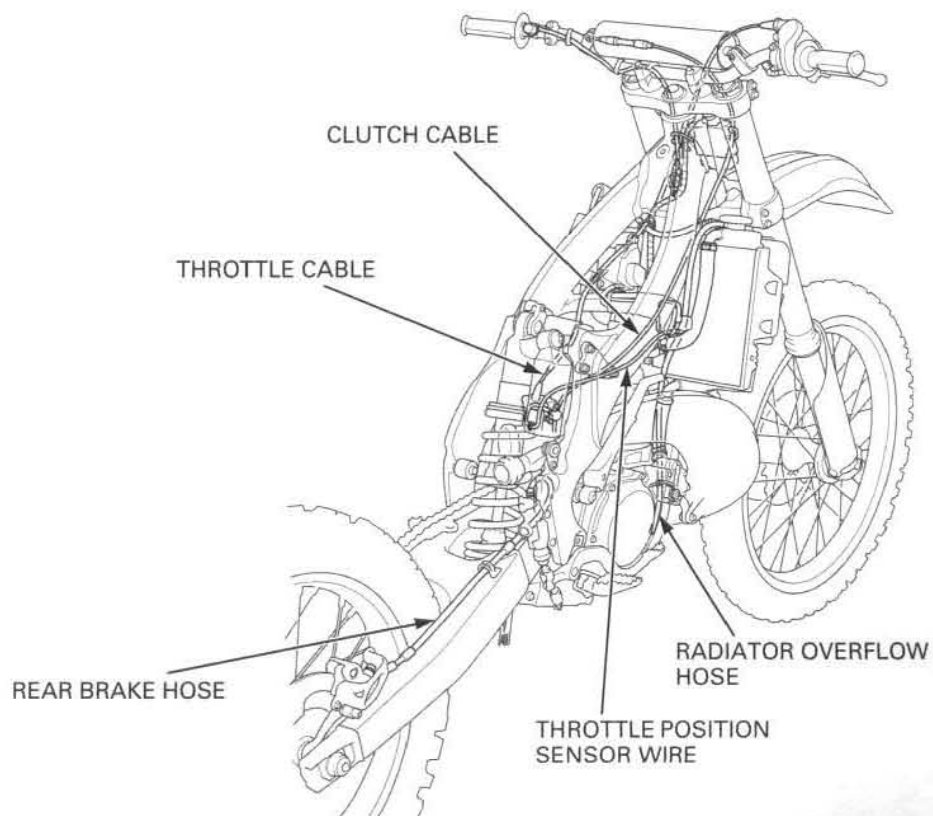
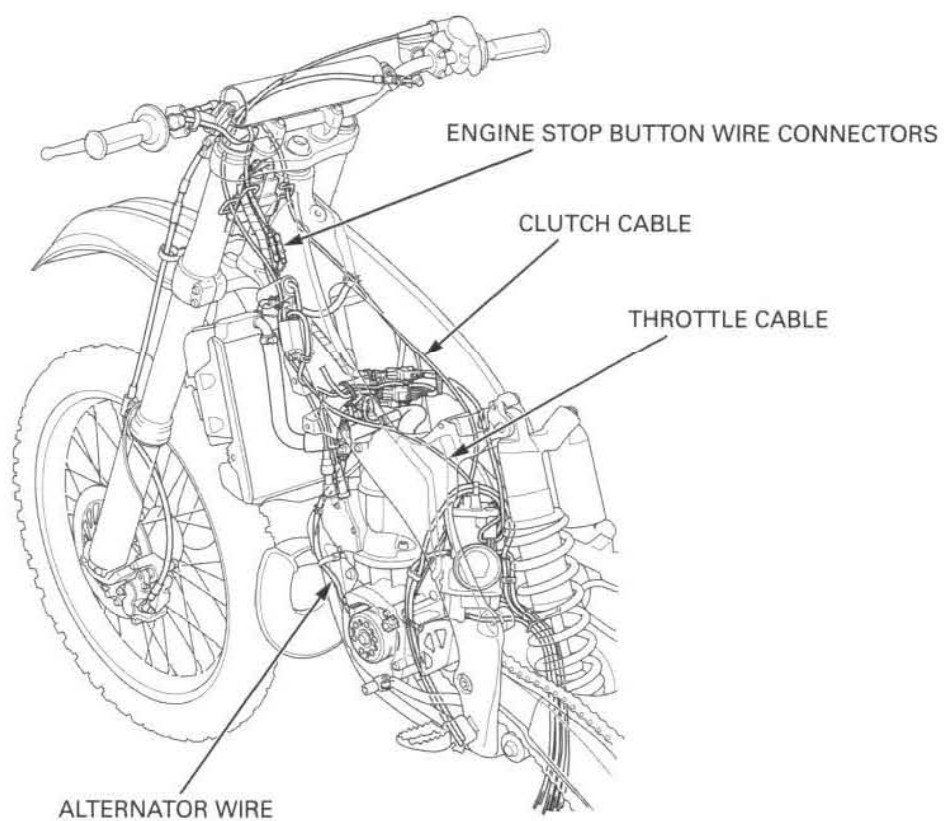
LOCATION	MATERIAL	REMARKS
Throttle cable end Throttle grip sliding surface	Pro Honda GN4 4-stroke Oil or equivalent	
Steering stem bearings Steering stem dust seal lips	Urea based multi-purpose grease for extreme pres- sure (example: EXCELITE EP2 manufactured by KYODO YUSHI, Japan) or equivalent	Fill up 3 - 5 g each bearing
Front/rear wheel dust seal lips Swingarm pivot needle bearing rolling area Swingarm pivot thrust bearing rolling area Swingarm pivot dust seal lips Shock arm/shock link needle bearing rolling area Shock arm/ shock link side collar (bearing side) Shock arm/shock link dust seal lips Clutch lever cable adjust dial Rear brake pedal pivot bolt sliding surface Throttle cable roller inner and outer surface	Multi-purpose grease (Shell alvania EP2 or equivalent)	
Kickstarter pedal joint shaft sliding surface Gearshift pedal pin sliding surface	Multi-purpose grease	
Brake caliper pin bolt/pin bolt A Brake caliper dust seals Brake lever pivot bolt sliding surface Brake lever adjusting bolt tip Rear master cylinder push rod sliding surface Rear master cylinder boot fitting area	Silicone grease	
Brake caliper slide pin threads Drive chain slider mounting screw threads Front brake caliper mounting bolt threads Fork protector bolt threads	Pro Honda Anaerobic Thread Lock or equivalent	
Brake caliper piston seal lips Master cylinder inner surface Master piston outer sliding surface	DOT 4 brake fluid	
Fork cap O-ring Fork oil seal lips and dust seal lips	Fork fluid	
Handlebar grip rubber inner surface	Honda Bond A or Pro Honda Hand Grip Cement (U.S.A. only)	

CABLE & HARNESS ROUTING

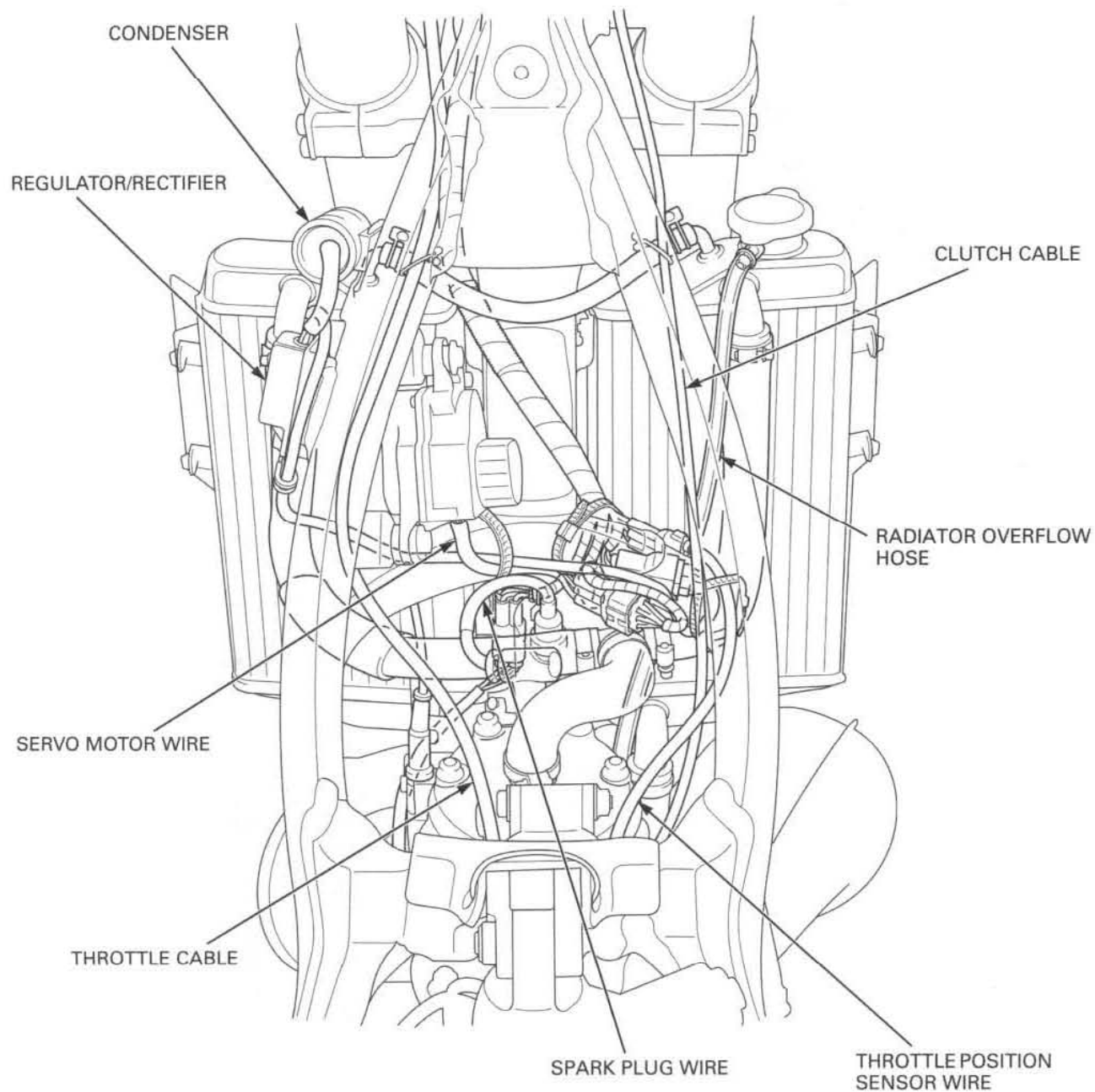


GENERAL INFORMATION





GENERAL INFORMATION



OPTIONAL PARTS

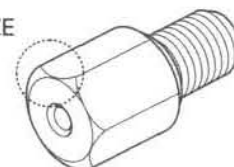
CARBURETOR SETTING PARTS

MAIN JET

ITEM	STANDARD
Standard	# 420
Optional	# 360 – 480 (increments of 10)

Main jet number

SIZE



SLOW JET

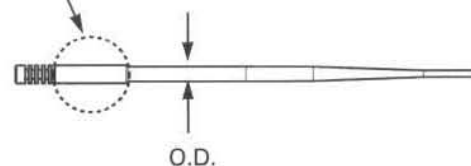
ITEM	STANDARD
Standard	# 40
Optional	# 32.5 – 45 (increments of 2.5), #50, #55

JET NEEDLE

Specific Flow Characteristics at 1/16 to 1/8 throttle	Jet Needle Number (Standard Series)	Jet Needle Number (1/2 clip position lower than standard series; Richer only at 1/8 to 3/4 throttle)
Rich	6DGY26-62 ($\phi 2.62$ mm)	6DGY27-62 ($\phi 2.62$ mm)
	6DGY26-63 ($\phi 2.63$ mm)	6DGY27-63 ($\phi 2.63$ mm)
	6DGY26-64 ($\phi 2.64$ mm)	6DGY27-64 ($\phi 2.64$ mm)
General Flow Characteristics At 1/16 To 1/8 Throttle	6DGY26-65 ($\phi 2.65$ mm) (Standard)	6DGY27-65 ($\phi 2.65$ mm)
	6DGY26-66 ($\phi 2.66$ mm)	6DGY27-66 ($\phi 2.66$ mm)
	6DGY26-67 ($\phi 2.67$ mm)	6DGY27-67 ($\phi 2.67$ mm)
Lean	6DGY26-68 ($\phi 2.68$ mm)	6DGY27-68 ($\phi 2.68$ mm)

Jet needle number

NEEDLE NUMBER



GENERAL INFORMATION

MAINTENANCE EQUIPMENT

ITEM	REMARKS
Work stand 	For maintenance
Air pressure gauge	For checking tire air pressure
Pin spanner	Pin spanner A x 2 For shock absorber spring installed length (preload) adjustment (two required)

DRIVE CHAIN & SPROCKET

DRIVEN SPROCKET TEETH (Material)		DRIVE CHAIN LINK
Standard	49T (Aluminium)	114 Link
Optional	48T (Aluminium)	114 Link
	50T (Aluminium)	114 Link

HANDLEBAR LOWER HOLDER

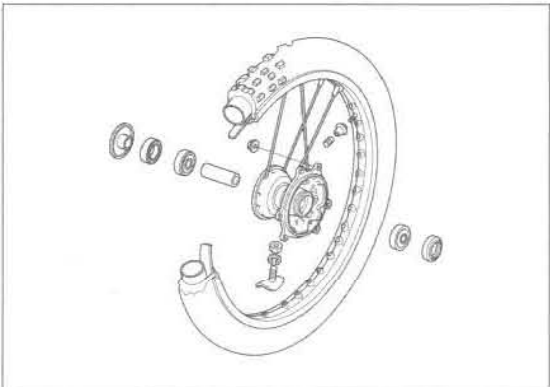
HANDLEBAR LOWER HOLDER	REMARKS
Standard	No offset
Optional	3 mm (0.12 in) offset

20 INCH FRONT WHEEL

CONSTRUCTION

- Front wheel assembly
 - Rim (20 x 1.85)
 - Spoke
 - Hub
 - Distance collar
 - Wheel bearing
 - Dust seal
- Rim lock (1.85)
- Tire (Dunlop D739FA 90/100-20)
- Rim band
- Inner tube

See page 11-9 for front wheel assembly.

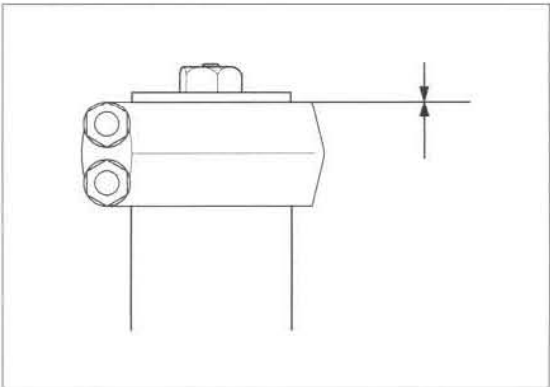


OPTIONAL WHEEL SPECIFICATION

ITEM		STANDARD	Unit: mm (in)
Wheel rim runout	Radial	—	2.0 (0.08)
	Axial	—	2.0 (0.08)
Wheel hub-to-rim distance		23 (0.9)	—

Specifications above are when using original brake disc, disc bolts and side collars.

When using the optional 20 inch wheel, align the top surface of the top bridge with the top surface of the outer tube.



GENERAL INFORMATION

FORK SPRING

TYPE	IDENTIFICATION MARK	SPRING RATE	FLUID LEVEL/ CAPACITY
Light 	1 scribe mark	0.42 kgf/mm (23.52 lbf/in)	Standard: 399 cm ³ (13.5 US oz, 14.0 Imp oz) Maximum: 435 cm ³ (14.7 US oz, 15.3 Imp oz) Minimum: 336 cm ³ (11.4 US oz, 11.8 Imp oz)
Standard 	No mark (factory products) or 3 scribe marks (after market parts)	0.44 kgf/mm (24.64 lbf/in)	Standard: 394 cm ³ (13.3 US oz, 13.9 Imp oz) Maximum: 430 cm ³ (14.5 US oz, 15.1 Imp oz) Minimum: 331 cm ³ (11.2 US oz, 11.7 Imp oz)
Heavy 	2 scribe marks	0.46 kgf/mm (25.76 lbf/in)	Standard: 389 cm ³ (13.2 US oz, 13.7 Imp oz) Maximum: 425 cm ³ (14.4 US oz, 15.0 Imp oz) Minimum: 326 cm ³ (11.0 US oz, 11.5 Imp oz)

The standard fork spring mounted on the motorcycle when it leaves the factory are not marked. Before replacing the springs, be sure to mark them so they are distinguished from the other optional springs.

SHOCK ABSORBER SPRING

TYPE	IDENTIFICATION MARK	SPRING RATE
Light 	White paint	5.0 kgf/mm (280.0 lbf/in)
Standard 	No mark (factory products) or Red paint (after market parts)	5.2 kgf/mm (291.2 lbf/in)
Heavy 	Green paint Pink paint	5.4 kgf/mm (302.4 lbf/in) 5.6 kgf/mm (313.6 lbf/in)

The standard shock spring mounted on the motorcycle when it leaves the factory are not marked. Before replacing the springs, be sure to mark them so they are distinguished from the other optional springs.

2. FRAME/BODY PANELS/EXHAUST SYSTEM

SERVICE INFORMATION	2-2	NUMBER PLATE	2-4
TROUBLESHOOTING	2-2	SUB-FRAME	2-5
SEAT	2-3	FUEL TANK	2-6
SIDE COVERS	2-3	EXHAUST PIPE	2-7
RADIATOR SHROUD	2-4		

FRAME/BODY PANELS/EXHAUST SYSTEM

SERVICE INFORMATION

GENERAL

- 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.
- Always inspect the exhaust system for leaks after installation.

TORQUE VALUES

Seat mounting bolt		27 N·m (2.8 kgf·m, 20 lbf·ft)
Sub-frame mounting bolt	(upper)	30 N·m (3.1 kgf·m, 22 lbf·ft)
	(lower)	30 N·m (3.1 kgf·m, 22 lbf·ft)
Seat bracket screw		5.9 N·m (0.6 kgf·m, 4.4 lbf·ft)
Rear fender (front mounting bolt)		13 N·m (1.3 kgf·m, 9 lbf·ft)
Rear fender (rear mounting bolt/nut)		13 N·m (1.3 kgf·m, 9 lbf·ft)

TROUBLESHOOTING

Excessive exhaust noise

- Broken exhaust system
- Exhaust gas leak

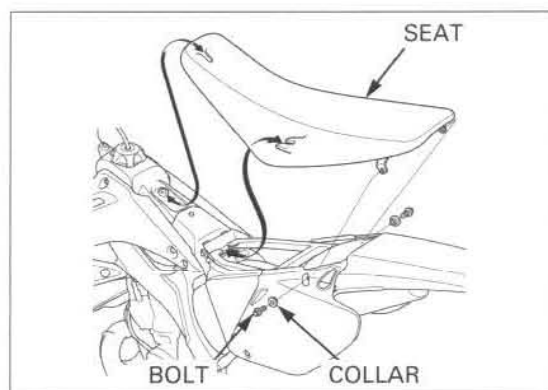
Poor performance

- Deformed exhaust system
- Exhaust gas leak
- Clogged muffler

SEAT

REMOVAL

Remove the two bolts, collars and seat.

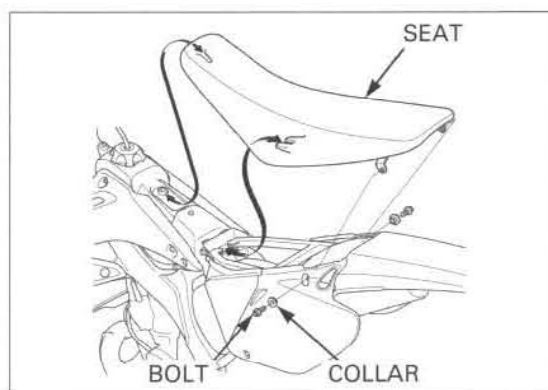


INSTALLATION

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 to the specified torque.

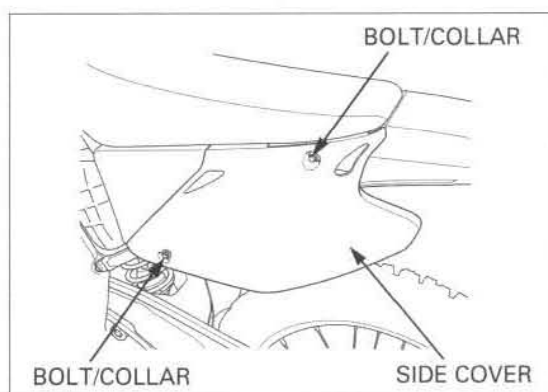
TORQUE: 27 N·m (2.8 kgf·m, 20 lbf·ft)



SIDE COVERS

REMOVAL/INSTALLATION

Remove the seat mounting bolts and collars.
Remove the flange bolt, collar and side cover.



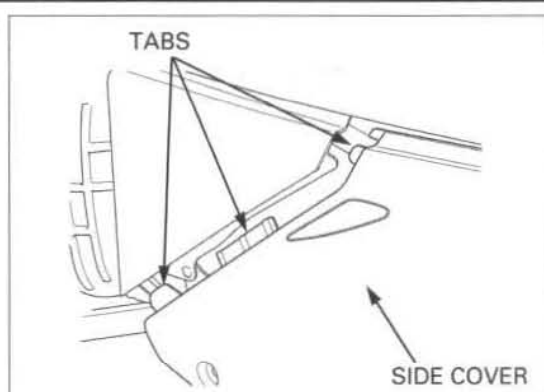
FRAME/BODY PANELS/EXHAUST SYSTEM

Be careful not to damage the tabs.

Install the side cover in the reverse order of removal.

Tighten the seat mounting bolts to the specified torque.

TORQUE: 27 N·m (2.8 kgf·m, 20 lbf·ft)



RADIATOR SHROUD

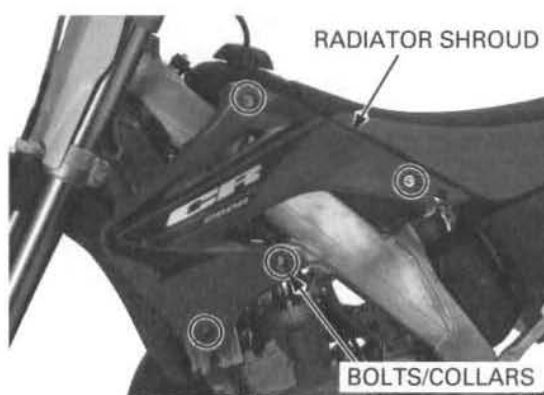
REMOVAL/INSTALLATION

Note that the thinner collars are in the upper bolts.

Remove the bolts, collars and radiator shroud.

Insert the tab inside the seat.

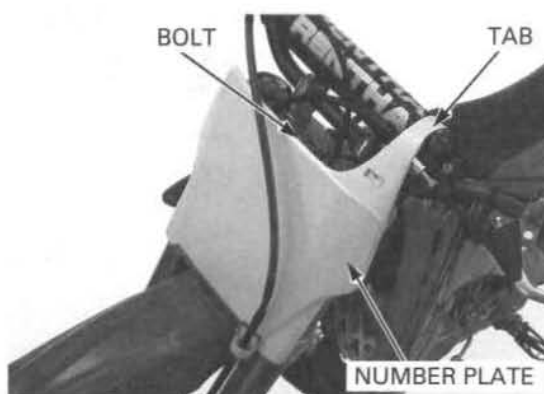
Installation is in the reverse order of removal.



NUMBER PLATE

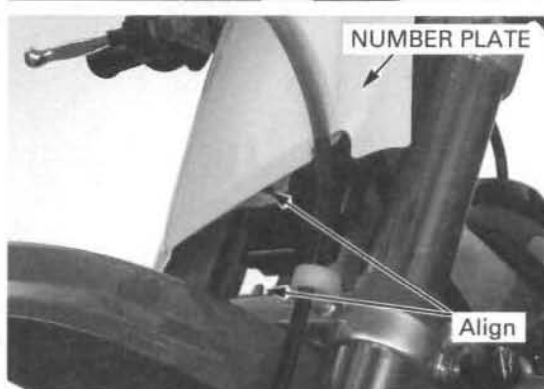
REMOVAL/INSTALLATION

Remove the number plate tab from the handlebar. Remove the bolt and number plate.



Install the number plate aligning its hole and pin on the steering stem.

Installation is in the reverse order of removal.

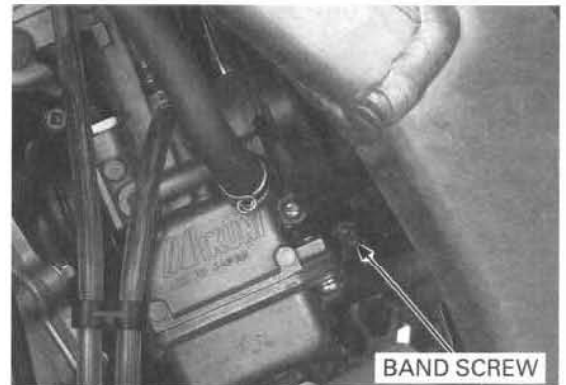


SUB-FRAME

REMOVAL

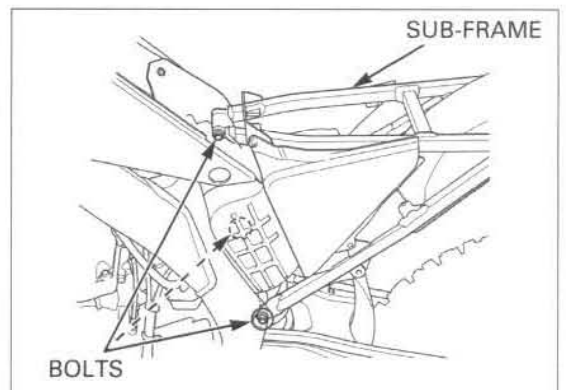
Remove the seat (page 2-3).

Loosen the air cleaner connecting tube band screw.



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

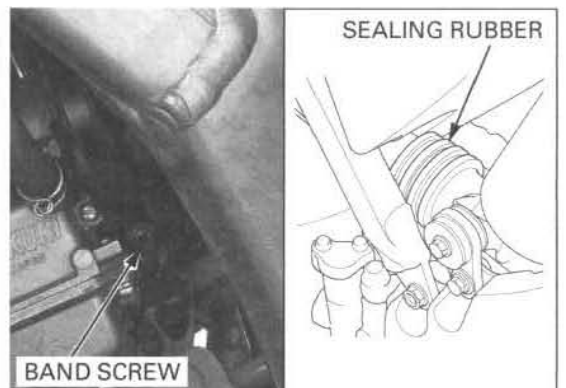
When pulling the sub-frame back, make sure the silencer pipe comes out of the rubber seal.



INSTALLATION

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

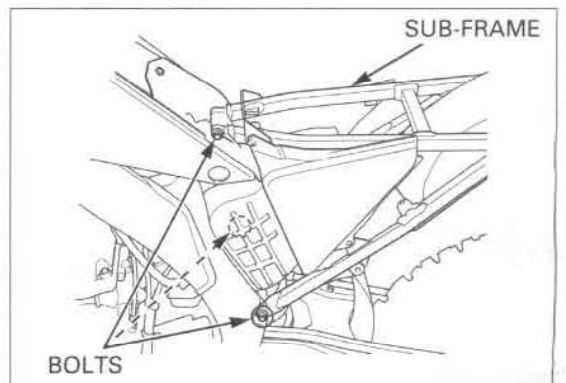
Tighten the screw on the connecting boot band.



Snug but do not tighten the three mounting bolts. Tighten the sub-frame upper and lower mounting bolts to the specified torque.

TORQUE: 30 N·m (3.1 kgf-m, 22 lbf-ft)

Install the seat (page 2-3).



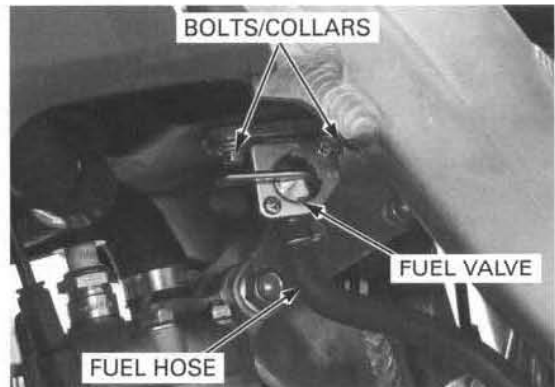
FUEL TANK

FUEL FILTER MAINTENANCE

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

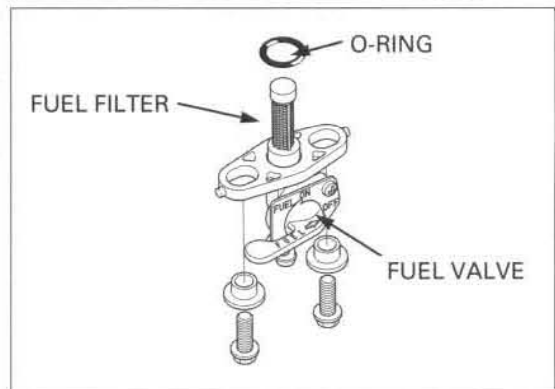
Disconnect the fuel hose from the fuel valve.

Remove the bolts, collars and fuel valve.



Wash the fuel filter in high flash-point cleaning solvent.

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



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

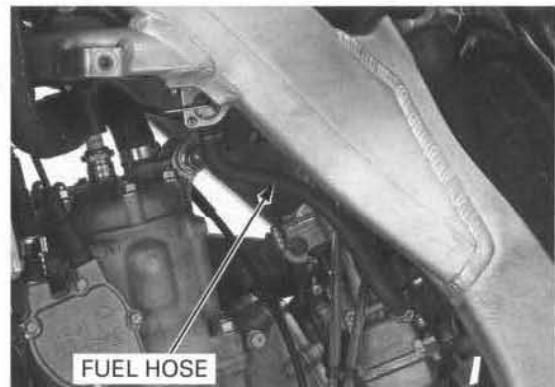
Install the fuel valve in the reverse order of removal.

REMOVAL

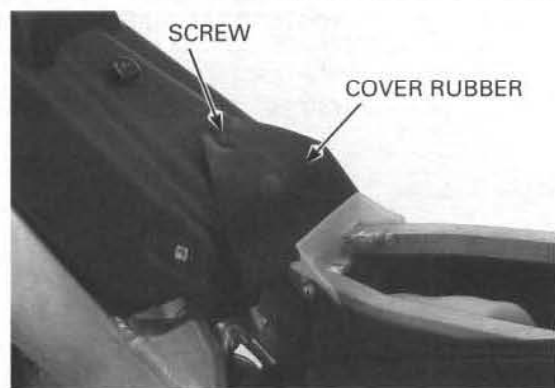
Remove the seat (page 2-3).

Remove the radiator shroud (page 2-4).

Turn the fuel valve OFF, and disconnect the fuel hose.

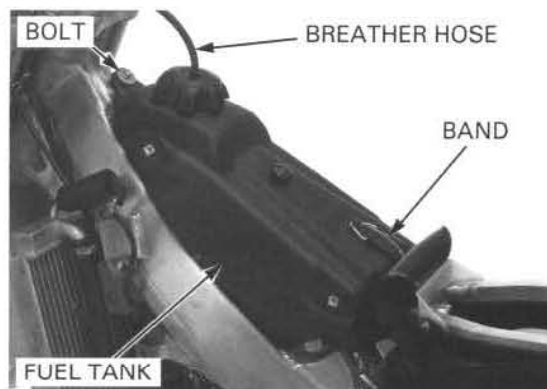


Release the air cleaner case cover rubber from the fuel tank stud screw boss.



Remove the fuel tank breather hose from the steering stem nut.

Remove the fuel tank mounting bolt, unhook the band and remove the fuel tank.

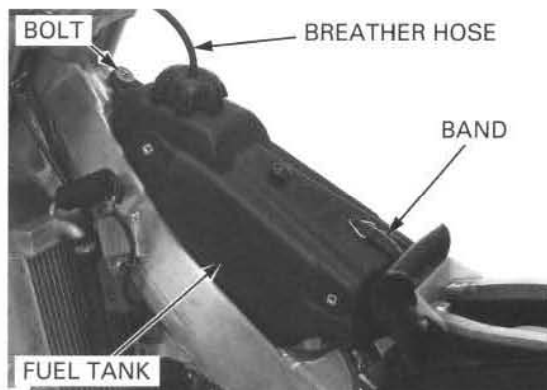


INSTALLATION

After installation, make sure there are no fuel leaks.

Installation is in the reverse order of removal.

Install the breather hose into the stem nut as shown.



EXHAUST PIPE

SILENCER REMOVAL/INSTALLATION

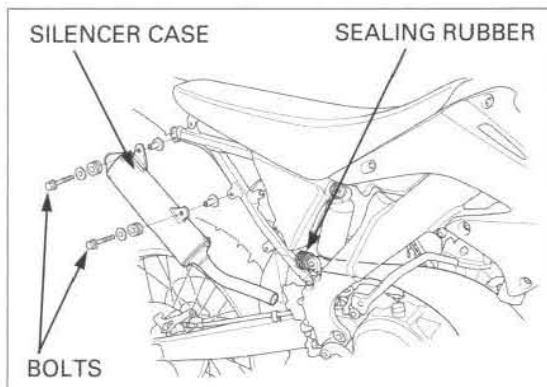
Remove the right side cover (page 2-3).

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

Check the sealing rubber for wear or damage. Replace the sealing rubber if necessary.

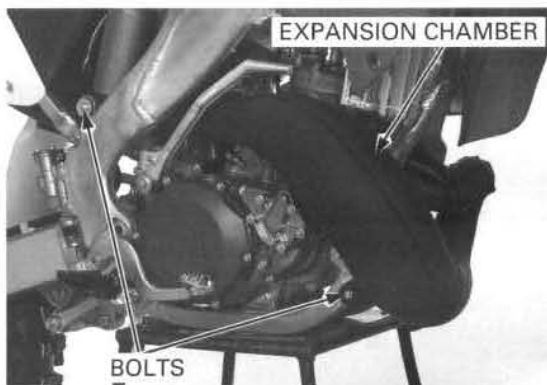
If necessary, perform glass wool packing maintenance (page 3-19).

Installation is in the reverse order of removal.



EXPANSION CHAMBER REMOVAL/INSTALLATION

Loosen the expansion chamber mounting bolt.

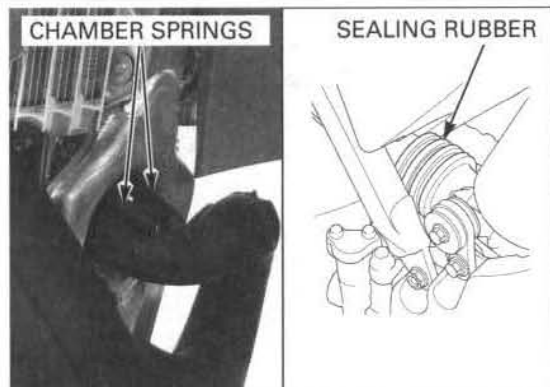


FRAME/BODY PANELS/EXHAUST SYSTEM

Always replace the exhaust pipe gaskets after removing the exhaust pipe from the engine.

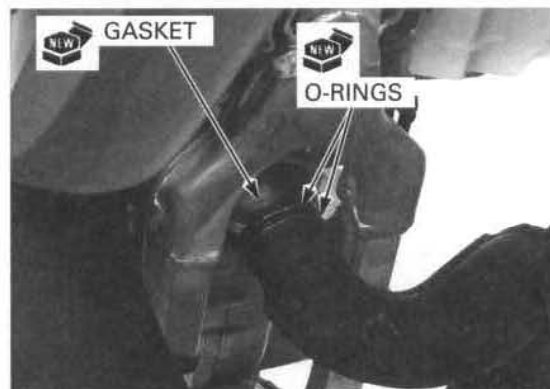
Unhook and remove the chamber springs. Remove the mounting bolts and expansion chamber.

Inspect the expansion mounting rubbers for damage.



Replace a gasket and O-rings with new ones.

Installation is in the reverse order of removal.



3. MAINTENANCE

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DRIVE CHAIN ROLLER	3-13		

MAINTENANCE

SERVICE INFORMATION

GENERAL

- Place the motorcycle on a level surface before starting any work.
- Gasoline is extremely flammable and is explosive under certain conditions.
- Work in a well ventilated area. Smoking or allowing flames or sparks in the work area or where the gasoline is stored can cause a fire or explosion.
- If the engine must be running to do some work, make sure the area is well ventilated. Never run the engine in an enclosed area.
- The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and may lead to death. Run the engine in an open area or with an exhaust evacuation system in an enclosed area.

SPECIFICATIONS

ITEM		SPECIFICATIONS
Throttle grip free play		3 – 5 mm (1/8 – 1/4 in)
Spark plug		NGK
	Standard	BR9EG-N-8
Spark plug gap		0.7 – 0.8 mm (0.027 – 0.031 in)
Transmission oil capacity	At draining	0.65 liter (0.69 US qt, 0.57 Imp qt)
	At disassembly	0.70 liter (0.74 US qt, 0.62 Imp qt)
Recommended engine oil		Pro Honda HP Trans Oil, Pro Honda GN4 or HP4 (without molybdenum additives) 4-stroke oil or equivalent motor oil API service classification SG or higher except oils labeled as energy conserving on the circular API service label JASO T 903 standard: MA Viscosity: SAE 10W-40
Clutch lever free play		10 – 20 mm (3/8 – 3/4 in)
Drive chain slack		25 – 35 mm (1 – 1-3/8 in)
Drive chain tensioner roller O.D.	Upper	25 mm (1.0 in) minimum
	Lower	31 mm (1.2 in) minimum
Tire size	Front	80/100-21 51M
	Rear	100/90-19 62M
Tire air pressure	Front	100 kPa (1.0 kgf/cm ² , 15 psi)
	Rear	100 kPa (1.0 kgf/cm ² , 15 psi)

TORQUE VALUES

Oil drain bolt	29 N·m (3.0 kgf·m, 21 lbf·ft)	
Oil check bolt	10 N·m (1.0 kgf·m, 7 lbf·ft)	
Spark plug	17 N·m (1.7 kgf·m, 13 lbf·ft)	
Rear axle nut	128 N·m (13.1 kgf·m, 94 lbf·ft)	U-nut
Drive chain roller bolt/nut	12 N·m (1.2 kgf·m, 9 lbf·ft)	
Brake lever adjuster lock nut	5.9 N·m (0.6 kgf·m, 4.4 lbf·ft)	
Spoke nipple	3.7 N·m (0.4 kgf·m, 2.7 lbf·ft)	
Rim lock	12 N·m (1.2 kgf·m, 9 lbf·ft)	
Drive chain adjusting bolt lock nut	27 N·m (2.8 kgf·m, 20 lbf·ft)	
Front master cylinder reservoir cover screw	1.0 N·m (0.1 kgf·m, 0.7 lbf·ft)	
Rear master cylinder reservoir cover bolt	1.0 N·m (0.1 kgf·m, 0.7 lbf·ft)	
Fork air pressure release screw	1.2 N·m (0.1 kgf·m, 0.9 lbf·ft)	

TOOL

Spoke wrench, 6.6 mm
070MA-KZ30100



or equivalent commercially available in U.S.A.

MAINTENANCE

MAINTENANCE SCHEDULE

Perform the Pre-ride inspection in the Owner's Manual at each scheduled maintenance period.

I: Inspect and Clean, Adjust, Lubricate or Replace if necessary. C: Clean. R: Replace. A: Adjust. L: Lubricate.

ITEMS		FREQUENCY	NOTE	Each race or about 2.5 hours	Every 3 races or about 7.5 hours	Every 9 races or about 22.5 hours	REFER TO PAGE
THROTTLE OPERATION				I			3-6
AIR CLEANER			NOTE 1	C			3-6
SPARK PLUG				I	R		3-8
RADIATOR COOLANT			NOTE 2	I			3-9
COOLING SYSTEM				I			3-9
CYLINDER HEAD DECARBONIZING					C		3-10
EXHAUST VALVE DECARBONIZATION				C			3-10
PISTON AND PISTON RINGS					R		7-10
PISTON PIN AND CONNECTING ROD SMALL END BEARING						R	7-10 7-11
REED VALVE					R		4-20
TRANSMISSION OIL					R		3-10
DRIVE CHAIN				I, L	R		3-11
DRIVE CHAIN SLIDERS				I			3-13
DRIVE CHAIN ROLLERS				I			3-13
DRIVE SPROCKET				I			3-14
DRIVEN SPROCKET				I			3-14
BRAKE FLUID			NOTE 2	I			3-14
BRAKE PADS WEAR				I			3-15
BRAKE SYSTEM				I			3-16
CLUTCH SYSTEM				I			3-16
CONTROL CABLES				I, L			3-18
EXPANSION CHAMBER/SILENCER				I			3-19
SUSPENSION				I			3-20
SWINGARM/SHOCK LINKAGE					L		3-21 12-28 12-33
FORK OIL	FORK PIPE/SLIDER		NOTE 3		R		11-12
	FORK DAMPER		NOTE 3			R	11-12
NUTS, BOLTS, FASTENERS				I			3-21
WHEELS/TIRES				I			3-21
STEERING HEAD BEARINGS						I	3-22

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

NOTES:

1. Clean after every moto for dusty riding condition.
2. Replace every 3 years. Replacement requires mechanical skill.
3. Replace after the first break-in ride.

ADDITIONAL ITEMS REQUIRING FREQUENT REPLACEMENT

ENGINE

ITEM	CAUSE	REMARKS
Cylinder head gasket	Compression leak	Replace whenever disassembled
Clutch disc	Wear or discoloration	
Cylinder base gasket	Leakage	Replace whenever disassembled
Right crankcase cover gasket	Damage	Replace whenever disassembled
Exhaust valve cover gasket	Damage	

FRAME

ITEM	CAUSE	REMARKS
Front/rear tire	Wear	Minimum cleat height: 8mm (5/16 in)
Front/rear brake pad	Wear	Minimum thickness: 1mm (0.04 in)
Sub-frame mounting bolt	Fatigue or damage	
Drive chain guide plate	Wear or damage	
Side cover	Damage	
Front number plate	Damage	
Front/rear fender	Damage	
Clutch lever/holder	Play or damage	
Brake lever	Play or damage	
Handlebar	Bent or damage	
Throttle housing	Damage	
Grip rubber	Damage	
Gearshift pedal	Damage	
Brake pedal	Damage	
Drive chain adjuster/bolt	Damage	
Air cleaner	Damage	
Exhaust chamber spring/hook	Fatigue or damage	

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

MAINTENANCE

THROTTLE OPERATION

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

Check the throttle cable and replace them if they are deteriorated, kinked or damaged.

Lubricate the throttle cables if throttle operation is not smooth.

Measure the free play at the throttle grip flange.

FREE PLAY: 3 – 5 mm (1/8 – 1/4 in)



Throttle grip free play can be adjusted at either end of the throttle cable.

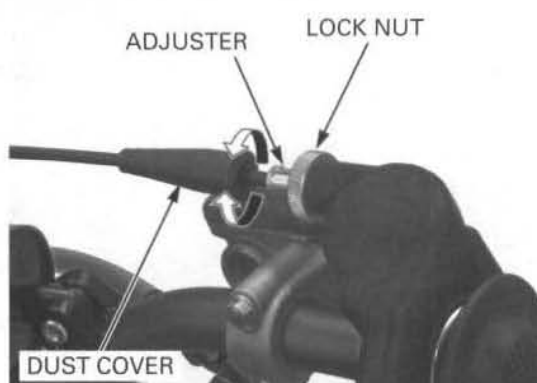
Minor adjustments are made with the upper adjuster.

Remove the dust cover from the adjuster.

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

Tighten the lock nut after making the adjustment.

Reinstall the dust cover.



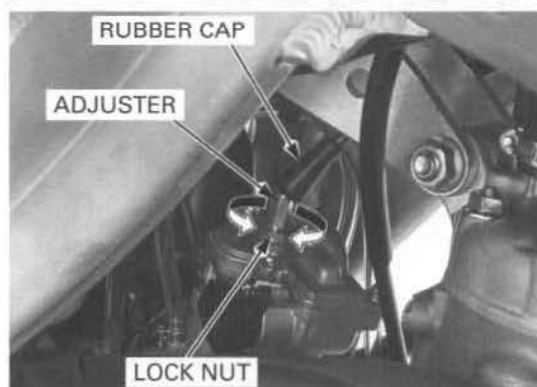
Major adjustments are made with the carburetor end of the cable.

Pull the carburetor rubber cap up.

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

After adjustment, tighten the lock nut securely and reinstall the rubber cap.

Recheck the throttle operation.

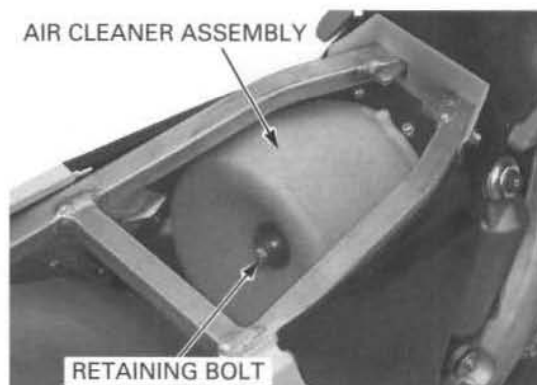


AIR CLEANER

Remove the seat (page 2-3).

Remove the air cleaner retaining bolt.

Remove the air cleaner assembly.



Remove the air cleaner holder pin from the hole on the air cleaner tab.

Remove the air cleaner from the cleaner holder.

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

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

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

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

Apply air filter oil to the entire surface of the air cleaner and rub it with both hands to saturate the element with oil.

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

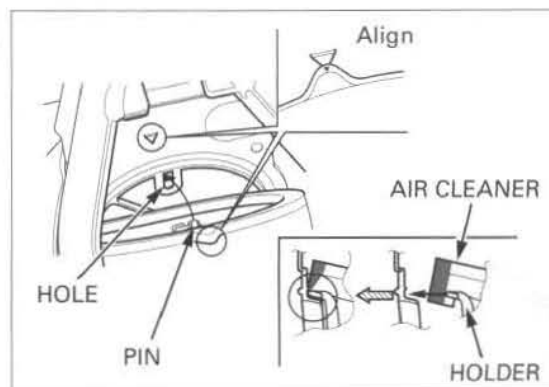
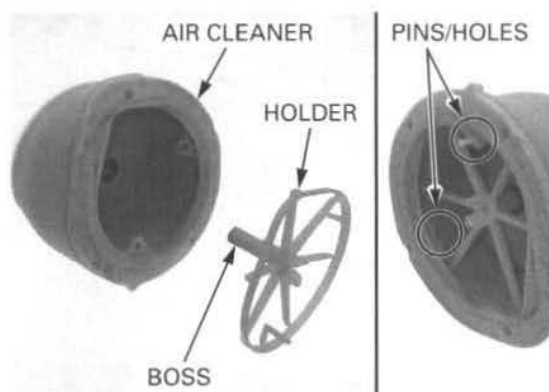
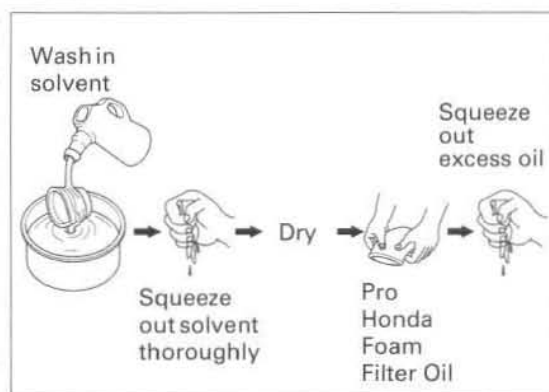
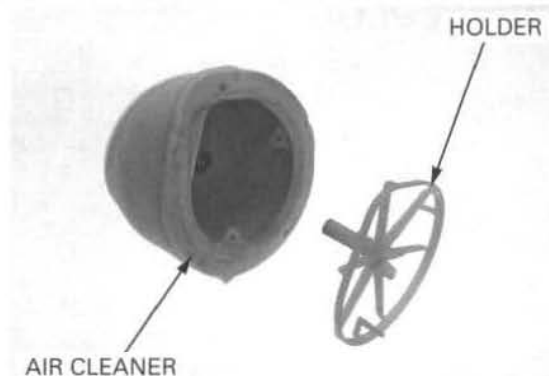
Insert the air cleaner holder center boss to the air cleaner center holder, and align the air cleaner holder pins with the holes on the air cleaner tabs. Apply a thin coat of Pro Honda Filter grease to the sealing surface. Insert the air cleaner retaining bolt through the assembly.

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

Insert the pin of the holder in the air cleaner housing hole and install the assembly into the air cleaner housing while aligning the tab on the air cleaner and the "△" mark on the air cleaner housing.

Tighten the retaining bolt securely. Carefully position the sealing flange of the element to prevent dirt intrusion.

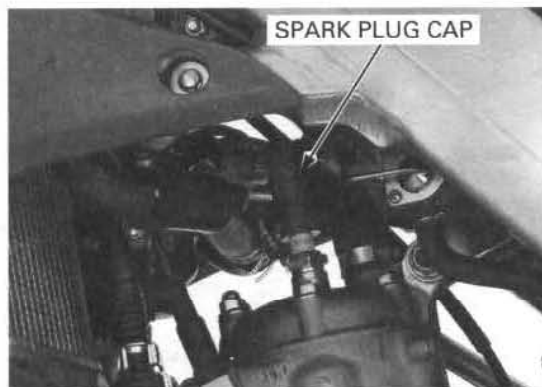
Install the seat (page 2-3).



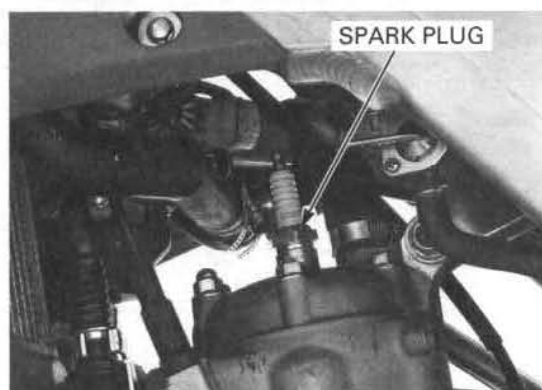
MAINTENANCE

SPARK PLUG

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

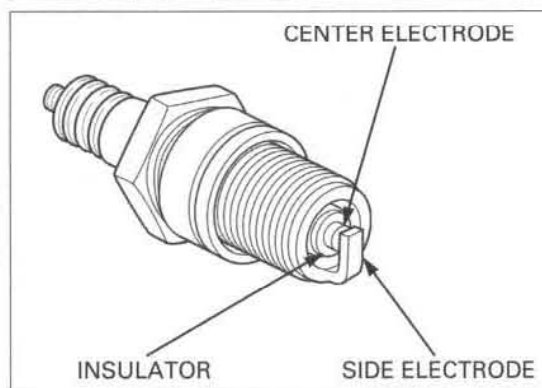


Remove the spark plug and inspect it for damage.



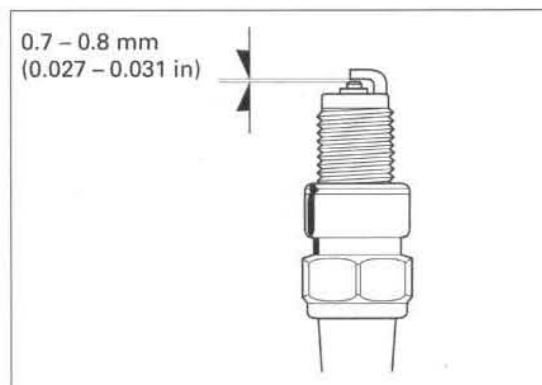
Check the following and replace if necessary (recommended spark plug: page 3-2):

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



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

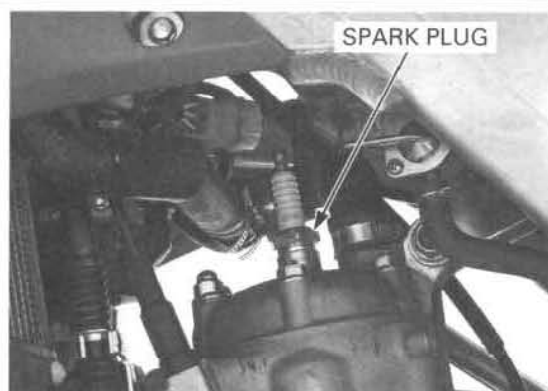
SPARK PLUG GAP: 0.7 – 0.8 mm (0.027 – 0.031 in)



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

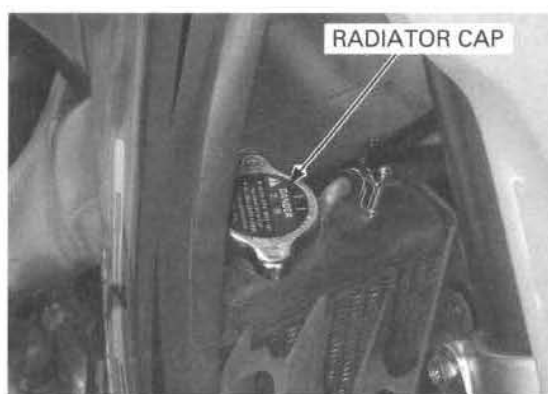
Reinstall the spark plug in the cylinder head and hand tighten, then torque to specification.

TORQUE: 17 N·m (1.7 kgf·m, 13 lbf·ft)



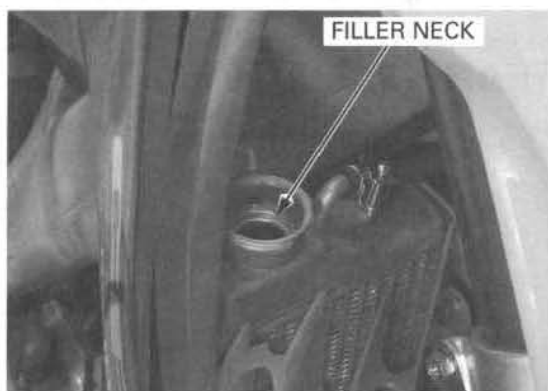
RADIATOR COOLANT

Remove the radiator cap.



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

Add coolant as required (page 5-6).



COOLING SYSTEM

Remove the radiator shroud (page 2-4).
Remove the fuel tank (page 2-6).

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

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



MAINTENANCE

CYLINDER HEAD DECARBONIZING

Remove the cylinder head (page 7-5).

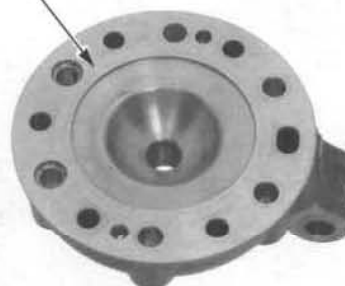
Decarbonize the cylinder head every 3 races or about 7.5 hours.

Clean the cylinder head surface of any gasket material.

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

Remove the carbon deposits from the combustion chamber.

CYLINDER HEAD



EXHAUST VALVE DECARBONIZING

Remove the RC valve shaft and RC valve (page 8-7).

Decarbonize the RC valve and valve shaft every 3 races or about 7.5 hours.

Remove the carbon deposits from the RC valve and valve shaft.

Inspect the RC valve and valve shaft for wear or damage.

RC VALVE



TRANSMISSION OIL

OIL LEVEL INSPECTION

1. Start the engine and let it idle for 2 – 3 minutes.
2. Wait three minutes after shutting off the engine to allow the oil to properly distribute itself in the clutch and transmission.
3. Support the motorcycle in an upright position on level ground.
4. Remove the oil filler cap from the right crankcase cover.
5. Remove the check bolt from the right crankcase cover. A small amount of oil should flow out of the check bolt hole. Allow any excess oil to flow out of the check bolt hole.
6. If no oil flow out of the check bolt hole, add oil slowly through the oil filler hole until oil starts to flow out of the check bolt hole. Install the oil check bolt and filler cap.
7. Repeat step 1 – 6.
8. After checking the oil level or adding oil, tighten the oil check bolt and filler cap securely.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

OIL FILLER CAP



OIL CHECK BOLT



OIL CHANGE

Transmission oil should be changed at least every 3 races or 7.5 hours of running to ensure consistent performance and maximum service life of both transmission and clutch components.

Warm-up the engine before draining the oil. This will ensure complete and rapid draining.

1. Start the engine and let it idle for two or three minutes.
2. Support the motorcycle in an upright position on level ground.
3. Remove the oil filler cap from the right crankcase cover.



OIL DRAIN BOLT

4. Place the oil pan under the engine to catch the oil, then remove the drain bolt.
5. After the oil has been drained completely, install the drain bolt with a new sealing washer.

TORQUE: 29 N·m (3.0 kgf·m, 21 lbf·ft)

6. Add the recommended oil.

OIL CAPACITY:

0.65 liter (0.69 US qt, 0.57 Imp qt) at draining

RECOMMENDED TRANSMISSION OIL:

Pro Honda HP Trans Oil, Pro Honda GN4 or HP4 (without molybdenum additives) 4-stroke oil or an equivalent motor oil

API service classification: SG or higher except oils labeled as energy conserving on the circular API service label

JASO T 903 standard: MA

Viscosity: SAE 10W-40



OIL FILLER CAP

Check the oil level by following steps 1 – 6 in oil level check procedure (page 3-10).

DRIVE CHAIN

Never inspect and adjust the drive chain while the engine is running.

CLEANING AND LUBRICATION

For maximum service life, the drive chain should be cleaned and lubricated after every ride.

Perform the following service with the engine stopped and the transmission in neutral. Place a work stand or equivalent under the engine.

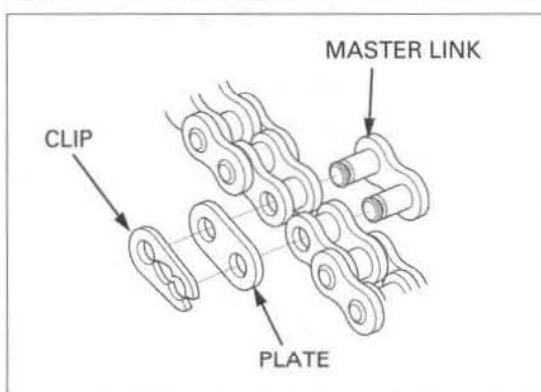
Carefully remove the master link clip with pliers.



MASTER LINK CLIP

MAINTENANCE

Remove the master link, plate and disconnect the drive chain.

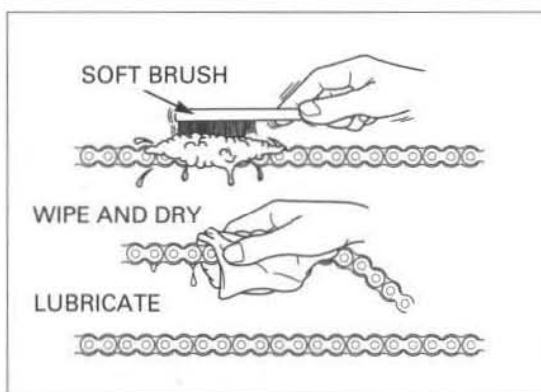


Clean the drive chain in non-flammable or high flash point solvent and wipe it dry.

Inspect the chain for possible wear or damage; replace any chain that has damaged rollers or loose fitting links.

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

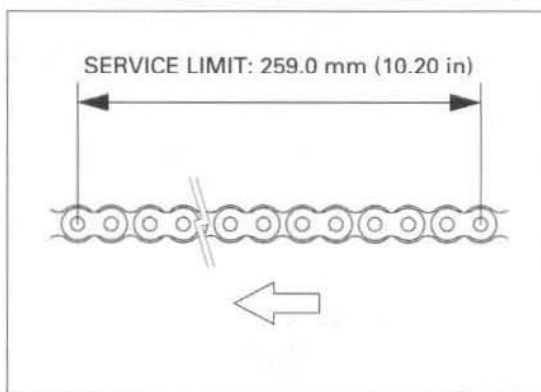
Install the open end of the master link opposite the direction of chain travel.



Measure the distance between a span of 17 pins (16 pitches), from pin center to pin center.

SERVICE LIMIT: 259.0 mm (10.20 in)

If the measurement exceeds the service limit, replace the chain.

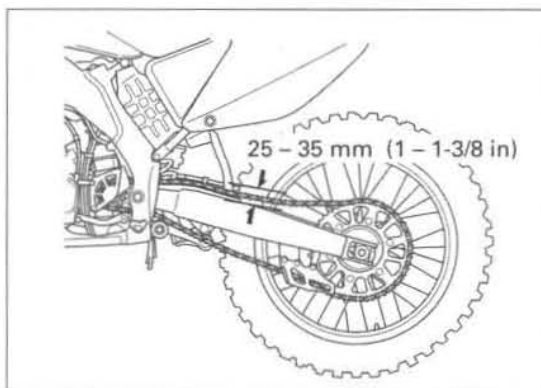


ADJUSTMENT

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

Measure the chain slack, on the upper chain run, midway between the sprockets.

CHAIN SLACK: 25 – 35 mm (1 – 1-3/8 in)



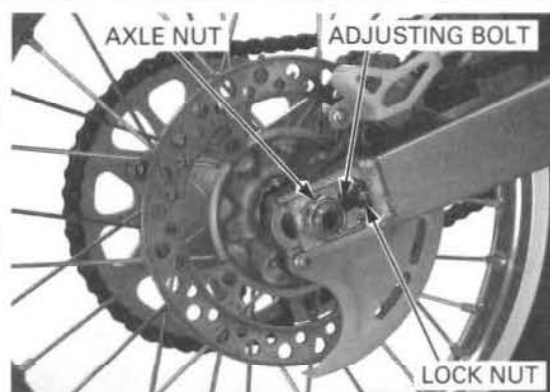
Raise the rear wheel off the ground by placing a workstand under the engine.

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

TORQUE: 128 N·m (13.1 kgf·m, 94 lbf·ft)

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

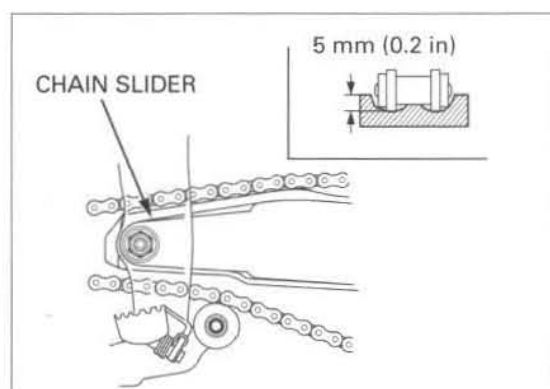
TORQUE: 27 N·m (2.8 kgf·m, 20 lbf·ft)



DRIVE CHAIN SLIDER

Inspect the drive chain slider for excessive wear.

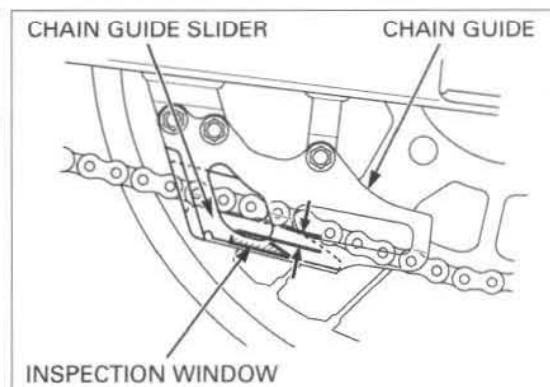
SERVICE LIMIT: 5 mm (0.2 in) from upper surface



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

Replace the chain guide if it is damaged or worn.

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



DRIVE CHAIN ROLLER

Inspect the drive chain rollers for excessive wear or damage.

SERVICE LIMIT:

Upper: 25 mm (1.0 in)

Lower: 31 mm (1.2 in)

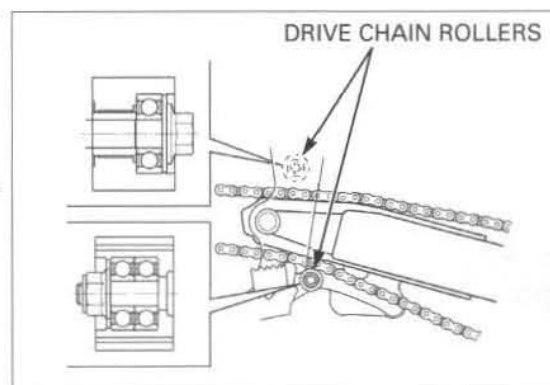
Install the upper drive chain roller with its arrow mark side facing out.

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

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Install the drive chain rollers as follows:

- Upper : Bearing side facing in.
- Lower: Dented side facing out.

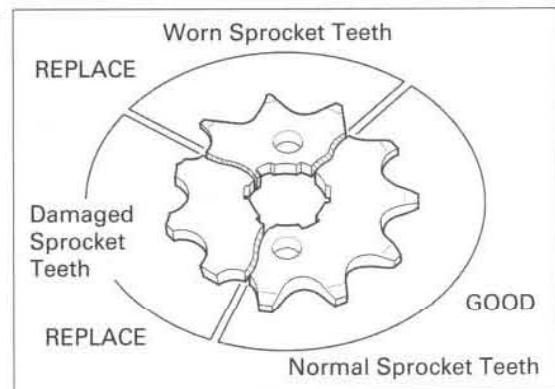


MAINTENANCE

DRIVE/DRIVEN SPROCKET

Never use a new drive chain on worn sprockets.

Inspect the drive and driven sprocket teeth for wear or damage, replace if necessary.



BRAKE FLUID

- Do not mix different types of fluid, as they are not compatible with each other.
- Do not allow foreign material to enter the system when filling the reservoir.
- Avoid spilling fluid on painted, plastic or rubber parts. Place a rag over these parts whenever the system is serviced.

FLUID LEVEL INSPECTION

When the fluid level is low, check the brake pad for wear (page 13-8). A low fluid level may be due to wear of the brake pads. If the brake pads are worn, the caliper piston is pushed out, and this accounts for a low reservoir level. If the brake pads are not worn and the fluid level is low, check the entire system for leaks (page 3-16).

FRONT

Check the front brake fluid reservoir level through the sight glass.

If the level is near the lower level mark, check the brake pad wear (page 3-15).



REAR

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

Check the rear brake fluid reservoir level.

If the level is near the lower level mark, check the brake pad wear (page 3-15).



FLUID FILLING

FRONT

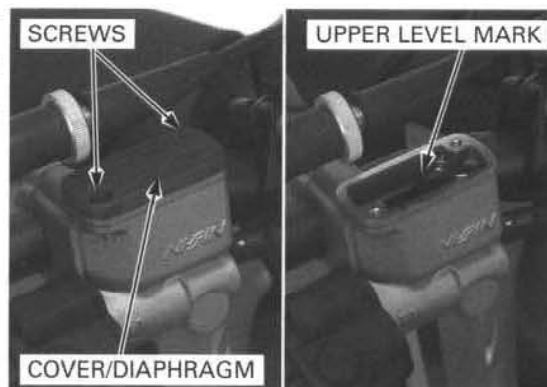
Remove the screws, diaphragm cover and diaphragm.

Fill the reservoir with DOT 4 brake fluid to the upper level mark.

Install the diaphragm and cover, tighten the screw to the specified torque.

TORQUE: 1.0 N·m (0.1 kgf·m, 0.7 lbf·ft)

Check the entire system for leaks.



REAR

Remove the bolts, diaphragm cover and diaphragm. Fill the reservoir with DOT 4 brake fluid to the upper level mark.

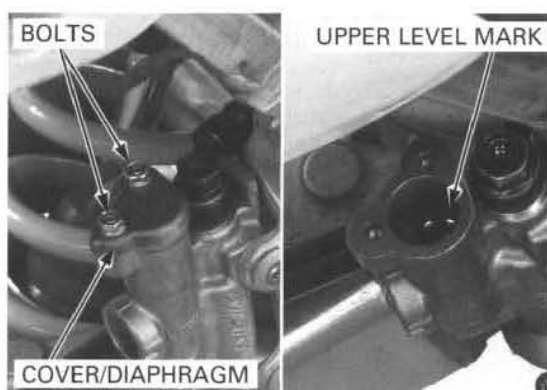
Install the diaphragm and cover, tighten the bolts to the specified torque.

TORQUE: 1.0 N·m (0.1 kgf·m, 0.7 lbf·ft)

Check the entire system for leaks.

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

Replace the hose and fittings as required.



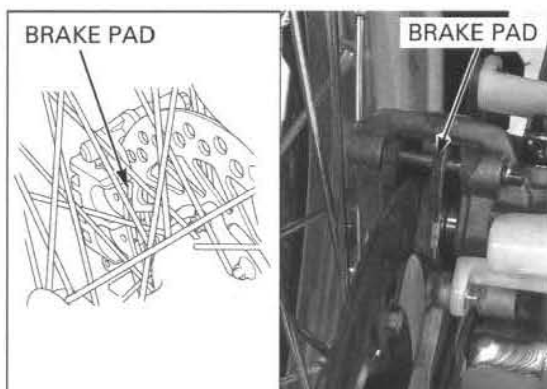
Do not bend the diaphragm during installation.

BRAKE PAD WEAR

Check the brake pads for wear.

Replace the brake pads if either pad is worn to the bottom of wear limit groove.

Refer to page 13-8 for brake pad replacement.



MAINTENANCE

BRAKE SYSTEM

LEVER POSITION INSPECTION

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

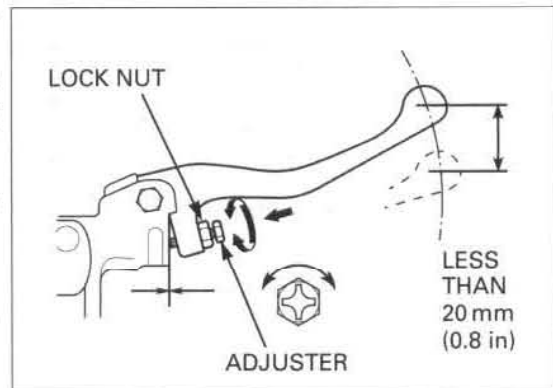
Turning the adjuster clockwise moves the brake lever farther away from the grip; turning the adjuster counterclockwise moves the brake lever closer to the grip.

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

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

TORQUE: 5.9 N·m (0.6 kgf·m, 4.4 lbf·ft)

If the brake lever free play exceeds 20 mm (0.8 in), there is air in the system that must be bled. Refer to page 13-5 for brake system bleeding.

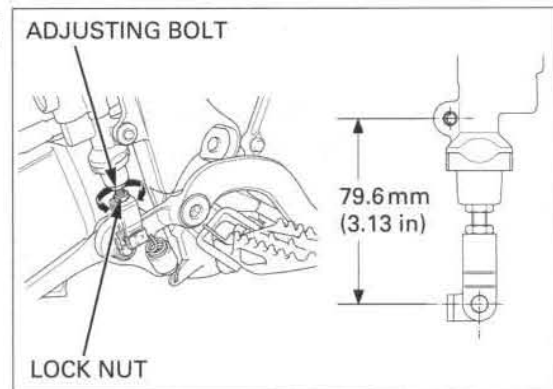


BRAKE PEDAL HEIGHT

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

Tighten the lock nut to the specified torque.

TORQUE: 5.9 N·m (0.6 kgf·m, 4.4 lbf·ft)



CLUTCH SYSTEM

CLUTCH LEVER POSITION ADJUSTMENT

NOTICE

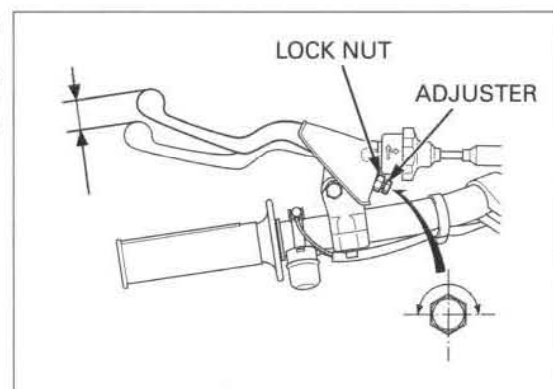
- Make sure to adjust the clutch lever free play after the clutch lever position adjustment or the clutch cable is disconnected.
- Failure to check the clutch lever free play may result in damaged clutch plates.

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

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

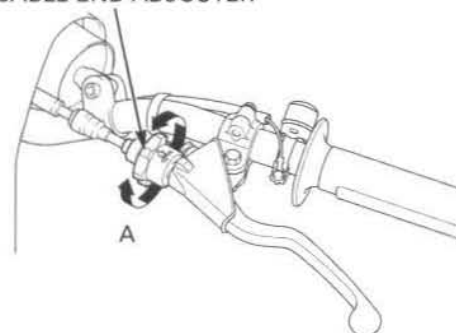
Tighten the lock nut securely.

Check the clutch lever free play (page 3-17).



Turn the clutch cable end adjuster in direction A until it seats lightly and then turn it out 5 turns.

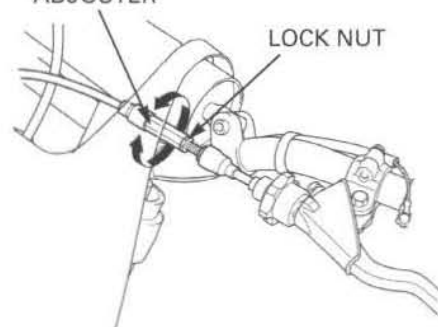
CABLE END ADJUSTER



Loosen the lock nut and turn the integral cable adjuster to adjust the clutch lever free play 10 – 20 mm (3/8 – 3/4 in) at the tip of lever. Tighten the lock nut.

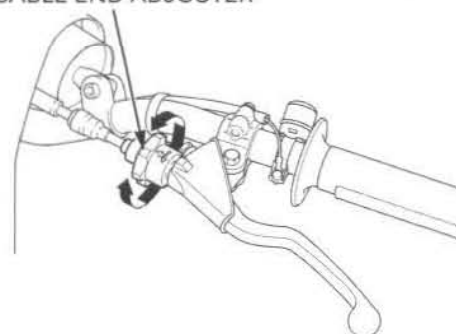
ADJUSTER

LOCK NUT



Adjust the clutch cable end adjuster for minor adjustment.

CABLE END ADJUSTER

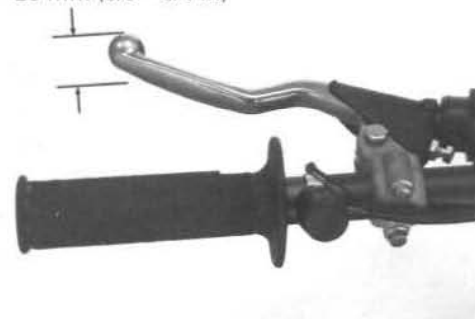


ADJUSTMENT

Measure the clutch free play at the lever end.

FREE PLAY: 10 – 20 mm (3/8 – 3/4 in)

10 – 20 mm (3/8 – 3/4 in)



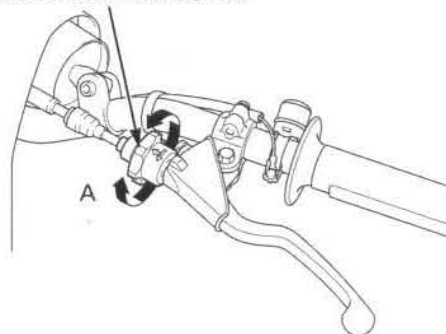
MAINTENANCE

Minor adjustments are made at the cable end adjuster on the lever.

Turning the adjuster to adjust the free play.

If the adjuster is threaded out near its limit and the correct free play cannot be reached, turn the adjuster all the way in (direction A) and back out one turn and make the adjustment with the integral cable adjuster.

CABLE END ADJUSTER



Major adjustments can be made at the integral adjuster.

Loosen the lock nut and turn the adjuster.

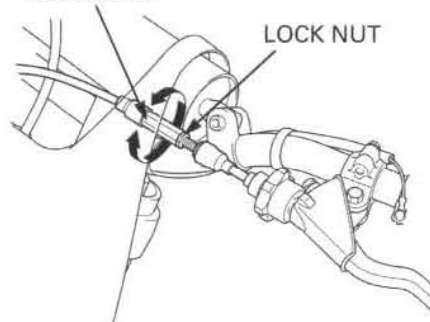
Tighten the lock nut after adjustment.

Test ride to be sure the clutch operates properly without slipping or dragging.

If proper free play cannot be obtained using both procedure or the clutch slips during the test ride, disassemble and inspect the clutch (page 9-6).

ADJUSTER

LOCK NUT



CONTROL CABLES

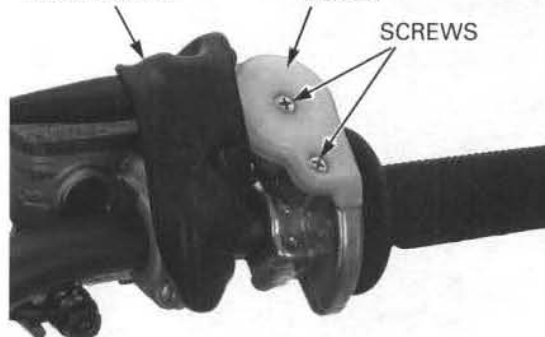
Remove the throttle housing dust cover.

Remove the throttle housing cover.

DUST COVER

COVER

SCREWS



Remove the throttle cable roller and collar.

Disconnect the throttle cable end from the throttle grip.

It is not necessary to lubricate the entire cable.

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

If the throttle operation is not smooth, replace the cable.

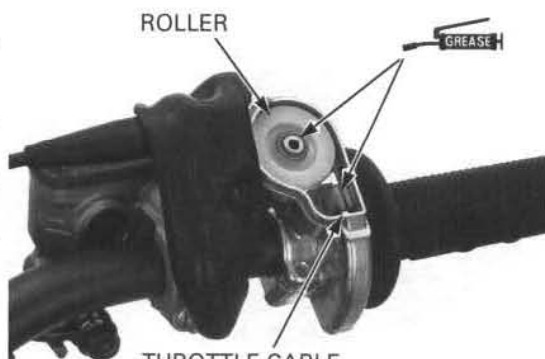
Be sure the throttle returns freely from fully open to fully closed automatically, in all steering positions.

Installation is in the reverse order of removal.

ROLLER

GREASE

THROTTLE CABLE



Disconnect the clutch cable upper end from the clutch lever.

It is not necessary to lubricate the cables.

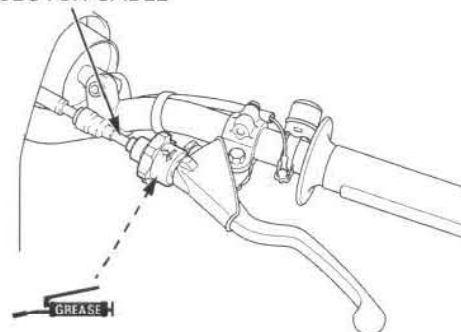
Thoroughly lubricate the throttle cable pivot points with a commercially available cable lubricant.

If the clutch lever operation is not smooth, replace the cable.

Installation is in the reverse order of removal.

Apply grease to inside of the clutch cable end adjuster.

CLUTCH CABLE



EXPANSION CHAMBER/SILENCER

SILENCER GLASS WOOL REPLACEMENT

Remove the silencer (page 2-7).

Remove the silencer case bolts.

Pull out the inner pipe.

Hold the mounting tab (after removing collar rubber) of the silencer case gently in a vise protected with a shop towel or soft jaws.

Remove the glass wool packing.

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

Be careful not to damage the glass wool packing.

Install the new glass wool packing material.

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

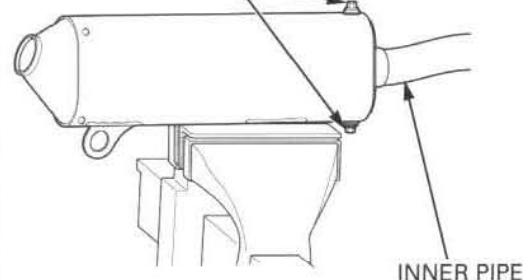
Insert the inner pipe and packing into the silencer case and align the bolt hole.

Install and tighten the silencer case bolts to the specified torque.

TORQUE: 4.9 N·m (0.5 kgf·m, 3.6 lbf·ft)

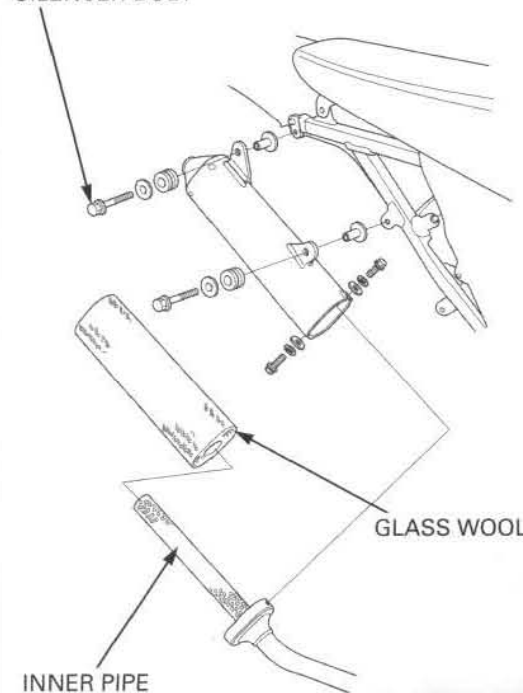
Wipe off any excess sealant.

BOLTS



INNER PIPE

SILENCER BOLT



MAINTENANCE

SUSPENSION

Loose, worn or damaged suspension parts impair motorcycles stability and control.

FRONT SUSPENSION INSPECTION

Check the action of the forks by operating the front brake and compressing the front suspension several times.

Check the entire fork assembly for signs of leaks, damage or loose fasteners. Make sure that the fork protectors and dust seals are clean and not packed with mud and dirt. Remove any dirt that has accumulated on the bottom of the fork seals.

Replace damaged components which cannot be repaired.

Tighten all nuts and bolts.

Refer to page 11-12 for fork service.

Air pressure acts as a progressive spring and affects the entire range of fork travel.

Air is an unstable gas; it increases in pressure as it is worked (such as in a fork), so the fork action on your CR. will get stiffer as the race progresses.

Release built-up air pressure from the fork legs after practice and between heats.

Be sure the fork is fully extended with the front tire off the ground.

Loosen the pressure release screw fully, then tighten them.

TORQUE: 1.2 N·m (0.1 kgf·m, 0.9 lbf·ft)



REAR SUSPENSION INSPECTION

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

Refer to page 12-13 for shock absorber service.



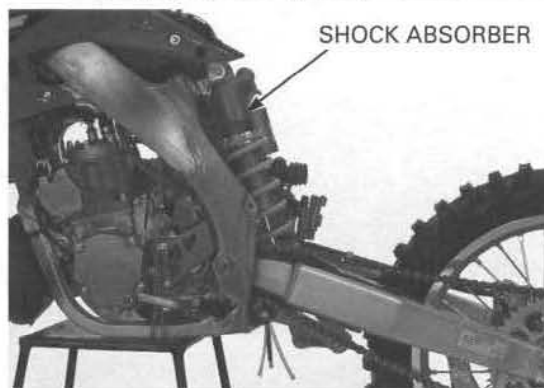
Remove the sub-frame (page 2-5).

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

Replace damaged components which cannot be repaired.

Tighten all nuts and bolts.

Refer to page 12-13 for shock absorber service.



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

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



SWINGARM/SHOCK LINKAGE

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

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

Replace the bearings if excessively worn (page 12-35).

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

Disassemble, clean and inspect the swingarm and shock linkage pivot bearings and related seals every 3 races or after about 7.5 hours of running (page 12-28).

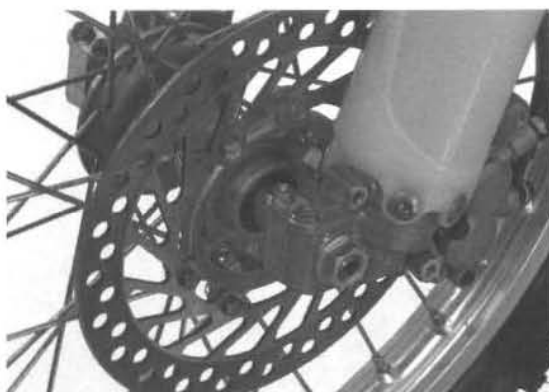
Lubricate and reassemble.



NUTS, BOLTS, FASTENERS

Check that all chassis nuts and bolts are tightened to their correct torque values (page 1-10).

Check that all safety clips, hose clamps and cable stays are in place and properly secured.



WHEELS/TIRES

Check the tires for cuts, embedded nails, or other damage.

Check the front and rear wheels for trueness (refer to page 11-7 and page 12-7).

Tire pressure should be checked when the tires are cold.

Check the cold tire pressure.

TIRE PRESSURE:

FRONT: 100 kPa (1.0 kgf/cm², 15 psi)

REAR: 100 kPa (1.0 kgf/cm², 15 psi)



AIR PRESSURE GAUGE

MAINTENANCE

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

TOOL:

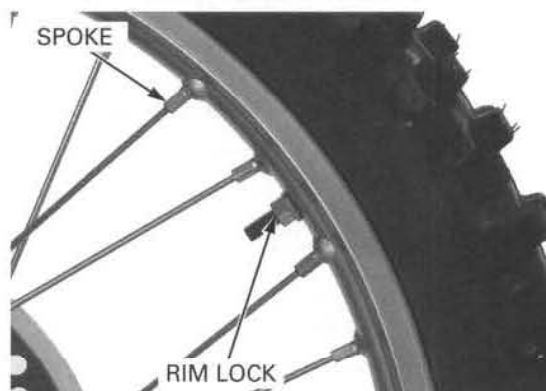
Spoke wrench, 6.6 mm

070MA-KZ30100
(Equivalent commercially available in U.S.A.)

TORQUE: 3.7 N·m (0.4 kgf·m, 2.7 lbf·ft)

Tighten the rim locks to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



STEERING HEAD BEARINGS

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

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

Check that the handlebar moves freely from side to side.

If the handlebar moves unevenly, binds, or has vertical movement, inspect the steering head bearings (page 11-37).

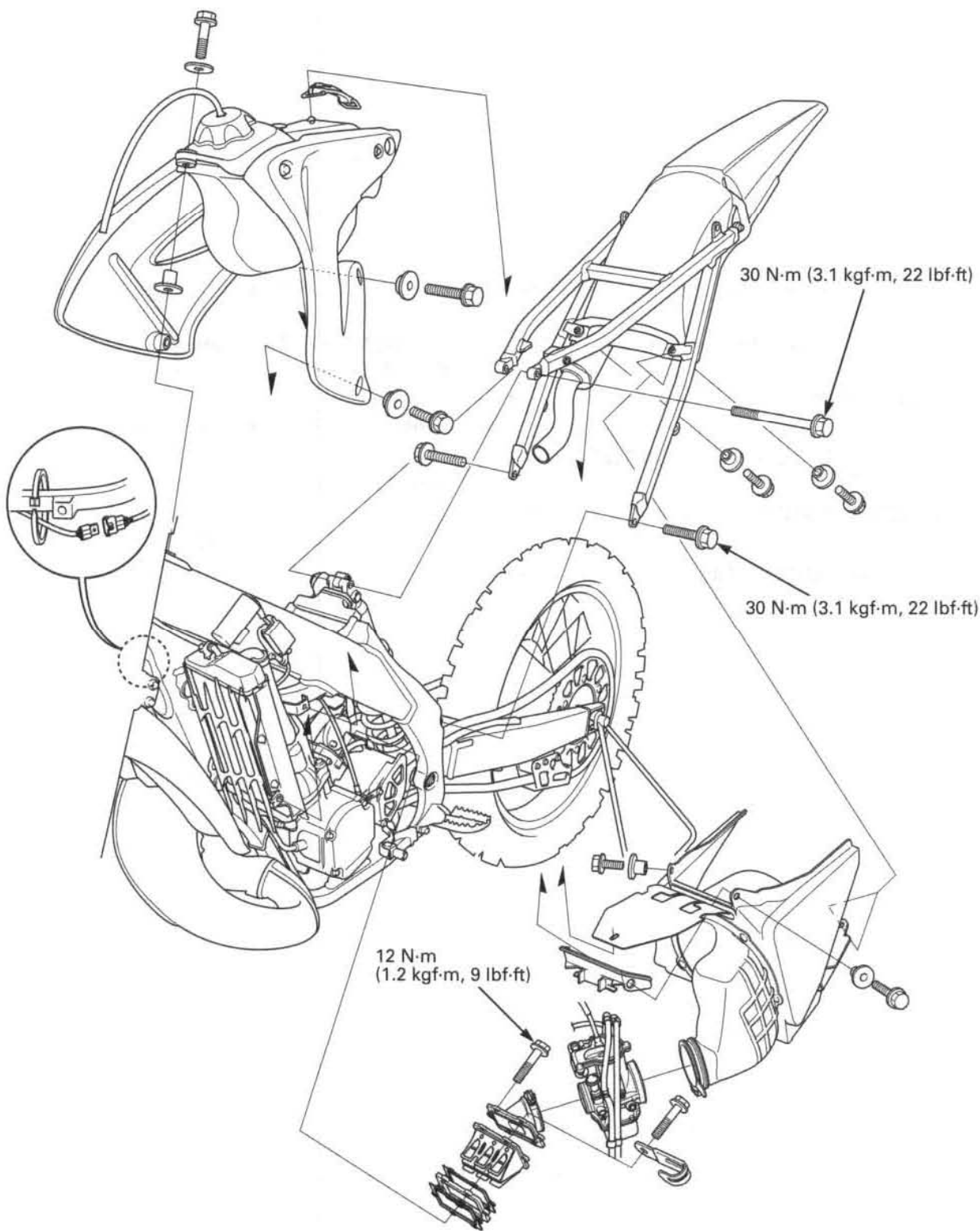
If excessive play has developed, check the steering stem for cracks.



4. FUEL SYSTEM

COMPONENT LOCATION	4-2	CARBURETOR REMOVAL/DISASSEMBLY ..	4-9
SERVICE INFORMATION	4-3	CARBURETOR ASSEMBLY/ INSTALLATION.....	4-14
TROUBLESHOOTING	4-4	THROTTLE POSITION SENSOR	4-19
CARBURETOR ADJUSTMENT, MINOR	4-5	REED VALVE.....	4-20
CARBURETOR ADJUSTMENT, MAJOR	4-5	AIR CLEANER HOUSING	4-22
CARBURETOR TUNING INFORMATION	4-7		

COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

- 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.
- Refer to page 2-6 for fuel tank removal and installation.
- When disassembling fuel system parts, note the locations of the O-rings. Replace them with new ones on reassembly.
- Before removing the carburetor, place an approved gasoline container under the float chamber, remove the drain plug and drain the carburetor.
- After removing the carburetor, wrap the intake port of the engine with a shop towel or cover it with pieces of tape to prevent any foreign material from dropping into the engine.
- If the vehicle is to be stored for more than one month, drain the float bowls. Fuel left in the float bowls may cause clogged jets, resulting in hard starting or poor driveability.

SPECIFICATIONS

ITEM	SPECIFICATIONS
Carburetor identification number	TMX 11A
Main jet	#420
Slow jet	#40
Jet needle	6DGY26-65
Jet needle clip position	3rd groove from top
Air screw initial opening	2 turns out
Float level	7.5 mm (0.30 in)
Throttle grip free play	3 – 5 mm (1/8 – 1/4 in)

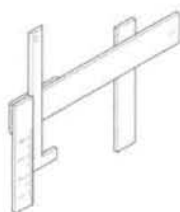
TORQUE VALUES

Sub-frame mounting bolt	(upper)	30 N·m (3.1 kgf·m, 22 lbf·ft)
	(lower)	30 N·m (3.1 kgf·m, 22 lbf·ft)
Throttle cable holder		2.5 N·m (0.25 kgf·m, 1.8 lbf·ft)
Float pin set screw		2.0 N·m (0.2 kgf·m, 1.5 lbf·ft)
Main jet		2.0 N·m (0.2 kgf·m, 1.5 lbf·ft)
Slow jet		1.0 N·m (0.1 kgf·m, 0.7 lbf·ft)
Carburetor top screw		2.0 N·m (0.2 kgf·m, 1.5 lbf·ft)
Throttle stop screw lock nut		2.0 N·m (0.2 kgf·m, 1.5 lbf·ft)
Float chamber screw		3.4 N·m (0.35 kgf·m, 2.5 lbf·ft)
Carburetor drain plug		3.9 N·m (0.4 kgf·m, 2.9 lbf·ft)
Choke valve		3.4 N·m (0.35 kgf·m, 2.5 lbf·ft)
Float valve seat set screw		1.0 N·m (0.1 kgf·m, 0.7 lbf·ft)
Mesh filter plate bolt		2.0 N·m (0.2 kgf·m, 1.5 lbf·ft)
Carburetor insulator bolt		12 N·m (1.2 kgf·m, 9 lbf·ft)
Throttle position sensor torx bolt		2.0 N·m (0.2 kgf·m, 1.5 lbf·ft)
Reed valve stopper screw		1.0 N·m (0.1 kgf·m, 0.7 lbf·ft)

Apply locking agent to the threads

TOOL

Carburetor float level gauge
07401-0010000



FUEL SYSTEM

TROUBLESHOOTING

Engine cranks but won't start

- Too much fuel getting to the engine
 - Air cleaner clogged
 - Flooded carburetor
- Intake air leak
- Fuel contaminated/deteriorated
- No fuel to carburetor
 - Fuel filter clogged
 - Fuel hose clogged
 - Fuel valve stuck
 - Float level misadjusted
 - Fuel tank breather hose clogged
- Slow circuit clogged
- No spark at plug (faulty spark plug or ignition malfunction)

Lean mixture

- Fuel jets clogged
- Fuel tank breather hose clogged
- Fuel filter clogged
- Fuel line restricted
- Float valve faulty
- Fuel level too low
- Air vent hose clogged
- Advanced ignition timing
- Intake air leak
- Jetting incorrect for altitude and temperature condition

Rich mixture

- Choke valve in "ON" position
- Float valve faulty
- Fuel level too high
- Air jets clogged
- Air cleaner element contaminated
- Flooded carburetor
- Worn crankshaft seal
- Jetting incorrect for altitude/temperature conditions.

Engine stalls, hard to start, rough idling

- Fuel line restricted
- Ignition malfunction
- Low cylinder compression
- Fuel mixture too lean/rich
- Fuel contaminated/deteriorated
- Intake air leak
- Float level misadjusted
- Fuel tank breather hose clogged
- Air screw misadjusted
- Slow circuit or starting enrichment circuit clogged

CARBURETOR ADJUSTMENT, MINOR

IDLE MIXTURE AND IDLE SPEED

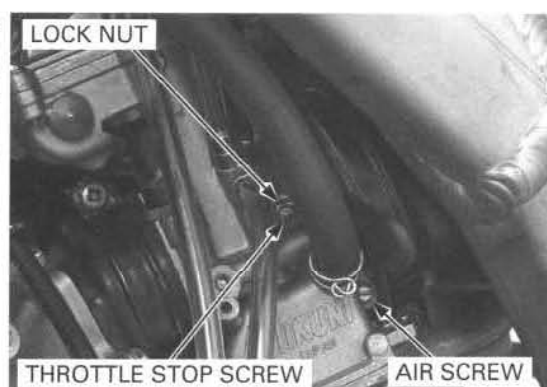
The standard carburetor settings are ideal for the following conditions: 32:1 premix ratio using Pro Honda HP-2 2-stroke oil or its equivalent, sea level altitude, and 20 °C (68 °F) air temperature. If your conditions are different, you may need to adjust the carburetor settings using the tuning information chart (page 4-7).

1. Adjust the carburetor setting using the tuning information chart (page 4-7).

STANDARD SETTING:

FLOAT LEVEL:	7.5 mm (0.30 in)
AIR SCREW INITIAL OPENING:	2 turns out
SLOW JET:	#40
MAIN JET:	#420
JET NEEDLE:	6DGY26-65
JET NEEDLE CLIP POSITION:	3rd groove from top

2. When the engine is warm enough to run without the choke, push the choke knob down to its "OFF" position.
3. Loosen the lock nut and turn the throttle stop screw to obtain the smoothest idle:
 - To decrease idle speed, turn the throttle stop screw counterclockwise.
 - To increase idle speed, turn the throttle stop screw clockwise.
4. Adjust the air screw to obtain the best off-idle performance.
 - If the engine runs rich exiting a corner, turn the air screw counterclockwise to lean the mixture.
 - If the engine runs lean exiting a corner, turn the air screw clockwise to richen the mixture.



CARBURETOR ADJUSTMENT, MAJOR

FOR TEMPERATURE AND ALTITUDE

1. Warm up the engine.
2. Make two or three laps of a course with the standard setting. Note engine acceleration and other engine conditions in relation to throttle opening. Verify the mixture by removing the spark plug and reading the firing end.
3. Change the carburetor settings or select suitable carburetor jets, taking into consideration the engine conditions and tuning information chart for temperature and altitude (page 4-7).



FUEL SYSTEM

4. Turn the fuel valve OFF, loosen the carburetor insulator band screw and connecting boot band screw.
5. Remove the drain plug and drain the gasoline from the carburetor.



6. Change the jets as required and reinstall the drain plug.



7. Remove the jet needle from the throttle valve (page 4-10) and change the jet needle clip position as required.
8. Reinstall the jet needle and carburetor top (page 4-18).
9. Tighten the carburetor insulator band screw and connecting boot band screw.
10. Adjust the air screw opening as required.



CARBURETOR TUNING INFORMATION

CARBURETOR TUNING CHART

		Temperature							
		Cent.	-30° – -17°	-18° – -6°	-7° – -5°	4° – 16°	15° – 27°	26° – 38°	37° – 49°
		Fahr.	-21° – 0°	-1° – 20°	19° – 40°	39° – 60°	59° – 80°	79° – 100°	99° – 120°
Altitude	3,050 m (10,000 ft)	AS:	2	2	2	2 · 1/4	2 · 1/2	2 · 1/2	2 · 1/2
		SJ:	#40	#40	#37.5	#37.5	#37.5	#35	#35
	2,300 m (7,500 ft)	NC:	3rd	3rd	3rd	2nd	2nd	2nd	2nd
	JN:	6DGY26-65	6DGY26-65	6DGY26-65	6DGY26-66	6DGY27-66	6DGY27-67	6DGY26-67	6DGY26-68
	MJ:	#420	#410	#400	#390	#390	#380	#370	#370
	2,299 m (7,499 ft)	AS:	1 · 3/4	2	2	2	2 · 1/4	2 · 1/2	2 · 1/2
		SJ:	#40	#40	#40	#37.5	#37.5	#37.5	#35
	1,500 m (5,000 ft)	NC:	3rd	3rd	3rd	3rd	2nd	2nd	2nd
	JN:	6DGY26-65	6DGY26-65	6DGY26-65	6DGY26-66	6DGY27-66	6DGY27-67	6DGY26-67	6DGY26-67
	MJ:	#430	#420	#410	#400	#390	#390	#380	#380
	1,499 m (4,999 ft)	AS:	2	1 · 3/4	2	2	2	2 · 1/4	2 · 1/2
		SJ:	#42.5	#40	#40	#40	#37.5	#37.5	#37.5
	750 m (2,500 ft)	NC:	3rd	3rd	3rd	3rd	3rd	2nd	2nd
	JN:	6DGY27-65	6DGY26-65	6DGY26-65	6DGY26-65	6DGY26-66	6DGY27-66	6DGY27-66	6DGY27-67
	MJ:	#440	#430	#420	#410	#400	#390	#390	#390
	749 m (2,499 ft)	AS:	1 · 3/4	2	1 · 3/4	2	2	2	2 · 1/4
		SJ:	#42.5	#42.5	#40	#40	#40	#37.5	#37.5
	300 m (1,000 ft)	NC:	4th	3rd	3rd	3rd	3rd	3rd	2nd
	JN:	6DGY26-65	6DGY27-65	6DGY26-65	6DGY26-65	6DGY26-65	6DGY26-65	6DGY26-66	6DGY27-66
	MJ:	#450	#440	#430	#420	#410	#400	#400	#390
	299 m (999 ft)	AS:	2	1 · 3/4	2	1 · 3/4	2	2	2
		SJ:	#45	#42.5	#42.5	#40	#40	#40	#37.5
	0 m (0 ft)	NC:	4th	4th	3rd	3rd	3rd	3rd	3rd
	JN:	6DGY26-64	6DGY26-65	6DGY27-65	6DGY26-65	6DGY26-65	6DGY26-65	6DGY26-65	6DGY26-66
	See level	MJ:	#460	#450	#440	#430	#420	#410	#400

Legend:

Standard

AS: Air Screw opening from fully seated, SJ: Slow Jet, NC: Needle Clip position, JN: Jet Needle, MJ: Main Jet

- If you use the chart correctly, it should not be necessary to adjust more than one jet size richer or leaner to fine tune your CR. If a very large adjustment is required, there may be something wrong elsewhere. Check for worn crankshaft seals, air leaks, blocked exhaust or fuel system, or dirty air cleaner element.
- The tuning information chart will get you very close to the ideal setting. However, because of differences in pressure and humidity, you may need to fine tune the carburetor for race day condition.

JUST OFF IDLE

- Engine stumbles/hesitates (rich): turn out the air screw 1/4 turn.
- Engine surges (lean): turn in the air screw 1/4 turn.

NOTE:

- The minimum to maximum range of air screw adjustment is 1 to 3 turns out from the lightly seated position.
 - If you exceed 3 turns out, the next smaller slow jet is needed.
 - If you are under 1 turn out, the next larger slow jet is needed.

ON THE TOP END

- Engine stumbles/hesitates (rich): go to next smaller main jet.
- Engine surges (lean): go to next larger main jet.

NOTICE

To prevent engine damage, always adjust the main jet (top end) before adjusting the jet needle (mid-range).

IN THE MID-RANGE

- Engine stumbles/hesitates (rich): lower the jet needle by raising the needle clip one position.
- Engine surges (lean): raise the jet needle by lowering the needle clip one position.

FUEL SYSTEM

TUNING FOR SPECIAL CONDITIONS

Once you have adjusted the carburetor for temperature and altitude, it should not need major readjustment unless the race conditions change drastically. Exclusive of the tuning information chart, there are some unique atmospheric conditions that may require additional adjustments. They are as follows:

Main jet:

- Go richer on the main jet, by one number, when the track has a very long straightaway, steep climbs, a high percentage of sand, or the track is muddy.
- Go leaner on the main jet, by one number, when it is very humid or raining, or it is very hot [above 45 °C (113 °F)].

Jet needle:

- Under normal circumstances, the standard jet needle can be adjusted to suit most situations. However, a peculiar condition may require replacement of the standard jet needle. But before replacing the standard needle, complete all the carburetor adjustments (page 4-5). If mid-range performance is still not satisfactory, try one of the optional jet needles (page 1-21).

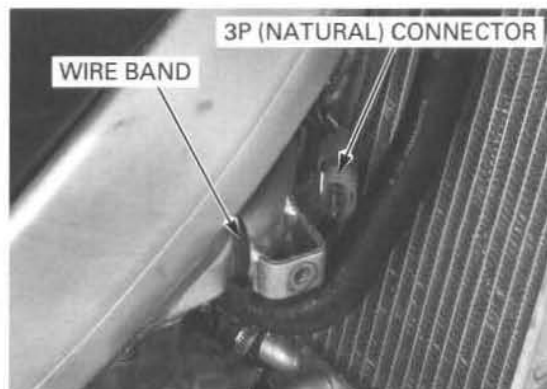
CARBURETOR REMOVAL/ DISASSEMBLY

REMOVAL

Remove the fuel tank (page 2-6).

Disconnect the TPS (throttle position sensor) 3P (Natural) connector.

Unfasten the wire band.



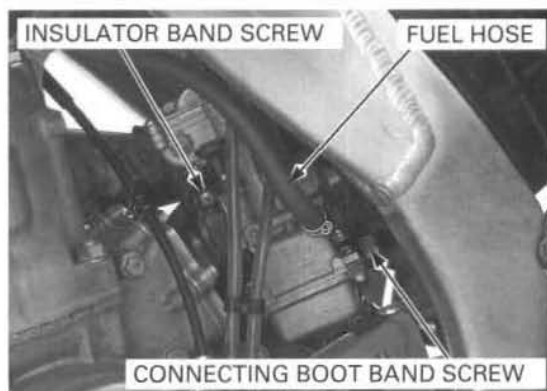
Release the TPS wire from the wire clamp on the upper engine hanger.



Disconnect the fuel hose.

Turn the handlebar to the left fully.

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

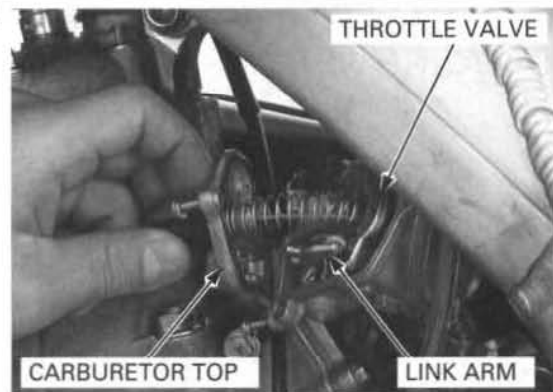


Loosen the carburetor top screws.



FUEL SYSTEM

Remove the carburetor top, pull up the TPS shaft link arm and then pull out the throttle valve. Remove the carburetor.

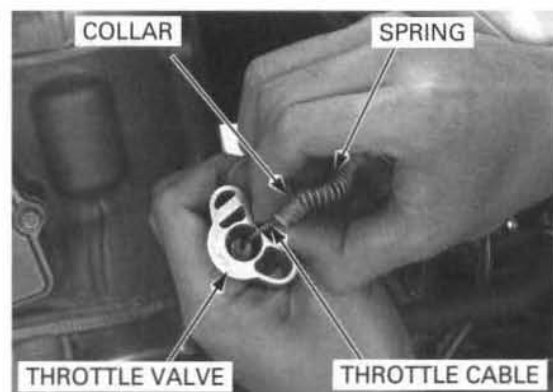


DISASSEMBLY

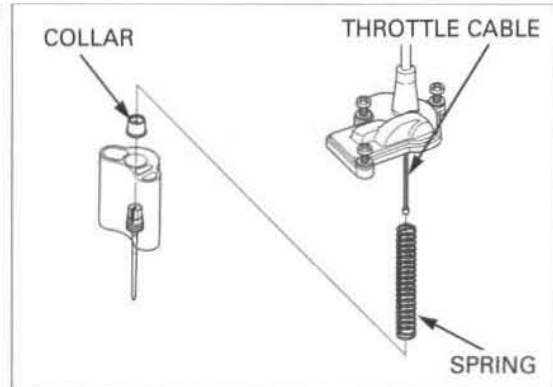
NOTE:

- Refer to page 4-19 for throttle position sensor (TPS) removal/installation.

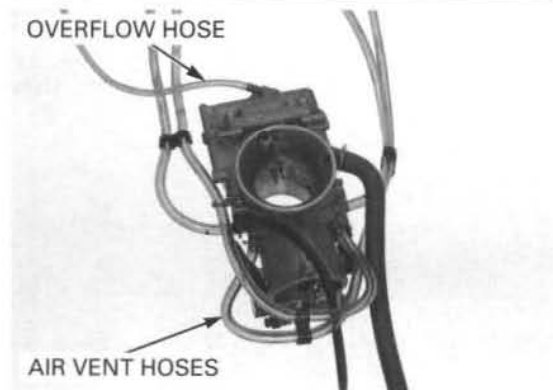
Compress the spring and remove the collar, and then the throttle cable end from the cable holder.



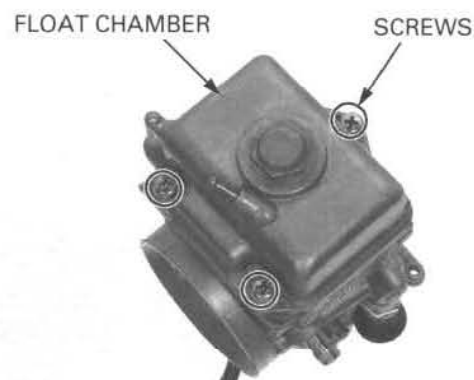
Remove the cable holder and jet needle from the throttle valve. Check the jet needle for stepped wear or damage. Check the throttle valve for damage. Replace these parts if necessary.



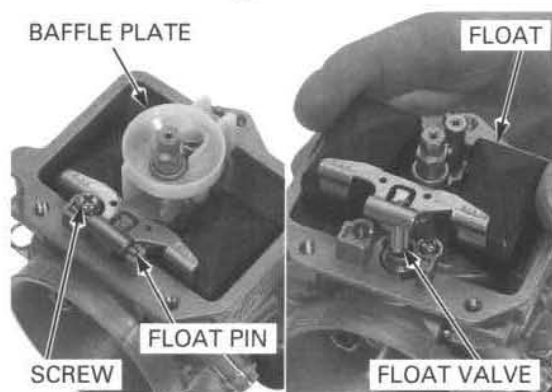
Disconnect the air vent hoses and overflow hose.



Remove the screws, float chamber and O-ring.



Remove the baffle plate.
Remove the float pin set screw and float pin.
Remove the float and float valve.



Remove the valve seat set screw and valve seat.
Check the float for damage.
Check the float valve and valve seat for scoring, scratches, clogs or damage.
Check the valve seat O-ring for deterioration or damage.

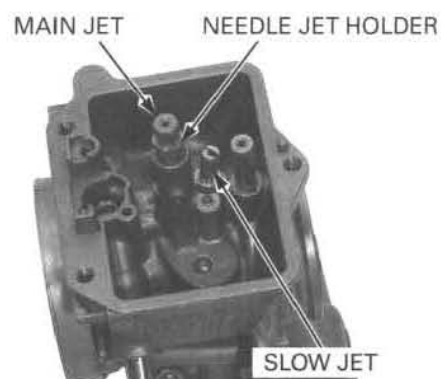
A worn or contaminated valve does not seat properly and will eventually flood the carburetor.

Check the tip of the float valve where it contacts the valve seat, for stepped wear or contamination.
Replace or clean these parts if necessary.

FLOAT VALVE SEAT/O-RING



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



FUEL SYSTEM

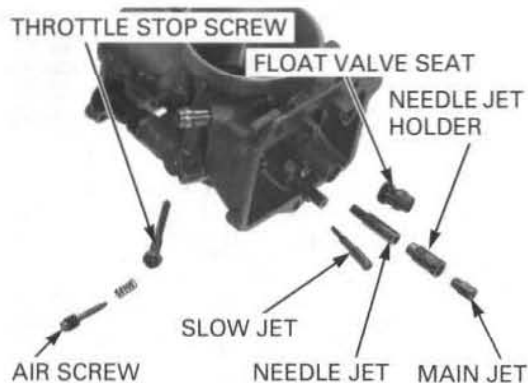
Be careful not to damage the needle jet. Push the needle jet from the throttle bore using a suitable tool, and remove it.



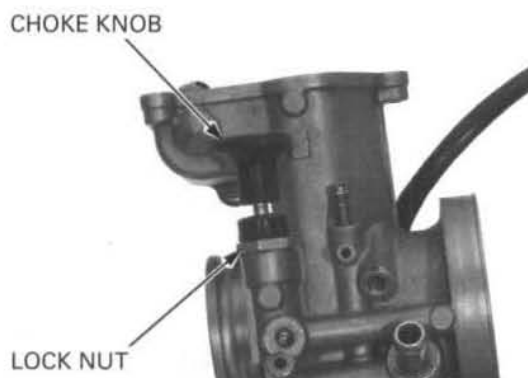
Before removing the air screw, record the number of turns in until it seats lightly, so it can be returned to its original position. Remove the air screw and throttle stop screw.



Check each jet for clogging or damage. Clean the jets with non-flammable or high flash point solvent and blow open with compressed air. Check the air screw for stepped wear or damage. Check the spring for damage. Replace these parts if necessary.



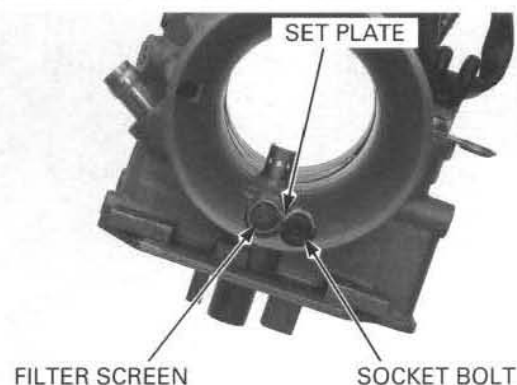
Unscrew the lock nut and remove the choke knob.



Check the valve seat for damage or stepped wear.
Check the O-ring for damage.
Replace the choke knob assembly if necessary.



Remove the bolt, set plate and wire mesh filter screen.



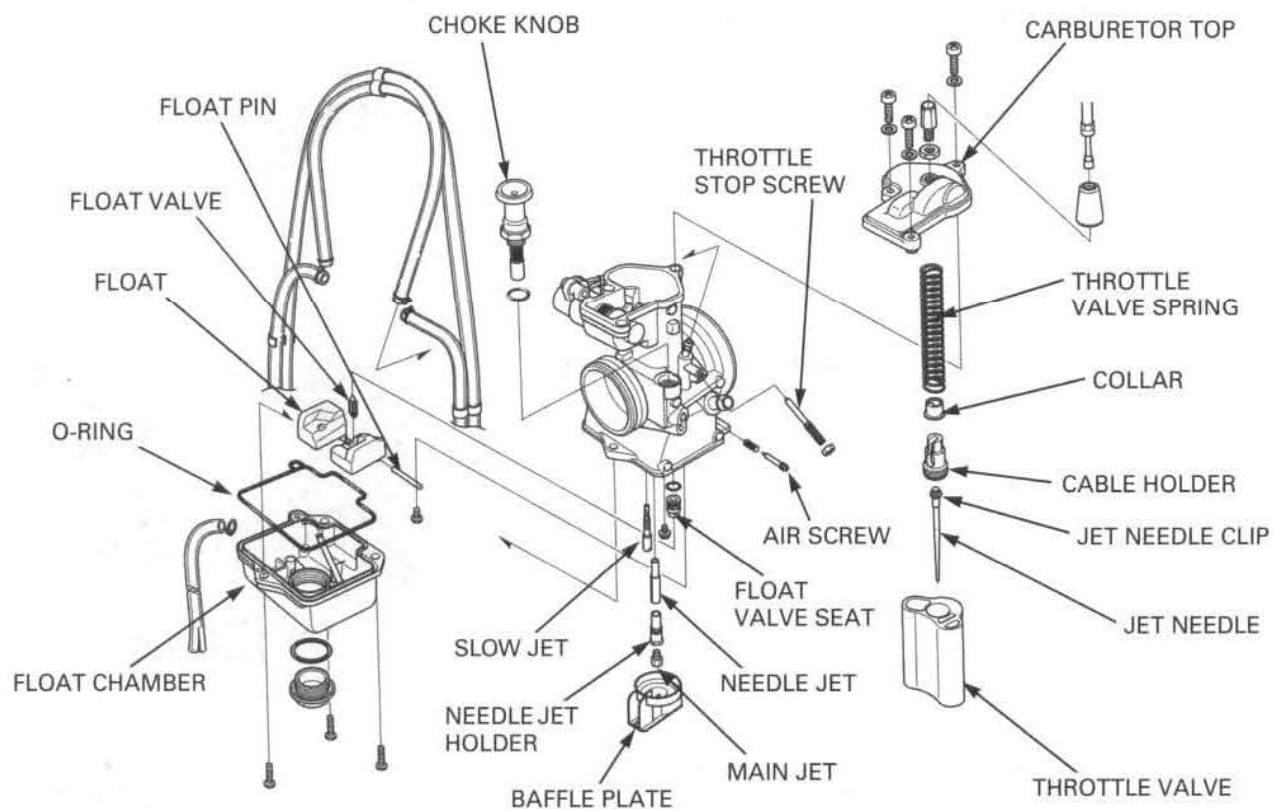
Cleaning the air and fuel passage with a piece of wire will damage the carburetor body.

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



FUEL SYSTEM

CARBURETOR ASSEMBLY/INSTALLATION



ASSEMBLY

Install the choke knob and tighten the lock nut to the specified torque.

TORQUE: 3.4 N·m (0.35 kgf·m, 2.5 lbf·ft)

CHOKE KNOB

LOCK NUT

Install the wire mesh filter screen and set plate. Tighten the set plate bolt to the specified torque.

TORQUE: 2.0 N·m (0.2 kgf·m, 1.5 lbf·ft)

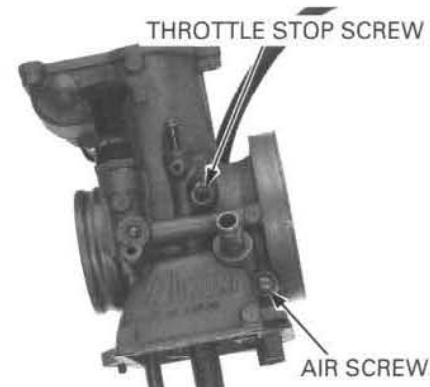
RETAINING PLATE

FILTER SCREEN

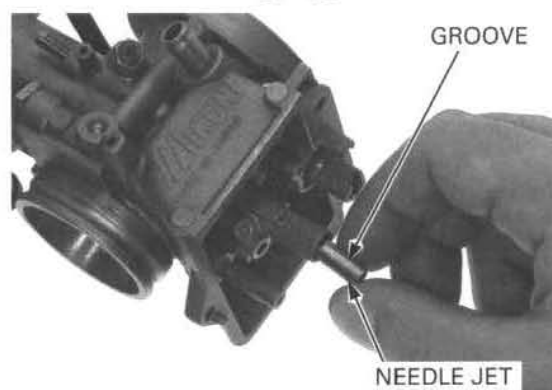
SOCKET BOLT

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

Install the air screw and spring.
Install the throttle stop screw/lock nut.



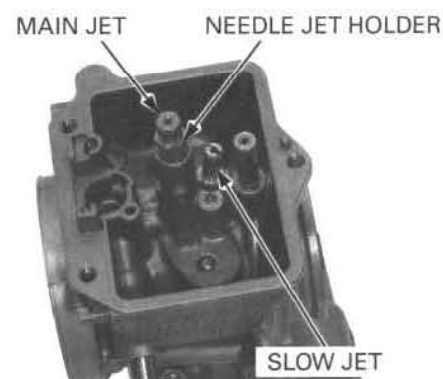
Install the needle jet while aligning its groove with the protrusion inside the fuel passage.



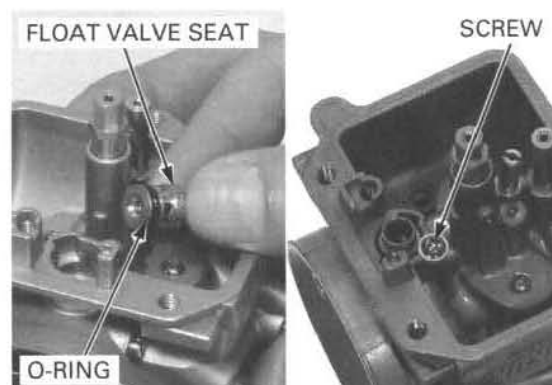
Install the slow jet, needle jet holder and main jet.

TORQUE:

Slow jet: 1.0 N·m (0.1 kgf·m, 0.7 lbf·ft)
Main jet: 2.0 N·m (0.2 kgf·m, 1.5 lbf·ft)



Install the float valve seat and O-ring.
Tighten the screw to the specified torque.
TORQUE: 1.0 N·m (0.1 kgf·m, 0.7 lbf·ft)



FUEL SYSTEM

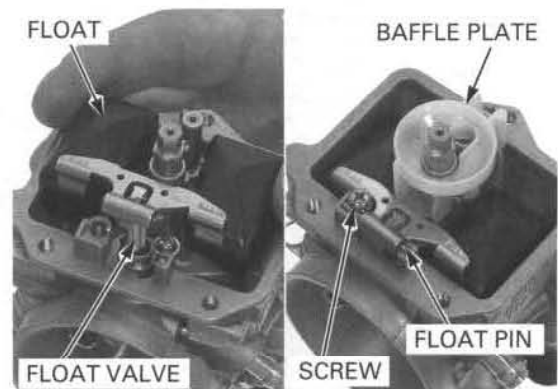
Install the float valve, float and float pin.
Tighten the screw to the specified torque.

TORQUE: 2.0 N·m (0.2 kgf·m, 1.4 lbf·ft)

Install the baffle plate.

NOTE:

Check the float level after installing the float valve and float.



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.

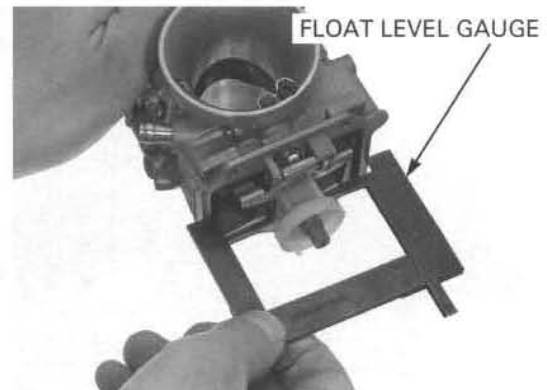
Measure the float level with the float level gauge.

TOOL:

Carburetor float level gauge 07401-0010000

Float level: 7.5 mm (0.30 in)

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



Install a new O-ring to the float chamber.
Install the float chamber to the carburetor, aligning the overflow pipe with the cut-out of the baffle plate.



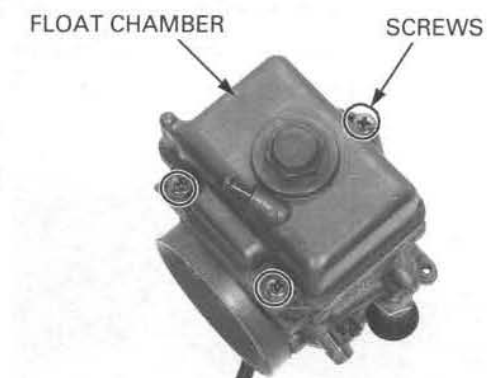
Install and tighten the float chamber screws to the specified torque.

TORQUE: 3.4 N·m (0.35 kgf·m, 2.5 lbf·ft)

If the drain plug is removed, install the new O-ring to the drain plug.

Install the drain plug to the float chamber and tighten it to the specified torque.

TORQUE: 3.9 N·m (0.4 kgf·m, 2.9 lbf·ft)

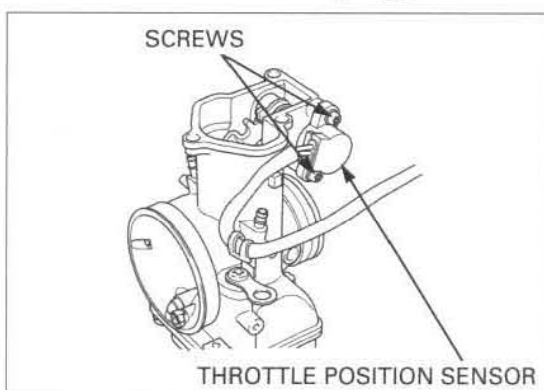


Connect the air vent hoses and overflow hose.



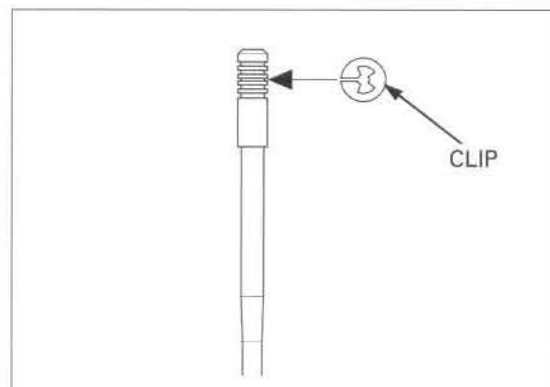
Install the throttle position sensor if it has been removed.

See page 4-19 for detail installation procedure.



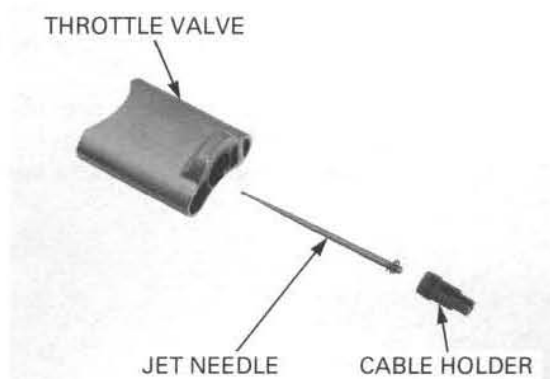
Install the jet needle clip to the jet needle.

Standard clip position: 3rd groove



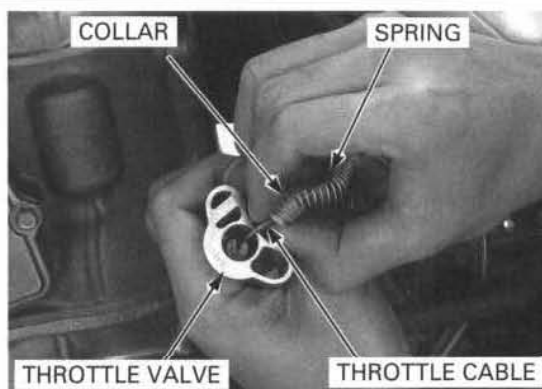
Install the jet needle into the throttle valve.
Install the cable holder into the throttle valve, then
tighten the cable holder to the specified torque.

TORQUE: 2.5 N·m (0.25 kgf·m, 1.8 lbf·ft)



FUEL SYSTEM

Guide the throttle cable through the throttle valve spring and collar.
Compress the throttle valve spring and install the throttle cable end into the cable holder.
Install the collar by aligning the tab of the collar with the cut-out in the cable holder.

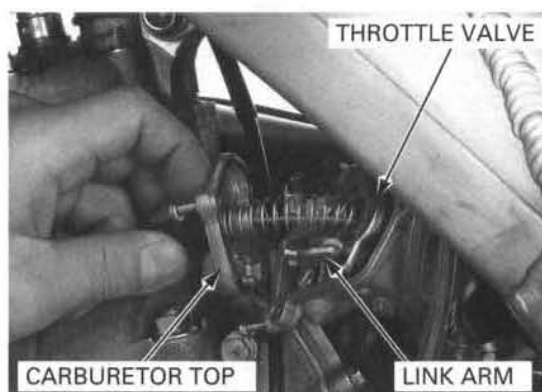


INSTALLATION

Loosely install the carburetor.

Lean the carburetor to the left.

Pull the TPS shaft link arm up and slide the throttle valve assembly into the carburetor with the cut-out and tab side facing to the air cleaner.



Install the carburetor top and tighten the screws to the specified torque.

TORQUE: 2.0 N·m (0.2 kgf·m, 1.5 lbf·ft)



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

Tighten the insulator and connecting boot band screws securely.

Connect the fuel hose to the carburetor.



Route the TPS wire properly, clamp it with wire clamp on the upper engine hanger.



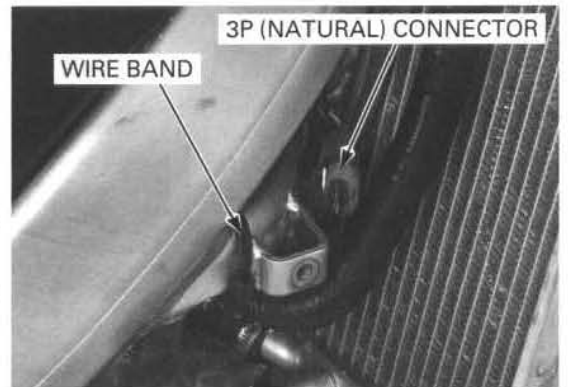
Connect the TPS 3P (Natural) connector. Secure the TPS wire with a wire band.

After installation, adjust the following:

- Throttle grip free play (page 3-6)
- Air screw adjustment (page 4-5)

After installation, check the following:

- Secondary air leaks around the insulator and connecting boot
- Fuel leaks around the fuel hose and carburetor
- Route the overflow hose, air vent hose and fuel hose



THROTTLE POSITION SENSOR

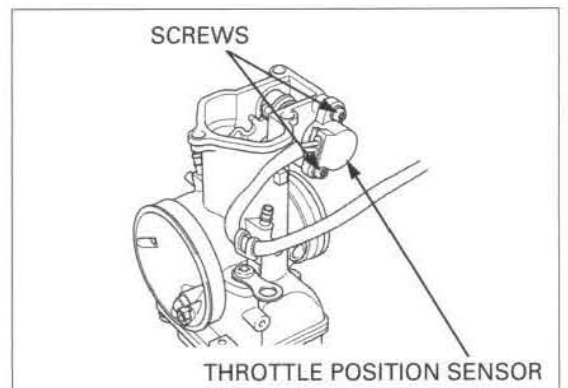
Do not remove the TPS (throttle position sensor) unless it is replaced.

REMOVAL/INSTALLATION

Remove the carburetor (page 4-9).

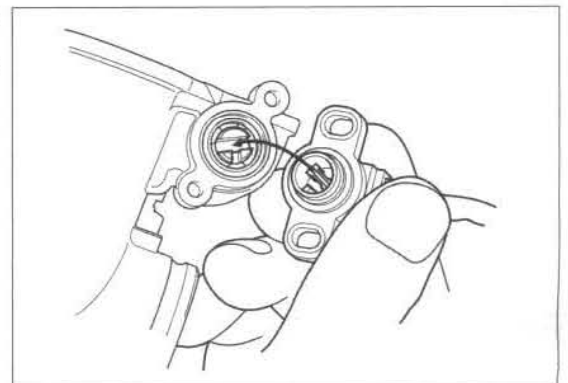
Release the TPS wire from the wire clamp on the carburetor body.

Remove the torx screws and TPS from the carburetor body.



Install the TPS by aligning the tabs of the TPS with the flat side of the shaft as shown.

Apply a locking agent to the torx screw threads and install the screws, then adjust the TPS position.



FUEL SYSTEM

If the resistance is out of standard, replace the TPS with new one.

Measure the resistance between the Blue/green and Yellow/red wire terminals of the sensor side 3P connector.

STANDARD: 4 – 6 k Ω (at 20°C/68°F)

Calculate the TPS resistance at the throttle valve fully closed position using the equation below.

A x (0.11 to 0.13) = B

A: Resistance between the Blue/green and Yellow/red wire terminals

B: TPS resistance between the Yellow/blue and Blue/green at the throttle valve fully closed.

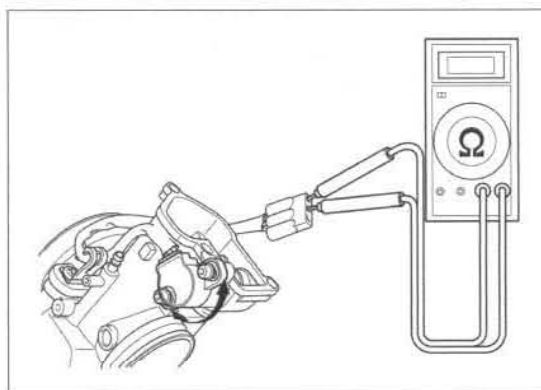
(Example)

If the resistance A is 5 k Ω , then the resistance B at the throttle valve fully closed position should be:
5 k Ω x (0.11 to 0.13) = 550 to 650 Ω

Adjust the TPS position so the resistance between the Yellow/blue and Blue/green terminals is the resistance calculated, and tighten the torx screws to the specified torque.

TORQUE: 2.0 N·m (0.2 kgf·m, 1.5 lbf·ft)

Install the carburetor (page 4-14).



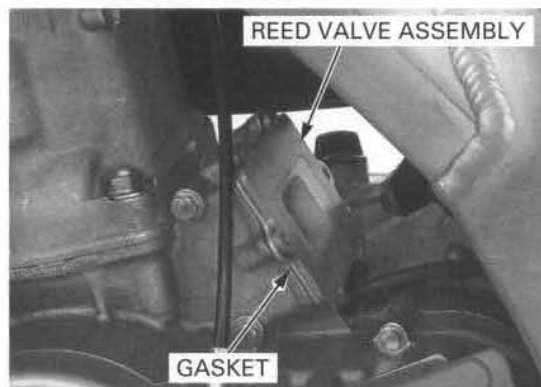
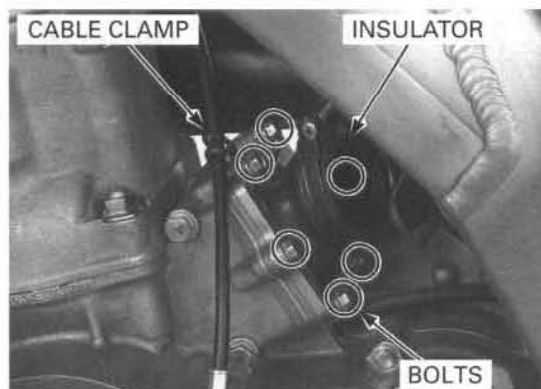
REED VALVE

REMOVAL

Remove the carburetor (page 4-9).

Remove the bolts, clutch cable clamp and insulator.

Remove the reed valve and gasket.



INSPECTION

Check the reed valve for fatigue or damage and replace the reed valve if necessary.

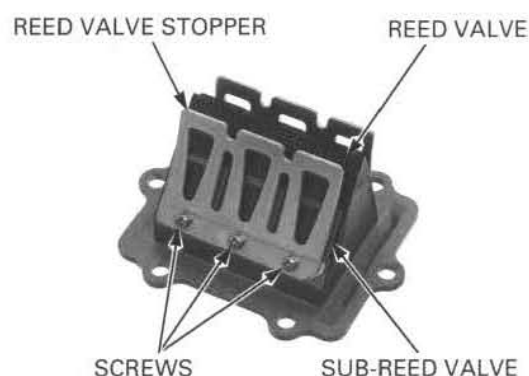
Check the reed valve stopper for cracks, damage and clearance from the reed, and replace the reed valve stopper if necessary.

**DISASSEMBLY/ASSEMBLY**

Remove the following:

- Screws
- Reed valve stoppers
- Sub reed valves
- Spacer (lower side only)
- Reed valves

Replace the reed valve after three races or about 7.5 hours.

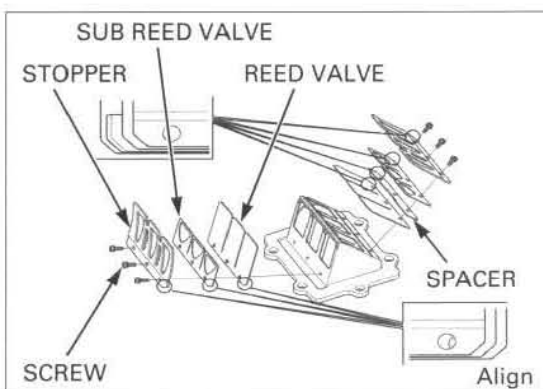


Align the cut-outs of the sub reed valve, spacer (lower side only), reed valve and reed valve stopper, then install them onto the reed valve body. Clean the reed valve screw threads.

Do not apply a locking agent to the reed valve.

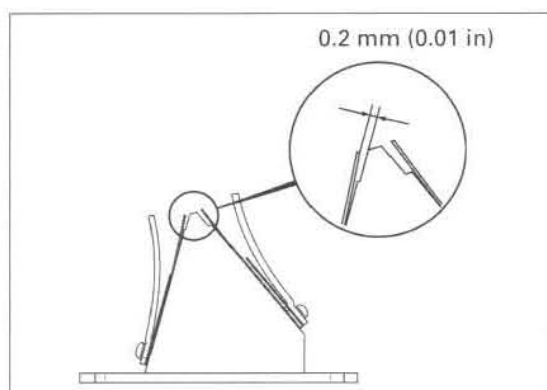
Apply a small amount of locking agent to the tip of the screw threads. Tighten the screws to the specified torque.

TORQUE: 1.0 N·m (0.1 kgf·m, 0.7 lbf·ft)



After assembling, check the clearance between the reed valve and reed valve body is less than 2.0 mm (0.01 in).

CLEARANCE: 0.2 mm (0.01 in)



FUEL SYSTEM

INSTALLATION

Install the new gasket to the crankcase.
Install the reed valve to the crankcase as shown.



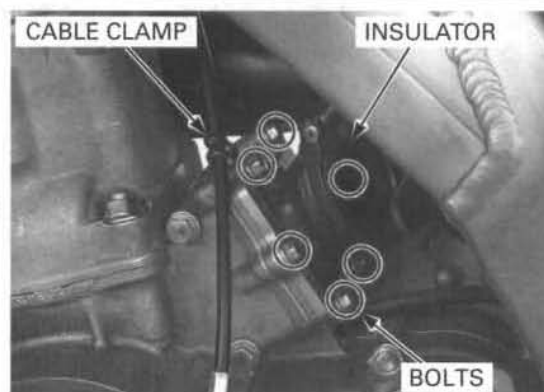
Install the insulator, clutch cable clamp and bolts.
Tighten the bolts to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Install the carburetor (page 4-14).

After installation, check the following:

- Secondary air leaks around the insulator and connecting boot
- Fuel leaks around the fuel hose and carburetor

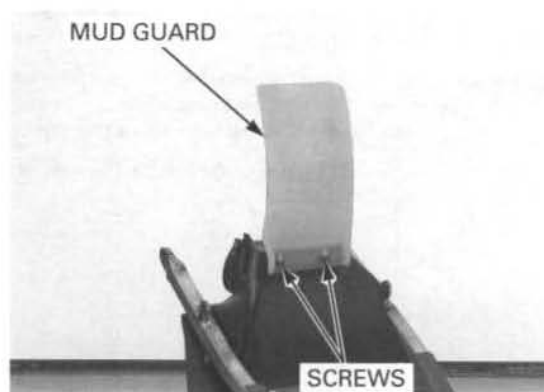


AIR CLEANER HOUSING

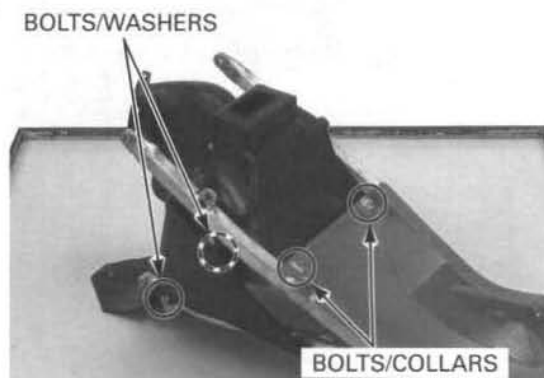
REMOVAL

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

Remove the screws and mud guard.



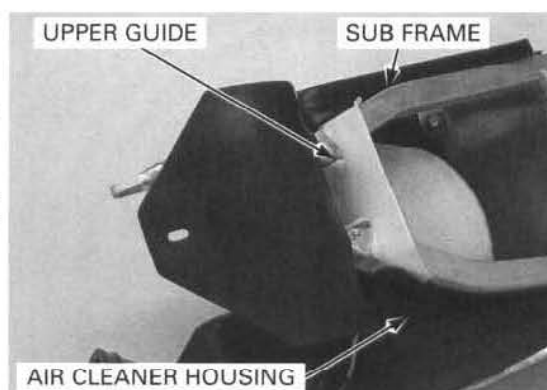
Remove the air cleaner housing bolts, washers, rear fender bolts and collars.



Remove the air cleaner housing with the upper guide from the sub frame.

Remove the air cleaner element (page 3-6). Check the carburetor connecting boot to see if it is sealing properly at the air cleaner housing. Check the air cleaner housing for damage.

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



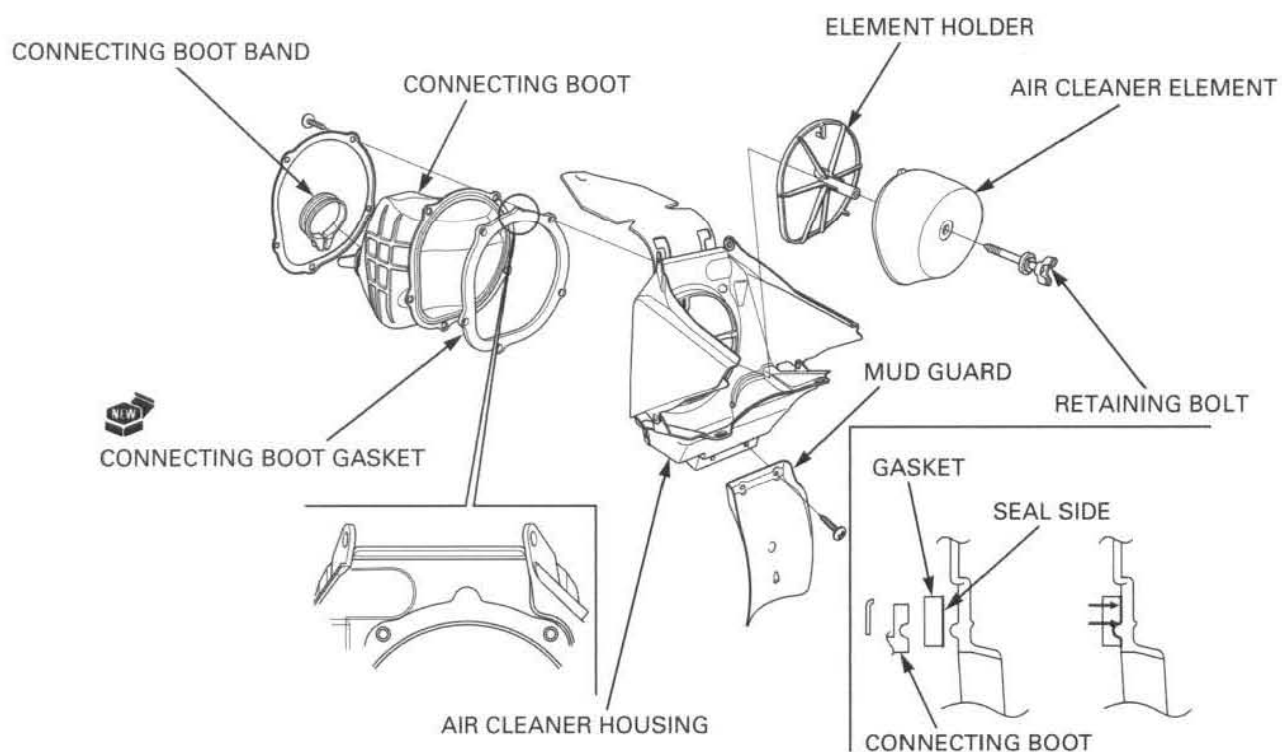
INSTALLATION

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

TORQUE: 13 N·m (1.3 kgf·m, 10 lbf·ft)

NOTE:

- At installation, replace the gasket with new one and install it with its tab facing up.
- Refer to page 3-6 for the air cleaner element installation.

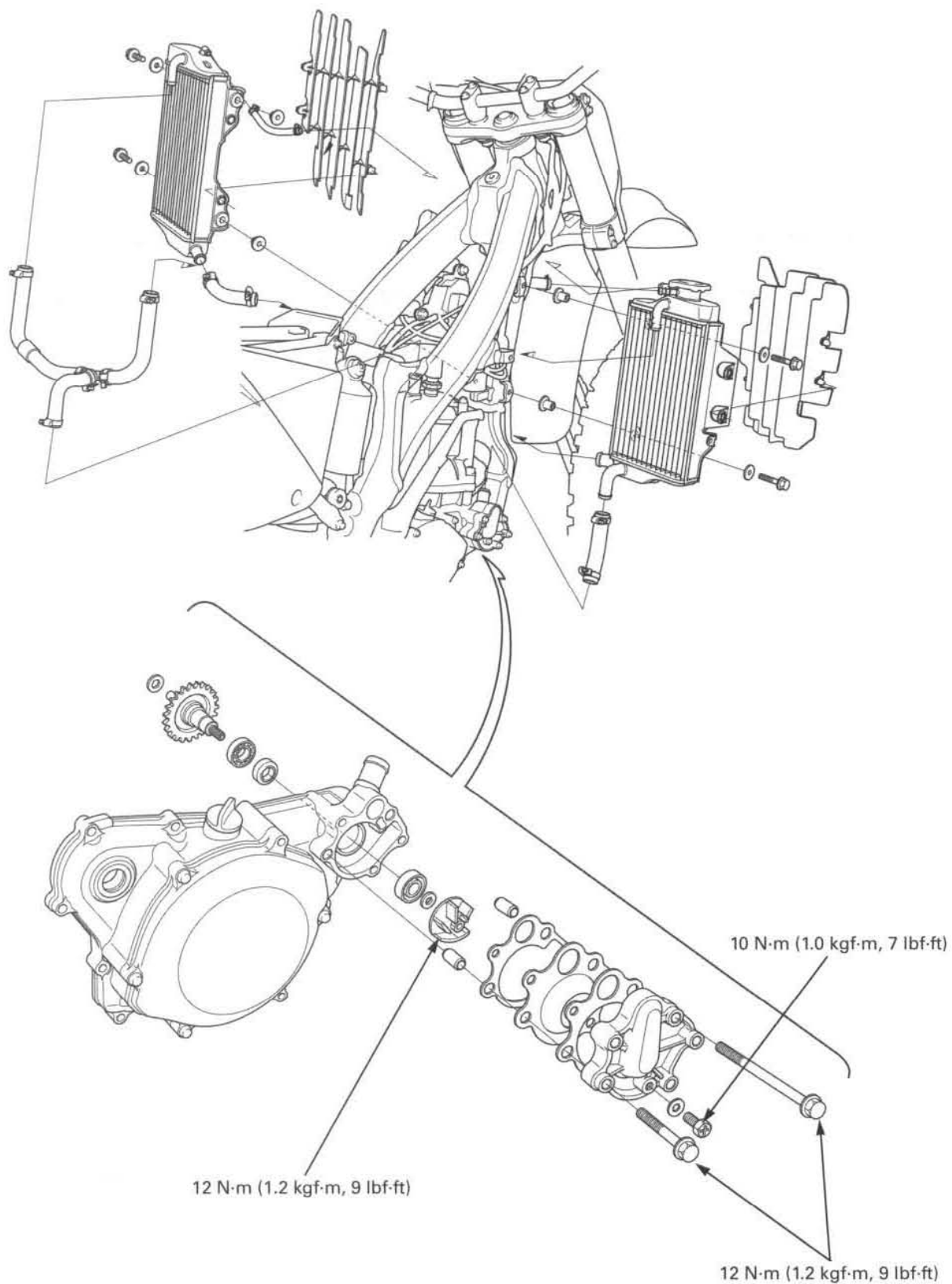


MEMO

5. COOLING SYSTEM

COMPONENT LOCATION	5-2	COOLANT REPLACEMENT	5-6
SERVICE INFORMATION	5-3	RADIATOR	5-7
TROUBLESHOOTING	5-4	WATER PUMP	5-9
SYSTEM TESTING.....	5-5		

COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

⚠ WARNING

Removing the radiator cap while the engine is hot can allow the coolant to spray out, seriously scalding you. Always let the engine and radiator cool down before removing the radiator cap.

NOTICE

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

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

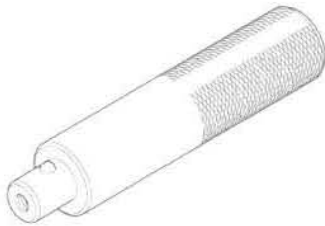
SPECIFICATIONS

ITEM		SPECIFICATIONS
Coolant capacity	At change	0.97 liter (1.02 US qt, 0.85 Imp qt)
	At disassembly	1.10 liter (1.16 US qt, 0.97 Imp qt)
Radiator cap relief pressure		108 – 137 kPa (1.1 – 1.4 kg/cm ² , 16 – 20 psi)
Recommended antifreeze		Pro Honda HP Coolant or an equivalent high quality ethylene glycol antifreeze containing silica-free corrosion inhibitors
Standard coolant concentration		1 : 1 mixture with distilled water

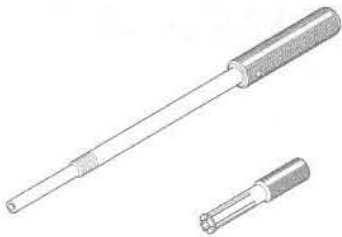
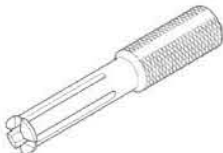
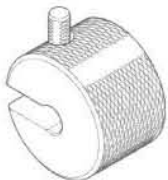
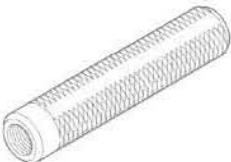
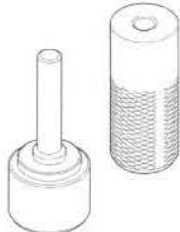
TORQUE VALUES

Water pump impeller	12 N·m (1.2 kgf·m, 9 lbf·ft)
Water pump cover bolt	12 N·m (1.2 kgf·m, 9 lbf·ft)
Coolant drain bolt	10 N·m (1.0 kgf·m, 7 lbf·ft)

TOOLS

Driver 07749-0010000 	Attachment, 28 x 30 mm 07946-1870100 	Pilot, 12 mm 07746-0040200 
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COOLING SYSTEM

Bearing remover, 12 mm 07936-1660101  Not available in U.S.A. or 07936-166010A	Remover head, 12 mm 07936-1660110  Not available in U.S.A.	Remover shaft 07936-1660120  Not available in U.S.A.
Remover weight 07741-0010201  or 07936-371020A (U.S.A. only) or 07936-3710200	Remover handle 07936-3710100 	Water seal driver 07945-KA30000  or 07965-415000A (U.S.A. only) or GN-AH-065-415

TROUBLESHOOTING

Engine temperature too high

- Faulty radiator cap
- Insufficient coolant
- Passage blocked in radiator, hoses or water jacket
- Radiator air passages clogged with dirt
- Air in system
- Faulty water pump

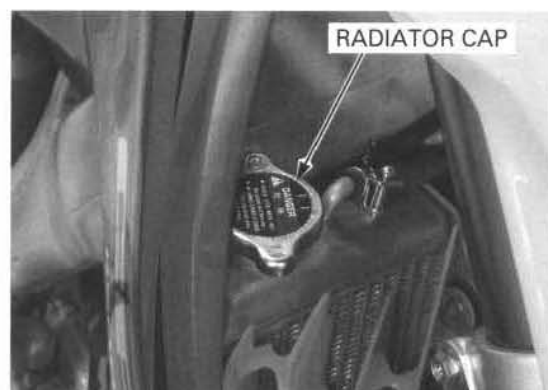
Coolant leak

- Faulty water pump oil and water seal
- Deteriorated water pump oil and water seal
- Damaged or deteriorated gasket
- Deteriorated water pump oil and water seal
- Loose hose connection or clamp
- Damaged or deteriorated hose
- Faulty radiator cap
- Damaged radiator

SYSTEM TESTING

COOLANT (HYDROMETER TEST)

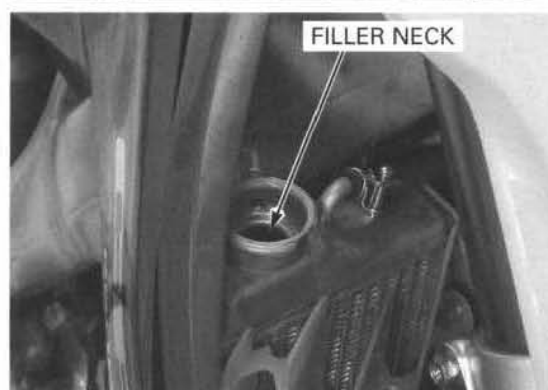
Remove the radiator cap.



Test the coolant gravity using a hydrometer (see below for "Coolant gravity chart").

For maximum corrosion protection, a 1:1 solution of ethylene glycol and distilled water is recommended (page 5-6).

Look for contamination and replace the coolant if necessary.



COOLANT GRAVITY CHART

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

COOLING SYSTEM

RADIATOR CAP/SYSTEM PRESSURE INSPECTION

Remove the radiator cap (page 5-5).

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

Install the radiator cap on the tester.

Pressure test the radiator cap.

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

RADIATOR CAP RELIEF PRESSURE:

108 – 137 kPa (1.1 – 1.4 kgf/cm², 16 – 20 psi)

Pressure test the radiator, engine and hoses, and check for leaks.

NOTICE

Excessive pressure can damage the cooling system components. Do not exceed 137 kPa (1.4 kgf/cm², 20 psi).

Repair or replace components if the system will not hold the specified pressure for at least 6 seconds.



COOLANT REPLACEMENT

PREPARATION

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

RECOMMENDED ANTIFREEZE:

Pro Honda HP Coolant or and equivalent high quality ethylene glycol antifreeze containing corrosion protection inhibitors

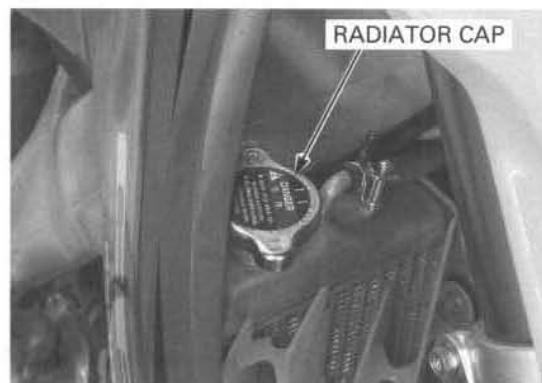
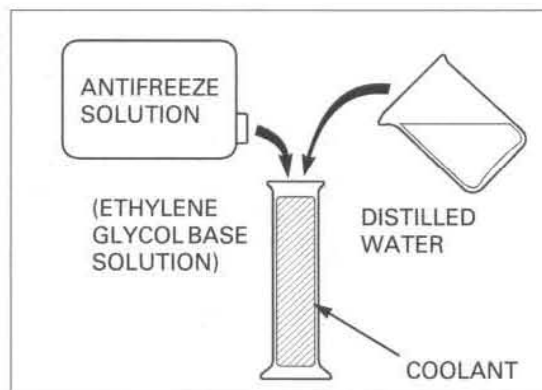
RECOMMENDED MIXTURE:

1:1 (Distilled water and antifreeze)

REPLACEMENT/AIR BLEEDING

Remove the radiator cap.

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



Remove the drain bolt on the water pump cover and cylinder then drain the system coolant.

Reinstall the drain bolt with the new sealing washers.

Tighten the drain bolt to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

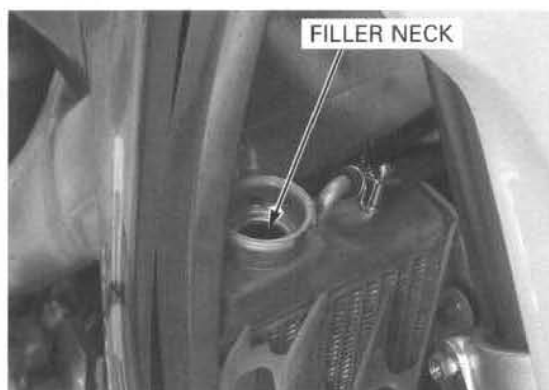


Fill the system with the recommended coolant through the filler opening up to filler neck.

CAPACITY: 0.97 liter (1.02 US oz, 0.85 Imp oz)

Lean the machine approximately 20° right and left several times to bleed air trapped in the cooling system.

If the coolant level drops, add more coolant and repeat air bleeding procedure.



RADIATOR

REMOVAL

Drain the coolant (page 5-6).

Remove the right and left radiator grills.



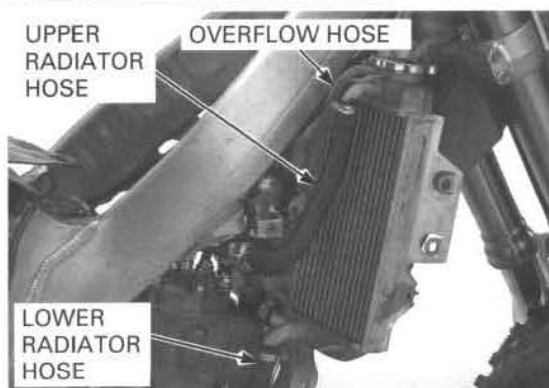
Note the direction of the hose clamps.

Loosen the upper radiator hose clamps and disconnect the upper radiator hoses.

Loosen the lower radiator hose clamp and disconnect the lower radiator hose.

Loosen the upper and lower joint hose clamps and disconnect the upper and lower joint hose.

Remove the overflow hose from the right side radiator.

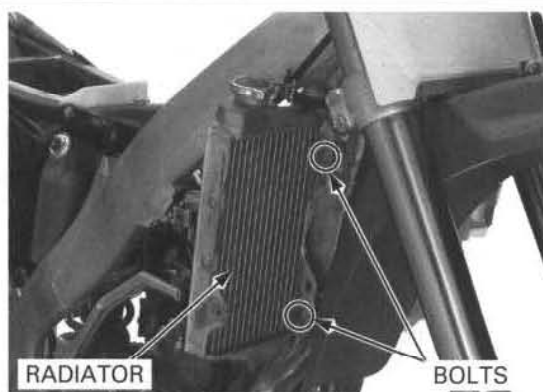


COOLING SYSTEM

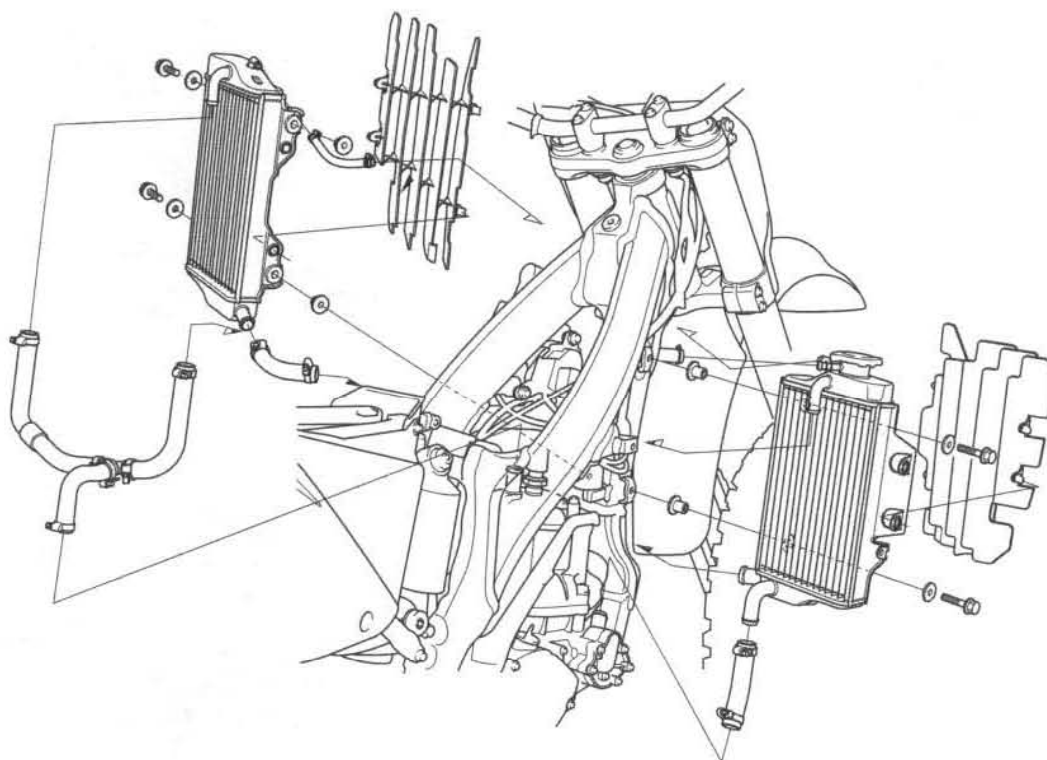
Remove the upper and lower mounting bolts and collars.

Be careful not to damage the radiator core.

Remove the radiator.



INSTALLATION



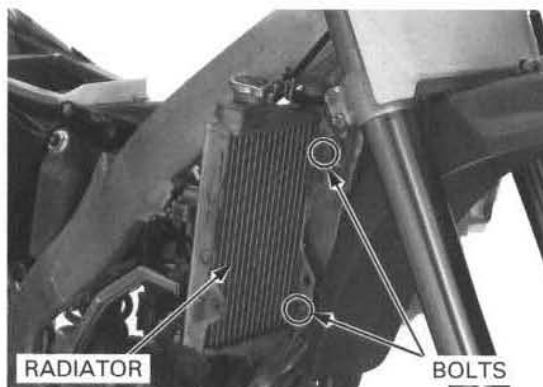
Be careful not to damage the radiator core.

Installation is essentially the reverse order of removal.

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

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

Install the radiator shrouds (page 2-4).



WATER PUMP

MECHANICAL SEAL INSPECTION

Inspect the inspection hole for signs of coolant leakage.

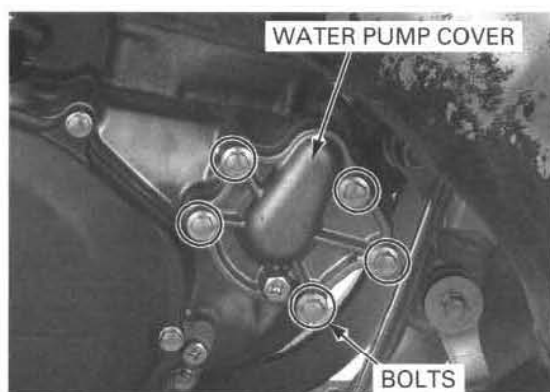
If there is leakage, the mechanical seal is defective, rebuild the water pump as an assembly.



REMOVAL

Drain the coolant (page 5-6).

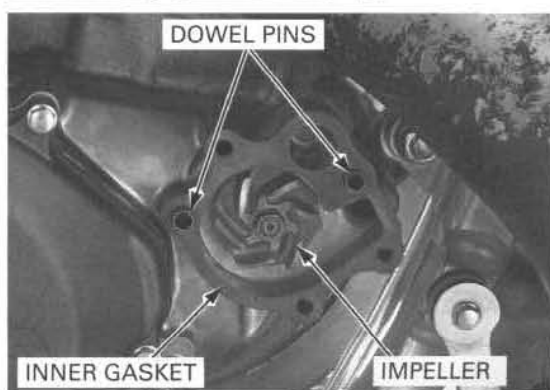
Remove the four flange bolts and water pump cover.



Remove the outer gasket and plate.

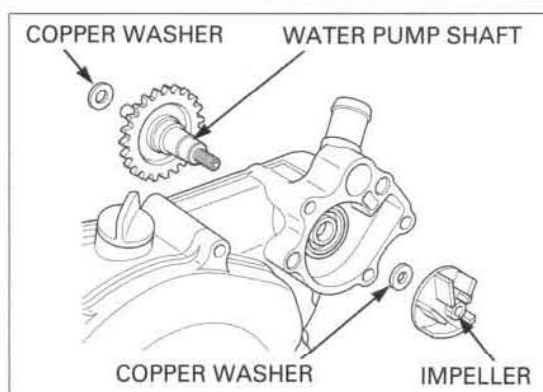


Remove the inner gasket and dowel pins.
Loosen the impeller.



COOLING SYSTEM

Remove the impeller and copper washer.
Remove the right crankcase cover (page 9-5).
Remove the copper washer.
Remove the water pump shaft from the right crankcase cover.



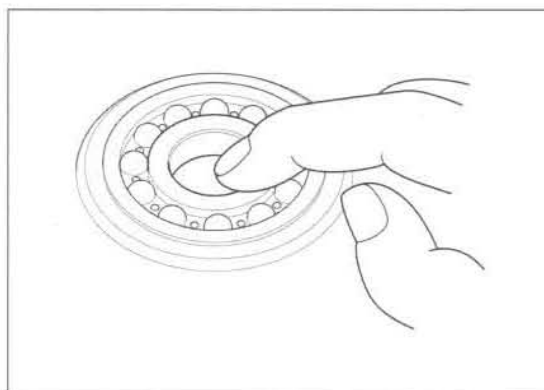
INSPECTION

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



Turn the inner race of the water pump shaft bearing with your finger.
The bearing should turn smoothly and quietly.
Also check that the bearing outer race fits tightly in the right crankcase cover.

Replace the water pump shaft bearing if necessary (page 5-11).



Check the water seal for damage or deterioration.
Replace the water seal if necessary (page 5-11).



BEARING REPLACEMENT**RIGHT CRANKCASE COVER SIDE:**

Remove the water pump shaft bearing using the special tools.

TOOLS:

Bearing remover, 12 mm	07936-1660101
Bearing head, 12 mm	07936-1660100
Remover shaft	07936-1660120
Remover weight	07741-0010201

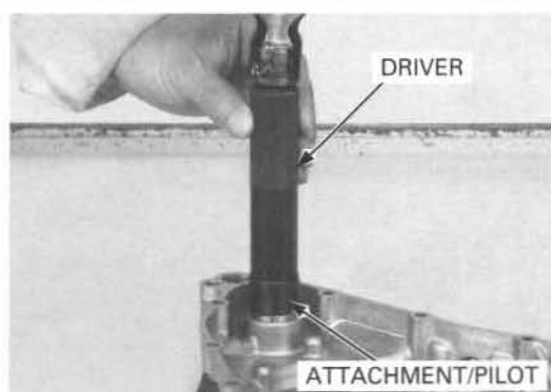
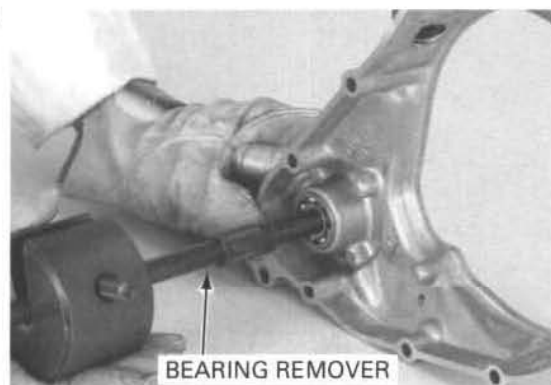
U.S.A. TOOLS:

Bearing remover, 12 mm	07936-166010A
Remover handle	07936-3710100
Remover weight	07936-371020A or 07936-3710200

Drive the new bearing into the right crankcase cover using the special tools as shown.

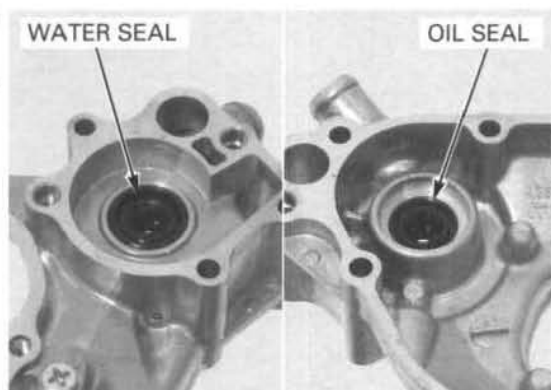
TOOLS:

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

**WATER/OIL SEAL REPLACEMENT**

Remove the water pump shaft bearing from the right crankcase cover (page 5-11).

Drive the water seal and oil seal out from the right crankcase cover.



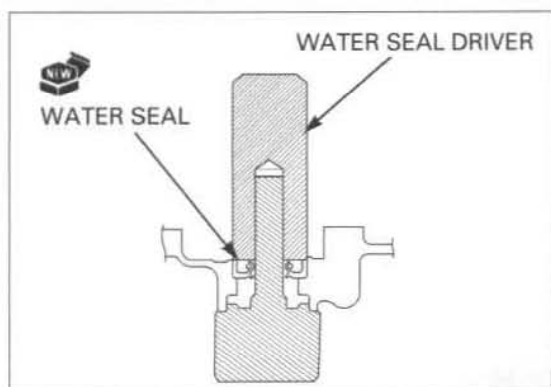
Install the water seal drive into the right crankcase cover as shown.

Be careful not to damage the water seal lips during installation.

Drive the new water seal into the right crankcase cover using the special tools.

TOOLS:

Water seal driver	07945-KA30000 or 07965-415000A (U.S.A. only) or GN-AH-065-415
Mechanical seal installer	



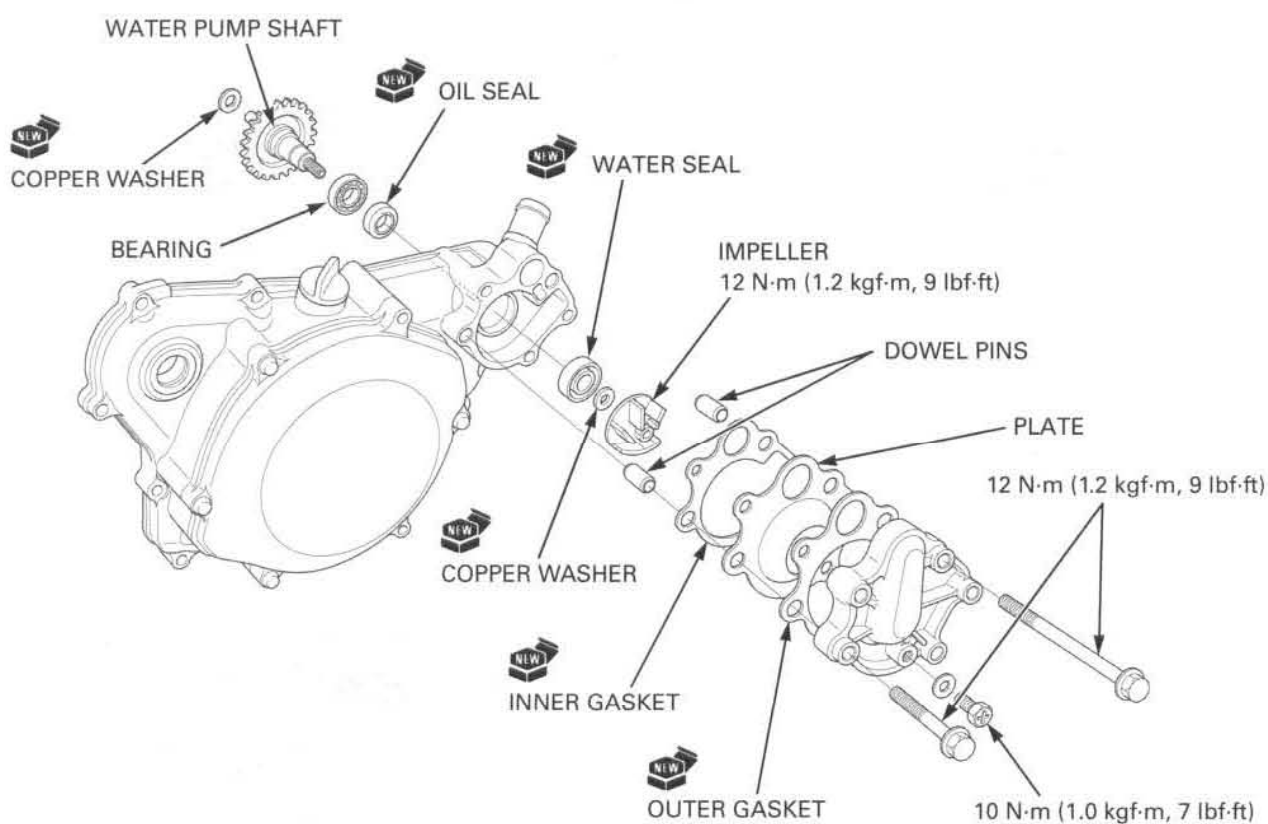
COOLING SYSTEM

Install the new oil seal into the right crankcase cover as shown.

Install the water pump shaft bearing (page 5-11).

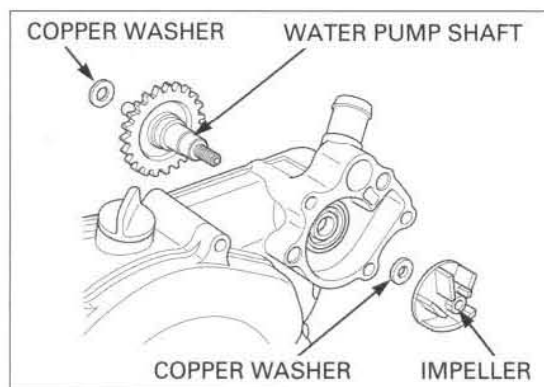


INSTALLATION



Install the water pump shaft to the right crankcase cover.

Install the copper washer and impeller onto the water pump shaft.



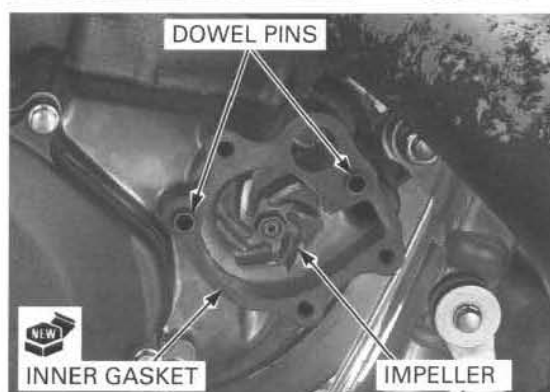
Install the copper washer onto the crankcase.
Install the right crankcase cover (page 9-6).



Tighten the impeller to the specified torque.

TORQUE: 12 N·m (1.2 kgf-m, 9 lbf-ft)

Install the dowel pins and new inner gasket.



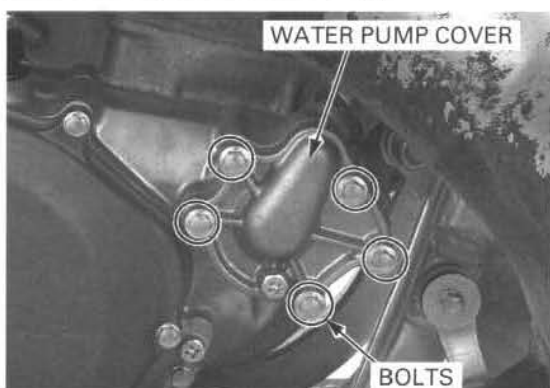
Install the plate and new outer gasket.



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

TORQUE: 12 N·m (1.2 kgf-m, 9 lbf-ft)

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



MEMO

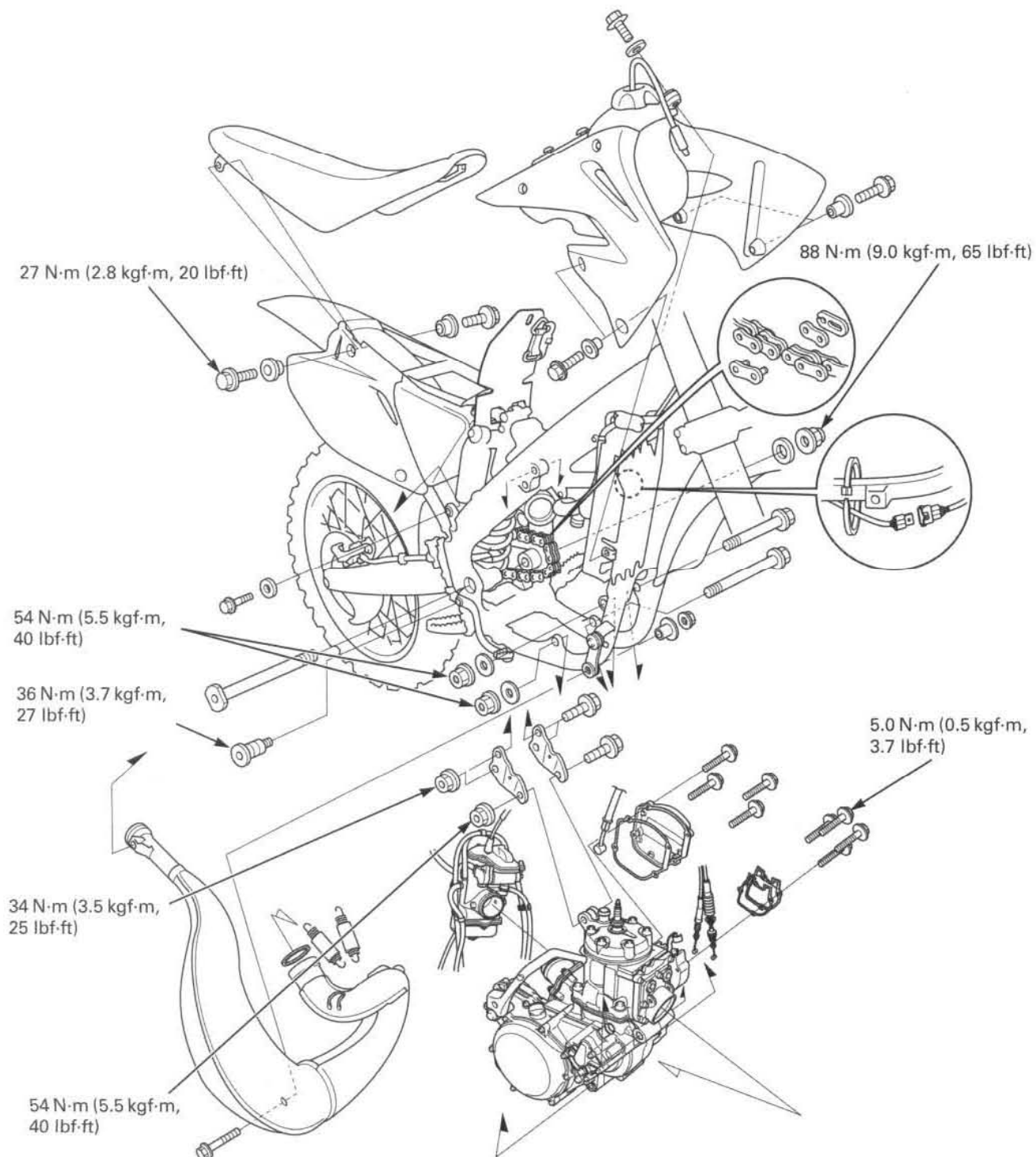
6. ENGINE REMOVAL/INSTALLATION

6

COMPONENT LOCATION	6-2	ENGINE REMOVAL	6-4
SERVICE INFORMATION	6-3	ENGINE INSTALLATION	6-6

ENGINE REMOVAL/INSTALLATION

COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

- During engine removal and installation, support the motorcycle using a workstand.
- The following components can be serviced with the engine installed in the frame.
 - alternator (page 14-10)
 - clutch/kickstarter/gearshift linkage (page 9-3)
 - cylinder head/cylinder/piston (page 7-3)
 - RC valve system (page 8-3)
- The following components require engine removal for service.
 - crankshaft/transmission (page 10-3)

SPECIFICATION

ITEM		SPECIFICATIONS
Engine dry weight		23.3 kg (51.4 lbs)
Recommended transmission oil		Pro Honda HP Trans Oil, Pro Honda GN4 or HP4 (without molybdenum additives) 4-stroke oil or an equivalent API service classification SG or Higher except oils labeled as energy conserving on the circular API service label JASO T 903 standard: MA Viscosity: SAE 10W-40
Transmission oil capacity	at draining	0.65 liter (0.69 US qt, 0.57 Imp qt)
	at disassembly	0.70 liter (0.74 US qt, 0.62 Imp qt)
Recommended antifreeze		Pro Honda HP Coolant or an equivalent high quality ethylene glycol antifreeze containing corrosion protection inhibitors
Coolant capacity	at draining	0.97 liter (1.02 US qt, 0.85 Imp qt)
	at disassembly	1.10 liter (1.16 US qt, 0.97 Imp qt)

TORQUE VALUES

Engine hanger plate nut	34 N·m (3.5 kgf·m, 25 lbf·ft)
Engine mounting nut	54 N·m (5.5 kgf·m, 40 lbf·ft)
Swingarm pivot nut	88 N·m (9.0 kgf·m, 65 lbf·ft)
RC valve cover bolt	5.0 N·m (0.5 kgf·m, 3.7 lbf·ft)
Brake pedal pivot bolt	36 N·m (3.7 kgf·m, 27 lbf·ft)

ENGINE REMOVAL/INSTALLATION

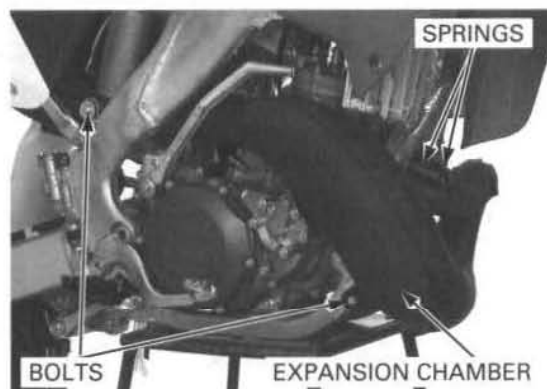
ENGINE REMOVAL

Remove the springs, bolts and expansion chamber.

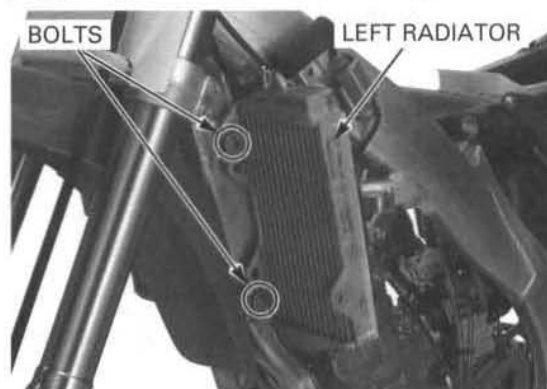
Drain the transmission oil (page 3-11).

Drain the coolant (page 5-6).

Remove the fuel tank (page 2-6).



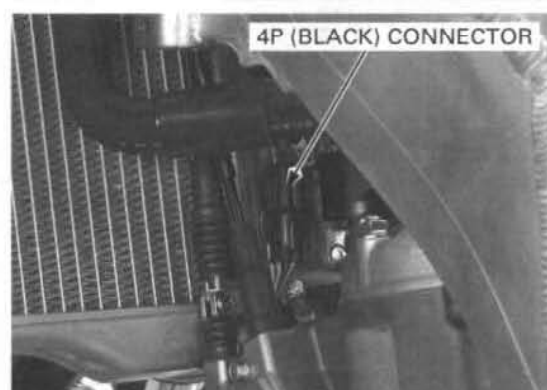
Remove the left and right radiator mounting bolts.



Disconnect the alternator 4P (Black) connector.

Remove the following:

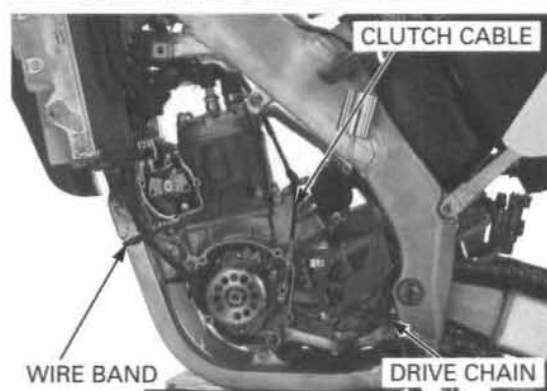
- RC valve cables (page 8-6)
- carburetor (page 4-9)



Remove the alternator wire band.

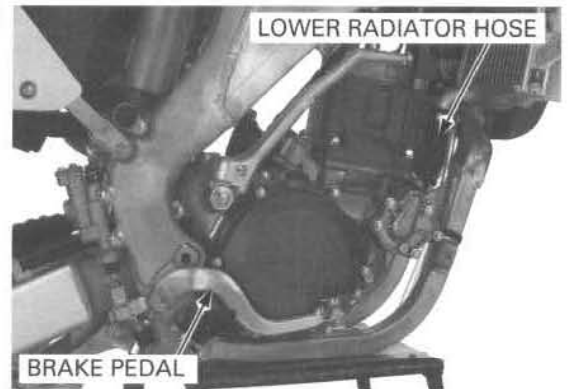
Remove the alternator cover (page 14-10) and disconnect the clutch cable.

Remove the drive chain (page 3-11).



ENGINE REMOVAL/INSTALLATION

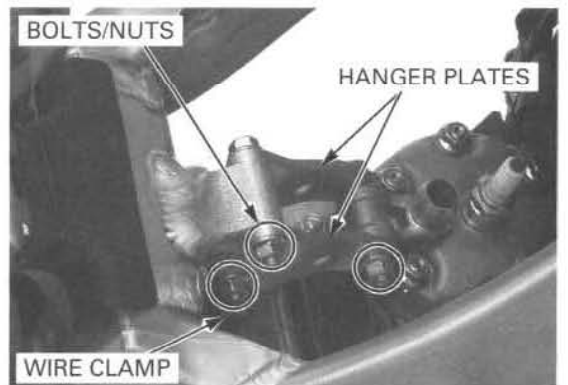
Disconnect the lower radiator hose from the right crankcase cover.
Remove the brake pedal pivot bolt.



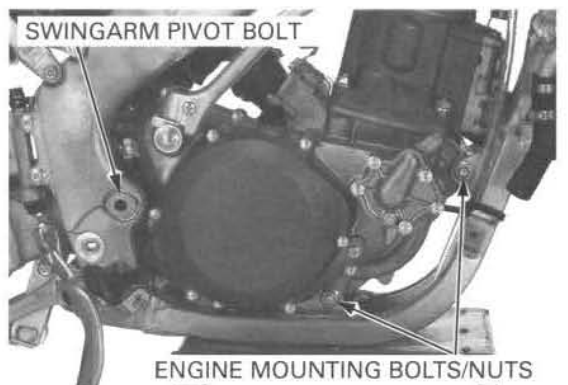
Disconnect the upper radiator hose from the cylinder head.
Disconnect the spark plug cap from the spark plug.



Remove the bolts, nuts, wire clamp and engine hanger plates.



Remove the engine mounting bolt and nuts.
Remove the swingarm pivot bolt and nut.



Note the direction of the engine mounting bolts, hanger plate bolts and swingarm pivot bolt.

Remove the engine from the frame.

Reinstall the swingarm pivot bolt and nut so the chassis can be moved and stored safely.

ENGINE REMOVAL/INSTALLATION

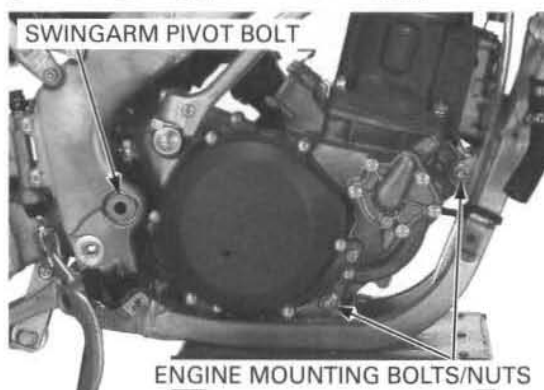
ENGINE INSTALLATION

NOTE:

- Install the swingarm pivot bolt first, then install the engine mounting bolts.
- Route the wire and cables properly (page 1-17).
- Do not tighten the swingarm pivot nut and engine mounting nuts yet.



Install the engine to the frame.
Loosely install the swingarm pivot bolt and nut.
Loosely install the engine mounting bolts and nuts.



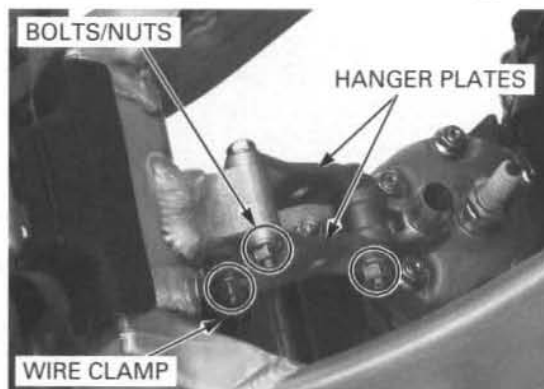
Loosely install the engine hanger plates, wire clamp, hanger bolts and nuts.
Tighten the engine mounting nuts, engine hanger plate nuts and swingarm pivot nut to the specified torque.

TORQUE:

Engine mounting nut: 54 N·m (5.5 kgf·m, 40 lbf·ft)

Engine hanger plate nut: 34 N·m (3.5 kgf·m, 25 lbf·ft)

Swingarm pivot nut: 88 N·m (9.0 kgf·m, 65 lbf·ft)



Connect the upper radiator hose to the cylinder head and tighten the clamp screw.
Connect the spark plug cap to the spark plug.

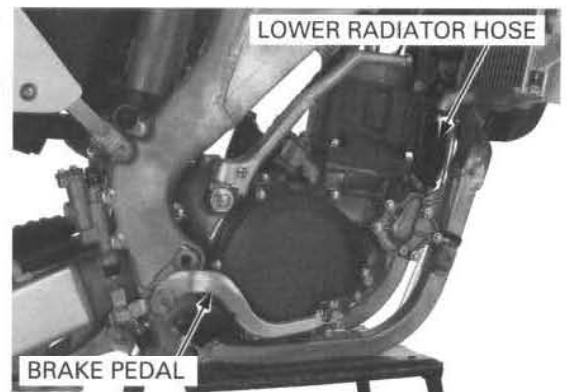


ENGINE REMOVAL/INSTALLATION

Connect the lower radiator hose to the right crank-case cover, tighten the clamp screw.

Install the washer and brake pedal pivot bolt, tighten the pivot bolt to the specified torque.

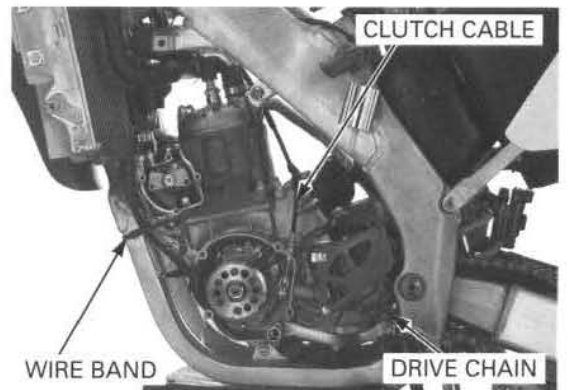
TORQUE: 36 N·m (3.7 kgf-m, 27 lbf-ft)



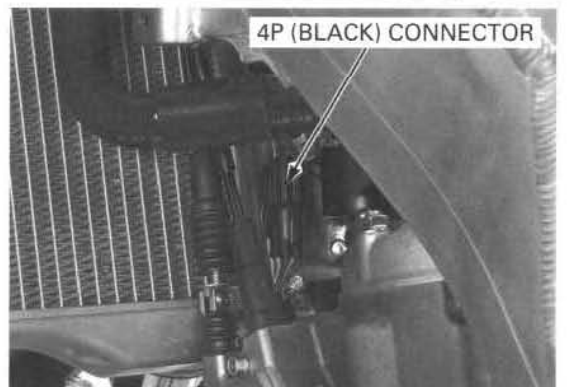
Install the drive chain onto the drive sprocket. Connect the clutch cable to the clutch lifter lever. Connect the RC valve control cables to the RC valve pulley and adjust the cables (page 8-13). Secure the alternator wire with the wire clamp.

Install the following:

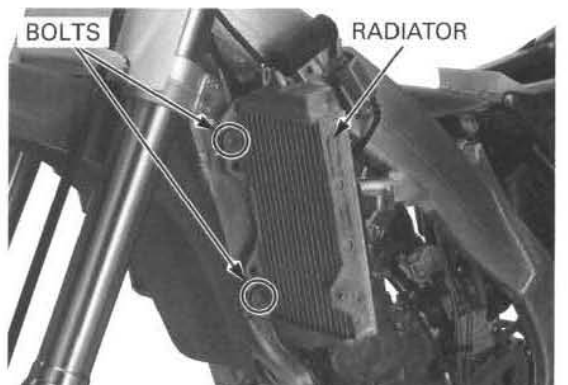
- carburetor (page 4-18)
- alternator cover (page 14-12)
- RC valve cover (page 8-15)



Connect the alternator 4P (Black) connector.



Install and tighten the left and right radiator mounting bolts.



ENGINE REMOVAL/INSTALLATION

Always install a new gasket and O-ring at the expansion chamber installation.

Install the expansion chamber (page 2-7).

Install the removed parts in the reverse order of removal.

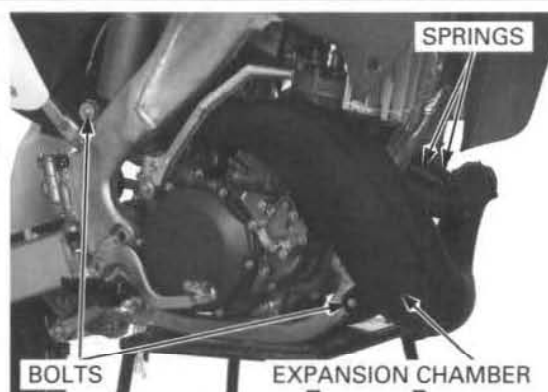
Fill the transmission with recommended oil to the correct level (page 3-10).

Pour radiator coolant mixture into the radiator up to the correct level (page 5-6).

After installing the engine, perform the following inspections and adjustments:

- throttle grip free play adjustment (page 3-6)
- rear brake pedal height (page 3-16)
- drive chain slack (page 3-12)
- clutch lever free play (page 3-16)

Check the exhaust system for leaks.

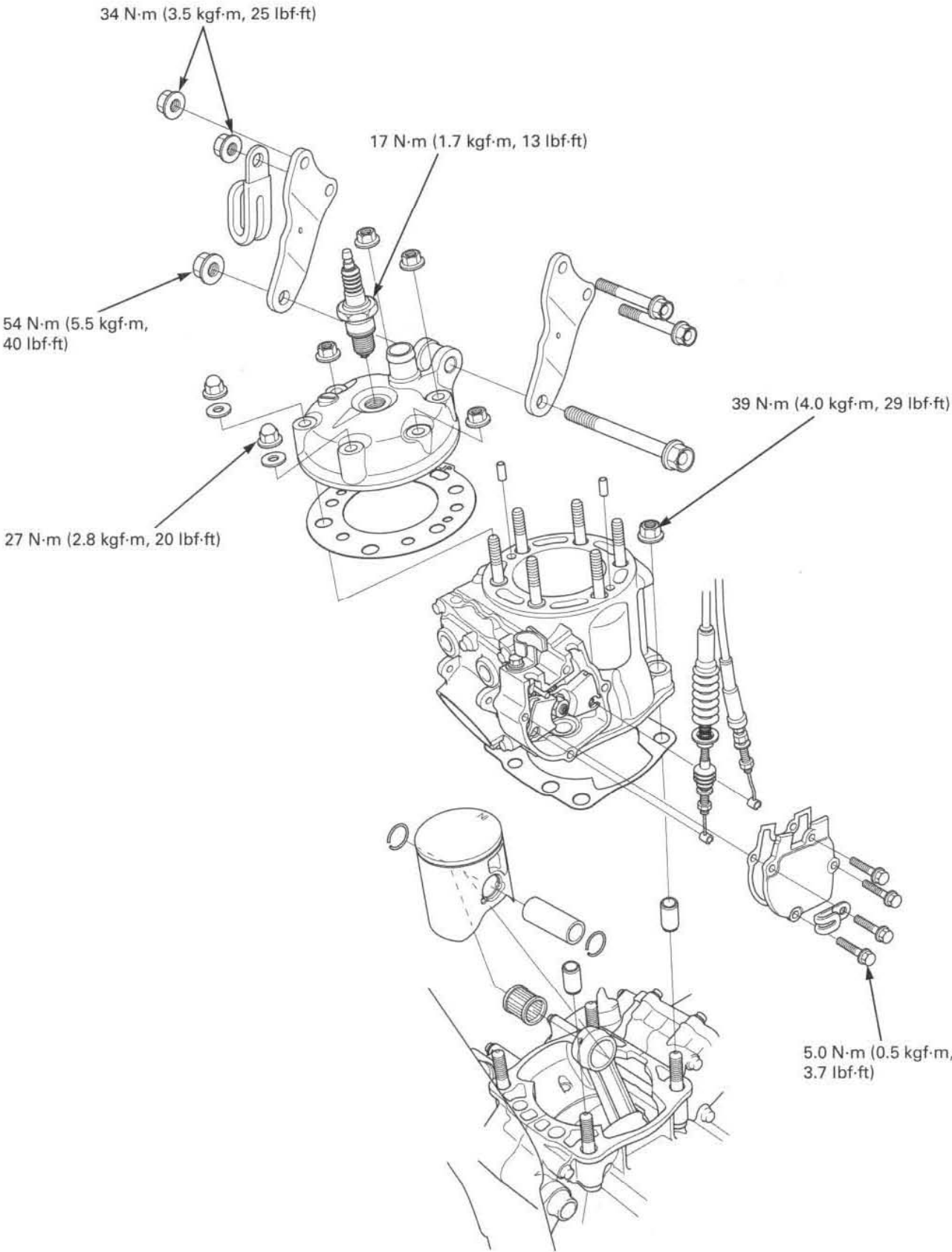


7. CYLINDER HEAD/CYLINDER/PISTON

COMPONENT LOCATION	7-2	CYLINDER HEAD	7-5
SERVICE INFORMATION	7-3	CYLINDER/PISTON	7-7
TROUBLESHOOTING	7-4		

CYLINDER HEAD/CYLINDER/PISTON

COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

- This section covers service of the cylinder head, cylinder and piston. These procedures can be done with the engine in the frame.
- Before disassembling, clean the engine thoroughly to keep dirt from entering the engine.
- Do not use a screwdriver to remove the cylinder head.
- Clean all disassembled parts with cleaning solvent and dry them by blowing them off with compressed air before inspection.
- Before assembling, apply clean Pro Honda HP2 2-stroke Oil to all sliding surfaces.
- Under racing conditions, the piston and piston ring should be replaced after 7.5 hours of running. Replace the piston pin and connecting rod small end bearing after 22.5 hours of running.
- See page 4-20 for reed valve servicing.
- See page 8-3 for RC valve system decarbonizing, disassembly and assembly.

SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Cylinder head warpage			—	0.05 (0.002)
Cylinder	I.D.	A	66.398 – 66.405 (2.6141 – 2.6244)	66.430 (2.615)
		B	66.390 – 66.398 (2.6138 – 2.6141)	66.428 (2.615)
	Out of round		—	0.05 (0.002)
	Taper		—	0.05 (0.002)
	Warpage		—	0.05 (0.002)
Piston, piston ring	Piston mark direction		"IN" mark facing toward the intake side	—
	Piston O.D.	A	66.340 – 66.348 (2.6118 – 2.6121)	66.320 (2.6110)
		B	66.333 – 66.340 (2.6115 – 2.6118)	66.313 (2.6107)
	Piston O.D. measurement point		13.5 - 28.5 mm (0.53 - 1.12 in) from bottom of skirt	—
	Piston pin bore I.D.		18.007 – 18.013 (0.7089 – 0.7092)	18.02 (0.709)
	Piston pin O.D.		17.994 – 18.000 (0.7084 – 0.7087)	17.98 (0.707)
	Piston-to-piston pin clearance		0.007 – 0.019 (0.0003 – 0.0007)	0.04 (0.0016)
	Piston ring end gap		0.40 – 0.55 (0.016 – 0.022)	0.65 (0.026)
Cylinder-to-piston clearance			0.050 – 0.065 (0.0020 – 0.0026)	0.085 (0.0033)
Connecting rod small end I.D.			21.997 – 22.009 (0.8660 – 0.8665)	22.02 (0.867)

TORQUE VALUES

Cylinder stud bolt	12 N·m (1.2 kgf·m, 9 lbf·ft)	Apply a locking agent to the threads
Cylinder head nut	27 N·m (2.8 kgf·m, 20 lbf·ft)	
Cylinder mounting nut	39 N·m (4.0 kgf·m, 29 lbf·ft)	
Engine hanger plate nut (frame side)	34 N·m (3.5 kgf·m, 25 lbf·ft)	.
Engine hanger plate nut (engine side)	54 N·m (5.5 kgf·m, 40 lbf·ft)	.
RC valve cover bolt	5.0 N·m (0.5 kgf·m, 3.7 lbf·ft)	
Cylinder front cover bolt	9 N·m (0.9 kgf·m, 6.6 lbf·ft)	

CYLINDER HEAD/CYLINDER/PISTON

TROUBLESHOOTING

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

- Blown cylinder head gasket
- Loose spark plug
- Worn, stuck or broken piston ring
- Worn or damaged cylinder and piston
- Faulty reed valve
- Worn crankshaft seals

Compression too high, overheating or knocking

- Excessive carbon build-up on top of piston or in combustion chamber

Abnormal noise—piston

- Worn or cracked piston
- Worn cylinder and piston
- Worn piston pin or piston pin bore
- Worn connecting rod small end bearing

Abnormal noise—piston ring

- Worn, stuck or broken piston ring
- Worn or damaged cylinder

Contaminated coolant

- Leaking cylinder head gasket

CYLINDER HEAD

REMOVAL

Drain the radiator coolant (page 5-6).

Remove the seat (page 2-3).

Remove the fuel tank (page 2-6).

Note the direction of the hose clamp.

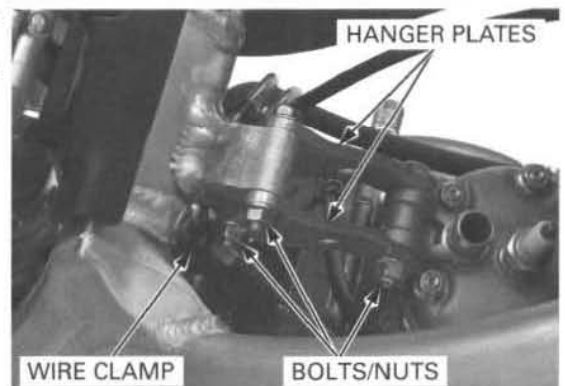
Loosen the upper radiator hose clamp and remove the radiator hose from the cylinder head.

Remove the spark plug cap and spark plug.



Release the throttle position sensor wire from the wire clamp.

Remove the engine upper hanger plate bolts, wire clamp and hanger plates.



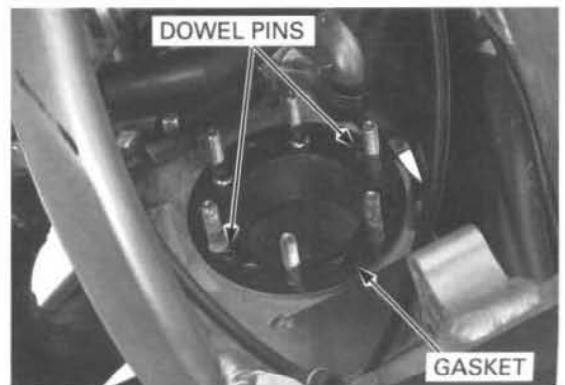
To avoid warping the cylinder head, use a crisscross pattern to loosen each nut about 1/4 turn in two or three steps, then remove the nuts.

Loosen the two cylinder head cap nuts, sealing washer and four flange nuts.

Remove the nuts and cylinder head.



Remove the cylinder head gasket and dowel pins.



CYLINDER HEAD/CYLINDER/PISTON

INSPECTION

Be careful not to damage the cylinder head.

Clean the head gasket surface of any gasket material.

Remove the carbon deposits from the combustion chamber.

COMBUSTION CHAMBER

CYLINDER HEAD

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

SERVICE LIMIT: 0.05 mm (0.002 in)

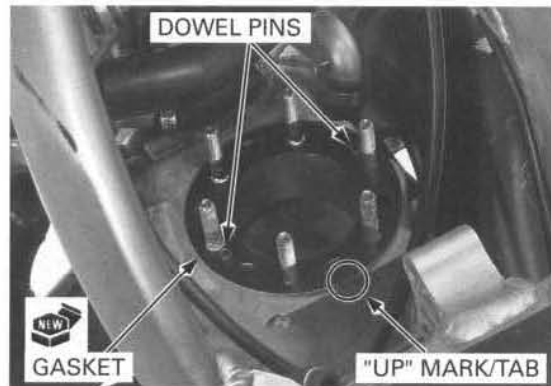
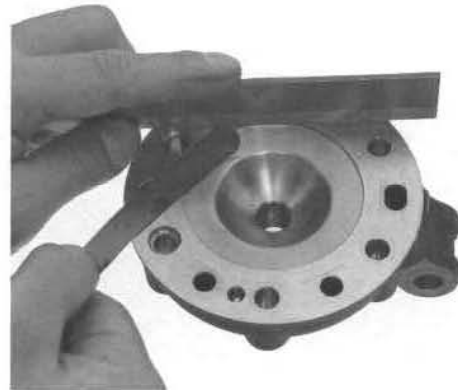
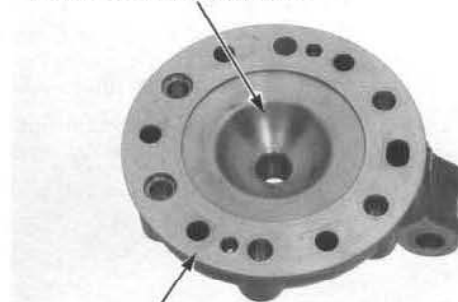
INSTALLATION

Install the dowel pins.

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

Place the cylinder head on the cylinder. Install the four cylinder head flange nuts and two cap nuts/sealing washers in a crisscross pattern in two or three steps. Then tighten the nuts to the specified torque.

TORQUE: 27 N·m (2.8 kgf·m, 20 lbf·ft)



CYLINDER HEAD/CYLINDER/PISTON

Install the engine upper hanger brackets, bolts, nuts and washer.

Tighten the engine hanger nuts (frame side) to the specified torque.

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

Tighten the engine hanger nut (engine side) to the specified torque.

TORQUE: 54 N·m (5.5 kgf·m, 40 lbf·ft)

Install the spark plug and spark plug cap.

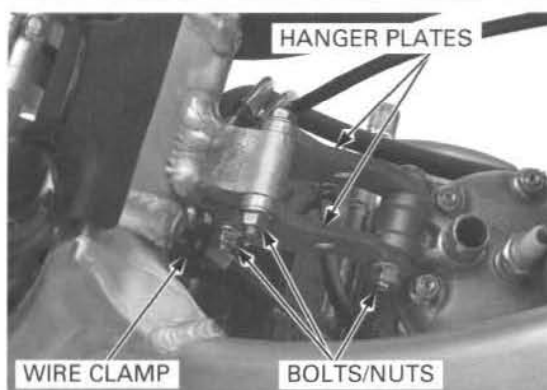
Note the direction of the hose clamp.

Connect the upper radiator hose to the cylinder head and tighten the clamp screw.

Add recommended coolant mixture into the radiator up to the correct level (page 5-6).

Install the fuel tank (page 2-7).

Install the seat (page 2-3).



CYLINDER/PISTON

CYLINDER REMOVAL

Remove the cylinder head (page 7-5).

Remove the expansion chamber (page 2-7).

Loosen the radiator joint hose clamp and lower radiator hose clamp.

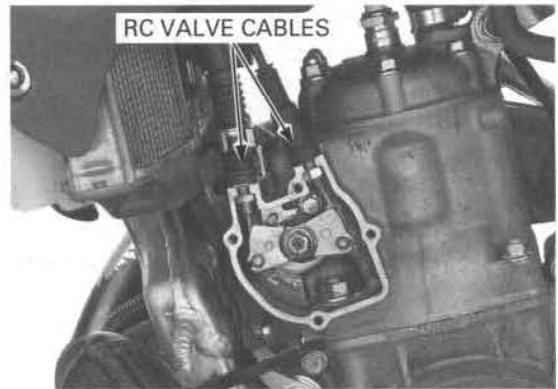
Remove the radiator lower mounting bolts and loosen the upper mounting bolts.

Swing the both radiator forward.

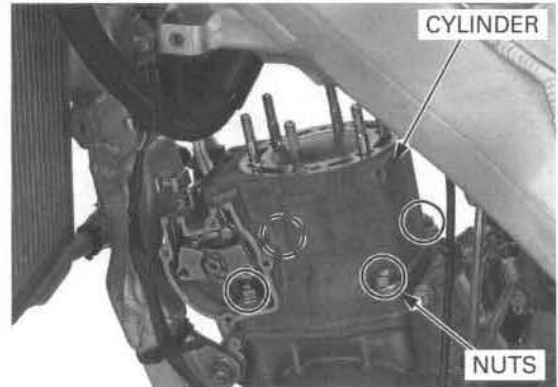


CYLINDER HEAD/CYLINDER/PISTON

Disconnect the RC valve control cables from the pulley.



Loosen the cylinder mounting nuts in a crisscross pattern in two or three steps. Remove the cylinder.



Remove the gasket and dowel pins.



PISTON REMOVAL

Do not let the clips fall into the crankcase.

Remove the piston pin clips.

Always support the piston when pressing out the pin.

Remove the piston.



Under racing conditions, the piston and piston ring should be replaced according to the maintenance schedule (page 3-4).

Do not damage the piston ring by spreading the ends too far.

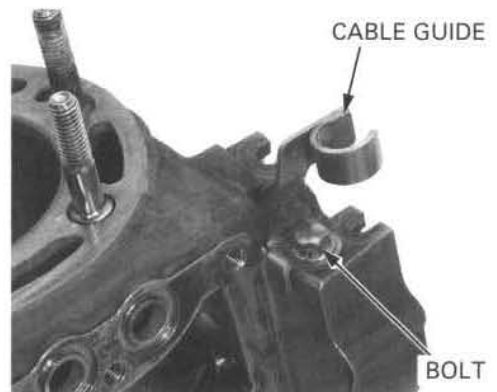
Spread the piston ring and remove it by lifting up at a point just opposite the gap.



CYLINDER INSPECTION

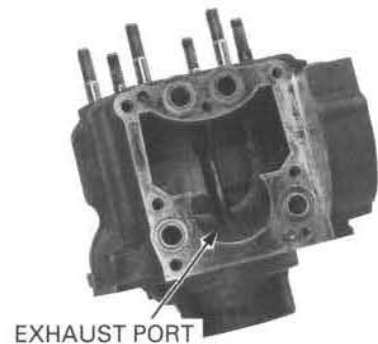
Remove the RC valve from the cylinder (page 8-7).

Remove the bolt and RC valve cable guide.



Do not damage the cylinder bore.

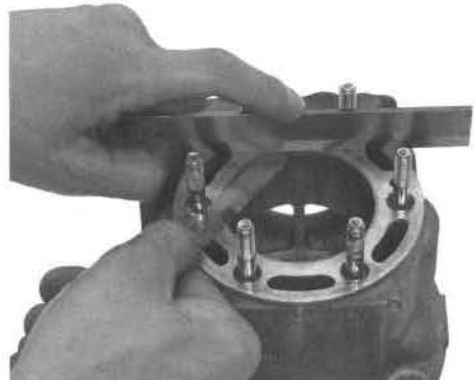
Remove the carbon deposits from the exhaust port area.



Inspect the top of the cylinder for warpage. Use a straight edge and feeler gauge to check the head gasket surface on the cylinder for warpage.

SERVICE LIMIT: 0.05 mm (0.002 in)

If warpage is beyond the service limit, correct as necessary.



CYLINDER HEAD/CYLINDER/PISTON

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

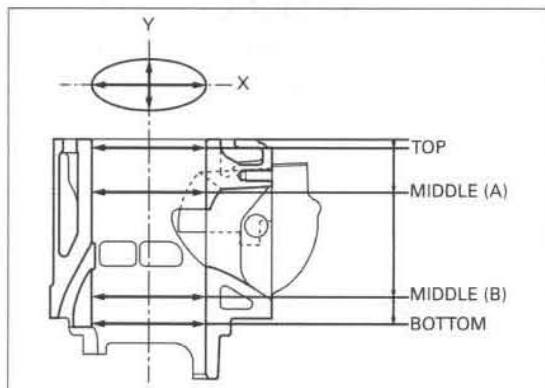


With the exception of the bottom, measure both "X" and "Y" axis at each position. Measure only the "X" axis of the bottom position.

Top: 5 mm (0.2 in)
Middle (A): 30 mm (1.2 in)
Middle (B): 90 mm (3.5 in)
Bottom: 105 mm (4.1 in)

Use the largest measurement to determine the cylinder wear.

SERVICE LIMIT: A: 66.430 mm (2.615 in)
B: 66.428 mm (2.615 in)



PISTON INSPECTION

Measure the piston O.D. 13.5 - 28.5 mm (0.53 - 1.12 in) from the bottom of the skirt and at a right angle to the piston pin hole.

SERVICE LIMIT: A: 66.320 mm (2.6110 in)
B: 66.313 mm (2.6107 in)

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

Calculate the cylinder-to-piston clearance.

SERVICE LIMIT: 0.09 mm (0.004 in)

Remove any carbon deposits from the piston ring grooves.

Measure the piston pin bore I.D.

SERVICE LIMIT: 18.02 mm (0.709 in)

Check the piston pin for wear and excessive discoloration.

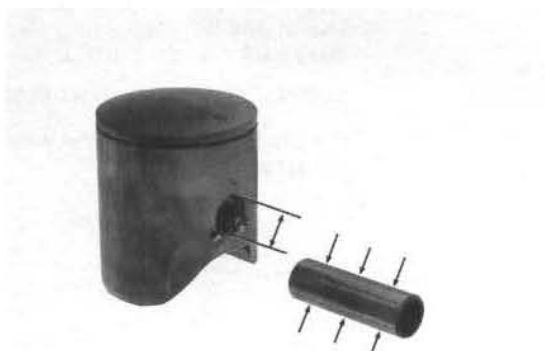
Measure the piston pin O.D.

SERVICE LIMIT: 17.98 mm (0.707 in)

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

Calculate the piston pin-to-piston clearance.

SERVICE LIMIT: 0.04 mm (0.0016 in)



CYLINDER HEAD/CYLINDER/PISTON

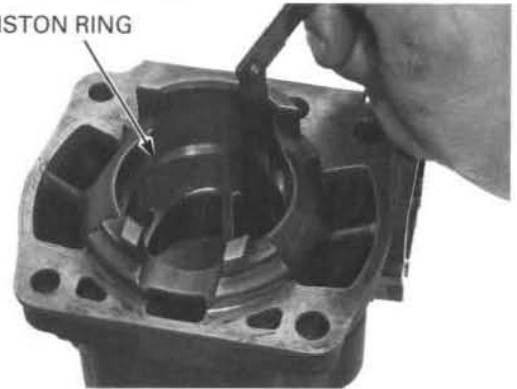
*Using the piston to
push the ring
squarely into the
cylinder*

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

Measure the piston ring end gap with a feeler gauge.

SERVICE LIMIT: 0.65 mm (0.026 in)

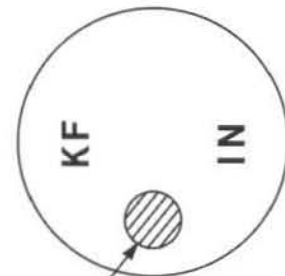
PISTON RING



CYLINDER/PISTON SELECTION

The cylinders and pistons are select fitted.

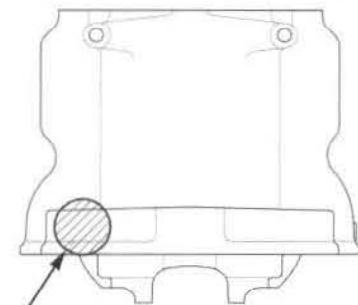
Record the piston O.D. code letter (A or B)



O.D. CODE LETTER

Record the cylinder I.D. code letter (A or B).

Use new cylinders and pistons with the same I.D. and O.D. codes when replacing the cylinder and/or piston.



I.D. CODE LETTER

CONNECTING ROD INSPECTION

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



CYLINDER HEAD/CYLINDER/PISTON

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

SERVICE LIMIT: 22.02 mm (0.867 in)

If the I.D. is not over the service limit, replace the piston pin and bearing.

If the I.D. is over the service limit, replace the crankshaft (page 10-11).



PISTON INSTALLATION

Clean the piston ring groove.

Lubricate the piston ring and piston ring groove with clean Pro Honda HP2 2-stroke oil.

Install the piston ring on the piston with the mark facing up.

Locate the ring end gap on the pin in the piston ring groove.



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

Clean off any gasket material from the cylinder mating surface.

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



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

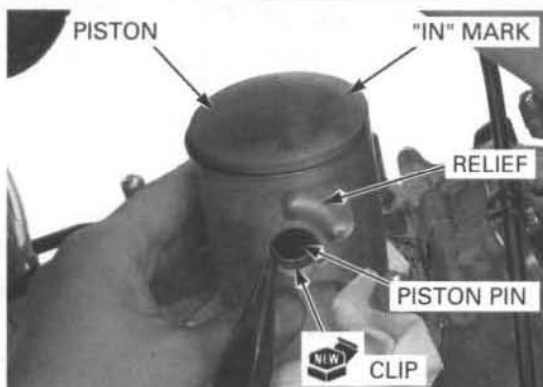
Install the piston with the "IN" mark facing the intake side.

If the "IN" mark is obscured, install the piston with the relief toward the intake side.

Do not reuse the piston pin clips and do not let the piston pin clips fall into the crankcase.

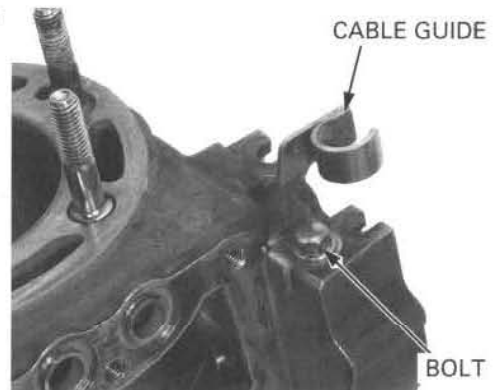
Install the new piston pin clips in the groove on the piston.

Do not align the piston pin clip end gap with the piston cut-out.



CYLINDER INSTALLATION

Install the RC valve cable guide and tighten the bolt securely.



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

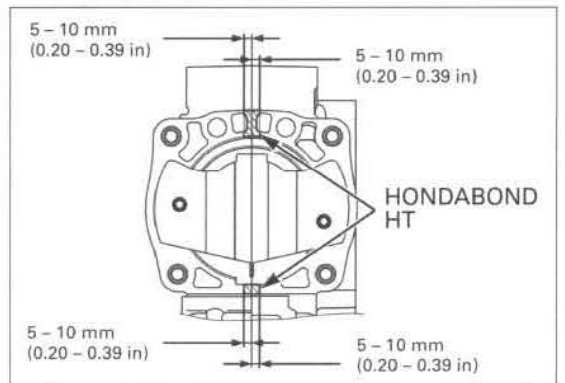


Install the RC valve system into the cylinder (page 8-9).

Align the ring end gap with the piston ring stopper pin.



Apply Hondabond HT to the cylinder mating surface as shown.



CYLINDER HEAD/CYLINDER/PISTON

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

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

Install the cylinder onto the crankcase.



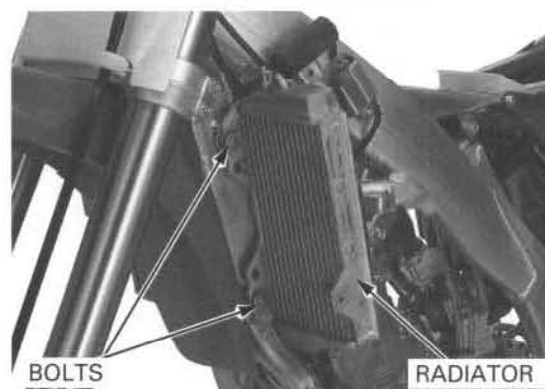
Before tightening the cylinder nuts, be sure the cylinder is seated completely against the crankcase.

Install and tighten the four cylinder mounting nuts in a crisscross pattern in two or three steps.

TORQUE: 39 N·m (4.0 kgf·m, 29 lbf·ft)



Install and tighten the radiator mounting bolts.



Place the radiators in their original position, and connect the joint hose and lower radiator hose.



CYLINDER HEAD/CYLINDER/PISTON

Connect and adjust the RC valve control cables (page 8-9).

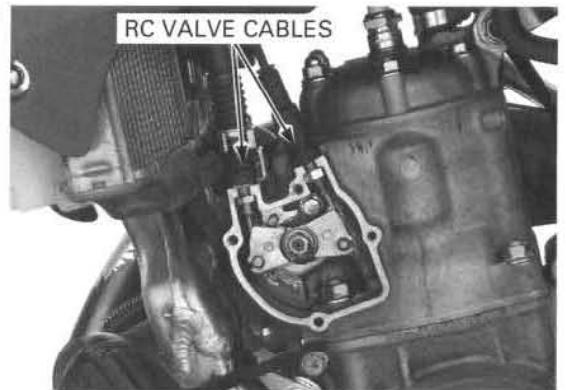
Install the expansion chamber (page 2-7).

Install the cylinder head (page 7-6).

Pour recommended coolant mixture into the radiator to the correct level (page 5-6).

Check for the following:

- compression leaks
- abnormal engine noise
- secondary air leak
- coolant leaks

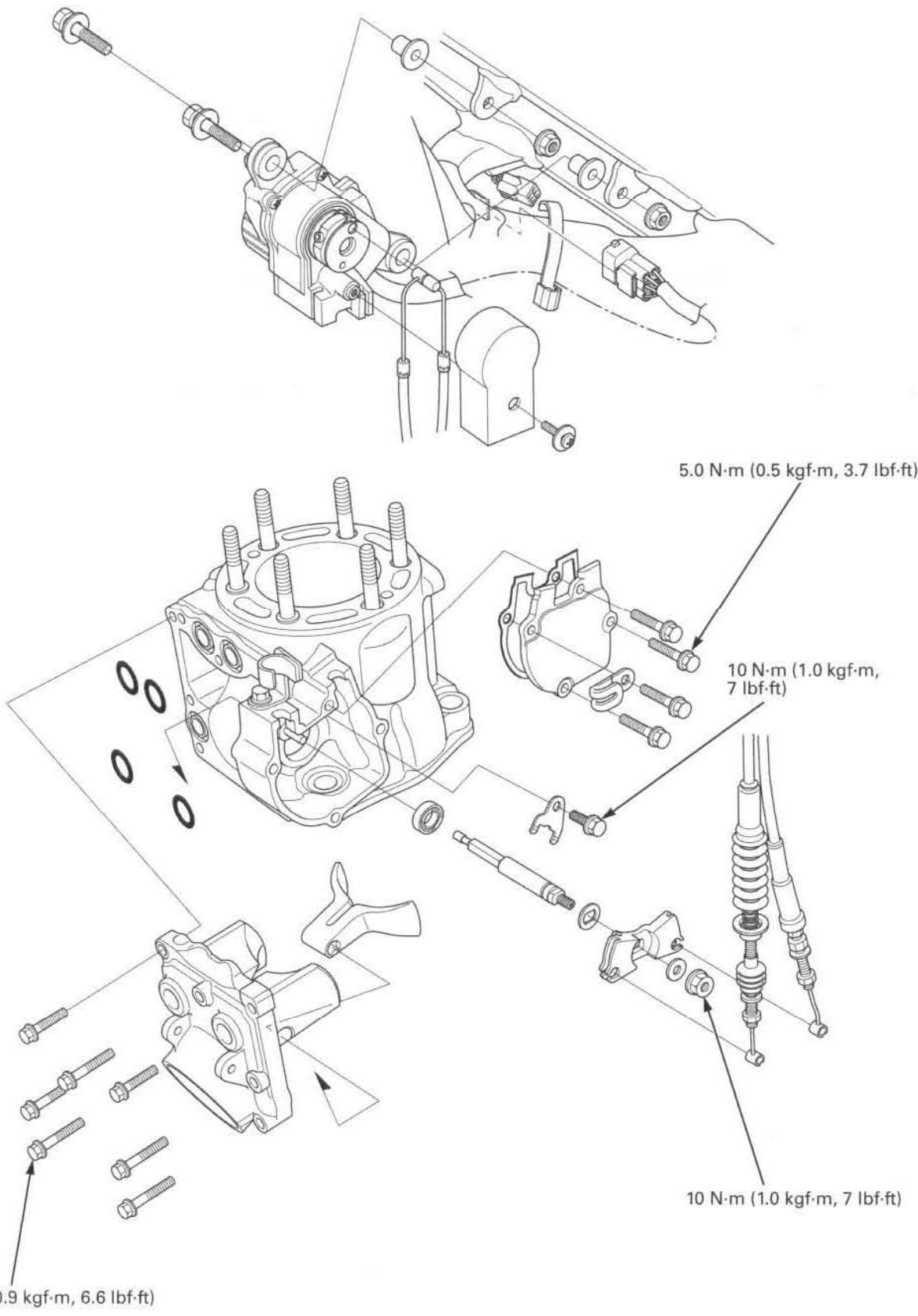


MEMO

8. RC VALVE

COMPONENT LOCATION	8-2	EXHAUST VALVE.....	8-6
SERVICE INFORMATION	8-3	SERVO MOTOR	8-11
TROUBLESHOOTING	8-4	RC VALVE CABLE.....	8-13

COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

- This section covers the maintenance of the RC valve.
- Decarbonize the RC valve and valve shaft every 7.5 hours of operation (every 3 races).
- If the RC valve or RC valve shaft is worn or damaged, replace the RC valve shaft and RC valve as an assembly.

TORQUE VALUES

RC valve cover bolt	5.0 N·m (0.5 kgf·m, 3.7 lbf·ft)
RC valve pulley nut	10 N·m (1.0 kgf·m, 7 lbf·ft)
RC valve stopper plate bolt	10 N·m (1.0 kgf·m, 7 lbf·ft)
Cylinder front cover bolt	9 N·m (0.9 kgf·m, 6.6 lbf·ft)

TROUBLESHOOTING

Poor performance at low speed

- Exhaust valve does not close fully
 - Incorrect RC valve cable adjustment
 - Faulty servo motor
 - Bent RC valve shaft
- Excessive carbon build-up on the RC valve
- Damaged RC valve
- Faulty throttle position sensor

Poor performance at high speed

- Exhaust valve does not open fully
 - Incorrect RC valve cable adjustment
 - Improper installation
 - Faulty servo motor
- Excessive carbon build-up on the RC valve and valve shaft
- Damaged RC valve

NOTE:

The RC valve operates from fully closed to fully open and returns to closed just after the engine starts.

Engine starts, but does not operate the RC valve

1. RC Valve Control Cable Operating Condition

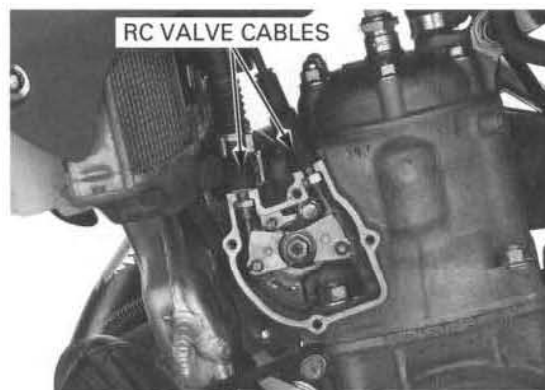
Remove the RC valve cover (page 8-6).
Check the RC valve cable operating condition (page 8-13).

Is the control cable good condition?

YES – GO TO STEP 2.

NO –

- Incorrect RC valve cable adjustment
- Stuck RC valve cable



2. RC Valve Pulley Operation

Disconnect the RC valve control cables from the RC valve pulley.
Turn the pulley with your finger, and check for smooth operation.

Does the pulley turn smoothly?

YES – GO TO STEP 3.

NO –

- Excessive carbon build-up on the RC valve
- Stuck RC valve
- Bent RC valve shaft



3. Servo Motor Operating Condition

Disconnect the servo motor 6P connector (page 8-11).

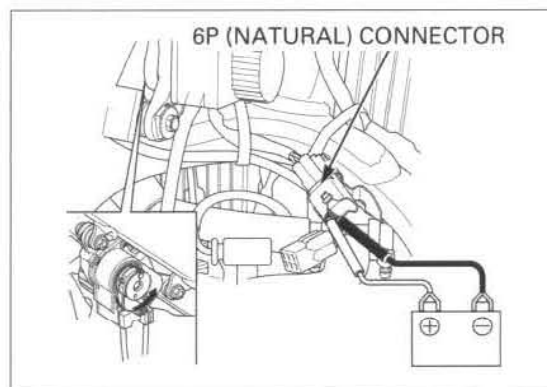
Connect the 12 V battery to the servo motor 6P connector and inspect the servo motor operation.

Connection: White/black (+) – White/green (-)

Does the servo motor turn counterclockwise?

YES – GO TO STEP 4.

NO – Faulty servo motor

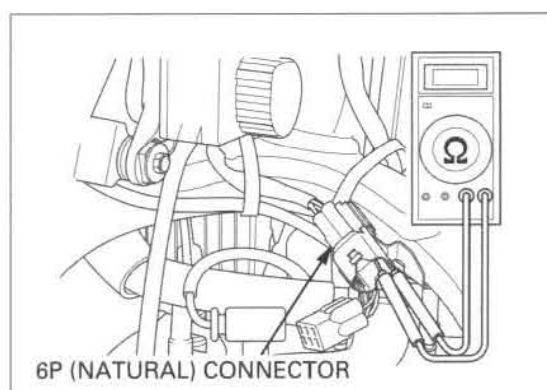
**4. Potentiometer Inspection**

Inspect the potentiometer in the servo motor (page 8-12).

Is condition normal?

YES – GO TO STEP 5.

NO – Faulty servo motor

**5. Wire Harness Continuity Inspection**

Disconnect the ECM 8P (Black) connector. Check for continuity between the ECM and servo motor 6P connector.

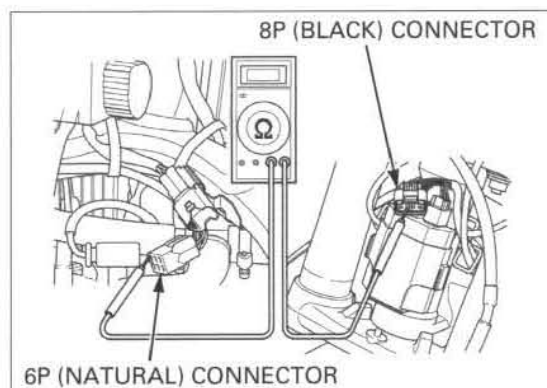
Connections: White/black – White/black
White/green – White/green

Is there continuity?

YES – Faulty ECM

NO –

- Open circuit between the ECM and servo motor
- Loose or poor contacts of connectors



RC VALVE

EXHAUST VALVE

OPERATING INSPECTION

NOTE:

The RC valve operates from fully closed to fully open and returns to closed just after the engine starts.

Warm up the engine to operating temperature.

Stop the engine.

Remove the bolts, wire clamp, RC valve cover and gasket.

Connect a tachometer.

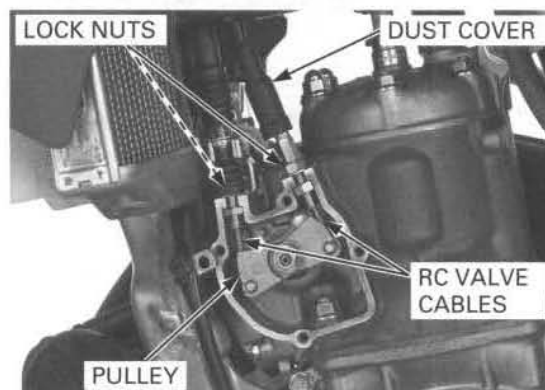
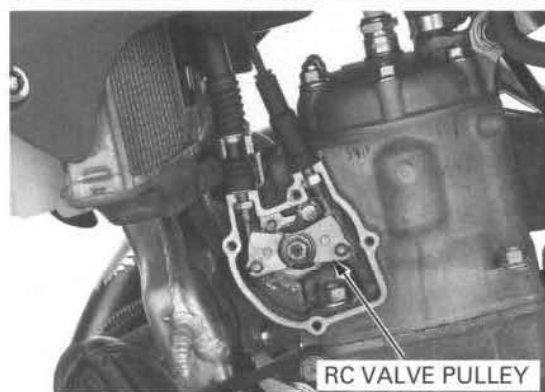
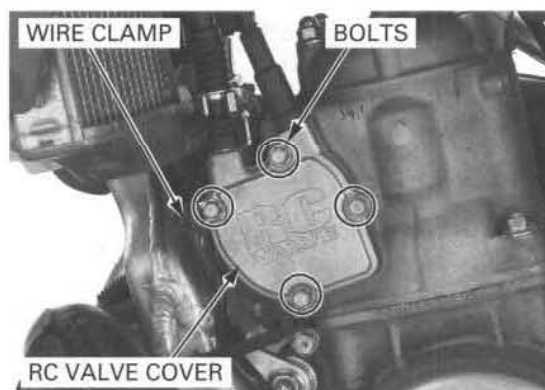
Start the engine and check that the RC valve pulley is in the initial position.

Increase the engine speed to approximately 8,000 rpm and check that the RC valve pulley turns to the fully-open position.

If the exhaust valve does not operate properly, check the following.

Remove the dust covers.

Loosen the lock nuts and disconnect the RC valve cables from the RC valve pulley.



Turn the RC valve pulley with your finger. The RC valve pulley should turn smoothly.

If the RC valve pulley does not turn smoothly, check the following:

- Carbon deposits on the RC valve
- Stuck RC valve
- Bent RC valve shaft

If the RC valve pulley turns smoothly, check the following:

- Incorrect RC valve cable adjustment
- Stuck RC valve cables
- Faulty servo motor

Connect the RC valve cables to the RC valve pulley (page 8-13).

Install a new gasket.

Install the RC valve cover, wire clamp and bolts. Tighten the bolts to the specified torque.

TORQUE: 5.0 N·m (0.5 kgf·m, 3.7 lbf·ft)

Install the alternator wire to the wire clamp.

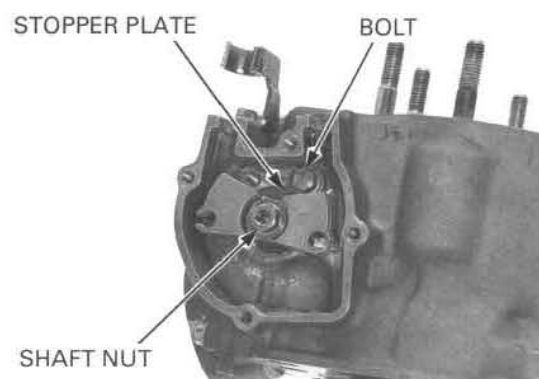
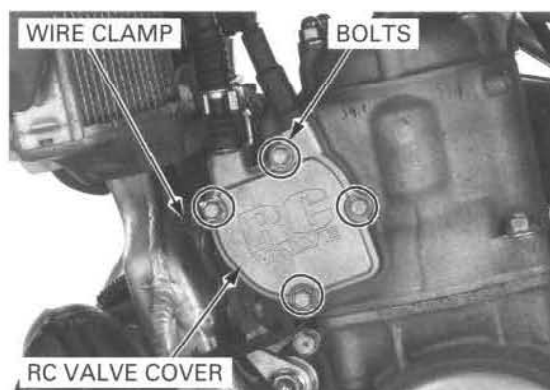
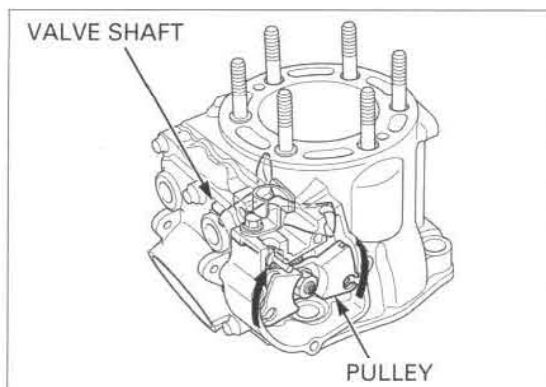
REMOVAL/DISASSEMBLY

Clean the engine thoroughly to keep dirt from entering the engine.

Remove the cylinder (page 7-7).

Remove the RC valve shaft stopper plate bolt and stopper plate.

Remove the RC valve shaft from the cylinder.



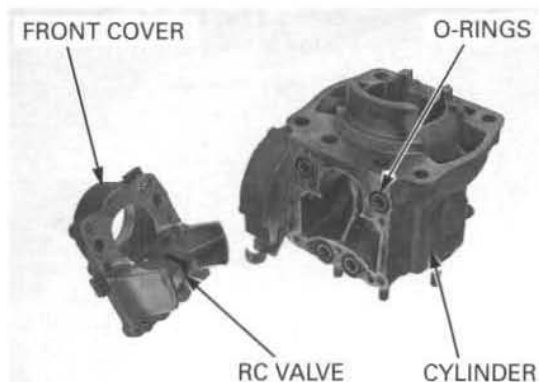
RC VALVE

Remove the cylinder front cover mounting bolts.

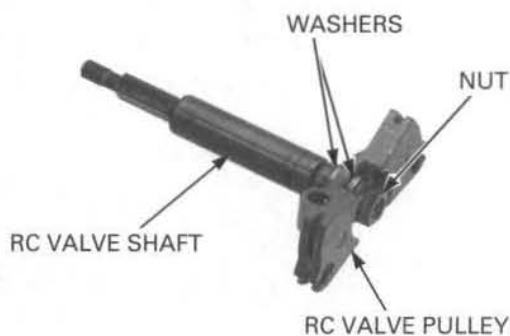
CYLINDER FRONT COVER



Remove the cylinder front cover and O-rings.
Remove the RC valve.



Remove the nut, washer, RC valve pulley and special washer from the RC valve shaft.



DECARBONIZING/INSPECTION

Decarbonize the RC valve every 3 races.

Remove the carbon deposits from the RC valve.
Inspect the RC valve for wear or damage.

Replace the RC valve and RC valve shaft as a set.

Replace the RC valve if necessary.

RC VALVE



Decarbonize the RC valve shaft every 3 races.

Replace the RC valve and RC valve shaft as a set.

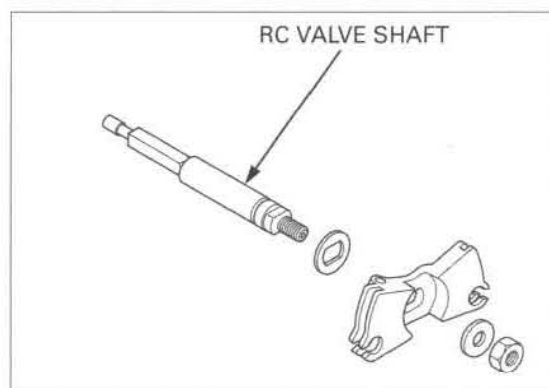
Remove the carbon deposits from the RC valve shaft. Inspect the RC valve shaft for wear or damage.

Replace the RC valve shaft if necessary.

Inspect the oil seal for deterioration or damage.

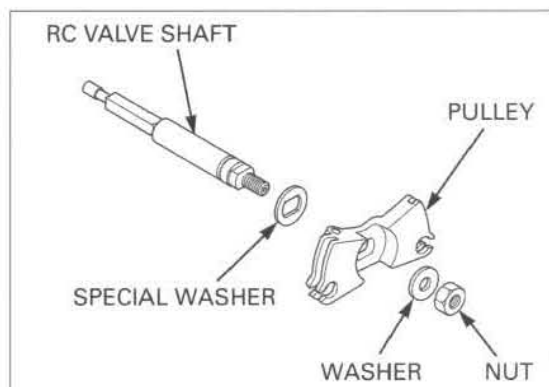
Replace the oil seal if necessary.

Be careful not to damage the cylinder when replacing the oil seal.

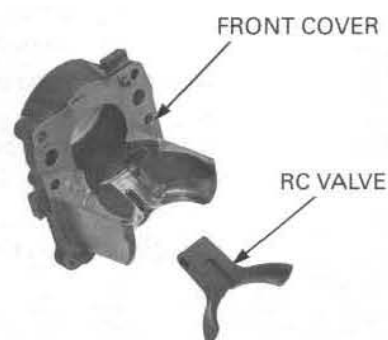


ASSEMBLY/INSTALLATION

Install the special washer to the RC valve shaft, aligning the cut-out. Install the RC valve pulley to the RC valve shaft, aligning the cut-out. Install the washer and nut to the RC valve shaft and loosely tighten the nut.

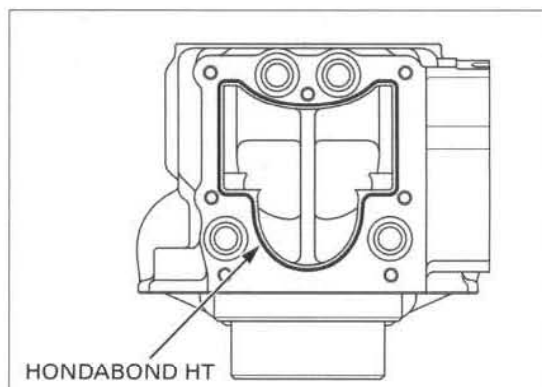


Place the cylinder front cover upside down, and install the RC valve onto the cylinder front cover.

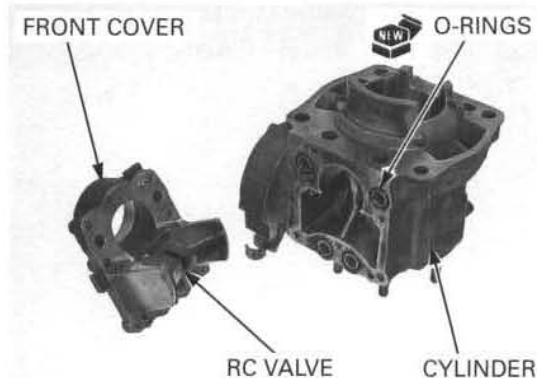


RC VALVE

Apply Hondabond HT sealant to the mating surface of the cylinder and cylinder front cover as shown.



Install the O-rings into the cylinder grooves. Install the cylinder front cover to the cylinder.



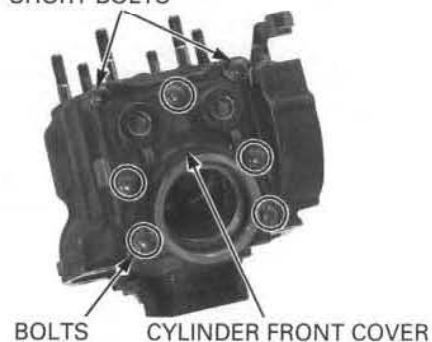
Install the gold colored (short) bolts to the top side of the cover.

Install the cylinder front cover bolts.

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

TORQUE: 9 N·m (0.9 kgf·m, 6.6 lbf·ft)

SHORT BOLTS



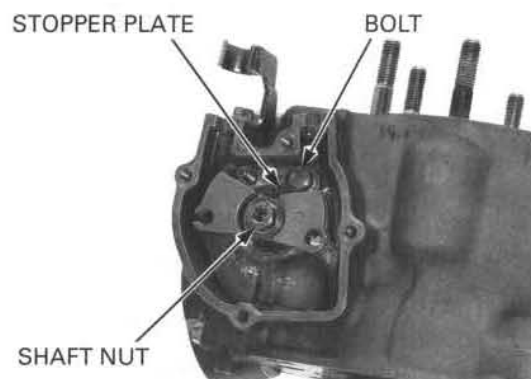
Apply molybdenum oil solution to the RC valve shaft sliding and rolling surface.

Install the RC valve shaft assembly into the cylinder.

Install the stopper plate and tighten the RC valve shaft stopper plate bolt.

Tighten the RC valve pulley nut to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)



SERVO MOTOR

INSPECTION

Remove the fuel tank (page 2-6).

Disconnect the RC valve cables from the RC valve pulley (page 8-6).

Remove the screw and servo motor cover.

Disconnect the RC valve cables from the servo motor.

Remove the wire band.
Disconnect the servo motor 6P connector.

MOTOR INSPECTION

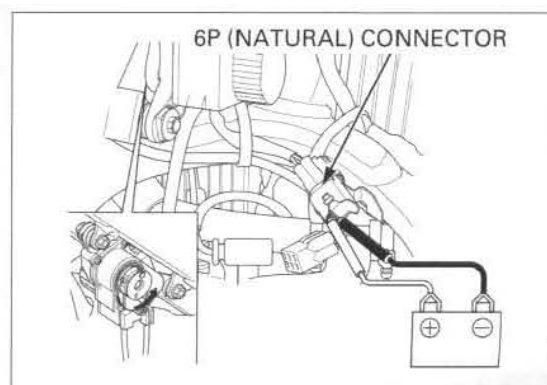
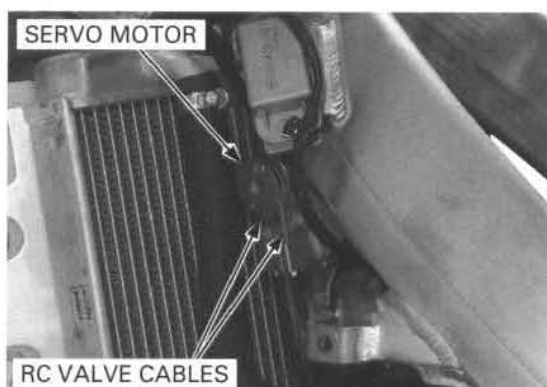
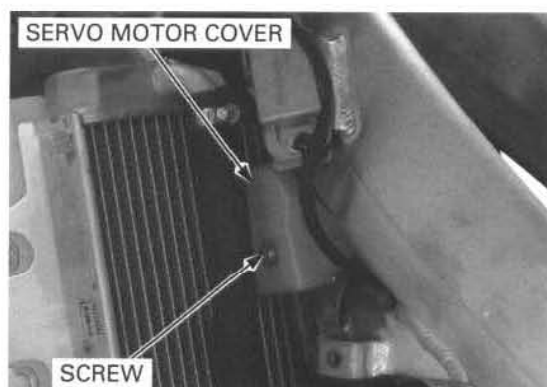
Connect a 12 V battery to the servo motor side 6P connector.
Check that the servo motor pulley turns counter-clockwise.

Connection: White/black (+) – White/green (-)

Then, switch the 12 V battery connection.
Check that the servo motor pulley turns clockwise.

Connection: White/green (+) – White/black (-)

Replace the servo motor if the servo motor operation is abnormal.



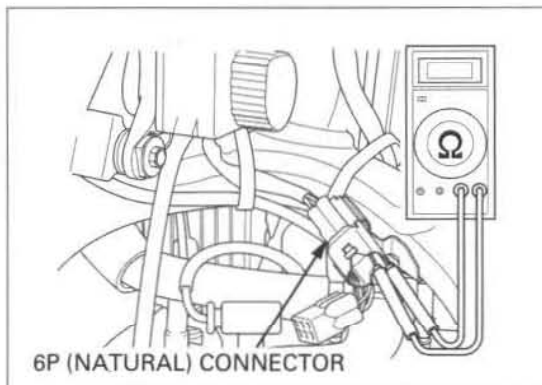
RC VALVE

POTENTIOMETER INSPECTION

Measure the resistance at the servo motor side 6P connector.

Connection: Yellow/red – Blue/green

Resistance: 3.5– 6.5 k Ω (20 °C/68 °F)



Be careful not to short the battery terminals.

Connect a 12 V battery to the servo motor side 6P connector.

Measure the resistance at the servo motor side 6P connector using an analogue tester.

Battery connection:

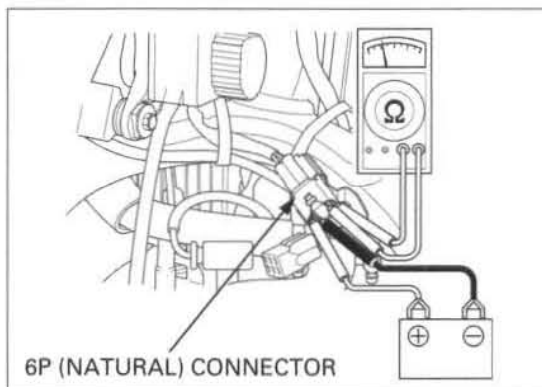
White/black (+) – White/green (-)

Tester connection:

Light green – Blue/green

Resistance: Repeat 0 to 3.5 – 6.5 k Ω (20 °C/68 °F)

Replace the servo motor if the servo motor operation is abnormal.

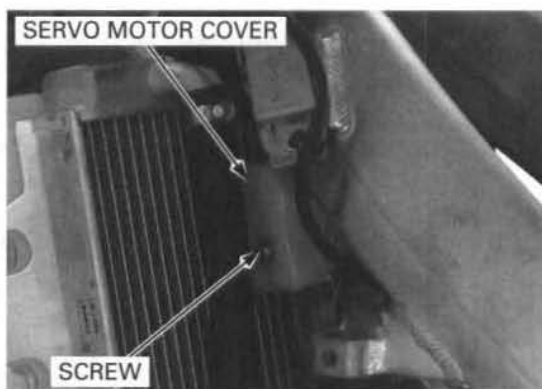


REMOVAL/INSTALLATION

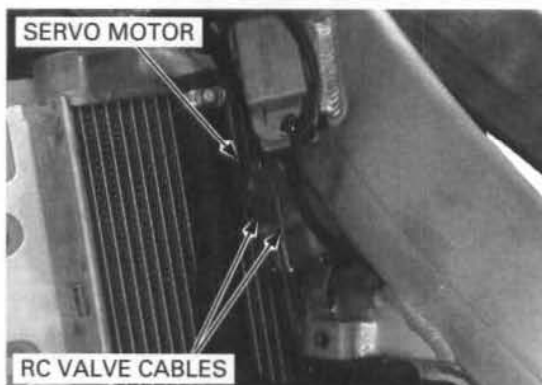
Remove the fuel tank (page 2-6).

Disconnect the RC valve control cables from the RC valve pulley (page 8-6).

Remove the screw and servo motor cover.



Disconnect the RC valve cables from the servo motor.

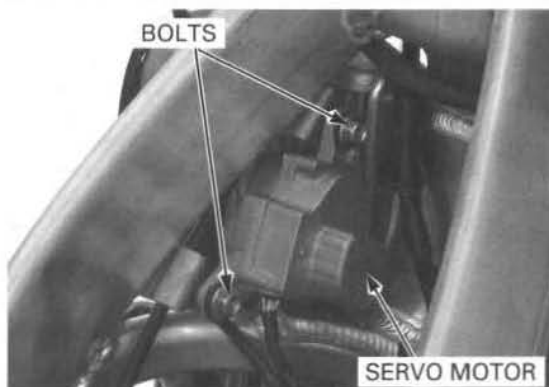


Remove the wire band and disconnect the servo motor 6P connector.



Remove the nuts, bolts and servo motor.

Installation is in the reverse order of removal.
Route the RC valve cables properly (page 1-17).



RC VALVE CABLE

RC VALVE CABLE CONNECTION/ ADJUSTMENT

Cable adjustment is done automatically via the servo motor and spring.

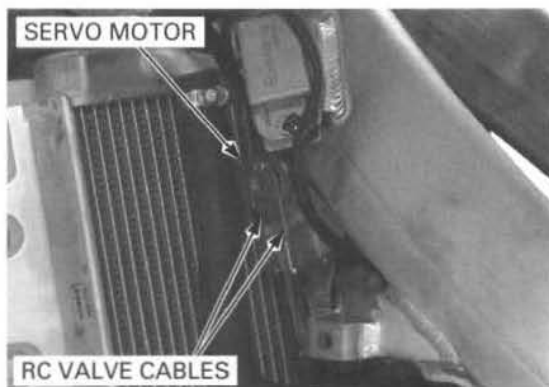
SERVO MOTOR SIDE

Connect the rear RC valve cable to the servo motor pulley.

Connect the front RC valve cable (spring/seat) to the servo motor pulley.

Install the RC valve cables to the grooves in the servo motor body.

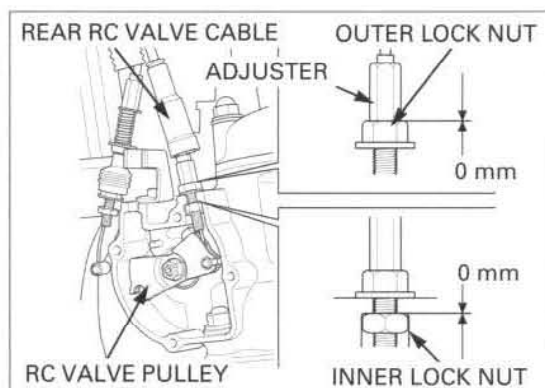
Route the RC valve cables properly (page 1-17).



RC VALVE

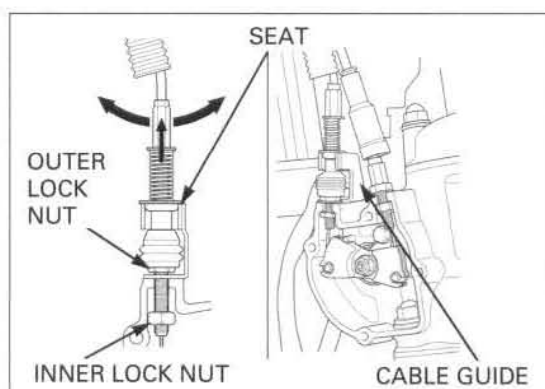
CYLINDER SIDE (REAR CABLE)

Turn the outer lock nut until it seats against the adjuster.
Connect the rear RC valve control cable to the RC valve pulley.
Turn the RC valve pulley counterclockwise fully.
Turn the adjuster clockwise until the inner lock nut seats to the cylinder.
Tighten the outer lock nut securely.

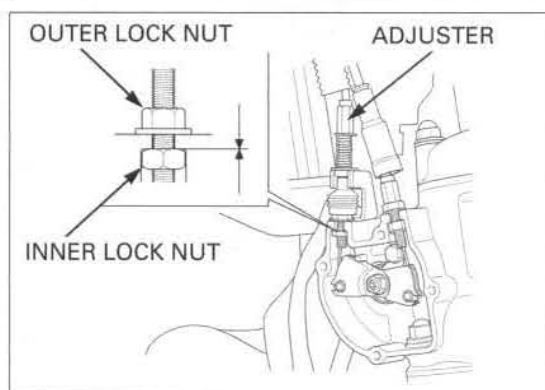


CYLINDER SIDE (FRONT)

Turn the RC valve pulley clockwise fully until the RC valve pulley stops against the pin.
Loosen the inner and outer lock nuts.
Connect the front RC valve control cable (spring/seat) to the RC valve pulley.
Install the seat to the cable guide while compressing the spring.
Pull up the front RC valve control cable while swinging it front and rear.



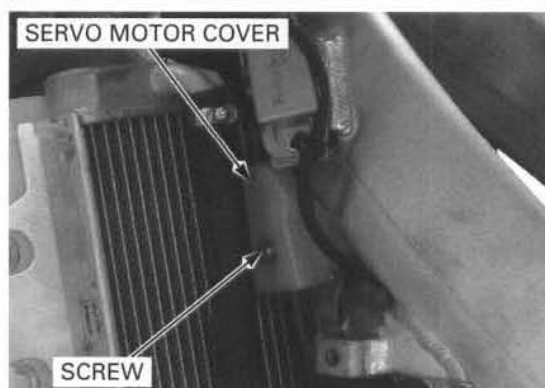
Turn the adjuster until the inner lock nut seats to the cylinder while pulling the adjuster.
Tighten the outer lock nut securely.



Install the servo motor cover and tighten the screw securely.

Install the fuel tank (page 2-7).

Check the RC valve operation (page 8-6).



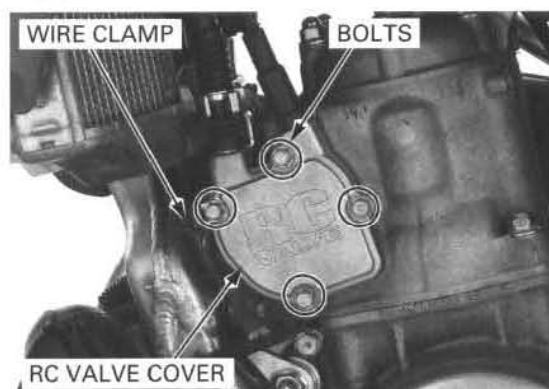
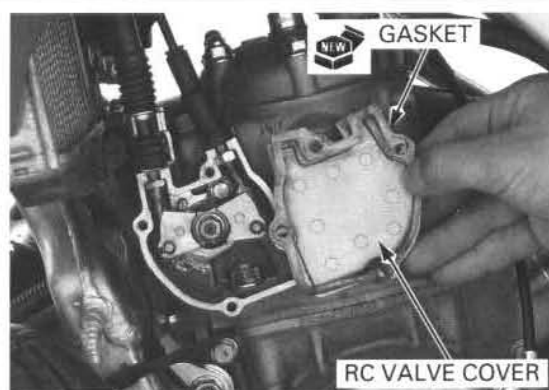
Requires removing the RC valve cover.

Install a new gasket.

Install the RC valve cover, wire clamp and bolts.
Tighten the bolts to the specified torque.

TORQUE: 5 N·m (0.5 kgf·m, 3.7 lbf·ft)

Install the alternator wire to the wire clamp.



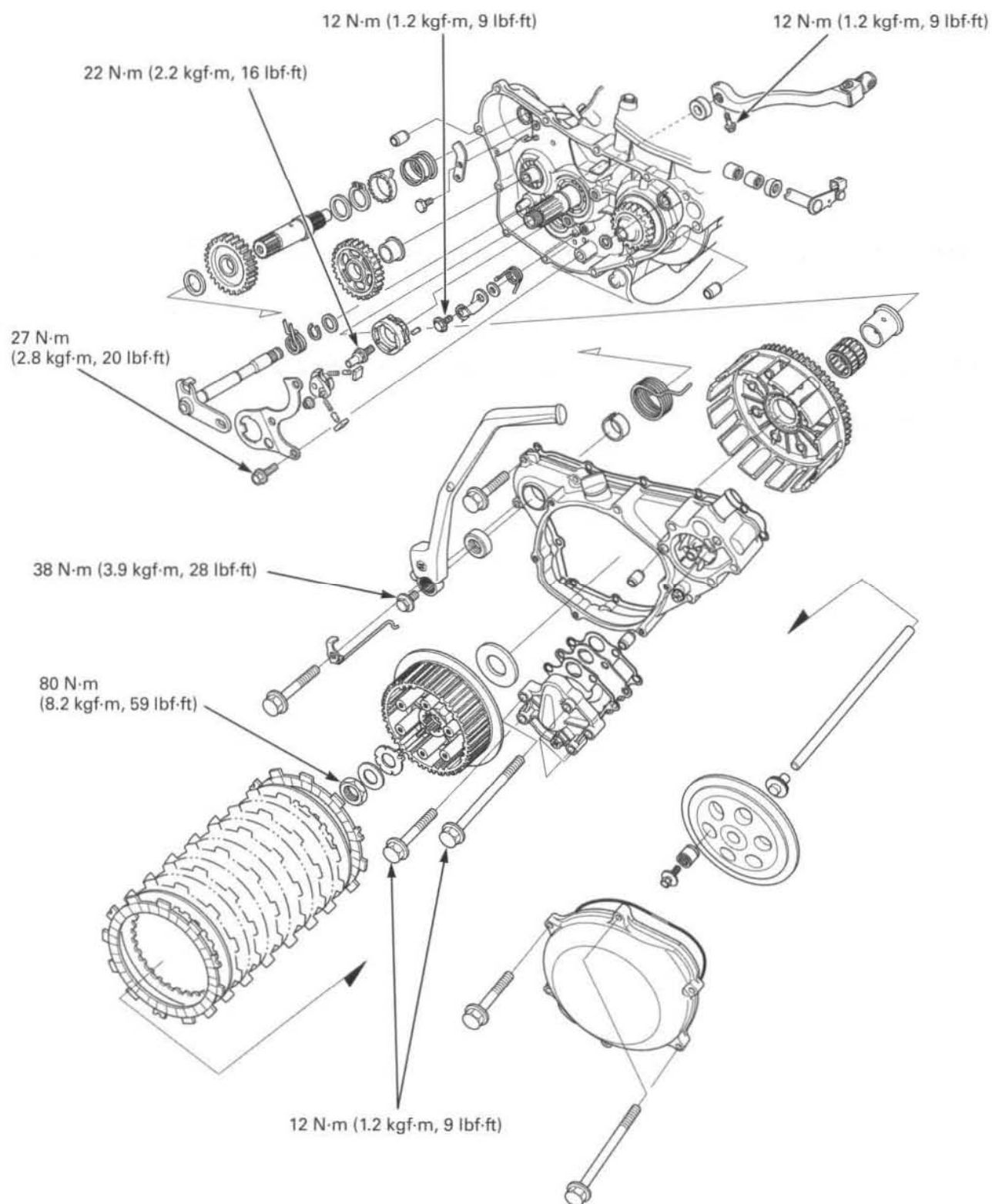
MEMO

9. CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

COMPONENT LOCATION	9-2	CLUTCH	9-6
SERVICE INFORMATION	9-3	KICKSTARTER	9-14
TROUBLESHOOTING	9-4	GEARSHIFT LINKAGE	9-18
RIGHT CRANKCASE COVER	9-5		

CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

- This section covers service of the clutch, kickstarter and gearshift linkage. All service can be done with the engine installed in the frame.
- Transmission oil viscosity and level have an effect on clutch disengagement. Oil additive also affect clutch performance and are not recommended. When the clutch does not disengage or the motorcycle creeps with clutch disengaged, inspect the transmission oil level before servicing the clutch system.

SPECIFICATIONS

ITEM		STANDARD	Unit: mm (in)
			SERVICE LIMIT
Clutch lever free play		10 – 20 (3/8 – 3/4)	–
Clutch spring free length		45.7 (1.83)	44.7 (1.76)
Clutch outer guide I.D.		23.000 – 23.021 (0.9055 – 0.9063)	23.03 (0.907)
Clutch disc thickness		2.92 – 3.08 (0.114 – 0.121)	2.85 (0.006)
Clutch plate warpage		–	0.20 (0.008)
Kickstarter pinion gear I.D.		22.007 – 22.028 (0.8664 – 0.8672)	22.05 (0.868)
Kickstarter spindle O.D.		21.959 – 21.980 (0.8645 – 0.8654)	21.95 (0.864)
Kickstarter idle gear I.D.		20.020 – 20.041 (0.7882 – 0.7890)	20.07 (0.790)
Kickstarter idle gear bushing	I.D.	17.000 – 17.018 (0.6693 – 0.6700)	17.04 (0.671)
	O.D.	19.979 – 20.000 (0.7866 – 0.7874)	19.96 (0.786)
Countershaft O.D. at kickstarter idle gear		16.966 – 16.984 (0.6680 – 0.6687)	16.95 (0.667)

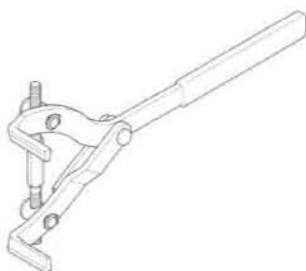
TORQUE VALUES

Gearshift drum center pin	22 N·m (2.2 kgf·m, 16 lbf·ft)
Gearshift drum stopper arm bolt	12 N·m (1.2 kgf·m, 9 lbf·ft)
Guide plate bolt	27 N·m (2.8 kgf·m, 20 lbf·ft)
Clutch center lock nut	80 N·m (8.2 kgf·m, 59 lbf·ft)
Gearshift pedal bolt	12 N·m (1.2 kgf·m, 9 lbf·ft)
Kickstarter pedal bolt	38 N·m (3.9 kgf·m, 28 lbf·ft)

Apply a locking agent to the threads

TOOL

Clutch center holder
07724-0050002



or 07724-0050001
or equivalent commercially available in U.S.A.

CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

TROUBLESHOOTING

Hard to shift

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

Transmission jumps out of gear

- Worn shift drum stopper arm
- Worn or broken gearshift spindle return spring
- Loose stopper plate bolt

Gearshift pedal will not return

- Weak or broken gearshift spindle return spring
- Bent gearshift spindle

Clutch slips when accelerating

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

Motorcycle creeps with the engine idling

- Incorrect clutch adjustment
- Clutch plate warped
- Faulty clutch lifter
- Incorrect transmission oil

RIGHT CRANKCASE COVER**REMOVAL**

Drain the coolant (page 5-6).

Drain the transmission oil (page 3-10).

Remove the expansion chamber (page 2-7).

Remove the brake pedal pivot bolt and move the pedal aside (page 13-24).

Remove the kickstarter pedal bolt and kickstarter pedal.

Remove the right RC valve cover (page 8-6).

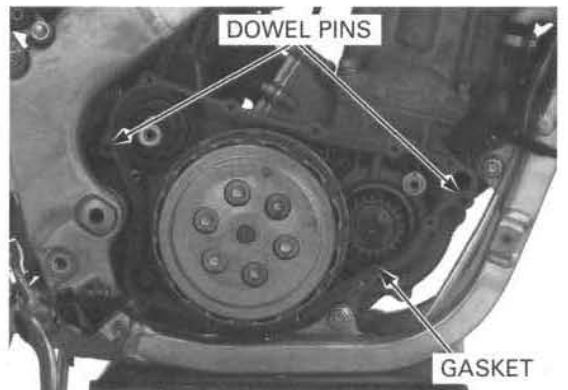
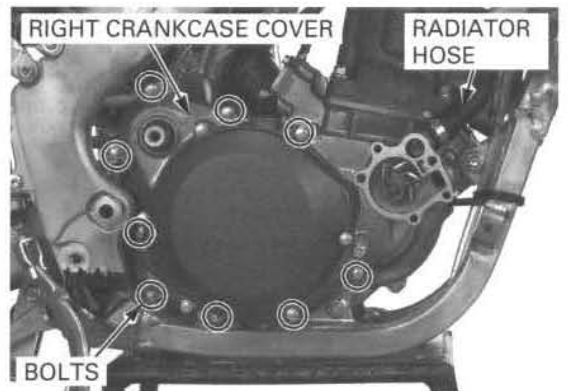
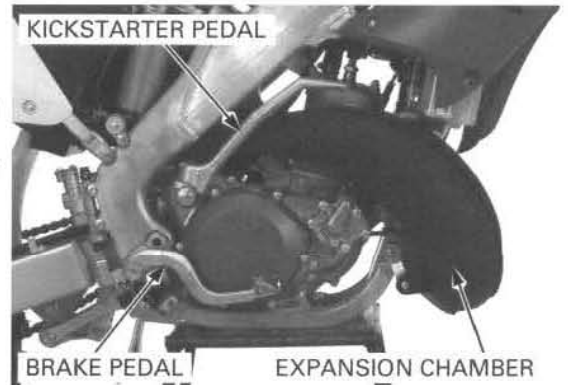
Remove the water pump cover (page 5-7).

Loosen the clamp screw and disconnect the radiator hose from the right crankcase cover.

Remove the bolts, hose guide and right crankcase cover.

Remove the gasket and dowel pins.

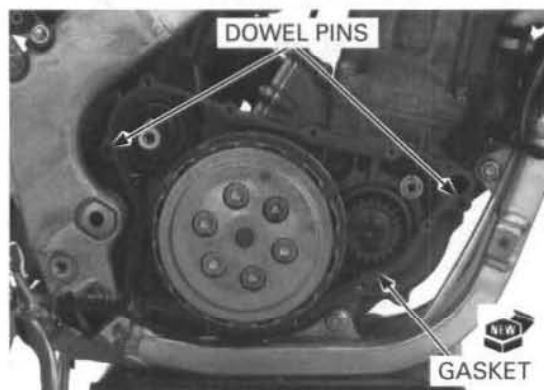
Check the starter spindle oil seal for deteriorated or damage.



CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

INSTALLATION

Install the dowel pins and new gasket.

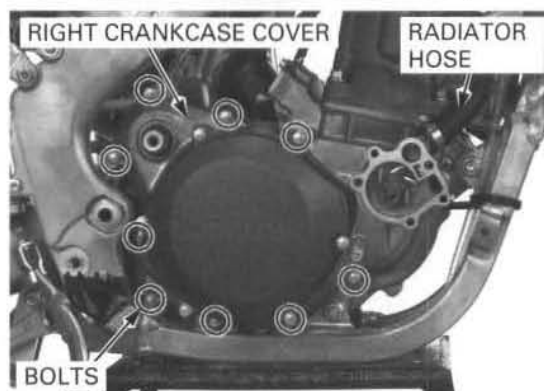


Install the right crankcase cover while engaging the water pump gear with the primary drive gear.

Install the hose guide and tighten the bolts.

Connect the radiator hose to the right crankcase cover and tighten the clamp screw securely.

Install the water pump cover (page 5-9).



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

TORQUE: 38 N·m (3.9 kgf·m, 28 lbf·ft)

Install the brake pedal (page 13-24).

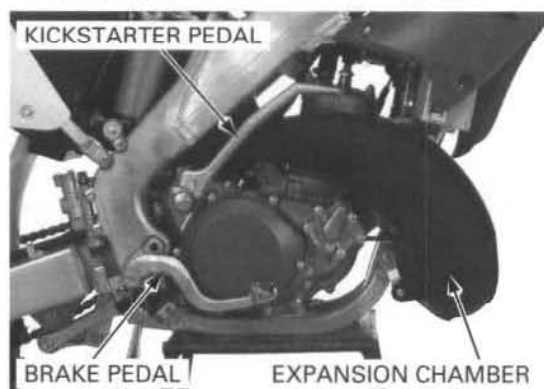
Install the expansion chamber (page 2-7).

Fill the transmission with the recommended oil to the correct level (page 3-10).

Pour the radiator coolant mixture into the radiator to the correct level (page 5-6).

Check and adjust the rear brake pedal height (page 3-16).

Start the engine and check for oil leaks.

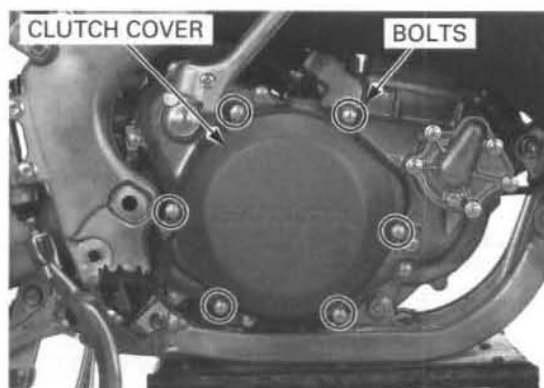


CLUTCH

REMOVAL

Remove the brake pedal pivot bolt and move the pedal aside (page 13-24).

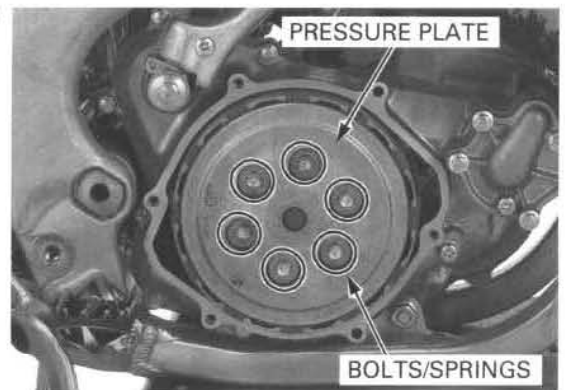
Remove the bolts and clutch cover.



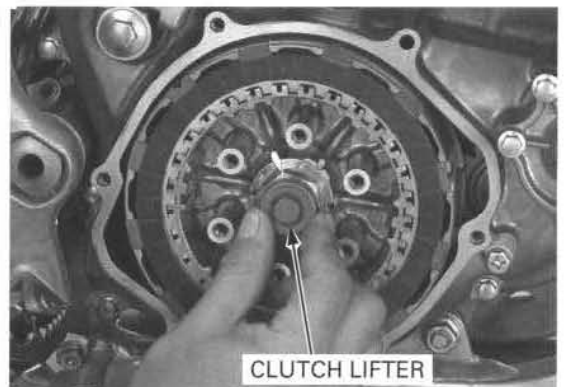
CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

Remove the six clutch spring bolts in a crisscross pattern in two or three steps.
Remove the clutch springs.

Remove the clutch pressure plate.

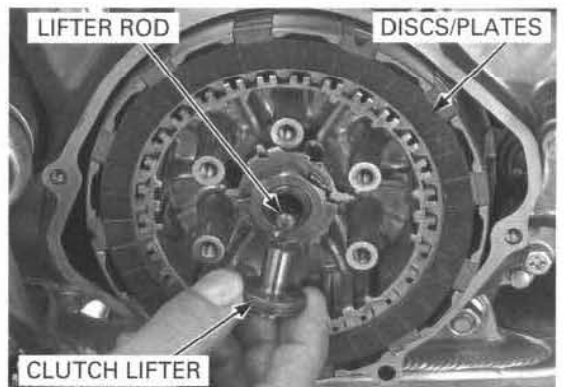


Turn the clutch lifter with your finger, check that the clutch lifter needle bearing turns smoothly.

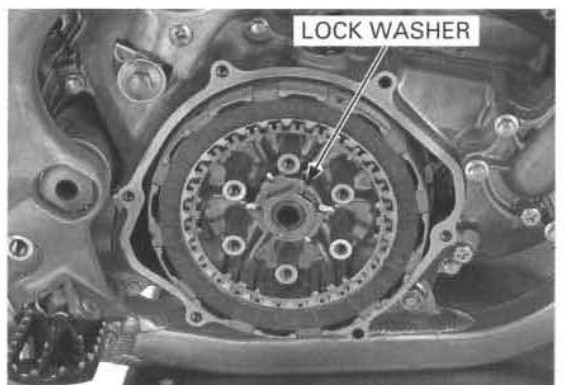


Remove the clutch lifter and lifter rod.

Remove the eight clutch friction discs and seven clutch plates.



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



CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

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

TOOL:

Clutch center holder

07724-0050002 or
07724-0050001
or equivalent commercially available in U.S.A.

Remove the tool and clutch center.

Remove the thrust washer.

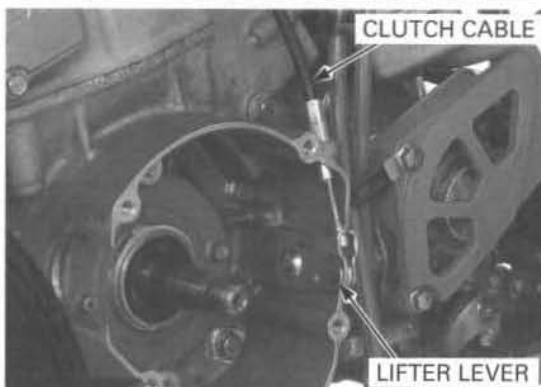
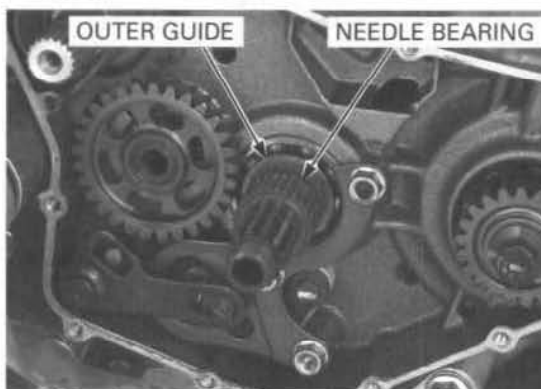
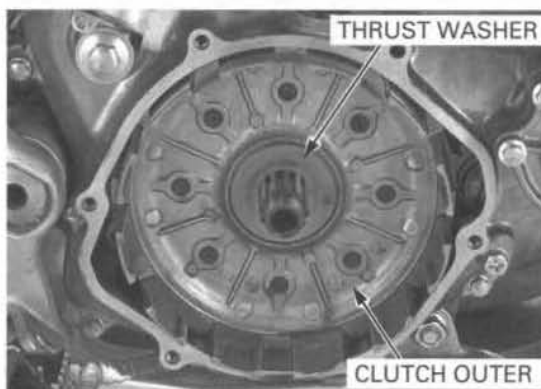
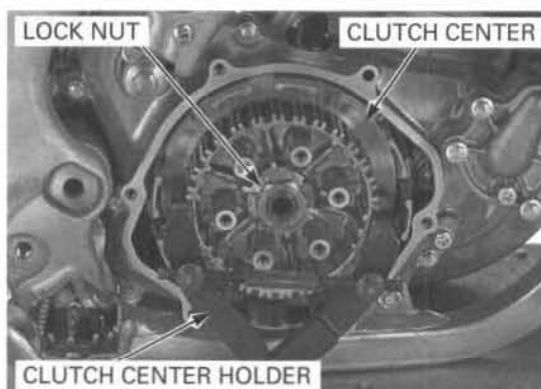
Remove the right crankcase cover (page 9-5).

Remove the clutch outer.

Remove the needle bearing and clutch outer guide.

Remove the alternator cover (page 14-10).
Remove the flywheel and stator (page 14-10).

Disconnect the clutch cable from the clutch lifter lever by loosening the clutch cable adjuster. Remove the clutch lifter lever from the left crankcase.



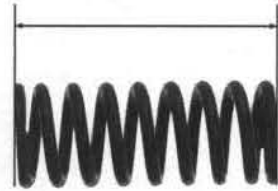
INSPECTION

CLUTCH SPRING

Replace the clutch springs as a set.

Measure the clutch spring free length.

SERVICE LIMIT: 44.7 mm (1.76 in)



CLUTCH DISC

Check the clutch discs for sign of scoring or discoloration.

Measure the thickness of each disc.

SERVICE LIMIT: 2.85 mm (0.112 in)



CLUTCH PLATE

Check each clutch plate for excessive warpage or discoloration.

Replace the clutch discs and plates as a set.

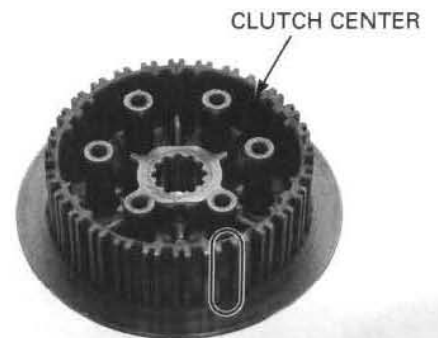
Check the plate warpage on a surface plate using a feeler gauge.

SERVICE LIMIT: 0.20 mm (0.008 in)



CLUTCH CENTER

Check the clutch center for nicks, indentations or abnormal wear made by the clutch plate.



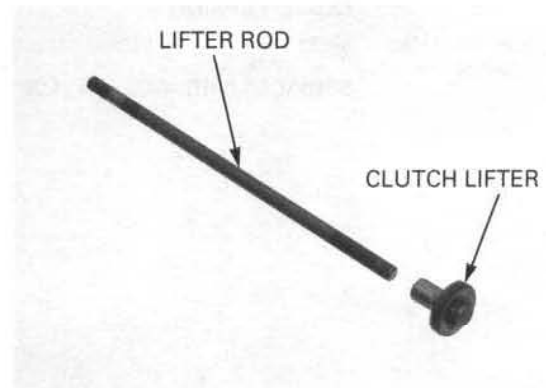
CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

CLUTCH LIFTER

Check the clutch lifter for wear or damage.

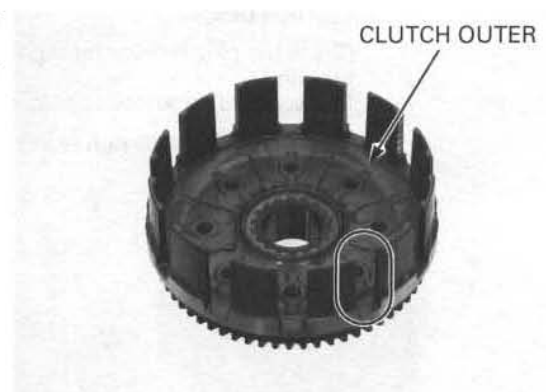
CLUTCH LIFTER ROD

Check the clutch lifter rod for damage or warpage.



CLUTCH OUTER

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



CLUTCH OUTER GUIDE

Check the clutch outer guide for abnormal wear or damage.

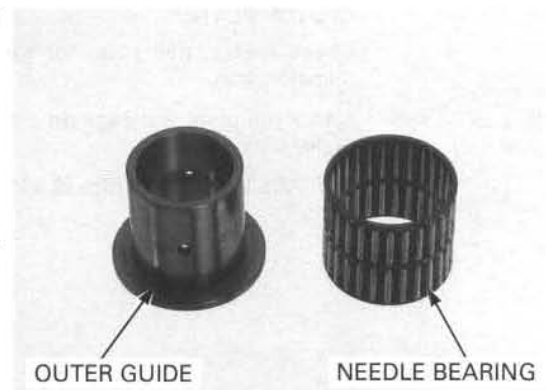
Measure the I.D. of the clutch outer guide.

SERVICE LIMIT: 20.05 mm (0789 in)

NEEDLE BEARING

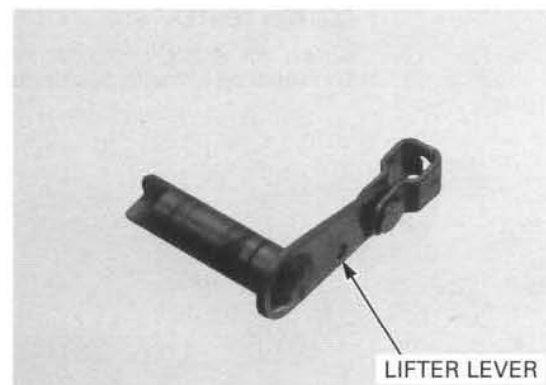
Check the needle bearing for wear or damage.

Check the mainshaft for wear or damage at the sliding surface of the clutch outer guide.

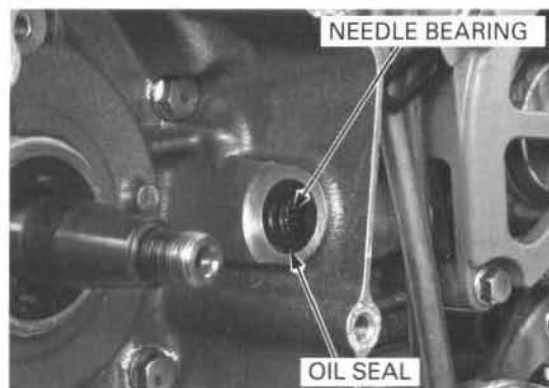


CLUTCH LIFTER LEVER

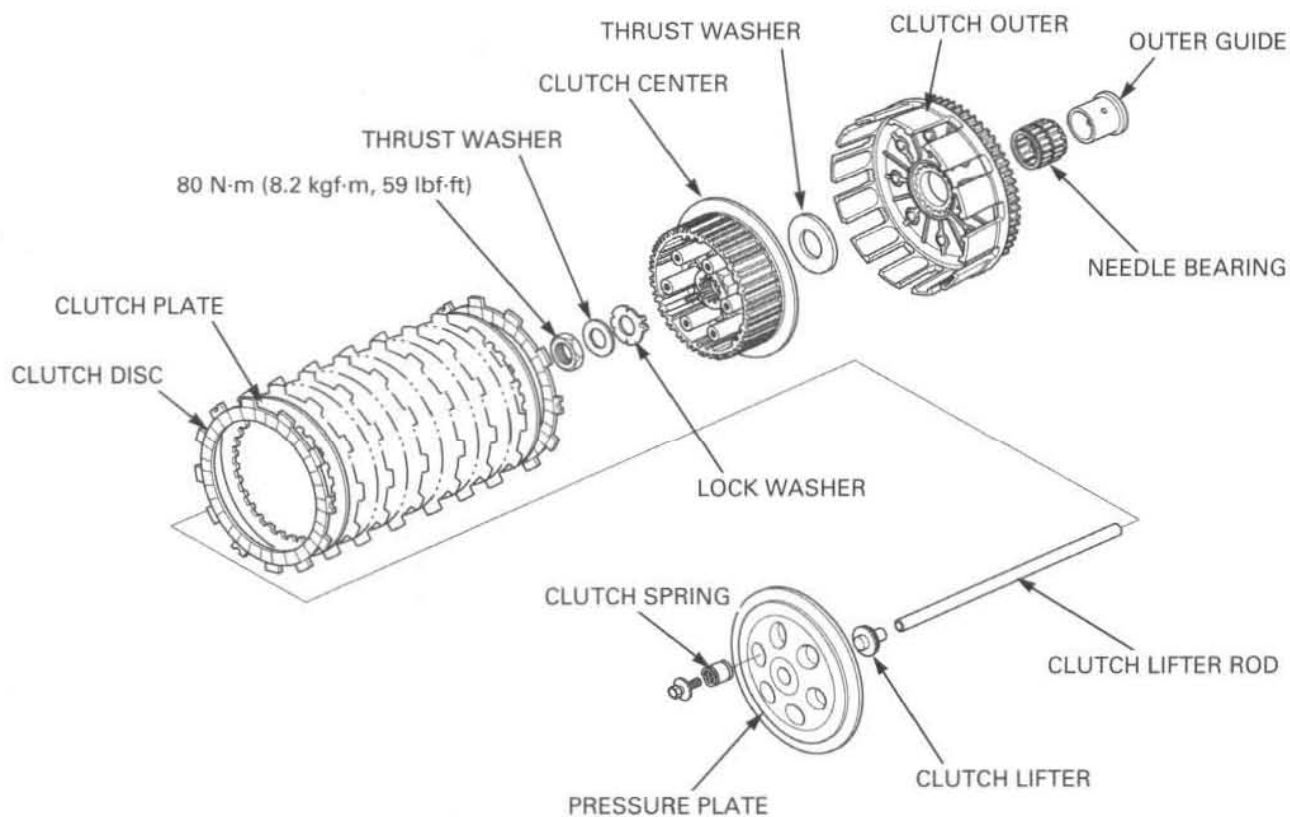
Check the clutch lifter lever for damage.



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



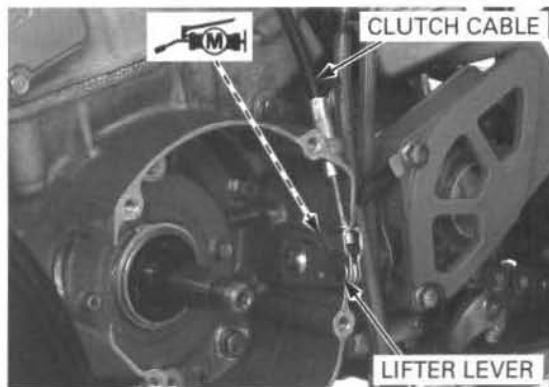
INSTALLATION



Apply Pro Honda Moly 60 or equivalent molybdenum paste to the clutch lifter lever sliding surface. Install the clutch lifter lever to the crankcase. Connect the clutch cable to the clutch lifter lever. Install the stator and flywheel (page 14-10).

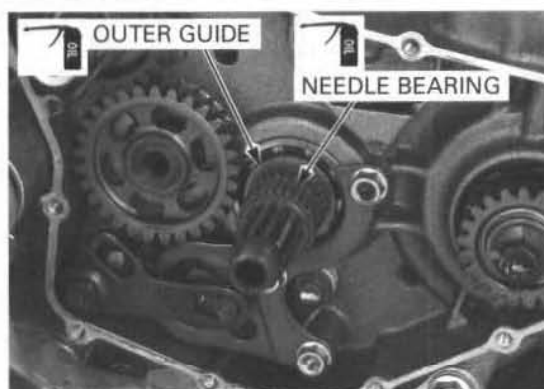
After installation, check the following:

- ignition timing (page 14-13)
- clutch operation (page 3-16)

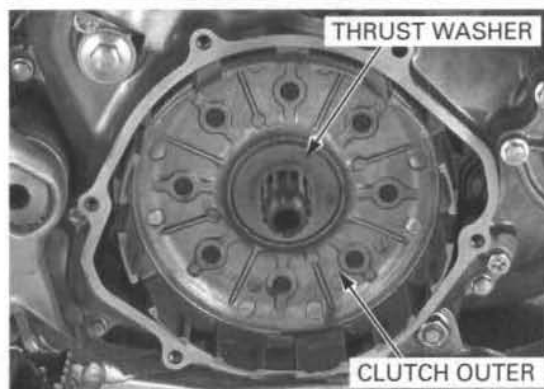


CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

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



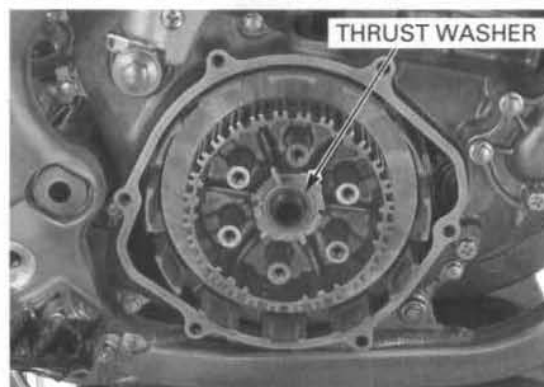
Install the right crankcase cover (page 9-6).
Install the clutch outer and thrust washer.



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



Install the thrust washer.



CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

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

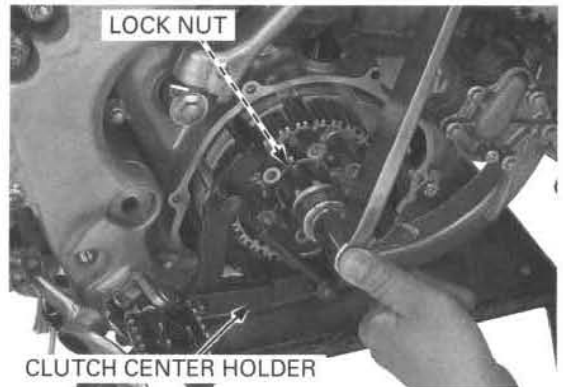
TOOL:

Clutch center holder

07724-0050002 or
07724-0050001
or equivalent commercially available
in U.S.A.

TORQUE: 80 N·m (8.2 kgf·m, 59 lbf·ft)

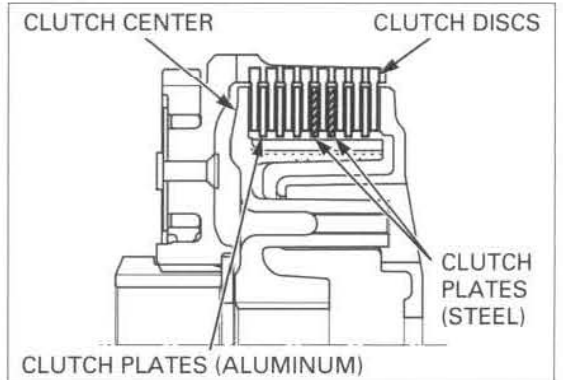
Bend the tabs of the lock washer up against the clutch center lock nut.



Coat the clutch plates and discs with clean transmission oil.

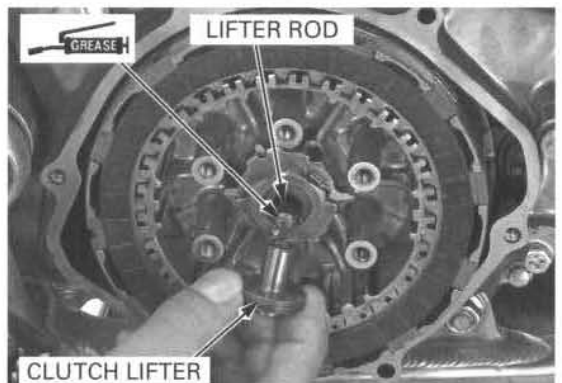
The outer clutch plate is aluminum.

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



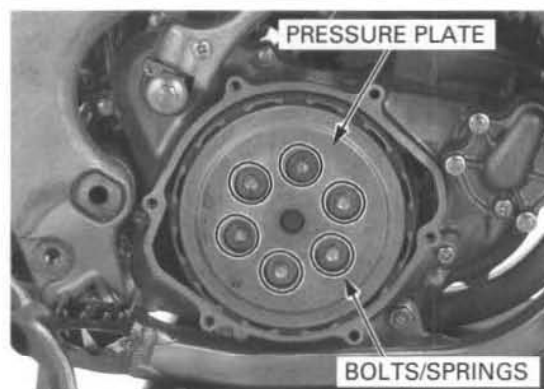
Apply grease to the clutch lifter rod tips.

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



CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

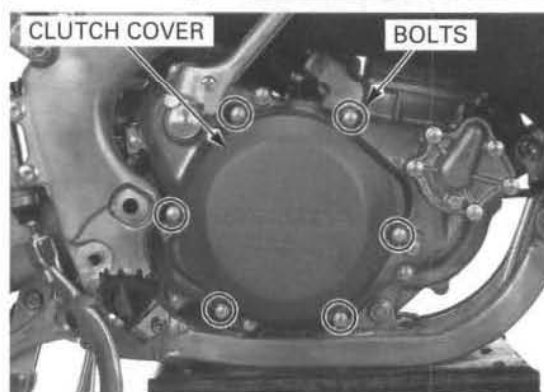
Install the clutch pressure plate.
Install the six springs and spring bolts.
Tighten the spring bolts in a crisscross pattern in two or three steps.



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



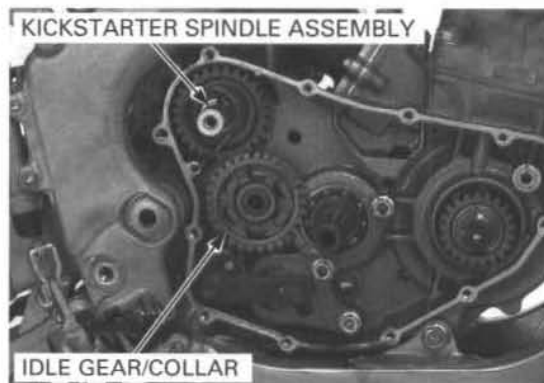
Install and tighten the clutch cover bolts securely.
Install the brake pedal (page 13-24).
Adjust the clutch lever free play (page 3-16).



KICKSTARTER

REMOVAL

Remove the right crankcase cover (page 9-5).
Remove the clutch (page 9-6).
Remove the idle gear and collar.
Unhook the kickstarter return spring from the crankcase, and pull the kickstarter spindle assembly out.



DISASSEMBLY

Disassemble the kickstarter spindle by removing the following:

- thrust washer and collar
- return spring
- ratchet spring and starter ratchet
- snap ring, thrust washer and pinion gear

**INSPECTION**

Check the return spring and ratchet spring for weakness or damage.

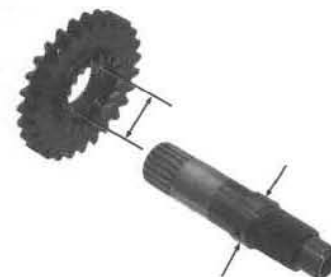
Check the starter ratchet for wear or damage.

Measure the kickstarter pinion gear I.D.

SERVICE LIMIT: 22.05 mm (0.868 in)

Measure the kickstarter spindle O.D.

SERVICE LIMIT: 21.95 mm (0.864 in)



Check the starter idle gear and bushing for wear or damage.

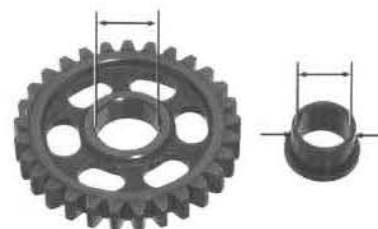
Measure the starter idle gear I.D.

SERVICE LIMIT: 20.07 mm (0.790 in)

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

SERVICE LIMIT: I.D.: 17.04 mm (0.671 in)

O.D.: 19.96 mm (0.786 in)



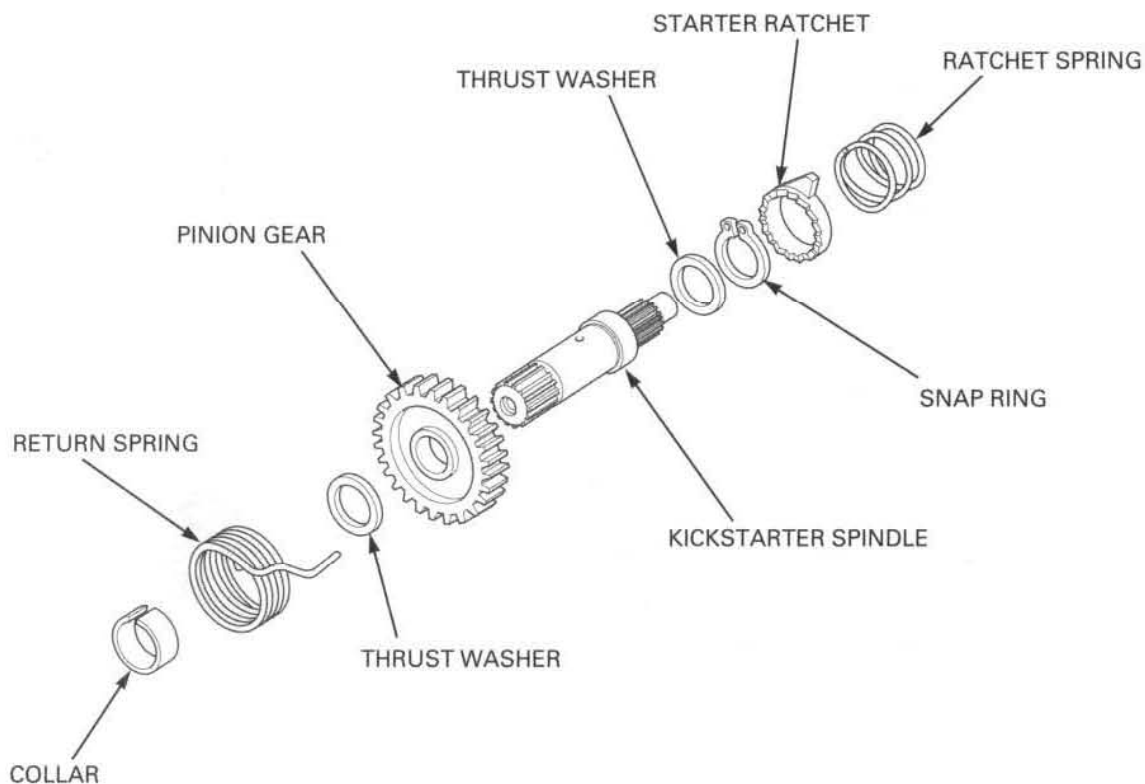
Measure the countershaft O.D. at the idle gear bushing sliding surface.

SERVICE LIMIT: 16.95 mm (0.667 in)



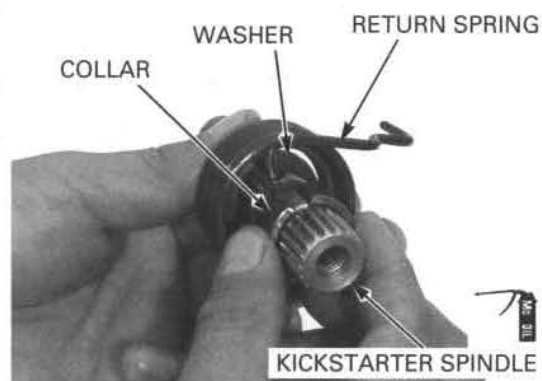
CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

ASSEMBLY



Apply molybdenum disulfide oil to the kickstarter spindle.
Install the thrust washer onto the kickstarter spindle.
Insert the return spring into the spring hook on the starter spindle.

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



Install the pinion gear onto the kickstarter spindle.
Install the thrust washer onto the pinion gear.

Install the snap ring so the sharp edge is facing out.

Install the snap ring in the groove of the spindle.



CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

Align the punch marks and install the starter ratchet.

STARTER RATCHET

PUNCH MARKS



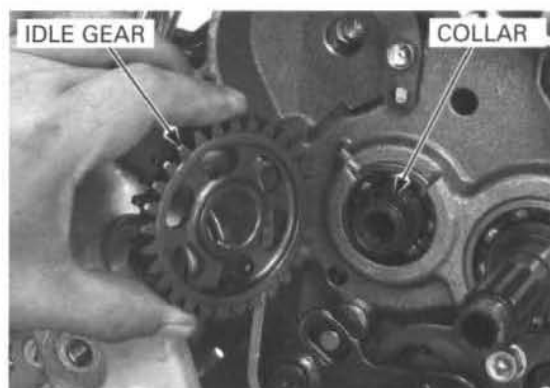
Install the ratchet spring.

RATCHET SPRING



INSTALLATION

Install the collar and idle gear to the countershaft.

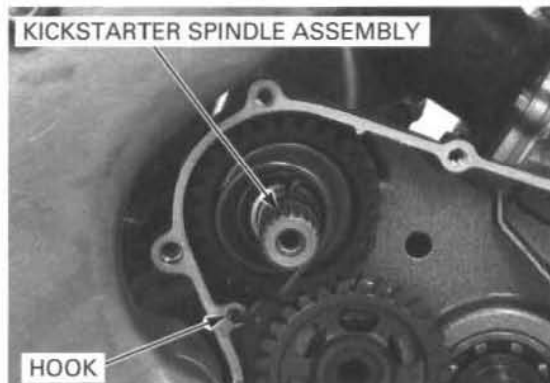


Be sure to preload the return spring before installing it into the crankcase.

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

Install the following:

- clutch (page 9-11)
- right crankcase cover (page 9-6)



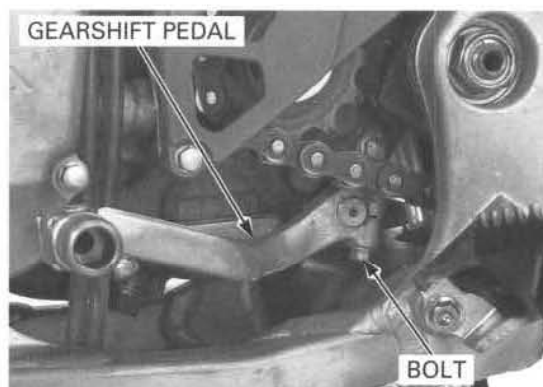
GEARSHIFT LINKAGE

REMOVAL

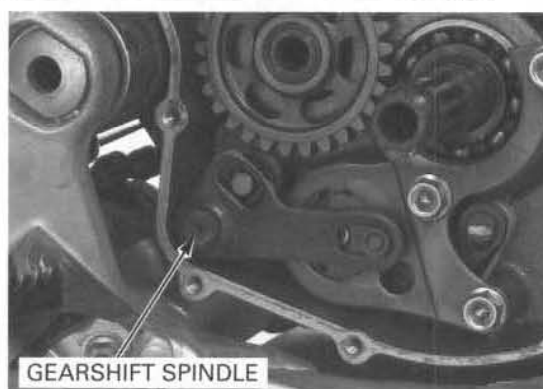
Remove the following:

- right crankcase cover (page 9-5)
- clutch (page 9-6)

Remove the bolt and gearshift pedal.



Pull the gearshift spindle out of the crankcase.

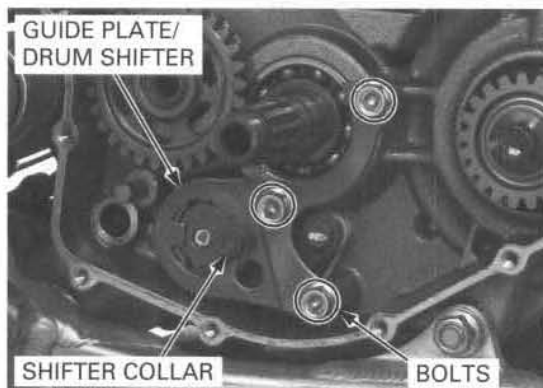


Remove the shifter collar.

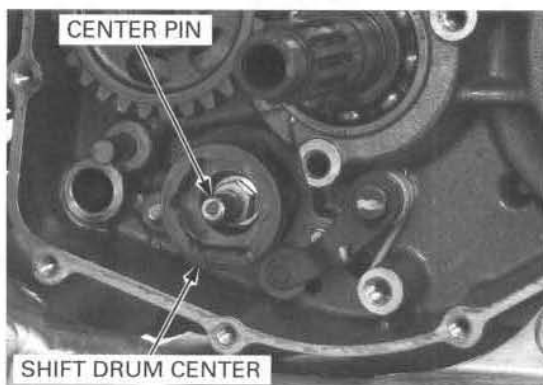
Remove the guide plate mounting bolts.

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

Remove the guide plate and drum shifter as an assembly.



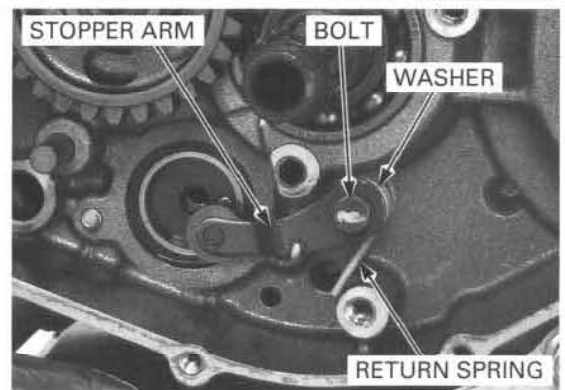
Remove the shift drum center pin and shift drum center.



CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

Remove the bolt, stopper arm, return spring and washer.

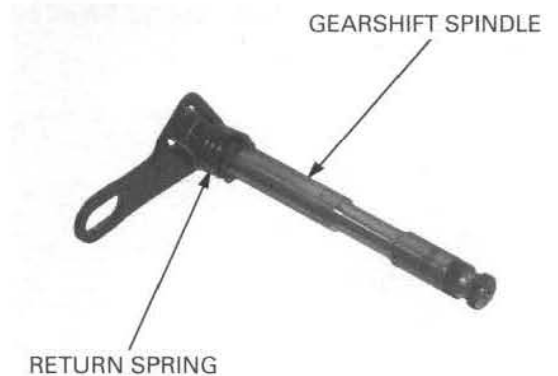
Remove the drum pin from the shift drum.



INSPECTION

GEARSHIFT SPINDLE

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



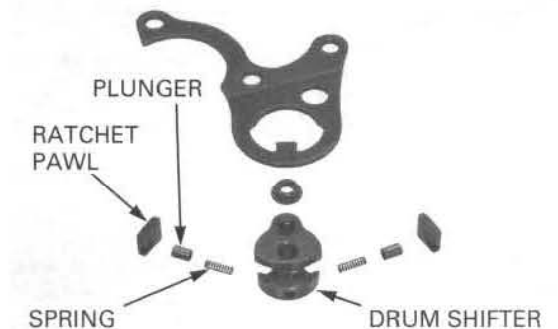
RATCHET PAWL

Clean the ratchet pawls, plungers, springs and drum shifter with clean transmission oil.

Check each part for wear or damage.

Apply clean transmission oil to each parts.

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



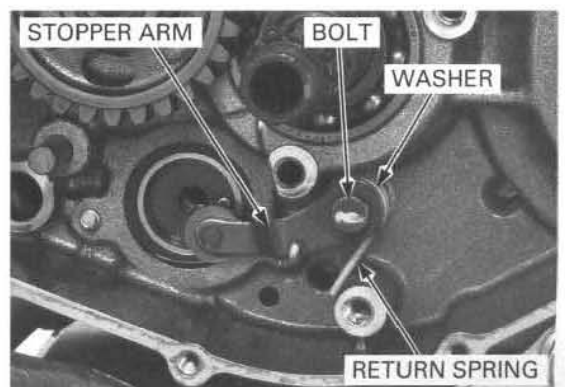
INSTALLATION

Install the drum pin to the hole in the shift drum.

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

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

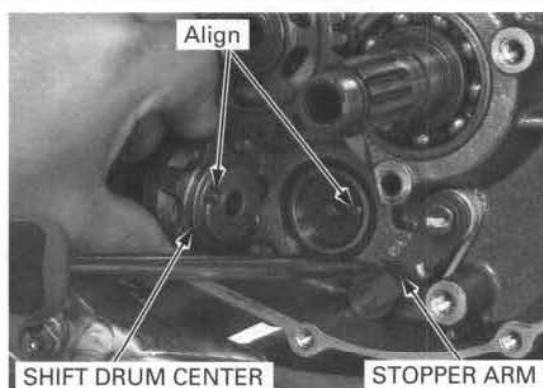
Check the stopper arm for proper operation.



CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

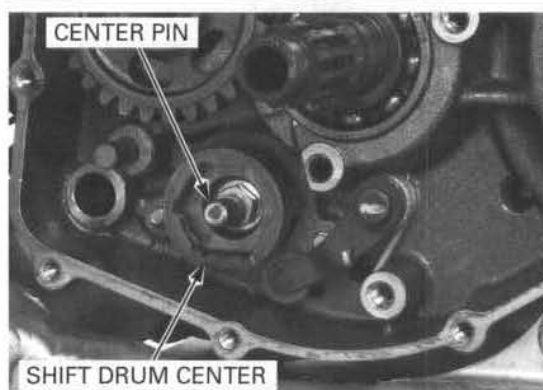
Move the stopper arm out of the way using a screwdriver.

Align the groove of the shift drum center with the drum pin and slip it into place.



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

TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)



Position the drum center in a gear other than neutral.

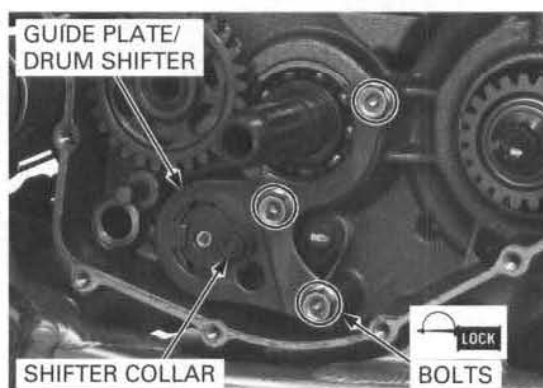
Holding the ratchet pawls in place in the guide plate and drum shifter, install the assembly onto the shift drum center pin.

Apply a locking agent to the guide plate bolt threads.

Install and tighten the guide plate bolts to the specified torque.

TORQUE: 27 N·m (2.8 kgf·m, 20 lbf·ft)

Install the shifter collar onto the drum shifter.



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

Assemble and install the washer to the gearshift spindle.



CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

Install the gearshift pedal, tighten the bolt to the specified torque.

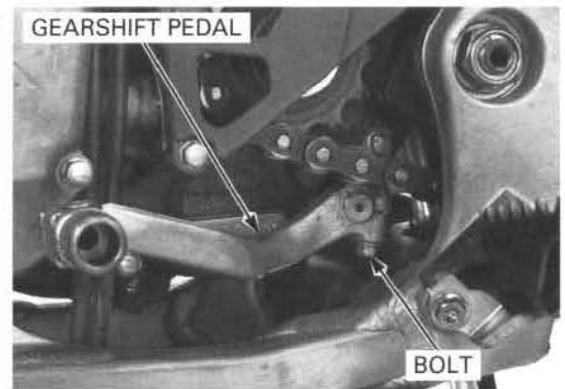
TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

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

Install the kickstarter, if removed (page 9-17).

Install the clutch (page 9-11).

Install the right crankcase cover (page 9-6).

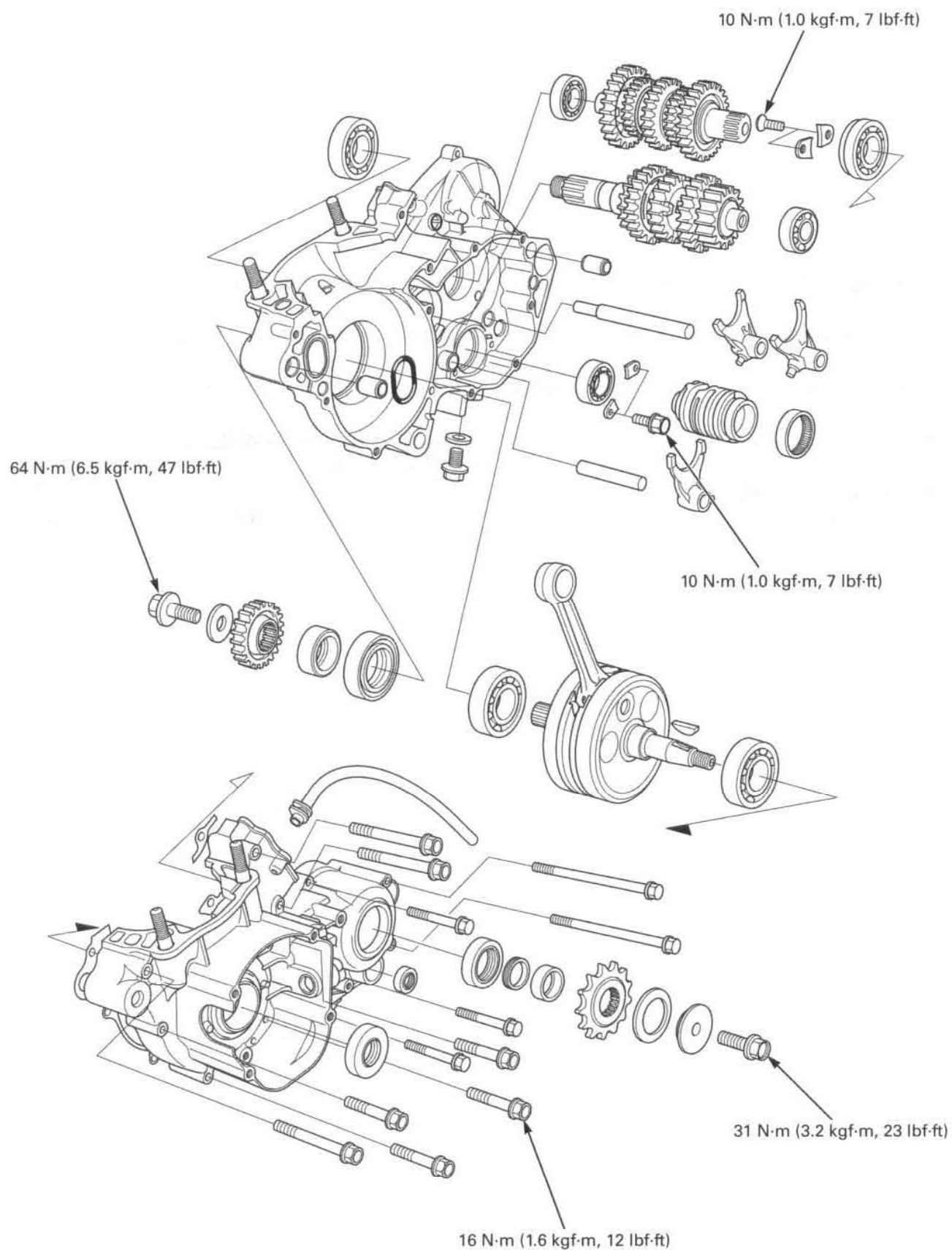


MEMO

10. CRANKCASE/CRANKSHAFT/TRANSMISSION

COMPONENT LOCATION	10-2	CRANKSHAFT REMOVAL.....	10-11
SERVICE INFORMATION	10-3	CRANKCASE BEARING REPLACEMENT ..	10-12
TROUBLESHOOTING	10-6	CRANKSHAFT INSTALLATION	10-15
CRANKCASE SEPARATION.....	10-7	TRANSMISSION ASSEMBLY/ INSTALLATION.....	10-16
TRANSMISSION REMOVAL/ DISASSEMBLY	10-9	CRANKCASE ASSEMBLY	10-19

COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

- The following parts must be removed before separating the crankcase.
 - alternator (page 14-10)
 - clutch/kickstarter/gearshift linkage (page 9-6)
 - cylinder head/cylinder/piston (page 7-5)
 - engine (page 6-4)

SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Crankshaft	Runout		–	0.05 (0.002)
	Connecting rod big end side clearance		0.4 – 0.8 (0.02 – 0.03)	0.9 (0.04)
	Connecting rod big end radial clearance		0.010 – 0.022 (0.0004 – 0.0009)	0.03 (0.001)
Transmission	Gear I.D.	M4	28.007 – 28.028 (1.1026 – 1.1035)	28.05 (1.104)
		M5	25.020 – 25.041 (0.9850 – 0.9859)	25.07 (0.987)
		C1	22.020 – 22.041 (0.8669 – 0.8678)	22.07 (0.869)
		C2	30.020 – 30.041 (1.1819 – 1.1827)	30.07 (1.184)
		C3	25.020 – 25.041 (0.9850 – 0.9859)	25.07 (0.987)
	Busing O.D.	M4	27.979 – 27.980 (1.1007 – 1.1015)	27.94 (1.100)
		C1	21.979 – 22.000 (0.8653 – 0.8661)	21.95 (0.864)
		C2	29.979 – 30.000 (1.1802 – 1.1811)	29.95 (1.179)
	Busing I.D.	C1	19.000 – 19.021 (0.7480 – 0.7489)	19.04 (0.750)
		C2	27.000 – 27.021 (1.0630 – 1.0638)	27.04 (1.064)
	Gear-to-bushing clearance	M4	0.027 – 0.069 (0.0011 – 0.0027)	0.11 (0.004)
		C1	0.020 – 0.062 (0.0008 – 0.0024)	0.12 (0.005)
		C2	0.020 – 0.062 (0.0008 – 0.0024)	0.12 (0.005)
	Mainshaft O.D.	at M5	24.959 – 24.980 (0.9826 – 0.9835)	24.94 (0.982)
		at clutch outer guide	22.959 – 22.980 (0.9039 – 0.9047)	22.95 (0.904)
	Counter-shaft O.D.	at C1 bushing	18.959 – 18.980 (0.7464 – 0.7472)	18.94 (0.746)
		at C2 bushing	26.959 – 26.980 (1.0614 – 1.0622)	26.94 (1.061)
		at C3	24.959 – 24.979 (0.9826 – 0.9834)	24.96 (0.983)
	Gear-to-shaft clearance	M5	0.040 – 0.082 (0.0016 – 0.0032)	0.13 (0.005)
		C3	0.041 – 0.082 (0.0016 – 0.0032)	0.11 (0.004)
	Bushing-to-shaft clearance	C1	0.020 – 0.062 (0.0008 – 0.0024)	0.12 (0.005)
		C3	0.020 – 0.062 (0.0008 – 0.0024)	0.12 (0.005)
Shift fork, shift fork shaft	Fork claw thickness		4.93 – 5.00 (0.194 – 0.197)	4.8 (0.19)
	Shift fork I.D.	C	11.003 – 11.024 (0.4332 – 0.4340)	11.04 (0.435)
		R/L	12.035 – 12.056 (0.4738 – 0.4746)	12.07 (0.475)
	Fork shaft O.D.	C	10.983 – 10.994 (0.4324 – 0.4328)	10.97 (0.432)
		R/L	11.966 – 11.984 (0.4711 – 0.4718)	11.95 (0.470)

TORQUE VALUES

Countershaft bearing set plate screw
 Gearshift drum bearing set plate bolt
 Crankcase 7 mm bolt
 Drive sprocket bolt
 Primary drive gear bolt

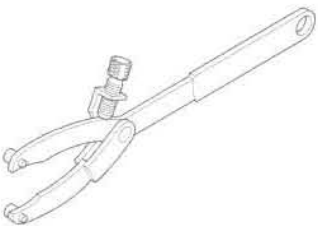
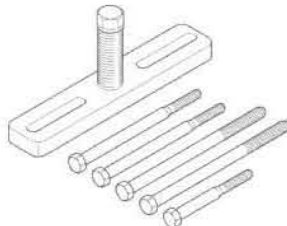
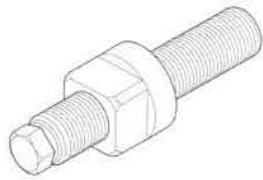
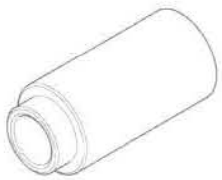
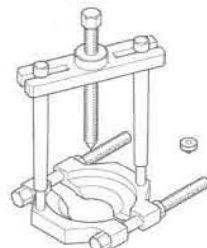
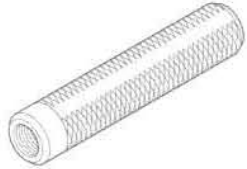
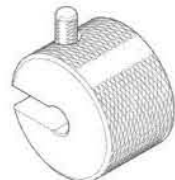
10 N·m (1.0 kgf·m, 7 lbf·ft)
 10 N·m (1.0 kgf·m, 7 lbf·ft)
 16 N·m (1.6 kgf·m, 12 lbf·ft)
 31 N·m (3.2 kgf·m, 23 lbf·ft)
 64 N·m (6.5 kgf·m, 47 lbf·ft)

Apply a locking agent to the threads
 Apply a locking agent to the threads

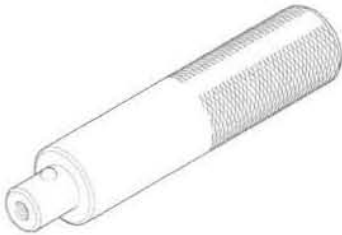
UBS bolt

CRANKCASE/CRANKSHAFT/TRANSMISSION

TOOLS

Universal holder 07725-0030000 	Crankcase puller 07937-4300001  or 07937-4300000 with Bolt, 6 mm: 07PMC-KZ40100 or use two 6 x 100 mm bolts	Assembly tool shaft 07965-1660200 
Assembly collar 07965-1660302  Not available in U.S.A. or 07965-1660300 or 07965-1660301 or 07965-166030A (U.S.A. only)	Thread adaptor 07965-KA30000 	Assembly collar 07965-VM00100 
Threaded shaft 07965-VM00200  or 07931-ME4010B and 07931-HB3020A (U.S.A. only)	Universal bearing puller 07631-0010000  or equivalent commercially avail- able in U.S.A.	Gear holder, 2.5 07724-0010100  or 07724-001A100 (U.S.A. only)
Bearing remover, 17 mm 07936-3710300 	Remover handle 07936-3710100 	Remover weight 07741-0010201  or 07936-3710200 or 07936-371020A (U.S.A. only)

CRANKCASE/CRANKSHAFT/TRANSMISSION

Driver 07749-0010000 	Attachment, 37 x 40 mm 07746-0010200 	Attachment, 42 x 47 mm 07746-0010300 
Attachment, 62 x 68 mm 07746-0010500 	Pilot, 17 mm 07746-0040400 	Pilot, 25 mm 07746-0040600 
Pilot, 28 mm 07746-0041100 		

CRANKCASE/CRANKSHAFT/TRANSMISSION

TROUBLESHOOTING

Excessive noise

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

Transmission jumps out of gear

- Worn gear dogs and slots
- Bent fork shaft
- Broken shift drum stopper
- Worn or bent shift forks
- Broken shift linkage return spring

Hard to shift

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

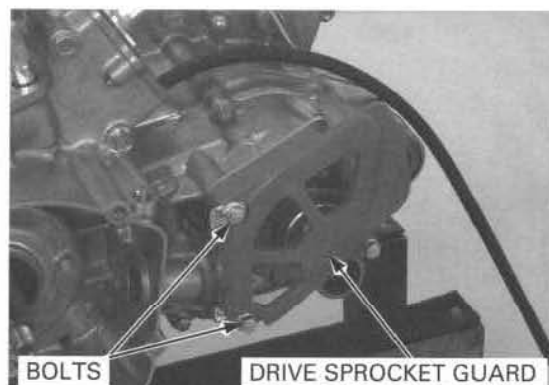
Engine vibration

- Excessive crankshaft runout

CRANKCASE SEPARATION

Refer to page 10-3 for the parts which must be removed before separating the crankcase.

Remove the two bolts and drive sprocket guard.



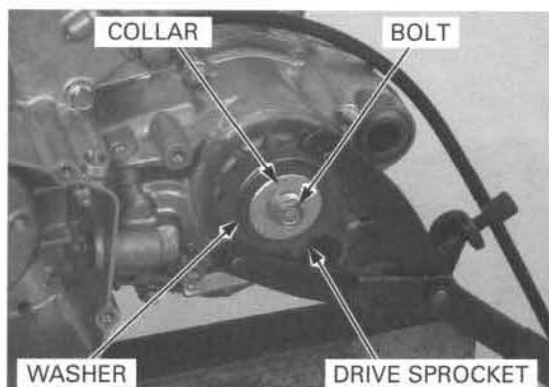
Loosen the drive sprocket bolt while holding the sprocket with the universal holder.

TOOL:

Universal holder

07724-0030000

Remove the collar, cone spring washer and drive sprocket.



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

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

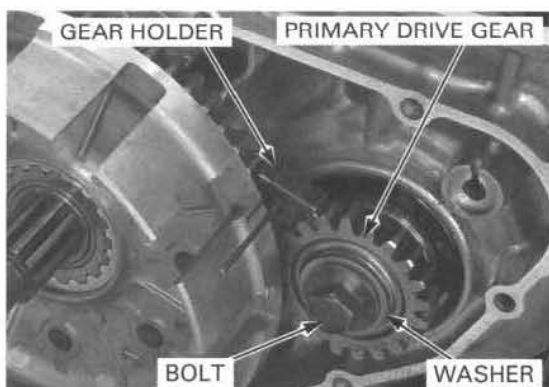
TOOL:

Gear holder, 2.5

**07724-0010100 or
07724-001A100
(U.S.A. only)**

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

Check the primary drive gear for wear or damage.



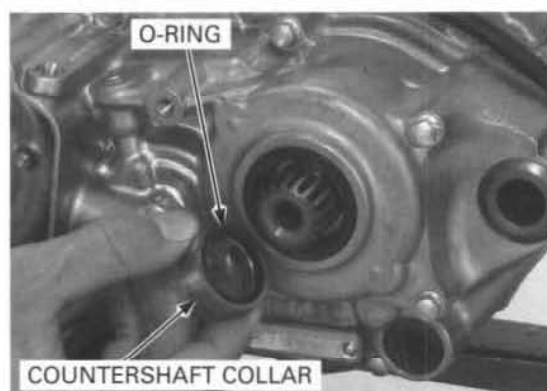
Remove the clutch outer, needle bearing and outer guide.

Remove the collar from the crankshaft.

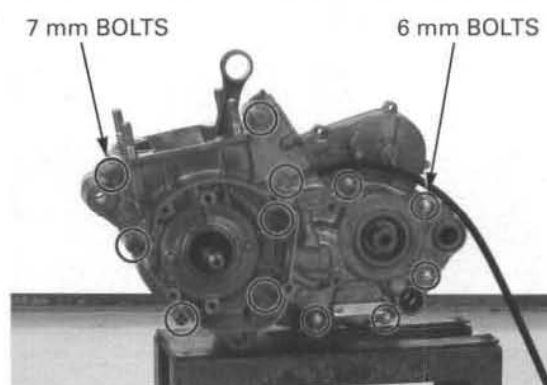


CRANKCASE/CRANKSHAFT/TRANSMISSION

Remove the countershaft collar and O-ring.



Loosen the crankcase 6 mm bolts and 7 mm bolts in a crisscross pattern in two or three steps. Remove the crankcase bolts.



Do not pry the crankcase halves apart with a screwdriver.

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

TOOLS:

Crankcase puller

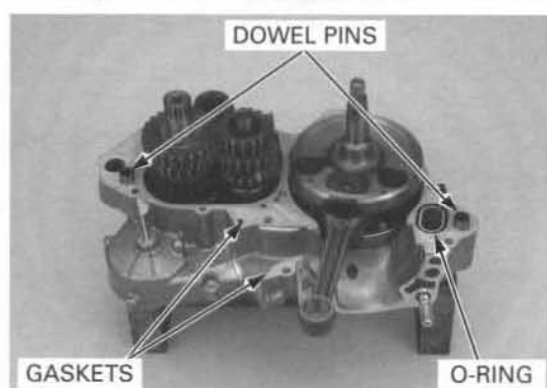
Bolt, 6 mm

Two commercially available
6 x 100 mm bolts

07937-4300001 or
07937-4300000 with
07PMC-KZ40100
(not available in
U.S.A.) or

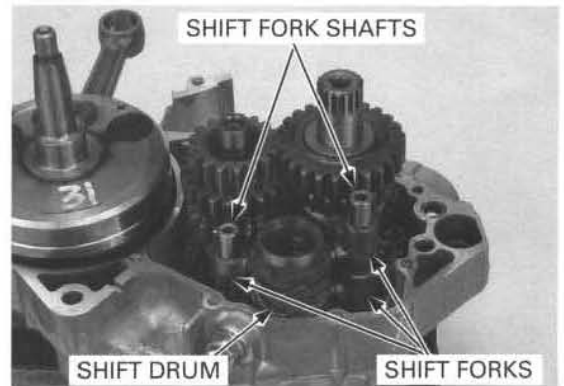


Remove the gaskets, dowel pins and O-ring.



TRANSMISSION REMOVAL/ DISASSEMBLY

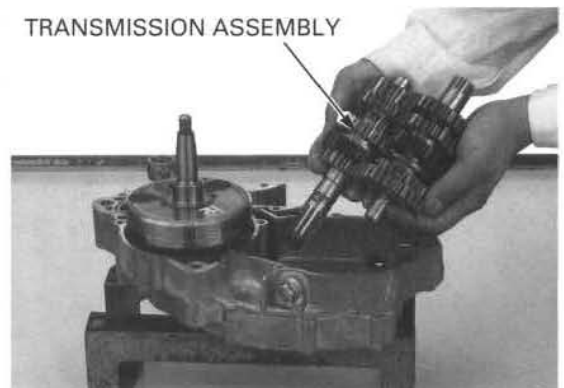
Separate the crankcase halves (page 10-7).
Remove the shift fork shafts and shift forks.
Remove the shift drum.



Remove the mainshaft and countershaft assemblies as a set.

- Keep track of the disassembled parts (gear, bushings, washers, and snap rings) by sliding them onto a tool or a piece of wire.
- Do not remove the snap rings over the shafts, expand the snap ring ends and slide it off the shaft, along with the gear behind it.

Disassemble the mainshaft and countershaft.



INSPECTION

GEAR/GEAR BUSHING

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

SERVICE LIMITS:

M4:	28.05 mm (1.004 in)
M5:	25.07 mm (0.987 in)
C1:	22.07 mm (0.869 in)
C2:	30.07 mm (1.184 in)
C3:	25.07 mm (0.987 in)

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

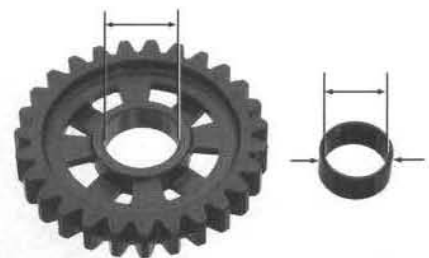
SERVICE LIMITS:

I.D.

C1:	19.04 mm (0.750 in)
C2:	27.04 mm (1.064 in)

O.D.

M4:	27.94 mm (1.100 in)
C1:	21.95 mm (0.864 in)
C2:	29.95 mm (1.179 in)



CRANKCASE/CRANKSHAFT/TRANSMISSION

MAINSHAFT/COUNTERSHAFT

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

SERVICE LIMITS:

Mainshaft:

M5: 24.94 mm (0.982 in)

Clutch outer guide: 22.95 mm (0.904 in)

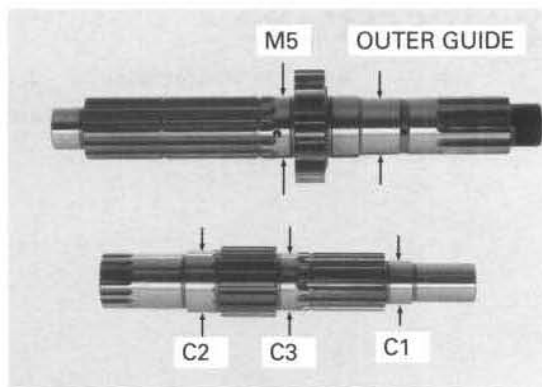
Countershaft

C1 bushing: 18.94 mm (0.983 in)

C2 bushing: 26.94 mm (1.061 in)

C3: 24.96 mm (0.983 in)

Starter idle gear: 16.97 mm (0.668 in)



SHIFT FORKS

Check the shift forks for abnormal wear or deformation.

Measure the shift fork I.D.

SERVICE LIMITS:

Center: 11.04 mm (0.435 in)

Right/left: 12.07 mm (0.475 in)

Measure the shift fork claw thickness.

SERVICE LIMIT: 4.8 mm (0.19 in)



SHIFT FORK SHAFT

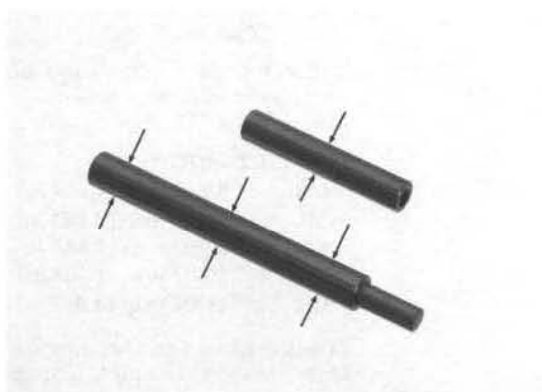
Check the shift fork shaft for abnormal wear or deformation.

Measure the shift fork shaft O.D.

SERVICE LIMITS:

Center: 10.97 mm (0.432 in)

Right/left: 11.95 mm (0.470 in)



SHIFT DRUM

Inspect the shift drum for scoring, scratches or evidence of insufficient lubrication.

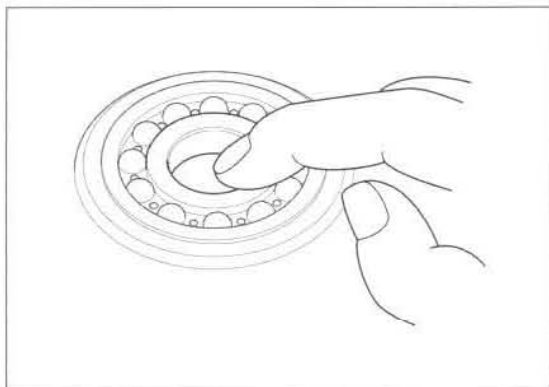
Check the shift drum grooves for abnormal wear or damage.



TRANSMISSION BEARING

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

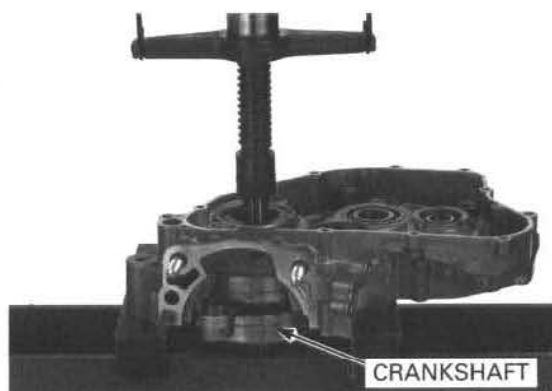
Replace the bearings if the race does not turn smoothly and quietly, or if they fit loosely in the crankcase (page 10-13).



CRANKSHAFT REMOVAL

Separate the crankcase halves (page 10-7).
Remove the transmission (page 10-9).

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



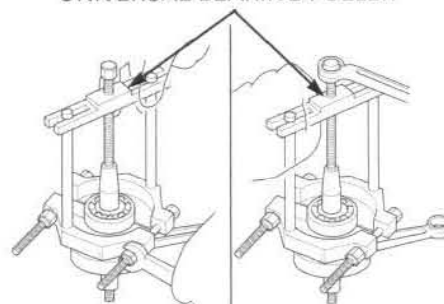
If the crankshaft bearing is removed with the crankshaft, remove the bearing using the bearing puller and discard the bearing.

TOOL:

Universal bearing puller

07724-0030000
07631-0010000 or
equivalent commercially
available in
U.S.A.

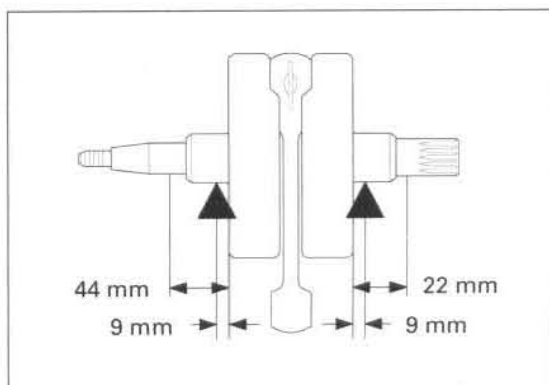
UNIVERSAL BEARING PULLER



INSPECTION

Place the crankshaft on a stand or V-blocks. Set the dial indicator on the main journal. Rotate the crankshaft two revolutions and read the runout.

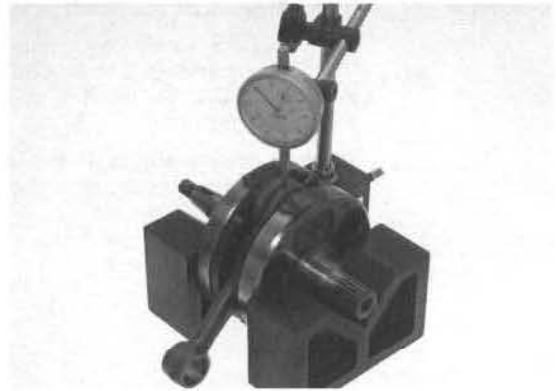
SERVICE LIMIT: 0.05 mm (0.002 in)



CRANKCASE/CRANKSHAFT/TRANSMISSION

Measure the connecting rod big end axial/radial play.

SERVICE LIMIT: 0.03 mm (0.001 in)



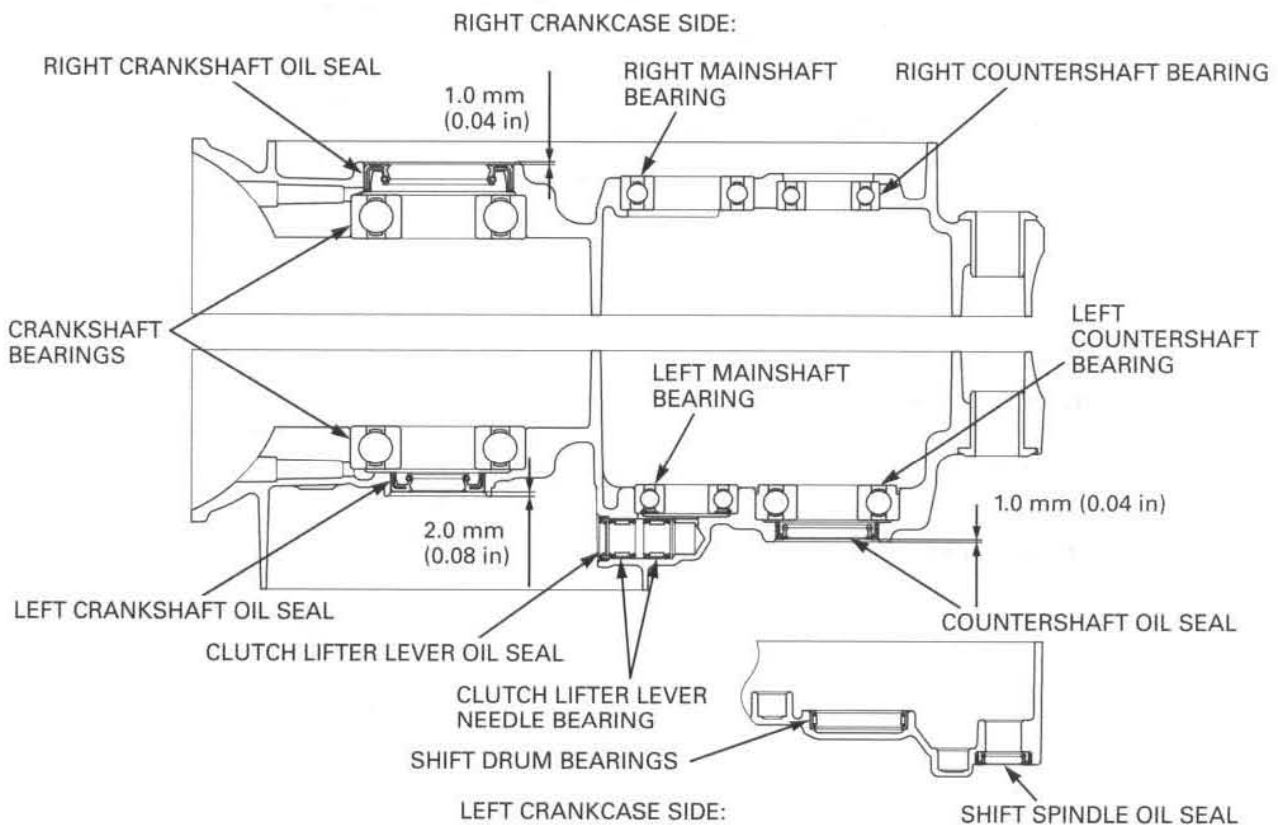
Measure the connecting rod big end side clearance.

SERVICE LIMIT: 0.9 mm (0.04 in)



CRANKCASE BEARING REPLACEMENT

CRANKCASE BEARING/OIL SEAL LOCATION



CRANKSHAFT BEARING

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

Drive the new bearings in squarely.

Drive new crankshaft bearings into both crankcases using the special tools as shown.

TOOLS:

Driver

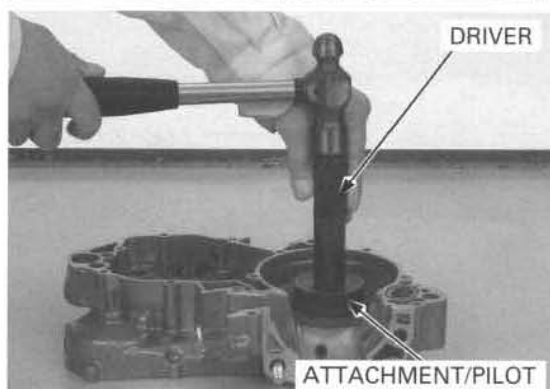
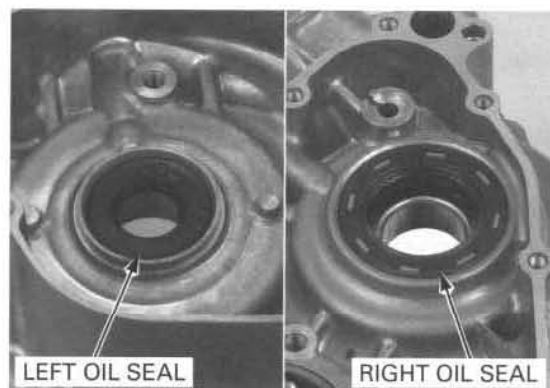
07749-0010000

Attachment, 62 x 68 mm

07746-0010500

Pilot, 28 mm

07746-0041100



TRANSMISSION BEARINGS

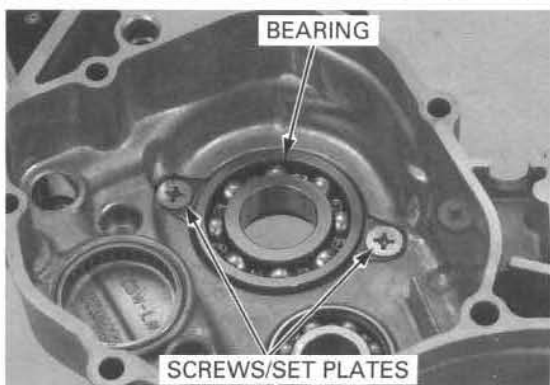
LEFT CRANKCASE

Remove the countershaft oil seal.



Remove the screws and countershaft bearing set plates.

Remove the countershaft bearing and shift drum bearing.

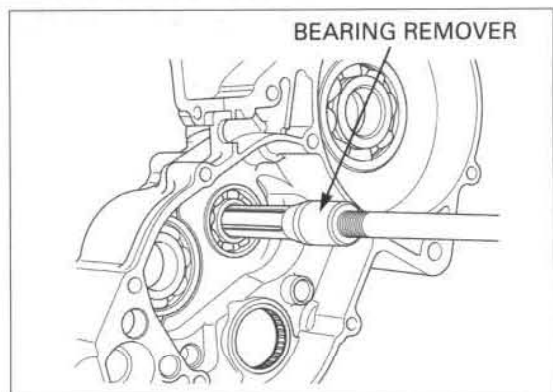


CRANKCASE/CRANKSHAFT/TRANSMISSION

Remove the mainshaft bearing using the special tools as shown.

TOOLS:

Bearing remover, 17 mm	07936-3710300
Remover handle	07936-3710100
Remover weight	07741-0010201 or 07936-3710200 or 07936-371020A (U.S.A. only)



Drive in the new bearings squarely. Drive new bearings into the left crankcase using the special tools.

TOOLS:

Shift drum bearing:

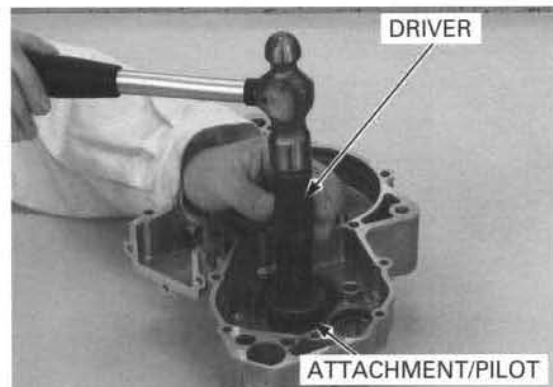
Driver	07749-0010000
Attachment, 37 x 40 mm	07746-0010200

Mainshaft bearing:

Driver	07749-0010000
Attachment, 42 x 47 mm	07746-0010300
Pilot, 17 mm	07746-0040400

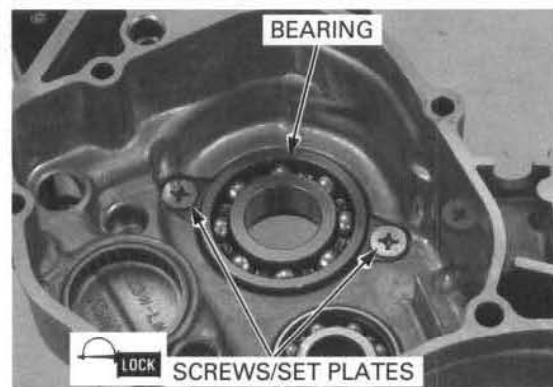
Countershaft bearing:

Driver	07749-0010000
Attachment, 42 x 47 mm	07746-0010300



Clean and apply a locking agent to the countershaft bearing set plate screws and tighten the screws with the set plate.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)



Apply grease to the new countershaft oil seal lips. Install the countershaft oil seal until the seal flush with the crankcase as shown.



RIGHT CRANKCASE

Remove the mainshaft and countershaft bearings.

Remove the shift drum bearing set plate bolts and set plates.

Remove the shift drum bearing.

Drive new bearings into the right crankcase using the special tools as shown.

TOOLS:

Shift drum bearing:

Driver	07749-0010000
Attachment, 42 x 47 mm	07746-0010300
Pilot, 25 mm	07746-0040600

Mainshaft bearing:

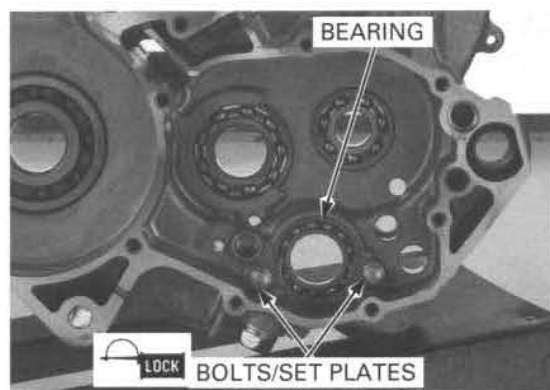
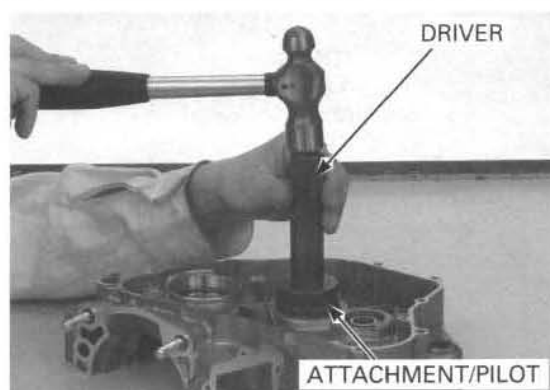
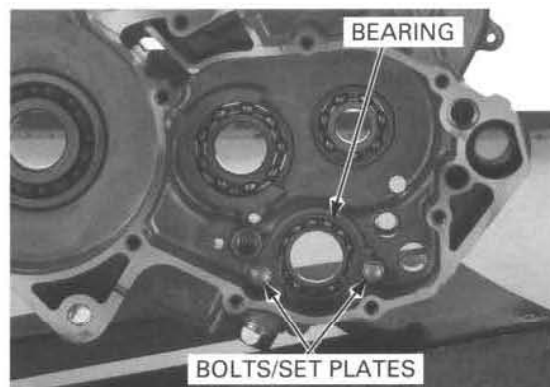
Driver	07749-0010000
Attachment, 52 x 55 mm	07746-0010400
Pilot, 25 mm	07746-0040600

Countershaft bearing:

Driver	07749-0010000
Attachment, 37 x 40 mm	07746-0010200
Pilot, 17 mm	07746-0040400

Clean and apply a locking agent to the countershaft bearing set plate screws and tighten the screws with the set plate.

TORQUE: 9.8 N·m (1.0 kgf·m, 7 lbf·ft)

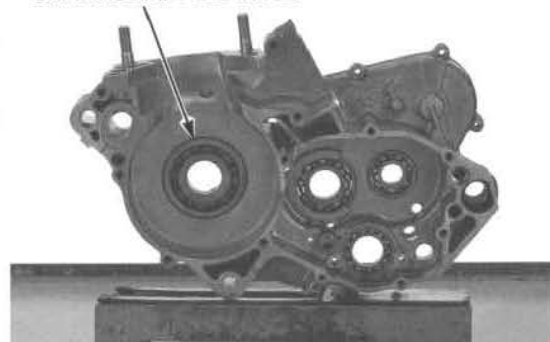


CRANKSHAFT INSTALLATION

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

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

CRANKSHAFT BEARING



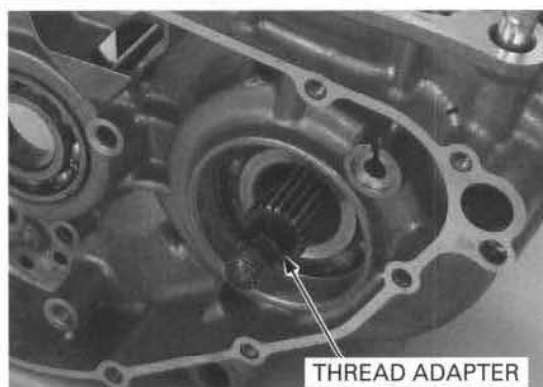
CRANKCASE/CRANKSHAFT/TRANSMISSION

Install the threaded adaptor onto the crankshaft.

TOOL:

Thread adapter

07965-KA30000



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

TOOLS:

Assembly tool shaft

Assembly collar

07965-1660200

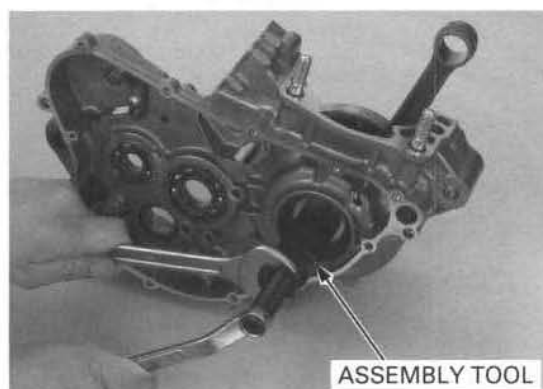
07965-1660302 or

07965-1660301 or

07965-1660300 or

07965-166030A

(U.S.A. only)



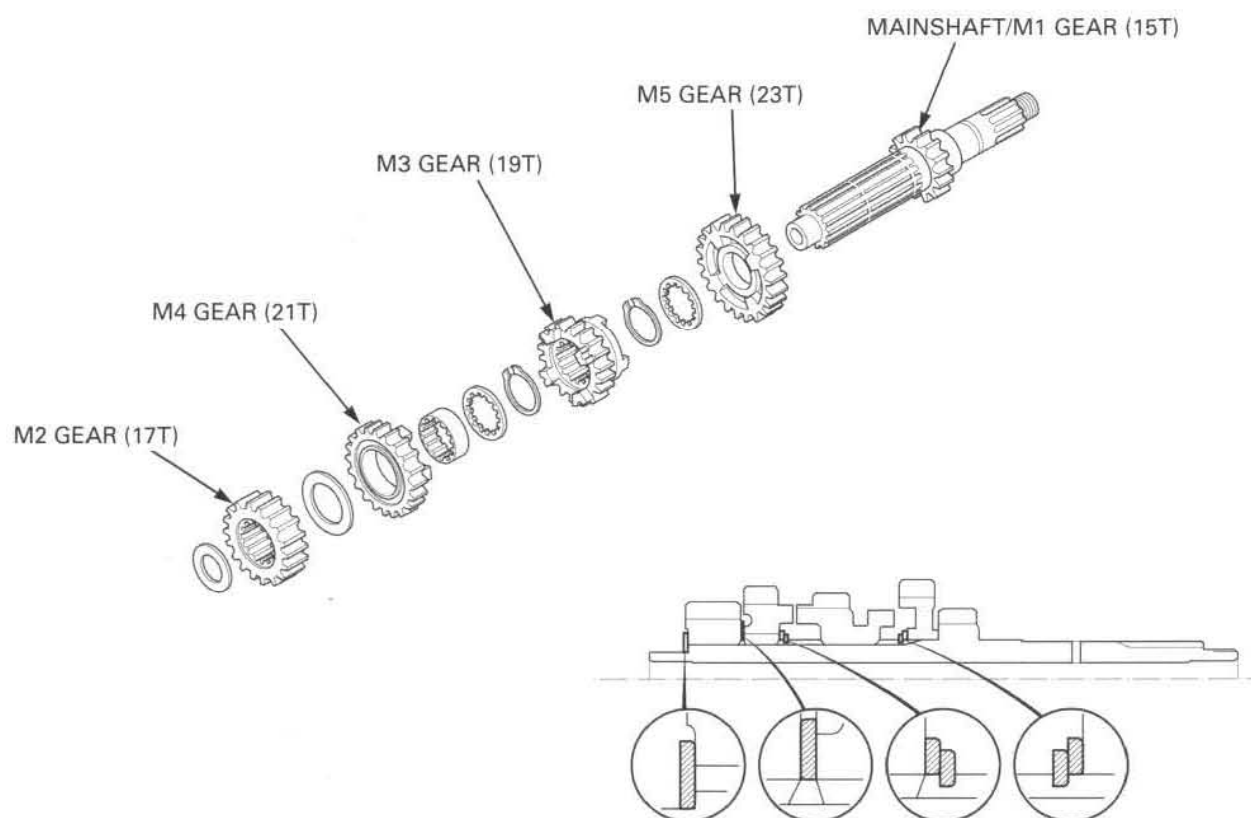
TRANSMISSION ASSEMBLY/ INSTALLATION

ASSEMBLY

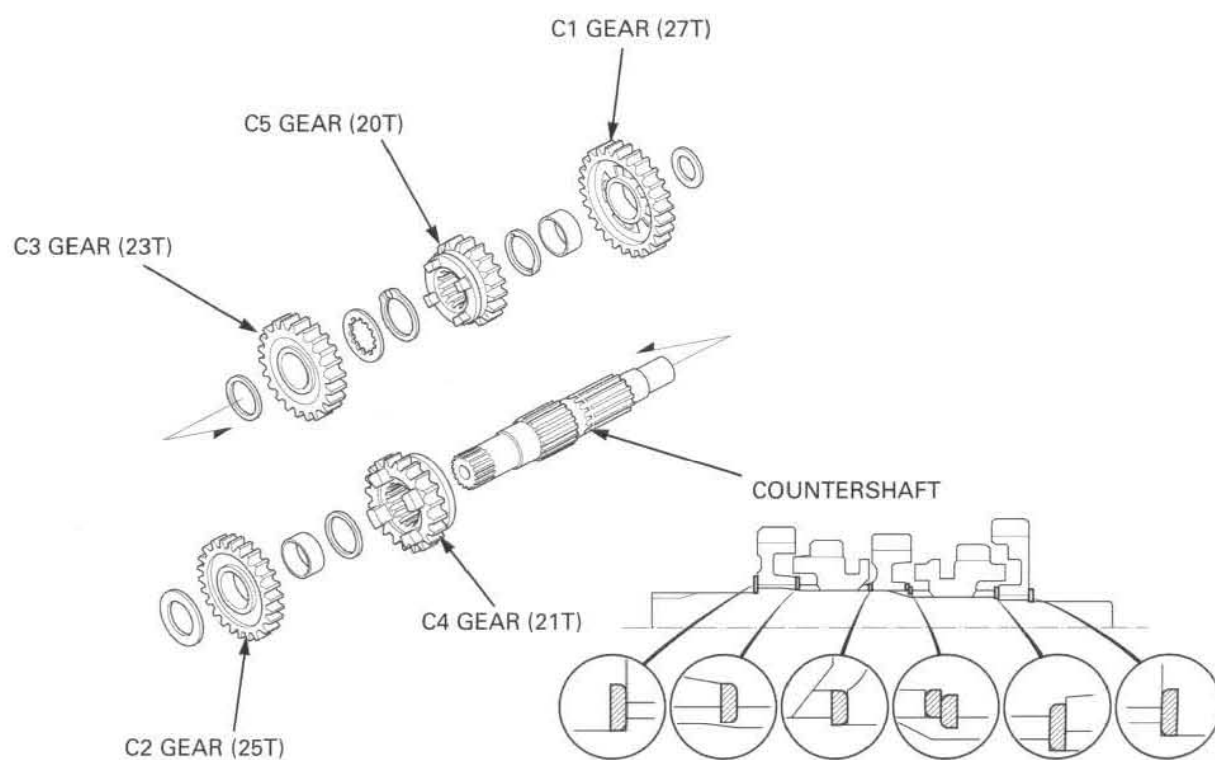
NOTE:

- Check the gear freedom of movement or rotation on the shaft.
- Install the washers and snap rings with the chamfered edge facing the thrust load side.
- Do not reuse worn snap rings which could easily spin in the grooves.
- Check that the snap rings are seated in the grooves. Align their end gaps with the grooves of the spindle.

MAINSHAFT:



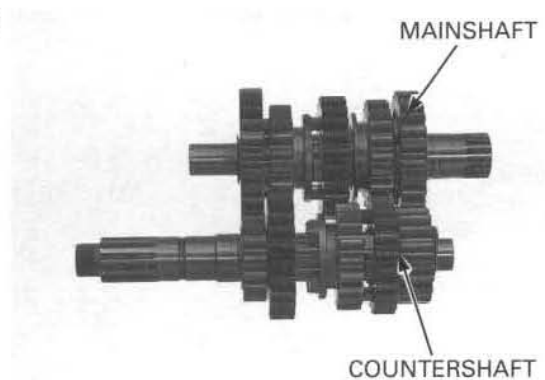
COUNTERSHAFT:



CRANKCASE/CRANKSHAFT/TRANSMISSION

Apply molybdenum oil solution to the following parts:

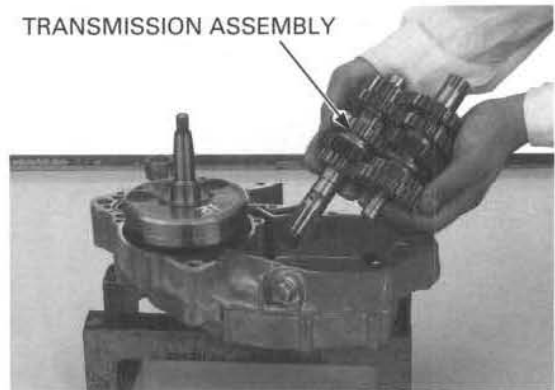
- mainshaft
- countershaft
- each gear
- mainshaft bearing
- countershaft bearing
- shift drum bearing



INSTALLATION

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

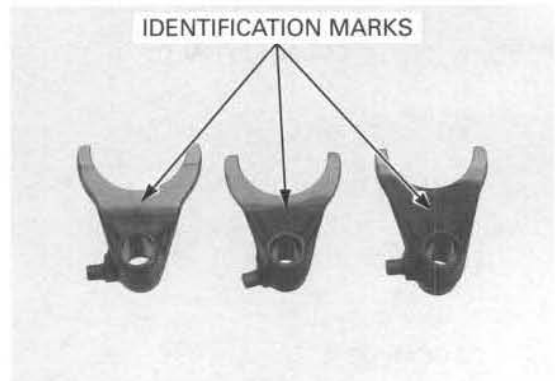
TRANSMISSION ASSEMBLY



Install the shift forks into the shifter gear grooves.

- Each shift fork has an identification mark, "R" is for the right shift fork, "L" is the left shift fork and "C" is for the center shift fork.
- Align the shift fork marks as follows:
 - Right and left shift fork marks to the left crankcase
 - Center shift fork mark to the right crankcase

IDENTIFICATION MARKS



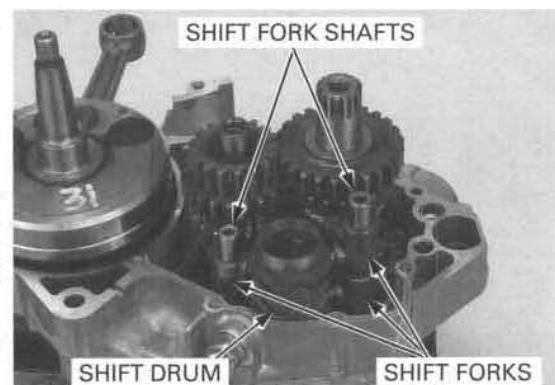
Apply molybdenum oil solution to the following parts:

- shift drum guide grooves
- shift fork claws and guide pins
- shift fork sliding surfaces
- shift fork shaft

Install the shift forks to the grooves of the shifter gears.

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

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



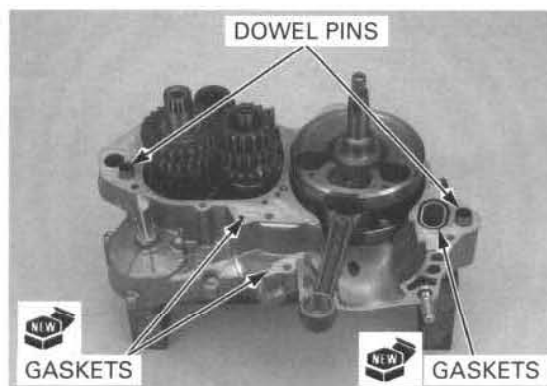
CRANKCASE ASSEMBLY

Before assembly, lubricate the transmission bearings with molybdenum oil solution.

Clean off any gasket material from the crankcase mating surface.

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

Install the crankcase breather hose onto the left crankcase.

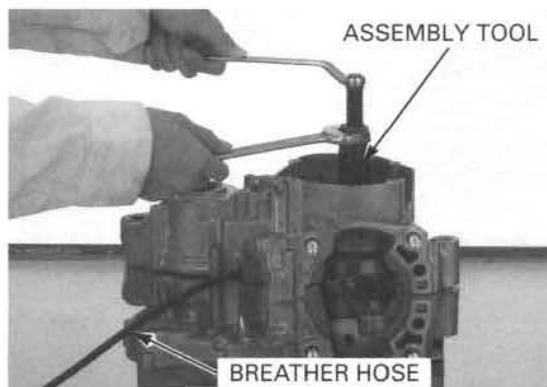


Place the left crankcase onto the right crankcase using the special tools as shown.

TOOLS:

Assembly tool shaft
Assembly collar

07965-1660200
07965-1660302 or
07965-1660301 or
07965-1660300 or
07965-166030A
(U.S.A. only)



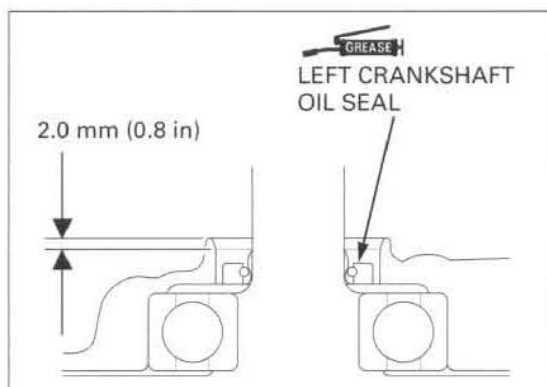
Pack grease into the cavity between the oil seal lips.

Press the left oil seal into the crankcase using the crankcase assembly tool until seal is flush with the case as shown.

TOOLS:

Assembly tool shaft
Assembly collar

07965-1660200
07965-1660302 or
07965-1660301 or
07965-1660300 or
07965-166030A
(U.S.A. only)



Press the right oil seal into the crankcase using the crankcase assembly tool until seal is flush with the case as shown.

TOOLS:

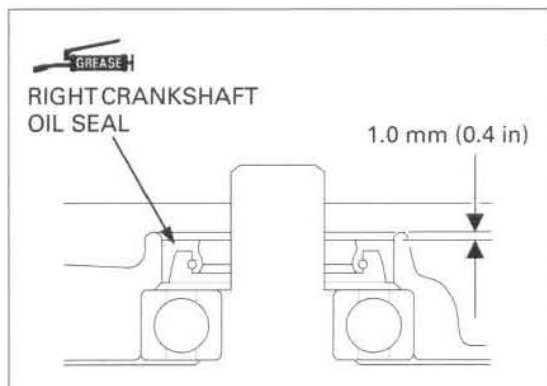
Threaded adaptor
Assembly collar
Assembly shaft

07931-KA30000
07965-VM00100
07965-VM00200

U.S.A. TOOLS:

Threaded adaptor,
10 x 12.5 – 16 x 1.5
Assembly collar
Assembly shaft
Special nut

07VMF-HM8010A
07965-VM00100
07931-ME4010B
07931-HB3020A



CRANKCASE/CRANKSHAFT/TRANSMISSION

Tighten the crankcase bolts in a criss-cross pattern in two or three progressive steps.

Install the crankcase 7 mm bolts and 6 mm bolts.

Tighten the crankcase 7 mm bolts to the specified torque.

TORQUE: 16 N·m (1.6 kgf·m, 12 lbf·ft)

Tighten the crankcase 6 mm bolts securely.

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

NOTE:

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

Check that the crankshaft turns smoothly.

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

Install the O-ring and collar onto the countershaft.

Install the drive sprocket onto the countershaft.

Install the cone washer and collar with their "OUT SIDE" marks facing out.

Hold the drive sprocket with the universal holder and install and tighten the sprocket bolt to the specified torque.

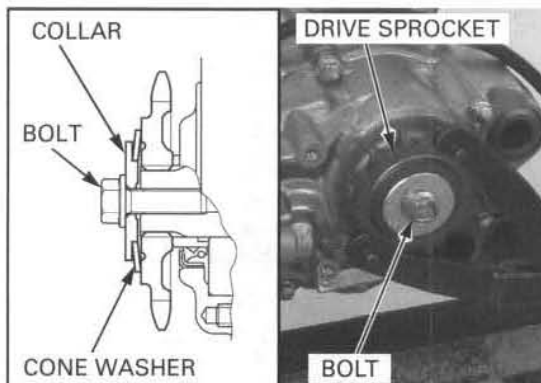
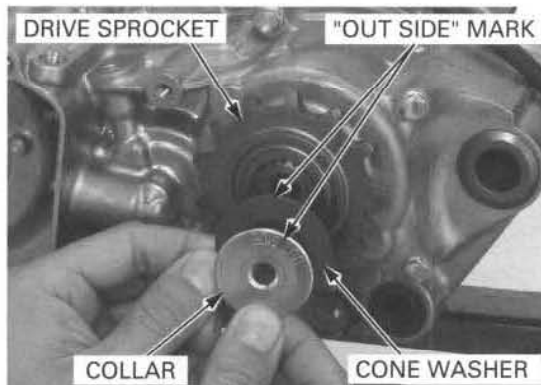
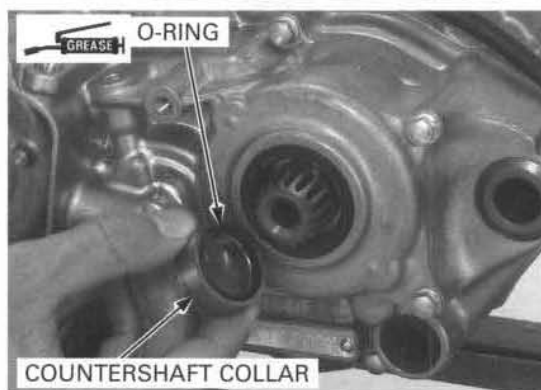
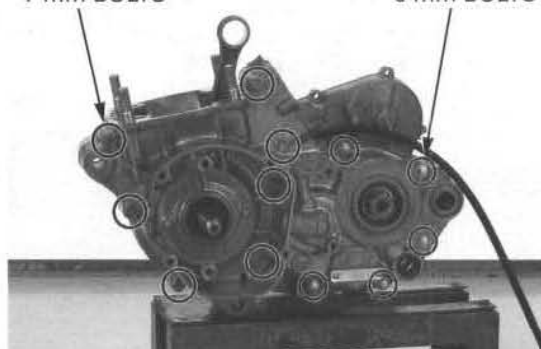
TOOL:

Universal holder

07724-0030000

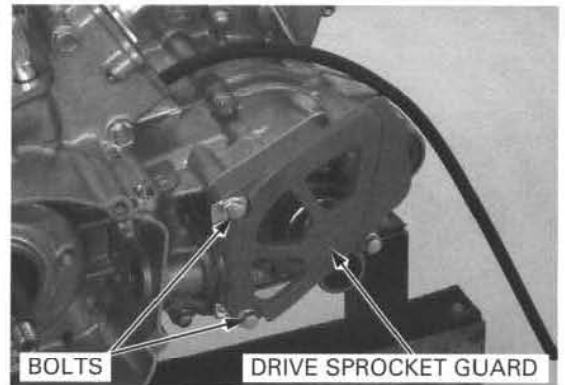
TORQUE: 31 N·m (3.2 kgf·m, 23 lbf·ft)

7 mm BOLTS 6 mm BOLTS



CRANKCASE/CRANKSHAFT/TRANSMISSION

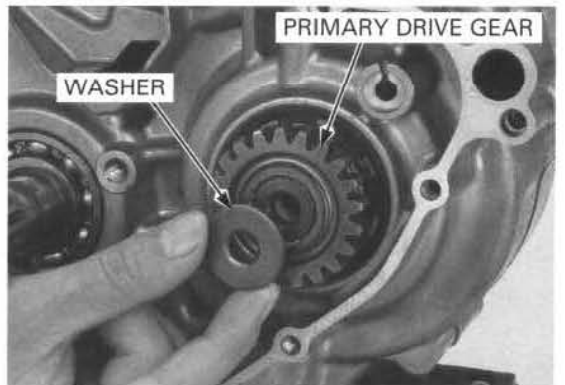
Install the drive sprocket guard and tighten the bolts.



Install the collar onto the crankshaft.



Install the primary drive gear, bolt and washer.



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

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

TOOL:

Gear holder, 2.5

07724-0010100 or
07724-001A100
(U.S.A. only)

Tighten the primary drive gear bolt to the specified torque.

TORQUE: 64 N·m (6.5 kgf·m, 47 lbf·ft)



CRANKCASE/CRANKSHAFT/TRANSMISSION

Refer to service information (page 10-3) for installation of parts removed to perform crankcase/transmission service.

Install the remaining parts in the reverse order of removal.

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

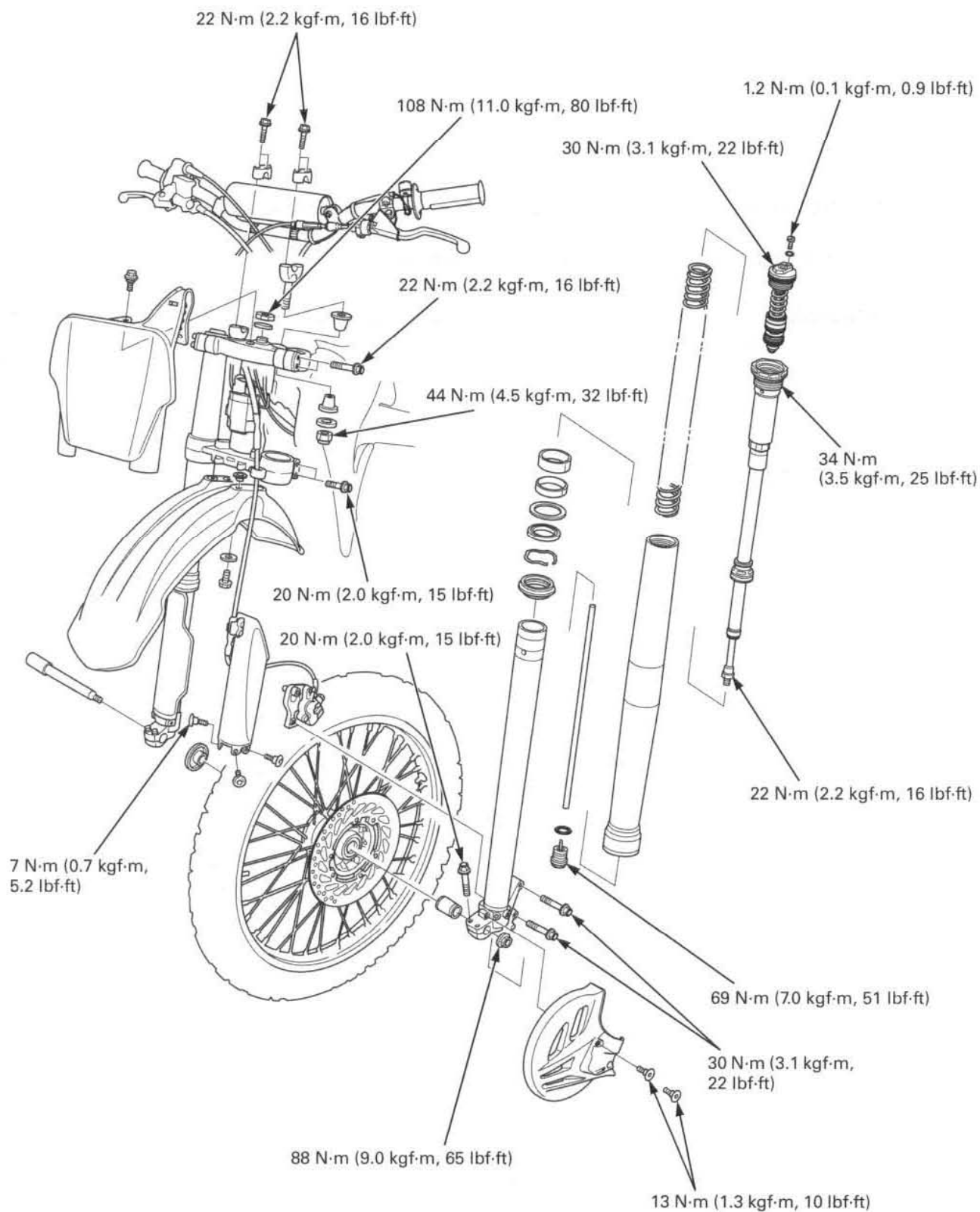


11. FRONT WHEEL/SUSPENSION/STEERING

COMPONENT LOCATION	11-2	FORK	11-12
SERVICE INFORMATION	11-3	HANDLEBAR	11-31
TROUBLESHOOTING	11-6	STEERING STEM	11-37
FRONT WHEEL	11-7		

FRONT WHEEL/SUSPENSION/STEERING

COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

- This section covers maintenance of the front wheel, fork and steering stem.
- When servicing the front wheel, fork or steering stem, support the motorcycle using a safety stand or hoist.
- A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.
- Optional lighter and heavier than standard springs are available. Refer to General Information (page 1-21) for details.
- For optimum fork performance, the fork should be completely disassembled and cleaned after the first 3 hours of riding. Thereafter it should be disassembled and cleaned on a regular basis to ensure maximum performance and service life from the internal parts.
- Refer to page 13-3 for brake system information.

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Cold tire pressure		100 kPa (1.0 kgf/cm ² , 15 psi)	—
Axle runout		—	0.20 (0.008)
Wheel rim runout	Radial	—	2.0 (0.08)
	Axial	—	2.0 (0.08)
Wheel hub-to-rim distance		28 (1.1)	—
Fork	Spring free length	494 (19.45)	487 (19.17)
	Tube runout	—	0.20 (0.01)
	Recommended fork fluid	Pro Honda HP Fork Oil 5W or equivalent	
	Fluid capacity	394 ± 4cm ³ (13.3 ± 0.14 US oz, 13.9 ± 0.14 Imp oz)	—
Compression damping adjuster standard position		10 clicks out from full in	—
Rebound damping adjuster standard position		14 clicks out from full in	—

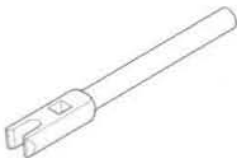
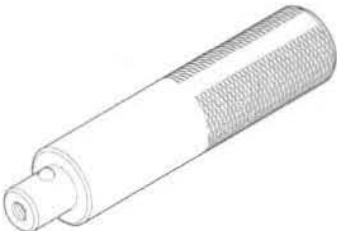
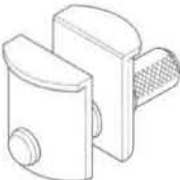
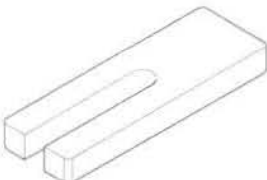
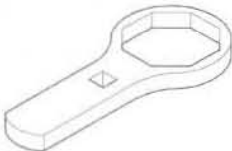
Unit: mm (in)

TORQUE VALUES

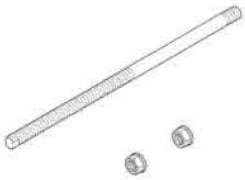
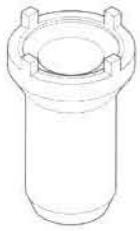
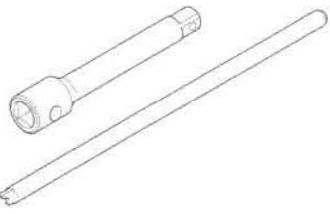
Front axle nut	88 N·m (9.0 kgf·m, 65 lbf·ft)	
Front axle holder bolt	20 N·m (2.0 kgf·m, 15 lbf·ft)	
Front spoke nipple	3.68 N·m (0.4 kgf·m, 2.7 lbf·ft)	
Front rim lock	12 N·m (1.2 kgf·m, 9 lbf·ft)	
Front brake disc nut	16 N·m (1.6 kgf·m, 12 lbf·ft)	ALOC bolt
Steering stem nut	108 N·m (11.0 kgf·m, 80 lbf·ft)	
Steering stem adjusting nut	7 N·m (0.7 kgf·m, 5.2 lbf·ft)	
Fork tube top pinch bolt	22 N·m (2.2 kgf·m, 16 lbf·ft)	
Fork tube bottom pinch bolt	20 N·m (2.0 kgf·m, 15 lbf·ft)	
Fork cap	30 N·m (3.1 kgf·m, 22 lbf·ft)	
Fork center bolt	69 N·m (7.0 kgf·m, 51 lbf·ft)	Apply a locking agent to the threads
Fork center bolt lock nut	22 N·m (2.2 kgf·m, 16 lbf·ft)	
Pressure release screw	1.2 N·m (0.1 kgf·m, 0.9 lbf·ft)	
Fork damper	34 N·m (3.5 kgf·m, 25 lbf·ft)	
Fork protector mounting bolt	7 N·m (0.7 kgf·m, 5.2 lbf·ft)	Apply a locking agent to the threads
Brake lever pivot bolt	1.0 N·m (0.1 kgf·m, 0.7 lbf·ft)	
Brake lever pivot nut	5.9 N·m (0.6 kgf·m, 4.4 lbf·ft)	
Handlebar upper holder bolt	22 N·m (2.2 kgf·m, 16 lbf·ft)	
Handlebar lower holder nut	44 N·m (4.5 kgf·m, 32 lbf·ft)	U-nut
Front brake disc cover bolt	13 N·m (1.3 kgf·m, 10 lbf·ft)	
Clutch lever pivot bolt	2.0 N·m (0.2 kgf·m, 1.5 lbf·ft)	
Clutch lever pivot nut	10 N·m (1.0 kgf·m, 7 lbf·ft)	
Clutch lever bracket holder bolt	8.8 N·m (0.9 kgf·m, 6.5 lbf·ft)	
Throttle housing mounting bolt	8.8 N·m (0.9 kgf·m, 6.5 lbf·ft)	
Throttle housing cover screw	1.5 N·m (0.2 kgf·m, 1.1 lbf·ft)	
Engine stop button screw	1.5 N·m (0.2 kgf·m, 1.1 lbf·ft)	
Front brake hose guide bolt	5.2 N·m (0.5 kgf·m, 3.8 lbf·ft)	
Front master cylinder holder bolt	9.9 N·m (1.0 kgf·m, 7.3 lbf·ft)	
Front brake caliper mounting bolt	30 N·m (3.1 kgf·m, 22 lbf·ft)	Apply a locking agent to the threads.

FRONT WHEEL/SUSPENSION/STEERING

TOOLS

Spoke wrench, 07JMA-MR60100  or equivalent commercially available in U.S.A.	Bearing remover shaft 07746-0050100 	Bearing remover head, 20 mm 07746-0050600 
Driver 07749-0010000 	Attachment, 37 x 40 mm 07746-0010200 	Pilot, 20 mm 07746-0040500 
Attachment, 30 mm I.D. 07746-0030300 	Fork seal driver, 47 mm 07VMD-KZ30100  or 07VMD-KZ3010A (U.S.A. only)	Ball race remover 07946-3710500 
Piston base 07958-2500001 	Fork rod stopper 07AMB-KZ3A100  U.S.A. only	Lock nut wrench, 50 mm 07WMF-KZ30100 

FRONT WHEEL/SUSPENSION/STEERING

Bearing race installer 07VMF-KZ30100  Two required	Installer shaft 07VMF-KZ30200 	Steering stem socket 07916-3710101  or 07702-0020001
Extension bar 07716-0020500  or equivalent commercially available in U.S.A.		

FRONT WHEEL/SUSPENSION/STEERING

TROUBLESHOOTING

Hard steering

- Steering stem adjusting nut too tight
- Faulty or damaged steering head bearing
- Insufficient tire pressure

Steers to one side or does not track straight

- Bent fork
- Bent front axle
- Wheel installed incorrectly
- Unequal oil quantity in each fork tube
- Faulty steering head bearings
- Bent frame
- Worn wheel bearings
- Worn swingarm pivot components
- Unevenly adjusted right and left fork legs

Front wheel wobbling

- Bent rim
- Worn front wheel bearings
- Bent spokes
- Faulty tire
- Axle not tightened properly
- Unbalanced tire and wheel

Front wheel hard to turn

- Faulty wheel bearings
- Bent front axle
- Brake drag

Soft suspension

- Insufficient fluid in fork
- Fork oil viscosity too high
- Weak fork spring
- Tire pressure too low

Stiff suspension

- Excess fork fluid
- Fork fluid viscosity too thick
- Bent or damaged fork tubes
- Clogged fork fluid passage

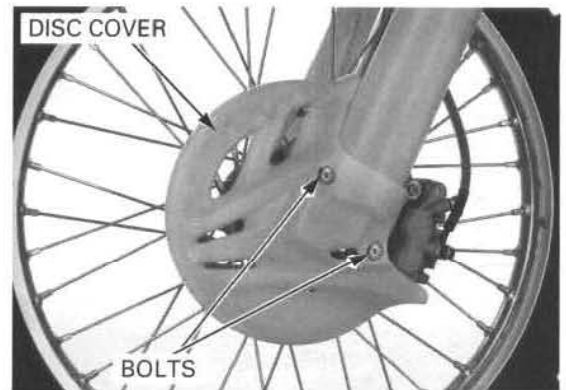
Noisy suspension

- Insufficient fluid in fork
- Loose fork fasteners

FRONT WHEEL

REMOVAL

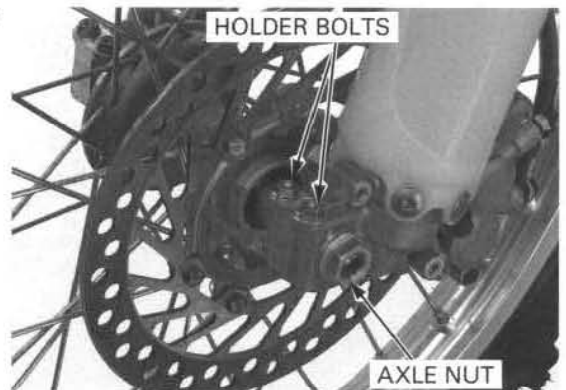
Remove the bolts and front brake disc cover.



Support the motorcycle using a safety stand or hoist under the engine.

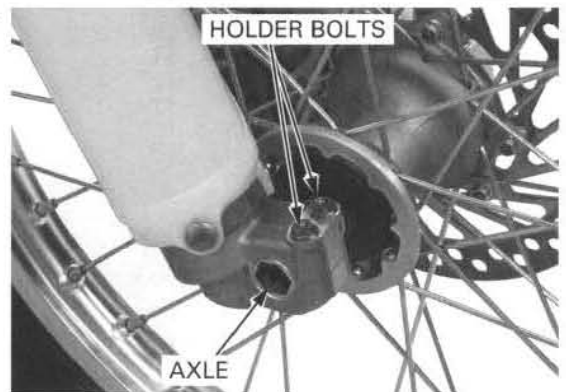
Remove the axle nut.

Loosen the left axle holder bolts.



Loosen the right axle holder bolts and pull out the axle.

Remove the front wheel assembly.



INSPECTION

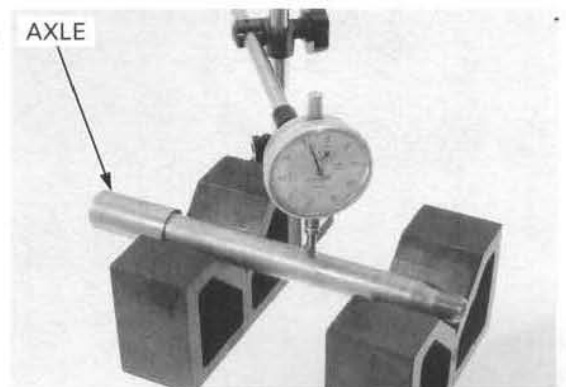
AXLE

Set the axle in V-blocks.

Turn the axle and measure the runout using a dial indicator.

Actual runout is 1/2 of the total indicator reading.

SERVICE LIMIT: 0.20 mm (0.008 in)



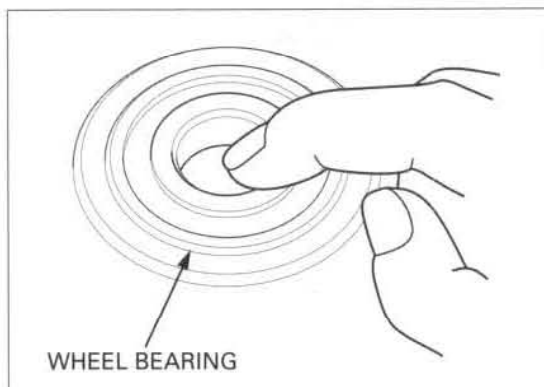
FRONT WHEEL/SUSPENSION/STEERING

WHEEL BEARING

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

Replace the bearings in pairs.

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



WHEEL RIM

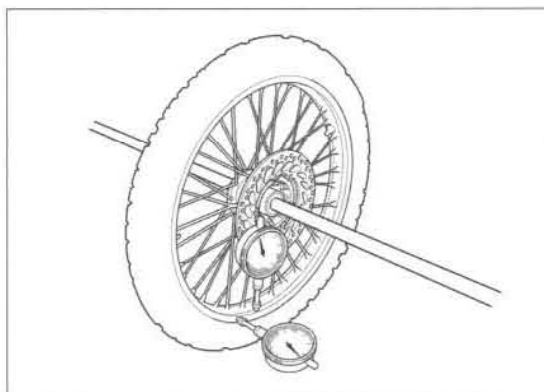
Check the rim runout by placing the wheel on a turning stand. Then rotate the wheel by hand, and read the runout using a dial indicator. Actual runout is 1/2 the total indicator reading.

SERVICE LIMITS:

Radial: 2.0 mm (0.08 in)

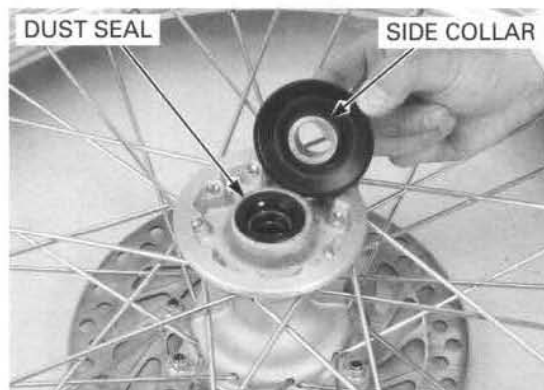
Axial: 2.0 mm (0.08 in)

Check the spokes and tighten any spoke nipple.

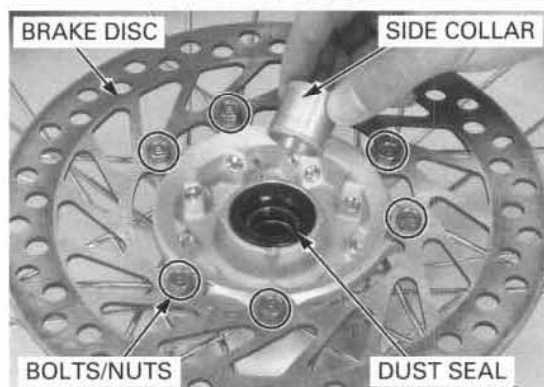


DISASSEMBLY

Remove the right side collar and dust seal.



Remove the left side collar and dust seal.
Remove the brake disc bolts and nuts.
Remove the brake disc.



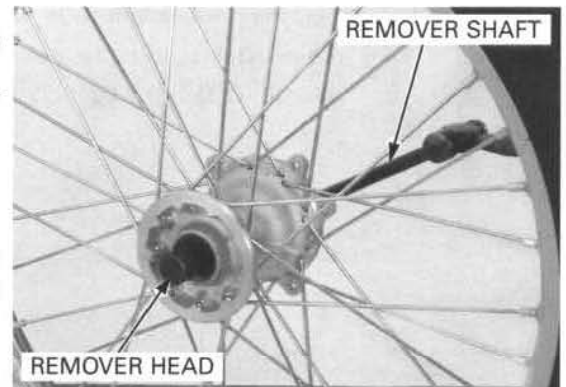
Install the bearing remover head into the bearing. From the opposite side, install the bearing remover shaft and drive the bearing out of the wheel hub. Remove the distance collar and drive out the other bearing.

TOOLS:

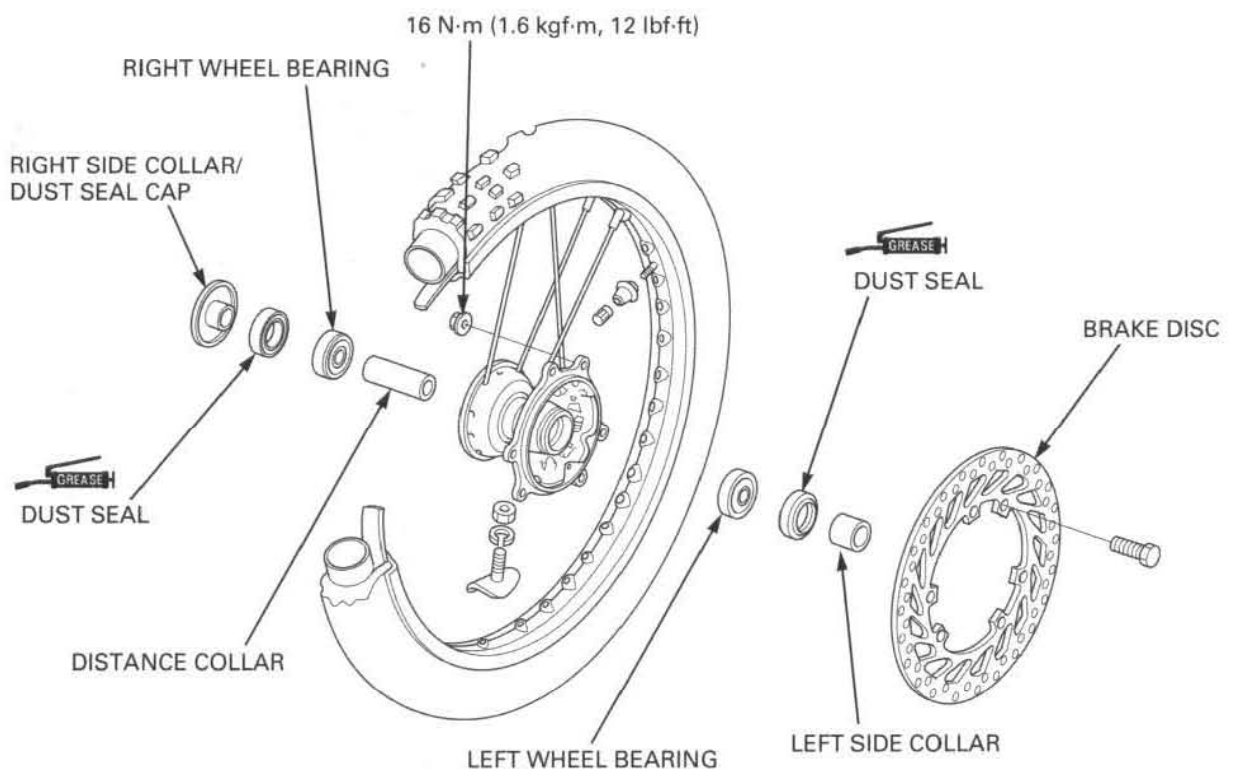
Bearing remover head, 20 mm 07746-0050600
Bearing remover shaft 07746-0050100

Replace the bearing
in pairs.

Never install the old bearings; once the bearings have been removed, they must be replaced with new ones.



ASSEMBLY



Place the rim on the work bench.

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

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

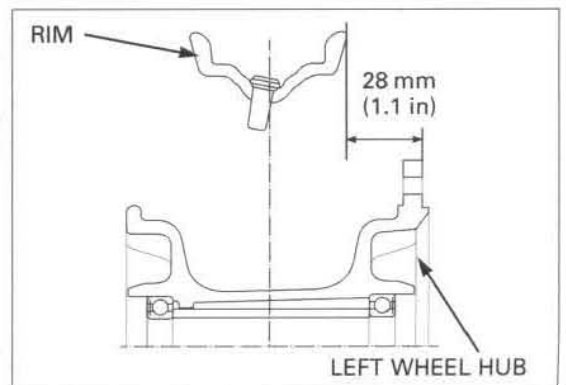
STANDARD: 28 mm (1.1 in)

Torque the spokes in 2 or 3 progressive steps.

TOOL:

Spoke wrench

07JMA-MA60100 or
equivalent commercially
available in
U.S.A.



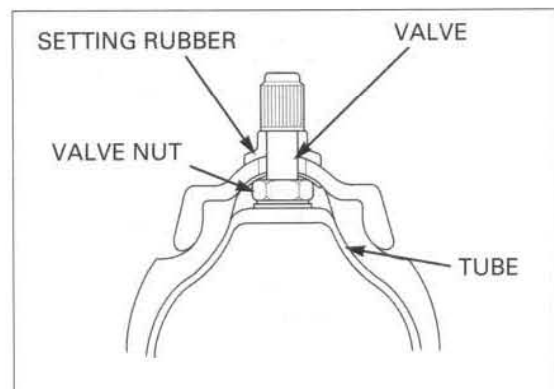
TORQUE: 3.68 N·m (0.4 kgf·m, 2.7 lbf·ft)

FRONT WHEEL/SUSPENSION/STEERING

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

Torque the rim lock to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



Pack the new bearing cavities with grease.

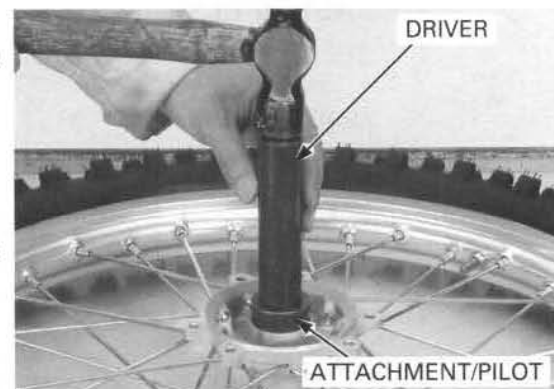
Replace the wheel bearings in pairs. Do not reuse old bearings.

Drive in a new left wheel bearing squarely into the hub using the special tools as shown.

TOOLS:

Driver	07749-0010000
Attachment, 37 x 40 mm	07746-0010200
Pilot, 20 mm	07746-0040500

Install the distance collar into place, then drive the right wheel bearing using the same special tools.



Pack the right dust seal lip with grease and install it into the right wheel hub.



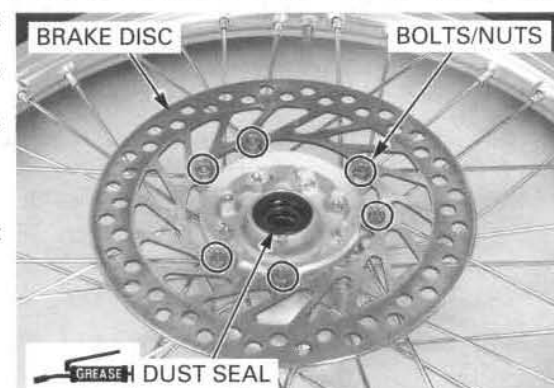
Install the brake disc onto the left wheel hub with its "DRIVE" mark facing out.

Clean and apply a locking agent to the brake disc bolt threads.

Install the brake disc bolts and nuts, then tighten the nut to the specified torque.

TORQUE: 16 N·m (1.6 kgf·m, 12 lbf·ft)

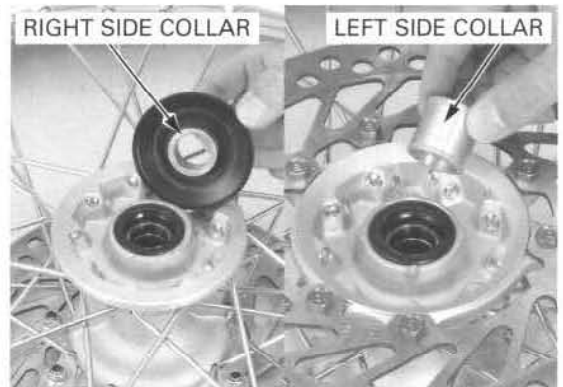
Pack the left dust seal lip with grease and install it into the left wheel hub.



FRONT WHEEL/SUSPENSION/STEERING

Check the right and left wheel collars for wear or damage.

Install the right and left wheel collars to the wheel as shown.



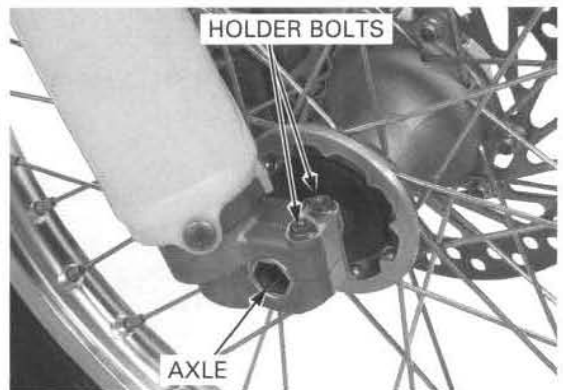
INSTALLATION

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

Install the front wheel between the fork legs.

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

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

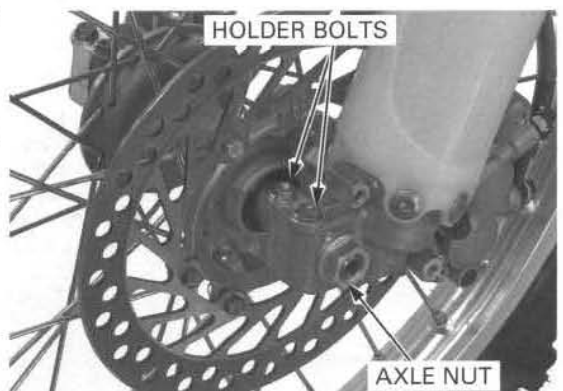


Install and tighten the axle nut to the specified torque.

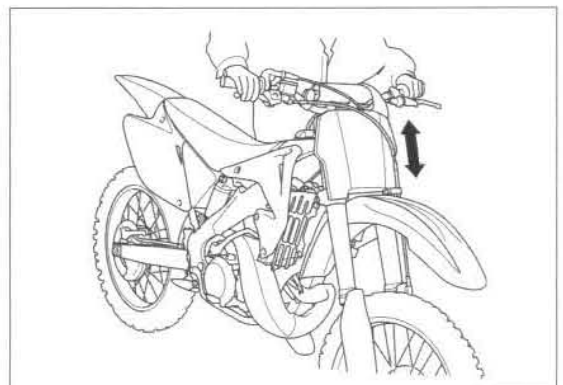
TORQUE: 88 N·m (9.0 kgf·m, 65 lbf·ft)

Tighten the left axle holder bolts to the specified torque.

TORQUE: 20 N·m (2.0 kgf·m, 15 lbf·ft)



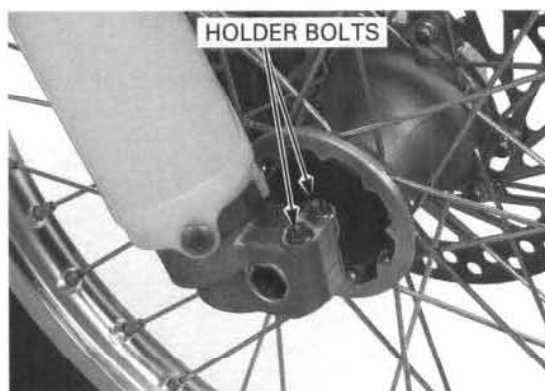
With the front brake applied, pump the front suspension up and down several times to seat the axle and check the front brake operation.



FRONT WHEEL/SUSPENSION/STEERING

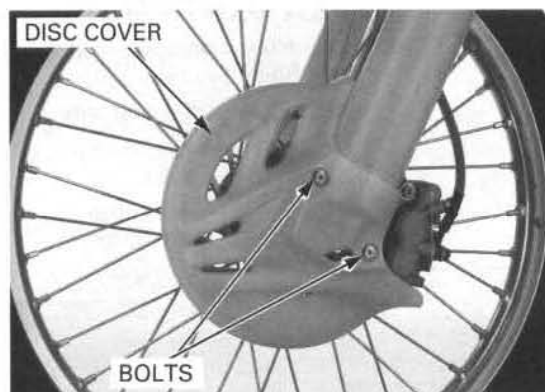
Be sure the fork legs are parallel, then tighten the right axle holder bolts to the specified torque.

TORQUE: 20 N·m (2.0 kgf·m, 15 lbf·ft)



Install the front brake disc cover.
Install and tighten the front brake disc cover bolts to the specified torque.

TORQUE: 13 N·m (1.3 kgf·m, 10 lbf·ft)

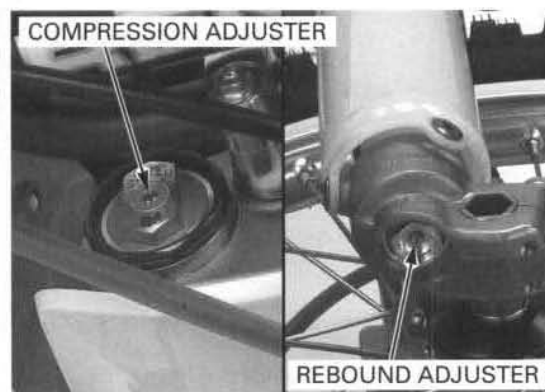


FORK

REMOVAL

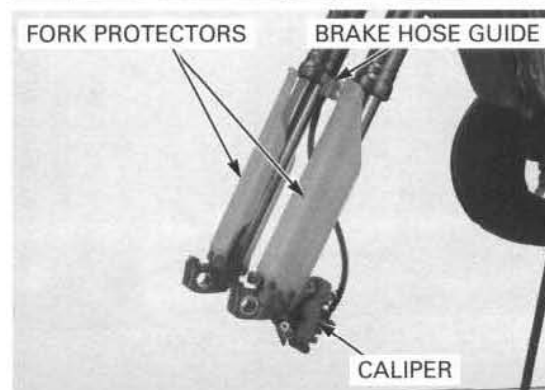
NOTE:

- When disassembling the fork leg, record the number of adjuster clicks to hardest position, then turn the rebound adjuster and compression adjuster counterclockwise to the softest position to prevent damage to the needle (be sure to record the number of turns from the starting position).



Do not operate the brake lever after removing the caliper and front wheel. To do so will cause difficulty in fitting the brake disc between the brake pad.

Remove the front wheel (page 11-7).
Remove the brake caliper (page 13-17).
Remove the bolts and brake hose guide.
Remove the bolts and fork protector.



Loosen the fork top bridge pinch bolts.



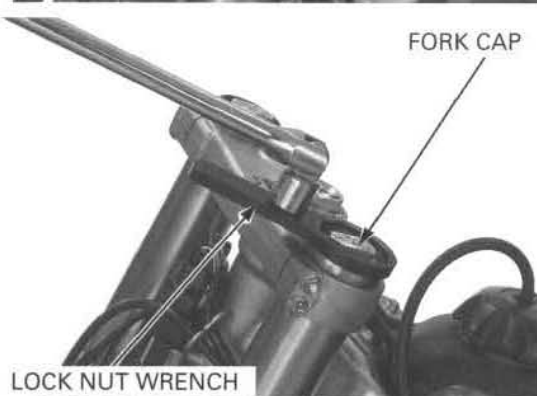
When the fork is ready to be disassembled, remove the handlebar and loosen the fork cap, but do not remove it.

TOOL:

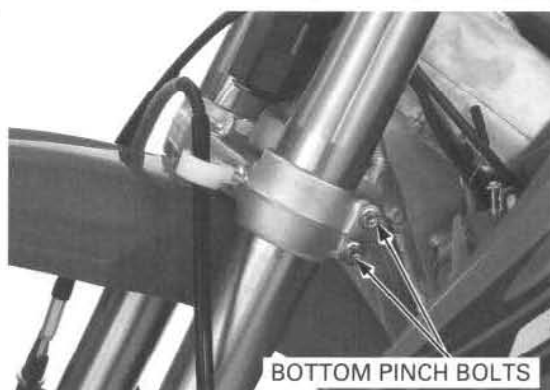
Lock nut wrench, 50 mm 07WMA-KZ30100

NOTE:

- Do not use a crescent or adjustable wrench to loosen the fork cap; it could be damaged.



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

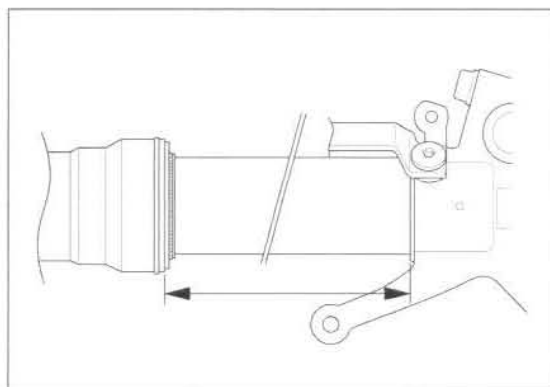


DISASSEMBLY

Be careful not to scratch the slider and not to damage the dust seal.

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

Measure the length between the axle holder and outer tube and record it before disassembling the fork.



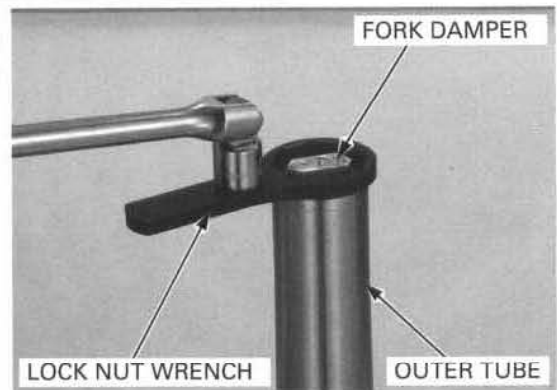
FRONT WHEEL/SUSPENSION/STEERING

Hold the outer tube, remove the fork damper using the special tool from the outer tube and slide the outer tube down until the dust seal meets the axle holder.

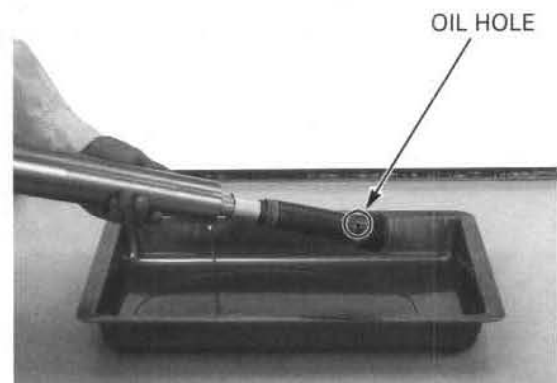
TOOL:

Lock nut wrench, 50 mm

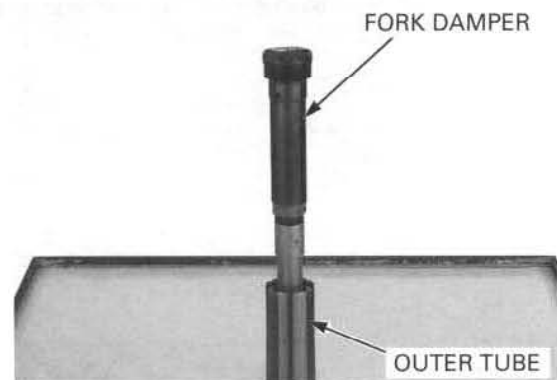
07WMA-KZ30100



Drain the fork oil from the fork leg.
Drain the fork oil from the oil hole of the fork damper.



Temporarily install the fork damper to the outer tube.



Do not clamp the axle holder too tight.

Set the lower end (axle holder) of the slider in a vise with a piece of wood or soft jaws to avoid damage.
Loosen the center bolt.



FRONT WHEEL/SUSPENSION/STEERING

If the piston base is not available, refer to the illustration to make a stopper tool.

Push out the fork center bolt from the axle holder of the slider by pushing the fork cap.

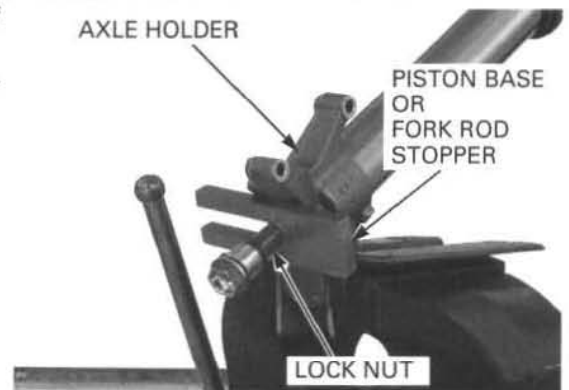
While the center bolt is pushed out, install the special tool between the axle holder and lock nut.

TOOLS:

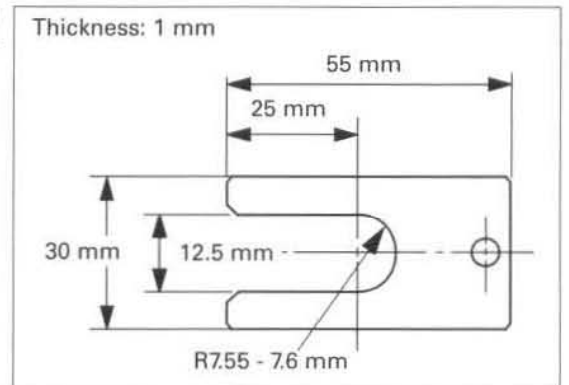
Piston base

Fork rod stopper

07958-2500001 or
07AMB-KZ3A100
(U.S.A. only)

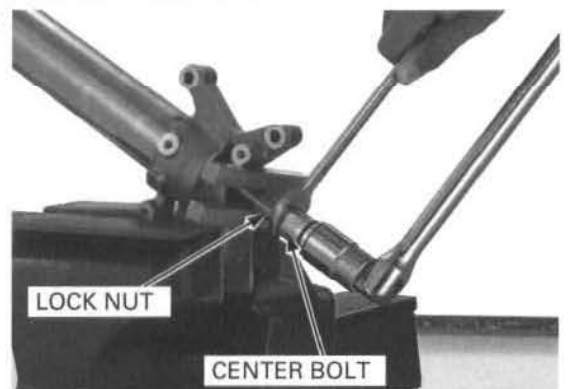


Make the mechanic's stopper tool as shown if you do not have the piston base mentioned in the previous step.

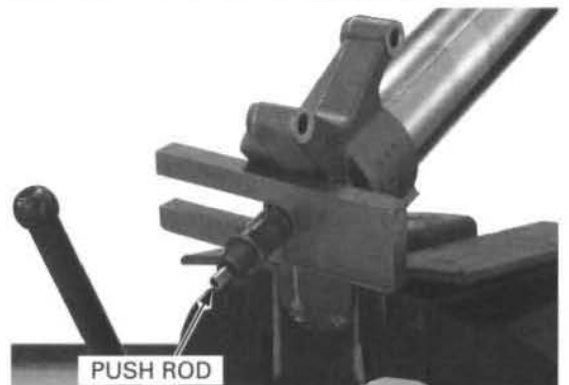


Do not remove the lock nut from the fork damper piston rod. If the lock nut is removed, the piston rod will fall into the fork damper and you will not be able to reassemble the fork damper.

Hold the lock nut and remove the fork center bolt from the fork damper.



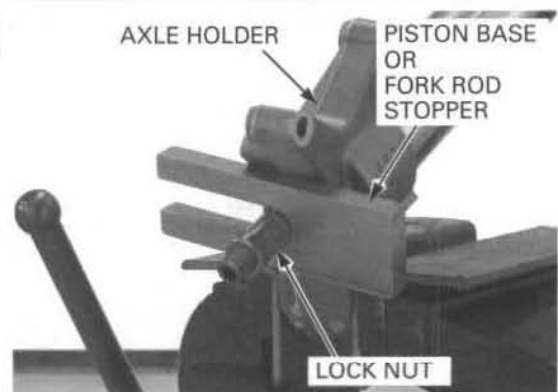
Remove the push rod from the fork damper.



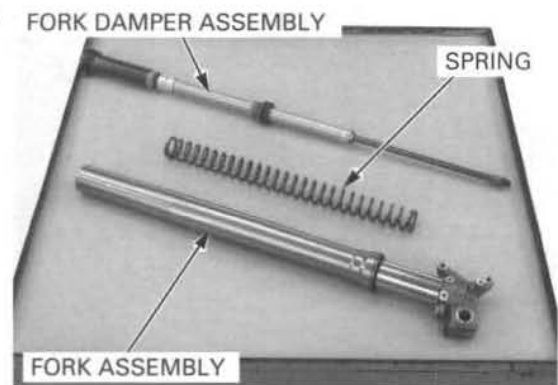
FRONT WHEEL/SUSPENSION/STEERING

Be careful not to damage the lock nut and fork center bolt hole.

Remove the special tool or mechanic's stopper tool between the axle holder and lock nut while pushing the fork cap.



Remove the fork cap from the outer tube and fork damper from the fork.
Remove the fork from the vise.
Remove the fork spring from the fork.



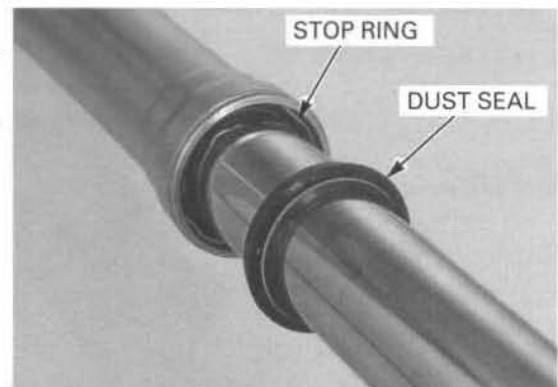
OUTER TUBE AND SLIDER DISASSEMBLY

Be careful not to scratch the slider.

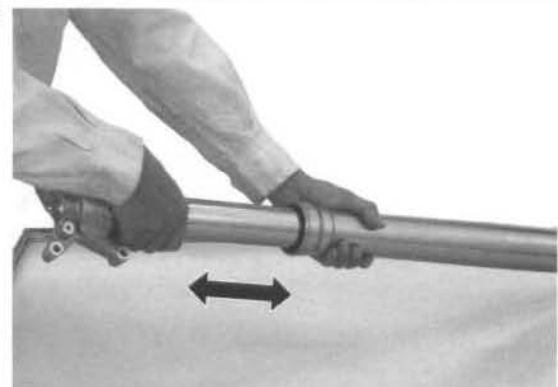
Remove the dust seal and stop ring.

Check that the slider moves smoothly in the outer tube.

If it does not, check the slider for bends or damage, and the bushings for wear or damage (page 11-18).



In quick successive motions, pull the slider out of the outer tube.



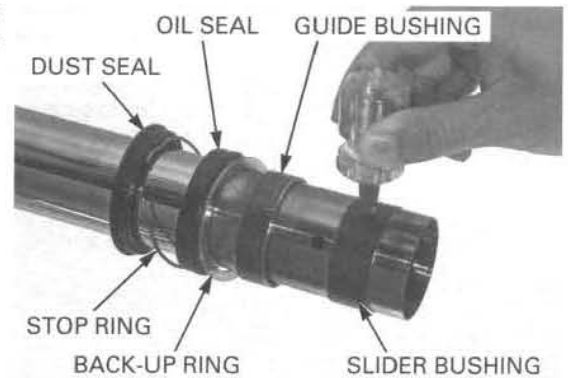
FRONT WHEEL/SUSPENSION/STEERING

Do not damage the slider bushing, especially the sliding surface. To prevent loss of tension, do not open the bushing more than necessary.

Carefully remove the slider bushing by prying the slot with a screwdriver until the bushing can be pulled off by hand.

Remove the following:

- guide bushing
- back-up ring
- oil seal
- stop ring
- dust seal



FORK DAMPER DISASSEMBLY

If the lock nut is removed, the piston rod will fall into the fork damper and you will not be able to reassemble the fork damper.

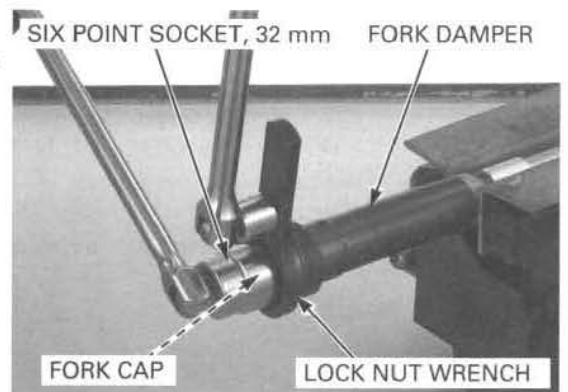
Check the lock nut installation.

Set the special tool to the cut-outs in the fork damper.

TOOL:

Lock nut wrench, 50 mm

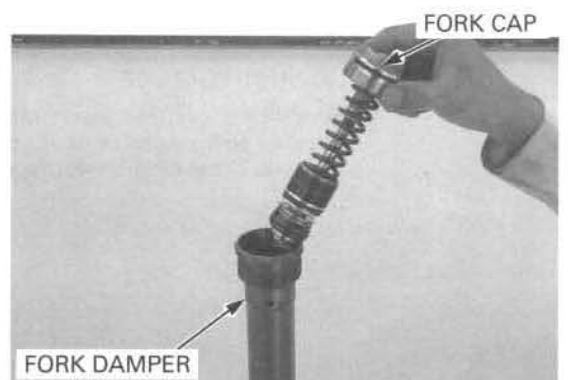
07WMA-KZ30100



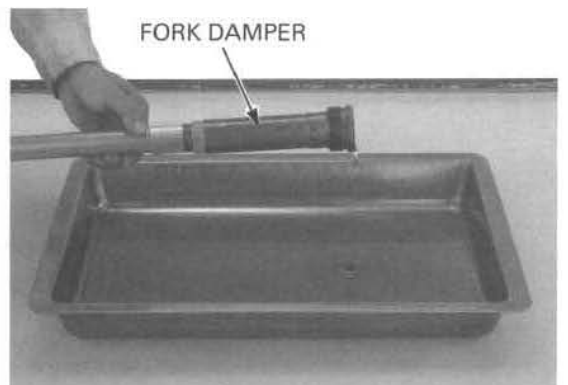
Be careful not to damage the fork cap bushing.

Remove the fork cap from the fork damper.

Do not disassemble the fork cap assembly. Replace the fork cap as an assembly if it is damaged.



Empty the fork oil from the fork damper by pumping the damper rod several times.



FRONT WHEEL/SUSPENSION/STEERING

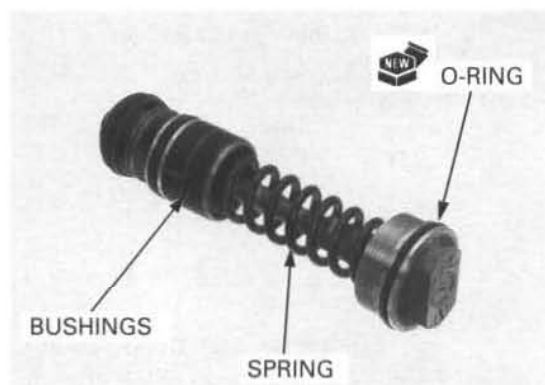
INSPECTION

FORK CAP

Check the fork cap for damage.
Check the bushing for excessive wear or scratches.
Check the spring for fatigue or damage.
Check the compression adjuster for clicks.

Replace the fork cap as an assembly if necessary.

Replace the O-ring with a new one.



FORK CENTER BOLT

Check the for center bolt for damage.
Check the adjuster rod for stepped wear or damage.
Check the rebound adjuster for clicks.

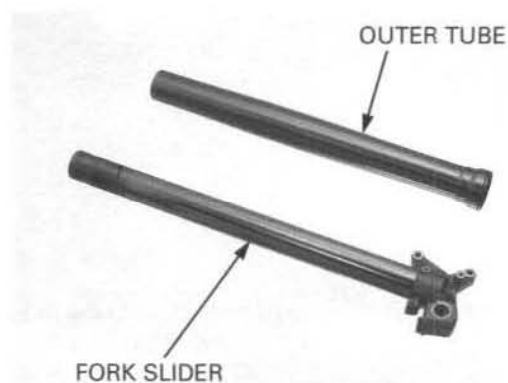
Replace the for center bolt as an assembly if necessary.

Replace the O-ring with a new one.



SLIDER/OUTER TUBE

Check the slider and outer tube for score marks, scratches and excessive or abnormal wear.
Check the outer tube for damage or bends.



Set the slider in V-blocks and measure the fork slider runout by rotating it with a dial indicator. Actual runout is 1/2 the total indicator reading.

SERVICE LIMIT: 0.20mm (0.008 in)

Do not reuse the slider if it is bent.

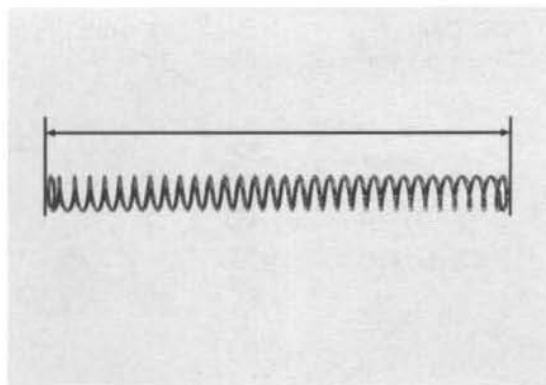
Replace if the service limit is exceeded, or there are scratches or nicks that will allow fork oil to leak past the seals.



FORK SPRING

Measure the fork spring free length by placing on a flat surface.

SERVICE LIMIT: 487 mm (19.17 in)

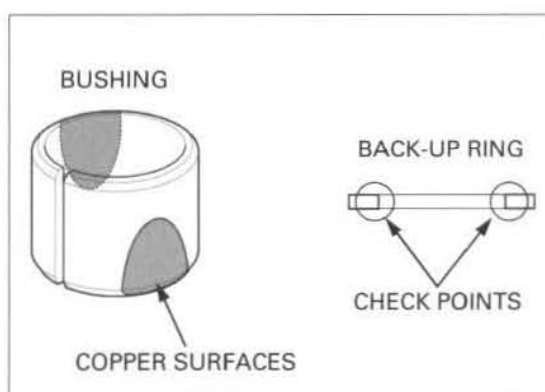


BUSHING/BACK-UP RING

Check the bushings for excessive wear or scratches. If copper appears on the entire surface, replace the bushings.

Replace the back-up ring if there is distortion at the points shown.

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



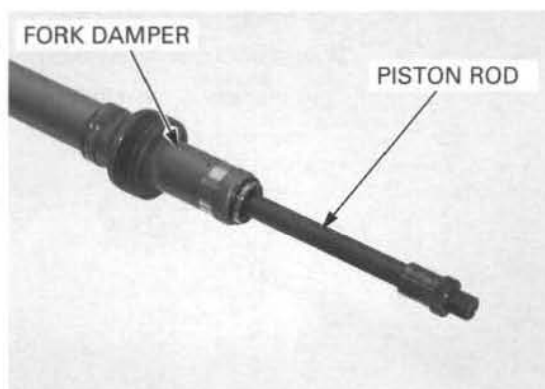
FORK DAMPER

Check the damper for bends or damage.

Check the fork damper piston rod for bends, wear or damage.

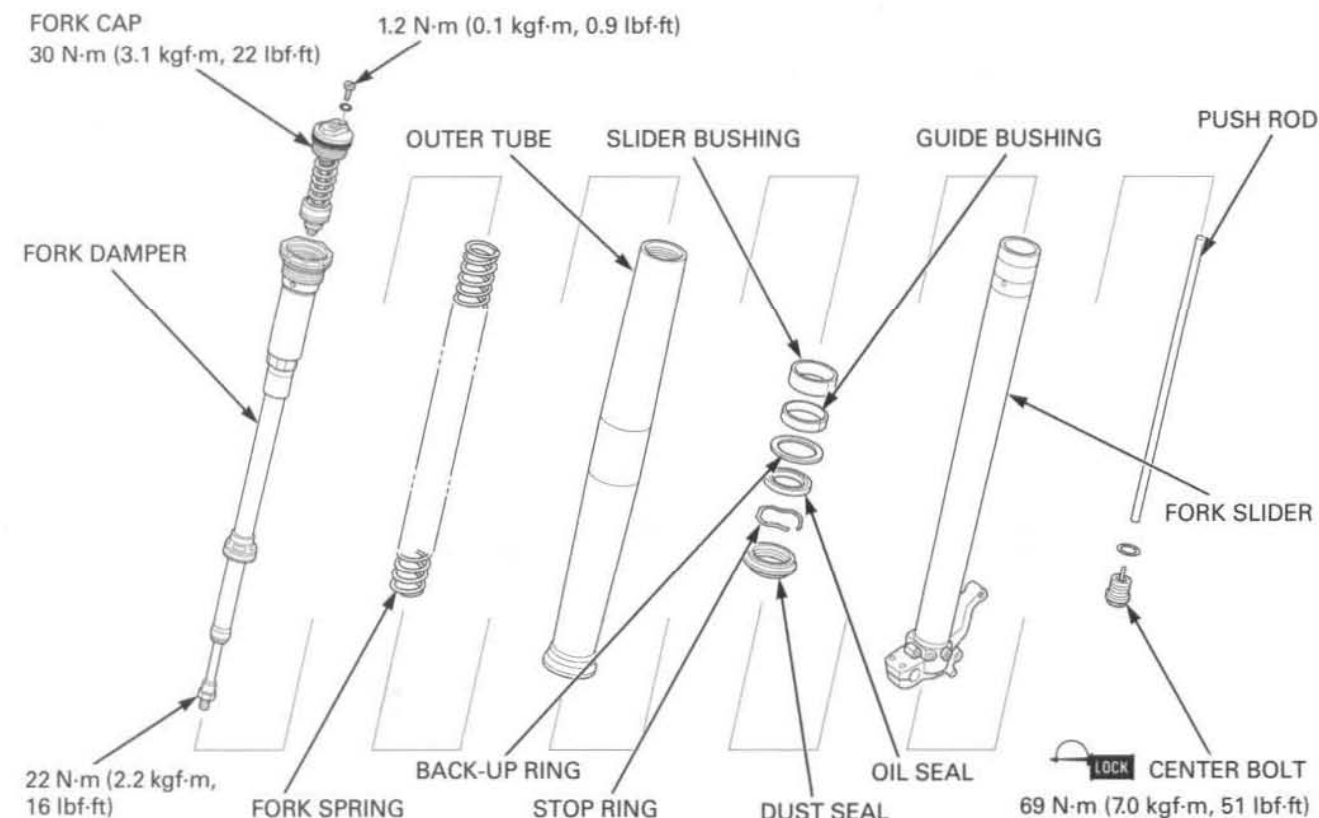
Check the fork damper operation by pumping the piston rod.

If the operation is not smooth, fill the fork damper with fork oil and check the fork damper operation again (page 11-21).



FRONT WHEEL/SUSPENSION/STEERING

ASSEMBLY



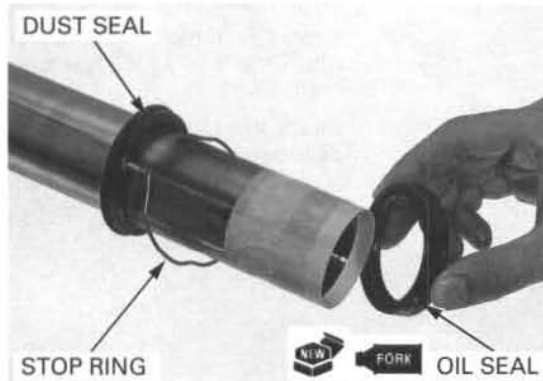
Before assembly, wash all parts with a high flash or non-flammable solvent and wipe them dry.

Wrap the end of the slider with tape.

Coat the new oil seal lips with fork fluid.

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

- dust seal
- stop ring
- oil seal

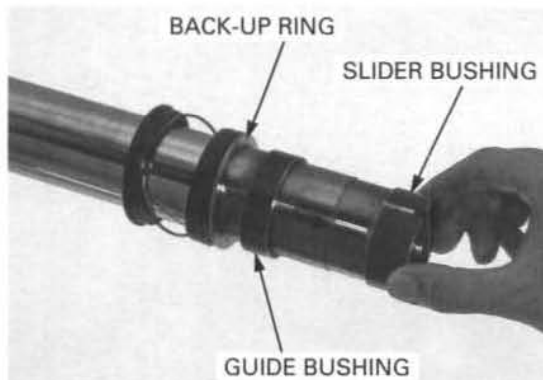


Remove the tape from the end of slider.

Remove any burrs from the bushing, take care not to peel its coating.

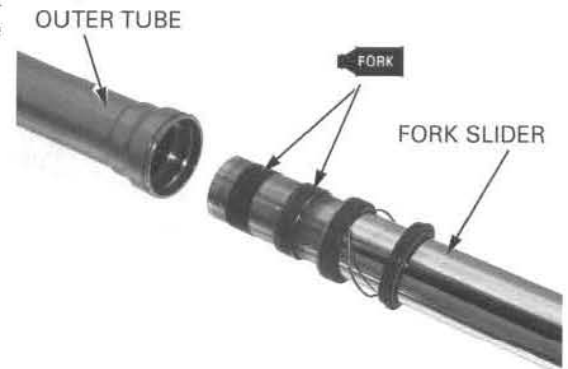
Install the following onto the slider.

- back-up ring
- guide bushing
- slider bushing



FRONT WHEEL/SUSPENSION/STEERING

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

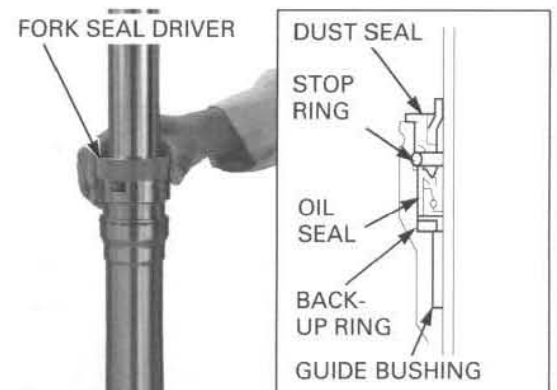


Drive the guide bushing together with the back-up ring and oil seal into the outer tube, using the special tool.

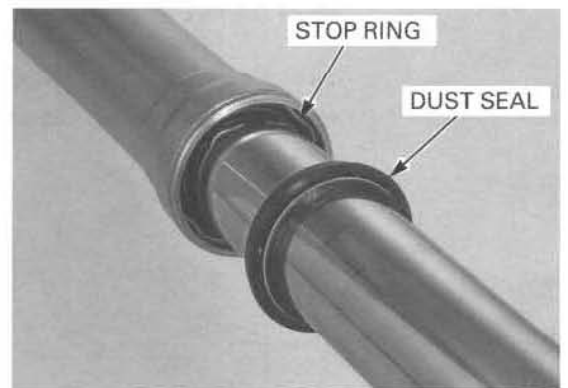
TOOL:

Fork seal driver, 47 mm I.D.

07VMD-KZ30100 or
07VMD-KZ3010A
(U.S.A. only)

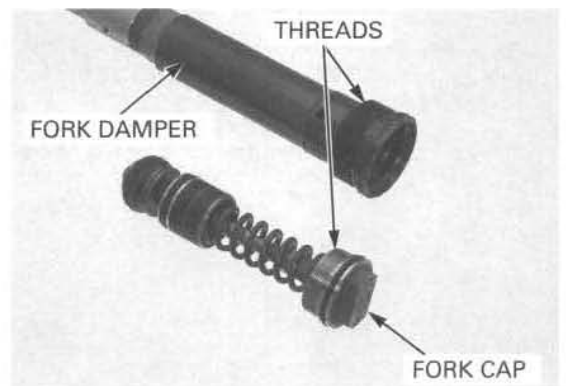


Install the stop ring to the groove in the outer tube.
Install the dust seal.



FORK DAMPER REFILLING/ASSEMBLY

Clean the fork cap and fork damper threads.



FRONT WHEEL/SUSPENSION/STEERING

Extend the fork damper piston rod to its maximum length.

Pour the recommended fork oil into the fork damper.

RECOMMENDED FORK FLUID:

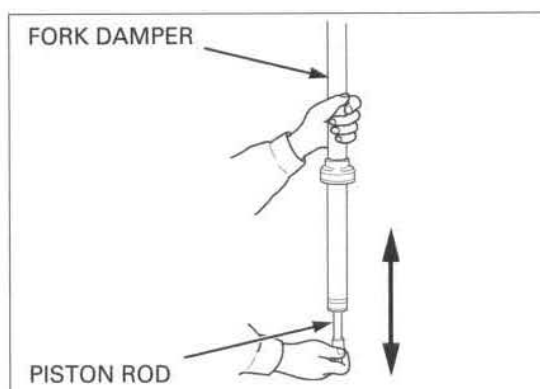
Pro Honda HP Fork Fluid 5W or equivalent

STANDARD QUANTITY:

195 cm³ (6.6 oz)



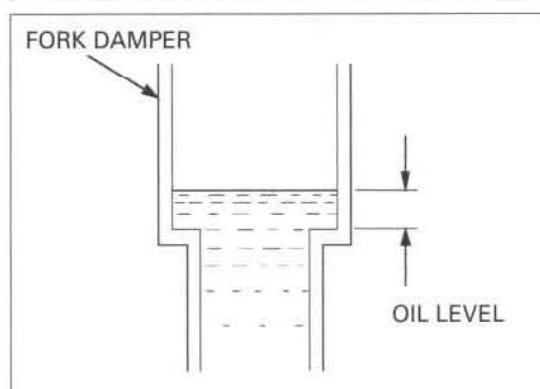
Pump the fork damper piston rod slowly several times and bleed any air from the fork damper.



Extend the fork damper piston rod to its maximum length.

Adjust the oil level of the fork damper as shown.

OIL LEVEL: 42 - 47 mm (1.65 - 1.85 in)

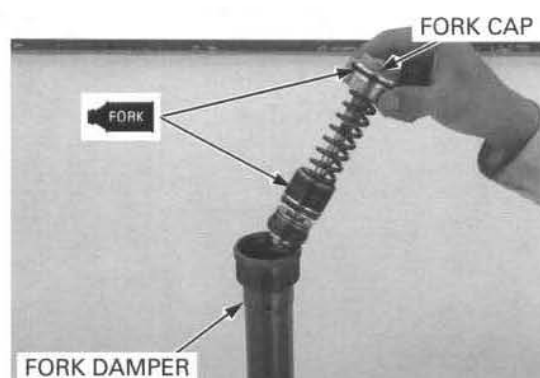


Apply fork fluid to the bushing and new O-ring on the fork cap assembly.

Be careful not to damage the fork cap bushing.

Extend the fork damper piston rod to maximum. Hold the rod and install the fork cap assembly to the fork damper.

If it is difficult to install the fork cap assembly, the fork damper oil level might be higher than standard. Inspect the fork damper oil level again.



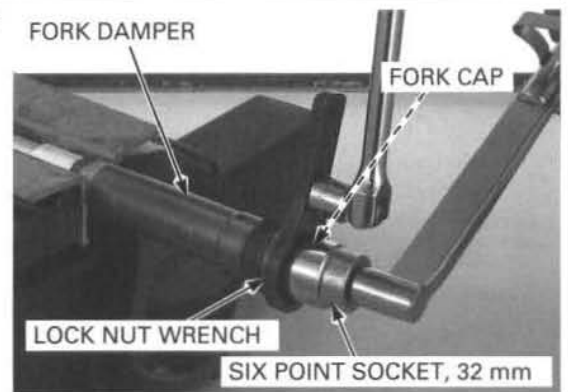
FRONT WHEEL/SUSPENSION/STEERING

Tighten the fork cap by holding the fork damper using the special tool.

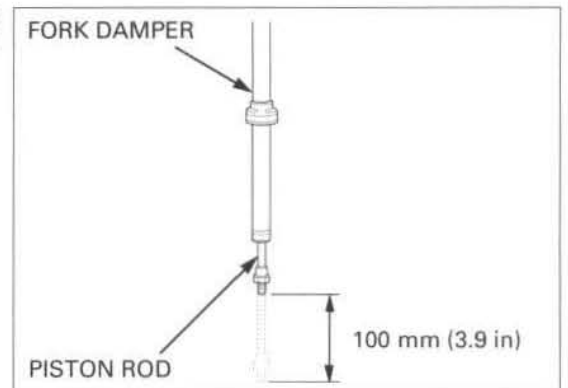
TOOL:

Lock nut wrench, 50 mm 07WMA-KZ30100

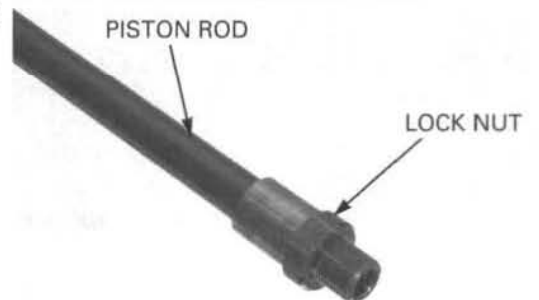
TORQUE: 30 N·m (3.1 kgf·m, 22 lbf·ft)



Hold the fork damper in an upright position and compress the fork piston rod 100 mm (3.9 in) slowly, several times.



Turn the lock nut onto the fork damper piston rod until fully seated.



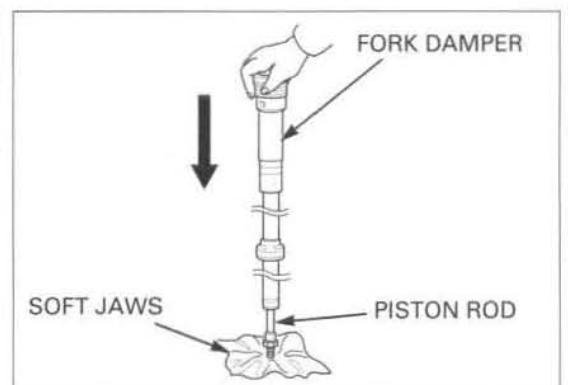
Turn the rebound adjuster and compression adjuster counterclockwise to the softest position.

Check the fork damper piston rod sliding surface for damage.

Apply fork fluid to the fork damper piston rod sliding surface.

Cover the piston rod end to prevent damage.

Be careful not to bend or damage the fork damper piston rod when the piston rod is stroked.



FRONT WHEEL/SUSPENSION/STEERING

Blow out any extra fluid in the fork damper spring chamber by fully stroking the fork damper piston rod.

By doing this procedure, about 17 cm³ of fork fluid will be drained from the damper spring chamber through the oil hole and cause 178 cm³ of fork fluid to be left in the chamber.

Drain extra oil from the fork damper spring chamber oil hole.

Blow out any fluid from the fork damper spring chamber using compressed air.

Wipe off the oil completely from the fork damper.

If you cannot use compressed air, remove the plug bolt on the fork cap.
Hold the fork damper upside down for 10 minutes and drain the fluid from the fork damper spring chamber.

Tighten the pressure release screw to the specified torque.

TORQUE: 1.2 N·m (0.1 kgf·m, 0.9 lbf·ft)

SPRING CHAMBER

OIL HOLE

FORK DAMPER

OIL HOLE

PRESSURE RELEASE SCREW

FORK CAP

FORK DAMPER OPERATION INSPECTION

Turn the compression adjuster counterclockwise to the softest position.

Check the fork damper piston rod sliding surface for damage.

Apply fork fluid to the fork damper piston rod sliding surface.

Inspect the fork damper operation after air bleeding (page 11-21).

Cover the piston rod end to prevent damage.

Fully stroke the fork damper piston rod by pushing down the fork damper.

Check the fork damper piston rod for smooth operation.

If the fork damper piston rod operation is not smooth, check the piston rod for bends or damage.

Be careful not to bend or damage the fork damper piston rod when the piston rod is stroked.

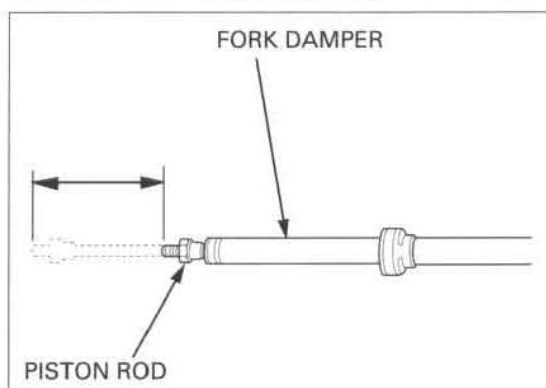
FORK DAMPER

PISTON ROD

Hold the fork damper level while the fork damper piston rod is fully extended and then compressed by hand.

Release the fork damper piston rod then check that the piston rod extends to its maximum length.

If the fork damper piston rod does not extend to maximum, bleed the fork damper again.

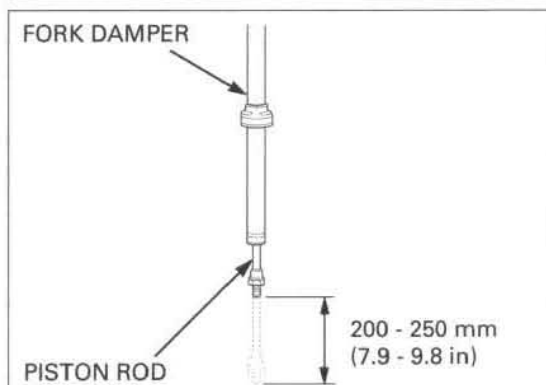


Wipe the fluid completely off from the fork damper. Compress the fork piston rod 200 - 250 mm (7.9 - 9.8 in) from fully extended and hold the fork damper in an upright position for 10 minutes.

There should be no fluid leaking from the fork damper spring chamber and piston rod.

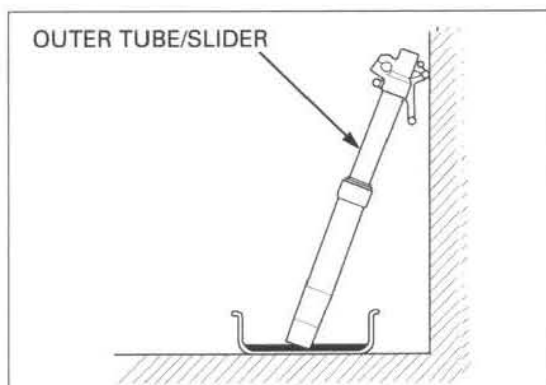
If fluid leaks from the spring chamber or piston rod, replace the fork damper assembly.

Hold the fork damper level and release the fork damper piston rod, then check that the piston rod extends to its maximum length.



FORK DAMPER INSTALLATION/PREPARATION

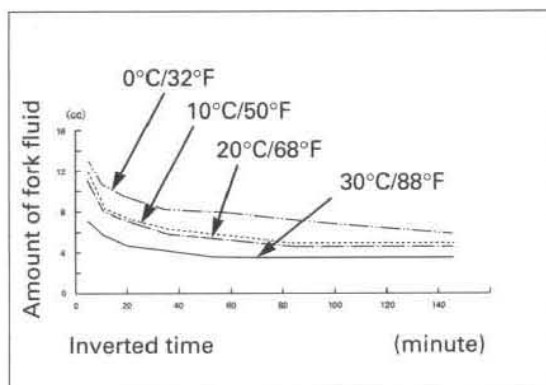
If the outer tube and slider (fork) have not been disassembled, turn the fork upside down for 20 minutes and drain the fluid from the inside of the outer tube and slider completely.



Amount of fork fluid left in the fork.
(within damper and spring)

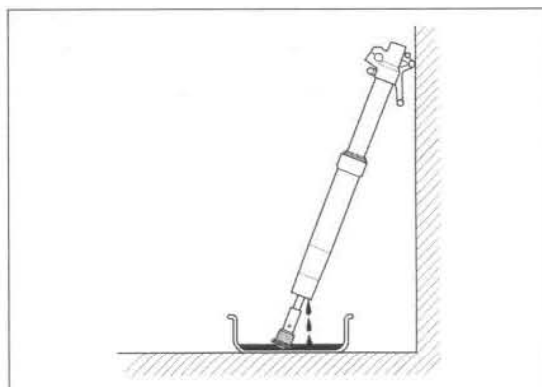
unit: cm³

minute °C/°F	5	10	20	35	55	85	145
30/86	7.1	5.9	4.7	4.2	3.5	3.5	3.5
20/68	10.6	8.2	7.1	5.9	5.6	4.7	4.7
10/50	11.8	8.3	7.2	6.2	5.8	4.9	4.8
0/32	12.9	10.6	9.4	8.2	7.9	7.1	5.9



FRONT WHEEL/SUSPENSION/STEERING

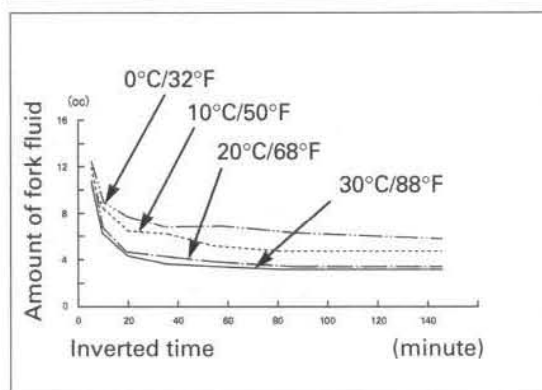
If the fork damper has not been disassembled from the outer tube/slider, turn it upside down for 20 minutes and drain the fluid from the inside of the outer tube and slider completely (12 cm³ left in the fork at 20°C/68°F).



Amount of fork fluid left in the fork.
(within damper and spring)

unit: cm³

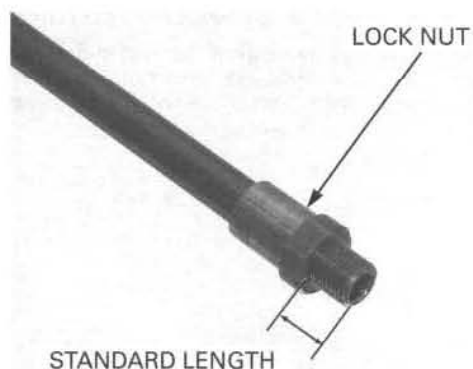
minute °C/°F	5	10	20	35	55	85	145
30/86	27	15.3	10.6	9.4	8.3	7.9	7.9
20/68	29.4	16.5	11.8	10.6	9.4	8.2	8.2
10/50	28.2	21.2	16.5	15.3	12.9	11.8	11.8
0/32	30.6	22.4	18.8	16.5	16.5	15.3	14.1



Tighten the lock nut fully and measure the length as shown.

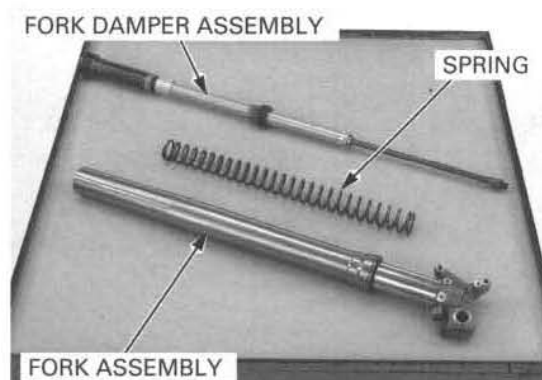
STANDARD: 11 - 13 mm (0.43 - 0.51 in)

Wipe fluid completely off from the fork damper.



FORK DAMPER INSTALLATION

Wipe the fluid off completely from the fork spring.
Install the fork spring.
Temporarily install the fork damper to the fork.



FRONT WHEEL/SUSPENSION/STEERING

Do not overtighten the vise on the axle holder.

Set the lower end (axle holder) of the slider in a vise with a piece of wood or soft jaws to avoid damage.

Push out the fork damper piston rod from the axle holder of the slider by pushing the fork damper. While the fork damper is pushed, install the special tool or mechanic's stopper tool between the axle holder and lock nut.

TOOLS:

Piston base

Fork rod stopper

07958-2500001 or
07AMB-KZ3A100
(U.S.A. only)

Measure the combined length of the lock nut and piston rod end again.

STANDARD: 11 - 13 mm (0.43 - 0.51 in)

Check the push rod installation by turning the push rod right and left.

Install the adjuster rod into the piston rod until it stops.

Install the fork center bolt to the fork damper piston rod by aligning the flat-side of the center bolt adjusting rod with the flat-side of the push rod. Tighten the center bolt fully by hand.

Measure the length of the lock nut and center bolt clearance.

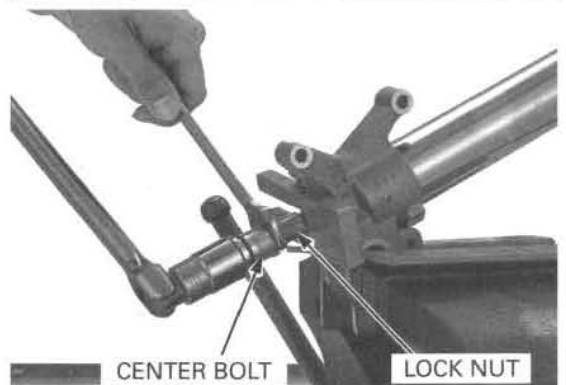
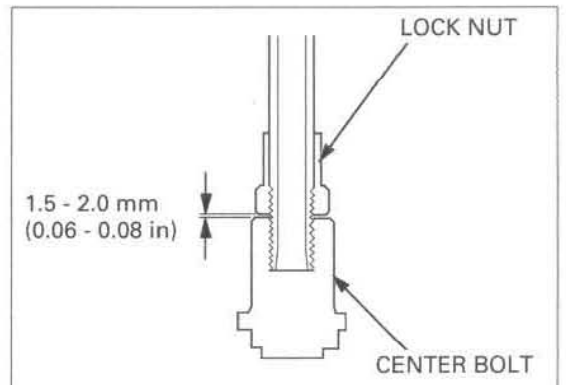
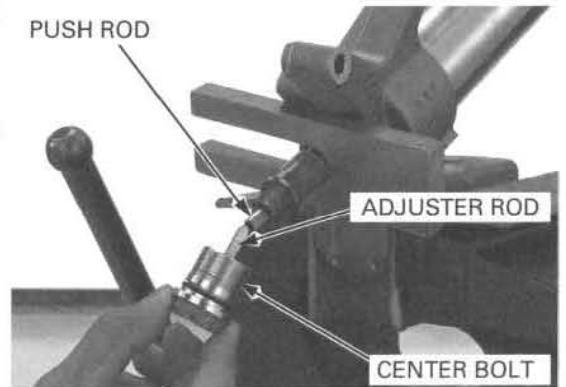
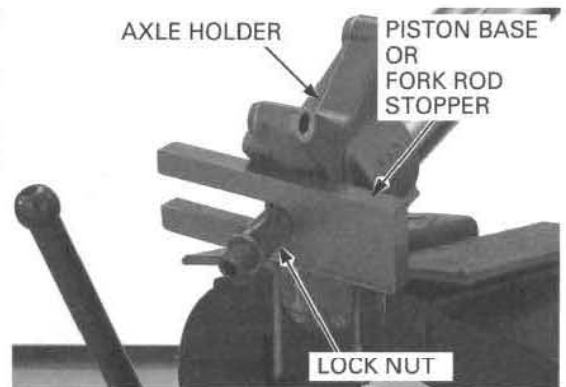
STANDARD: 1.5 - 2.0 mm (0.06 - 0.08 in)

If the clearance is out of specification, check the lock nut and center bolt installation.

Tighten the lock nut to the center bolt by hand, until they touch.

Tighten the lock nut to the specified torque.

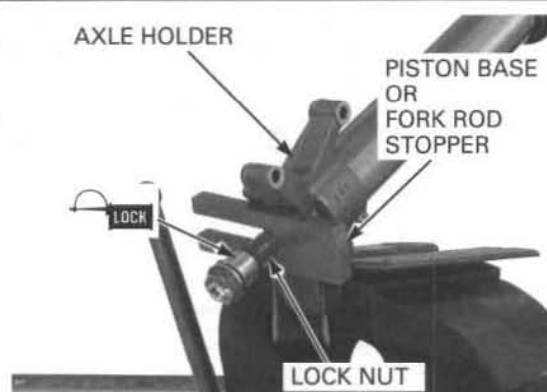
TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)



FRONT WHEEL/SUSPENSION/STEERING

Remove the special tool or mechanic's stopper tool between the axle holder and lock nut while pushing the fork damper.

Apply a locking agent to the fork center bolt threads.



Install the center bolt to the axle holder and tighten it to the specified torque.

TORQUE: 69 N·m (7.0 kgf·m, 51 lbf·ft)

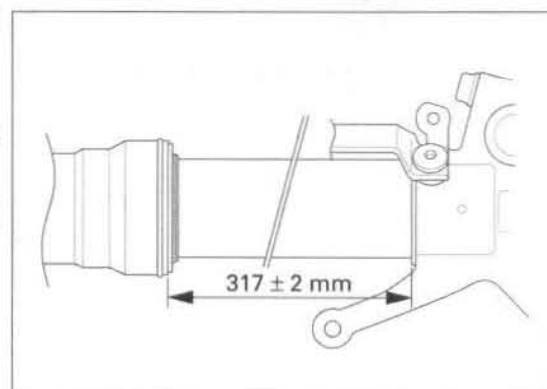


Measure the length between the axle holder and outer tube.

STANDARD: 317 ± 2 mm

Compare the length at assembly and disassembly; they should be the same length.

If the length at assembly is longer than after disassembly, check the center bolt and lock nut installation.



OIL CAPACITY ADJUSTMENT

Remove the fork cap from the outer tube.

Pour recommended fork fluid into the fork leg.

RECOMMENDED FORK FLUID:

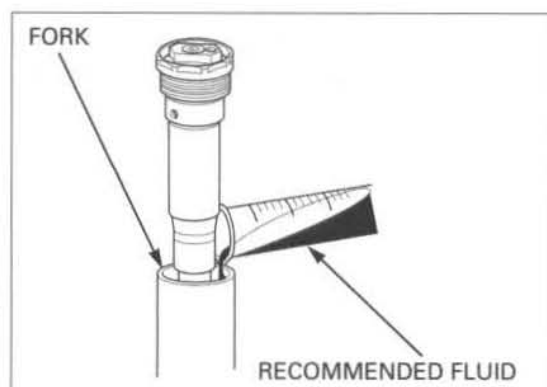
Pro Honda HP Fork Fluid 5W or equivalent

STANDARD FLUID CAPACITY:

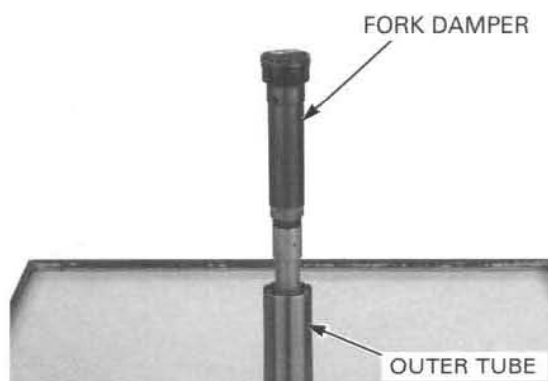
394 cm^3 (13.3 US oz)

Maximum fluid level capacity	430 cm^3 (14.5 US oz)	Slightly stiffer as it nears full compression.
Minimum fluid level capacity	331 cm^3 (11.2 US oz)	Slightly softer as it nears full compression.

Be sure the oil capacity is the same in both fork legs.



Pull up the outer tube slowly and install the fork damper to the outer tube.



INSTALLATION

Install the fork leg.
Tighten the bottom bridge pinch bolt to the specified torque.

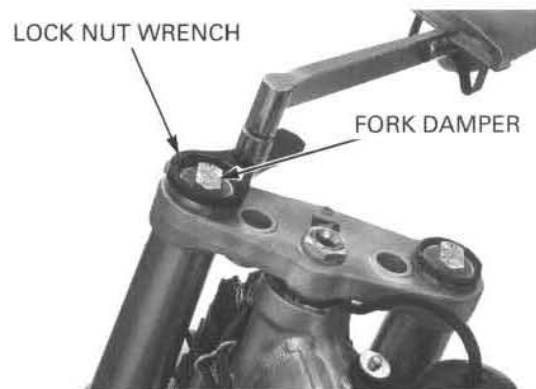
TORQUE: 20 N·m (2.0 kgf·m, 15 lbf·ft)

Tighten the fork damper to the specified torque.

TOOL:

Lock nut wrench, 50 mm 07WMA-KZ30100

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)



STANDARD POSITION

Loosen the bottom pinch bolts.

To ease releasing the air pressure after the forks are installed, position the fork outer tubes so that the pressure release screws are in front of the compression adjusters.

Align the top surface of the top bridge with the index mark line of the outer tube (7 mm from top of the fork tube).

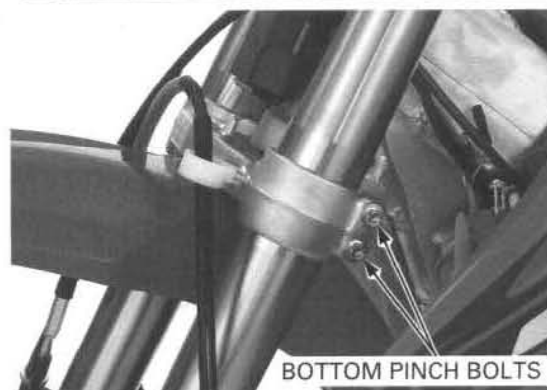
For alternative positions, see the Owner's Manual.



Overtightening the pinch bolts can deform the outer tubes. A deformed outer tube must be replaced.

Tighten the bottom bridge pinch bolts to the specified torque.

TORQUE: 20 N·m (2.0 kgf·m, 15 lbf·ft)



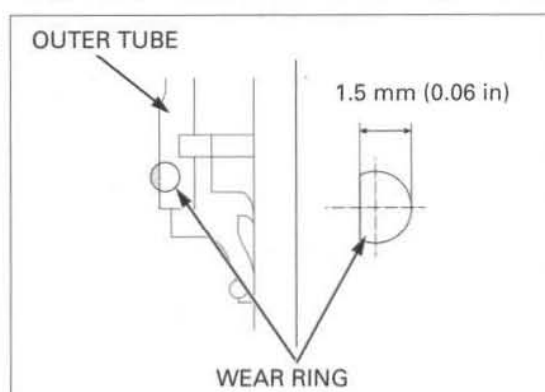
FRONT WHEEL/SUSPENSION/STEERING

Tighten the top bridge pinch bolts to the specified torque.

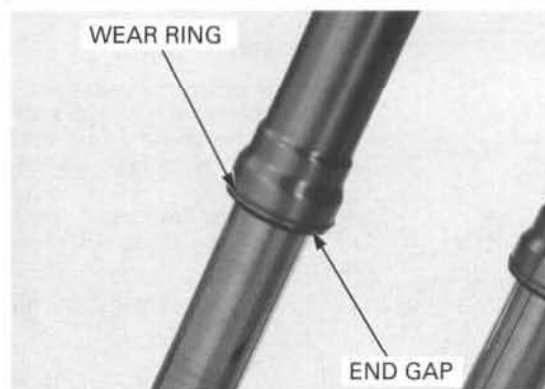
TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)



Inspect the wear rings for wear or damage. Replace the wear ring if it is 1.5 mm (0.06 in) or flat with the outer tube.



Install each wear ring with the end gap facing rearward.



Tighten the brake hose guide bolts to the specified torque.

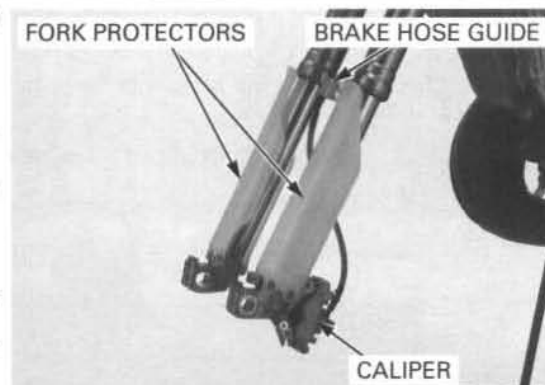
TORQUE: 5.2 N·m (0.5 kgf·m, 3.8 lbf·ft)

Clean and apply a locking agent to the fork protector mounting bolt threads. Install the fork protector and tighten the mounting bolts to the specified torque.

TORQUE: 7 N·m (0.7 kgf·m, 5.2 lbf·ft)

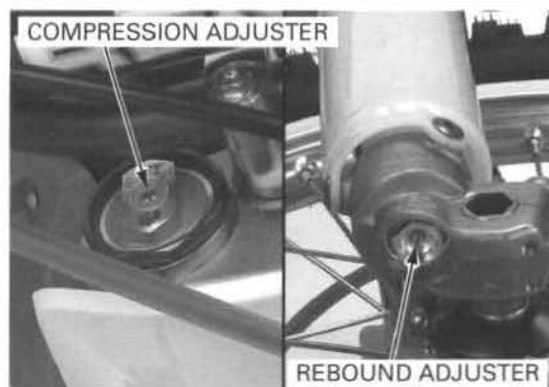
Clean and apply a locking agent to the front brake caliper mounting bolt threads. Install and tighten the brake caliper mounting bolts to the specified torque.

TORQUE: 30 N·m (3.1 kgf·m, 22 lbf·ft)



Refer to page 11-3
for damping
adjuster standard
position.

Return the rebound and compression adjusters to
the original position as noted during removal.
Install the front wheel (page 11-11).



HANDLEBAR

REMOVAL

Disconnect the engine stop button connectors.
Unhook the holding tab of the number plate.
Remove the handlebar pad.

NUMBER PLATE TAB HANDLEBAR PAD



Remove the wire bands securing the engine stop
button wire and remove the engine stop button.
Disconnect the clutch cable and remove the clutch
lever bracket.

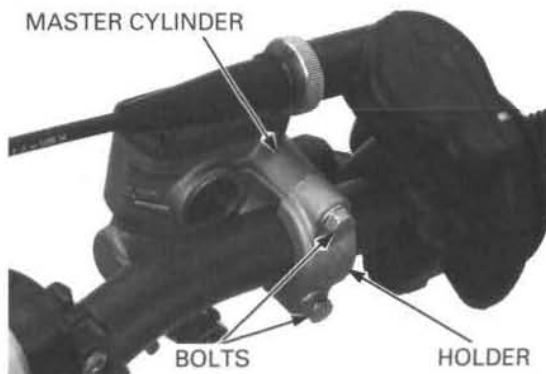
ENGINE STOP BUTTON CLUTCH LEVER BRACKET



Do not disconnect
the hydraulic line.

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

MASTER CYLINDER



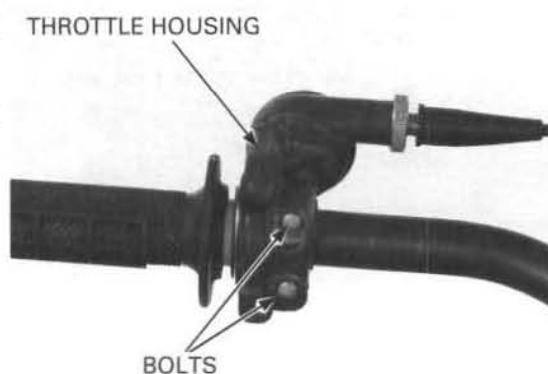
HOLDER

BOLTS

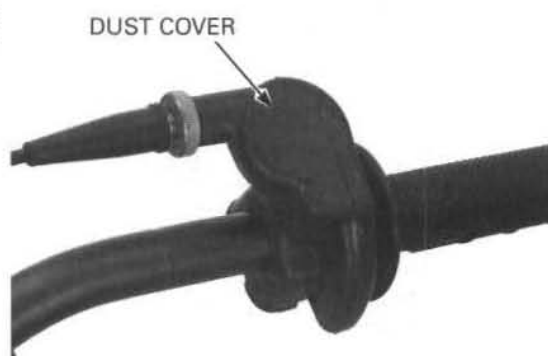
FRONT WHEEL/SUSPENSION/STEERING

If you will not disassemble the throttle housing, remove the throttle housing as an assembly as follows.

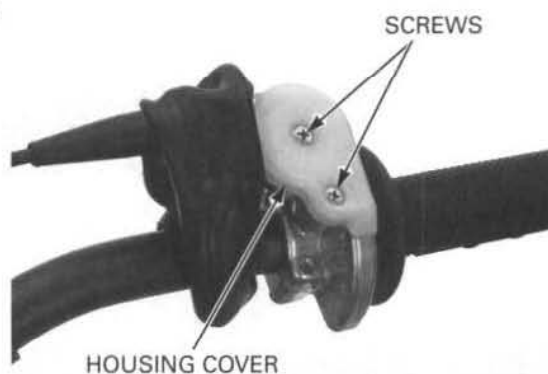
Loosen the throttle housing bolts, turn the handlebar to the left fully, then remove the throttle housing.



If you will disassemble the throttle housing, slide the dust cover off the throttle cable and loosen the lock nut and adjuster. Remove the throttle housing dust cover.

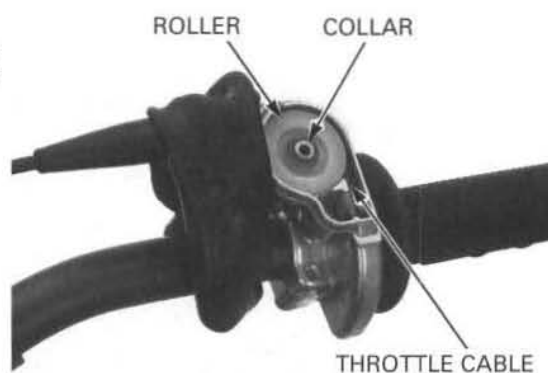


Remove the throttle housing cover by removing the screws.



Remove the throttle cable roller and collar.

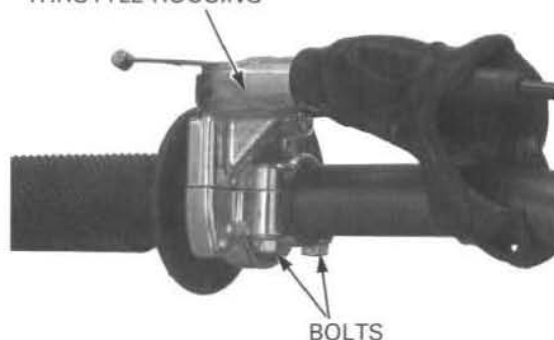
Disconnect the throttle cable and from the throttle drum, remove the cable from the housing by removing the lock nut and adjuster.



FRONT WHEEL/SUSPENSION/STEERING

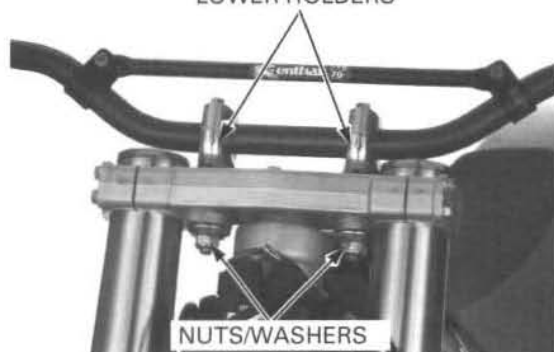
Loosen the throttle housing mounting bolts and remove the throttle drum from the handlebar.

THROTTLE HOUSING



Loosen the handlebar lower holder nuts.

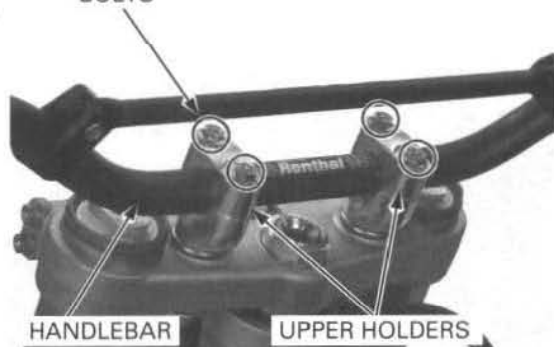
LOWER HOLDERS



Remove the bolts, upper holders and handlebar.

Remove the lower holder nuts, washers, lower holders and bushings.

BOLTS



INSTALLATION

Install the bushings, lower holders, washers and nuts.

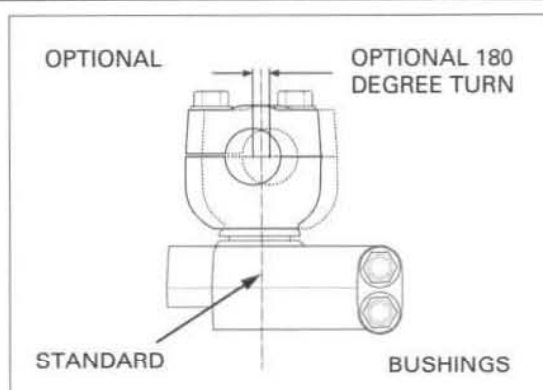
Place the handlebar onto the lower holders and loosely install the upper holders and bolts.

LOWER HOLDERS



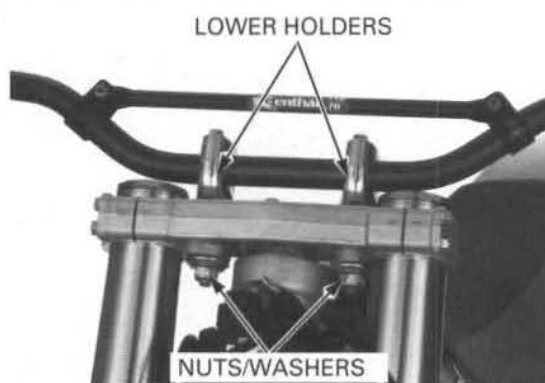
FRONT WHEEL/SUSPENSION/STEERING

Using optional handlebar lower holders, the handlebar position may be moved 3 mm (0.12 in) forward or rearward.



Tighten the lower holder nuts to the specified torque.

TORQUE: 44 N·m (4.5 kgf·m, 32 lbf·ft)

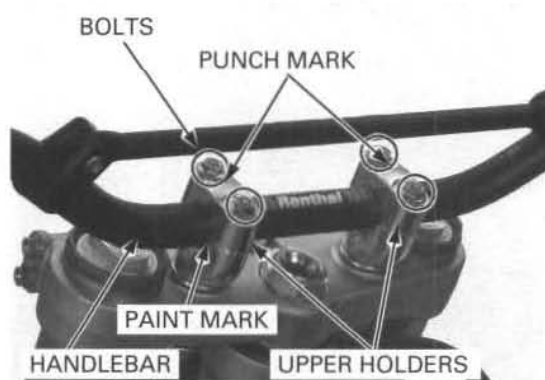


Align the paint mark on the handlebar with the top of the lower holder.

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

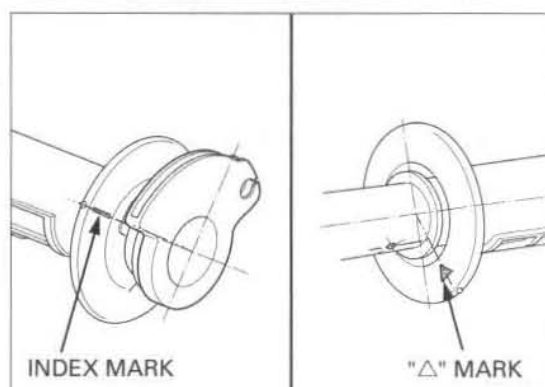
Install and tighten the front handlebar holder bolts first, then tighten the rear bolts.

TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)



Align the index mark on the throttle grip flange with the edge of the throttle drum.

Align the "△" mark on the left handlebar grip flange with the paint mark on the handlebar.

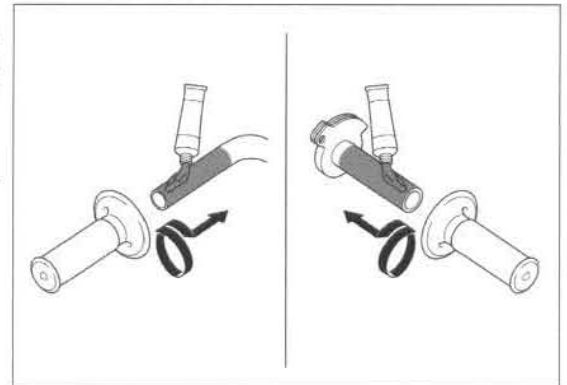


Replace the handlebar grips as follows:
Apply Honda Bond A or Pro Honda Hand Grip Cement (U.S.A. only) to the inside surface of the grips and to the clean surface of the left handlebar and throttle pipe.

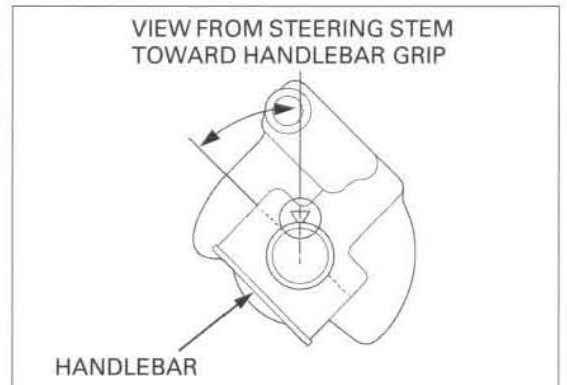
Wait three or five minutes and install the grips.

Allow the adhesive to dry for an hour before using.

Rotate the grips for even application of the adhesive.



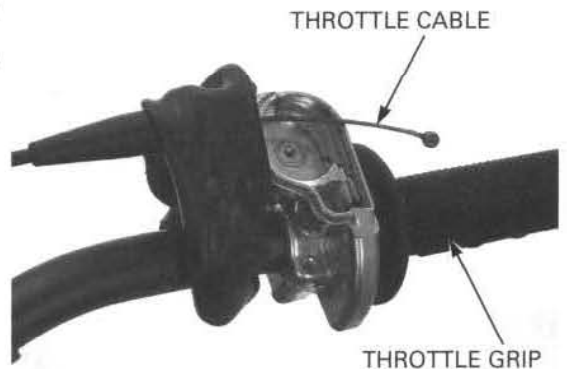
If you did not disassemble the throttle housing, place the dust cover over the throttle housing. Align the "△" mark on the dust cover with the paint mark on the handlebar. Tighten the throttle housing upper bolt first, then the lower bolt.



If you disassembled the throttle housing, install the throttle housing as follows:

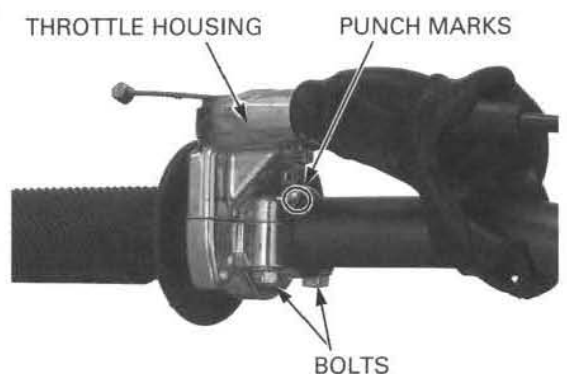
Apply a thin coat of oil to the sliding surface of the throttle pipe and throttle housing.

Connect the throttle cable end to the throttle drum.



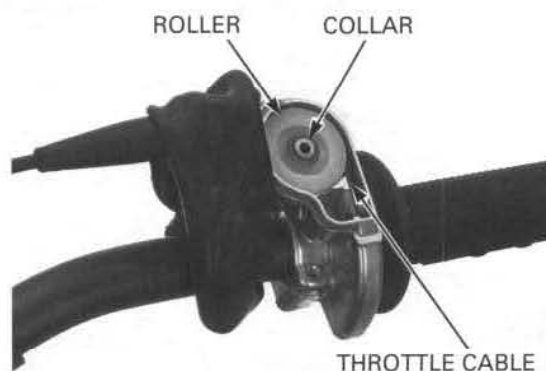
Install the throttle housing by aligning the punch mark on the handlebar.

Tighten the upper bolt first, then the lower bolt.



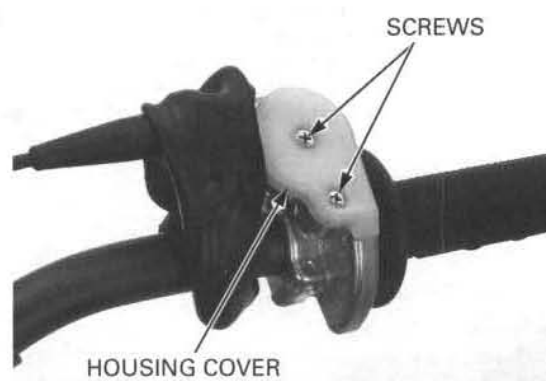
FRONT WHEEL/SUSPENSION/STEERING

Install the throttle cable roller and collar.



Install the throttle housing cover and tighten the screws to the specified torque.

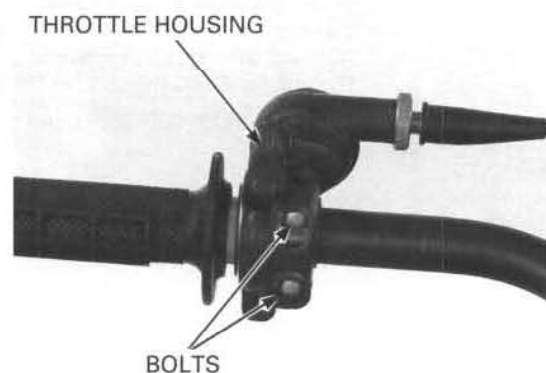
TORQUE: 1.5 N·m (0.2 kgf·m, 1.1 lbf·ft)



Place the dust cover over the throttle housing. Align the "△" mark on the dust cover with the punch mark on the handlebar. Tighten the throttle housing upper bolt first, then the lower bolt.

TORQUE: 8.8 N·m (0.9 kgf·m, 6.5 lbf·ft)

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

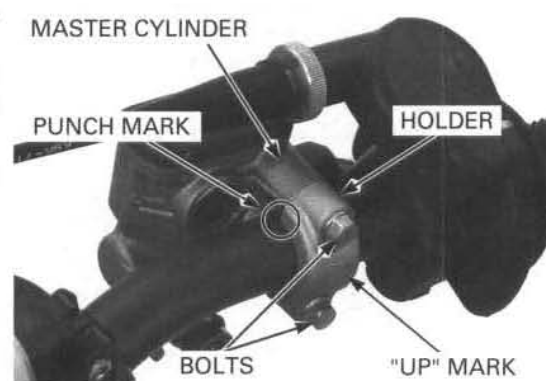


Position and brake master cylinder on the handlebar.

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

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

TORQUE: 9.9 N·m (1.0 kgf·m, 7.3 lbf·ft)



FRONT WHEEL/SUSPENSION/STEERING

Install the clutch lever bracket and holder with the punch mark on the holder facing up.
Align the end of the holder with the punch mark on the handlebar.
Tighten the upper bolt first, then the lower bolt.

TORQUE: 8.8 N·m (0.9 kgf·m, 6.5 lbf·ft)

Connect the clutch cable.

Adjust the clutch lever free play (page 3-16).

Route the engine stop button wire.

Install the engine stop button on the handlebar and align the end of engine stop button holder with the punch mark on the handlebar.

Install and tighten the engine stop button screw with the ground wire.

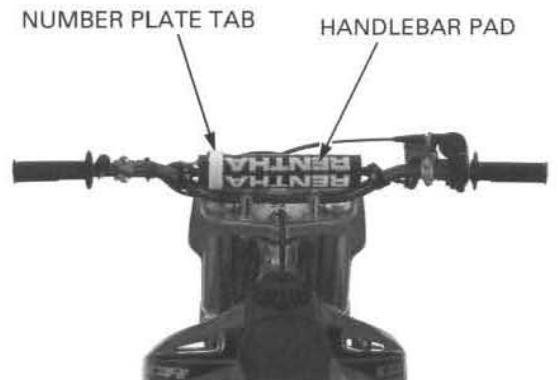
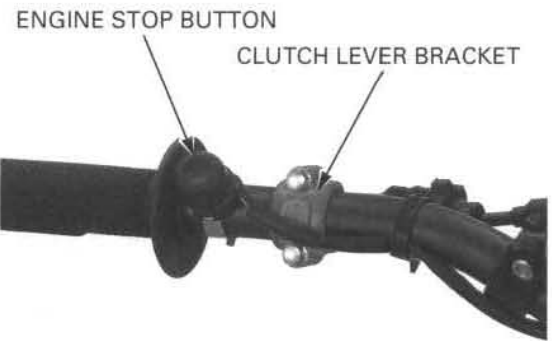
TORQUE: 1.5 N·m (0.2 kgf·m, 1.1 lbf·ft)

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

Connect the engine stop button connectors.

Install the handlebar pad.

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



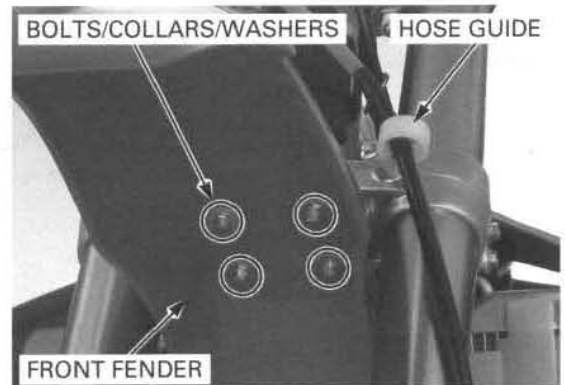
STEERING STEM

REMOVAL

Remove the following:

- number plate (page 2-4)
- handlebar (page 11-31)
- front wheel (page 11-7)

Remove the fender bolts, collars and washers.
Remove the front fender and brake hose guide.



FRONT WHEEL/SUSPENSION/STEERING

Remove the steering stem nut and washer.

Remove the fork legs (page 11-12).

Remove the fork top bridge.

STEM NUT/WASHER



FORK LEGS

TOP BRIDGE

Remove steering stem adjusting nut.

TOOLS:

Steering stem socket 07916-3710101 or
Adjustable pin spanner wrench 07702-0020001
(U.S.A. only)

STEERING STEM SOCKET



ADJUSTING NUT

Remove the steering stem.

Remove the dust seal upper tapered roller bearing.

Check the head bearings, outer races for wear or damage.

UPPER BEARING DUST SEAL



STEERING STEM

BEARING RACE REPLACEMENT

Always replace the bearings and races as a set.

Remove the upper and lower bearing outer races using the special tools.

TOOL:

Ball race remover 07946-3710500

BALL RACE REMOVER



FRONT WHEEL/SUSPENSION/STEERING

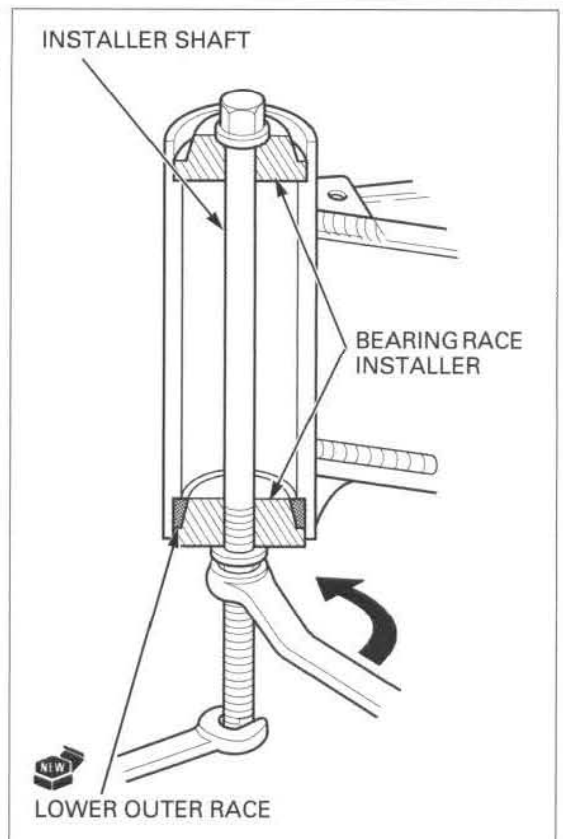
Install a new lower outer race, bearing race installer and install shaft as shown.
Hold the shaft with a wrench, turn the installer to install the lower outer race.

TOOLS:

Bearing race installer
(2 required)
Installer shaft

07VMF-KZ30100

07VMF-KZ30200



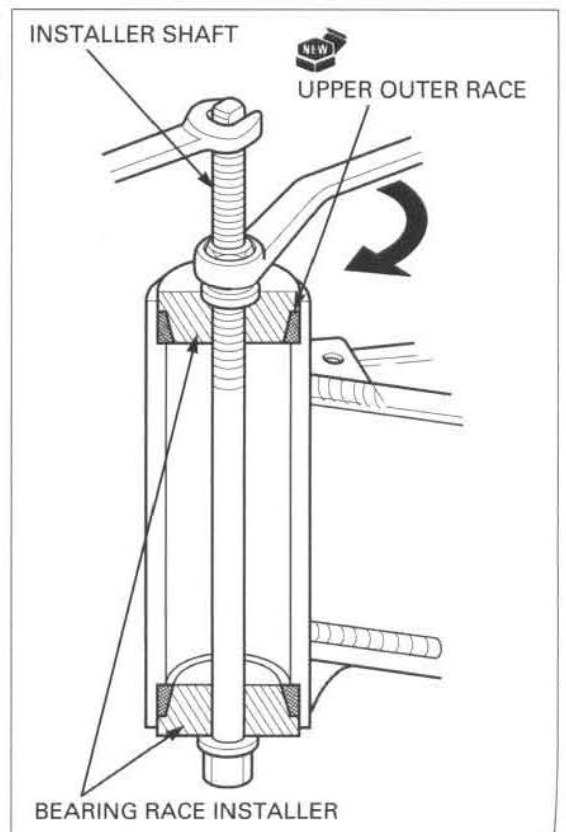
install a new upper outer race, bearing race installer and installer shaft as shown.
Hold the shaft with a wrench, turn the installer to install the upper outer race.

TOOLS:

Bearing race installer
(2 required)
Installer shaft

07VMF-KZ30100

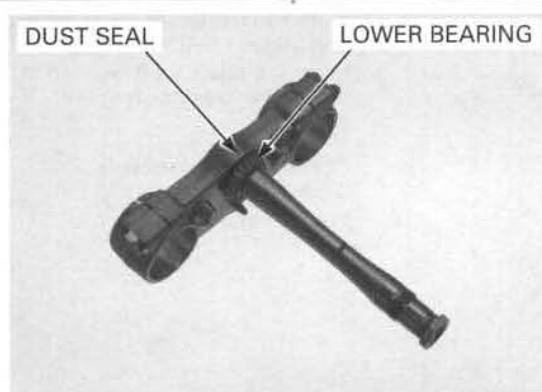
07VMF-KZ30200



FRONT WHEEL/SUSPENSION/STEERING

Temporarily install the stem nut to avoid damaging the steering stem threads.

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



Install the new dust seal.

Pack the new lower tapered roller bearing with grease.

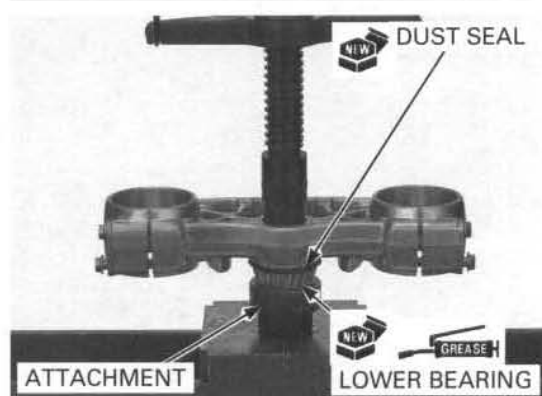
Make sure press only the steering stem with the attachment.

install the lower bearing using a hydraulic press and special tool as shown.

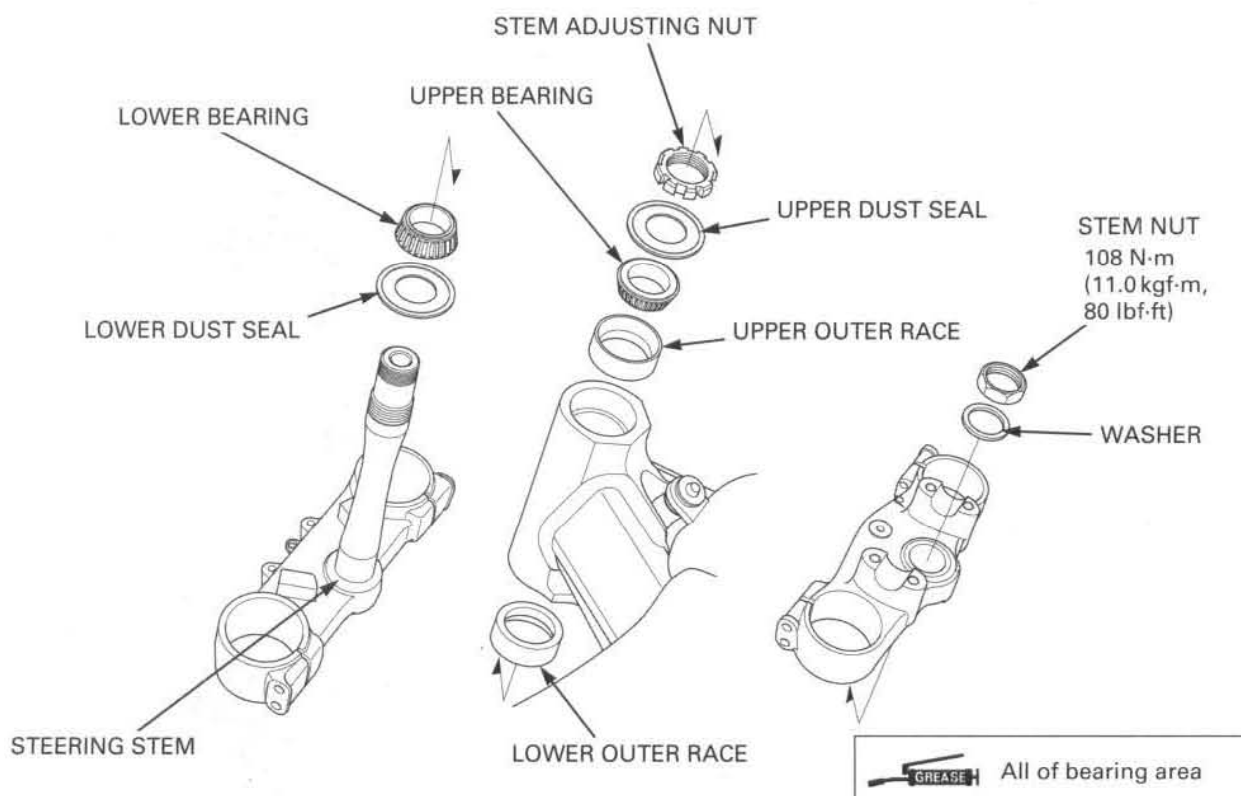
TOOL:

Attachment, 30 mm I.D.

07746-0030300



INSTALLATION



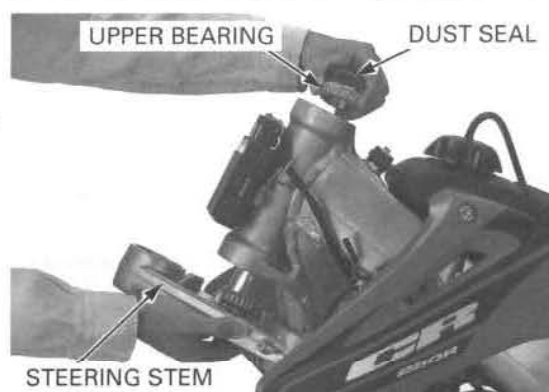
FRONT WHEEL/SUSPENSION/STEERING

Apply grease to all of the bearing area.

Pack the upper tapered roller bearing with grease.
Install the upper bearing into the steering stem.

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

Install the dust seal.



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

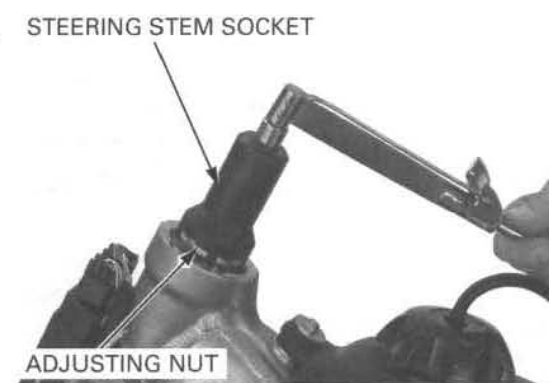
TOOLS:

Steering stem socket 07916-3710101 or

Adjustable pin spanner wrench 07702-0020001
(U.S.A. only)

TORQUE: 29 N·m (3.0 kgf·m, 21 lbf·ft)

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



Loosen the steering stem adjusting nut.
Retighten the stem adjusting nut to the specified torque.

TOOLS:

Steering stem socket 07916-3710101 or

Adjustable pin spanner wrench 07702-0020001
(U.S.A. only)

TORQUE: 7 N·m (0.7 kgf·m, 5.2 lbf·ft)



FRONT WHEEL/SUSPENSION/STEERING

Install the following:

- top bridge
- fork legs (page 11-29)
- washer onto the top bridge

install and tighten the stem nut to the specified torque.

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

Recheck the steering stem adjustment.

Turning the bridge side-to-side and check for smoothness and no binding.

Install the brake hose guide and tighten the bolt to the specified torque.

TORQUE: 5.2 N·m (0.5 kgf·m, 3.8 lbf·ft)

Install the front fender, washers, collars and tighten the bolts.

Install the following:

- number plate (page 2-4)
- front wheel (page 11-11)
- handlebar (page 11-33)

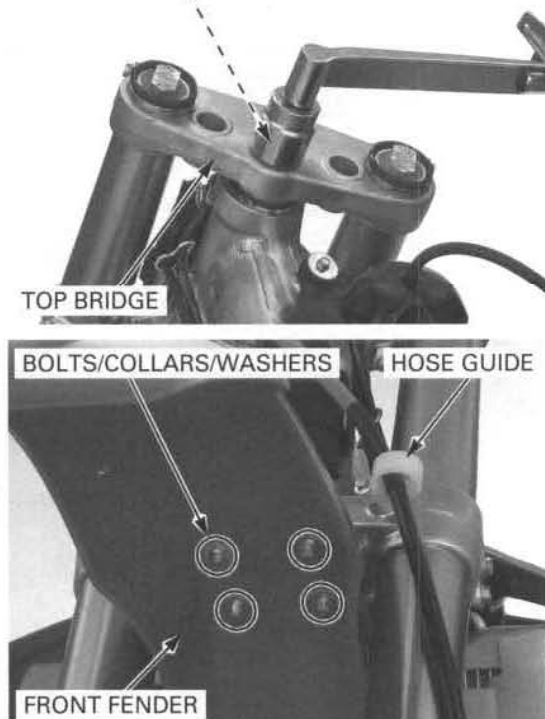
STEM NUT/WASHER

TOP BRIDGE

BOLTS/COLLARS/WASHERS

HOSE GUIDE

FRONT FENDER

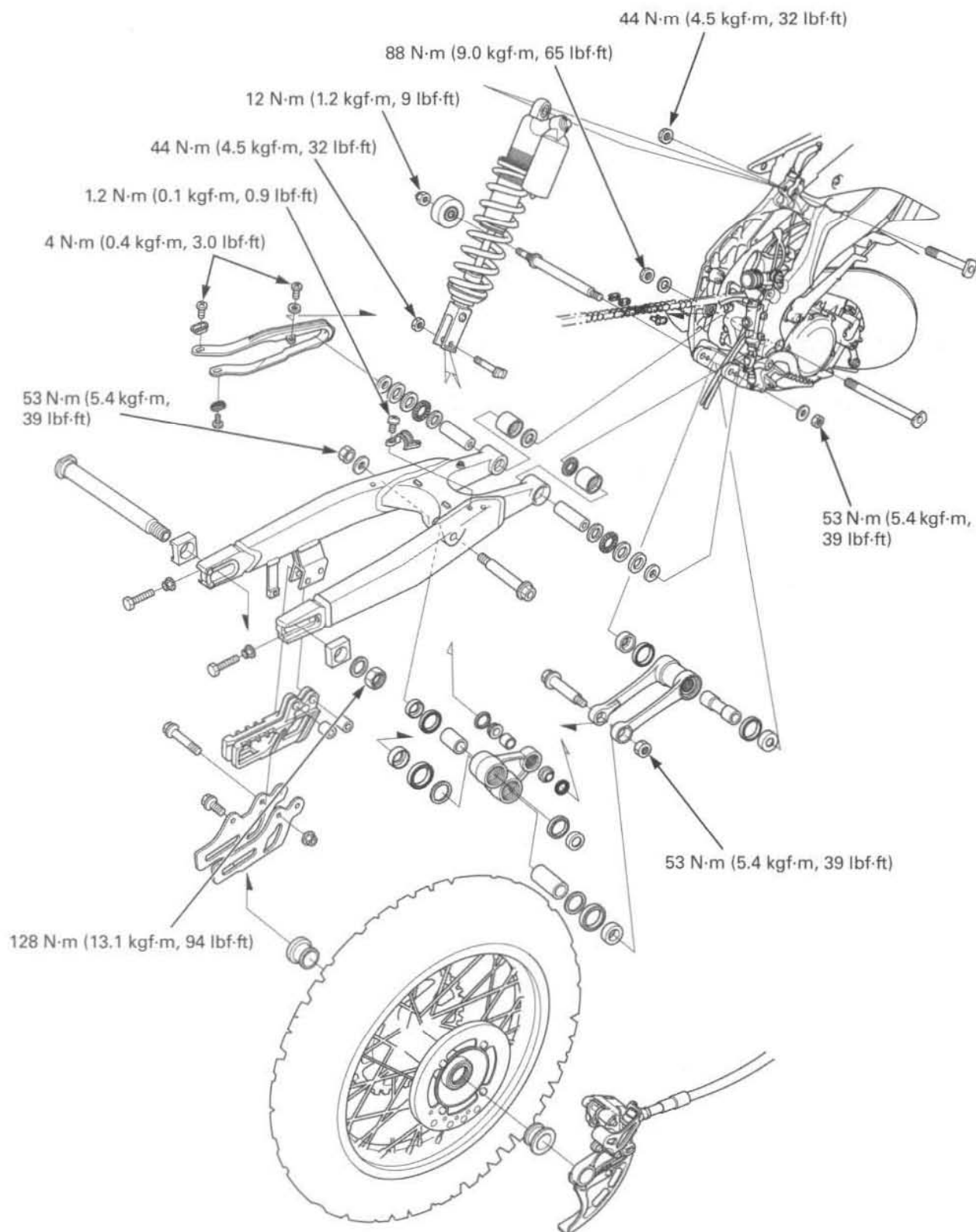


12. REAR WHEEL/SUSPENSION

COMPONENT LOCATION	12-2	SHOCK ABSORBER	12-13
SERVICE INFORMATION	12-3	SHOCK LINKAGE	12-28
TROUBLESHOOTING	12-6	SWINGARM	12-33
REAR WHEEL	12-7		

REAR WHEEL/SUSPENSION

COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

- When servicing the rear wheel, support the motorcycle using a safety stand or hoist.
- For optimum suspension performance and linkage component service life, the swingarm and shock linkage pivot bearing (along with related seals and bushings) should be disassembled, cleaned, inspected for wear and lubricated with multipurpose grease NLGI No.2 (molybdenum disulfide additive) every 3 races or after 7,5 hours of running.
- A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.
- Optional rear wheel sprockets, drive chain, shock springs and spring preload pin spanners are available. Refer to page 1-22 for detail.
- Refer to page 13-3 for brake system information.

SPECIFICATIONS

Unit: mm (in)

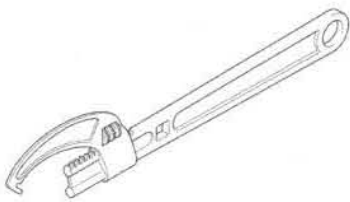
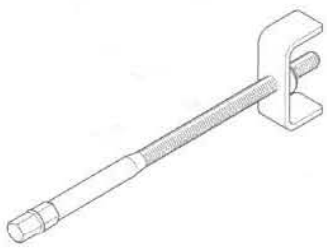
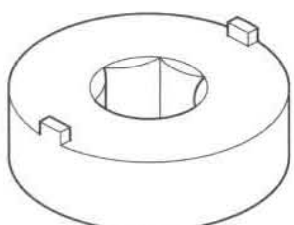
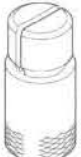
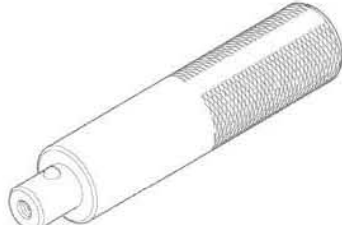
ITEM		STANDARD	SERVICE LIMIT
Cold tire pressure		100 kPa (1.0 kgf/cm ² , 15 psi)	—
Axle runout		—	0.20 (0.008)
Wheel rim runout	Radial	—	2.0 (0.08)
	Axial	—	2.0 (0.08)
Wheel hub-to-rim distance		45.5 (1.79)	—
Drive chain slack		25 – 35 (1 – 1-3/8)	—
Drive chain size/link	DID	520DMA2 – 114	—
Drive chain slider thickness		—	5 (0.2)
Drive chain tensioner roller O.D.	Upper	—	25 (0.98)
	Lower	—	39 (1.54)
Shock absorber	Damper gas pressure	981 kPa (10.0 kgf/cm ² , 142 psi)	—
	Damper compressed gas	Nitrogen gas	—
	Damper rod compressed force at 10 mm compressed	20.0 – 24.0 kg (44.1 – 52.9 lbf)	—
	Spring direction	Narrow wound end of coil facing down	—
	Spring installed length	258.1 (10.16)	—
High speed compression damping adjuster standard position		2-5/12 – 2-11/12 turns out from full in	—
Low speed compression damping adjuster standard position		7 clicks out from full in	—
Rebound damping adjuster standard position		5 – 8 clicks out from full in	—

TORQUE VALUES

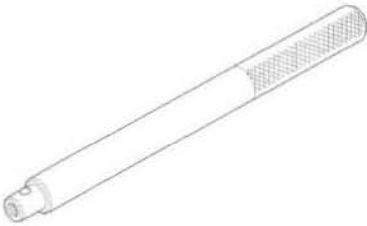
Rear axle nut	128 N·m (13.1 kgf·m, 94 lbf·ft)	U-nut
Rear spoke nipple	3.7 N·m (0.4 kgf·m, 2.7 lbf·ft)	
Rear rim lock	12 N·m (1.2 kgf·m, 9 lbf·ft)	
Rear brake disc bolt	16 N·m (1.6 kgf·m, 12 lbf·ft)	
Final driven sprocket nut	32 N·m (3.3 kgf·m, 24 lbf·ft)	U-nut
Rear wheel bearing retainer	44 N·m (4.5 kgf·m, 32 lbf·ft)	
Swingarm pivot nut	88 N·m (9.0 kgf·m, 65 lbf·ft)	
Shock arm nut (swingarm side)	53 N·m (5.4 kgf·m, 39 lbf·ft)	U-nut, Apply oil to the threads and seating surface
Shock arm nut (shock link side)	53 N·m (5.4 kgf·m, 39 lbf·ft)	U-nut, Apply oil to the threads and seating surface
Shock link nut (frame side)	53 N·m (5.4 kgf·m, 39 lbf·ft)	U-nut, Apply oil to the threads and seating surface
Shock absorber mounting nut	44 N·m (4.5 kgf·m, 32 lbf·ft)	
Shock absorber spring lock nut	44 N·m (4.5 kgf·m, 32 lbf·ft)	
Drive chain roller bolt/nut	12 N·m (1.2 kgf·m, 9 lbf·ft)	
Drive chain slider screw	4 N·m (0.4 kgf·m, 2.9 lbf·ft)	
Shock absorber damper rod end nut	37 N·m (3.8 kgf·m, 27 lbf·ft)	Stake
Shock absorber damping adjuster	29 N·m (3.0 kgf·m, 21 lbf·ft)	Stake
Step mounting bolt (upper)	55 N·m (5.6 kgf·m, 41 lbf·ft)	
Step mounting bolt (lower)	30 N·m (3.1 kgf·m, 22 lbf·ft)	

REAR WHEEL/SUSPENSION

TOOLS

Spoke wrench, 6.6 mm 070MA-KZ30100  or equivalent commercially available in U.S.A.	Pin spanner 07702-0020001  (two required) or 89201-KS6-810	Retainer wrench body 07710-0010401 
Retainer wrench, 48 x 15 mm 07YMA-KZ40100  or 07HMA-KS70100 (U.S.A. only)	Bearing remover head, 25 mm 07746-0050800 	Bearing remover shaft 07746-0050100 
Driver 07749-0010000 	Attachment, 24 x 26 mm 07746-0010700 	Attachment, 42 x 47 mm 07746-0010300 
Attachment, 28 x 30 mm 07946-1870100 	Pilot, 20 mm 07746-0040500 	Pilot, 22 mm 07746-0041000 

REAR WHEEL/SUSPENSION

Pilot, 25 mm 07746-0040600 	Pilot, 19 mm 07746-0041400 	Collar, 23 x 17 mm 07GMD-KT8A110 
Driver 07949-3710001  Not available in U.S.A.	Slider guide attachment 07MAG-SP00102  Not available in U.S.A.	Slider guide, 16 mm 07PMG-KZ40100  Not available in U.S.A.
Attachment, 30 mm I.D. 07746-0030300 		

REAR WHEEL/SUSPENSION

TROUBLESHOOTING

Soft suspension

- Weak shock absorber springs
- Incorrect suspension adjustment
- Oil leakage from damper unit
- Low tire pressure

Stiff suspension

- Damaged shock absorber mounting bearings
- Bent shock absorber damper rod
- Damaged swingarm pivot
- Bent swingarm pivot
- Incorrect suspension adjustment
- High tire pressure

Steers to one side or does not track straight

- Bent rear axle
- Axle alignment/chain adjustment not equal on both sides

Rear wheel wobbling

- Bent rim
- Worn or damaged rear wheel bearings
- Faulty rear tire
- Low tire pressure
- Loose or broken spokes
- Worn or damaged swingarm bearings

Wheel hard to turn

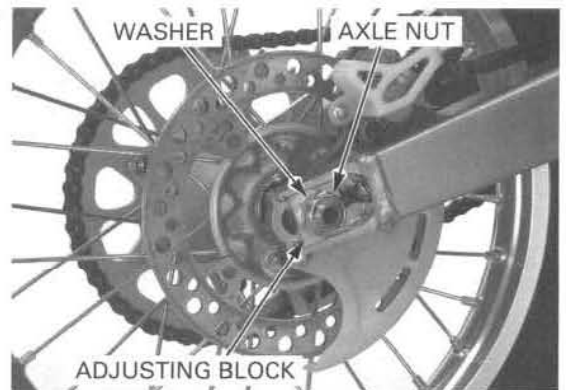
- Brake drag
- Faulty wheel bearings
- Bent axle

REAR WHEEL

REMOVAL

Support the motorcycle securely using a hoist or equivalent.

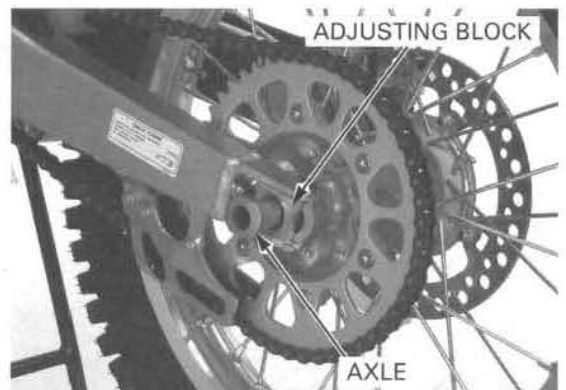
Remove the axle nut, washer and adjusting block.



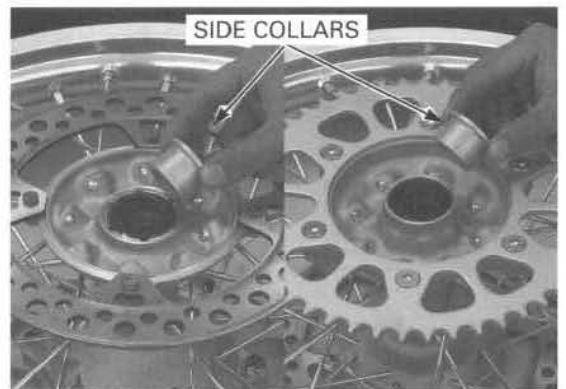
Push the rear wheel forward.

Derail the drive chain from the driven sprocket.

Remove the axle from the left side and remove the rear wheel.



Remove the side collars.

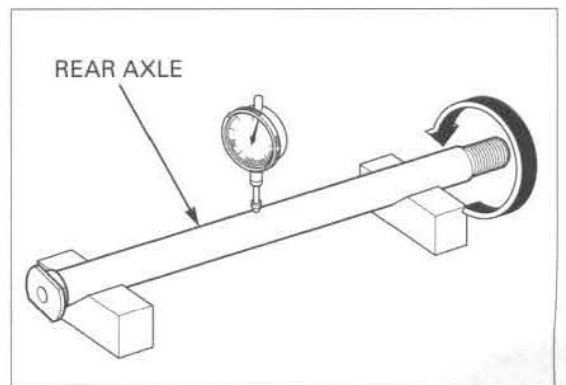


INSPECTION

AXLE

Set the axle on V-blocks and measure the runout. The actual runout is 1/2 of the total indicator reading.

SERVICE LIMIT: 0.20 mm (0.008 in)



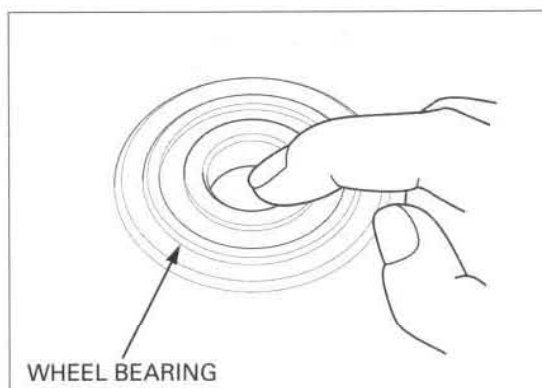
REAR WHEEL/SUSPENSION

WHEEL BEARING

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

Replace the wheel bearings in pairs.

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



WHEEL RIM RUNOUT

Check the rim runout by placing the wheel in a truing stand.

Spin the wheel slowly and measure the runout using a dial indicator.

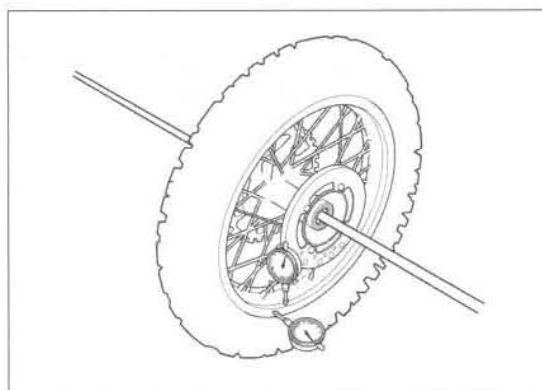
The actual runout is 1/2 of the total indicator reading.

SERVICE LIMITS:

Radial: 2.0 mm (0.08 in)

Axial: 2.0 mm (0.08 in)

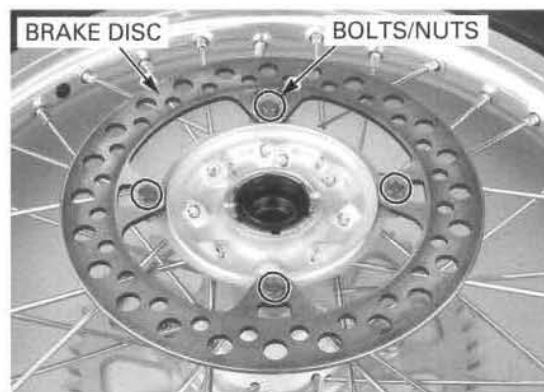
Check the spokes and tighten any that are loose.



DISASSEMBLY

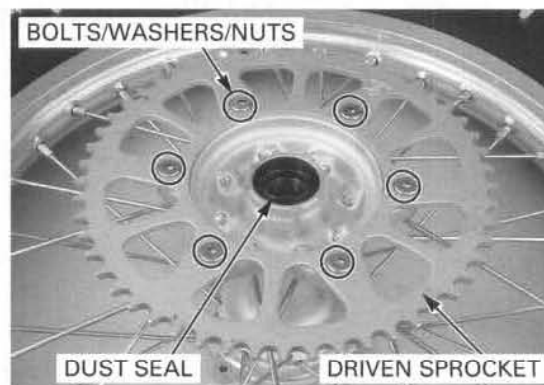
Remove the bolts, nuts and brake disc.

Remove the right dust seal.



Remove the driven sprocket bolts, nuts, washers and driven sprocket.

Remove the left dust seal.



REAR WHEEL/SUSPENSION

Unstake the retainer with a drill before removing it.

Remove the bearing retainer using the special tools as shown.

TOOLS:

Retainer wrench body

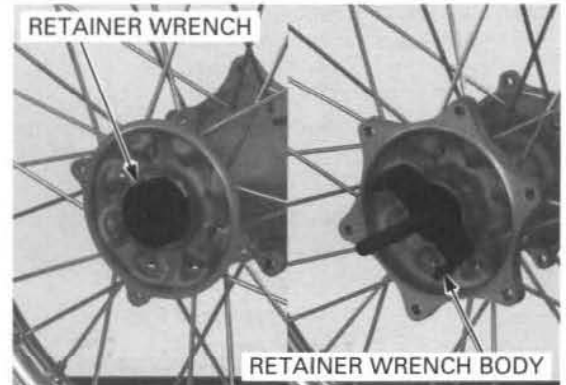
07710-0010401

Retainer wrench, 48 x 15 mm

07YMA-KZ40100 or

07HMA-KS70100

(U.S.A. only)



Install the bearing remover head into the bearing. From the opposite side, install the bearing remover shaft and drive the bearing out of the wheel hub. Remove the distance collar and drive out the other bearing.

TOOLS:

Bearing remover head, 25 mm

07746-0050800

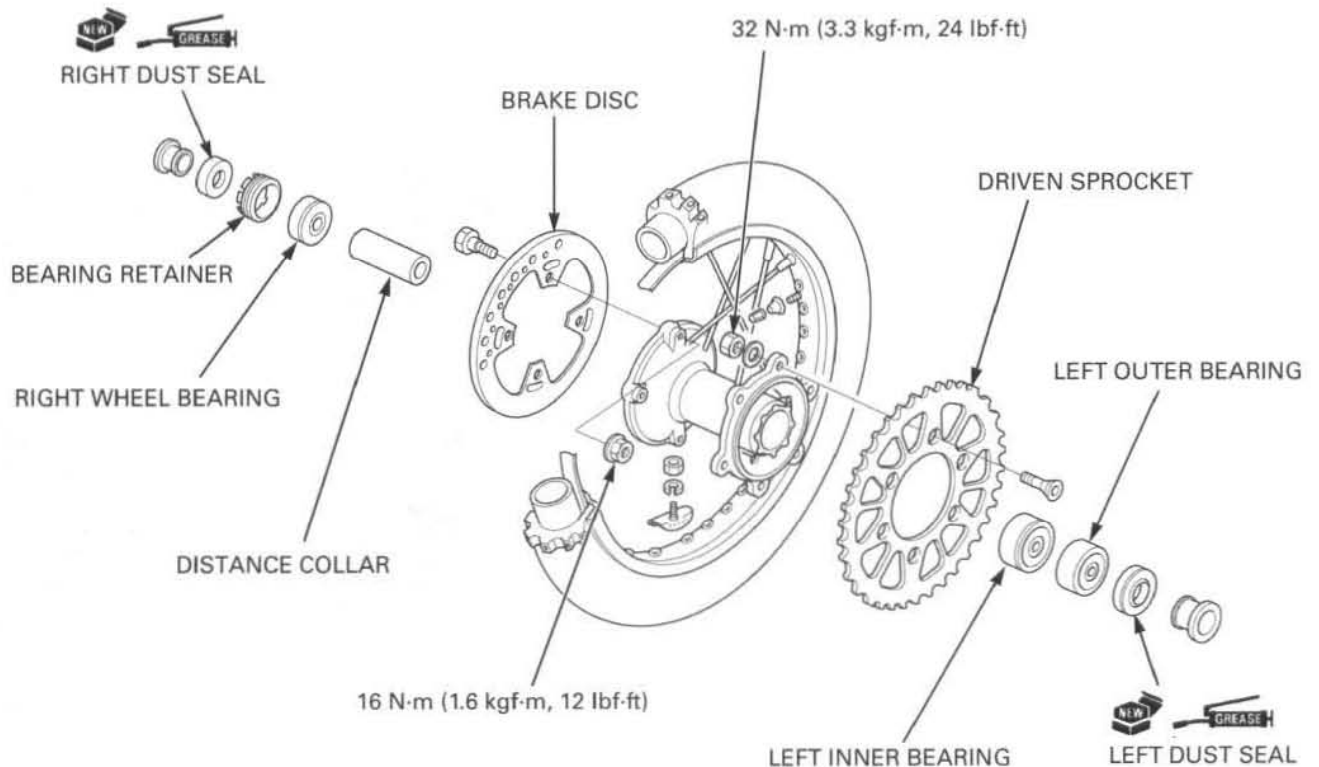
Bearing remover shaft

07GGD-0010100

- Never install old bearings; once the bearings have been removed, the bearing must be replaced with a new one.
- Replace the bearings in pairs.



ASSEMBLY



REAR WHEEL/SUSPENSION

Wheel center adjustment is necessary when new spokes are installed.

Place the rim on the work bench with its directional arrow going counterclockwise. Place the hub in the center of rim, and begin lacing with new spokes.

Adjust the hub position so that the distance from the hub left end surface to the side of rim is 45.5 mm (1.79 in) as shown.

Tighten the spokes in 2 or 3 progressive steps to the specified torque.

TOOLS:

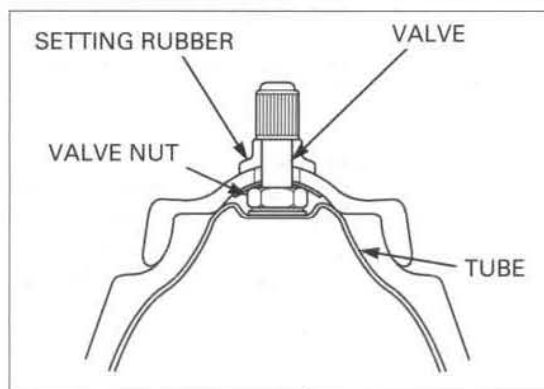
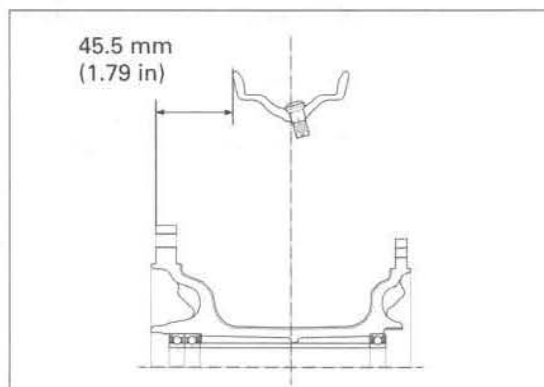
Spoke wrench, 6.6 mm **070MA-KZ30100**

TORQUE: 3.7 N·m (0.4 kgf·m, 2.7 lbf·ft)

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

Torque the rim lock to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



Replace the wheel bearings in pairs. Do not reuse old bearings.

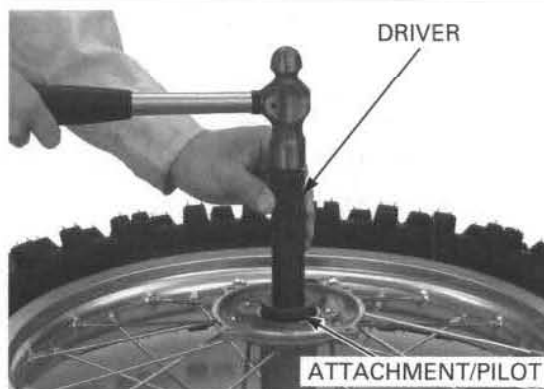
Pack the new bearing cavities with grease.

Drive in a new left inner and outer bearings using the special tools as shown.

TOOLS:

Driver **07749-0010000**
Attachment, 42 x 47 mm **07746-0010300**
Pilot, 25 mm **07746-0040600**

Install the distance collar, then drive the new right wheel bearing in using the same tools.

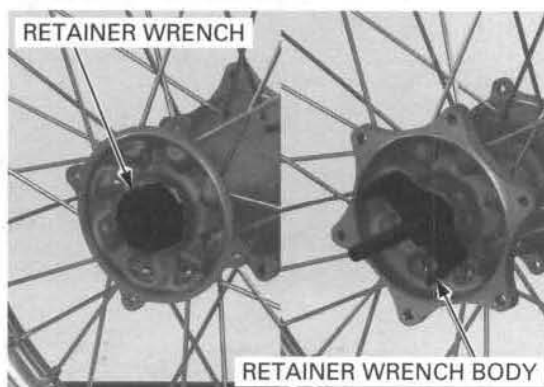


Apply grease to the bearing retainer and install it into the hub using the special tools.

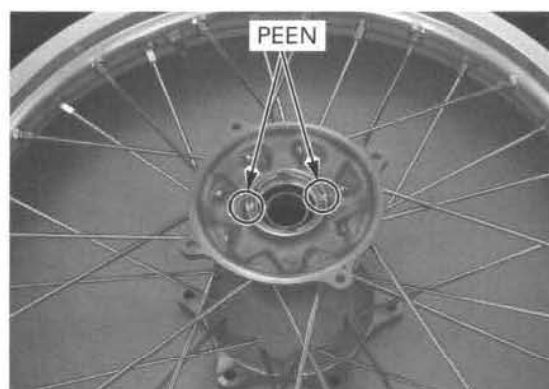
TOOLS:

Retainer wrench body **07710-0010401**
Retainer wrench, 48 x 15 mm **07YMA-KZ40100 or**
 07HMA-KS70100
 (U.S.A. only)

TORQUE: 44 N·m (4.5 kgf·m, 32 lbf·ft)



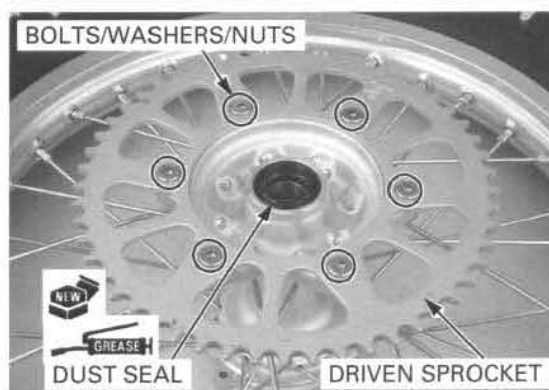
Peen the edge of the retainer.



Install the driven sprocket.
Install the bolts, washers and nuts, then tighten the nuts to the specified torque.

TORQUE: 32 N·m (3.3 kgf·m, 24 lbf·ft)

Apply grease to the new left dust seal lips, then install it.

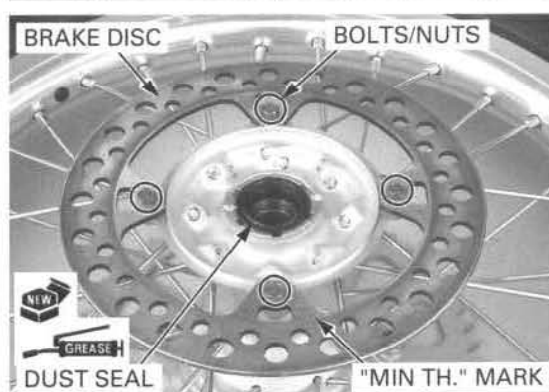


Install the brake disc with its "MIN TH. 3.5 mm" mark facing out.

Install the bolts and nuts, then tighten the nuts to the specified torque.

TORQUE: 16 N·m (1.6 kgf·m, 12 lbf·ft)

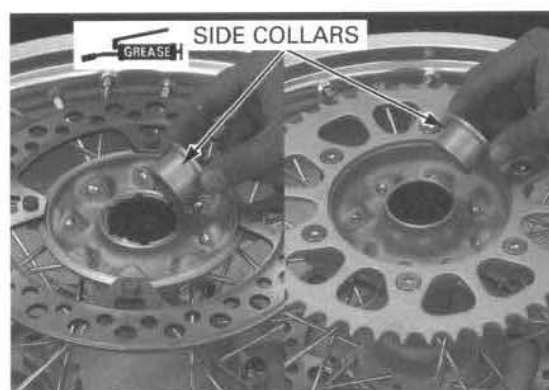
Apply grease to the new right dust seal lips, then install it.



INSTALLATION

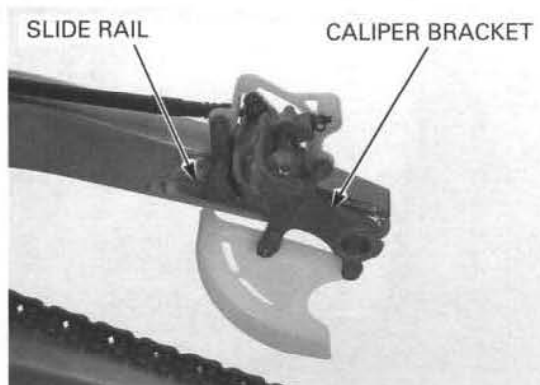
Apply grease to the inside of the side collars.

Install the side collars.

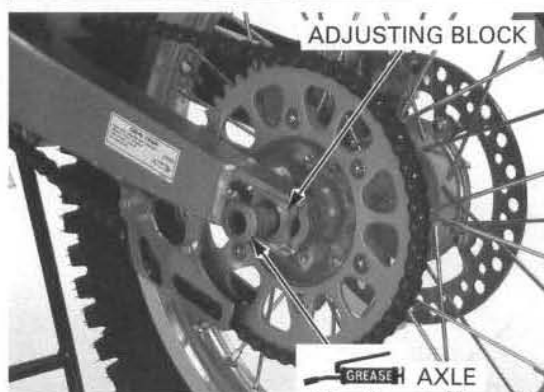


REAR WHEEL/SUSPENSION

If removed, install the rear brake caliper bracket onto the slide rail of the swingarm.



Place the rear wheel into the swingarm.
Apply a thin layer of grease to the axle.
Install the axle from the left side.
Install the drive chain over the driven sprocket.



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



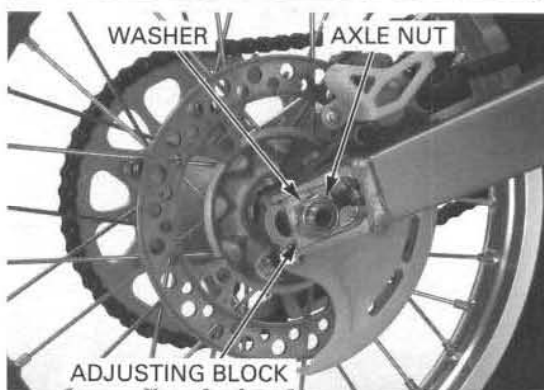
Install the adjusting block, washer and loosely install the axle nut.

Adjust the drive chain slack (page 3-11).

Tighten the axle nut to the specified torque.

TORQUE: 128 N·m (13.1 kgf·m, 94 lbf·ft)

Snug the adjusting bolts against the chain adjusters and tighten the lock nuts.



SHOCK ABSORBER

REMOVAL

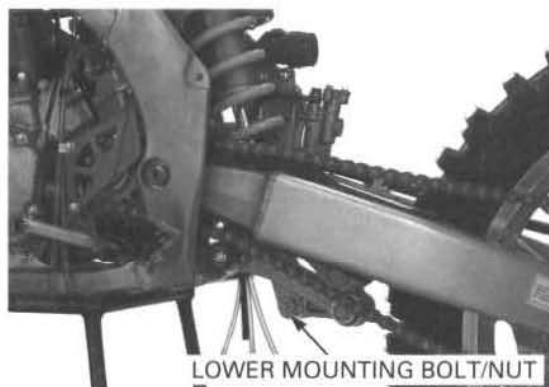
Support the motorcycle securely and raise the rear wheel off the ground by placing a work stand under the engine.

Remove the seat (page 2-3).

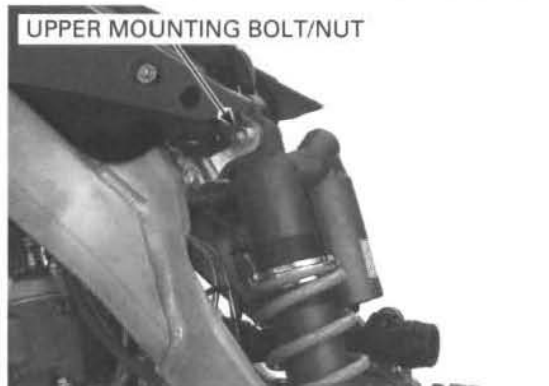
Remove the sub-frame (page 2-5).

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

Remove the shock absorber lower mounting bolt and nut.



Remove the shock absorber upper mounting bolt/nut and shock absorber.



DISASSEMBLY

Measure the spring length for installation later.

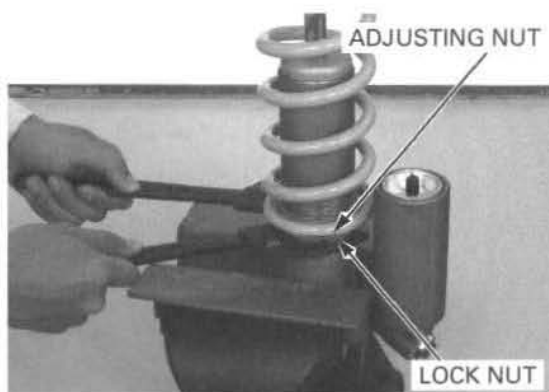
Hold the shock absorber in a vise by the upper mount, protected on both sides by piece of wood.

Loosen the lock nut and adjusting nut.

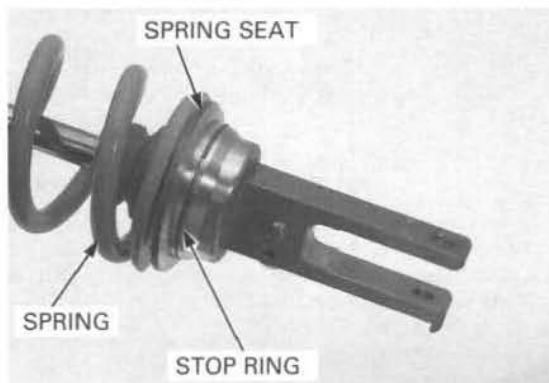
TOOL:

Pin spanner, 4 mm

07702-0020001 or
89201-KS6-810
(two required)



Remove the stop ring, spring seat and spring.



REAR WHEEL/SUSPENSION

BLADDER REPLACEMENT

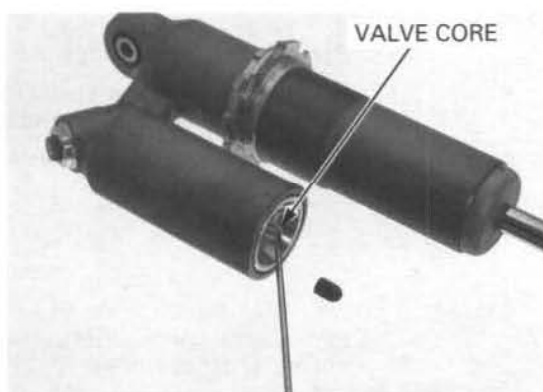
- Replace the bladder when oil leaks around the chamber cap or oil spills out when releasing the nitrogen from the reservoir.
- Perform this procedure before draining the oil from the damper.

Point the valve away from you to prevent debris getting in your eyes.

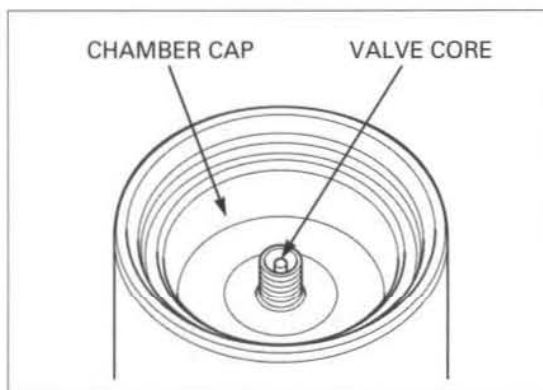
Depress the valve core to release the nitrogen from the reservoir.

CAUTION

- Release all nitrogen pressure before disassembly; otherwise the chamber cap will be under significant pressure and could cause serious injury or death.
- Wear protective clothing and adequate eye protection to prevent injury and from debris entering your eyes.



Remove the valve core.

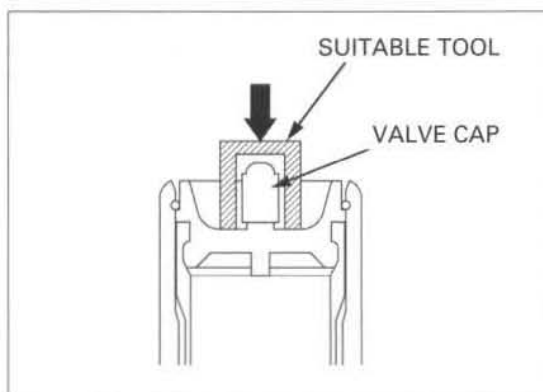


Depress the chamber cap just enough to access the stop ring.

Put a suitable tool on the valve cap and push it in by lightly tapping on the tool with a plastic hammer until you have good access to the stop ring.

NOTICE

To avoid damaging the threads of the gas valve, install the valve cap before depressing the chamber cap.

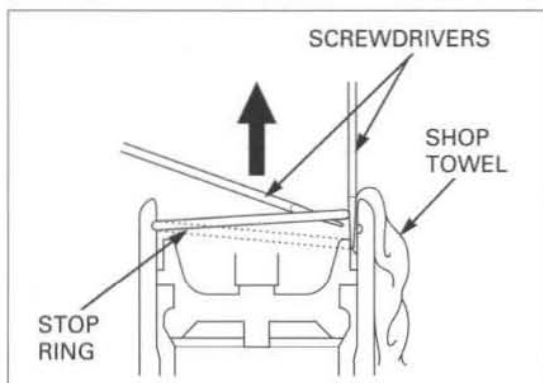


Two small screwdrivers and a shop towel are required to remove the stop ring.

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

To avoid damaging the inside surface of the reservoir, cover the screwdriver with shop towel.

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



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

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

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

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

Recommended shock oil:

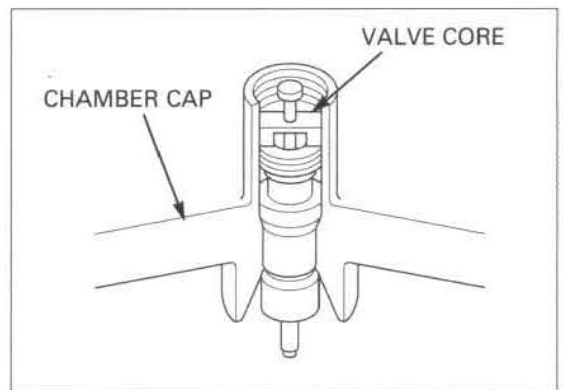
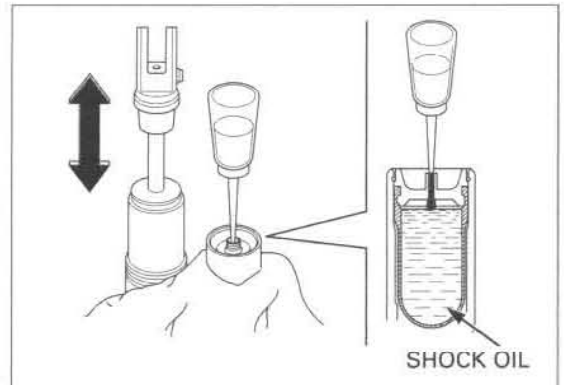
Pro Honda HP Fork Oil 5W

Slowly pump the damper rod until no air bubbles appear in the valve core hole, then pull the damper rod to extend the shock fully.

Install the valve core securely.

Remove the chamber cap and bladder following the procedure below:

1. Wrap the shop towel around the chamber cap. Compress the damper rod slowly, to force the chamber cap out.
- The chamber cap will be removed with hydraulic pressure so its force can be significant considering the air in the bladder.
- Wear protective clothing and a face guard to protect your eyes and face in case the chamber cap pops out quickly and forcibly.



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

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

3. Fill the damper with Pro Honda HP Fork Oil 5W through the damping adjuster hole, while slowly pulling the damper rod out.

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

4. Reinstall the damping adjuster after filling the damper.

5. Place the damper with the reservoir chamber cap facing up.

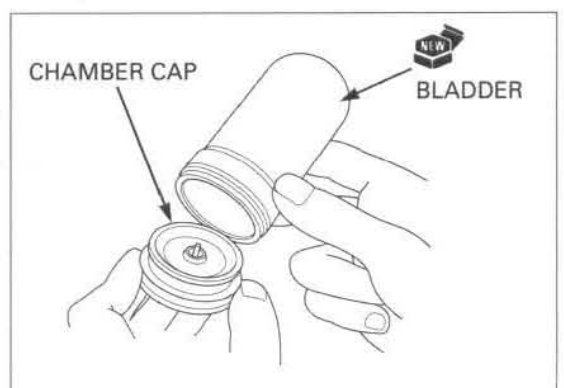
6. Repeat steps 1 to 5 until the chamber cap is removed from the reservoir.

Remove the bladder from the chamber cap.

NOTICE

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

Attach the new bladder to the chamber cap.



REAR WHEEL/SUSPENSION

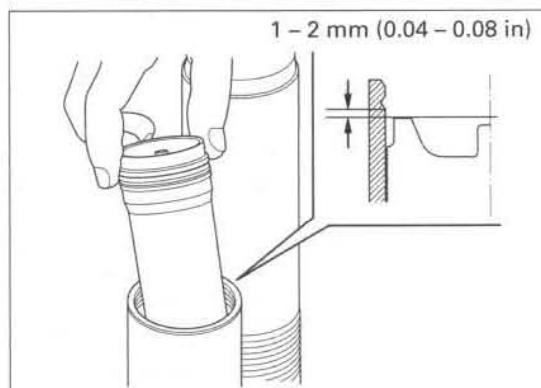
If the bladder becomes distorted during installation, depress the valve core to reform it.



Clean the inside the reservoir and fill it with Pro Honda HP Fork oil 5W.

Recommended shock oil:
Pro Honda HP Fork Oil 5W

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



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

NOTICE

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

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

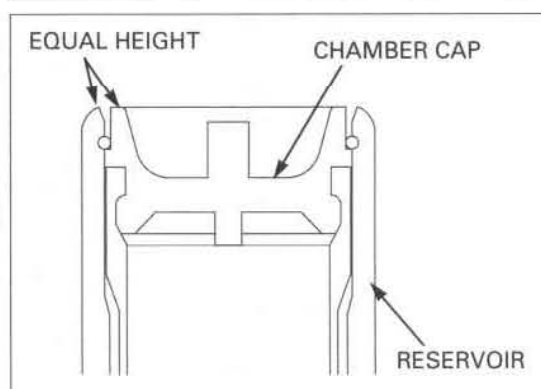
NOTICE

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

Release the air from the reservoir by depressing the valve core.

Bleed the air from the shock absorber bladder (page 12-14).

Fill the reservoir with nitrogen to the specified pressure (page 12-25).



DAMPER DISASSEMBLY

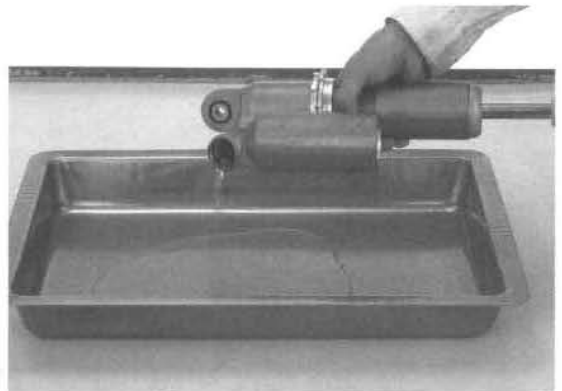
Point the valve away from you to prevent debris getting in your eyes. Before disposal of the shock absorber, release the nitrogen by pressing the valve core. Then remove the valve core from the shock absorber reservoir.

Depress the valve core to release the nitrogen from the reservoir (page 12-17).

Remove the damping adjuster.

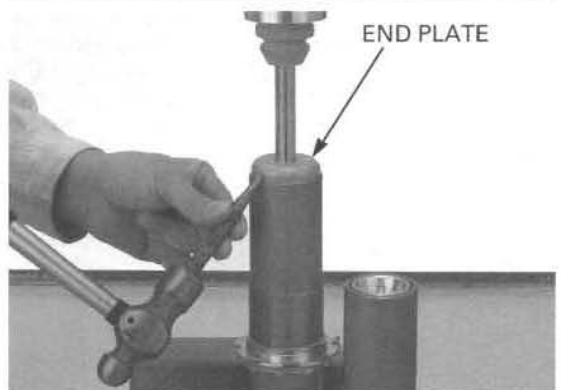


Drain most of the shock oil from the damper and reservoir, by pumping the damper rod in and out several times.



Clamp the shock absorber in a vise by the damper case protected on both sides by pieces of wood.

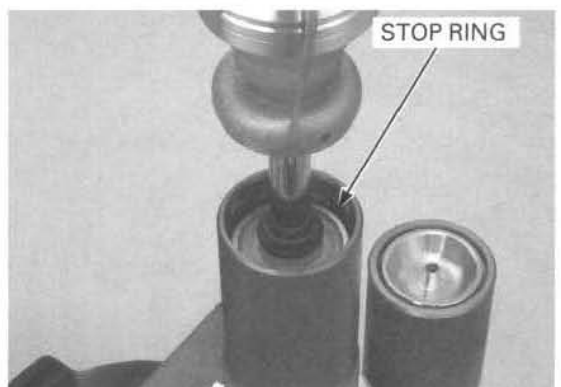
Remove the end plate and tape or tie it to the rubber stopper so it won't get in the way.



Push in the damper seal until you have good access to the stop ring.

Two small screwdrivers are required to remove the stop ring.

The stop ring groove in the damper case is ramped towards the inside to give the stop ring a square shoulder on which to seat securely.



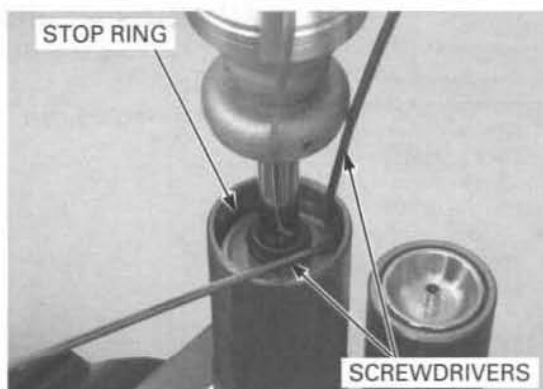
REAR WHEEL/SUSPENSION

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

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

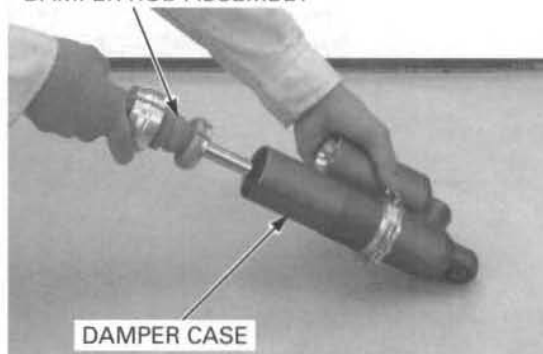
Burrs will damage the damper rod piston ring.

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



Carefully pull the damper rod assembly out of the damper case.

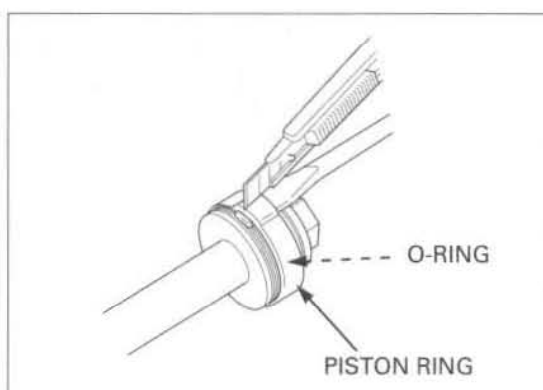
DAMPER ROD ASSEMBLY



PISTON RING REPLACEMENT

Inspect the piston ring.

If the piston ring is damaged, cut the piston ring and replace the piston ring and O-ring under the piston ring with a new one.



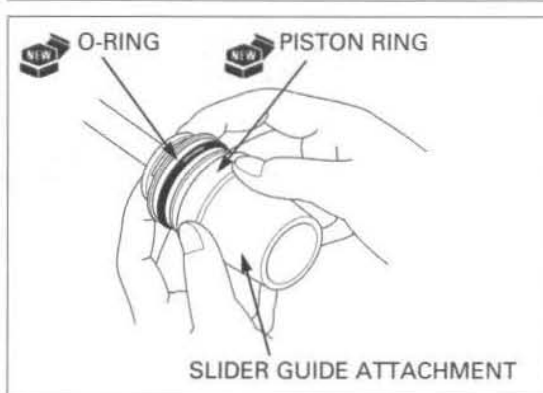
Place the slider guide attachment over the piston and install a new O-ring and piston ring onto place with your finger.

TOOL:

Slider guide attachment

070MO-KZ30100
not available in
U.S.A.

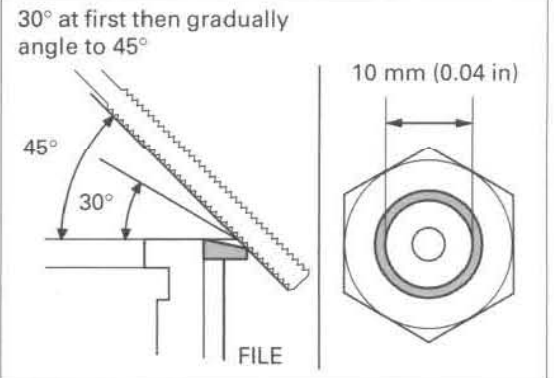
Compress the piston ring against the ring groove, and seat the piston ring into the ring groove.



DAMPER ROD DISASSEMBLY

- To keep lint or dirt from getting onto damper rod parts, do not wear gloves while working on the damper rod.
- Be careful to file the end nut by hand so that the O.D. of the rod end is about 10 mm (0.4 in). Be careful not to over-file.

Unstake the damper rod end nut with a file as shown.



Place the damper in a vise protected with a piece of wood or shop towel, being careful not to distort the lower mount.

Turn the end nut back-and-forth in 1/4 turn increments until it loosens, then rotate another 1/4 turn and repeat the back-and-forth until nut loosens completely.

- If the damper rod is cracked or damaged when removing the end nut, replace the damper rod assembly with a new one.
- Remove all burrs from the end of the damper rod. Lean thoroughly with solvent. If the threads cannot be repaired, replace the rod.

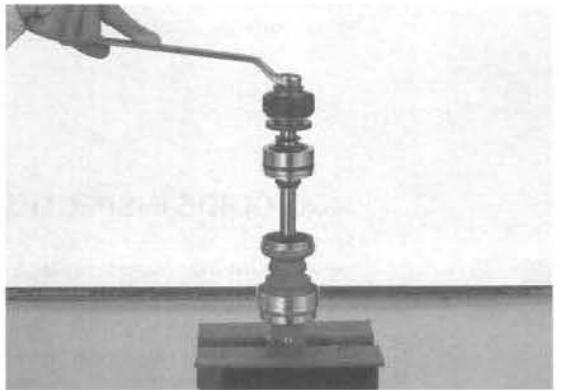
Hold the lower shock mount in a vise with soft jaws, a piece of wood, or shop towel.

Remove the burrs from the damper rod end with a file and chase the threads with a die.

DIE: 12 x 1.25 mm

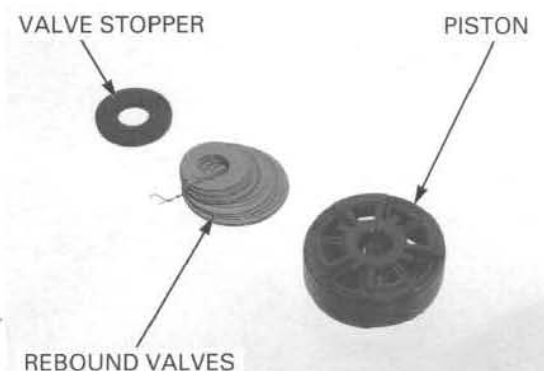
Clean the damper rod with solvent after chasing the threads.

Make sure that filings are not stuck in the damper rod I.D.



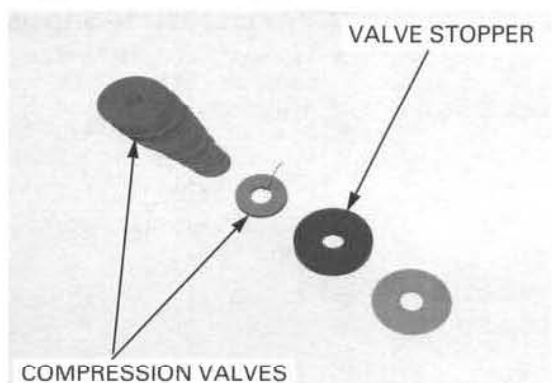
Remove the valve stopper, rebound valves and piston from the damper rod.

- Use a piece of mechanic's wire to keep the valves in the correct order.
- Keep dust and abrasives away from all damper rod parts
- Thoroughly clean the valves in solvent and blow them dry with compressed air if they have been disassembled and separated.
- Be careful not to get solvent on the O-ring and piston ring.
- The valve arrangement and number of valves shown is typical and may not represent this model exactly.



REAR WHEEL/SUSPENSION

Remove the compression valves and valve stopper.

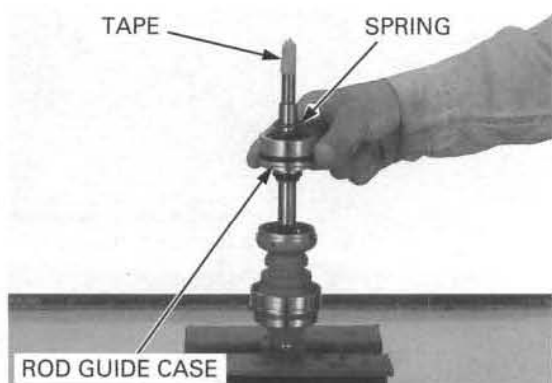


Chase the threads with a die and clean with oil. Back out damping adjuster and back flush with solvent.

Wrap the top threads of the damper rod with tape.

Remove the spring and rod guide case from the damper rod.

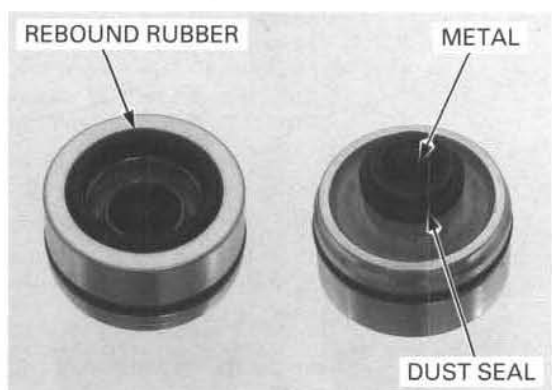
Remove the end plate, rubber stopper and rubber seat from the damper rod.



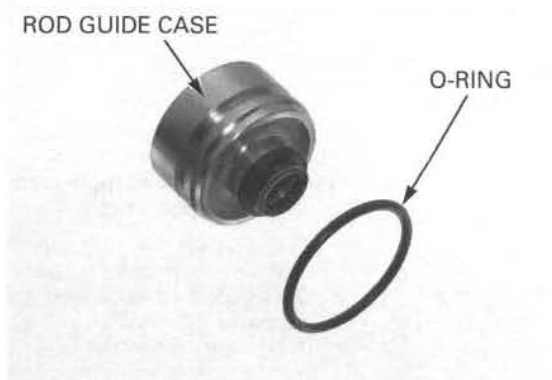
ROD GUIDE INSPECTION

Inspect the rebound rubber and dust seal lips for wear or damage and replace the rod guide case with a new one if necessary.

Visually inspect the rod guide case metal. If the metal is worn so that the copper surface appears, replace the rod guide case with a new one.

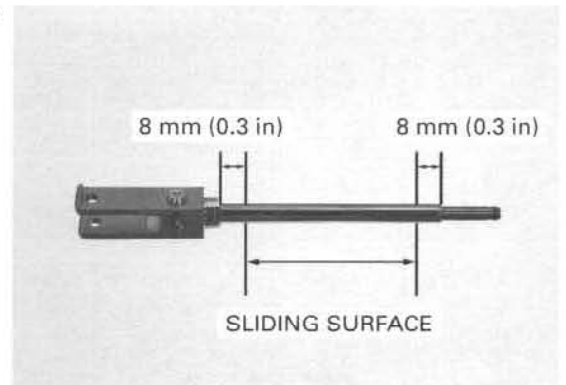


Remove the O-ring from the rod guide case and replace it with a new one.

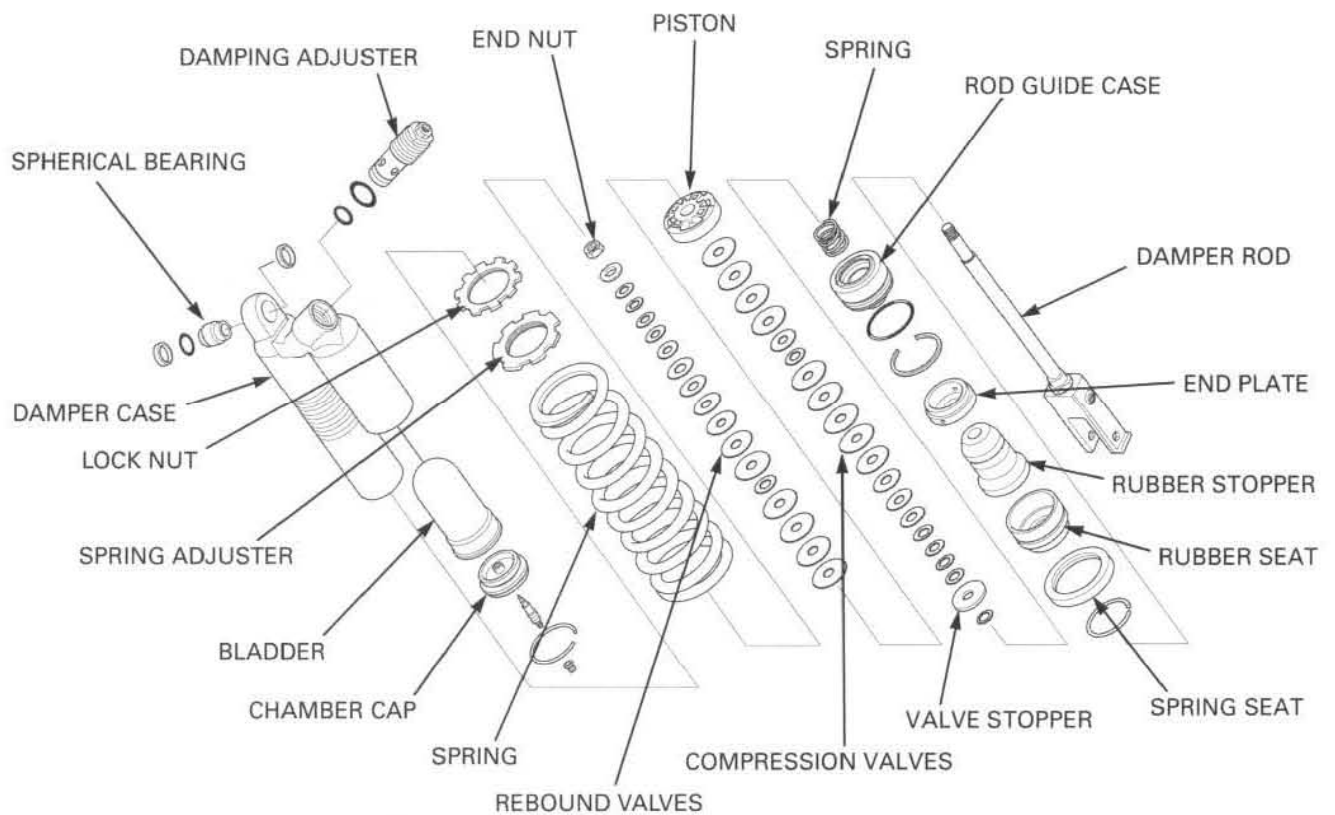


DAMPER ROD INSPECTION

Inspect the damper rod sliding surface for damage or distortion.



DAMPER ASSEMBLY

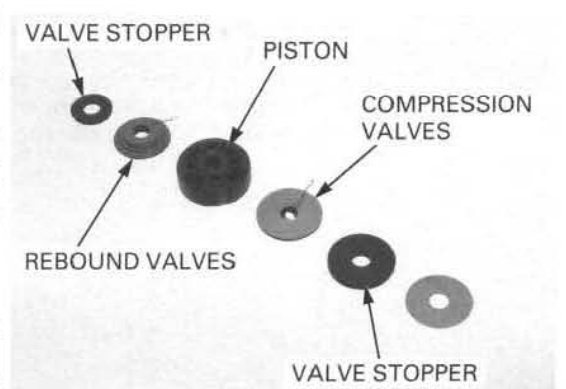


Before assembly, wash all parts with solvent and blow them dry with compressed air. Be sure that there is no dust or lint on any of the parts.

Never assemble valves which may have become dusty or otherwise contaminated during the disassembly process. Disassemble them, thoroughly clean them with solvent and blow them dry with compressed air before assembly.

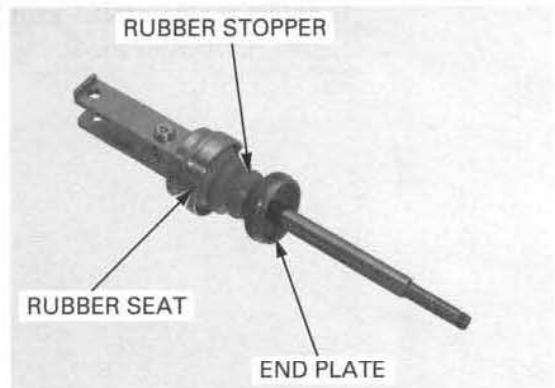
NOTICE

- Use added care to avoid getting solvent on the piston ring and O-ring.
- The valve arrangement and number of valves may differ from those shown.



REAR WHEEL/SUSPENSION

Install the rubber seat, rubber stopper and end plate.



Install the special tool onto the damper rod.

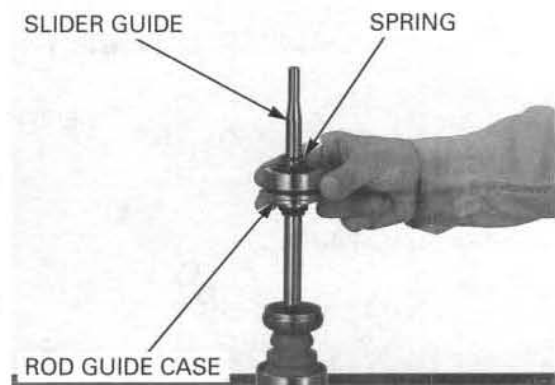
TOOL:

Slider guide, 16 mm

07PMG-KZ40100
not available in
U.S.A.

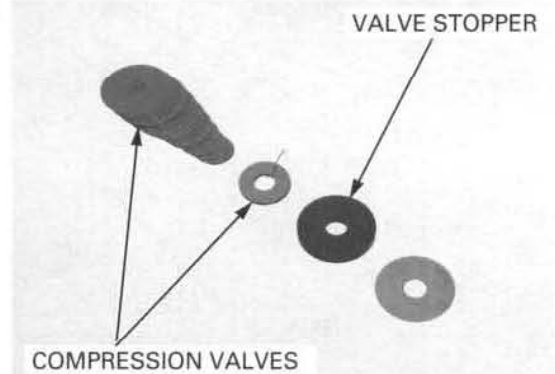
Carefully install the rod guide case with the rebound rubber facing up, over the damper rod.

- The rod guide case oil seal is filled with grease.
- Be careful not to remove grease from the seal.
- Be careful not to damage the dust seal lip or turn it inside out.



The valve arrangement and number of valves may vary from those shown.

Install the valve stopper and compression valves onto the damper rod.

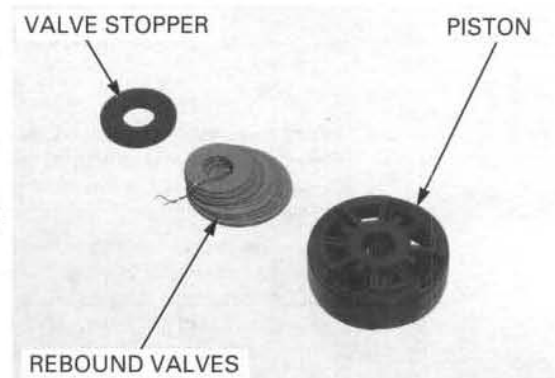


Install the piston onto the damper rod.

Install the rebound valves with their polished surfaces facing down.

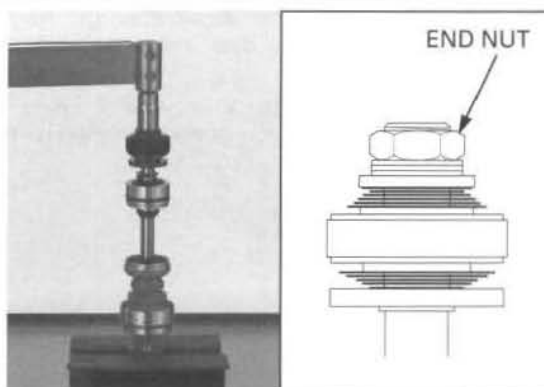
Install the washers and valve stopper.

- Note the installation direction of the piston valves.
- Be careful not to bind the valves when installing the piston onto the damper rod. Also, check that they are concentric with the damper rod.

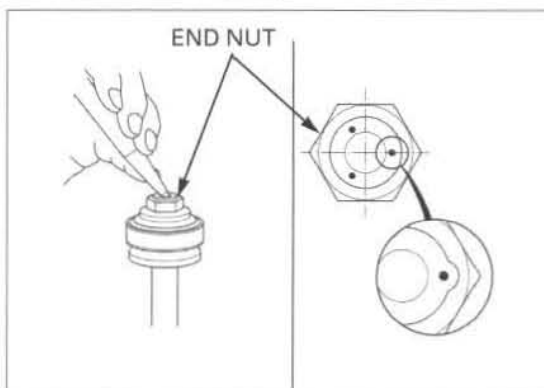


Hold the lower shock mount in a vise with soft jaws, piece of wood or shop towel. Install and tighten a new end nut to the specified torque.

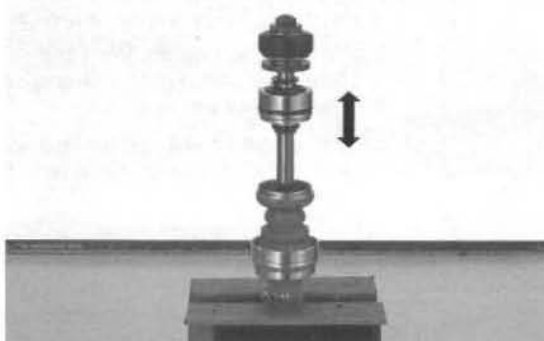
TORQUE: 37 N·m (3.8 kgf-m, 27 lbf-ft)



Stake the end of damper rod in three places as shown to secure the end nut.

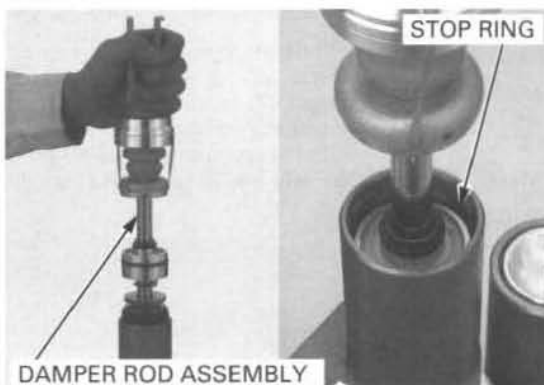


Coat the damper rod with Pro Honda HP Fork Oil 5W or equivalent. Check the rod guide case by sliding it up and down fully to be sure there is no restriction.



Coat the damper case inner surface, piston ring and O-ring with Pro Honda HP Fork Oil 5W or equivalent, and insert the damper rod assembly carefully. Install the stop ring into the groove in the damper case.

After assembling, check that the stop ring is seated in the groove of the damper case completely. You should not be able to pull it out of the damper case.

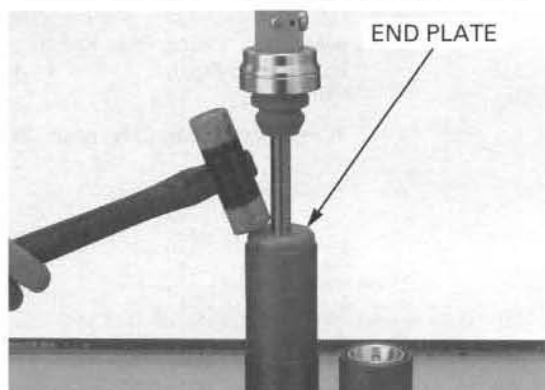


REAR WHEEL/SUSPENSION

Do not overtighten the vise and distort the damper case.

Hold the shock absorber gently in a vise by the damper case, protected on both sides by pieces of wood.

Drive the end plate squarely and evenly into the damper case with a plastic hammer.



Fill the damper case and reservoir with Pro Honda HP Fork Oil 5W through the damping adjuster hole.

Recommended shock oil:
Pro Honda HP Fork Oil 5W

Make sure the rod guide case is seated against the stop ring by pulling the damper rod out all the way.

Slowly pump the damper rod until there are no bubbles in the oil that overflows from the damper case.

Remove the damper unit from the vise.



Do not let oil flow out of the reservoir.

Position the damper the damping adjuster hole facing up. Turn the damper unit as shown to bleed the air from the reservoir completely.

When bleeding air from the reservoir, be careful to hold the damper at the angles shown so the filler hole points up.

Temporarily charge the reservoir with 49 kPa (0.5 kgf/cm², 7.1 psi) of air slowly to inflate the bladder inside.

NOTICE

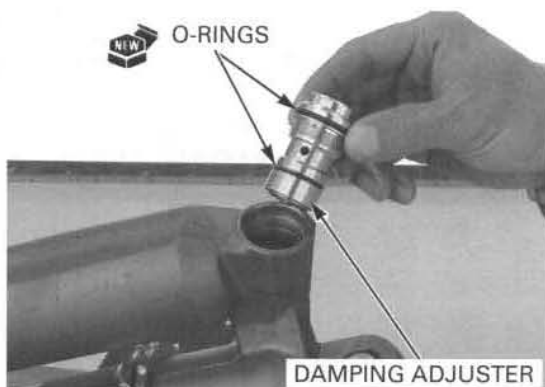
- Check for any oil that may leak out of the valve while pressurizing. Replenish oil as necessary.
- Be sure that the reservoir pressure is correct with an accurate pressure gauge.

Fill the damper with Pro Honda HP Fork Oil 5W up to the damping adjuster hole neck.

Apply oil to the new O-rings and install them to the damping adjuster.

Dip the damping adjuster in clean shock oil.

Slowly install the damping adjuster.



REAR WHEEL/SUSPENSION

Tighten the damping adjuster to the specified torque.

TORQUE: 29 N·m (3.0 kgf·m, 21 lbf·ft)

Stake the damping adjuster as shown.



Wipe off all oil from the damper rod; oil left on the damper rod can lead to premature failure of the oil seal.

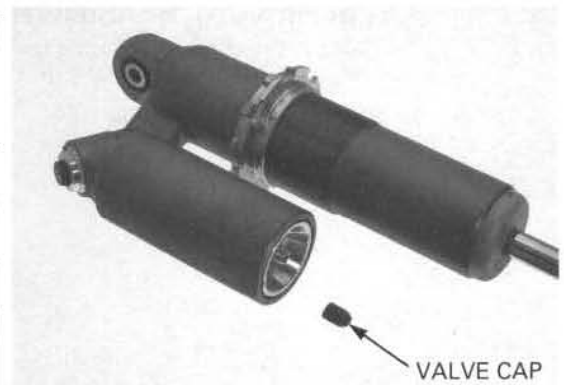
Check for oil leak.

Release the air that was in the reservoir precompression.

Fill the reservoir with 981 kPa (10.0 kgf/cm², 142 psi) of nitrogen gas.

⚠ WARNING

The shock absorber is fitted with a gas-filled reservoir. Use only nitrogen gas to pressurize the shock absorber. The use of an unstable gas can cause a fire or explosion resulting in serious injury.

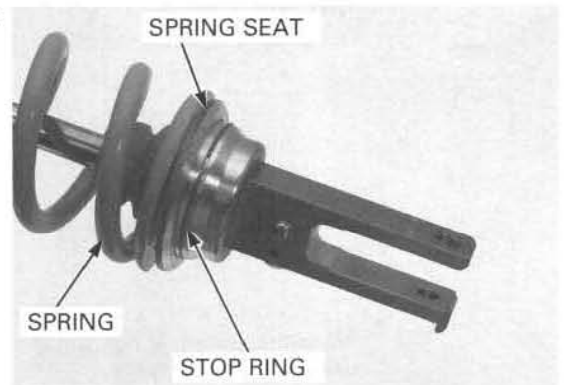


Install the valve cap.

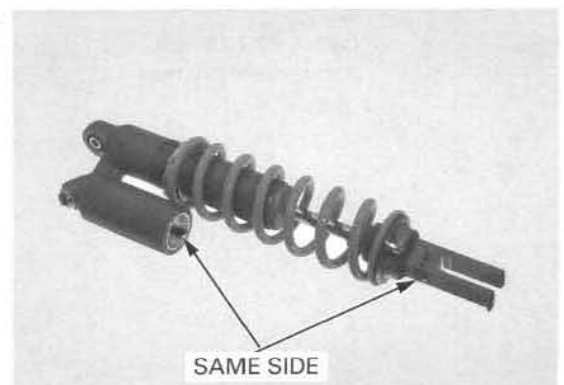
Install the spring with the wider end sliding against the adjusting nut.

Install the spring seat and stop ring.

Loosely tighten the adjusting nut and lock nut.



Turn the shock absorber lower mount so that the rebound adjuster screw is on the same side of the shock as the reservoir as shown.



REAR WHEEL/SUSPENSION

One turn of the adjusting nut changes the spring length by 1.5 mm (0.06 in).

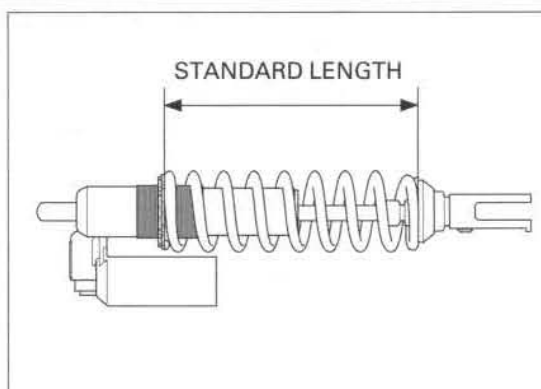
Turn the spring adjusting nut until the spring length measurement recorded at disassembly is reached or until the spring length is as specified below.

Standard spring length: 258.1 mm (10.16 in)

Hold the adjusting nut and tighten the lock nut.

TORQUE: 44 N·m (4.5 kgf·m, 32 lbf·ft)

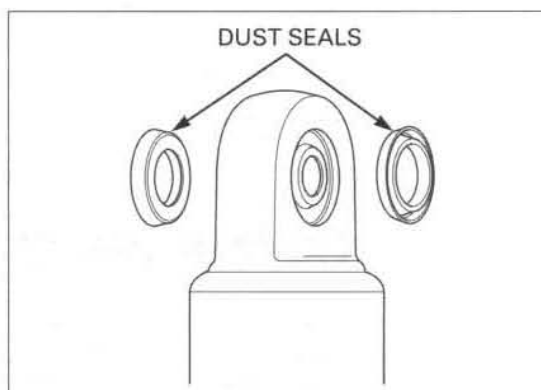
Use this standard spring length as a baseline. See the Owner's Manual for detailed instructions on adjusting preload and damping setting for rider weight and steering damping for riding conditions and rider skill.



SPHERICAL BEARING REPLACEMENT

Check the spherical bearing for wear or damage. If it is worn or damaged, it must be replaced.

Remove the dust seals.

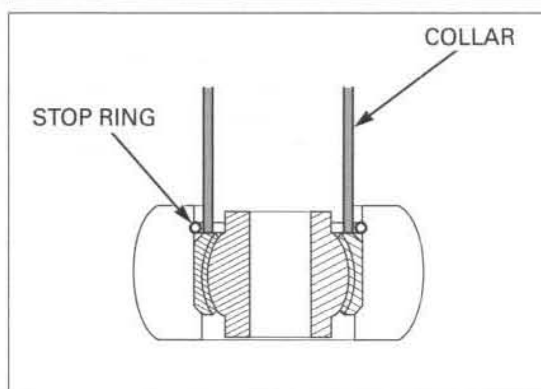


Press the spherical bearing to get the clearance necessary to remove the stop ring.

TOOL:

Collar, 23 x 17 mm

07GMD-KT8A110



Press the spherical bearing out of the upper mount using the special tools.

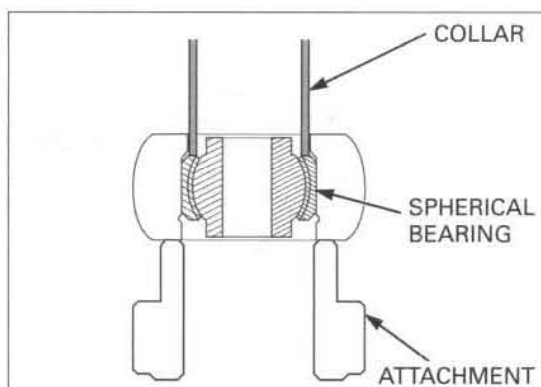
TOOLS:

Collar, 23 x 17 mm

07GMD-KT8A110

Attachment, 30 mm

07746-0030300



REAR WHEEL/SUSPENSION

Apply multi-purpose grease NLGI No.2 (Molybdenum disulfide additive) to the new spherical bearing.

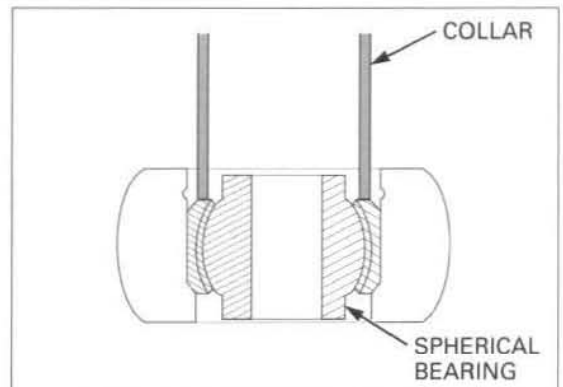
Drive the bearing in evenly, do not allow it tilt.

Press a new spherical bearing into the upper mount.

TOOL:

Collar, 23 x 17 mm

07GMD-KT8A110



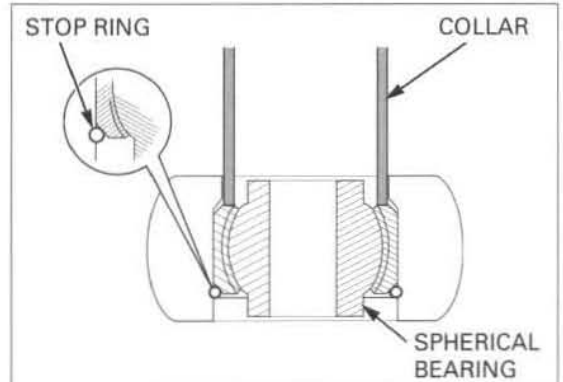
Install a new stop ring into the groove of the upper mount securely.

Press the spherical bearing into the upper mount until it seats against the stop ring.

TOOL:

Collar, 23 x 17 mm

07GMD-KT8A110



Be sure to install the correct dust seal in each side.

Apply grease to the lip of the new dust seals and install them.

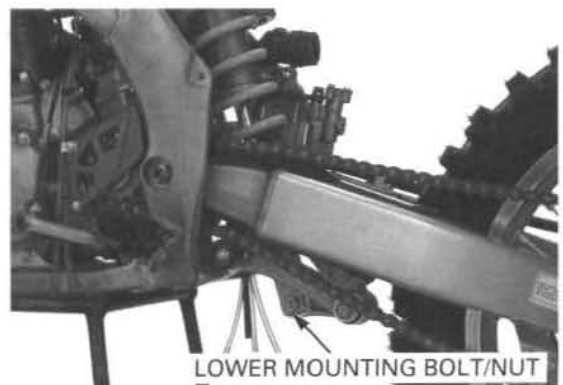


INSTALLATION

Set the shock absorber onto the shock arm with the rebound adjuster facing to the right. Install the lower mounting bolt by aligning the cut-out of the bolt with the stopper on the shock absorber.

Install and tighten the lower mounting nut.

TORQUE: 44 N·m (4.5 kgf·m, 32 lbf·ft)



REAR WHEEL/SUSPENSION

Install and tighten the shock absorber upper mounting nut/bolt.

TORQUE: 44 N·m (4.5 kgf·m, 32 lbf·ft)

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

UPPER MOUNTING BOLT/NUT



SHOCK LINKAGE

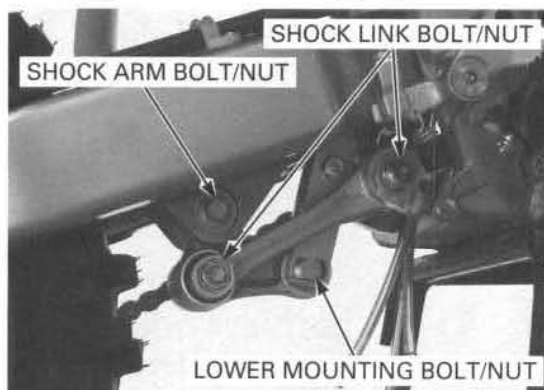
REMOVAL

Remove the nut and drive chain roller.



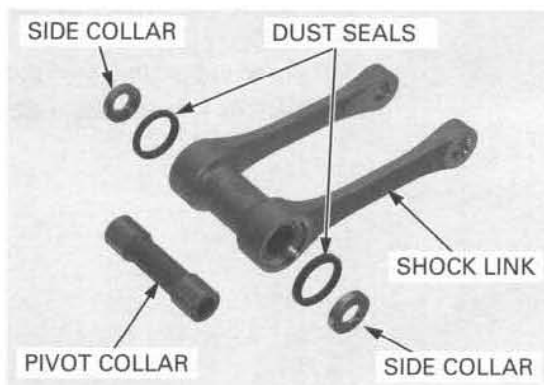
Remove the following:

- shock absorber lower mounting bolt/nut
- shock arm bolt/nut (shock link side)
- shock arm bolt/nut (swingarm side)
- shock arm
- shock link bolt/nut (frame side)
- shock link



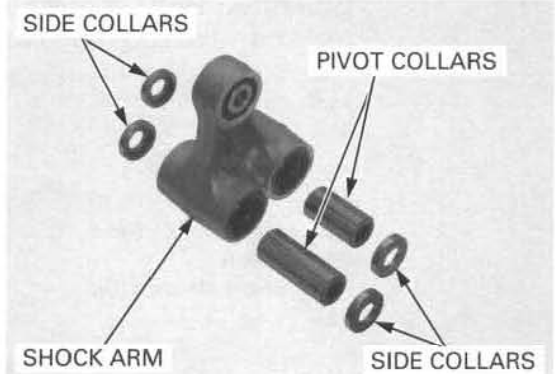
DISASSEMBLY

Remove the side collars, pivot collar and dust seals from the shock link.



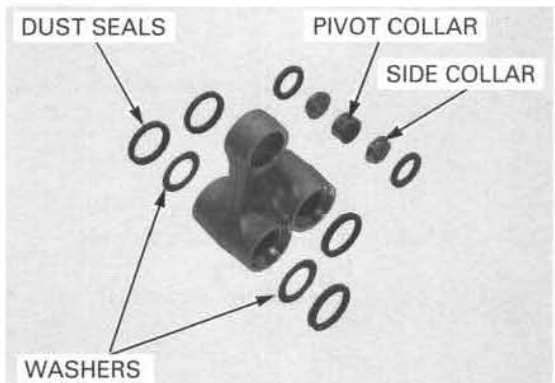
REAR WHEEL/SUSPENSION

Remove the pivot collars and side collars from the shock arm (swingarm side, shock link side).



Remove the dust seals and washers (swingarm side, shock link side).

Remove the dust seals, side collars and pivot collar (shock absorber side).



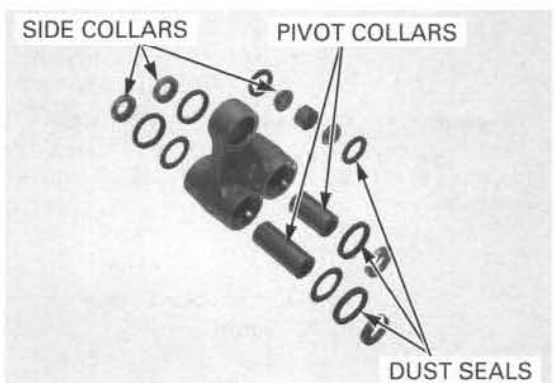
INSPECTION

Check the dust seals and collars for wear, damage or fatigue.

Check the needle bearings for damage or loose fit.

Check the shock arm for cracks or damage.

If the needle bearings are damaged, replace them.

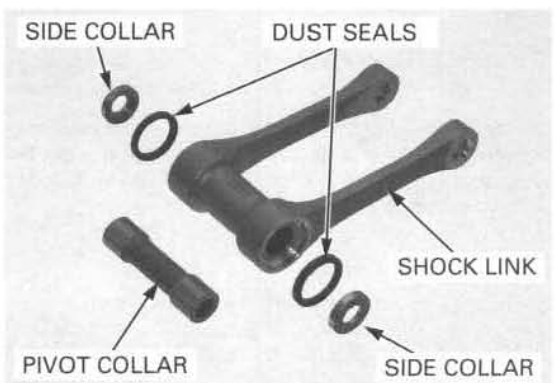


Check the dust seals and collars for wear, damage or fatigue.

Check the needle bearings for damage or loose fit.

Check the shock link for cracks or damage.

If the needle bearings are damaged, replace them.



REAR WHEEL/SUSPENSION

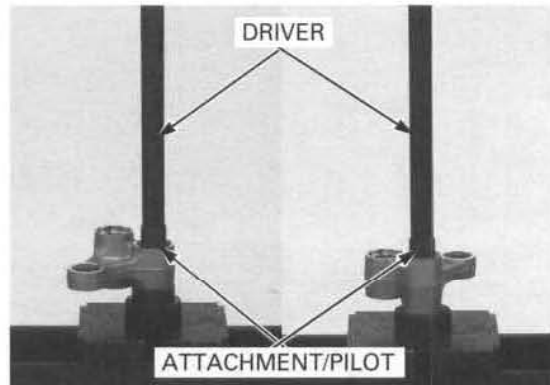
BEARING REPLACEMENT

SHOCK ARM NEEDLE BEARING

Press the needle bearing (shock link side, swingarm side) out of the shock arm using the special tools and a hydraulic press.

TOOLS:

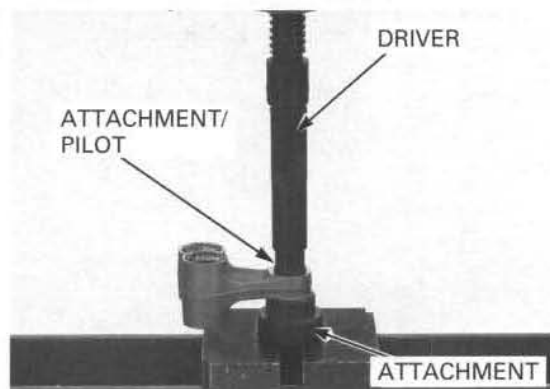
Driver	07749-0010000
Attachment, 24 x 26 mm	07746-0010700
Pilot, 20 mm	07746-0040500
Attachment, 30 mm I.D.	07746-0030300



Press the needle bearing (shock absorber side) out of the shock arm using the special tools and a hydraulic press.

TOOLS:

Driver	07749-0010000
Attachment, 24 x 26 mm	07746-0010700
Pilot, 17 mm	07746-0040400
Attachment, 30 mm I.D.	07746-0030300



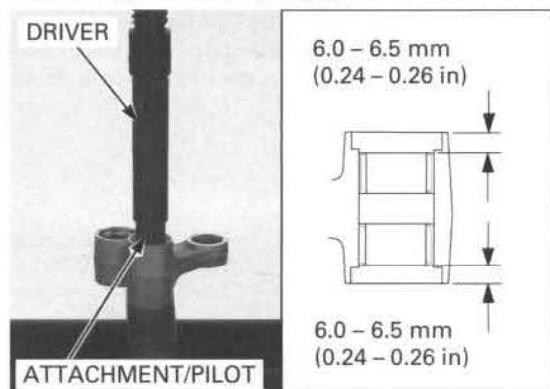
Fill up the new needle bearings and inside of shock arm with multi-purpose grease.

Press the needle bearings into the shock arm with the marked side facing out.

Press the new needle bearings into the shock link side pivot so that the needle bearing surface is 6.0 – 6.5 mm (0.24 – 0.26 in) below the end of the shock arm surface.

TOOLS:

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



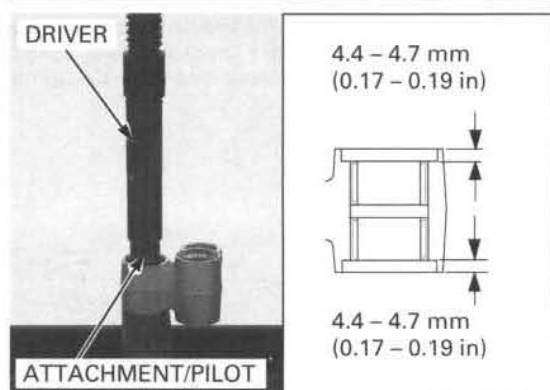
Fill up the new needle bearings and inside of shock arm with multi-purpose grease.

Press the needle bearings into the swingarm side pivot so that the needle bearing surface is 4.4 – 4.7 mm (0.17 – 0.19 in) below the end of the shock arm surface.

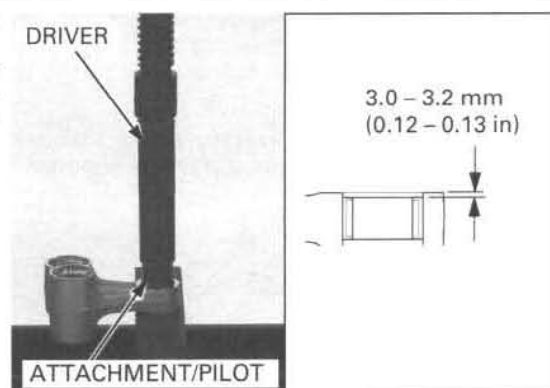
Press the new needle bearings into the swingarm side pivot so that the needle bearing surface is 4.4 – 4.7 mm (0.17 – 0.19 in) below the end of the shock arm surface.

TOOLS:

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



Driver	07749-0010000
Attachment, 24 x 26 mm	07746-0010700
Pilot, 19 mm	07746-0041400



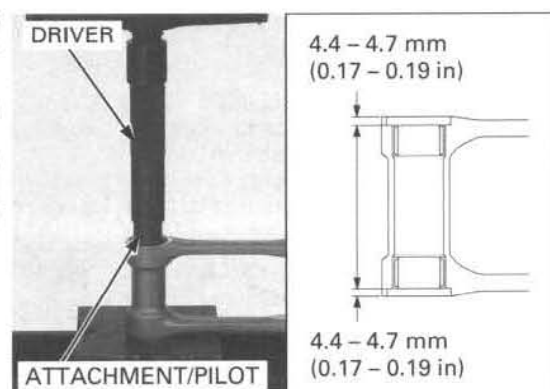
NEEDLE BEARINGS

SHOCK LINK

This diagram shows a shock absorber assembly. A label 'NEEDLE BEARINGS' with two dashed arrows points to the needle bearings at the top of the shock absorber. A label 'SHOCK LINK' with a solid arrow points to the shock link at the bottom of the assembly.

TOOLS:

Driver	07749-0010000
Attachment, 28 x 30 mm	07946-1870100
Pilot, 20 mm	07746-0040500



Shock link: 32
Shock arm: shock link side: 32
 swingarm side: 32
 shock absorber side: 27

Diagram illustrating the exploded view of the rear suspension assembly components:

- SIDE COLLAR**: Located at the top left, with an arrow pointing to the upper O-ring.
- PIVOT COLLAR**: Located at the bottom left, with an arrow pointing to the lower O-ring.
- DUST SEAL**: Located at the bottom right, with an arrow pointing to the lower O-ring.

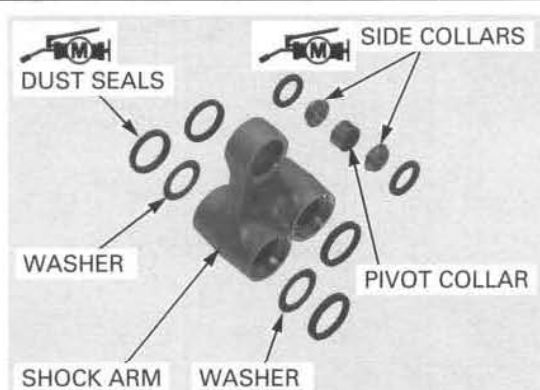
REAR WHEEL/SUSPENSION

Install the dust seals and washers to the shock arm (shock link side).

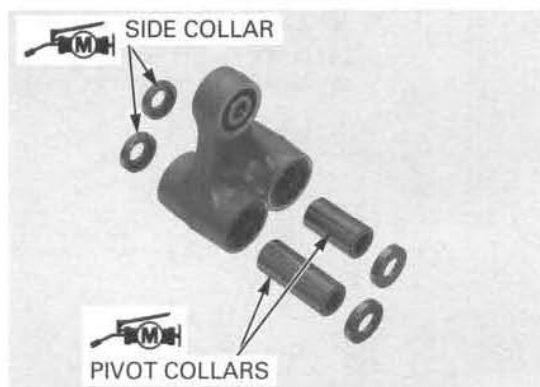
Install the dust seals to the shock arm (swingarm side).

Install the side collars (shock absorber side) with its smaller side facing pivot collar.

Install the pivot collar, side collars and dust seals to the shock arm (shock absorber side).



Install the pivot collars and side collars to the shock arm (swingarm side, shock link side).



INSTALLATION

Apply oil to the shock arm and shock link nut threads and flange surface.

Loosely install the following:

- shock link
- shock link bolt/nut
- shock arm
- shock arm bolt/nut (swingarm side)
- shock arm bolt/nut (shock link side)

Install the lower mounting bolt by aligning the cut-out of the bolt with the stopper on the shock absorber.

Tighten all nuts to the specified torque.

TORQUE:

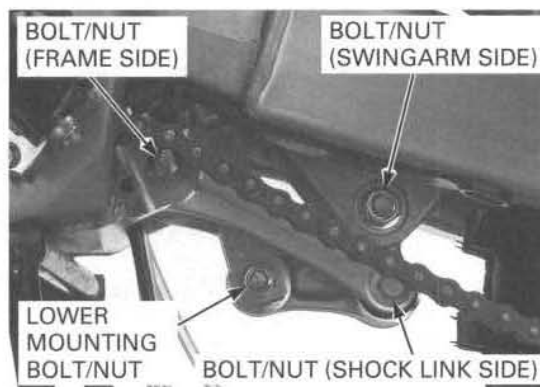
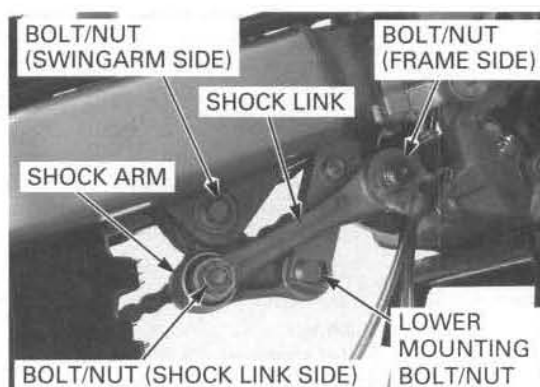
Shock link nut: 53 N·m (5.4 kgf·m, 39 lbf·ft)

Shock arm nut:

swingarm side: 53 N·m (5.4 kgf·m, 39 lbf·ft)

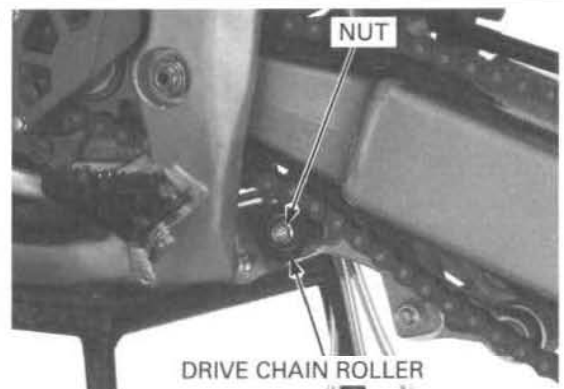
shock link side: 53 N·m (5.4 kgf·m, 39 lbf·ft)

Shock absorber lower 44 N·m (4.5 kgf·m, 32 lbf·ft)
mounting nut:



Install the drive chain roller and tighten the bolt to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

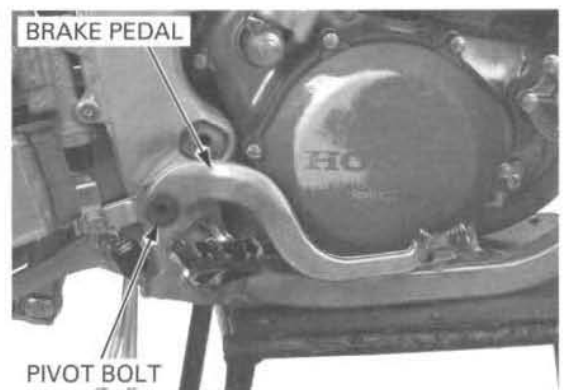


SWINGARM

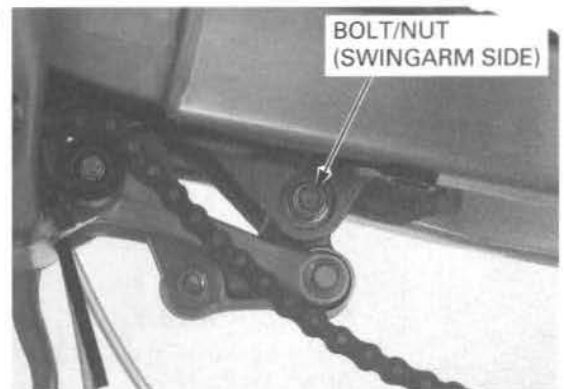
REMOVAL

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

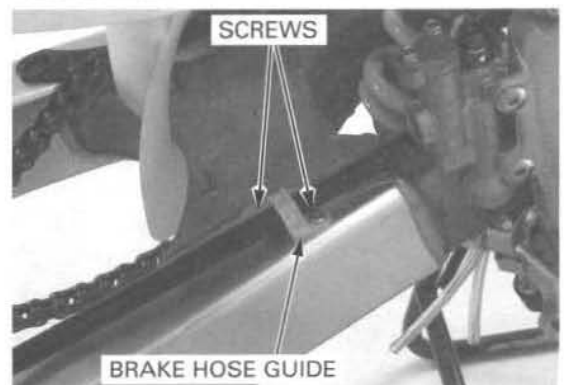
Remove the rear wheel (page 12-7).
Remove the brake pedal (page 13-24).



Remove the shock arm bolt and nut (swingarm side).



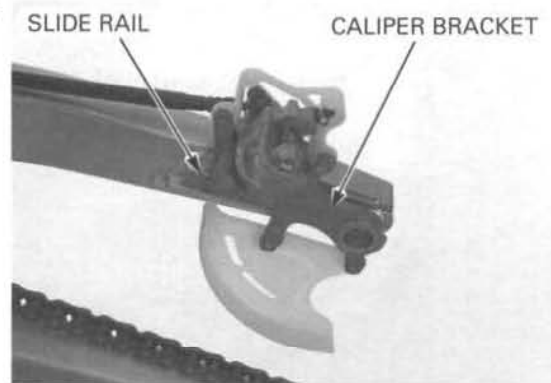
Remove the screws and brake hose guide.



REAR WHEEL/SUSPENSION

Do not disconnect the hydraulic line and do not suspend the brake caliper from the brake hose.

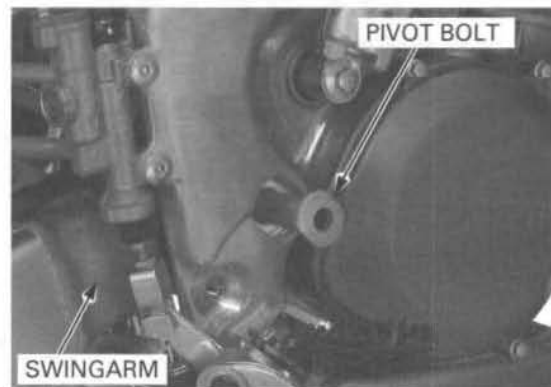
Remove the rear brake caliper/bracket from the slide rail on the swingarm.



Remove the swingarm pivot nut and washer.



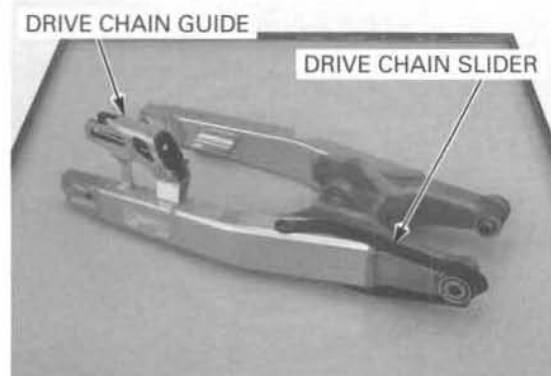
Remove the swingarm pivot bolt and swingarm.



DISASSEMBLY

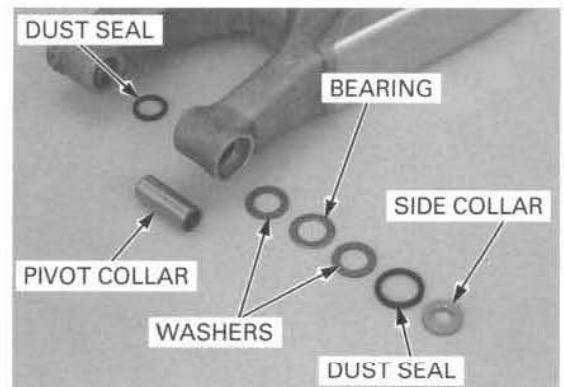
Check the chain slider and chain guide for wear or damage (page 3-13).

Remove the bolts, nuts and chain guide.
Remove the screws and chain slider.



Remove the following:

- side collars
- dust seals
- washers
- thrust needle bearings
- collars

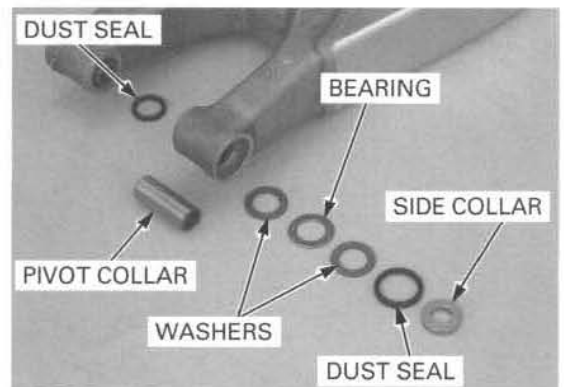


Check the dust seals and collars for wear, damage or fatigue.

Check the needle bearings and thrust needle bearings for damage or loose fit.

Check the swingarm for cracks or damage.

Replace them, if necessary.

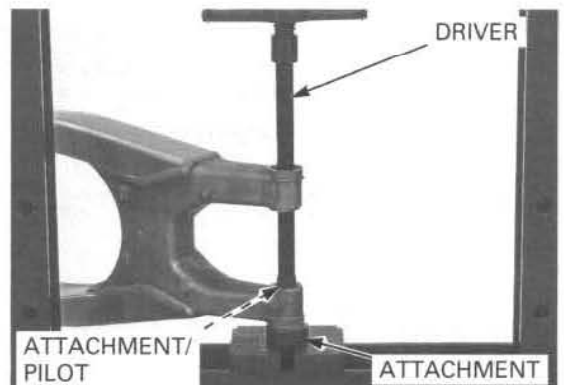


BEARING REPLACEMENT

Press the needle bearing out of the swingarm pivot using the special tools and a hydraulic press.

TOOLS:

Driver	07949-3710001
Attachment, 24 x 26 mm	07746-0010700
Pilot, 22 mm	07746-0041000
Attachment, 30 mm I.D.	07746-0030300



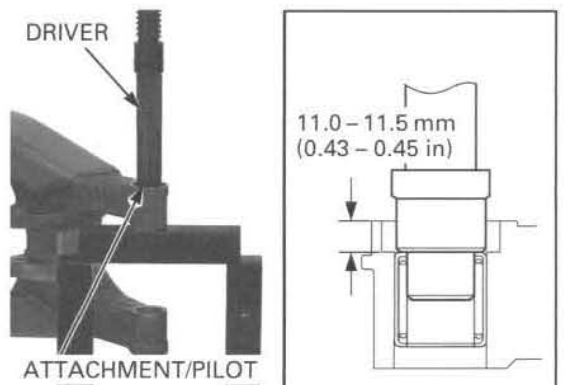
Pack new needle bearings with multi-purpose grease.

Press the needle bearings into the swingarm pivot with the marked side facing out.

Press the new needle bearings into the swingarm pivot so that the needle bearing surface is 11.0 – 11.5 mm (0.43 – 0.45 in) below the end of the swingarm pivot surface.

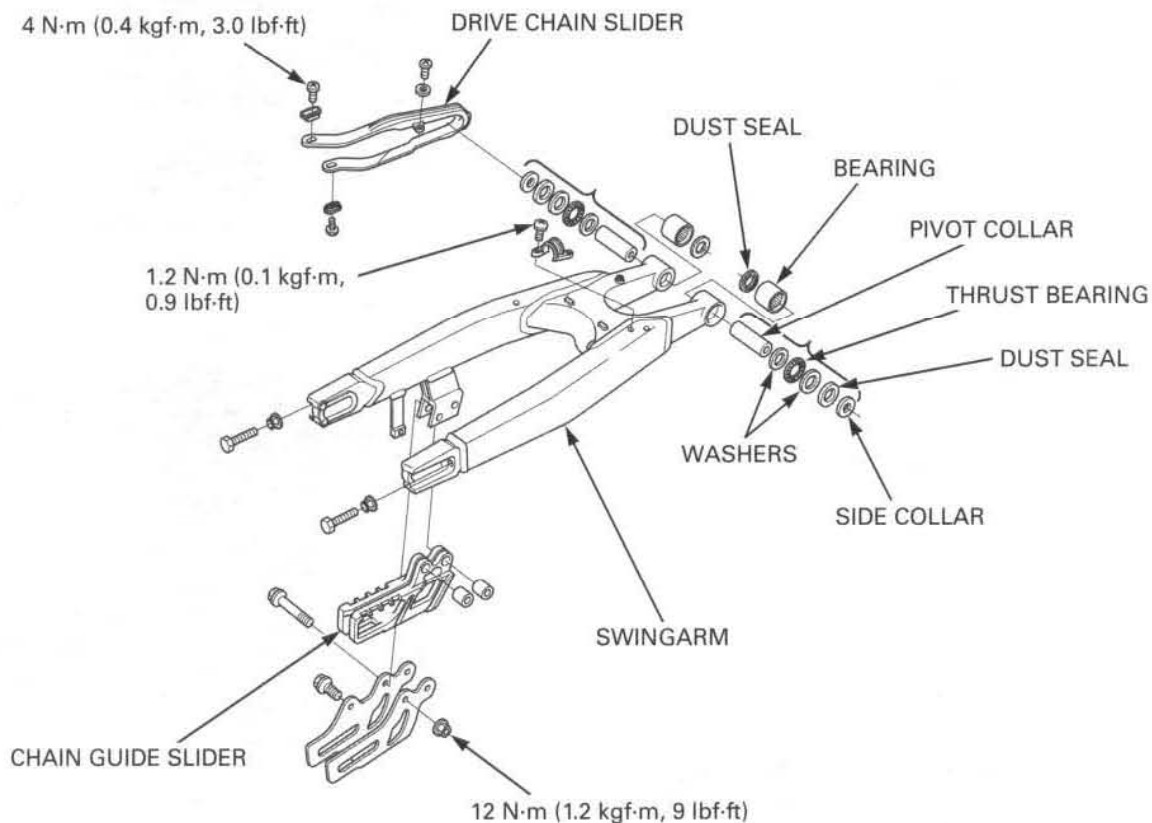
TOOLS:

Driver	07749-0010000
Attachment, 28 x 30 mm	07746-1870100
Pilot, 22 mm	07746-0041000



REAR WHEEL/SUSPENSION

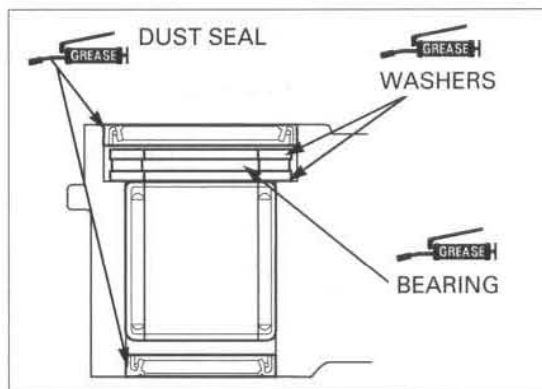
ASSEMBLY



Fill up the new dust seals, washers and bearing with multi-purpose grease.

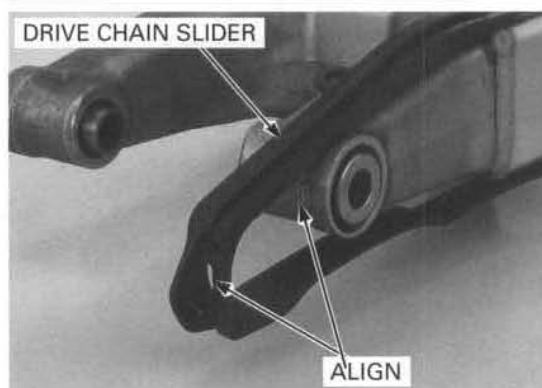
Install the following:

- washers
- thrust needle bearings
- dust seals
- collars
- side collars



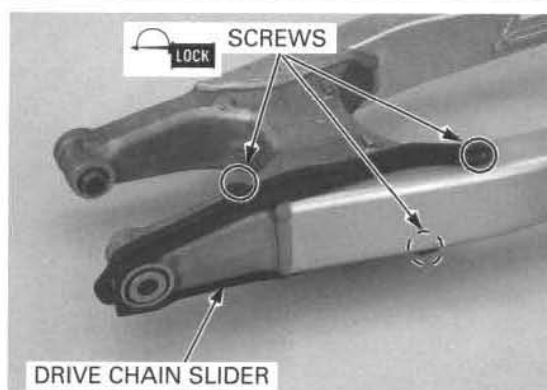
Install the chain slider with its hole and tab on the swingarm.

Install the drive chain slider mounting bolt holes with the bosses on the swingarm.

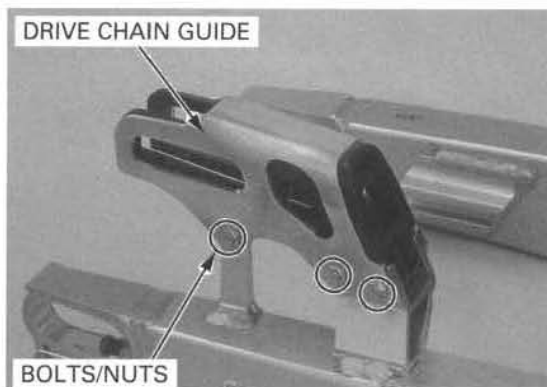


Clean and apply a locking agent to the screw threads.
Install and tighten the screws to the specified torque.

TORQUE: 4 N·m (0.4 kgf·m, 3.0 lbf·ft)

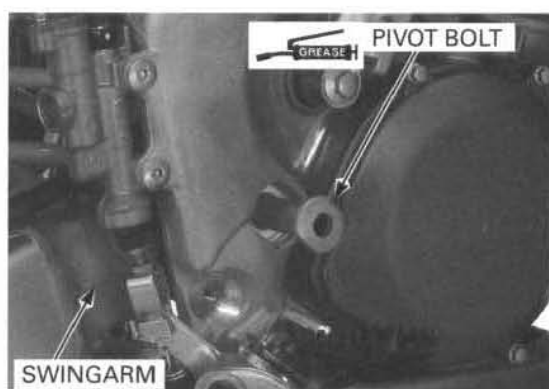


Install the chain guide.
Install and tighten the bolts.



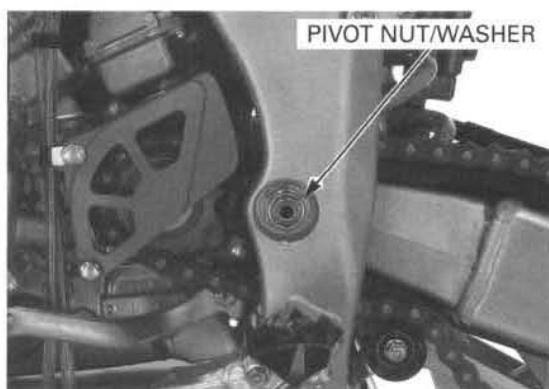
INSTALLATION

Apply thin coat of grease to the swingarm pivot bolt sliding surface.
Install the swingarm onto the frame.
Install the swingarm pivot bolt to the frame and swingarm pivot from the right side.



Install the washer.
Install and tighten the swingarm pivot nut to the specified torque.

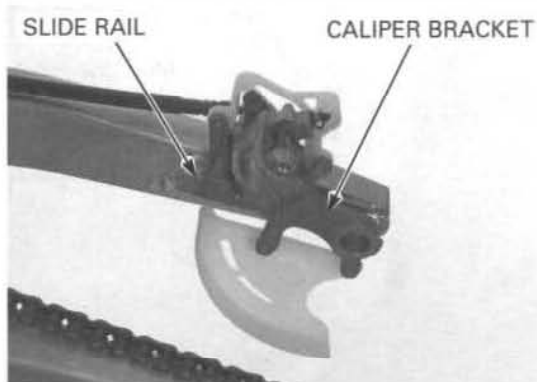
TORQUE: 88 N·m (9.0 kgf·m, 65 lbf·ft)



REAR WHEEL/SUSPENSION

*Do not twist the
brake hose.*

Install the rear brake caliper to the slide rail on the swingarm.



Install the brake hose guide.

Tighten the brake hose guide screws to the specified torque.

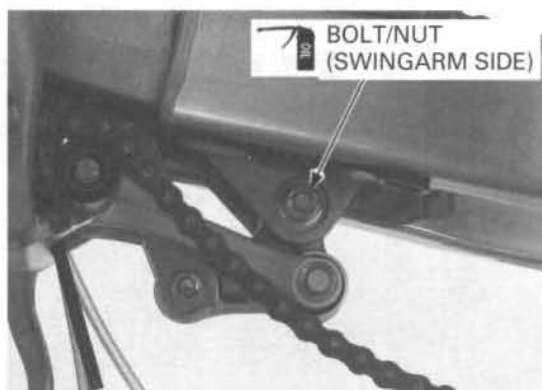
TORQUE: 1.2 N·m (0.12 kgf·m, 0.9 lbf·ft)



Apply oil to the shock arm nut (swingarm side) threads and seating surface. Install the shock arm bolt and nut, tighten the nut to the specified torque.

TORQUE: 53 N·m (5.4 kgf·m, 39 lbf·ft)

Install the rear wheel (page 12-11).

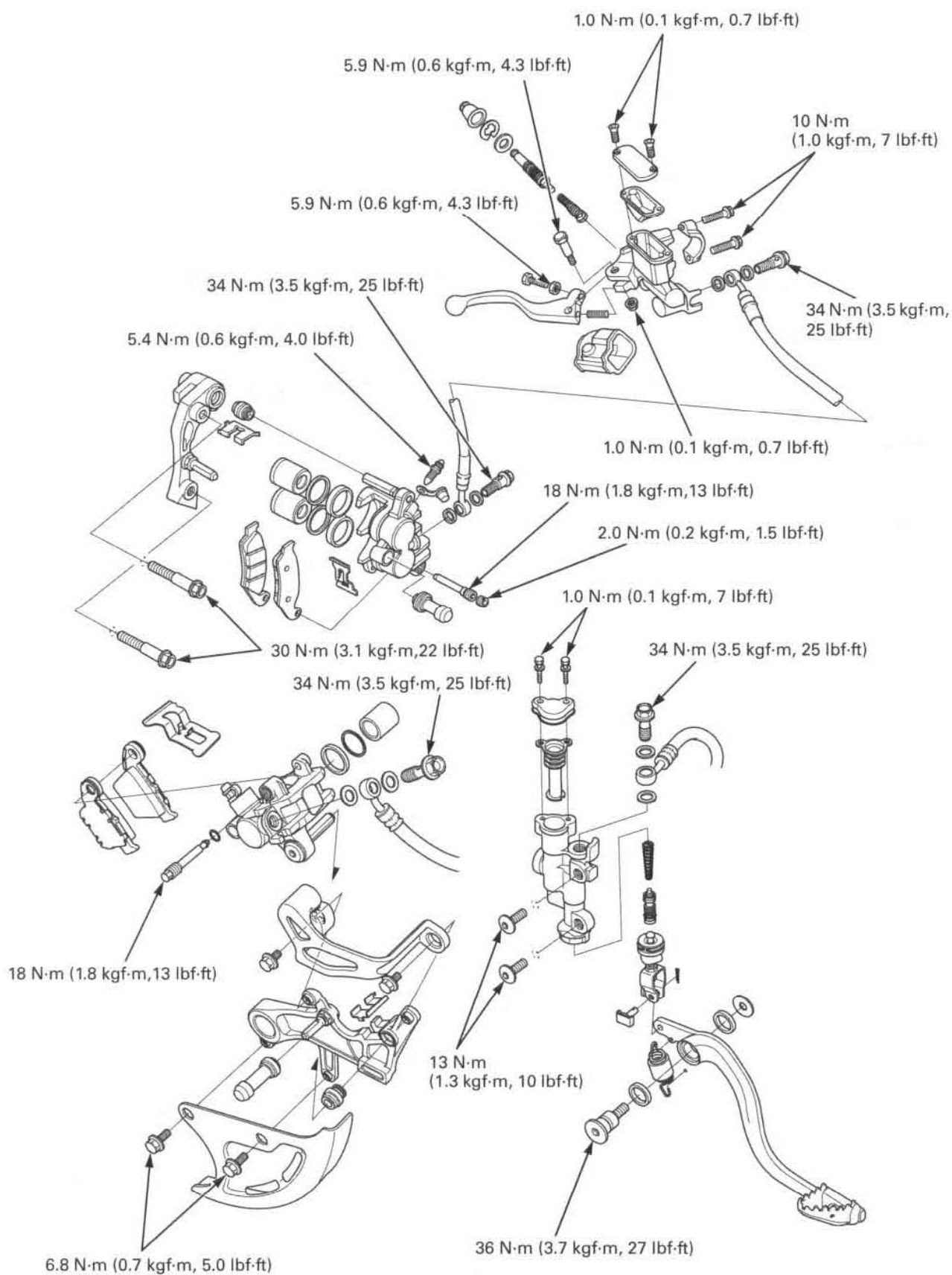


13. HYDRAULIC BRAKE

COMPONENT LOCATION	13-2	FRONT MASTER CYLINDER.....	13-10
SERVICE INFORMATION	13-3	REAR MASTER CYLINDER	13-14
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BRAKE FLUID REPLACEMENT/ AIR BLEEDING	13-5	REAR BRAKE CALIPER.....	13-20
BRAKE PAD/DISC.....	13-8	BRAKE PEDAL	13-24

HYDRAULIC BRAKE

COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

⚠ CAUTION

Frequent inhalation of brake pad dust, regardless of material composition could be hazardous to your health.

- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.
- A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.
- Avoid spilling brake fluid on painted, plastic or rubber parts. Place a rag or shop towel over these parts whenever the system is serviced.
- Be careful whenever you remove the reservoir cap; make sure the reservoir is horizontal.
- Bleed the hydraulic system if it has been disassembled or if the brake feels spongy.
- Never allow contaminants (dirt, water, etc.) to get into an open reservoir.
- Always use fresh DOT 4 brake fluid from a sealed container when servicing the system. Do not mix different types of fluid; they may not be compatible.
- Always check brake operation before riding the motorcycle.

SPECIFICATION

Unit: mm (in)

	ITEM	STANDARD	SERVICE LIMIT
Front	Specified brake fluid	DOT 4	—
	Brake pad wear indicator	—	1.0 (0.04)
	Brake disc thickness	3.0 (0.12)	2.5 (0.10)
	Brake disc runout	—	0.15 (0.006)
	Master cylinder I.D.	11.00 (0.433)	—
	Caliper cylinder I.D.	27.00 (1.063)	—
Rear	Specified brake fluid	DOT 4	—
	Brake pad wear indicator	—	1.0 (0.04)
	Brake disc thickness	4.0 (0.16)	3.5 (0.14)
	Brake disc runout	—	0.15 (0.006)
	Master cylinder I.D.	9.52 (0.375)	—
	Caliper cylinder I.D.	22.65 (1.892)	—

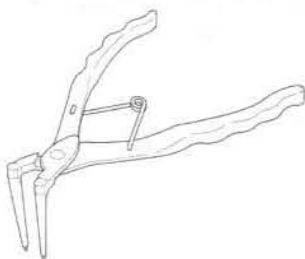
TORQUE VALUES

Brake hose oil bolt	34 N·m (3.5 kgf·m, 25 lbf·ft)	
Brake lever adjuster lock nut	5.9 N·m (0.6 kgf·m, 4.4 lbf·ft)	
Front brake hose guide bolt	5.2 N·m (0.5 kgf·m, 3.8 lbf·ft)	
Rear brake hose guide screw	1.2 N·m (0.1 kgf·m, 0.9 lbf·ft)	
Front master cylinder holder bolt	9.9 N·m (1.0 kgf·m, 7.3 lbf·ft)	
Front caliper mounting bolt	30 N·m (3.1 kgf·m, 22 lbf·ft)	Apply a locking agent to the threads
Front disc cover mounting bolt	13 N·m (1.3 kgf·m, 10 lbf·ft)	
Caliper bleeder valve	5.4 N·m (0.6 kgf·m, 4.0 lbf·ft)	
Rear brake disc guard mounting bolt	6.8 N·m (0.7 kgf·m, 5.0 lbf·ft)	
Rear master cylinder mounting bolt	13 N·m (1.3 kgf·m, 10 lbf·ft)	
Front caliper pin bolt	22 N·m (2.2 kgf·m, 16 lbf·ft)	Apply a locking agent to the threads
Brake caliper pad pin	18 N·m (1.8 kgf·m, 13 lbf·ft)	
Brake caliper pad pin plug	2 N·m (0.2 kgf·m, 1.5 lbf·ft)	
Rear caliper pin bolt	27 N·m (2.8 kgf·m, 20 lbf·ft)	
Brake pedal pivot bolt	36 N·m (3.7 kgf·m, 27 lbf·ft)	
Rear master cylinder joint lock nut	5.9 N·m (0.6 kgf·m, 4.4 lbf·ft)	
Brake lever pivot bolt	1.0 N·m (0.1 kgf·m, 0.7 lbf·ft)	
Brake lever pivot nut	5.9 N·m (0.6 kgf·m, 4.3 lbf·ft)	
Front master cylinder reservoir cover screw	1.0 N·m (0.1 kgf·m, 0.7 lbf·ft)	
Rear master cylinder reservoir cover bolt	1.0 N·m (0.1 kgf·m, 0.7 lbf·ft)	
Front caliper bracket pin bolt	23 N·m (2.3 kgf·m, 17 lbf·ft)	Apply a locking agent to the threads
Rear caliper bracket pin bolt	12 N·m (1.2 kgf·m, 9 lbf·ft)	Apply a locking agent to the threads

HYDRAULIC BRAKE

TOOL

Snap ring pliers
07914-SA50001



TROUBLESHOOTING

Brake lever/pedal soft or spongy

- Air in hydraulic system
- Leaking hydraulic system
- Contaminated brake pad/disc
- Worn caliper piston seal
- Worn master cylinder piston cups
- Worn brake pad/disc
- Contaminated caliper
- Caliper not sliding properly
- Low brake fluid level
- Clogged fluid passage
- Warped/deformed brake disc
- Sticking/worn caliper piston
- Sticking/worn master cylinder piston
- Contaminated master cylinder
- Bent brake lever/pedal

Brake lever/pedal hard

- Clogged/restricted brake system
- Sticking/worn caliper piston
- Caliper not sliding properly
- Clogged/restricted fluid passage
- Worn caliper piston seal
- Sticking/worn master cylinder piston
- Bent brake lever/pedal

Brake drags

- Contaminated brake pad/disc
- Misaligned wheel
- Clogged/restricted brake hose joint
- Warped/deformed brake disc
- Caliper not sliding properly
- Clogged/restricted brake hydraulic system
- Sticking/worn caliper piston
- Clogged master cylinder port

BRAKE FLUID REPLACEMENT/AIR BLEEDING

- Do not allow foreign material to enter the system when filling the reservoir.
- Avoid spilling fluid on painted, plastic, or rubber parts. Place a rag over these parts whenever the system is serviced.

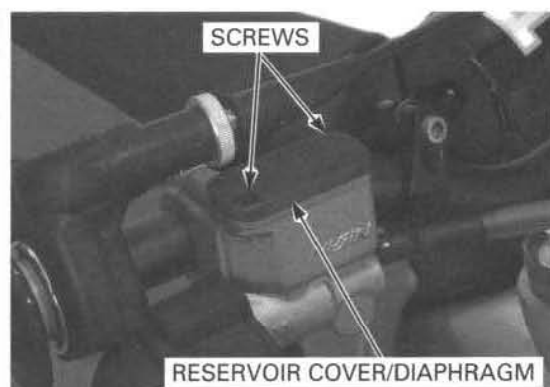
NOTE:

- The pedal brake line air bleeding procedure is performed in the same manner as in the lever brake line air bleeding procedure.
- Once the hydraulic system has been opened, or if the brake feels spongy, the system must be bled.
- When using a commercially available brake bleeder, follow the manufacturer's operating instructions.

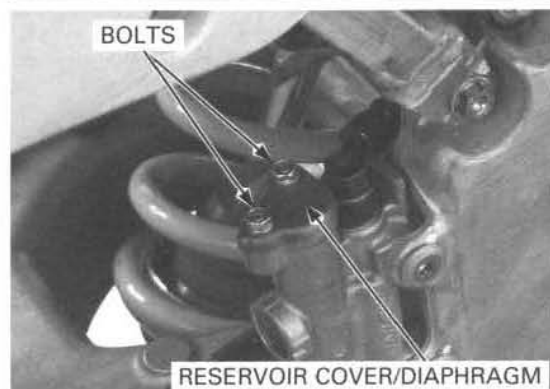
BRAKE FLUID DRAINING

Make sure that the master cylinder is parallel to the ground, before removing the reservoir cover and cap.

Front: Remove the screws, reservoir cover and diaphragm.



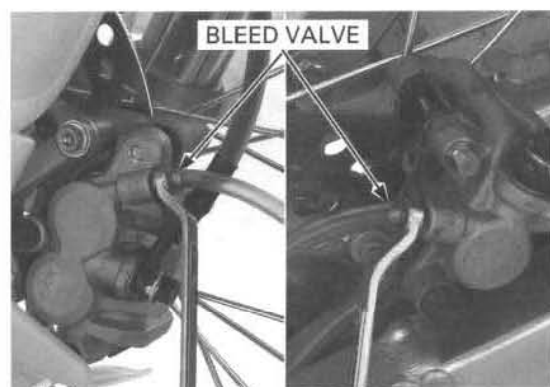
Rear: Remove the bolts, reservoir cover and diaphragm.



Connect a bleed hose to the caliper bleed valve.

Loosen the bleed valve and pump the brake lever (pedal).

Stop operating the brake when no more fluid flows out of the bleed valve.

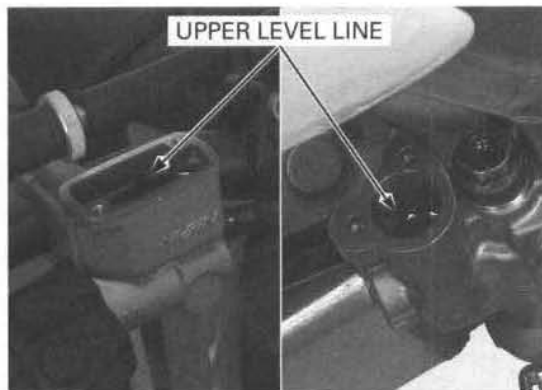


HYDRAULIC BRAKE

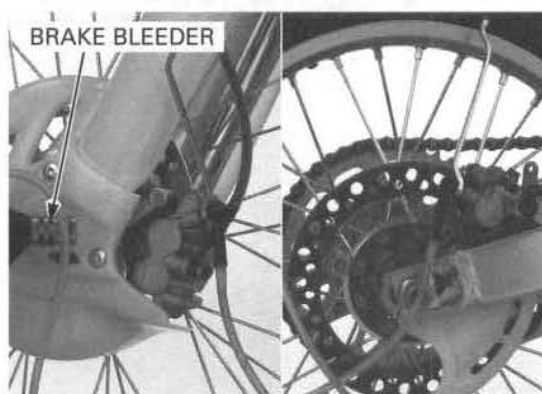
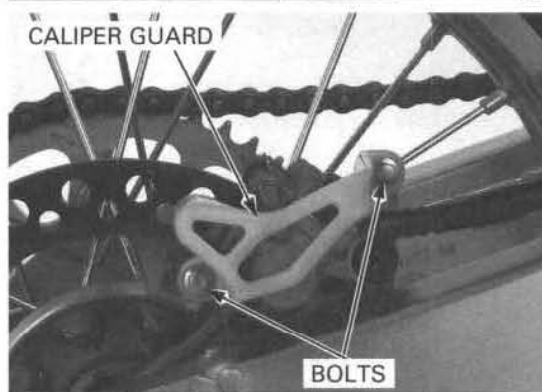
BRAKE FLUID FILLING/AIR BLEEDING

- Use only DOT 4 brake fluid from a sealed container.
- Do not mix different types of fluid. They are not compatible.

Fill the master cylinder with DOT 4 brake fluid from a sealed container.



Rear: Remove the bolts and rear brake caliper guard.



If air enters the bleeder from around the bleed valve threads, seal the threads with teflon tape.

Connect a commercially available brake bleeder to the bleed valve.

Operate the brake bleeder and loosen the bleed valve.

If an automatic refill system is not used, add fluid when the fluid level in the reservoir is low.

Perform the bleeding procedure until the system is completely flushed/bled.

Close the bleed valve and operate the brake lever (pedal). If it still feels spongy, bleed the system again.

If the brake bleeder is not available, perform the following procedure.

Pressurize the system with the lever until there are no air bubbles in the fluid flowing out of the reservoir small hole and lever (pedal) resistance is felt.



Connect a bleed hose to the bleed valve.

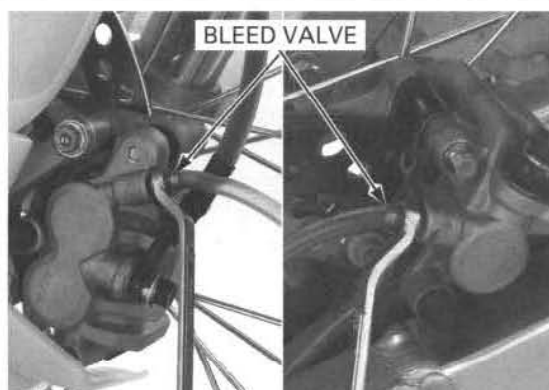
Do not release the brake lever until the bleed valve has been closed.

1. Pump the brake lever or pedal several times, then squeeze the brake lever or pedal all the way and loosen the bleed valve 1/2 turn. Wait several seconds and then close the bleed valve.
2. Release the brake lever or pedal slowly until the bleed valve has been closed.
3. Repeat the steps 1 and 2 until there are no air bubbles in the bleed hose.

After bleeding the air completely, tighten the bleed valve to the specified torque.

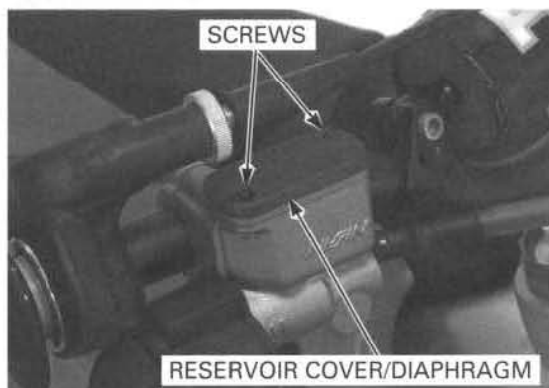
TORQUE: 5.4 N·m (0.6 kgf·m, 4.0 lbf·ft)

Fill the reservoir to the upper level with DOT 4 brake fluid from a sealed container.



Front: Install the diaphragm and reservoir cover. Tighten the reservoir cover screws to the specified torque.

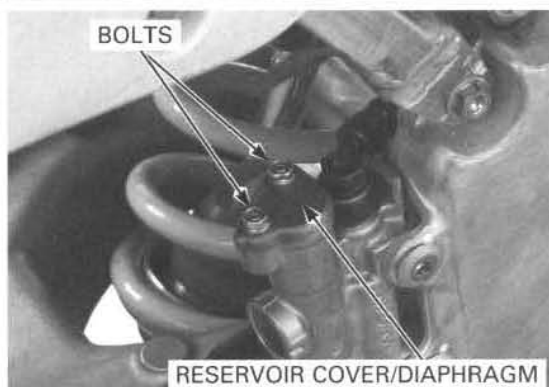
TORQUE: 1.0 N·m (0.1 kgf·m, 0.7 lbf·ft)



Rear: Install the diaphragm and reservoir cover being careful not to bend the diaphragm while installation.

Tighten the reservoir cover bolts to the specified torque.

TORQUE: 1.0 N·m (0.1 kgf·m, 0.7 lbf·ft)



HYDRAULIC BRAKE

BRAKE PAD/DISC

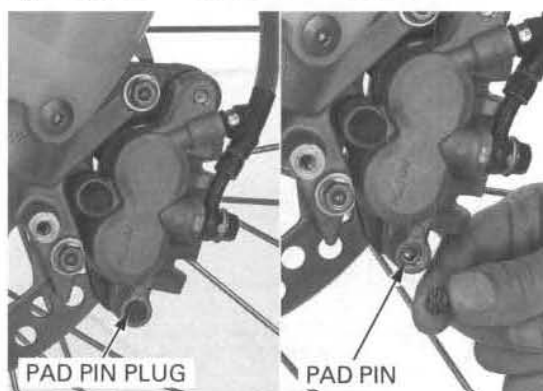
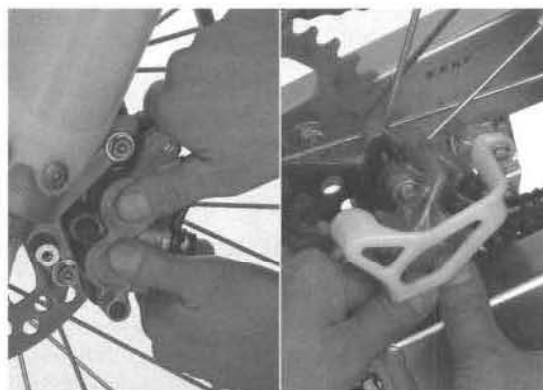
BRAKE PAD REPLACEMENT

Always replace the brake pads in pairs to assure even disc pressure.

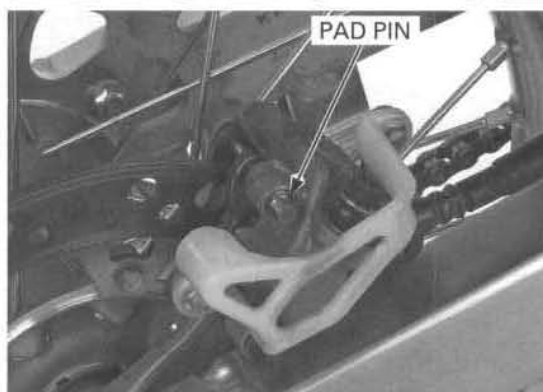
Check the fluid level in the master cylinder reservoir as this operation causes the fluid level to rise.

Push the caliper pistons all the way in by to allow installation of new brake pads.

Front: Remove the pad pin plug and the pad pin.

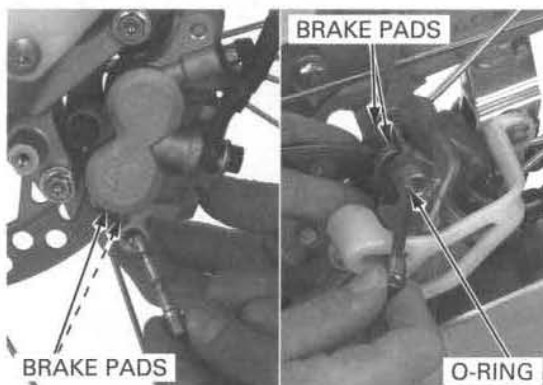


Rear: Remove the pad pin.

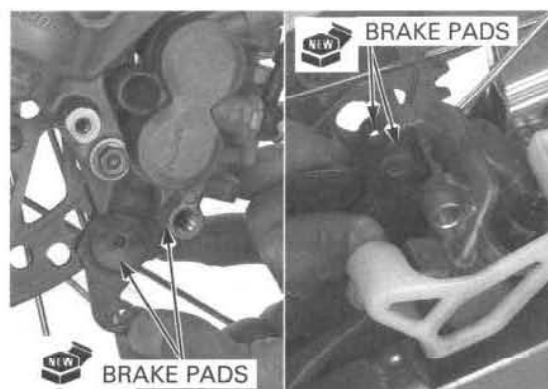


Front: Remove the brake pads.

Rear: Remove the brake pads and O-ring from the pad pin.



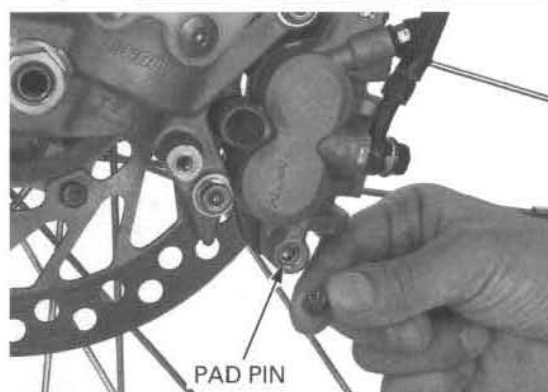
Install the new brake pads to the pad retainer securely.



Front: Push the brake pads against the pad spring, then install the pad pin.

Tighten the pad pin to the specified torque.

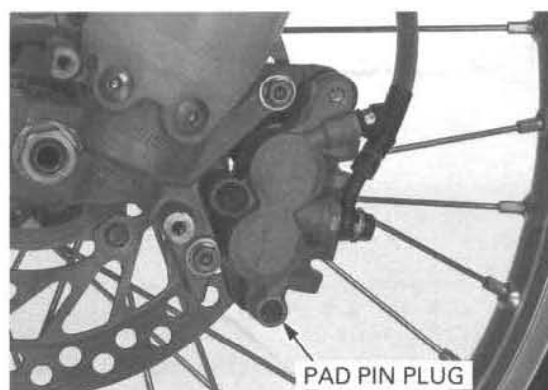
TORQUE: 18 N·m (1.8 kgf·m, 13 lbf·ft)



Install and tighten the pad pin plug to the specified torque.

TORQUE: 2 N·m (0.2 kgf·m, 1.5 lbf·ft)

After replacement, operate the brake lever to seat the caliper pistons against the pads.



Rear: Set a new O-ring in the groove of the pad pin.

Push the brake pads against the pad spring, then install the pad pin.

Tighten the pad pin to the specified torque.

TORQUE: 18 N·m (1.8 kgf·m, 13 lbf·ft)

After replacement, operate the brake pedal to seat the caliper piston against the pads.



HYDRAULIC BRAKE

BRAKE DISC INSPECTION

Remove the brake disc cover (page 13-20).

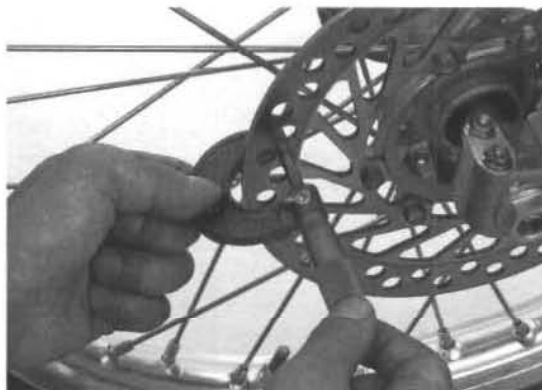
Visually inspect the brake disc for damage or cracks. Measure the brake disc thickness at several points with a micrometer.

SERVICE LIMITS:

Front: 2.5 mm (0.10 in)

Rear: 3.5 mm (0.14 in)

Replace the brake disc if the smallest measurement is less than service limit.



Check the brake disc for warpage with a dial indicator.

SERVICE LIMIT: 0.15 mm (0.006 in)

Check the wheel bearings for excessive play, if the warpage exceeds the service limit.

Replace the brake disc if the wheel bearings are normal.



FRONT MASTER CYLINDER

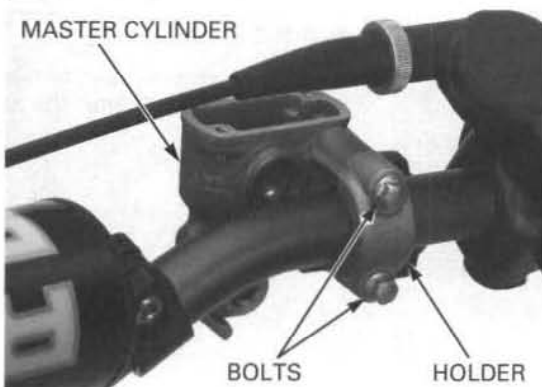
REMOVAL

Drain the brake fluid from the hydraulic system (page 13-5).

Remove the brake hose oil bolt, sealing washers and brake hose eyelet.



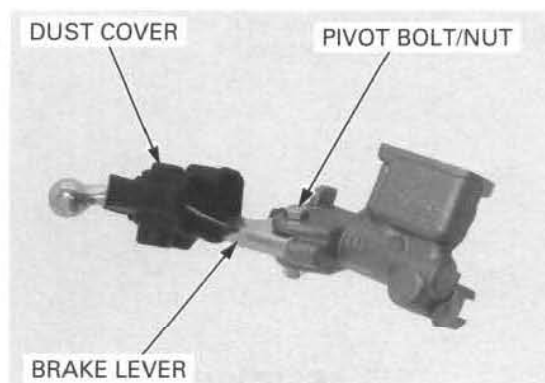
Remove the bolts from the master cylinder holder and remove the master cylinder assembly.



DISASSEMBLY

Remove the dust cover.

Remove the pivot bolt/nut and brake lever assembly.



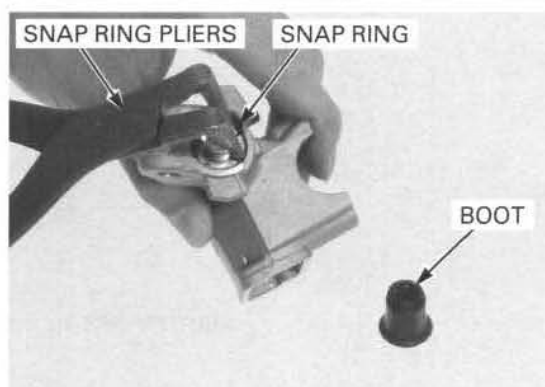
Remove the boot.

Remove the snap ring from the master cylinder body using the special tool as shown.

TOOL:

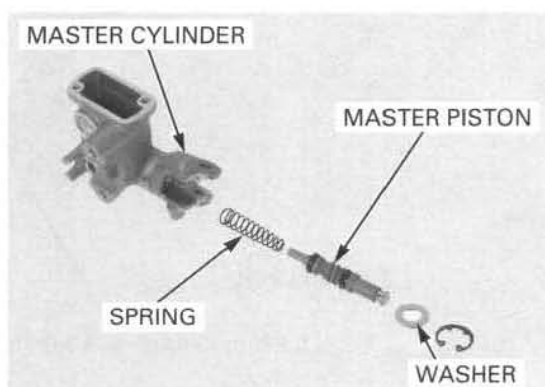
Snap ring pliers

07914-SA50001

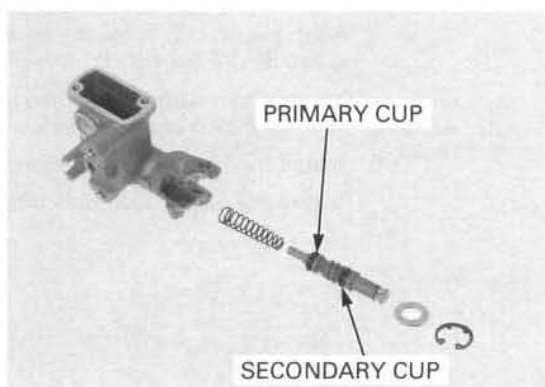


Remove the master piston, washer and spring.

Clean the master cylinder, reservoir and master piston in clean brake fluid.

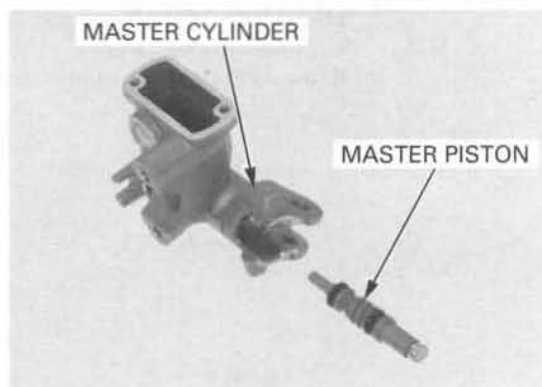
**INSPECTION**

Check the piston boot, primary cup and secondary cup for fatigue or damage.

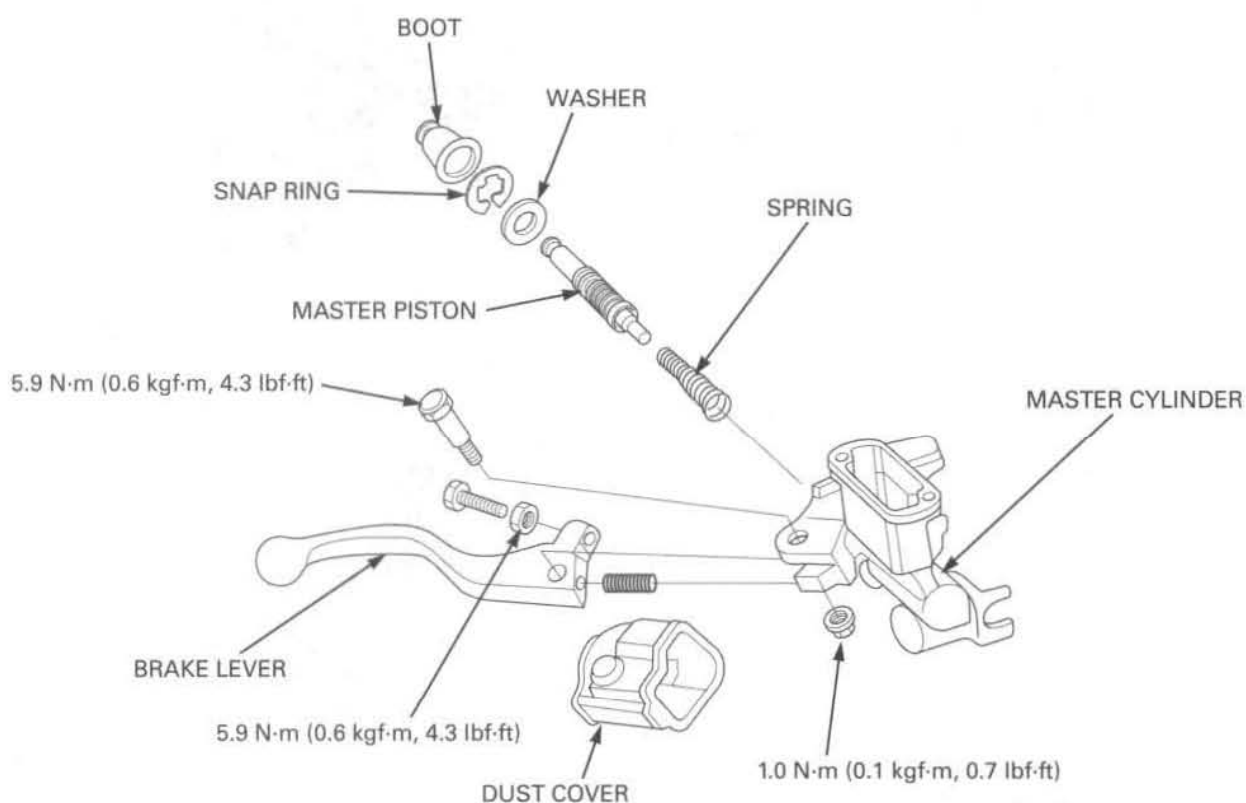


HYDRAULIC BRAKE

Check the master cylinder for abnormal scratches.
Check the master cylinder piston for abnormal scratches.



ASSEMBLY



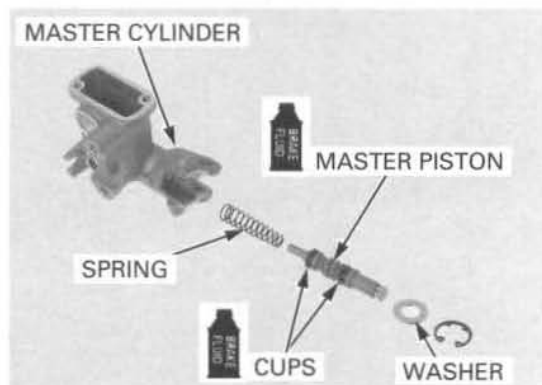
Keep the piston, cups, spring, snap ring and boot as a set; do not substitute individual parts.

Do not allow the piston cup lips to turn inside out.

Coat all part with clean brake fluid before assembly. Dip the piston in brake fluid.

Install the spring to the piston.

Install the piston assembly into the master cylinder.



Be certain the snap ring is firmly seated in the groove.

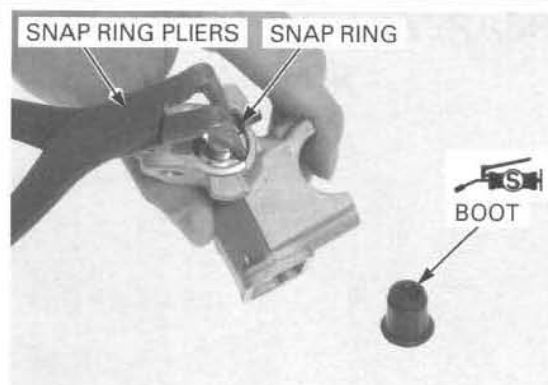
Install the snap ring into the groove in the master cylinder.

TOOL:

Snap ring pliers

07914-SA50001

Apply silicone grease to the inside of the boot.



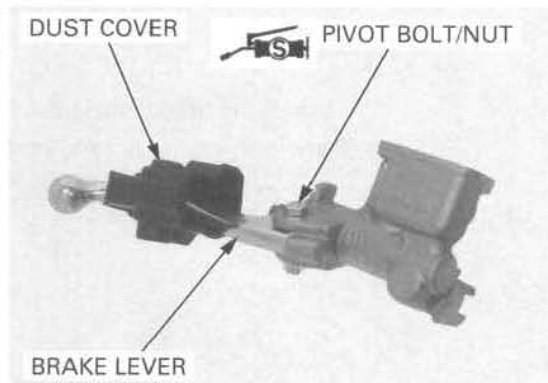
Apply silicone grease to the brake lever pivot bolt sliding surface.
Install and tighten the pivot bolt to the specified torque.

TORQUE: 1.0 N·m (0.1 kgf·m, 0.7 lbf·ft)

Install and tighten the pivot nut to the specified torque.

TORQUE: 5.9 N·m (0.6 kgf·m, 4.3 lbf·ft)

Install the dust cover.



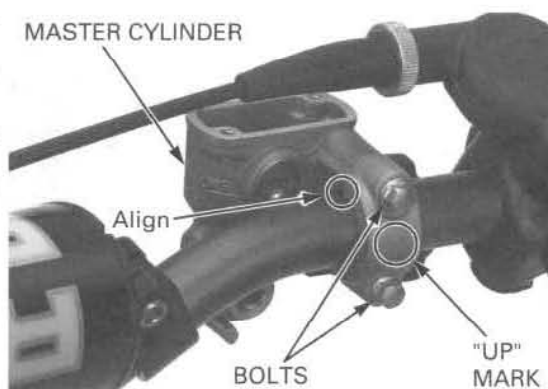
INSTALLATION

Place the master cylinder assembly on the handlebar.
Align the end of the master cylinder with the punch mark on the handlebar.

Install the master cylinder holder with its "UP" mark facing up.

Install and tighten the upper bolt first, then tighten the lower bolt.

TORQUE: 9.9 N·m (1.0 kgf·m, 7.3 lbf·ft)



Align the brake hose eyelet between the stoppers on the master cylinder.

Connect the brake hose with the oil bolt and new sealing washers.

Tighten the oil bolt to the specified torque.

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

Fill and bleed the hydraulic system (page 13-6).



HYDRAULIC BRAKE

REAR MASTER CYLINDER

REMOVAL

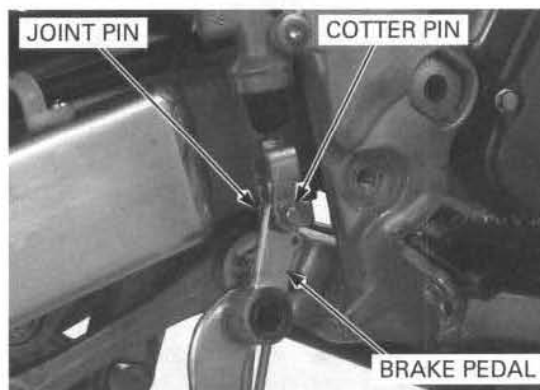
Drain the brake fluid from the hydraulic system (page 13-5).

Remove the brake hose oil bolt, sealing washers and brake hose.

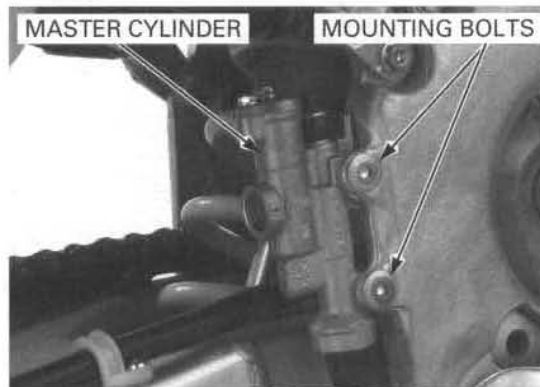


Remove the brake pedal pivot bolt (page 13-24).

Remove the cotter pin and joint pin.



Remove the rear master cylinder mounting bolts and master cylinder.



DISASSEMBLY

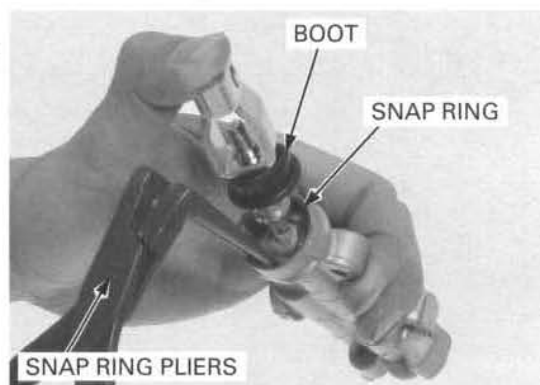
Remove the boot.

Remove the snap ring from the master cylinder body using the special tool as shown.

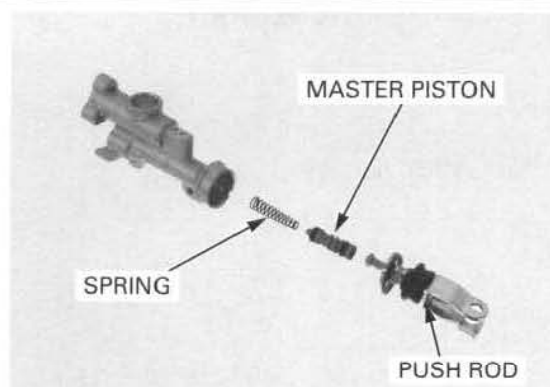
TOOL:

Snap ring pliers

07914-SA50001

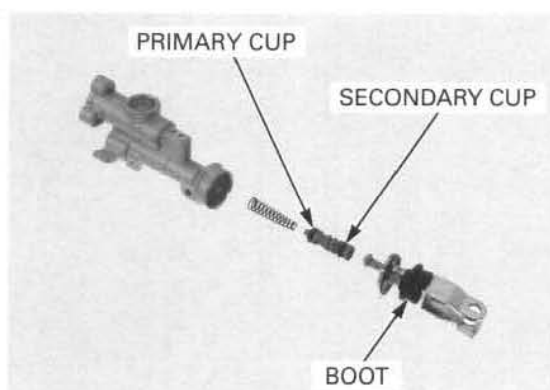


Remove the push rod, master piston and spring.
Clean the inside of the cylinder with brake fluid.

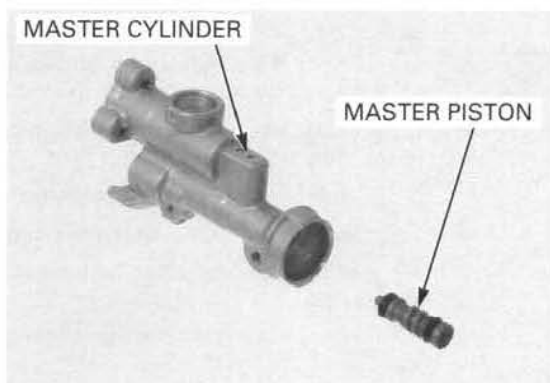


INSPECTION

Check the boot, primary cup and secondary cup for fatigue or damage.

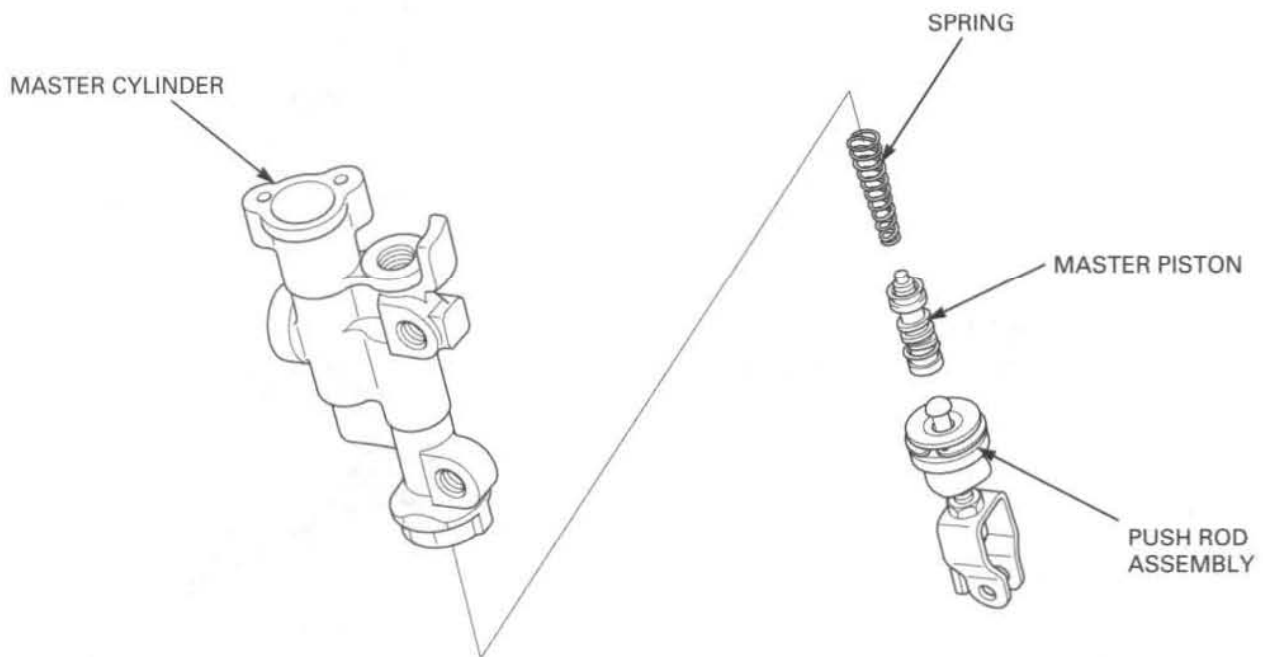


Check the master cylinder for abnormal scratches.
Check the master cylinder piston for abnormal scratches.



HYDRAULIC BRAKE

ASSEMBLY



Keep the piston, cups, spring, snap ring and boot as a set; do not substitute individual parts.

Do not allow the piston cup lips to turn inside out.

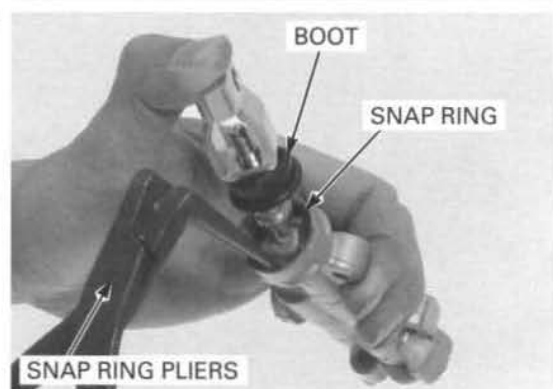
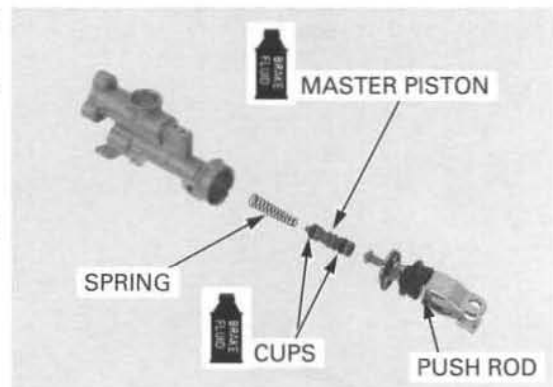
Coat all part with clean brake fluid before assembly. Dip the piston in brake fluid.

Install the spring to the piston.

Install the piston assembly into the master cylinder.

Apply grease to the piston contact area of the push rod.

Install the push rod into the master cylinder.



Be certain the snap ring is firmly seated in the groove.

Install the snap ring into the groove in the master cylinder.

TOOL:

Snap ring pliers

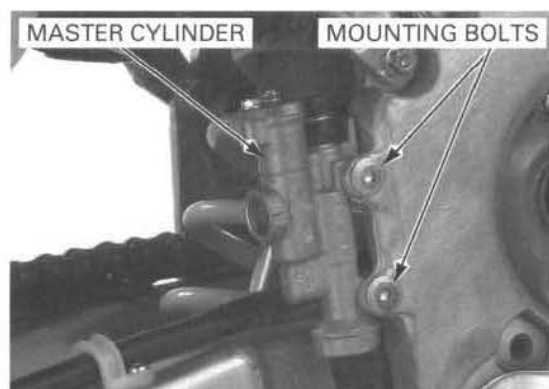
07914-SA50001

Install the boot.

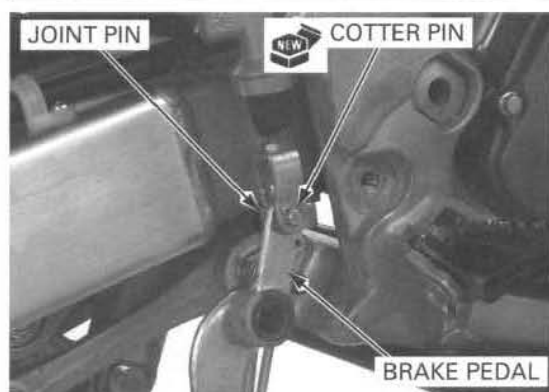
INSTALLATION

Install the rear master cylinder and tighten the mounting bolts to the specified torque.

TORQUE: 13 N·m (1.3 kgf-m, 10 lbf-ft)



Connect the brake pedal to the push rod lower joint. Install the joint pin and secure it with a new cotter pin.



Install the brake hose with the oil bolt and new sealing washers. Push the eyelet joint against the stopper, then tighten the oil bolt to the specified torque.

TORQUE: 34 N·m (3.5 kgf-m, 25 lbf-ft)

Fill and bleed the hydraulic system (page 13-6).

**FRONT BRAKE CALIPER****REMOVAL**

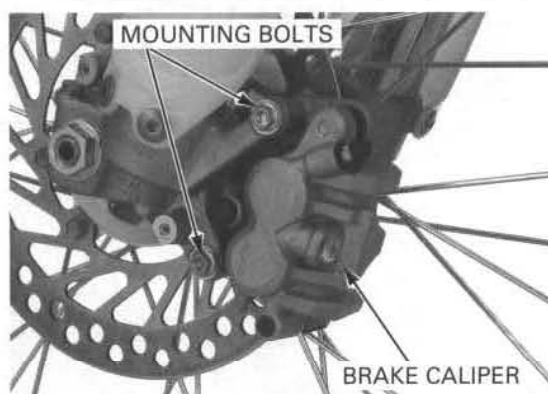
Drain the brake fluid from the hydraulic system (page 13-5).

Remove the oil bolt, sealing washer and brake hose eyelet joint.



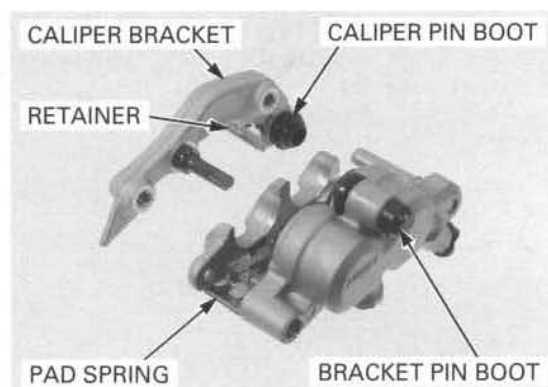
HYDRAULIC BRAKE

Remove the caliper mounting bolts and then remove the caliper and bracket as an assembly.
Remove the brake pads (page 13-8).



DISASSEMBLY

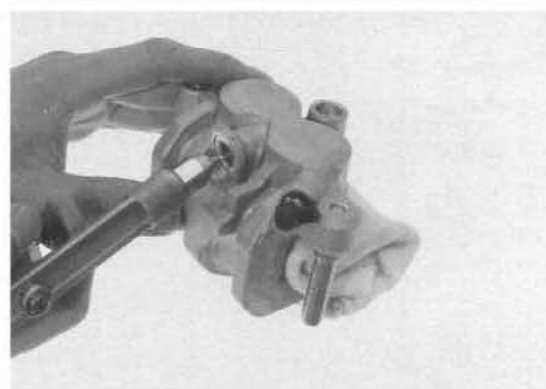
Remove the caliper bracket from the caliper body.
Remove the brake pad spring from the caliper body.
Remove the brake pad retainer from the caliper bracket.
Remove the caliper pin and bracket pin boots.



If necessary, lightly apply compressed air to the caliper fluid inlet to get the piston out.

Do not use high pressure air or bring the nozzle too close the inlet.

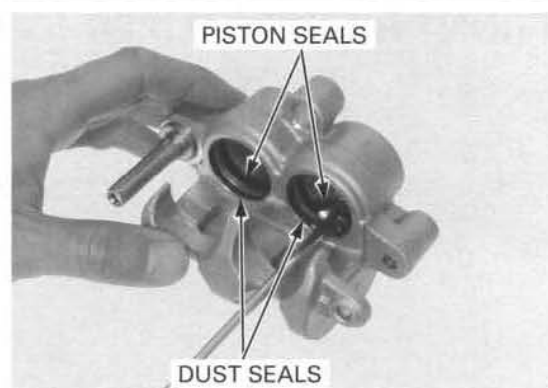
Place a shop rag under the caliper to cushion the piston when it is expelled.
Use the air in short spurts.



Be careful not to damage the piston sliding surface.

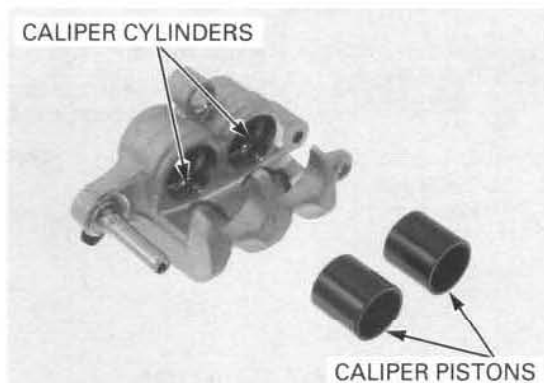
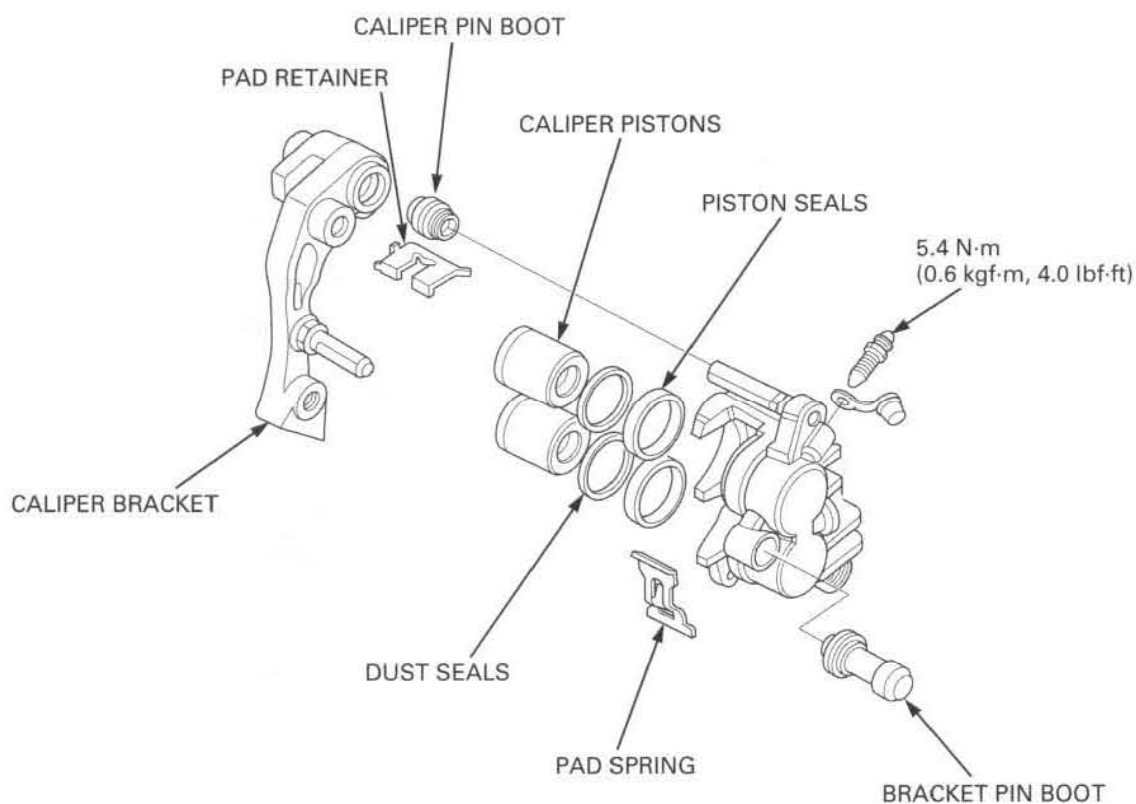
Push the dust seals and piston seals in and lift them out.

Clean the seal grooves, caliper pistons and caliper piston sliding surfaces with clean brake fluid.

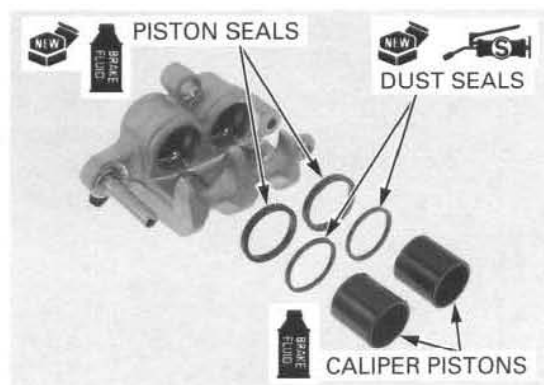


INSPECTION

Check the caliper cylinder and pistons for scoring, scratches or damage.

**ASSEMBLY**

Coat new piston seals with clean brake fluid.
 Coat new dust seals with silicone grease.
 Install the piston seals and dust seals into the grooves of the caliper body.
 Coat the caliper pistons with clean brake fluid and install them into the caliper cylinder with their closed ends facing the caliper.



HYDRAULIC BRAKE

Install the brake pad retainer onto the caliper bracket.

Note the installation direction of the pad spring.

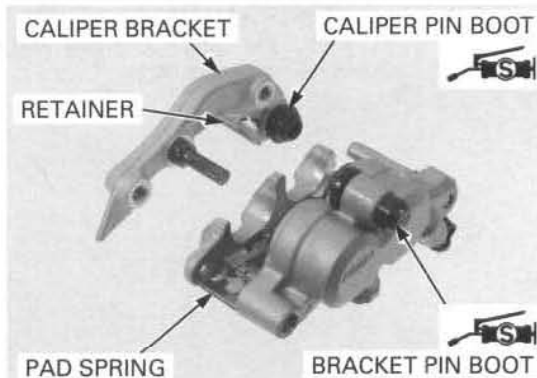
Install the pad spring into the caliper body.

Apply silicone grease to the boot inside.

Install the caliper pin boot and bracket pin boot.

When assembling the caliper and bracket, set the boot into the slide pin groove.

Assemble the caliper and bracket.



INSTALLATION

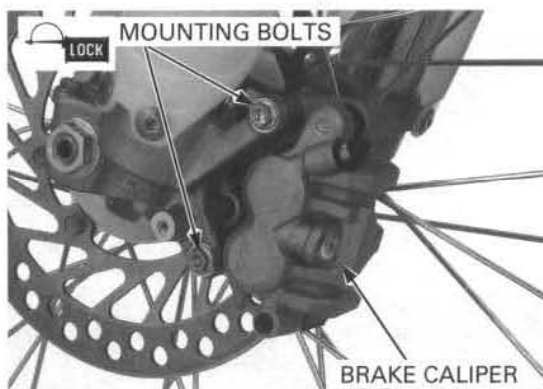
Install the brake pads (page 13-8).

Install the caliper/bracket assembly to the fork leg.

Clean and apply a locking agent to the caliper mounting bolt threads.

Install and tighten the mounting bolts to the specified torque.

TORQUE: 30 N·m (3.1 kgf·m, 22 lbf·ft)



Install the brake hose eyelet to the caliper body with new sealing washers and oil bolt.

Push the brake hose eyelet to the stopper on the caliper, then tighten the oil bolt to the specified torque.

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

Fill and bleed the hydraulic system (page 13-6).



REAR BRAKE CALIPER

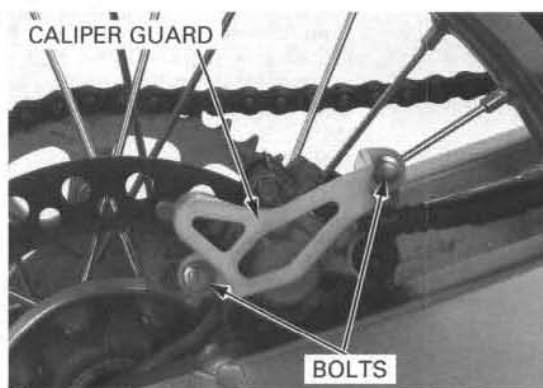
REMOVAL

Drain the brake fluid from the hydraulic system (page 13-5).

Remove the bolts and caliper guard plate.

Loosen the brake hose oil bolt, sealing washers and brake hose eyelet joint.

Remove the rear wheel (page 12-7).



Remove the brake hose oil bolt, sealing washers and brake hose eyelet joint.

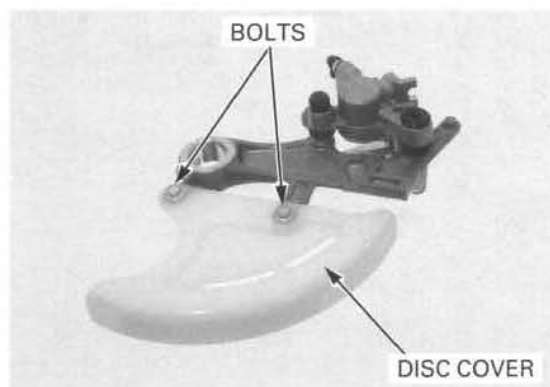
Slide the brake caliper backward and pull it off of the slide rail on the swingarm.

Remove the brake pads (page 13-8).



DISASSEMBLY

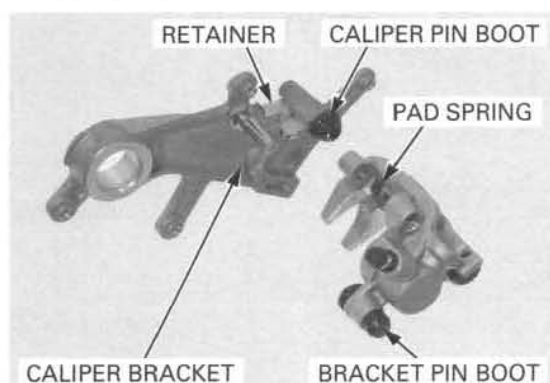
Remove the bolts and brake disc cover.



Remove the caliper bracket from the caliper body.

Remove the brake pad spring from the caliper body. Remove the brake pad retainer from the caliper bracket.

Remove the caliper pin and bracket pin boots.



If necessary, lightly apply compressed air to the caliper fluid inlet to get the piston out.

Do not use high pressure air or bring the nozzle too close to the inlet.

Place a shop rag under the caliper to cushion the piston when it is expelled. Use the air in short spurts.

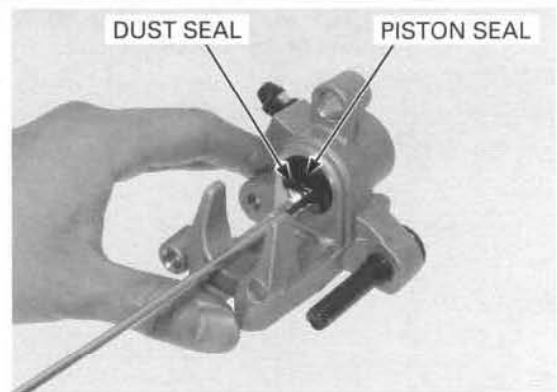


HYDRAULIC BRAKE

Be careful not to damage the piston sliding surface.

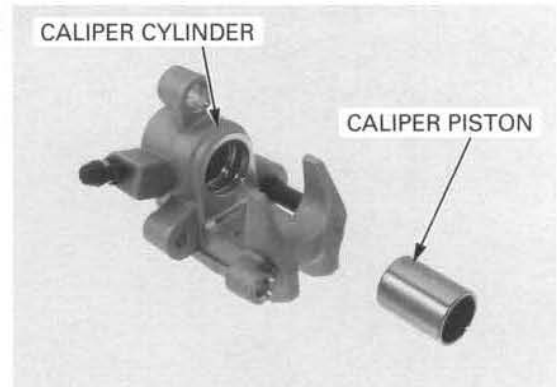
Push the dust seal and piston seal in and lift them out.

Clean the seal grooves, caliper piston and caliper piston sliding surface with clean brake fluid.

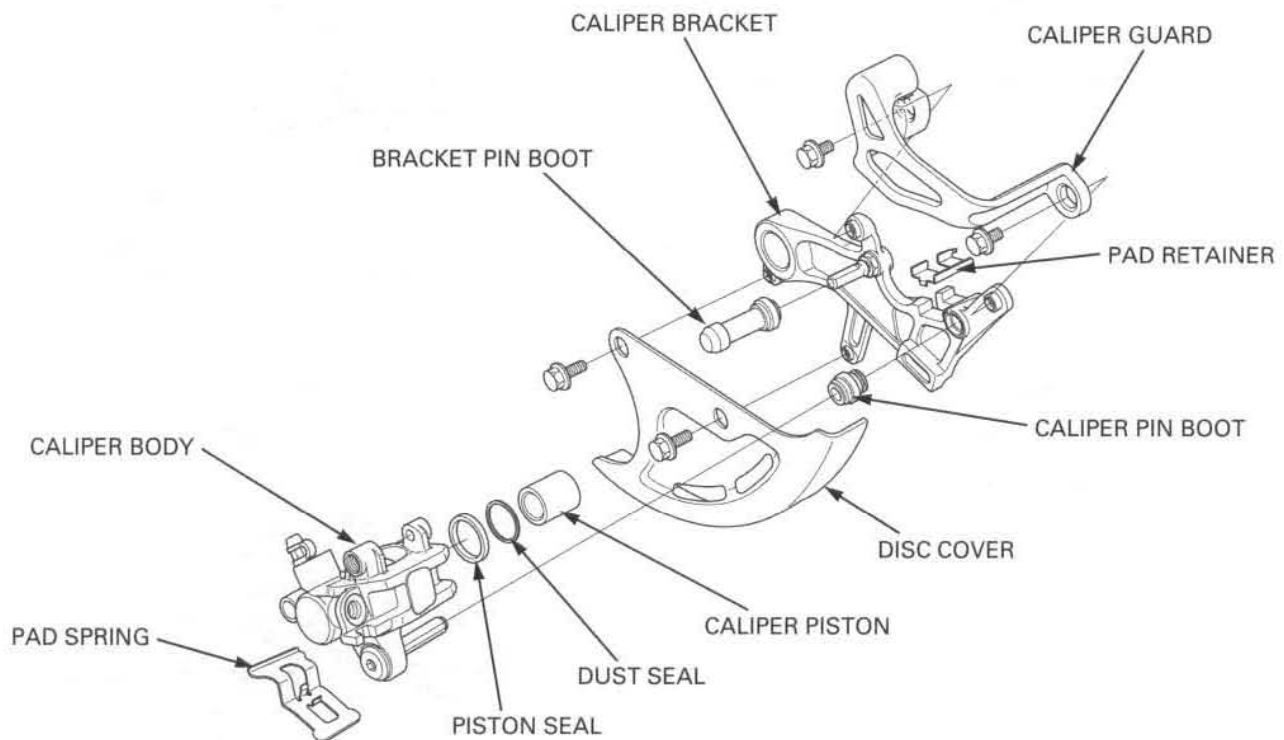


INSPECTION

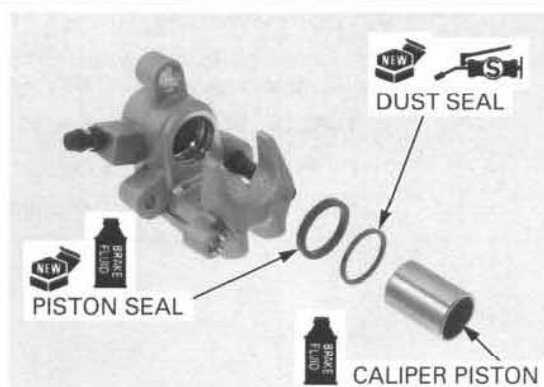
Check the caliper cylinder and pistons for scoring, scratches or damage.



ASSEMBLY



Coat a new piston seal with clean brake fluid.
Coat a new dust seal with silicone grease.
Install the piston seal and dust seal into the grooves of the caliper body.
Coat the caliper piston with clean brake fluid and install it into the caliper cylinder with their closed end facing the caliper.



Install the brake pad retainer onto the caliper bracket.

Note the installation direction of the pad spring.

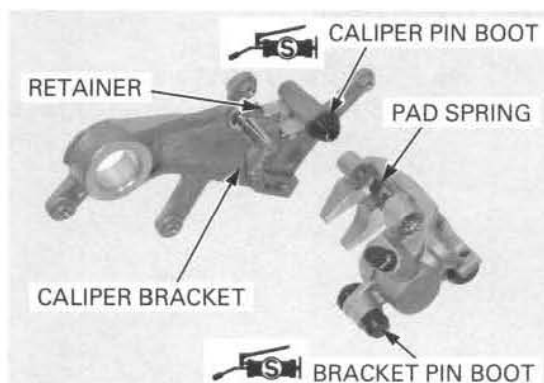
Install the pad spring into the caliper body.

Apply silicone grease to the boot inside.

Install the caliper pin boot and bracket pin boot.

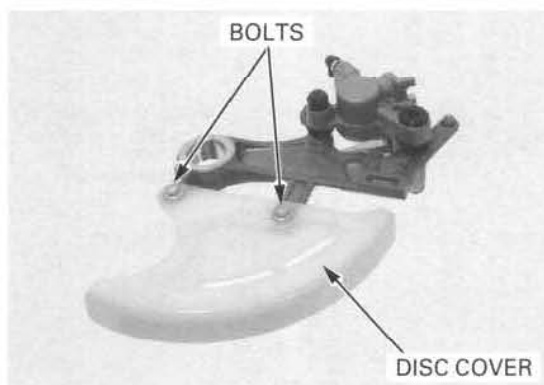
When assembling the caliper and bracket, set the boot into the slide pin groove.

Assemble the caliper an bracket.



Install the brake disc cover and tighten the bolts to the specified torque

TORQUE: 6.8 N·m (0.7 kgf·m, 5.0 lbf·ft)

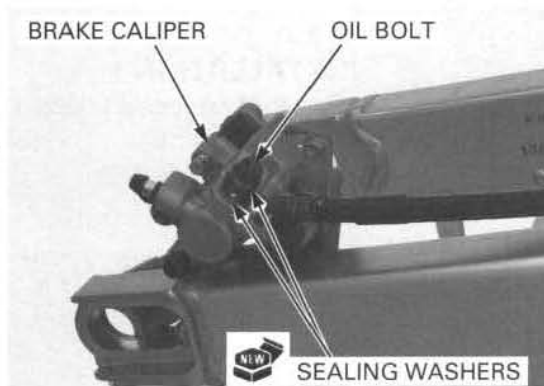


INSTALLATION

Temporarily install the brake hose eyelet to the caliper body with new sealing washers and oil bolt.

Install the brake pads (page 13-8).

Install the caliper/bracket assembly onto the swing-arm by aligning the bracket tab with the slide rail on the swingarm.



HYDRAULIC BRAKE

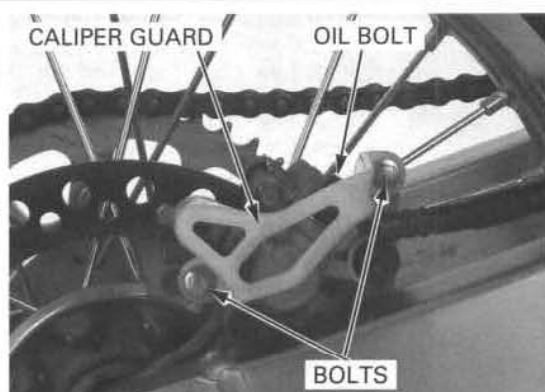
Install the rear wheel (page 12-11).

Push the brake hose eyelet to the stopper on the caliper, then tighten the oil bolt to the specified torque.

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

Fill and bleed the hydraulic system (page 13-6).

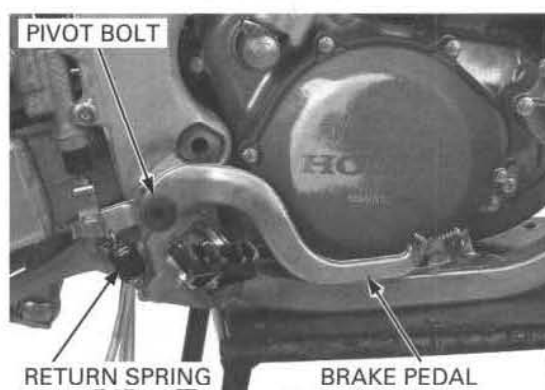
Install the caliper guard plate and tighten the mounting bolts securely.



BRAKE PEDAL

REMOVAL

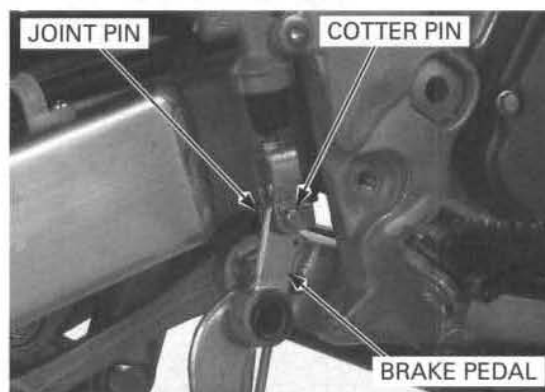
Remove the rear brake pedal pivot bolt, washer and return spring.



Remove and discard the cotter pin.

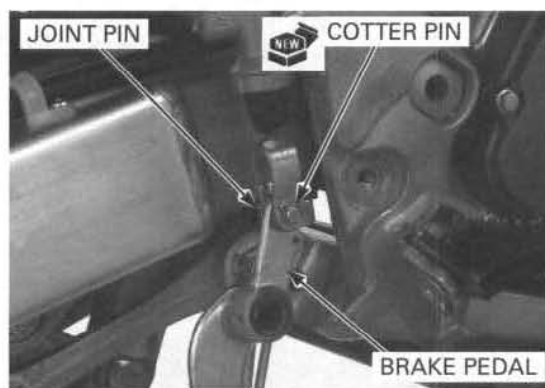
Remove the joint pin.

Remove the brake pedal.



INSTALLATION

Install the brake pedal joint and secure it with a new cotter pin.

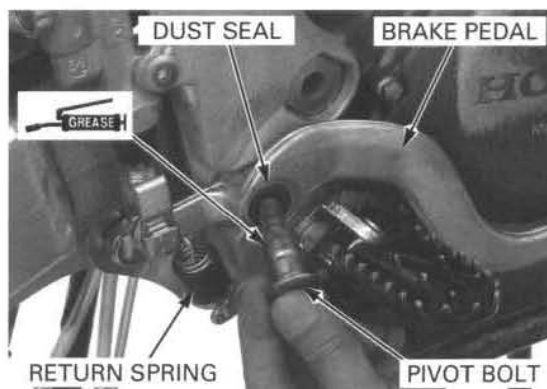


HYDRAULIC BRAKE

Place the washer between the brake pedal and frame as shown.

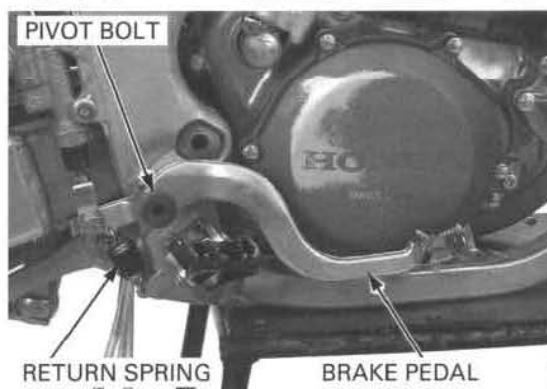


Check the pivot dust seal for damage or deterioration, and replace it if necessary. Hook the brake pedal return spring to the pedal and frame. Apply grease to the sliding surface of the brake pedal and pivot bolt.



Install and tighten the brake pedal pivot bolt to the specified torque.

TORQUE: 36 N·m (3.7 kgf·m, 27 lbf·ft)

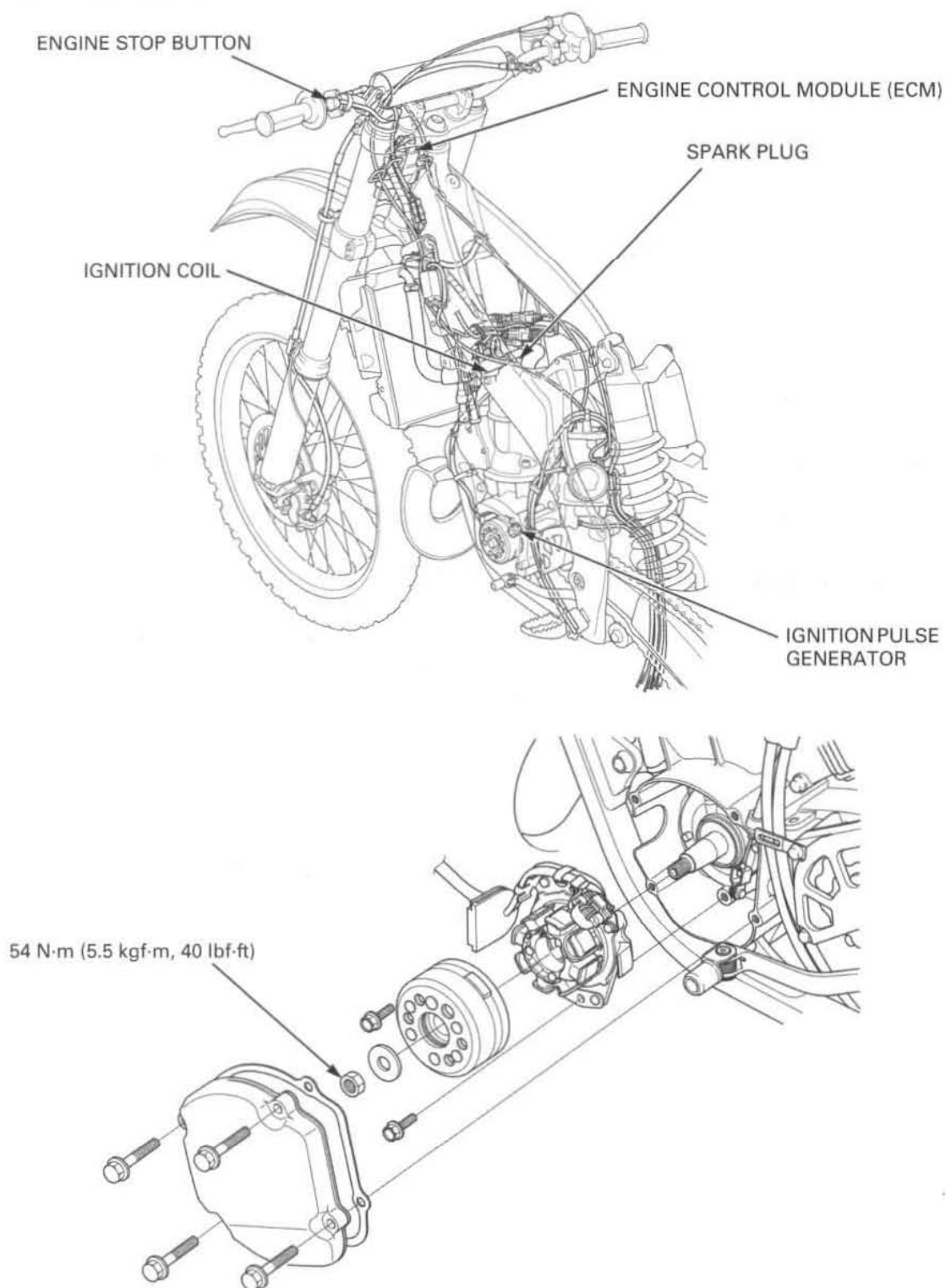


MEMO

14. IGNITION SYSTEM/ALTERNATOR

SYSTEM DIAGRAM.....	14-2	IGNITION PULSE GENERATOR.....	14-10
SERVICE INFORMATION	14-3	ALTERNATOR.....	14-10
TROUBLESHOOTING	14-5	IGNITION TIMING	14-13
IGNITION SYSTEM INSPECTION	14-6	ENGINE STOP BUTTON	14-14
ECM (ENGINE CONTROL MODULE).....	14-8	REGULATOR/RECTIFIER	14-15
IGNITION COIL.....	14-8	THROTTLE POSITION SENSOR INSPECTION	14-16
ALTERNATOR COIL.....	14-9		

SYSTEM DIAGRAM



SERVICE INFORMATION

GENERAL

- When servicing the ignition system, always follow the steps in the troubleshooting sequence on page 14-5.
- The ignition timing does not normally need to be adjusted since the Engine Control Module (ECM) is factory preset.
- The Engine Control Module (ECM) may be damaged if dropped. Also, if the connector is disconnected when current is flowing, the excessive voltage may damage the module.
- A faulty ignition system is often related to poor connections. Check those connections before proceeding.
- Use a spark plug of the correct heat range. Using a spark plug with an incorrect heat range can damage the engine.

SPECIFICATION

ITEM		SPECIFICATION
Spark plug	Standard	BR9EG-N-8 (NGK)
Spark plug gap		0.7 – 0.8 mm (0.027 – 0.031 in)
Ignition coil resistance (at 20 °C/68 °F)	Primary	0.1 – 0.3 Ω
	Secondary with plug cap	9 – 16 k Ω
	Secondary without plug cap	4 – 8 k Ω
Ignition coil peak voltage		100 V minimum
Ignition pulse generator resistance (at 20 °C/68 °F)		180 – 280 Ω
Ignition pulse generator peak voltage		0.7 V minimum
Alternator charging coil resistance (at 20 °C/68 °F)		0.5 – 4.0 Ω
Throttle position sensor resistance (at 20 °C/68 °F)		4 – 6 k Ω (Blue/green - Yellow/red)
Ignition timing ("F" mark) with the throttle position sensor 3P connector disconnected		13.5° BTDC/4,000 rpm

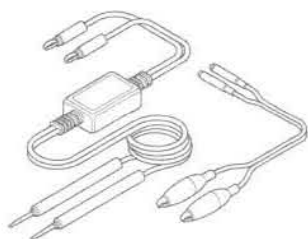
TORQUE VALUES

Flywheel nut

54 N·m (5.5 kgf·m, 40 lbf·ft)

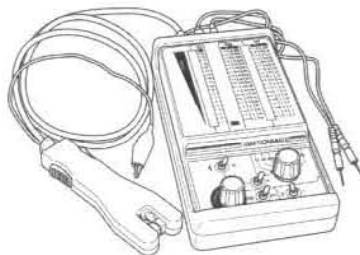
TOOLS

Peak voltage adaptor
07HGJ-0020100
(not available in U.S.A.)

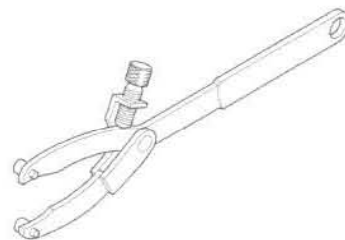


with commercially available digital multimeter (impedance 10 M Ω /minimum)
or Peak voltage tester (U.S.A. only)

IgnitionMate peak voltage tester
MTP07-0286 (U.S.A. only)

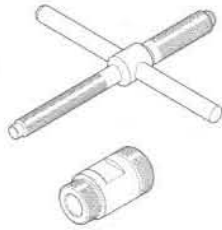


Universal holder
07725-0030000



IGNITION SYSTEM/ALTERNATOR

Flywheel puller
07733-0010000



or 07933-0010000

TROUBLESHOOTING

- Inspect the following before diagnosing the system.
 - faulty spark plug
 - loose spark plug cap or spark plug wire connection
 - water got into the spark plug cap (affecting the ignition coil secondary voltage)

IGNITION SYSTEM

No spark at plug

	Unusual condition	Probable cause (check in numerical order)
Ignition coil primary voltage	Low peak voltage.	1. Incorrect peak voltage adaptor connections (system is normal if measured voltage is over the specifications with reverse connection). 2. The multimeter impedance is too low; below 10 MΩ/DCV. 3. Cranking speed is too slow (operating force of the kick-starter is weak). 4. The sampling timing of the tester and measured pulse were not synchronized (system is normal if measured voltage is over the standard voltage at least once). 5. Poorly connected connectors or an open circuit in ignition system. 6. Faulty alternator coil (measure the peak voltage). 7. Faulty ignition coil. 8. Faulty regulator/rectifier or condenser. 9. Faulty ECM (in case when above No. 1 – 8 are normal).
	No peak voltage.	1. Incorrect peak voltage adaptor connections (system is normal if measured voltage is over the specifications with reverse connection). 2. Short circuit in the engine stop button wire. 3. Loose or poorly connected ECM connectors. 4. An open circuit or loose connection in Green wire. 5. Faulty alternator coil (measure the peak voltage). 6. Faulty ignition pulse generator (measure the peak voltage). 7. Faulty peak voltage adaptor. 8. Faulty regulator/rectifier or condenser. 9. Faulty ECM (in case when above No. 1 – 8 are normal).
	Peak voltage is normal, but no spark jumps at plug.	1. Faulty spark plug or leaking ignition coil secondary current amperage. 2. Faulty ignition coil.
Ignition pulse generator	Low peak voltage.	1. The multimeter impedance is too low; below 10 MΩ/DCV. 2. Cranking speed is too slow (operating force of the kick-starter is weak). 3. The sampling time of the tester and measured pulse were not synchronized (system is normal if measured voltage is over the standard voltage at least once). 4. Faulty ignition pulse generator (in case when above No. 1 – 3 are normal).
	No peak voltage.	1. Faulty peak voltage adaptor. 2. Faulty ignition pulse generator.

IGNITION SYSTEM INSPECTION

- If there is no spark at the spark plug, check all connections for loose or poor contact before measuring each peak voltage.
- If using the peak voltage adaptor, use a commercially available digital multimeter with an impedance of 10 M Ω /DCV minimum.
- The display value differs depending upon the internal impedance of the multimeter.

Connect the peak voltage adaptor to the digital multimeter, or use the peak voltage tester (U.S.A. only).

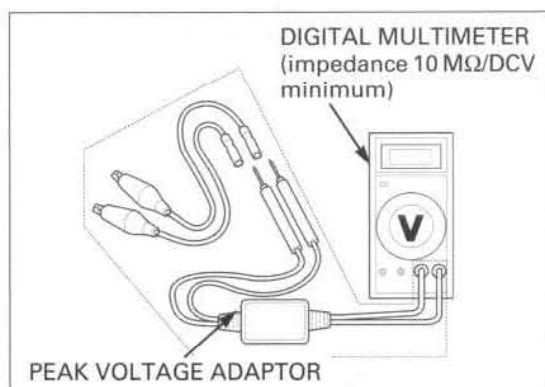
If using the peak voltage tester (U.S.A. only), follow the manufacturer's instruction.

TOOLS:

IgnitionMate peak voltage tester MTP07-0286 (U.S.A. only) or 07HGJ-0020100 (not available in U.S.A.)

Peak voltage adaptor

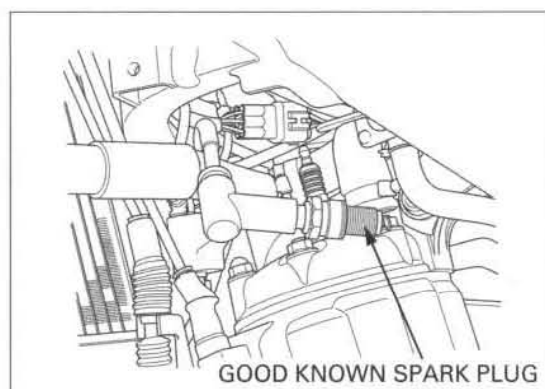
with commercially available digital multimeter (impedance 10 M Ω /DCV minimum)



IGNITION COIL PRIMARY PEAK VOLTAGE

- Check all system connections before inspection. If the system is disconnected, incorrect peak voltage might be measured.
- Check cylinder compression and make sure the spark plug is installed correctly.

Shift the transmission into neutral and disconnect the spark plug cap from the spark plug. Connect a good known spark plug to the spark plug cap and ground the spark plug to the cylinder head.



Avoid touching the spark plug or tester probes to prevent electric shock.

Disconnect the ECM 8P (Black) connector.

With the ignition coil primary wire connected, connect the peak voltage adaptor or peak voltage tester to the ignition coil.

TOOLS:

IgnitionMate peak voltage tester MTP07-0286
(U.S.A. only) or
07HGJ-0020100
(Not available in U.S.A.)

Peak voltage adaptor

with commercially available digital multimeter
(impedance 10 M Ω /DCV minimum)

CONNECTION:

Black/yellow terminal (-) – Green (+)

Crank the engine with kickstarter and read ignition coil primary peak voltage.

PEAK VOLTAGE: 100 V minimum

If the peak voltage measured at ECM is abnormal, check the peak voltage at the ignition coil primary connector.

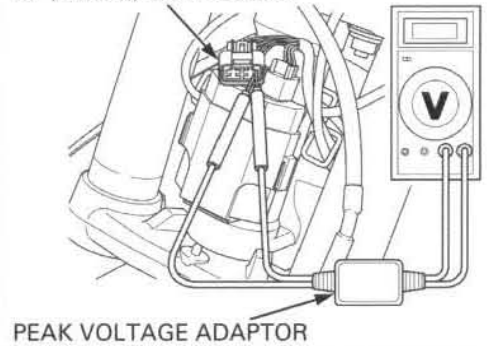
CONNECTION:

Black/yellow terminal (-) – Body ground (+)

If the peak voltage measure at the ignition coil is normal, check for an open circuit or poor connection in Black/yellow wire.

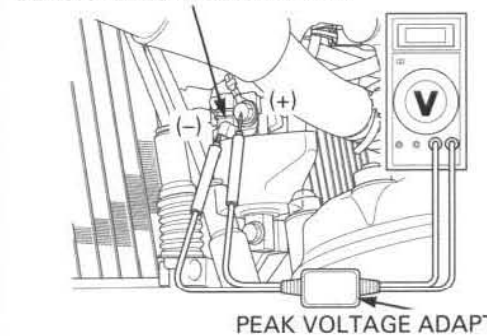
If defects are not found in the harness, refer to the troubleshooting chart (page 14-5).

8P (BLACK) CONNECTOR



PEAK VOLTAGE ADAPTOR

BLACK/YELLOW CONNECTOR



PEAK VOLTAGE ADAPTOR

IGNITION PULSE GENERATOR PEAK VOLTAGE

- Check that the spark plug is installed correctly.

Remove the number plate (page 2-4).

Disconnect the ECM 8P (Black) and 4P (Black) connectors.

Connect the peak voltage adaptor or peak voltage tester probes to the connector terminals of the wire harness side.

TOOLS:

IgnitionMate peak voltage tester MTP07-0286
(U.S.A. only) or
07HGJ-0020100
(Not available in U.S.A.)

Peak voltage adaptor

with commercially available digital multimeter
(impedance 10 M Ω /DCV minimum)

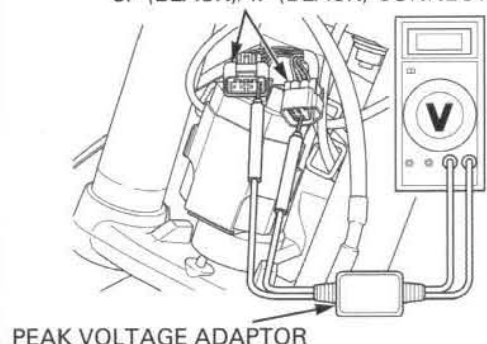
CONNECTION:

Blue/yellow terminal (+) – Green (-)

Crank the engine with the kickstarter and read the peak voltage.

PEAK VOLTAGE: 0.7 V minimum

8P (BLACK)/4P (BLACK) CONNECTOR



PEAK VOLTAGE ADAPTOR

IGNITION SYSTEM/ALTERNATOR

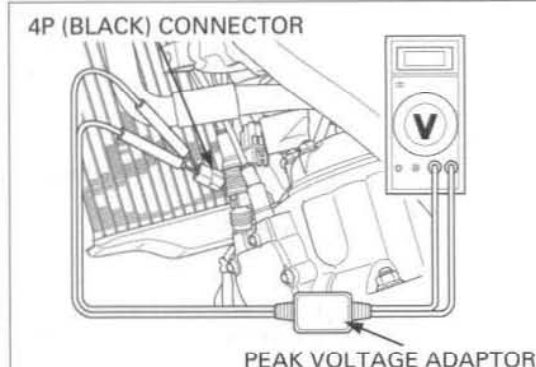
If the peak voltage measured at the ECM connector is abnormal, check the peak voltage at the alternator 4P (Black) connector.

CONNECTION:

Blue/yellow terminal (+) – Green/white (–)

If the peak voltage measured at the alternator connector is normal, check the wire harness for open circuit or loose connection.

If the wire harness is abnormal, check each item in the troubleshooting. If all items are normal, the ignition pulse generator is faulty. See page 14-10 for ignition pulse generator replacement.



ECM (ENGINE CONTROL MODULE)

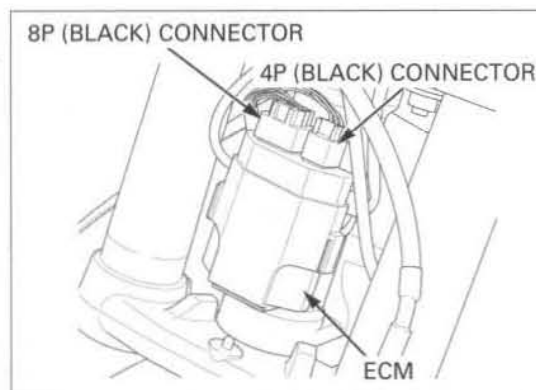
REMOVAL/INSTALLATION

Remove the number plate (page 2-4).

Disconnect the ECM 4P (Black) and 8P (Black) connectors.

Remove the ECM from the rubber case.

Installation is in the reverse order of removal.



IGNITION COIL

INSPECTION

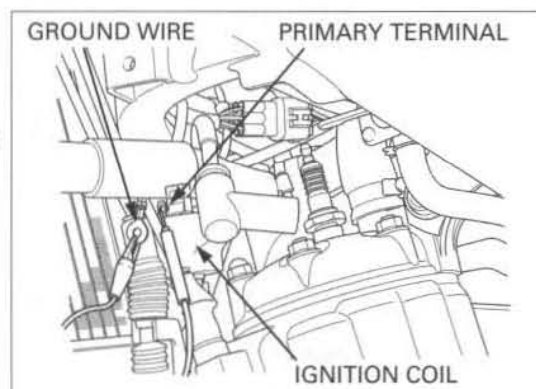
Remove the fuel tank (page 2-6).

Remove the spark plug cap.

Remove the ignition coil mounting bolt.

Disconnect the ignition coil primary wire connector. Measure the ignition primary coil resistance between the primary terminals.

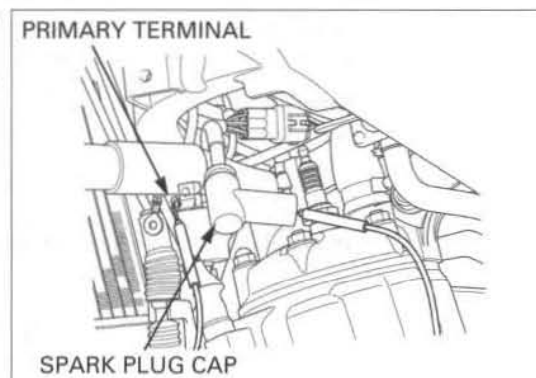
STANDARD: 0.1 – 0.3 Ω (20 °C/68 °F)



If the resistance is out of range, replace the ignition coil.

Measure the ignition secondary coil resistance between the primary terminal and plug cap.

STANDARD: 9 – 16 k Ω (20 °C/68 °F)

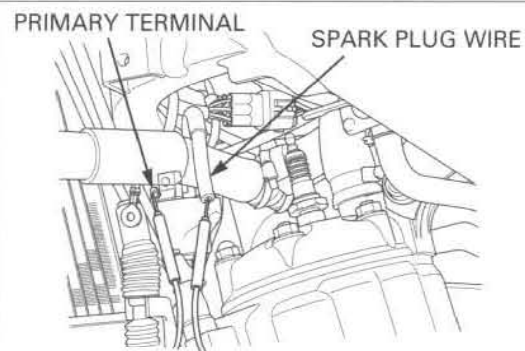


IGNITION SYSTEM/ALTERNATOR

If the resistance is out of range, remove the spark plug cap and measure the ignition secondary coil resistance between the primary terminal and spark plug wire.

STANDARD: 4 – 8 k Ω (20 °C/68 °F)

If the resistance is out of range, replace the ignition coil.



REMOVAL/INSTALLATION

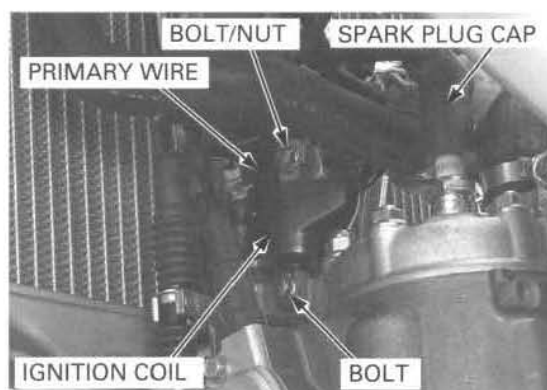
Remove the left radiator shroud (page 2-4).

Remove the spark plug cap.

Disconnect the ignition coil primary wire.

Remove the bolts, nut and ignition coil.

Installation is in the reverse order of removal.



ALTERNATOR COIL

INSPECTION

Remove the fuel tank (page 2-6).

Disconnect the regulator/rectifier 4P (Natural) connector.

Measure the resistance between the Yellow and White terminals of the wire harness side.

CONNECTION:

Yellow – White

STANDARD: 0.5 – 4.0 Ω (20 °C/68 °F)

4P (NATURAL) CONNECTOR

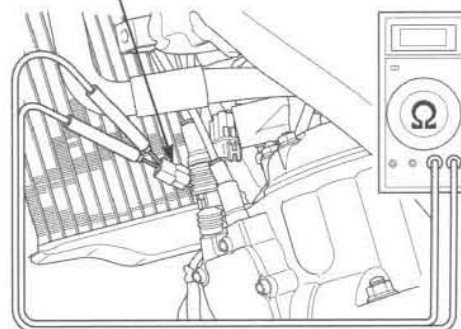


If the resistance is out of range, disconnect the alternator 4P (Black) connector and measure the resistance at the 4P (Black) terminals of the alternator side.

If the resistance measured at the alternator 4P (Black) connector is normal, check for an open circuit or poor connection in Yellow and White wire.

If defects are not found in the harness, refer to the troubleshooting chart (page 14-5).

4P (BLACK) CONNECTOR



IGNITION SYSTEM/ALTERNATOR

IGNITION PULSE GENERATOR

INSPECTION

Remove the number plate (page 2-4).

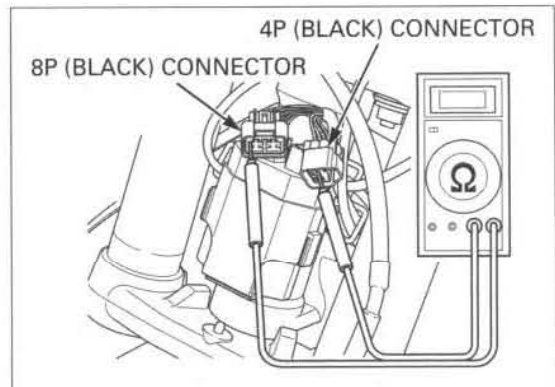
Disconnect the ECM 8P (Black) and 4P (Black) connectors.

Measure the resistance between the Blue/yellow and Green terminals of the wire harness side.

CONNECTION:

Blue/yellow – Green

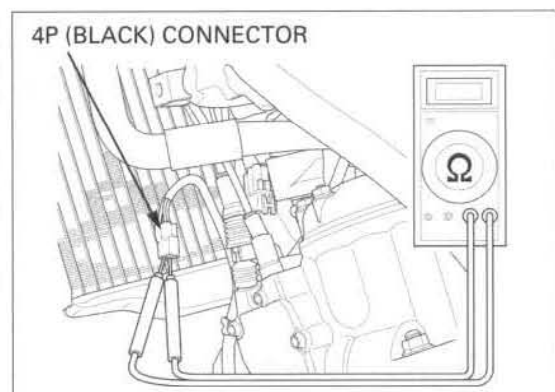
STANDARD: 180 – 280 Ω (20 °C/68 °F)



If the resistance is out of range, disconnect the alternator 4P (Black) connector and measure the resistance between the Blue/yellow and Green/white terminals at the 4P (Black) terminals of the ignition pulse generator side.

If the resistance measured at the alternator 4P (Black) connector is normal, check for an open circuit or poor connection in Blue/yellow and Green wire.

If defects are not found in the harness, refer to the troubleshooting chart (page 14-5).



ALTERNATOR

REMOVAL

Disconnect the alternator 4P (Black) connector.

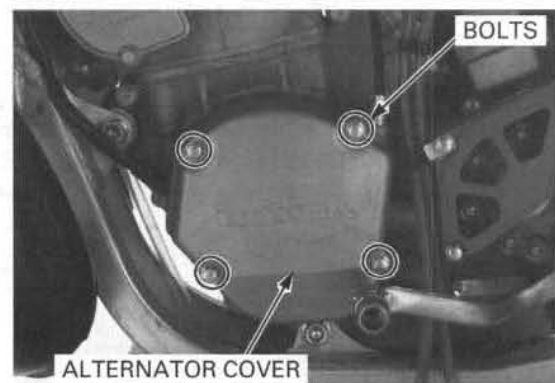
Remove the left radiator mounting bolts (page 5-7).

Remove the wire band.

Release the alternator wire from the wire clamp on the RC valve cover.



Remove the bolts and alternator cover.



IGNITION SYSTEM/ALTERNATOR

Remove the gasket.

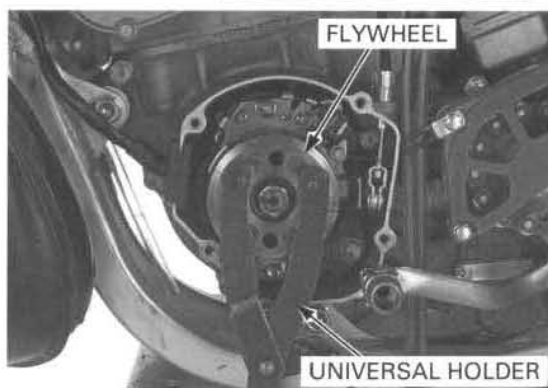


Hold the flywheel with the universal holder, then remove the nut and washer.

TOOL:

Universal holder

07724-0030000



Remove the flywheel using the flywheel puller.

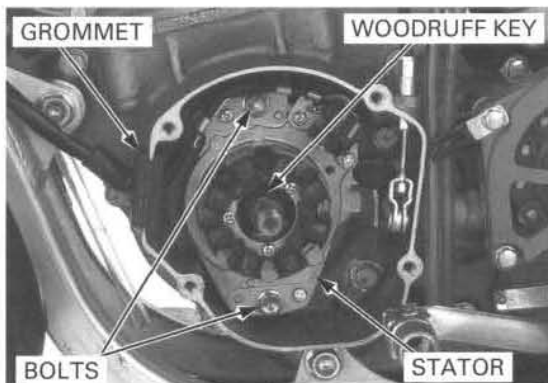
TOOL:

Flywheel puller

07733-0010000 or
07933-0010000



Remove the grommet, woodruff key, bolts and stator.



IGNITION SYSTEM/ALTERNATOR

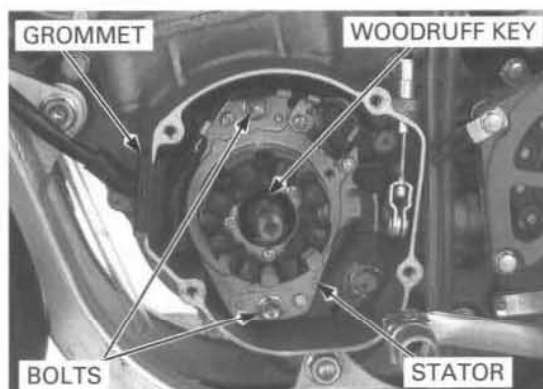
INSTALLATION

Clean any oil from the tapered portion of the crankshaft and flywheel.

Install the woodruff key to the groove on the crankshaft.

Install the stator and tighten the bolts securely.

Install the grommet to the groove on the left crankcase.



When you replaced the flywheel, stator or ECM, check and adjust the ignition timing (page 14-13).

Install the flywheel to the crankshaft, aligning the groove on the flywheel and woodruff key.

Install the washer and nut.

Hold the flywheel with the universal holder and tighten the nut to the specified torque.

TOOL:

Universal holder 07724-0030000

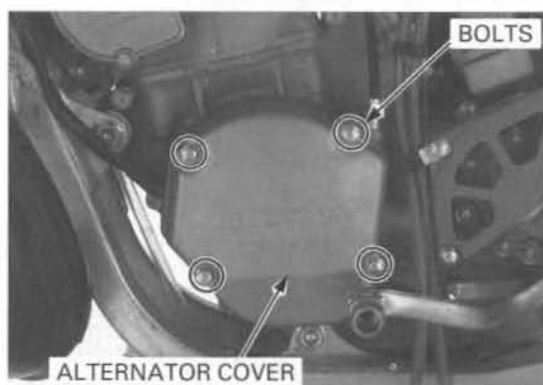
TORQUE: 54 N·m (5.5 kgf·m, 40 lbf·ft)



Install the new gasket.



Install the alternator cover and tighten the bolts.



Route the alternator wire properly, clamp it with wire clamp on the RC valve cover.

Secure the alternator wire with wire band.

Connect the alternator 4P (Black) connector.



IGNITION TIMING

- Read the manufacturer's instructions for timing light operation.

Warm up the engine to normal operating temperature.

Stop the engine.

Remove the bolts and alternator cover.



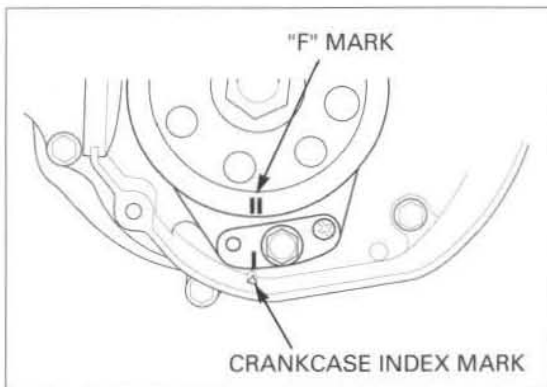
Disconnect the TPS (Throttle Position Sensor) 3P (Natural) connector.



Check that the stator index mark is aligned with the index mark on the crankcase.

Attach the timing light and tachometer.

Start the engine and hold it at 4,000 rpm while pointing the timing light towards the index mark.



IGNITION SYSTEM/ALTERNATOR

If the stator's original index mark aligns between the "F" marks, the engine is timed correctly. Remove the testing equipment and reassemble the motorcycle.

If the stator's original index mark does not align between the "F" marks, scribe a temporary index mark on the stator setting plate that will align between the "F" marks at 4,000 rpm.

Stop the engine and do the following.

- This procedure is to be done after replacing the ECM, ignition pulse generator/stator assembly or flywheel.
- If you have checked the ignition timing as a troubleshooting method and the marks did not align, inspect the ECM, ignition pulse generator and stator, before performing this procedure.

Remove the stator mounting bolts, setting plate screw and setting plate.

Elongate the setting plate mounting bolt hole, then reinstall it with its temporary index mark aligned with the index mark on the crankcase.

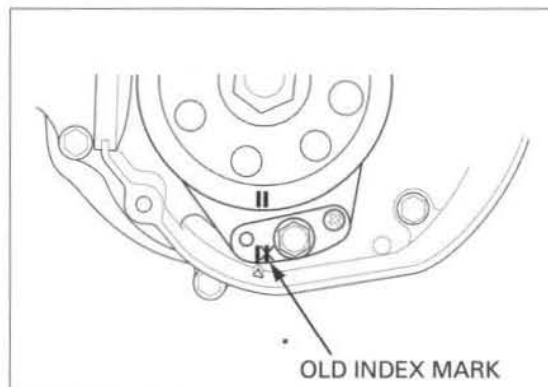
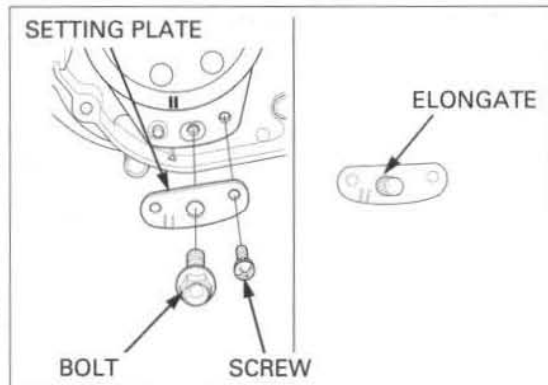
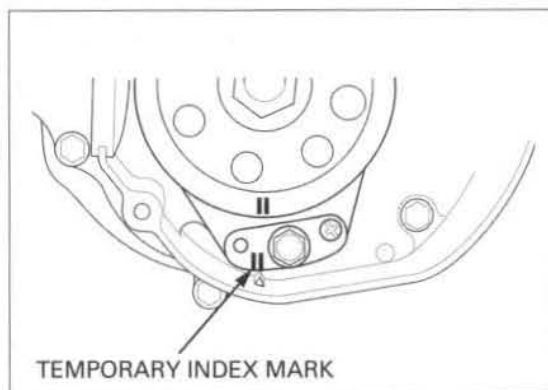
Install and tighten the stator mounting bolts and setting plate screw.

Recheck the ignition timing.

The stator setting plate index mark should now align between the "F" marks on the flywheel.

Repeat the steps if the ignition timing is not correct.

Grind off the old index mark.



ENGINE STOP BUTTON

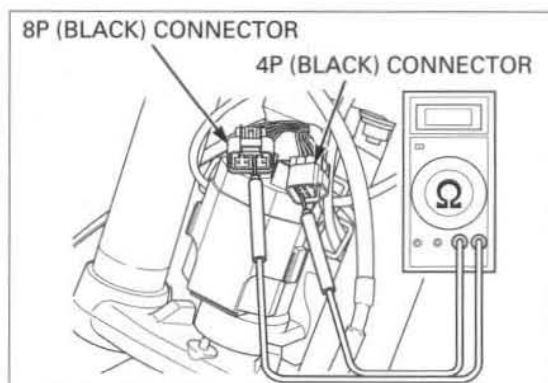
INSPECTION

Remove the number plate (page 2-4).

Disconnect the ECM 8P (Black) and 4P (Black) connectors.

Check for continuity at the Black/white and Green terminals of the wire harness side with the engine stop button pressed.

There should be no continuity when the button is not pushed.



Disconnect the engine stop button connectors.



Check the engine stop button for continuity with the button pressed.
There should be continuity when the button is pressed and no continuity when released.



REGULATOR/RECTIFIER

INSPECTION

VOLTAGE INSPECTION

Remove the number plate (page 2-4).

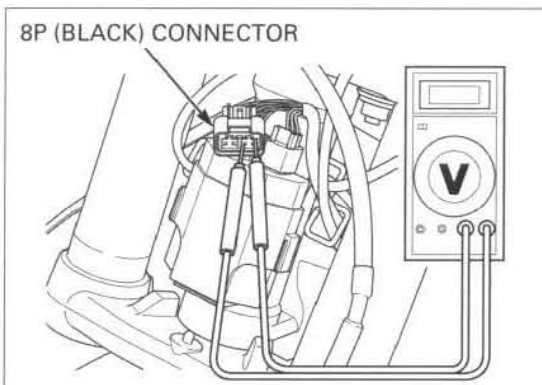
Disconnect the ECM 8P (Black) connector.
Measure the voltage at the ECM 8P (Black) connector of the wire harness side.
Crank the engine with kickstarter several times at a few seconds interval.

CONNECTION: Red (+) – Green (-)

STANDARD: 5 V minimum

If the voltage measured is below 5 V, check the circuit inspection.

If the voltage measured is over 12 V all the time, replace the regulator/rectifier unit.



CIRCUIT INSPECTION

Remove the fuel tank (page 2-6).

Disconnect the regulator/rectifier 4P (Black) connector.

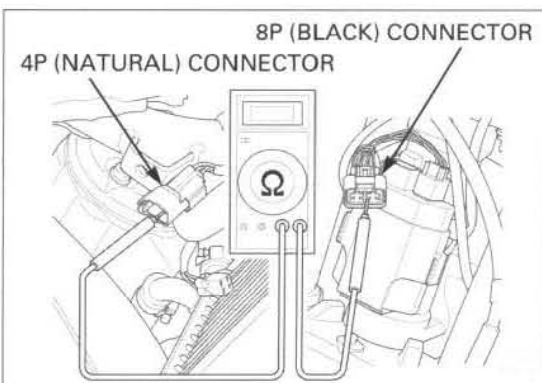
Check for continuity between the ECM 8P (Black) connector of the wire harness side and the regulator/rectifier 4P connector of the wire harness side.

CONNECTION: Red – Red
Green – Green

STANDARD: Continuity

If there is no continuity, check for poorly connected connectors or a broken wire harness.

If there is continuity, replace the regulator/rectifier.



IGNITION SYSTEM/ALTERNATOR

REMOVAL/INSTALLATION

Remove the fuel tank (page 2-6).

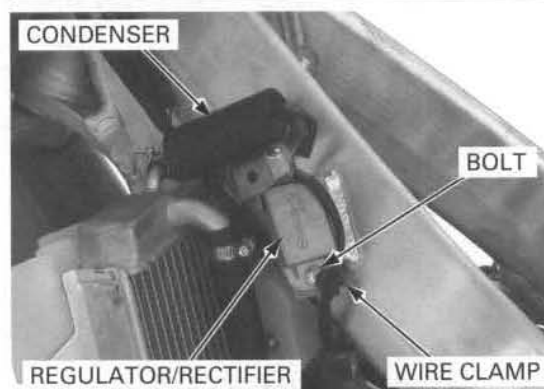
Disconnect the regulator/rectifier 4P (Natural) connector.

Remove the condenser from the tab on the frame.
Remove the regulator/rectifier wire from the wire clamp.

Remove the bolt, clamp and regulator/rectifier unit.

Installation is in the reverse order of removal.

Route the wires properly (page 1-17).

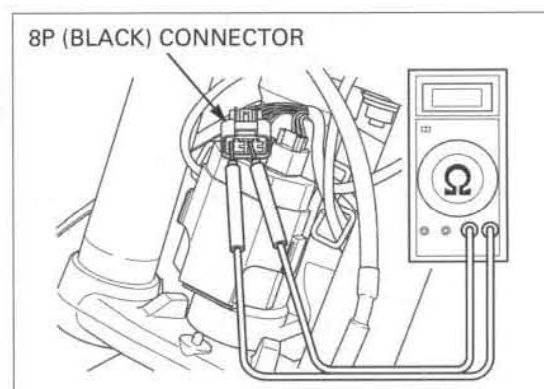


THROTTLE POSITION SENSOR INSPECTION

Remove the number plate (page 2-4).

Disconnect the ECM 8P (Black) connectors.
Measure the resistance between the Blue/green and Yellow/red wire terminals of the wire harness side connector.

STANDARD: 4 – 6 k Ω (20 °C/68 °F)



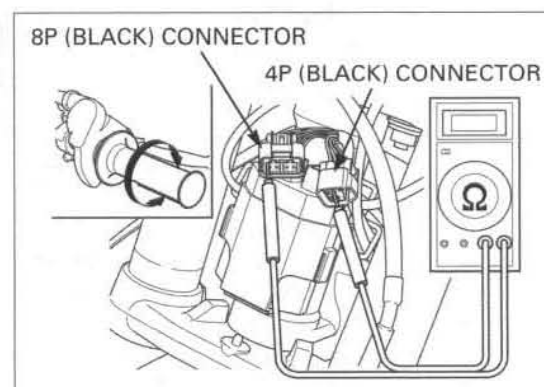
Check that the resistance between the Blue/green and Yellow/blue wire terminals varies from 0 to about 5 k Ω with the throttle position while operating the throttle grip.

Fully closed – Fully open position:

Resistance increases

Fully open – Fully closed position:

Resistance decreases



If both measurements are abnormal, recheck the following:

Remove the fuel tank (page 2-6).

Disconnect the throttle position sensor (TPS) 3P (Natural) connector.

Measure the resistance between the Blue/green and Yellow/red wire terminals of the sensor side connector.

STANDARD: 4 – 6 k Ω (20 °C/68 °F)

Check that the resistance between the Blue/green and Yellow/blue wire terminals varies from 0 to about 5 k Ω with the throttle position while operating the throttle grip.

Fully closed – Fully open position:

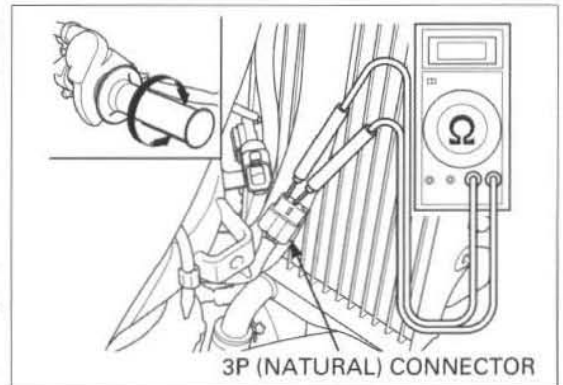
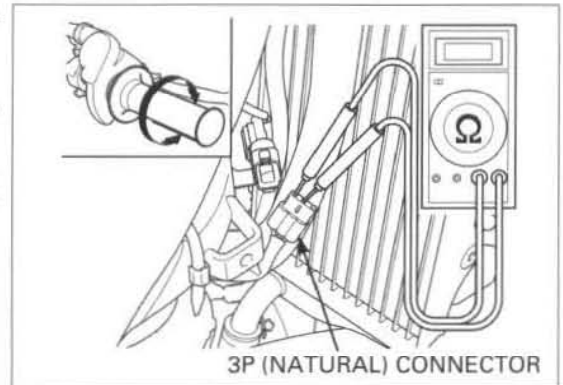
Resistance increases

Fully open – Fully closed position:

Resistance decreases

If the measurements at the ECM 8P (Black) connector is abnormal and the measurement at the TPS connector is normal, check for poor connection of the connectors or a broken wire harness.

If both measurements are abnormal, replace the TPS (page 4-19).

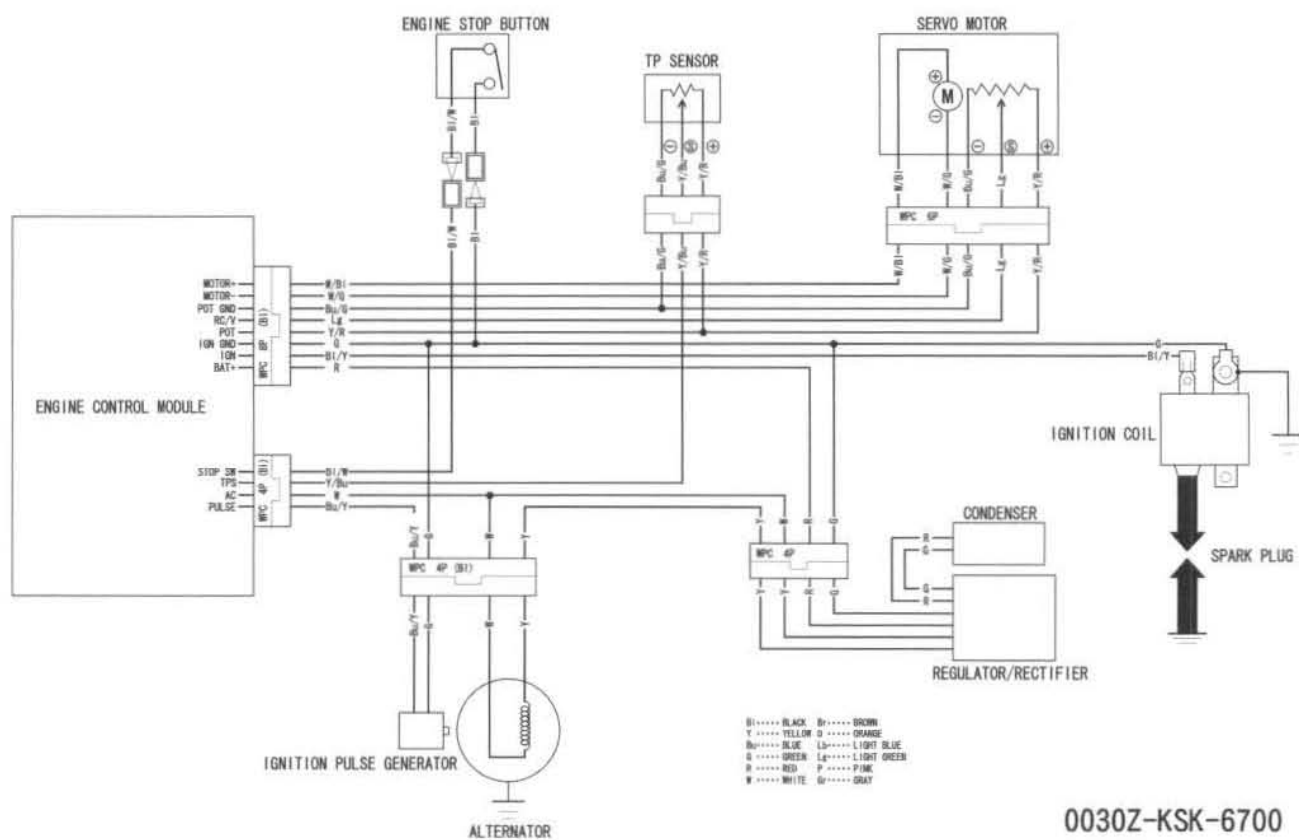


MEMO

15. WIRING DIAGRAM

WIRING DIAGRAM 15-2

WIRING DIAGRAM WIRING DIAGRAM



0030Z-KSK-6700

16. TROUBLESHOOTING

ENGINE DOES NOT START OR IS
HARD TO START 16-2

ENGINE LACKS POWER 16-3

POOR PERFORMANCE AT LOW AND
IDLE SPEED..... 16-5

POOR PERFORMANCE AT HIGH SPEED 16-6

POOR HANDLING..... 16-7

ENGINE DOES NOT START OR IS HARD TO START

1. Carburetor Inspection

Check the fuel flow to carburetor.

Is fuel reaching the carburetor?

- NO** – • Clogged fuel hose or fuel strainer screen
• Sticking float valve
• Clogged fuel tank breather hose

YES – GO TO STEP 2.

2. Spark Test

Perform a spark test.

Is there a good spark?

- NO** – • Faulty spark plug
• Fouled spark plug
• Faulty (ECM) Engine Control Module
• Broken or shorted spark plug wire
• Broken or shorted ignition coil
• Faulty igniting pulse generator
• Faulty alternator coil
• Faulty engine stop button
• Loose or disconnected ignition system wires

YES – GO TO STEP 3.

3. Cylinder Compression Inspection

Test the cylinder compression.

Is the compression normal?

- NO** – • Stuck piston ring
• Worn cylinder and piston ring
• Leaking/damaged cylinder head gasket
• Faulty reed valve
• Cylinder head flaw
• Compression leak past crankcase

YES – GO TO STEP 4.

4. Engine Start Condition

Start by following the normal procedure.

Does the engine start but then stop?

- YES** – • Improper choke operation
• Carburetor incorrectly adjusted
• Intake pipe leaking
• Improper ignition timing (faulty ignition coil or ignition pulse generator)
• Crankcase leaking
• Fuel contaminated

NO – GO TO STEP 5.

5. Spark Plug Inspection

Remove and inspect spark plug.

Is the spark plug in good condition?

- NO** – • Flooded carburetor
• Clogged air cleaner

ENGINE LACKS POWER

1. Drive Train Inspection

Raise wheel off the ground and spin by hand.

Does the wheel spin freely?

- NO – • Brake dragging
• Worn or damaged wheel bearings
• Drive chain too tight

YES – GO TO STEP 2.

2. Tire Pressure Inspection

Check the tire pressure.

Is the tire pressure correct?

- NO – • Faulty tire valve
• Punctured tire

YES – GO TO STEP 3.

3. Clutch Inspection

Accelerate rapidly from low to second.

Does the engine speed change accordingly when clutch is released?

- NO – • Clutch slipping
• Worn clutch discs/plates
• Warped clutch discs/plates
• Weak clutch spring

YES – GO TO STEP 4.

4. Engine Performance Inspection

Accelerate lightly.

Does the engine speed increase?

- NO – • Carburetor choke is on
• Clogged air cleaner
• Restricted fuel flow
• Clogged exhaust chamber
• Pinched fuel fill cap breather
• Excessive carbon build-up on the RC valve

YES – GO TO STEP 5.

5. Ignition Timing Inspection

Check the ignition timing.

Is the ignition timing normal?

- NO – • Faulty Engine Control Module (ECM)
• Faulty ignition pulse generator

YES – GO TO STEP 6.

6. Cylinder compression Inspection

Test the cylinder compression.

Is the compression normal?

- NO – • Faulty reed valve
• Worn cylinder and piston ring
• Leaking/damaged head gasket
• Flaws in cylinder head, cylinder or crankcase

YES – GO TO STEP 7.

7. Carburetor Inspection

Check the carburetor for clogs.

Is the carburetor clogged?

- YES – • Carburetor dirty
• Dirt getting past air cleaner

TROUBLESHOOTING

NO – GO TO STEP 8.

8. Spark Plug Inspection

Remove and inspect the spark plug.

Is the spark plug in good condition?

NO – • Plug not serviced frequently enough
• Incorrect spark plug heat range
• Incorrect fuel/oil mixture

YES – GO TO STEP 9.

9. Over Heating Inspection

Check for engine over heating.

Is the engine over heating?

YES – • Excessive carbon build-up in combustion chamber
• Use of poor quality fuel
• Clutch slipping
• Lean fuel mixture
• Wrong type of fuel

NO – GO TO STEP 10.

10. Engine Knocking Inspection

Accelerate or run at high speed.

Does the engine knock?

YES – • Worn piston and cylinder
• Wrong type of fuel
• Excessive carbon build-up in combustion chamber
• Ignition timing too advanced (faulty engine control module)
• Lean fuel mixture

NO – • No problem

POOR PERFORMANCE AT LOW AND IDLE SPEED**1. Ignition Timing Inspection**

Check the ignition timing.

Is the ignition timing normal?

NO – • Improper ignition timing (Faulty engine control module)
• Faulty alternator

YES – GO TO STEP 2.

2. Carburetor Air Screw Inspection

Check the carburetor air screw adjustment.

Is the air screw correct?

NO – See page 4-5

YES – GO TO STEP 3.

3. Intake Manifold Leaking Inspection

Check for leaks in the intake manifold.

Is there leaking?

YES – • Loose insulator clamp
• Damaged insulator and reed valve/reed valve gasket

NO – GO TO STEP 4.

4. Spark Test

Perform a spark test.

Is there a good spark?

NO – • Carbon or wet fouled spark plug
• Faulty Engine Control Module (ECM)
• Faulty ignition coil
• Broken or shorted spark plug wire
• Faulty engine stop button
• Faulty ignition pulse generator
• Faulty alternator

YES – GO TO STEP 5.

5. Throttle Position Sensor Inspection

Check for throttle position sensor.

Is the throttle position sensor correct?

NO – Faulty throttle position sensor

YES – GO TO STEP 6.

6. Inspect The RC Valve System

Check for RC valve system.

Is the RC valve system correct?

NO – • Faulty RC valve
• Excessive carbon build-up on the RC valve

YES – No problem

TROUBLESHOOTING

POOR PERFORMANCE AT HIGH SPEED

1. Ignition Timing Inspection

Check the ignition timing.

Is the ignition timing normal?

NO – • Faulty Engine Control Module (ECM)
• Faulty alternator

YES – GO TO STEP 2.

2. Fuel Line Inspection

Disconnect the fuel tube at the carburetor.

Does the fuel flow freely?

NO – • Clogged fuel line
• Clogged fuel fill cap breather
• Clogged fuel valve
• Clogged fuel filter

YES – GO TO STEP 3.

3. Air Cleaner Inspection

Remove the air cleaner and check for dirty.

Is the air cleaner dirty?

YES – Not cleaned frequently enough

NO – GO TO STEP 4.

4. Carburetor Inspection

Remove the carburetor and check for clogged jets.

Are the jets clogged?

YES – Contaminants in the fuel

NO – GO TO STEP 5.

5. RC Valve System Inspection

Check the RC valve system.

Is the system correct?

NO – Damaged RC valve system

YES – GO TO STEP 6.

6. Carburetor Setting Inspection

Install a larger carburetor main jet.

Does the engine condition improve?

NO – Jet size wrong, rejet in the opposite direction

YES – Tune for special conditions (page 4-7)

POOR HANDLING

Steering is heavy

- Steering stem adjusting nut too tight
- Damaged steering head bearings

Either wheel is wobbling

- Excessive wheel bearing play
- Bent rim
- Improperly installed wheel hub
- Swingarm pivot bearing excessively worn
- Bent frame
- Loose swingarm pivot bolt/nut

The motorcycle pulls to one side

- Front and rear wheel not aligned
- Bent fork
- Bent swingarm
- Bent axle

NOTE:

- Follow these recommendation, the motorcycle must be adjusted as follows;
 - Fork: compression damping at standard position, at standard fork oil quantity and viscosity, and air pressure zero.
 - Shock: nitrogen pressure 142 psi (981 kPa, 10.0 kgf/cm²), compression and rebound damping standard position, and spring preload adjusted so the bikes sags correctly with rider seated - see Owner's Manual for spring preload adjustment
- Make only one change in the preferred sequence of adjustment.

Front End Oversteers; It Cuts Too Sharply (such as in sand)

- Increase the fork oil capacity
- Use stiffer fork spring

Front End Understeers; It Washes Out Or Pushes (such as on at tight track with hard ground)

- Lower the fork oil capacity
- Use softer fork spring

Front End Hunts At High Speed; It Wanders Under Power

- Increase the fork oil capacity
- Increase shock preload

Front End Shakes Under Heavy Braking

- Decrease shock preload
- Increase shock rebound damping
- Increase the fork oil capacity

Front End Hops Over Bumps In Smooth Turns

- Change to lighter fork oil
- Decrease the fork oil capacity
- Decrease for compression damping
- Use softer fork spring

Rear End Hops Over Bumps While Accelerating

- Decrease shock preload
- Decrease shock compression damping

Rear End Gets Poor Traction While Accelerating Away From A Corner

- Decrease shock preload
- Decrease shock compression damping

MEMO

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