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 **HONDA**

**SERVICE MANUAL**

**NSS250/A**  
**NSS250S/AS**

**REFLEX®**

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## **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 recommend 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 turned 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 NSS250, NSS250S, NSS250A and NSS250AS.

Follow the Maintenance Schedule (Section 3) recommendations to ensure that the vehicle is in peak operating condition and emission levels are at the proper levels.

Performing the first scheduled maintenance is very important. It compensates for the initial wear that occurs during the break-in period.

Sections 1 and 3 apply to the whole motorcycle. Section 2 illustrates procedures for removal/installation of components that may be required to perform service described in the following sections. Sections 4 through 20 describe parts of the vehicle, 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 are not familiar with this motorcycle, read Technical Features in Section 23.

If you do not know the source of the trouble, go to Section 24, 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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Honda Motor Co., Ltd.  
SERVICE PUBLICATION OFFICE

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# SYMBOLS

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

	<p>Replace the part(s) with new one(s) before assembly.</p>
	<p>Use recommended engine oil, unless otherwise specified.</p>
	<p>Use molybdenum oil solution (mixture of the engine oil and molybdenum grease in a ratio of 1:1).</p>
	<p>Use multi-purpose grease (lithium based multi-purpose grease NLGI # 2 or equivalent).</p>
	<p>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</p>
	<p>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</p>
	<p>Use silicone grease.</p>
	<p>Apply a locking agent. Use a midium strength locking agent unless otherwise specified.</p>
	<p>Apply sealant.</p>
	<p>Use DOT 4 brake fluid. Use the recommended brake fluid unless otherwise specified.</p>
	<p>Use fork or suspension fluid.</p>

# 1. GENERAL INFORMATION

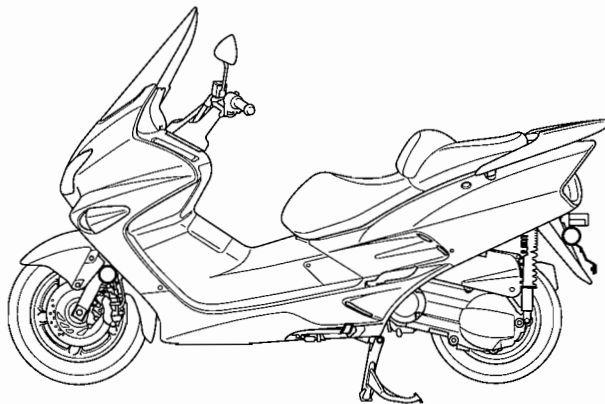
<b>SERVICE RULES</b>	<b>1-1</b>	<b>CABLE &amp; HARNESS ROUTING, NSS250</b>	<b>1-18</b>
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## SERVICE RULES

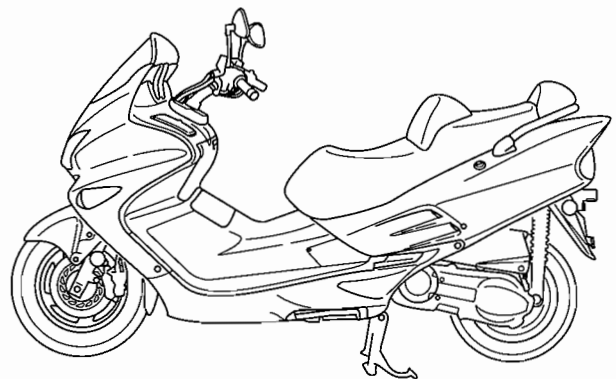
1. Use genuine Honda or Honda-recommended parts and lubricants or their equivalents. Parts that don't meet Honda's design specifications may cause damage to the motorcycle.
2. Use the special tools designed for this product to avoid damage and incorrect assembly.
3. Use only metric tools when servicing the motorcycle. Metric bolts, nuts and screws are not interchangeable with English fasteners.
4. Install new gaskets, O-rings, cotter pins, and lock plates when reassembling.
5. When tightening bolts or nuts, begin with the larger diameter or inner bolt first. Then tighten to the specified torque diagonally in incremental steps unless a particular sequence is specified.
6. Clean parts in cleaning solvent upon disassembly. Lubricate any sliding surfaces before reassembly.
7. After reassembly, check all parts for proper installation and operation.
8. Route all electrical wires as show in the Cable and Harness Routing (NSS250/A: page 1-18 or NSS250S/AS: page 1-30).

## MODEL IDENTIFICATION

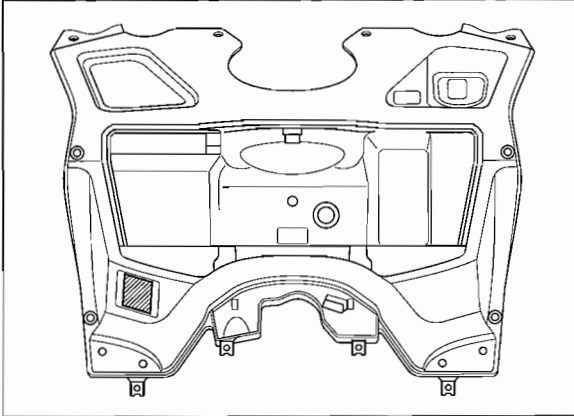
**NSS250/A**



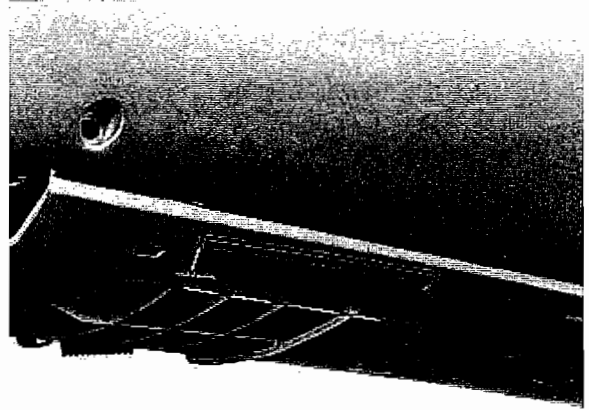
**NSS250S/AS**



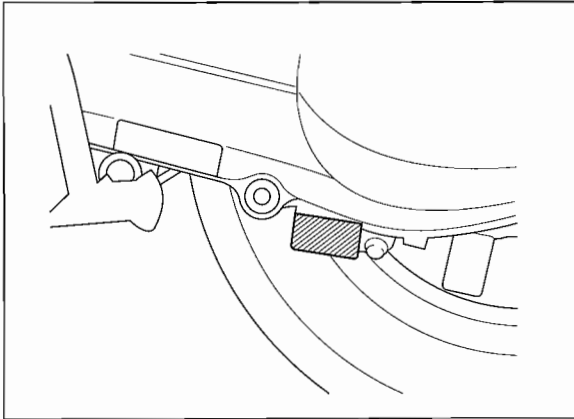
## GENERAL INFORMATION



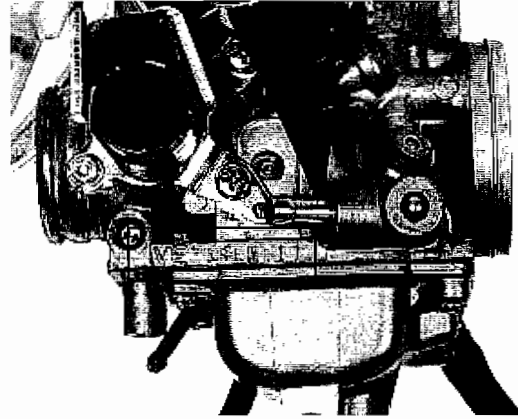
(1) The vehicle identification number (VIN) is attached as shown.



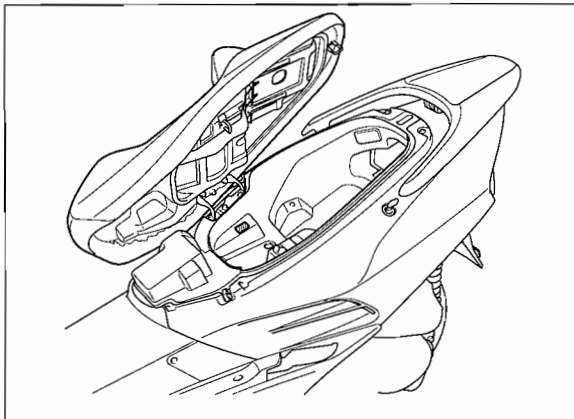
(2) The frame serial number is stamped on the left side of the frame.



(3) The engine serial number is stamped on the rear of the left crankcase.



(4) The carburetor identification numbers are stamped on the intake side of the carburetor body as shown.



(5) The color label is attached as shown. When ordering color-coded parts, always specify the designated color code.

**SPECIFICATIONS**

GENERAL		
	ITEM	SPECIFICATIONS
DIMENSIONS	Overall length (NSS250/A)	2,210 mm (87.0 in)
	(NSS250S/AS)	2,160 mm (85.0 in)
	Overall width	760 mm (29.9 in)
	Overall height (NSS250/A)	1,360 mm (53.5 in)
	(NSS250S/AS)	1,170 mm (46.1 in)
	Wheelbase	1,545 mm (60.8 in)
	Seat height	720 mm (28.3 in)
	Ground clearance	130 mm (5.1 in)
	Dry weight (NSS250)	170.0 kg (374.8 lbs)
	(NSS250A/AS)	172.0 kg (379.2 lbs)
	(NSS250S)	169.0 kg (372.6 lbs)
	Curb weight (NSS250)	179.0 kg (394.6 lbs)
	(NSS250A)	182.0 kg (401.2 lbs)
	(NSS250S)	178.0 kg (392.4 lbs)
(NSS250AS)	181.0 kg (399.0 lbs)	
	Maximum weight capacity	166 kg (366 lbs)
FRAME	Frame type	Under bone
	Front suspension	Telescopic fork
	Front wheel travel	100 mm (3.9 in)
	Front axle travel	88.7 mm (3.49 in)
	Rear suspension	Unit swing
	Rear axle travel	96 mm (3.8 in)
	Front tire size	110/90-13 M/C 56L
	Rear tire size	130/70-12 62L
	Tire brand	
	Bridgestone	Front: BRIDGESTONE HOOP B03F Rear: BRIDGESTONE HOOP B02
	Dunlop	Front: DUNLOP D305FG Rear: DUNLOP D305
	Front brake	Hydraulic single disc brake with 3 pots caliper
	Rear brake	Hydraulic single disc brake with 1 pot caliper
	Caster angle	27°30'
Trail length	95 mm (3.7 in)	
Fuel tank capacity	12.0 ℓ (3.17 US gal , 2.64 Imp gal)	
ENGINE	Bore and stroke	72.7 × 60.0 mm (2.86 × 2.36 in)
	Displacement	249 cm <sup>3</sup> (15.2 cu-in)
	Compression ratio	10.5 : 1
	Valve train	Chain drive and OHC
	Intake valve	7°BTDC (At 1 mm lift)
	opens	33°ABDC (At 1 mm lift)
	closes	37°BBDC (At 1 mm lift)
	Exhaust valve	3°ATDC (At 1 mm lift)
	opens	
	closes	
	Lubrication system	Forced pressure and wet sump
	Oil pump type	Trochoid
Cooling system	Liquid cooled	
Air filtration	Paper filter	
Engine dry weight	38.6 kg (85.1 lbs)	

## GENERAL INFORMATION

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<b>GENERAL (Cont'd)</b>		
	<b>ITEM</b>	<b>SPECIFICATIONS</b>
CARBURETOR	Carburetor type Throttle bore	CV (Constant Velocity) type, with butterfly valve 30 mm (1.2 in)
DRIVE TRAIN	Clutch system Primary reduction Final reduction Gear ratio	Dry, automatic centrifugal clutch 2.714 2.533 2.250–0.830
ELECTRICAL	Ignition system Starting system Charging system Regulator/rectifier Lighting system	Full transistor digital ignition Electric starter motor Triple phase output alternator SCR shorted/triple phase, full wave rectification Battery



## GENERAL INFORMATION

Unit: mm (in)

<b>LUBRICATION SYSTEM</b>			
ITEM		STANDARD	SERVICE LIMIT
Engine oil capacity	At draining	1.1 ℓ (1.2 US qt , 1.0 Imp qt)	_____
	At disassembly	1.3 ℓ (1.4 US qt , 1.1 Imp qt)	_____
Recommended engine oil		Pro Honda GN4 4-stroke oil or equivalent motor oil API service classification SG or Higher JASO T 903 standard: MA Viscosity: SAE 10W-30	_____
Oil pump rotor	Tip clearance	0.15 (0.006)	0.20 (0.008)
	Body clearance	0.15—0.20 (0.006—0.008)	0.25 (0.010)
	Side clearance	0.04—0.09 (0.002—0.004)	0.12 (0.005)

<b>FUEL SYSTEM</b>		
ITEM	SPECIFICATIONS	
Carburetor identification number	VE3BL	
Main jet	# 102	
Slow jet	# 40	
Starting enrichment (SE) valve resistance (at 20°C /68°F)	10 kΩ max	
Pilot screw initial opening	See page 5-18	
Float level	18.5 mm (0.73 in)	
Idle speed	1,500 ± 100 rpm	
Throttle grip freeplay	2—6 mm (1/16— 1/4 in)	

<b>COOLING SYSTEM</b>		
ITEM	SPECIFICATIONS	
Coolant capacity	Radiator and engine	1.2 ℓ (1.3 US qt , 1.1 Imp qt)
	Reserve tank	0.2 ℓ (0.2 US qt , 0.2 Imp qt)
Radiator cap relief pressure	74—103 kPa (0.75—1.05 kgf/cm <sup>2</sup> , 10.7—15 psi)	
Thermostat	Begin to open	69—72.5 °C (156—163 °F)
	Fully open	80 °C (176 °F)
	Valve lift	3.5 mm (0.14 in) minimum
Recommended antifreeze	Pro Honda HP Coolant or an equivalent high quality ethylene glycol antifreeze containing silicate-free corrosion inhibitors	
Standard coolant concentration	1:1 mixture with soft water	

## GENERAL INFORMATION

CYLINDER HEAD/VALVES			Unit: mm (in)	
ITEM			STANDARD	SERVICE LIMIT
Cylinder compression			1,569 kPa (16.0 kgf/cm <sup>2</sup> , 228 psi) at 400 rpm	_____
Cylinder head warpage			_____	0.05 (0.002)
Valve, valve guide	Valve clearance	IN	0.12 (0.005)	_____
		EX	0.12 (0.005)	_____
	Valve stem O.D.	IN	4.975 – 4.990 (0.1959 – 0.1965)	4.90 (0.193)
		EX	4.955 – 4.970 (0.1951 – 0.1957)	4.90 (0.193)
	Valve guide I.D.	IN	5.000 – 5.012 (0.1969 – 0.1973)	5.03 (0.198)
		EX	5.000 – 5.012 (0.1969 – 0.1973)	5.03 (0.198)
	Stem-to-guide clearance	IN	0.010 – 0.037 (0.0004 – 0.0015)	0.08 (0.003)
		EX	0.030 – 0.057 (0.0012 – 0.0022)	0.10 (0.004)
	Valve guide projection above cylinder head	IN	11.5 (0.45)	_____
		EX	11.5 (0.45)	_____
Valve seat width	IN/EX	0.90 – 1.10 (0.035 – 0.043)	1.8 (0.07)	
	INNER	IN/EX	31.06 (1.223)	29.5 (1.16)
Valve spring free length	OUTER	IN/EX	40.42 (1.591)	38.4 (1.51)
	Rocker arm I.D.	IN/EX	12.000 – 12.018 (0.4724 – 0.4731)	12.10 (0.476)
Rocker arm	Rocker arm shaft O.D.	IN/EX	11.966 – 11.984 (0.4711 – 0.4718)	11.91 (0.469)
Camshaft	Cam lobe height	IN	34.231 – 34.351 (1.3477 – 1.3524)	34.181 (1.3457)
		EX	34.112 – 34.232 (1.3430 – 1.3477)	34.062 (1.3410)

PISTON/CYLINDER			Unit: mm (in)		
ITEM			STANDARD	SERVICE LIMIT	
Cylinder	I.D.		72.750 – 72.760 (2.8642 – 2.8646)	72.76 (2.865)	
	Out-of-round		_____	0.05 (0.002)	
	Taper		_____	0.05 (0.002)	
	Warpage		_____	0.05 (0.002)	
Piston, piston rings	Piston mark direction		"IN" mark facing toward the intake side	_____	
	Piston O.D.		72.720 – 72.740 (2.8630 – 2.8638)	72.65 (2.860)	
	Piston O.D. measurement point		18 mm (0.7 in) from bottom of skirt	_____	
	Piston pin bore I.D.		17.002 – 17.008 (0.6694 – 0.6696)	17.04 (0.671)	
	Piston pin O.D.		16.994 – 17.000 (0.6691 – 0.6693)	16.96 (0.668)	
	Piston-to-piston pin clearance		0.002 – 0.014 (0.0001 – 0.0006)	0.02 (0.001)	
	Piston ring-to-ring groove clearance	Top		0.015 – 0.050 (0.0006 – 0.0020)	0.09 (0.004)
		Second		0.015 – 0.050 (0.0006 – 0.0020)	0.09 (0.004)
	Piston ring end gap	Top		0.15 – 0.30 (0.006 – 0.012)	0.50 (0.020)
		Second		0.30 – 0.45 (0.012 – 0.018)	0.65 (0.026)
Oil (side rail)			0.20 – 0.70 (0.008 – 0.028)	0.90 (0.035)	
Cylinder-to-piston clearance			0.010 – 0.040 (0.0004 – 0.0016)	0.10 (0.004)	
Connecting rod small end I.D.			17.016 – 17.034 (0.6699 – 0.6706)	17.06 (0.672)	
Connecting rod-to-piston pin clearance			0.016 – 0.040 (0.0006 – 0.0016)	0.06 (0.002)	

## GENERAL INFORMATION

<b>DRIVE PULLEY/DRIVEN PULLEY/CLUTCH</b>		Unit: mm (in)	
<b>ITEM</b>		<b>STANDARD</b>	<b>SERVICE LIMIT</b>
Clutch	Clutch outer O.D.	135.0 – 135.2 (5.31 – 5.32)	135.5 (5.33)
	Lining thickness	4.0 (0.16)	0.5 (0.02)
Drive belt width		23.3 (0.92)	22.3 (0.88)
Movable drive face	Bushing I.D.	27.024 – 27.057 (1.0639 – 1.0652)	27.91 (1.099)
	Boss O.D.	26.995 – 27.031 (1.0628 – 1.0642)	26.93 (1.060)
	Weight roller O.D.	22.92 – 23.08 (0.902 – 0.909)	22.5 (0.89)
Driven pulley	Face spring free length	112.6 (4.43)	108.6 (4.28)
	Driven face O.D.	39.965 – 39.985 (1.5734 – 1.5742)	39.94 (1.572)
	Movable driven face I.D.	40.000 – 40.025 (1.5748 – 1.5758)	40.06 (1.577)

<b>FINAL REDUCTION</b>		<b>SPECIFICATIONS</b>	
<b>ITEM</b>			
Final reduction oil capacity	At draining	0.16 ℓ (0.17 US qt, 0.14 Imp qt)	
	At disassembly	0.20 ℓ (0.21 US qt, 0.18 Imp qt)	
Recommended final reduction oil		Hypoid gear oil # 90	

<b>ALTERNATOR/STARTER CLUTCH</b>		Unit: mm (in)	
<b>ITEM</b>		<b>STANDARD</b>	<b>SERVICE LIMIT</b>
Starter driven gear	Boss O.D.	42.195 – 42.208 (1.6612 – 1.6617)	42.15 (1.659)
	Bushing I.D.	22.026 – 22.045 (0.8672 – 0.8679)	22.10 (0.870)
Starter clutch outer I.D.		58.64 – 58.84 (2.309 – 2.317)	58.89 (2.318)

<b>CRANKSHAFT/CRANKCASE</b>		Unit: mm (in)	
<b>ITEM</b>		<b>STANDARD</b>	<b>SERVICE LIMIT</b>
Crankshaft	Connecting rod side clearance	0.05 – 0.40 (0.002 – 0.016)	0.60 (0.024)
	Connecting rod radial clearance	0 – 0.008 (0.0 – 0.0003)	0.05 (0.002)
	Runout		0.10 (0.004)

## GENERAL INFORMATION

Unit: mm (in)

FRONT WHEEL/SUSPENSION/STEERING		STANDARD	SERVICE LIMIT
ITEM			
Minimum tire tread depth		_____	1.5 (0.06)
Cold tire pressure	Rider only	175 kPa (1.75 kgf/cm <sup>2</sup> , 25 psi)	_____
	Rider and passenger	175 kPa (1.75 kgf/cm <sup>2</sup> , 25 psi)	_____
Axle runout		_____	0.20 (0.008)
Wheel rim runout	Radial	_____	2.0 (0.08)
	Axial	_____	2.0 (0.08)
Wheel balance weight		_____	60 g (2.1 oz) max.
Fork	Spring free length	270.3 (10.64)	265 (10.4)
	Tube runout	_____	0.20 (0.008)
	Recommended fork fluid	Pro Honda Suspension Fluid SS-8	_____
	Fluid level	63 (2.5)	_____
	Fluid capacity	121 cm <sup>3</sup> (4.1 US oz, 4.3 Imp oz)	_____

Unit: mm (in)

REAR WHEEL/SUSPENSION		STANDARD	SERVICE LIMIT
ITEM			
Minimum tire tread depth		_____	2.0 (0.08)
Cold tire pressure	Rider only	200 kPa (2.00 kgf/cm <sup>2</sup> , 29 psi)	_____
	Rider and passenger	250 kPa (2.50 kgf/cm <sup>2</sup> , 36 psi)	_____
Wheel rim runout	Radial	_____	2.0 (0.08)
	Axial	_____	2.0 (0.08)
Wheel balance weight		_____	60 g (2.1 oz) max.

Unit: mm (in)

HYDRAULIC BRAKE			STANDARD	SERVICE LIMIT
ITEM				
Front	Specified brake fluid		Honda DOT 4 Brake Fluid	_____
	Brake disc thickness		3.8 – 4.2 (0.15 – 0.17)	3.5 (0.14)
	Brake disc runout		_____	0.30 (0.012)
	Master cylinder I.D.		11.000 – 11.043 (0.4331 – 0.4348)	11.055 (0.4352)
	Master piston O.D.		10.957 – 10.984 (0.4314 – 0.4324)	10.945 (0.4309)
	Caliper cylinder I.D.	Upper	27.000 – 27.050 (1.0630 – 1.0650)	27.060 (1.0654)
		Middle	22.650 – 22.700 (0.8917 – 0.8937)	22.710 (0.8941)
		Lower	25.400 – 25.450 (1.0000 – 1.0020)	25.460 (1.0024)
	Caliper piston O.D.	Upper	26.935 – 26.968 (1.0604 – 1.0617)	26.910 (1.0594)
		Middle	22.585 – 22.618 (0.8892 – 0.8905)	22.560 (0.8882)
Lower		25.335 – 25.368 (0.9974 – 0.9987)	25.320 (0.9968)	
Rear	Specified brake fluid		Honda DOT 4 Brake Fluid	_____
	Brake disc thickness		4.8 – 5.2 (0.19 – 0.20)	4.0 (0.16)
	Brake disc runout		_____	0.30 (0.012)
	Master cylinder I.D.		14.000 – 14.043 (0.5512 – 0.5529)	14.055 (0.5533)
	Master piston O.D.		13.957 – 13.984 (0.5495 – 0.5506)	13.945 (0.5490)
	Caliper cylinder I.D.		33.960 – 34.010 (1.3370 – 1.3390)	34.020 (1.3394)
	Caliper piston O.D.		33.878 – 33.928 (1.3338 – 1.3357)	33.870 (1.3335)

## GENERAL INFORMATION

BATTERY/CHARGING SYSTEM			SPECIFICATIONS
ITEM			
Battery	Capacity		12V-11 (10) Ah
	Current leakage	'01-'03	0.1 mA max.
		After '03	1.5 mA max.
	Voltage (20°C /68°F)	Fully charged	13.0 – 13.2 V
		Needs charging	Below 12.3 V
Charging current	Normal	1.1 A/5 – 10 h	
	Quick	5.5 A/0.5 h	
Alternator	Capacity	'01-'03	0.29 kW/5,000 rpm
		After '03	0.40 kW/5,000 rpm
	Charging coil resistance (20°C /68°F)		0.1 – 0.5 Ω

IGNITION SYSTEM			SPECIFICATIONS
ITEM			
Spark plug	Standard		DPR7EA-9 (NGK) , X22EPR-U9 (DENSO)
	For cold climate/below 5°C /41°F		DPR6EA-9 (NGK) , X20EPR-U9 (DENSO)
	For extended high speed riding		DPR8EA-9 (NGK) , X24EPR-U9 (DENSO)
Spark plug gap			0.80 – 0.90 mm (0.031 – 0.035 in)
Ignition coil peak voltage			100 V minimum
Ignition pulse generator peak voltage			0.7 V minimum
Ignition timing ("F" mark)			11° BTDC at idle
Coolant temperature sensor resistance	At 20°C (68°F)		2 – 3 Ω
	At 80°C (176°F)		200 – 400 Ω
Throttle position (TP) sensor	Resistance (20°C /68°F)		4 – 6k Ω
	Input voltage		4.6 – 5.4 V

ELECTRIC STARTER		Unit: mm (in)	
ITEM		STANDARD	SERVICE LIMIT
Starter motor brush length		12.5 (0.49)	8.5 (0.33)

## GENERAL INFORMATION

LIGHTS/METERS/SWITCHES		ITEM		SPECIFICATIONS
Bulbs	Headlight			12V-55W × 2
	Brake/tail light			12V-21/5W × 2
	Front turn signal/running light			12V-21/5W × 2
	Rear turn signal light			12V-21W × 2
	License light			12V-5W
	Instrument light			12V-1.7W × 3
	Turn signal indicator			12V-3W × 2
	High beam indicator			12V-1.7W
	Parking indicator			12V-1.7W
	Luggage box instrument light			12V-3.4W
Fuse	Main fuse			30A
	Sub fuse	LBS type		15A × 2, 10 A × 3
		ABS type		30A, 20A, 15A × 2, 10 A × 4
Fan motor switch	Start to close (ON)			98 – 102 °C (208 – 216 °F)
	Stop to open			91 – 99 °C (196 – 210 °F)
Thermosensor resistance		at 80°C /176°F		47 – 57 Ω
		at 120°C /248°F		14 – 18 Ω
Fuel pump flow capacity			Minimum 500 cm <sup>3</sup> (16.9 US oz, 17.6 Imp oz) /minute at 13 V	

## 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	4.9 (0.5 , 3.6)	5 mm screw	3.9 (0.4 , 2.9)
6 mm hex bolt and nut	9.8 (1.0 , 7)	6 mm screw	8.8 (0.9 , 6.5)
8 mm hex bolt and nut	22 (2.2 , 16)	6 mm flange bolt (8 mm head)	8.8 (0.9 , 6.5)
10 mm hex bolt and nut	34 (3.5 , 25)	6 mm flange bolt (10 mm head) and nut	12 (1.2 , 9)
12 mm hex bolt and nut	54 (5.5 , 40)	8 mm flange bolt and nut	26 (2.7 , 20)
		10 mm flange bolt and nut	39 (4.0 , 29)

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

- NOTES:
1. Apply sealant to the threads.
  2. Apply a locking agent to the threads.
  3. Apply molybdenum disulfide oil to the threads and flange surface.
  4. Apply grease to the threads.
  5. Stake.
  6. Apply oil to the threads and flange surface.
  7. Apply clean engine oil to the O-ring.
  8. U-nut
  9. ALOC bolt: replace with a new one.

### ENGINE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
<b>LUBRICATION SYSTEM:</b>				
Engine oil strainer cap	1	30	20 (2.0 , 14)	
Engine oil pump cover screw	1	3	2.0 (0.2 , 1.4)	
<b>FUEL SYSTEM:</b>				
Throttle cable stay screw	2	5	5.1 (0.52 , 3.8)	NOTE 2 (page 5-16)
Carburetor insulator band screw	2	5	5.1 (0.52 , 3.8)	
Reed valve case stud bolt	2	6	7.8 (0.8 , 5.8)	
<b>COOLING SYSTEM:</b>				
Water pump impeller	1	7	12 (1.2 , 9)	
<b>CYLINDER HEAD/VALVES:</b>				
Adjusting hole cap	1	14	5.9 (0.6 , 4.3)	NOTE 6
Cylinder head nut	4	8	24 (2.4 , 17)	
Cam chain tensioner sealing bolt	1	11	22 (2.2 , 16)	
Spark plug	1	12	18 (1.8 , 13)	
Exhaust pipe stud bolt	2	8	8.8 (0.9 , 6.5)	
<b>CYLINDER/PISTON:</b>				
Cylinder stud bolt	4	8	8.8 (0.9 , 6.5)	(page 9-6)
<b>DRIVE PULLEY/DRIVEN PULLEY/CLUTCH:</b>				
Clutch/driven pulley nut	1	30	78 (8.0 , 58)	NOTE 6
Clutch outer nut	1	12	74 (7.5 , 54)	
Drive pulley face nut	1	14	93 (9.5 , 69)	
Left crankcase cover bolt	4	6	9.8 (1.0 , 7)	
<b>FINAL REDUCTION:</b>				
Final drive oil drain bolt	1	8	13 (1.3 , 9)	
Final drive oil level check bolt	1	8	13 (1.3 , 9)	
Final drive oil filler bolt	1	8	13 (1.3 , 9)	
Transmission cover bolt	7	8	25 (2.5 , 18)	

## GENERAL INFORMATION

### ENGINE (Cont'd)

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
<b>ALTERNATOR/STARTER CLUTCH:</b>				
Starter clutch outer bolt	3	8	29 (3.0 , 22)	NOTE 2 NOTE 6
Flywheel nut	1	16	116 (11.8 , 85)	
Stator mount bolt	3	6	12 (1.2 , 9)	
<b>CRANKSHAFT/CRANKCASE:</b>				
Cam chain tensioner slider bolt	1	6	9.8 (1.0 , 7)	
<b>IGNITION SYSTEM:</b>				
Timing hole cap	1	14	5.9 (0.6 , 4.3)	

### FRAME

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS	
<b>FRAME/BODY PANELS/EXHAUST SYSTEM:</b>					
Exhaust pipe joint nut	2	8	29 (3.0 , 22)		
Exhaust pipe band bolt	1	8	22 (2.2 , 16)		
Muffler mount bolt	4	10	49 (5.0 , 36)		
<b>COOLING SYSTEM:</b>					
Thermosensor	1	PT1/8	9.8 (1.0 , 7)	NOTE 1	
Engine coolant temperature (ECT) sensor	1	12	15 (1.5 , 11)		
Fan motor switch	1	16	17 (1.7 , 12)		
<b>ENGINE MOUNTING:</b>					
Engine hanger adjust bolt	1	22	15 (1.5 , 11)		
Engine hanger lock nut	1	22	42 (4.3 , 31)		
Engine hanger pivot nut	1	12	78 (8.0 , 58)		
Sub-bracket pivot nut	1	10	69 (7.0 , 51)		
Sub-bracket stopper nut	1	8	26 (2.7 , 20)		
Tension rod nut	1	8	20 (2.0 , 14)		
Engine mount nut	1	12	59 (6.0 , 43)		
<b>FRONT WHEEL/SUSPENSION/STEERING:</b>					
Front fender socket bolt	4	6	12 (1.2 , 9)		(page 14-26)
Steering bearing adjusting nut	1	26	74 (7.5 , 54)		
Steering stem top thread	1	26	2.5 (0.25 , 1.8)		
Front brake disc bolt	4	8	42 (4.3 , 31)		
Front pulser ring Torx bolt (ABS type)	4	5	7.8 (0.8 , 5.8)		
Front wheel speed sensor bolt (ABS type)	2	8	15 (1.5 , 11)		
Speedometer cable set screw	1	5	2.2 (0.22 , 1.6)		
Front axle nut	1	12	69 (7.0 , 51)		
Fork socket bolt	2	8	20 (2.0 , 14)		
Fork pinch bolt	4	10	49 (5.0 , 36)		
<b>REAR WHEEL/SUSPENSION:</b>					
Rear brake disc bolt	4	5	42 (4.3 , 31)	NOTE 9	
Rear pulser ring Torx bolt (ABS type)	4	8	7.8 (0.8 , 5.8)		
Rear wheel speed sensor bolt (ABS type)	2	8	15 (1.5 , 11)	NOTE 9	
Swingarm mount bolt	2	10	49 (5.0 , 36)		
Rear axle nut	1	16	118 (12.0 , 87)	NOTE 2	
Rear shock absorber mount bolt	4	10	39 (4.0 , 29)		



**GENERAL INFORMATION**

**FRAME (Cont'd)**

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N-m (kgf-m, lbf-ft)	REMARKS
<b>HYDRAULIC BRAKE:</b>				
Brake caliper bleed valve	3	8	5.9 (0.6 , 4.3)	
Brake pad pin	2	10	18 (1.8 , 13)	
Brake pad pin plug	1	10	2.5 (0.25 , 1.8)	
Master cylinder reservoir cap screw	4	4	1.5 (0.15 , 1.1)	
Brake lever pivot bolt	2	6	5.9 (0.6 , 4.3)	
Brake lever pivot nut	2	6	5.9 (0.6 , 4.3)	
Brake light switch screw	3	4	1.2 (0.12 , 0.9)	
Master cylinder holder bolt	4	6	12 (1.2 , 9)	
Brake hose oil bolt	7	10	34 (3.5 , 25)	
Brake pipe nut (LBS type)	4	10	17 (1.7 , 12)	
(ABS type)	6	10	17 (1.7 , 12)	
Front caliper mount bolt	2	8	31 (3.2 , 23)	NOTE 9
Front caliper body B bolt	3	8	32 (3.3 , 24)	NOTE 9
Front caliper pin bolt	1	8	23 (2.3 , 17)	NOTE 2
Front caliper bracket pin bolt	1	8	13 (1.3 , 9)	NOTE 2
Rear caliper mount bolt	2	8	31 (3.2 , 23)	NOTE 9
Rear caliper bolt	1	8	23 (2.3 , 17)	
Rear caliper pin bolt	1	12	27 (2.8 , 20)	
ABS modulator mount nut	2	6	9.8 (1.0 , 7)	
<b>LIGHTS/METERS/SWITCHES:</b>				
Side stand switch bolt	1	6	9.8 (1.0 , 7)	
Ignition switch bolt	2	8	26 (2.7 , 20)	
<b>OTHERS:</b>				
Side stand pivot bolt	1	10	9.8 (1.0 , 7)	
Side stand pivot nut	1	10	29 (3.0 , 22)	
Front/Rear reflector	4	6	5.1 (0.52 , 3.8)	NOTE 8

## GENERAL INFORMATION

### TOOLS

- NOTES: 1. Equivalent commercially available.  
 2. Alternative tool.  
 3. Newly provided tool.  
 4. Newly designed tool.

DESCRIPTION	TOOL NUMBER	REMARKS	REF. SEC.
Carburetor float level gauge	07401-0010000		5
Universal bearing puller	07631-0010000	NOTE 1	11, 13
Adjustable pin spanner	07702-0020001		14
Universal holder	07725-0030000	NOTE 1	6, 10
Flywheel holder	07725-0040000	NOTE 1	10, 12
Remover weight	07741-0010201		6, 10, 11
Attachment, 32 × 35 mm	07746-0010100		10, 14
Attachment, 42 × 47 mm	07746-0010300		11, 15
Attachment, 52 × 55 mm	07746-0010400		11
Attachment, 24 × 26 mm	07746-0010700		14
Attachment, 22 × 24 mm	07746-0010800		11
Driver C	07746-0030100		6
Attachment, 30 mm	07746-0030300		13
Attachment, 35 mm	07746-0030400		6, 14
Pilot, 12 mm	07746-0040200		14
Pilot, 15 mm	07746-0040300		10, 11
Pilot, 17 mm	07746-0040400		15
Pilot, 20 mm	07746-0040500		11
Pilot, 25 mm	07746-0040600		10, 11
Pilot, 22 mm	07746-0041000		14
Pilot, 14 mm	07746-0041200		11, 14
Bearing remover shaft	07746-0050100		14
Bearing remover head, 12 mm	07746-0050300		14
Slider weight	07747-0010100		14
Fork seal driver attachment	07747-0010501	or 07947-3330000 (U.S.A. only)	14
Driver	07749-0010000		6, 10, 11, 14, 15
Valve spring compressor	07757-0010000		8
Valve seat cutter		NOTE 1	8
Seat cutter, 29 mm (45° EX)	07780-0010300	NOTE 2	
Seat cutter, 33 mm (45° IN)	07780-0010800	NOTE 2	
Flat cutter, 30 mm (32° EX)	07780-0012200	NOTE 2	
Flat cutter, 36 mm (32° IN)	07780-0013500	NOTE 2	
Interior cutter, 30 mm (60° EX)	07780-0014000	NOTE 2	
Interior cutter, 34 mm (60° IN)	07780-0014700	NOTE 2	
Cutter holder	07781-0010400		8
Snap ring pliers	07914-SA50001		10, 16
Lock nut wrench, 32 mm	07916-KM10000		14
Bearing remover handle	07936-3710100		11
Bearing remover head	07936-3710600		11
Bearing remover	07936-KC10500	(U.S.A. only)	
Remover weight	07936-371020A	or 07936-3710200 (U.S.A. only)	
Remover shaft	07936-KC10100		6, 11
Bearing remover, 15 mm	07936-KC10200		6, 11
Remover shaft assembly	07936-ZV10100		10
Valve guide driver	07942-MA60000		8
Ball race driver attachment	07945-3330300		14
Mechanical seal driver attachment	07945-4150400		6
Attachment, 28 × 30 mm	07946-1870100		6, 10, 14
Oil seal driver	07947-SB00200		14
Oil seal remover	07948-4630100	NOTE 2	14
Valve spring compressor attachment	07959-KM30101		8

## GENERAL INFORMATION

DESCRIPTION	TOOL NUMBER	REMARKS	REF. SEC.
Assembly collar	07965-VM00100		13
Assembly shaft	07965-VM00200	or 07931-ME4010B and	11, 13
Valve guide reamer	07984-MA60000	07931-HB3020A (U.S.A. only)	8
Socket wrench, 39 × 41 mm	07GMA-KS40100		10
Ball race remover	07GMD-KS40100		14
Brake spring compressor	07HAE-SG00100		16
Peak voltage adaptor	07HGJ-0020100	Peak voltage tester (U. S. A. only)	18, 20
Lock nut wrench	07KMA-KAB0100		7
Flywheel puller	07KMC-HE00100		12
Clutch spring compressor	07LME-GZ40200	or 07960-KM1000A (U.S.A. only)	10
Pilot screw wrench	07MMA-MT3010B	(U.S.A. only)	5
Case puller	07SMC-0010001	Not available in U.S.A.	13
Bearing remover set, 14 mm	07WMC-KFG0100		11
Plate	07XMF-KGB0300		13
Bearing remover shaft, 14 mm	07YMC-001010A	(U.S.A. only)	11
Bearing installer, 29.31 mm	07YMF-KFG0100		13
Thread adapter	07YMF-KFG0300		13
Assembly collar	07YMF-KPB0100		11
Vacuum/Pressure pump	A937X-041-XXXXXX		5
Vacuum pump	ST-AH-260-MC7	(U. S. A. only)	5
Pressure pump	ST-AH-255-MC7	(U. S. A. only)	5

**GENERAL INFORMATION****LUBRICATION & SEAL POINTS**

<b>ENGINE</b>	<b>LOCATION</b>	<b>MATERIAL</b>	<b>REMARKS</b>
	Thermosensor threads Stator wire grommet seating surface Ignition pulse generator wire grommet seating surface Crankcase mating surface	Liquid sealant (Three Bond 1207B or equivalent)	Do not apply sealant to the sensor threads head.
	Carburetor throttle cable stay screw threads Starter clutch outer socket bolt threads	Locking agent	Coating width: 6.5 mm from tip.
	Engine mount bushing (left and right crankcase) outer groove and O-ring	Molybdenum disulfide paste	Apply 0.5–0.7 g per bushing
	Crankcase (crankshaft bearing installing area)	Molybdenum disulfide grease	
	Water pump shaft journal Starter driven gear inner surface (crankshaft skidding surface) Piston pin outer surface Valve stem (valve guide sliding surface) Camshaft cam lobes	Molybdenum disulfide oil (a mixture of 1/2 engine oil and 1/2 molybdenum disulfide grease	Do not apply to the mechanical seal sliding surface (page 6-9). Avoid getting on the crankshaft tapered area.
	Movable driven face inner surface  Movable driven face guide grooves (guide pins)	Multi-purpose grease	Apply 11–13 g. Avoid getting on the drive shaft spline. Fill with 4–5 g in all.
	Oil strainer cap threads, seating surface and O-ring Oil pump rotors and shaft sliding surfaces Valve stem seal inner surfaces Rocker arm shaft sliding surface Rocker arm sliding surface Cylinder head nut threads and seating surfaces Piston and cylinder sliding surfaces Piston rings Drive pulley face nut (14 mm) threads and seating surface Sprag clutch outer contact surface Crankshaft oil orifice end (flanged side) Flywheel nut threads and seating surface  Connecting rod big end bearing Crankshaft main journal bearings Right crankshaft oil passage Cam chain and oil pump drive chain Oil seal lips and outer surfaces Bearings Sprocket teeth Gear engaging portions and rotating surface Other rotating and sliding surface	Engine oil	Avoid getting on the crankshaft tapered area. Fill with 3 cc. Fill with 2 cc per each bearing. Fill.  Fill with 1 cc per each bearing.