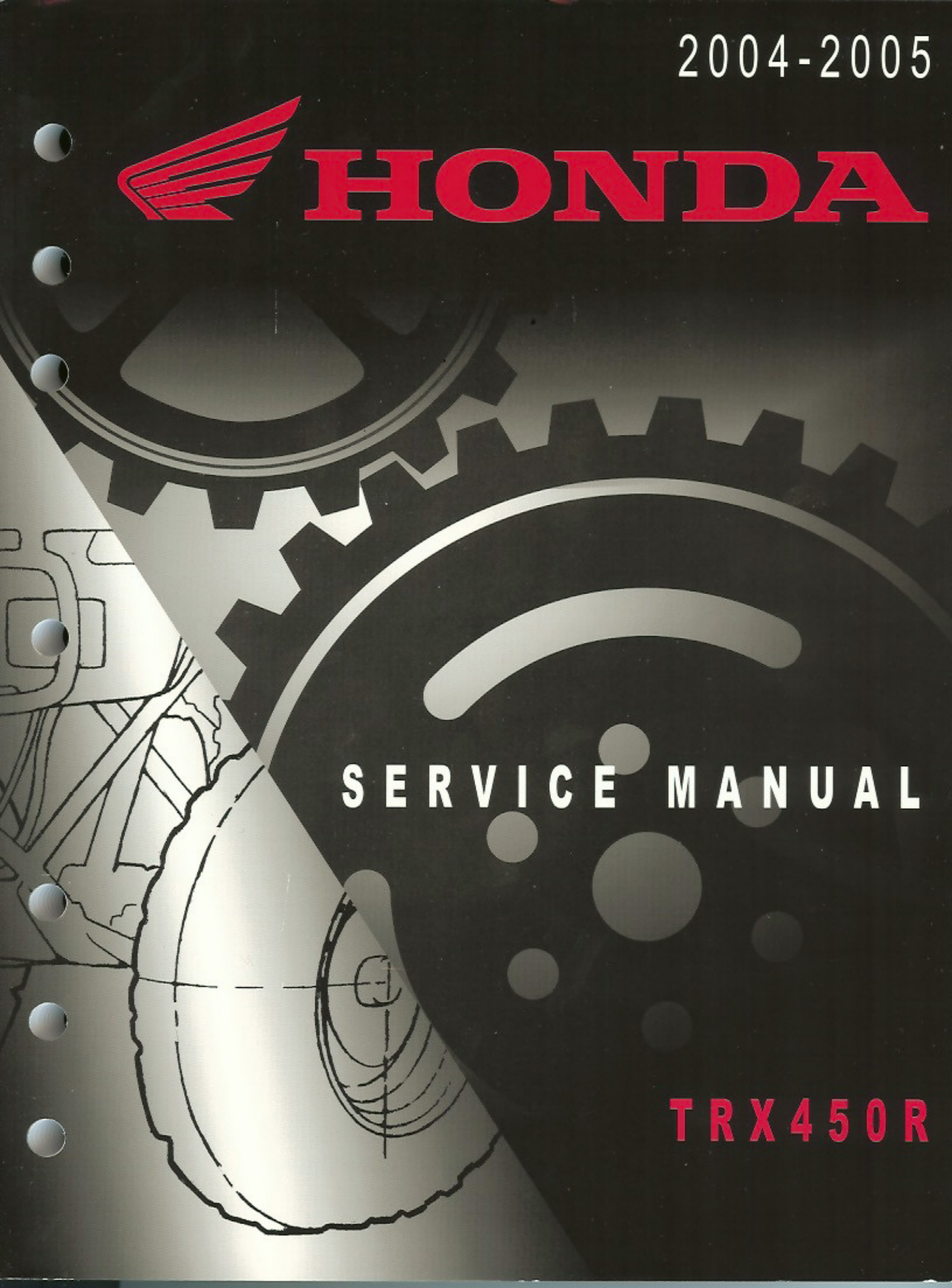
2004-2005

HONDA



SERVICE MANUAL

TRX450R

HOW TO USE THIS MANUAL

This service manual describes the service procedures for the TRX450R.

Follow the Maintenance Schedule (Section 4) recommendations to ensure that the vehicle is in peak operating condition and the emission levels are within the standards set by the California Air Resources Board (CARB).

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

Sections 1 and 4 apply to the whole vehicle. Section 3 illustrates procedures for removal/installation of components that may be required to perform service described in the following sections.
Sections 5 through 16 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 procedure.

If you are not familiar with this motorcycle, read Technical Features in Section 2.
If you don't know the source of the trouble, go to section 18 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.

CONTENTS

Date of Issue: December, 2003

SYMBOLS

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

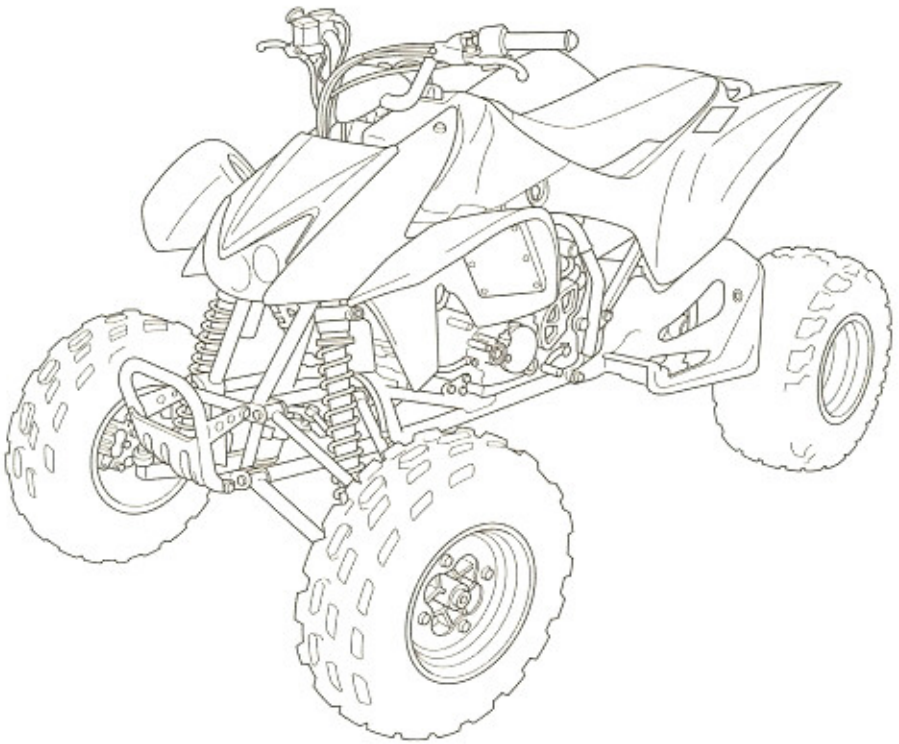
	Replace the part(s) with new one(s) before assembly.
	Use the recommended engine oil, unless otherwise specified.
	Use molybdenum oil solution (mixture of the engine oil and molybdenum grease in a ratio of 1:1)
	Use multi-purpose grease (lithium based multi-purpose grease NLGI #2 or equivalent).
	Use 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 medium 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

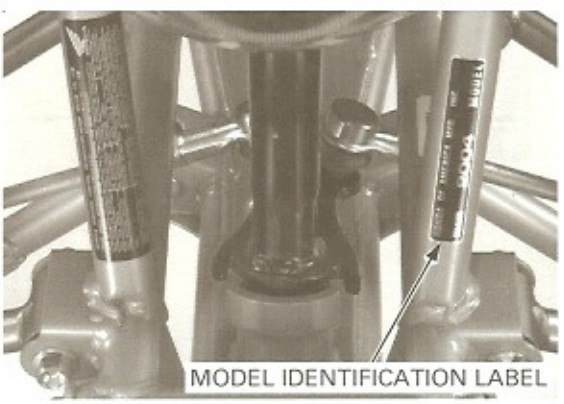
SERVICE RULES

1. Use genuine Honda or Honda-recommended parts and lubricants or their equivalents. Parts that do not meet Honda's design specifications may cause damage to the vehicle.
2. Use the special tools designed for this product to avoid damage and incorrect assembly.
3. Use only metric tools when servicing the vehicle. 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 in the Cable and Harness Routing (page 1-17).

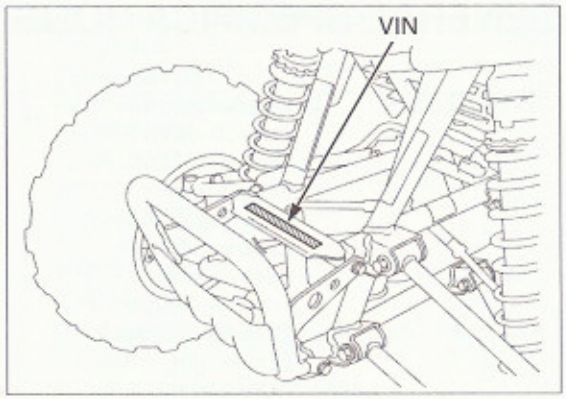
MODEL IDENTIFICATION



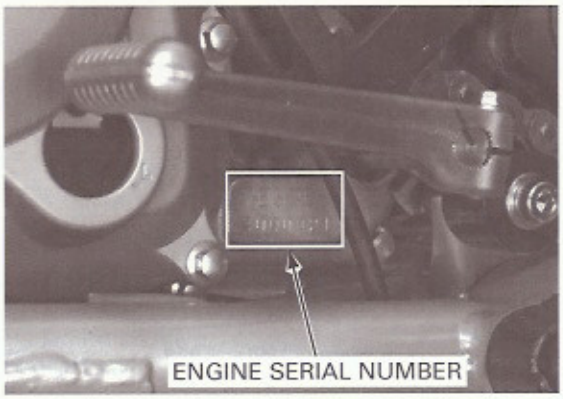
The model identification label is located on the left front frame pipe.



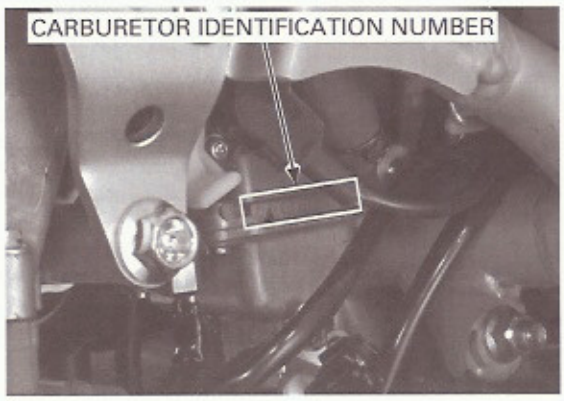
The vehicle identification number (VIN) is stamped on the front side of the frame.



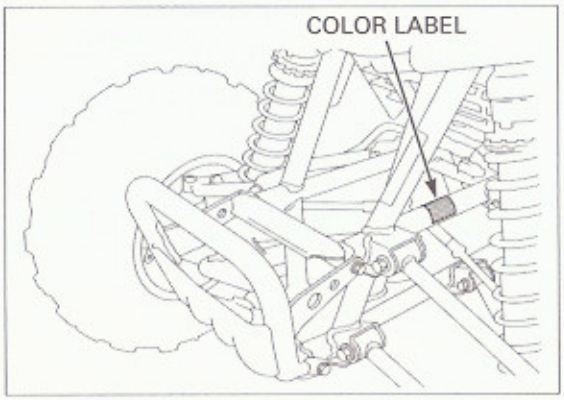
The engine serial number is stamped on the left side of the crankcase.



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



The color label is attached on the left side of the front frame pipe. When ordering color coded parts, always specify the designated color code.



GENERAL SPECIFICATIONS

	ITEM	SPECIFICATIONS
DIMENSIONS	Overall length	1,846 mm (72.6 in)
	Overall width	1,177 mm (46.3 in)
	Overall height	1,108 mm (43.6 in)
	Wheelbase	1,251 mm (49.2 in)
	Front tread	937 mm (36.8 in)
	Rear tread	920 mm (36.2 in)
	Seat height	829 mm (32.6 in)
	Footpeg height	361 mm (14.2 in)
	Ground clearance	114 mm (4.5 in)
	Dry weight	166 kg (366 lbs)
	Curb weight	176 kg (388 lbs)
	Maximum weight capacity	110 kg (243 lbs)
FRAME	Frame type	Double cradle
	Front suspension	Double wish-bone
	Front wheel travel	215 mm (8.5 in)
	Rear suspension	Swingarm
	Rear wheel travel	230 mm (9.1 in)
	Rear damper	Single tube
	Front tire size	AT22 x 7R10 ★★
	Rear tire size	AT20 x 10R9 ★★
	Front rim size	10 x 5.5 AT
	Rear rim size	9 x 8.0 AT
	Front tire brand	DUNLOP KT371
	Rear tire brand	DUNLOP KT335H
	Front brake	Hydraulic disc brake
	Rear brake	Hydraulic/mechanical disc brake
	Caster angle	5.87°
	Trail length	25.58 mm (1.007 in)
	Camber angle	0°
	Fuel tank capacity	12.0 liters (3.17 US gal, 2.64 Imp gal)
	Fuel tank reserve capacity	1.9 liters (0.50 US gal, 0.42 Imp gal)
ENGINE	Cylinder arrangement	Single cylinder, transversely installed
	Bore and stroke	94 x 64.8 mm (3.70 x 2.55 in)
	Displacement	449.7 cm^3 (27.44 cu-in)
	Compression ratio	10.5 : 1
	Valve train	Chain drive and OHC with rocker arm
	Intake valve opens at 1 mm (0.04 in) lift	10° BTDC
	Intake valve closes at 1 mm (0.04 in) lift	40° ABDC
	Exhaust valve opens at 1 mm (0.04 in) lift	40° BBDC
	Exhaust valve closes at 1 mm (0.04 in) lift	10° ATDC
	Lubrication system	Forced pressure (wet sump)
	Oil pump type	Trochoid
	Cooling system	Liquid cooled
	Air filtration	Oiled urethane foam
	Engine dry weight	34.7 kg (76.8 lbs)
CARBURETOR	Carburetor type	Piston valve
	Throttle bore	42 mm (1.65 in)

ITEM			SPECIFICATIONS
DRIVE TRAIN	Clutch system		Multi-plate, wet
	Clutch operation system		Cable operated
	Transmission		Constant mesh, 5-speed
	Primary reduction		2.739 (63/23)
	Final reduction		2.714 (38/14)
	Gear ratio	1st	2.071 (29/14)
		2nd	1.625 (26/16)
		3rd	1.333 (24/18)
		4th	1.120 (28/25)
		5th	0.963 (26/27)
	Gearshift pattern		Left foot operated return system, 1-N-2-3-4-5
ELECTRICAL	Ignition system		AC–CDI
	Charging system		Triple phase output alternator
	Regulator/rectifier		Triple phase full wave rectification
	Lighting system		12 V DC output

LUBRICATION SYSTEM SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Engine oil capacity	After draining	0.78 liter (0.82 US qt, 0.67 Imp qt)	–
	After filter change	0.82 liter (0.87 US qt, 0.72 Imp qt)	–
	After disassembly	1.20 liter (1.27 US qt, 1.06 Imp qt)	–
Recommended engine oil		Pro Honda GN4, HP4 (without molybdenum additives) 4-stroke oil or HP4M (with molybdenum additives) 4-stroke oil, or equivalent motor oil API service classification: SG or Higher JASO T 903 standard: MA or MB Viscosity: SAE 10W-40, 5W-30	–
Transmission oil capacity	After draining	0.55 liter (0.58 US qt, 0.48 Imp qt)	–
	After disassembly	0.65 liter (0.69 US qt, 0.57 Imp qt)	–
Recommended transmission oil		Pro Honda GN4 or HP4 (without molybdenum additives) 4-stroke oil or equivalent motor oil API service classification: SG or Higher JASO T 903 standard: MA Viscosity: SAE 10W-40	–
Oil pump rotor	Tip clearance	0.15 (0.006)	0.20 (0.008)
	Body clearance	0.15 – 0.21 (0.006 – 0.008)	–
	Side clearance	0.05 – 0.13 (0.002 – 0.005)	–

FUEL SYSTEM SPECIFICATIONS

ITEM	SPECIFICATIONS
Carburetor identification number	QA16A
Main jet	#118
Slow jet	#48
Pilot screw opening	See page 6-23
Float level	15.9 mm (0.63 in)
Idle speed	1,600 ± 100 rpm
Throttle grip free play	3 – 8 mm (1/8 – 5/16 in)
Hot starter lever free play	2 – 3 mm (1/16 – 1/8 in)

COOLING SYSTEM SPECIFICATIONS

ITEM		SPECIFICATIONS
Coolant capacity	Radiator and engine	1.5 liters (1.6 US qt, 1.3 Imp qt)
	Reserve tank	0.34 liter (0.36 US qt, 0.30 Imp qt)
Radiator cap relief pressure		108 – 137 kPa (1.1 – 1.4 kgf/cm², 16 – 20 psi)
Thermostat	Begin to open	80 – 84°C (176 – 183°F)
	Fully open	95°C (203°F)
	Valve lift	8 mm (0.3 in) minimum
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 distilled water

CYLINDER HEAD/VALVE/CAMSHAFT SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Cylinder compression			745 kPa (7.6 kgf/cm², 108 psi)	–
Valve clearance		IN	0.16 ± 0.03 (0.006 ± 0.001)	–
		EX	0.28 ± 0.03 (0.011 ± 0.001)	–
Decompressor clearance			Right side exhaust valve clearance + 0.15 ± 0.02 mm (0.006 ± 0.001 in)	–
Valve, valve guide	Valve stem O.D.	IN	5.475 – 5.490 (0.2156 – 0.2161)	5.46 (0.215)
		EX	5.455 – 5.470 (0.2148 – 0.2154)	5.44 (0.214)
	Valve guide I.D.	IN/EX	5.500 – 5.512 (0.2165 – 0.2170)	5.52 (0.217)
	Stem-to-guide clearance	IN	0.010 – 0.037 (0.0004 – 0.0015)	0.12 (0.005)
		EX	0.030 – 0.057 (0.0012 – 0.0022)	0.14 (0.006)
	Valve guide projection above cylinder head	IN	16.8 – 17.2 (0.66 – 0.68)	–
		EX	17.9 – 18.3 (0.70 – 0.72)	–
	Valve seat width	IN	1.1– 1.3 (0.043 – 0.051)	2.0 (0.08)
		EX	1.3 – 1.5 (0.051 – 0.059)	2.0 (0.08)
Valve spring	Free length	IN	40.68 (1.602)	39.7 (1.56)
		EX	43.16 (1.699)	42.2 (1.66)
Exhaust rocker arm	Arm I.D.		12.000 – 12.018 (0.4724 – 0.4731)	12.05 (0.474)
	Shaft O.D.		11.967 – 11.975 (0.4711 – 0.4715)	11.92 (0.469)
	Arm-to-shaft clearance		0.025 – 0.051 (0.0010 – 0.0020)	0.10 (0.004)
Camshaft	Cam lobe height	IN	36.630 – 36.790 (1.4421 – 1.4484)	36.48 (1.436)
		EX	34.753 – 34.913 (1.3682 – 1.3745)	34.60 (1.362)
Valve lifter O.D.			25.978 – 25.993 (1.0228 – 1.0233)	25.97 (1.022)
Valve lifter bore I.D.			26.010 – 26.026 (1.0240 – 1.0246)	26.04 (1.025)
Cylinder head warpage			–	0.05 (0.002)

CYLINDER/PISTON SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Cylinder	I.D.		94.000 – 94.015 (3.7008 – 3.7014)	94.05 (3.703)
	Out-of-round		–	0.05 (0.002)
	Taper		–	0.05 (0.002)
	Warpage		–	0.05 (0.002)
Piston, piston pin, piston ring	Piston O.D. at 20 (0.8) from bottom		93.960 – 93.990 (3.6992 – 3.7004)	93.86 (3.695)
	Piston pin hole I.D.		21.002 – 21.008 (0.8268 – 0.8271)	21.03 (0.828)
	Piston pin O.D.		20.994 – 21.000 (0.8265 – 0.8268)	20.98 (0.826)
	Piston-to-piston pin clearance		0.002 – 0.014 (0.0001 – 0.0006)	0.04 (0.002)
	Piston ring end gap	Top	0.20 – 0.35 (0.008 – 0.014)	0.50 (0.020)
		Second	0.35 – 0.50 (0.014 – 0.020)	0.65 (0.026)
		Oil (side rail)	0.20 – 0.70 (0.008 – 0.028)	0.9 (0.04)
	Piston ring-to-ring groove clearance	Top	0.065 – 0.100 (0.0026 – 0.0039)	0.115 (0.0045)
		Second	0.030 – 0.060 (0.0012 – 0.0024)	0.075 (0.0030)
Cylinder-to-piston clearance			0.010 – 0.055 (0.0004 – 0.0022)	0.19 (0.007)
Connecting rod small end I.D.			21.016 – 21.034 (0.8274 – 0.8281)	21.04 (0.828)
Connecting rod-to-piston pin clearance			0.016 – 0.040 (0.0006 – 0.0016)	0.06 (0.002)

CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Clutch	Lever free play		10 – 20 (3/8 – 3/4)	–
	Spring free length		45.7 (1.80)	44.7 (1.76)
	Disc A thickness		2.92 – 3.08 (0.115 – 0.121)	2.85 (0.112)
	Disc B thickness		3.22 – 3.38 (0.127 – 0.133)	3.15 (0.124)
	Plate warpage		–	0.15 (0.006)
Kickstarter	Pinion gear I.D.		22.007 – 22.028 (0.8664 – 0.8672)	22.05 (0.868)
	Spindle I.D.		21.959 – 21.980 (0.8645 – 0.8654)	21.95 (0.864)
	Idle gear I.D.		21.020 – 21.041 (0.8276 – 0.8284)	21.07 (0.830)
	Idle gear bushing	I.D.	17.000 – 17.018 (0.6693 – 0.6700)	17.04 (0.671)
		O.D.	20.979 – 21.000 (0.8259 – 0.8268)	20.96 (0.825)
Countershaft O.D. at kickstarter idle gear			16.966 – 16.984 (0.6680 – 0.6687)	16.95 (0.667)

CRANKCASE/TRANSMISSION/CRANKSHAFT SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Shift fork, shaft	Fork I.D.	Left, right	12.003 – 12.024 (0.4726 – 0.4733)	12.04 (0.474)
		Center	11.003 – 11.024 (0.4332 – 0.4340)	11.04 (0.435)
	Shaft O.D.	Left/right	11.983 – 11.994 (0.4718 – 0.4722)	11.97 (0.471)
		Center	10.983 – 10.994 (0.4324 – 0.4328)	10.97 (0.432)
	Fork claw thickness		4.93 – 5.00 (0.194 – 0.197)	4.8 (0.19)
Transmission	Gear I.D.	M4	28.007 – 28.028 (1.1026 – 1.1035)	28.05 (1.104)
		M5	28.020 – 28.033 (1.1031 – 1.1037)	28.06 (1.105)
		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	28.020 – 28.041 (1.1031 – 1.1040)	28.07 (1.105)
	Gear bushing O.D.	M4, M5	27.959 – 27.980 (1.1007 – 1.1016)	27.94 (1.100)
		C1	21.959 – 21.980 (0.8645 – 0.8654)	21.94 (0.864)
		C2	29.959 – 29.980 (1.1795 – 1.1803)	29.94 (1.179)
		C3	27.959 – 27.980 (1.1007 – 1.1016)	27.94 (1.100)
	Gear bushing I.D.	M5	25.020 – 25.041 (0.9850 – 0.9859)	25.06 (0.987)
		C1	19.020 – 19.041 (0.7488 – 0.7496)	19.06 (0.750)
		C2	27.020 – 27.041 (1.0638 – 1.0646)	27.06 (1.065)
		C3	25.020 – 25.041 (0.9850 – 0.9859)	25.06 (0.987)
	Mainshaft O.D.	at M5	24.967 – 24.980 (0.9830 – 0.9835)	24.95 (0.982)
	Countershaft O.D.	at C1	18.959 – 18.980 (0.7464 – 0.7472)	18.94 (0.746)
		at C2	26.959 – 26.980 (1.0614 – 1.0622)	26.94 (1.061)
		at C3	24.959 – 24.980 (0.9826 – 0.9835)	24.94 (0.982)
Crankshaft	Runout	Left	–	0.05 (0.002)
		Right	–	0.03 (0.001)
	Big end side clearance		0.05 – 0.60 (0.002 – 0.024)	0.75 (0.030)
	Big end radial clearance		0.006 – 0.018 (0.0002 – 0.0007)	0.05 (0.002)

FRONT WHEEL/SUSPENSION/STEERING SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Minimum tire tread depth		–	4.0 (0.16)
Cold tire pressure	Standard	27.5 kPa (0.275 kgf/cm^2, 4.0 psi)	–
	Minimum	23.5 kPa (0.235 kgf/cm^2, 3.4 psi)	–
	Maximum	31.5 kPa (0.315 kgf/cm^2, 4.6 psi)	–
Compression damping adjuster standard position		1-7/8 turns out from full in	–
Rebound damping adjuster standard position		1-3/8 turns out from full in	–
Tie-rod distance between the ball joints		409.5 (16.12)	–
Toe		Toe-in: 11.4 ± 15 (0.45 ± 0.6)	–

REAR WHEEL/SUSPENSION SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Minimum tire tread depth			–	4.0 (0.16)
Cold tire pressure	Standard		32.5 kPa (0.325 kgf/cm^2, 4.7 psi)	–
	Minimum		28.5 kPa (0.285 kgf/cm^2, 4.1 psi)	–
	Maximum		36.5 kPa (0.365 kgf/cm^2, 5.3 psi)	–
Axle runout			–	3.0 (0.12)
Drive chain	Slack		30 – 40 (1-1/4 – 1-9/16)	–
	Size/link	DID	DID520V6/94	–
		RK	RK520SMOZ10S/94	–
Compression damping adjuster standard position			26 ± 1 clicks out from full in	–
Rebound damping adjuster standard position			1-3/4 turns out from full in	–

HYDRAULIC BRAKE SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Recommended brake fluid		DOT 4 brake fluid	–
Front brake	Disc thickness	2.8 – 3.2 (0.11 – 0.13)	2.5 (0.10)
	Disc runout	–	0.30 (0.012)
	Master cylinder I.D.	12.7 (0.55)	–
	Caliper cylinder I.D.	25.4 (1.00)	–
Rear brake	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.	12.7 (0.55)	–
	Caliper cylinder I.D.	32.0 (1.26)	–

ELECTRICAL SPECIFICATIONS

ITEM			SPECIFICATIONS
Alternator	Capacity		214 W/5,000 rpm
	Charging coil resistance (20°C/68°F)		0.1 – 1.0 Ω
Spark plug	Standard		IFR8H11 (NGK) VK24PRZ11 (DENSO)
	For extended high speed riding		IFR9H11 (NGK) VK27PRZ11 (DENSO)
Spark plug gap			1.0 – 1.1 mm (0.039 – 0.043 in)
Ignition coil peak voltage			100 V minimum
Exciter coil peak voltage		High	80 V minimum
		Low	80 V minimum
Ignition pulse generator peak voltage			0.7 V minimum
Ignition timing ("F" mark)			12° BTDC at idle
Bulb	Headlight		12 V - 30 W/30 W x 2
	Taillight		LED
	Coolant temperature indicator		12 V - 3.4 W
Carburetor heater resistance (20°C/68°F)			13 – 15 Ω
ECT sensor resistance		at 80°C (176°F)	47.5 – 57 Ω
		at 120°C (248°F)	14.8 – 17.3 Ω

STANDARD TORQUE VALUES

FASTENER TYPE	TORQUE N·m (kgf·m, lbf·ft)	FASTENER TYPE	TORQUE N·m (kgf·m, lbf·ft)
5 mm bolt and nut	5 (0.5, 3.6)	5 mm screw	4 (0.4, 2.9)
6 mm bolt and nut	9.8 (1.0, 7)	6 mm screw	9 (0.9, 6.5)
8 mm bolt and nut	22 (2.2, 16)	6 mm flange bolt (8 mm head; small flange)	9.8 (1.0, 7)
10 mm bolt and nut	34 (3.5, 25)	6 mm flange bolt (8 mm head; large flange)	12 (1.2, 9)
12 mm bolt and nut	54 (5.5, 40)	6 mm flange bolt (10 mm head) and nut	12 (1.2, 9)
		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 important fasteners.
- Others should be tightened to standard torque values listed above.

NOTE:

1. Apply engine oil to the threads and seating surface.
2. Apply grease to the threads and seating surface.
3. Apply locking agent to the threads.
4. Replace with a new one and stake.
5. Apply sealant to the threads.
6. ALOC bolt: replace with a new one.
7. Castle nut: tighten to the specified torque and further tighten until its grooves aligns with the cotter pin hole.

ENGINE

MAINTENANCE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Spark plug	1	14	23 (2.3, 17)	
Decompressor arm adjusting screw lock nut	1	5	9.8 (1.0, 7)	NOTE 1
Crankshaft hole cap	1	30	15 (1.5, 11)	NOTE 2
Engine oil drain bolt	1	8	22 (2.2, 16)	
Transmission oil drain bolt	1	8	22 (2.2, 16)	

FUEL SYSTEM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Carburetor insulator band screw	2	5	–	page 6-21
Starting enrichment (SE) valve nut	1	–	3 (0.3, 2.2)	
Hot start valve nut	1	–	3 (0.3, 2.2)	

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)	

ENGINE REMOVAL/INSTALLATION

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Drive sprocket bolt	1	8	31 (3.2, 23)	

CYLINDER HEAD/VALVE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Cylinder head nut	4	10	54 (5.5, 40)	NOTE 1
Cylinder head cover bolt	3	6	9.8 (1.0, 7)	
Camshaft holder bolt	4	6	14 (1.4, 10)	NOTE 1
Decompressor lifter arm nut	1	8	22 (2.2, 16)	NOTE 1
Decompressor cam bolt	1	8	25 (2.5, 18)	NOTE 3
Cam sprocket bolt	2	7	20 (2.0, 14)	NOTE 3

CYLINDER/PISTON

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Cylinder stud bolt	4	10	–	page 10-7

CLUTCH/KICKSTARTER/GEARSHIFT LINKAGE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Clutch spring bolt	6	6	12 (1.2, 9)	
Clutch center lock nut	1	18	108 (11.0, 80)	NOTE 1
Shift drum center pin bolt	1	8	22 (2.2, 16)	
Shift drum stopper arm bolt	1	6	12 (1.2, 9)	
Kickstarter pedal bolt	1	8	38 (3.9, 28)	

CRANKCASE/TRANSMISSION/CRANKSHAFT

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Balancer shaft lock nut	1	16	64 (6.5, 47)	NOTE 1, 4
Cam chain tensioner bolt	1	6	12 (1.2, 9)	NOTE 3
Primary drive gear bolt	1	12	108 (11.0, 80)	NOTE 1
Bearing set plate bolt	6	6	12 (1.2, 9)	NOTE 3
Oil jet	1	5	2 (0.2, 1.4)	NOTE 3

ELECTRICAL

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Engine coolant temperature (ECT) sensor	1	PT 1/8	9.8 (1.0, 7)	NOTE 5
Timing hole cap	1	14	9.8 (1.0, 7)	NOTE 2
Flywheel nut	1	14	74 (7.5, 54)	NOTE 1
Ignition pulse generator bolt	2	5	5 (0.5, 3.6)	
Alternator stator bolt	3	6	9.8 (1.0, 7)	

FRAME

FRAME/BODY PANELS/EXHAUST SYSTEM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf-m, lbf-ft)	REMARKS
Footpeg bracket bolt	4	10	42 (4.3, 31)	
Skid plate bolt	6	8	30 (3.1, 22)	NOTE 6
Muffler mounting nut	2	8	32 (3.3, 24)	
Exhaust pipe band bolt	2	8	23 (2.3, 17)	
Rear frame upper mounting bolt	2	8	32 (3.3, 24)	
Rear frame lower mounting bolt	2	10	54 (5.5, 40)	

MAINTENANCE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf-m, lbf-ft)	REMARKS
Axle bearing holder pinch bolt	4	8	21 (2.1, 15)	
Front master cylinder reservoir cap screw	2	4	2 (0.2, 1.4)	
Parking brake arm lock nut	1	8	18 (1.8, 13)	
Rear master cylinder push rod lock nut	1	8	18 (1.8, 13)	
Tie-rod lock nut	4	12	54 (5.5, 40)	

ENGINE REMOVAL/INSTALLATION

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf-m, lbf-ft)	REMARKS
Upper engine hanger nut	1	10	54 (5.5, 40)	
Upper engine hanger plate bolt	4	8	26 (2.7, 20)	
Front engine hanger nut	1	10	54 (5.5, 40)	
Front engine hanger plate bolt	4	8	26 (2.7, 20)	
Lower engine hanger nut	1	10	74 (7.5, 54)	

FRONT WHEEL/SUSPENSION/STEERING

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf-m, lbf-ft)	REMARKS
Throttle housing cover screw	2	4	4 (0.4, 2.9)	
Handlebar grip end bolt	2	6	12 (1.2, 9)	
Handlebar switch housing screw	2	5	2 (0.2, 1.4)	
Clutch lever pivot bolt	1	6	9.8 (1.0, 7)	
Parking brake lever pivot screw	1	6	9 (0.9, 6.5)	
Front wheel nut	8	10	64 (6.5, 47)	
Front wheel hub nut	2	14	69 (7.0, 51)	NOTE 7
Front brake disc bolt	6	8	42 (4.3, 31)	NOTE 6
Shock absorber mounting nut	4	10	39 (4.0, 29)	
Front brake hose clamp bolt	5	6	12 (1.2, 9)	NOTE 6
Upper and lower arm pivot nut	8	10	39 (4.0, 29)	
Upper and lower arm ball joint nut	4	12	32 (3.3, 24)	NOTE 7
Tie-rod ball joint nut	4	10	44 (4.5, 33)	
Handlebar lower holder nut	2	10	39 (4.0, 29)	
Steering shaft end nut	1	14	69 (7.0, 51)	
Steering shaft holder bolt	2	8	32 (3.3, 24)	

REAR WHEEL/SUSPENSION

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Rear wheel nut	8	10	64 (6.5, 47)	
Rear wheel hub nut	2	18	147 (15.0, 108)	NOTE 2, 7
Rear brake caliper bracket mounting bolt	2	8	30 (3.1, 22)	NOTE 6
Drive chain guard bolt	2	6	9.8 (1.0, 7)	NOTE 6
Rear axle inner lock nut	1	48	128 (13.0, 94)	NOTE 3
Rear axle outer lock nut	1	48	88 (9.0, 65)	NOTE 3
Rear brake disc bolt	3	8	42 (4.3, 31)	NOTE 6
Final driven sprocket nut	4	10	59 (6.0, 43)	
Rear shock absorber mounting nut	2	10	59 (6.0, 43)	
Shock link-to-swingarm nut	1	10	44 (4.5, 33)	
Shock arm-to-frame nut	1	10	59 (6.0, 43)	
Shock arm-to-shock link nut	1	10	59 (6.0, 43)	
Rear brake hose clamp bolt	2	6	12 (1.2, 9)	NOTE 6
Rear brake hose guide bolt	1	6	9.8 (1.0, 7)	NOTE 6
Parking brake cable clamp bolt	2	6	9.8 (1.0, 7)	NOTE 6
Chain slider bolt	2	6	9.8 (1.0, 7)	NOTE 6
Swingarm pivot nut	1	14	108 (11.0, 80)	NOTE 2
Rear brake caliper stay stopper bolt	1	12	59 (6.0, 43)	NOTE 3

HYDRAULIC BRAKE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Brake caliper bleed valve	3	8	6 (0.6, 4.3)	
Rear brake reservoir mounting bolt	1	6	12 (1.2, 9)	
Front brake disc cover bolt	2	6	12 (1.2, 9)	NOTE 6
Front brake pad pin	2	8	18 (1.8, 13)	
Rear brake caliper pin bolt	1	8	23 (2.3, 17)	
Brake hose oil bolt	5	10	34 (3.2, 25)	
Front brake lever pivot bolt	2	6	1 (0.1, 0.7)	
Front brake lever pivot nut	2	6	6 (0.6, 4.3)	
Front brake light switch screw	1	4	1 (0.1, 0.7)	
Front brake caliper bracket mounting bolt	2	8	30 (3.1, 22)	NOTE 6
Rear brake reservoir hose joint screw	1	4	2 (0.2, 1.4)	NOTE 3
Rear master cylinder mounting bolt	2	6	12 (1.2, 9)	
Parking brake base bolt	2	8	23 (2.3, 17)	
Brake pedal pivot bolt	1	8	26 (2.7, 20)	
Front brake pipe joint bolt	3	10	17 (1.7, 12)	
Front brake 3-way joint mounting bolt	1	6	12 (1.2, 9)	

LUBRICATION & SEAL POINTS

ENGINE

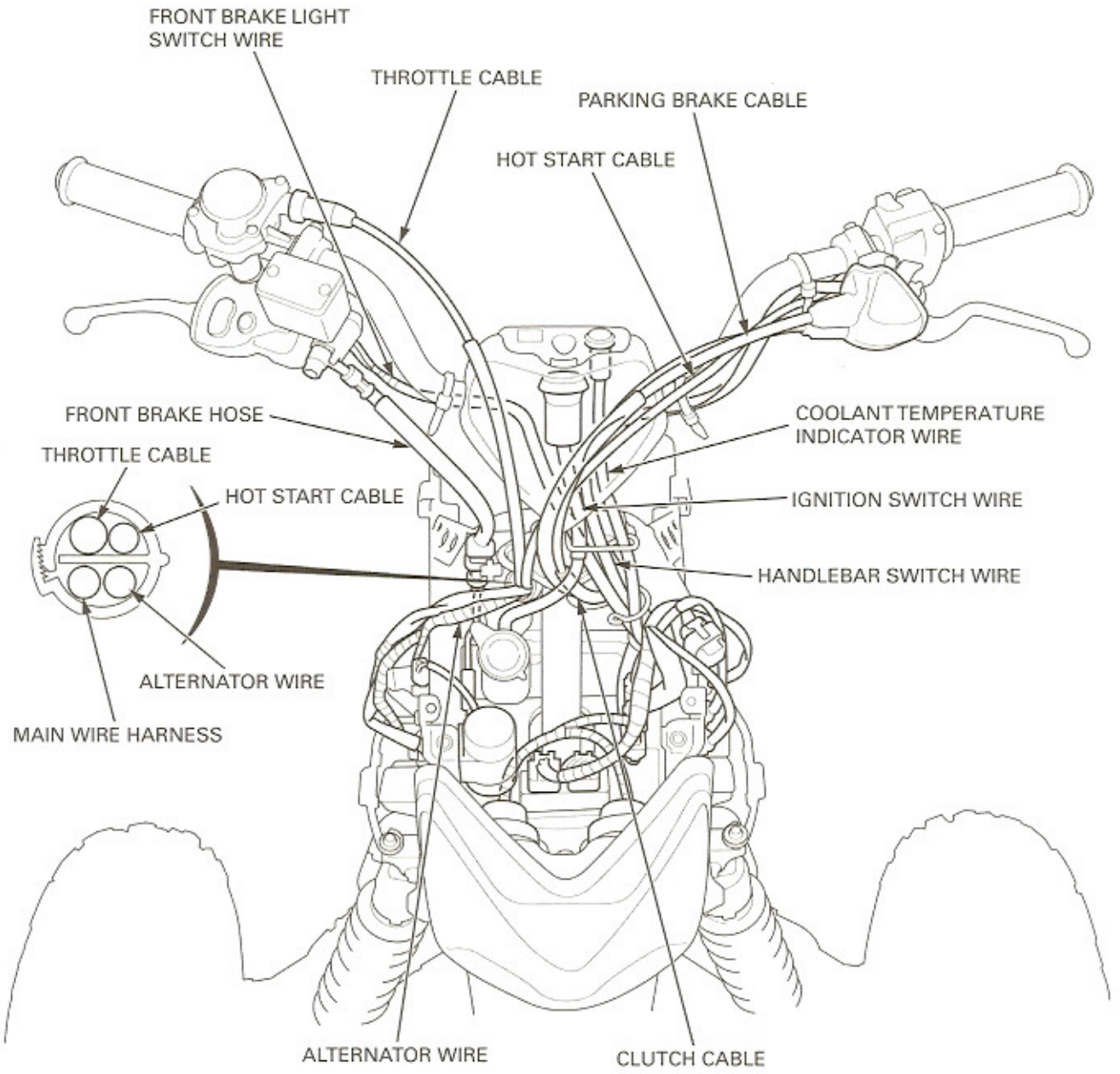
LOCATION	MATERIAL	REMARKS
Camshaft cam lobe Rocker arm pivot and slipper surface Decompressor lifter arm roller surface Valve stem sliding surface Valve stem end Valve lifter outer surface Clutch outer guide sliding surface Clutch lifter arm cam (lifter rod contact area) Shift fork guide pin and shifter (gear guide groove) Shift fork shaft sliding surface Kickstarter spindle gear and ratchet sliding surface Kickstarter pinion gear inner surface Piston pin outer surface Connecting rod small end inner surface Connecting rod big end thrust surface Balancer shaft needle bearing and ball bearing Mainshaft gear and shifter sliding surface Countershaft gear and shifter sliding surface Each gear sliding surface	Molybdenum oil solution (a mixture of engine oil and molybdenum disulfide grease in a ratio of 1:1)	
Oil pump rotor sliding surface Oil pipe seal ring Decompressor arm adjusting screw lock nut threads Camshaft holder bolt threads Decompressor lifter arm nut threads and seating surface Decompressor arm pivot surface Cylinder head nut threads and seating surface Piston outer surface and piston pin hole Piston rings Clutch outer sliding surface Clutch disc lining surface Clutch center lock nut threads and seating surface Clutch lifter piece needle bearing Gearshift spindle serration area Kickstarter idle gear B bearing area Kickstarter spindle bearing area Balancer shaft lock nut threads Primary drive gear bolt threads Crankshaft oil seal contacting surface Shift drum guide groove Flywheel nut threads and seating surface Each bearing rotating area Each O-ring	Engine oil	
Crankshaft hole cap threads Timing hole cap threads Each oil seal lip	Multi purpose grease	

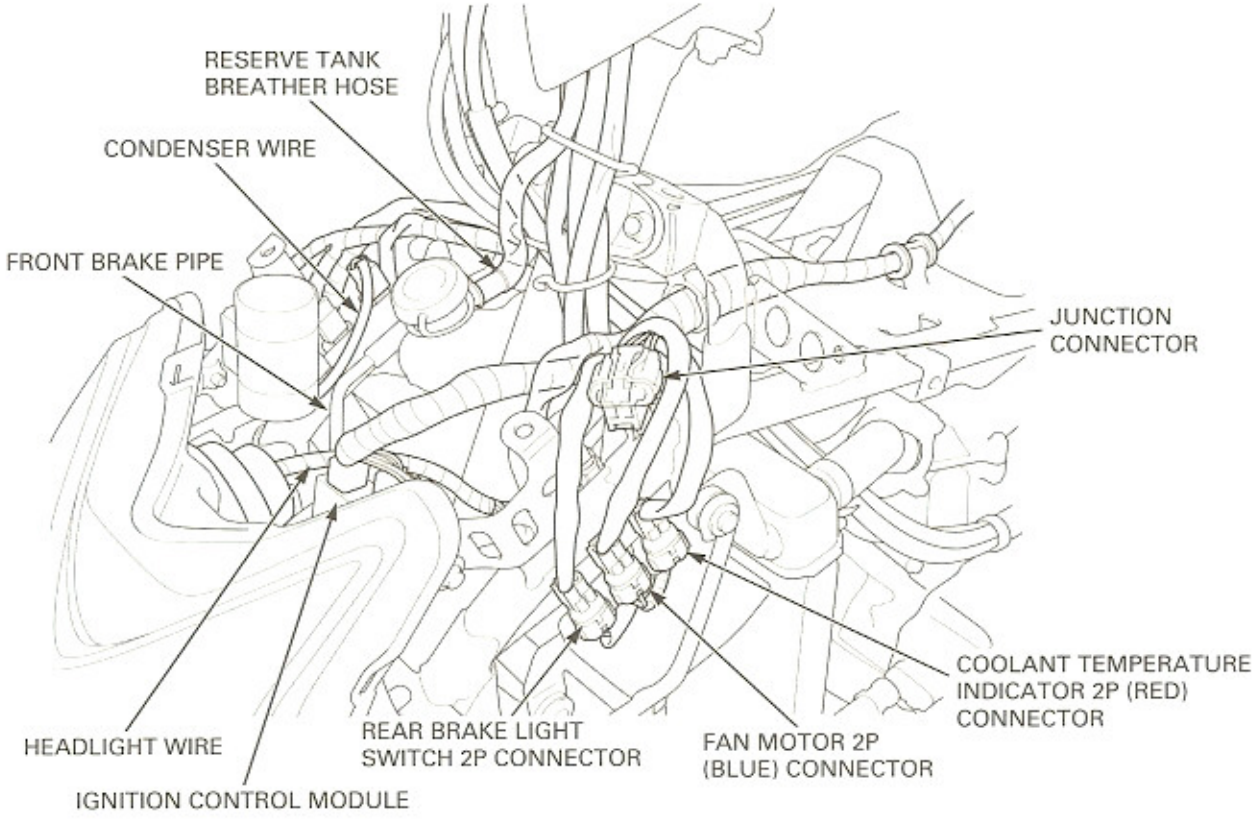
LOCATION	MATERIAL	REMARKS
Cam sprocket bolt threads	Locking agent	Coating width: 6.5 ± 1 mm (0.26 ± 0.04 in)
Decompressor cam bolt threads		Coating width: 6.5 ± 1 mm (0.26 ± 0.04 in)
Shift drum center bolt threads Cam chain tensioner bolt threads		Coating width: 6.5 ± 1 mm (0.26 ± 0.04 in)
Bearing set plate bolt threads		Coating width: 6.5 ± 1 mm (0.26 ± 0.04 in)
Bearing set plate screw threads		Coating width: 6.5 ± 1 mm (0.26 ± 0.04 in)
Oil jet threads		Coating width: 2.5 ± 1 mm (0.26 ± 0.04 in)
Cylinder head cover breather plate bolt threads		Coating width: 6.5 ± 1 mm (0.26 ± 0.04 in)
Crankcase bolt threads		Coating width: 6.5 ± 1 mm (0.10 ± 0.04 in) (page 12-25)
Engine coolant temperature (ECT) sensor threads	Sealant	

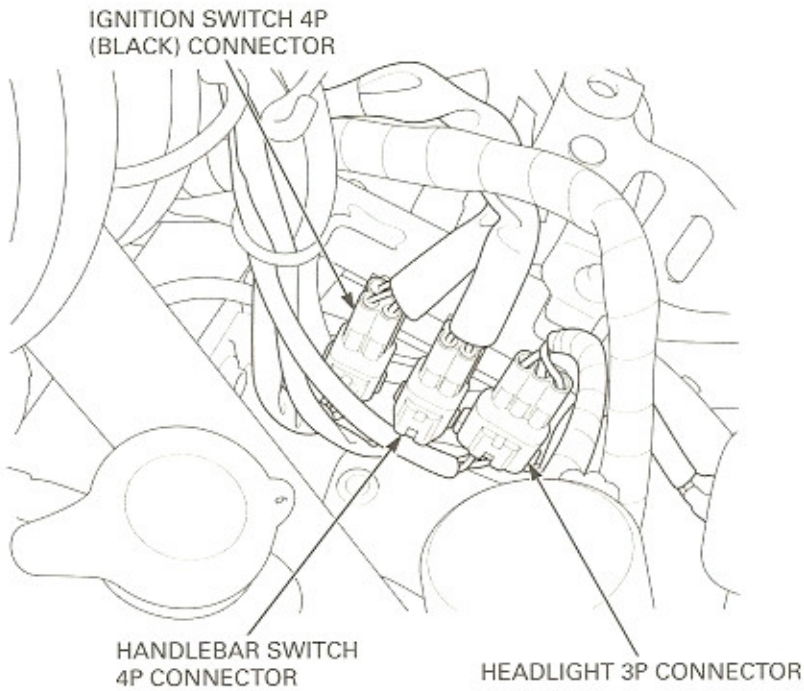
FRAME

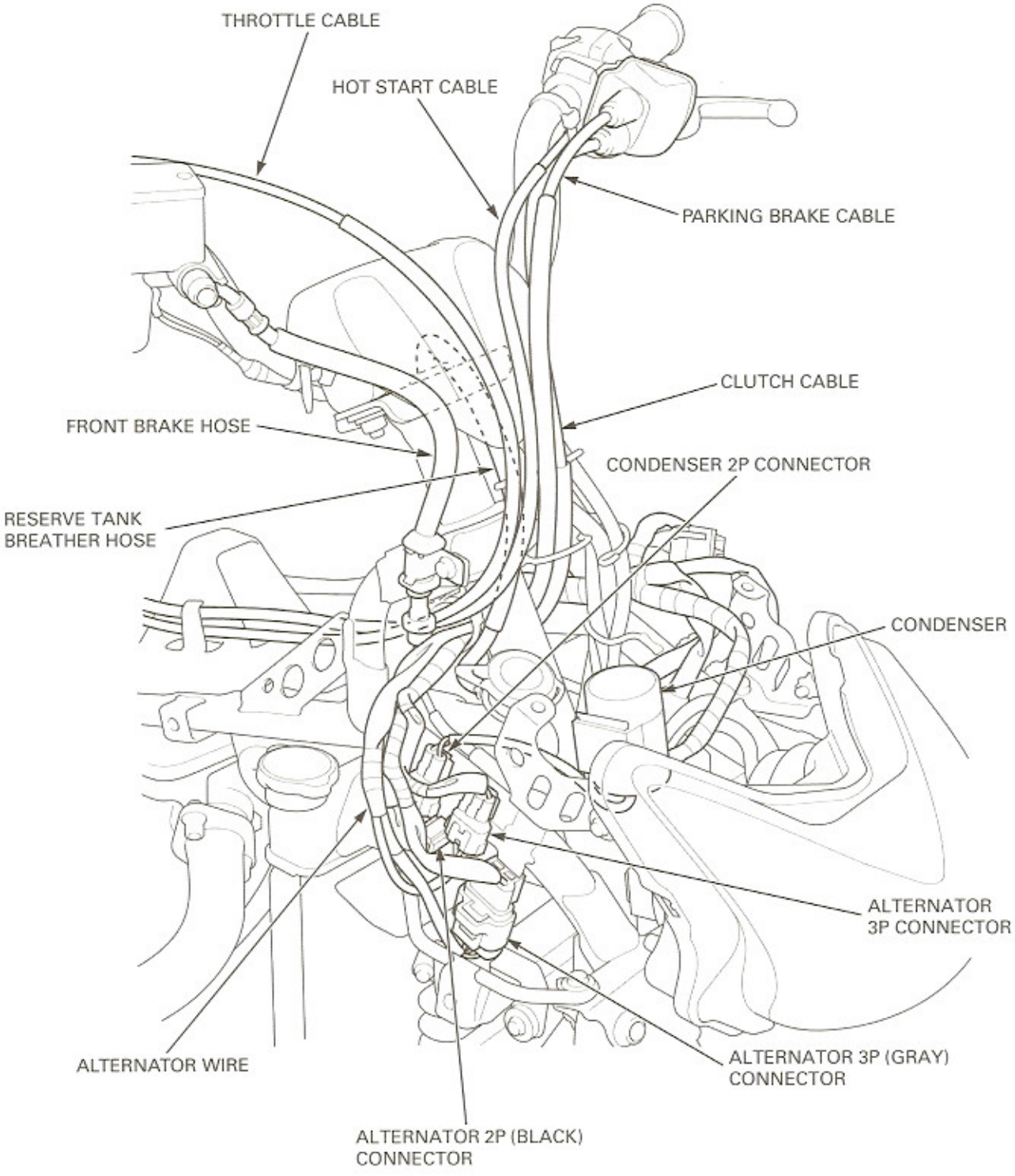
LOCATION	MATERIAL	REMARKS
Throttle cable end Throttle cable adjuster threads Throttle lever pivot and dust seal lip Clutch lever pivot Parking lock arm pivot (screw) Parking brake cable end Kickstarter pedal joint sliding area Steering shaft bushing sliding surface Steering shaft bearing dust seal lip Front wheel hub dust seal lip Upper and lower arm pivot bearings Upper and lower arm pivot bearing dust seal lips Front shock absorber lower bearing Front shock absorber lower bearing dust seal lip Shock arm and link bearings Shock arm and link bearing dust seal lips Rear shock absorber upper bearing Rear shock absorber upper bearing dust seal lip Swingarm pivot bearing Swingarm pivot bearing dust seal lip Rear axle bearing holder dust seal lip Rear axle bearing holder sliding surface Rear axle outer lock nut clip contacting area Shock link-to-swingarm bolt pivot surface Rear wheel hub nut threads and seating surface Rear axle splines Rear brake caliper stay sliding surface Swingarm pivot nut threads and seating surface Brake pedal pivot bolt sliding surface	Multi purpose grease (NLGI #2)	Fill up 3 g per each bearing Fill up 3 g per each bearing
Throttle cable outer inside Clutch cable outer inside Hot start cable inside	Cable lubricant	
Handlebar grip rubber inside	Honda bond A or Pro Honda Hand Grip Cement (U.S.A. only) or equivalent	
Front brake lever-to-master piston contacting area Front brake lever pivot Front brake caliper pin sliding surface Front brake caliper bracket pin sliding surface Rear brake master piston-to-push rod contacting area Rear brake caliper pin sliding surfaces Rear brake caliper parking brake shaft sliding surface	Silicone grease	
Brake master piston and cup Brake caliper piston and seal Rear brake reservoir hose joint O-ring	DOT4 brake fluid	
Rear axle inner and outer lock nut threads Rear caliper stay stopper bolt threads Rear brake reservoir hose joint screw threads	Locking agent	

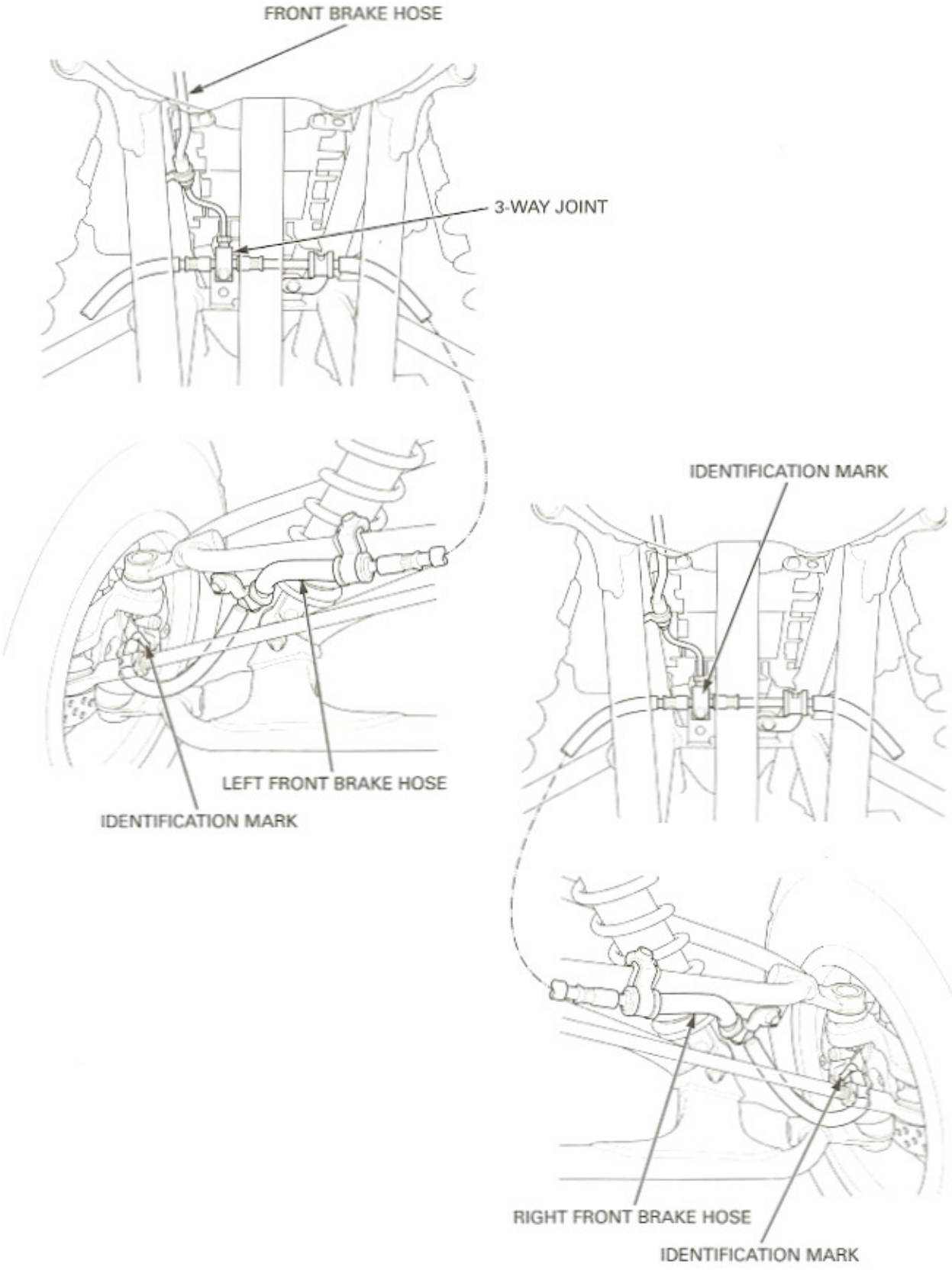
CABLE & HARNESS ROUTING

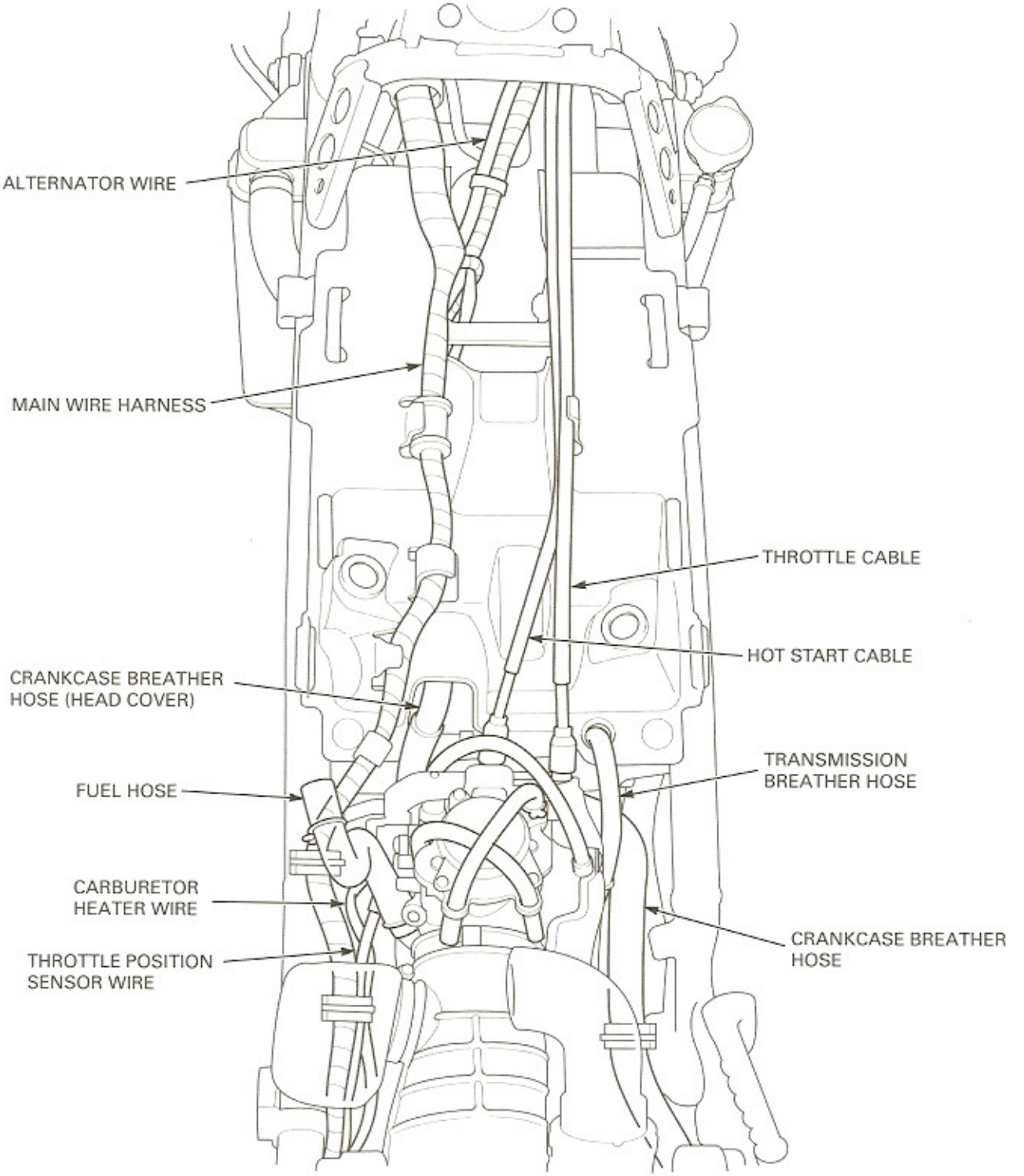


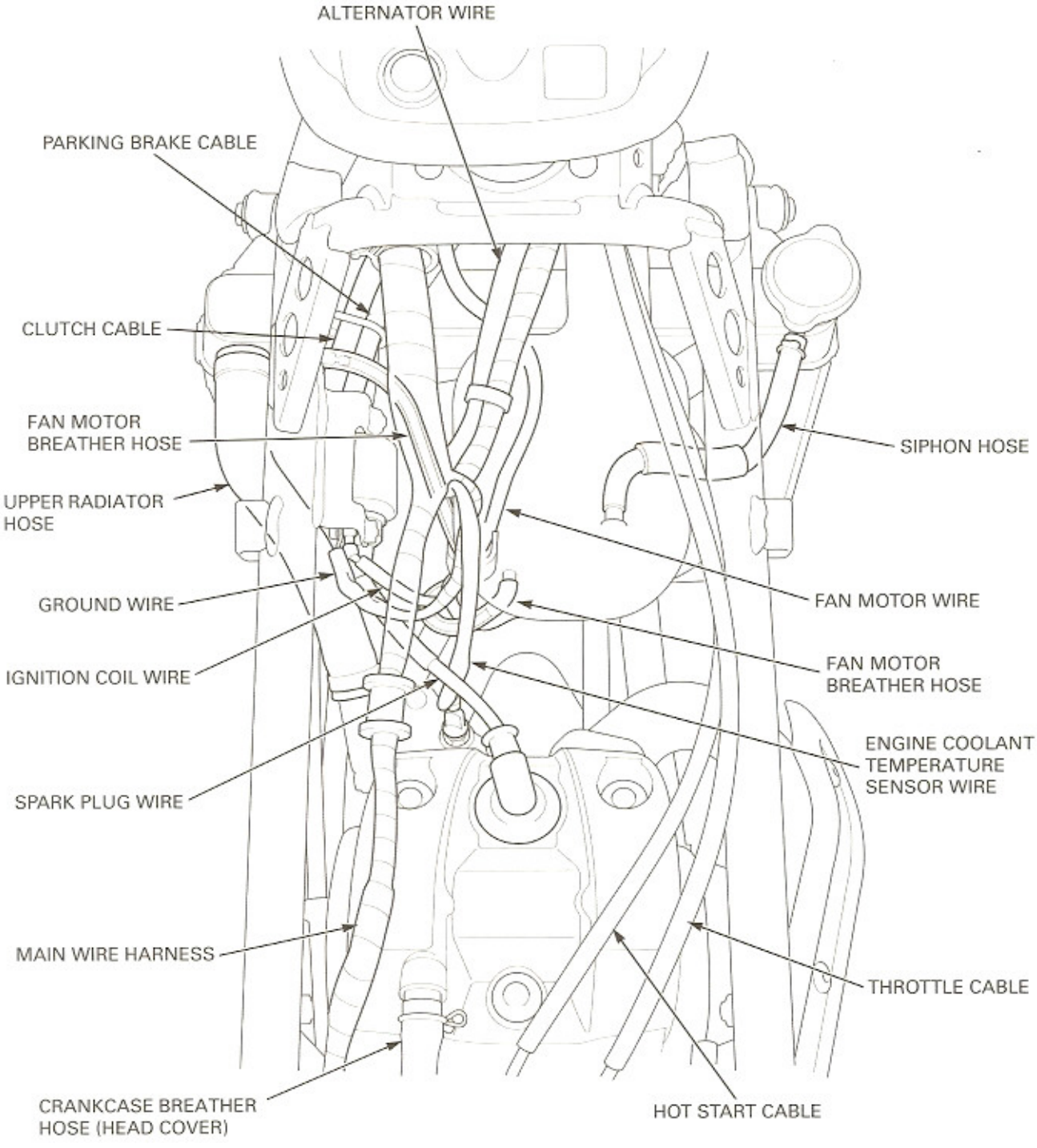

RESERVE TANK
BREATHER HOSE
CONDENSER WIRE
FRONT BRAKE PIPE
JUNCTION
CONNECTOR
COOLANT TEMPERATURE
INDICATOR 2P (RED)
CONNECTOR
HEADLIGHT WIRE
REAR BRAKE LIGHT
SWITCH 2P CONNECTOR
FAN MOTOR 2P
(BLUE) CONNECTOR
IGNITION CONTROL MODULE

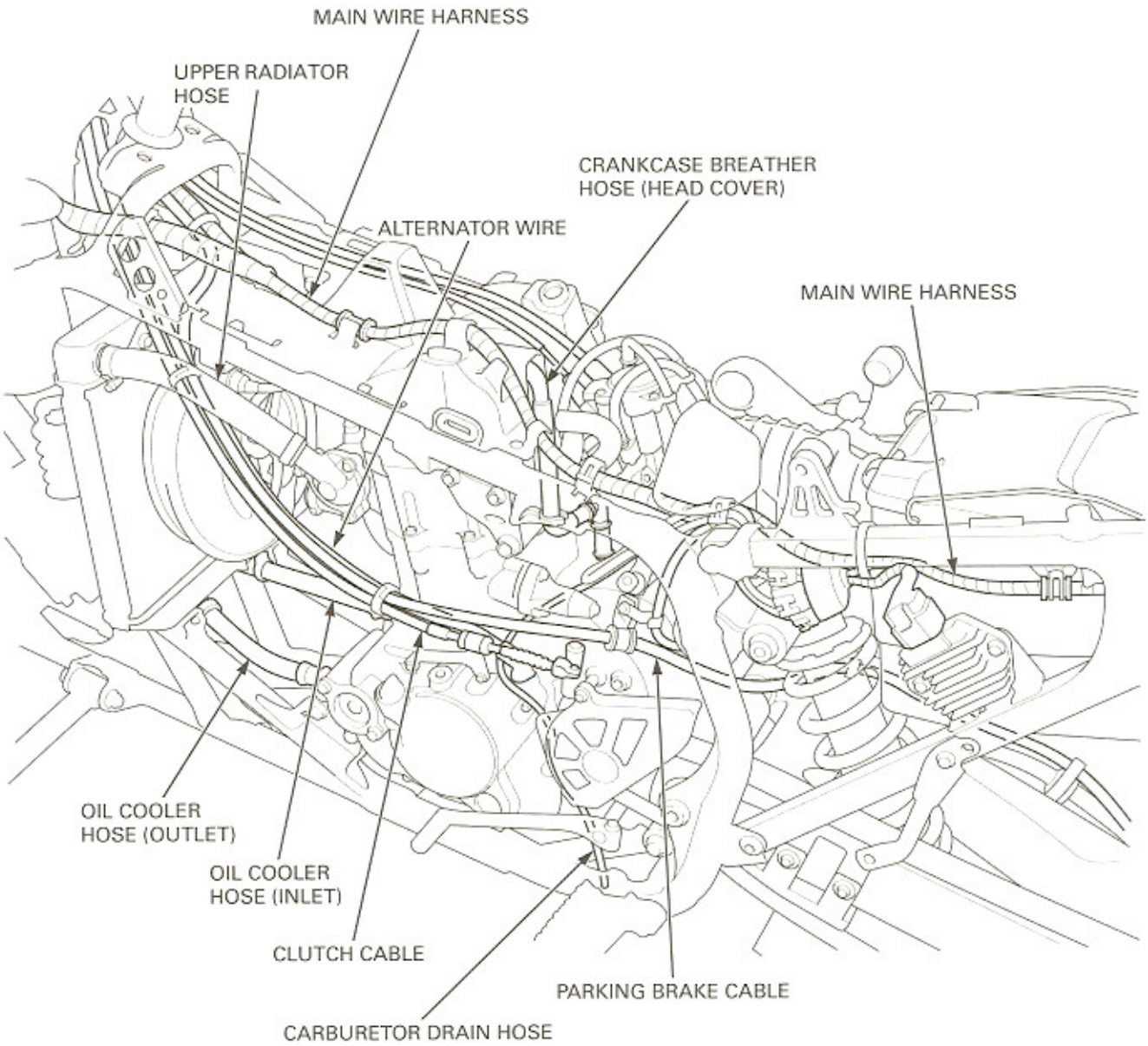

IGNITION SWITCH 4P
(BLACK) CONNECTOR
HANDLEBAR SWITCH
4P CONNECTOR
HEADLIGHT 3P CONNECTOR

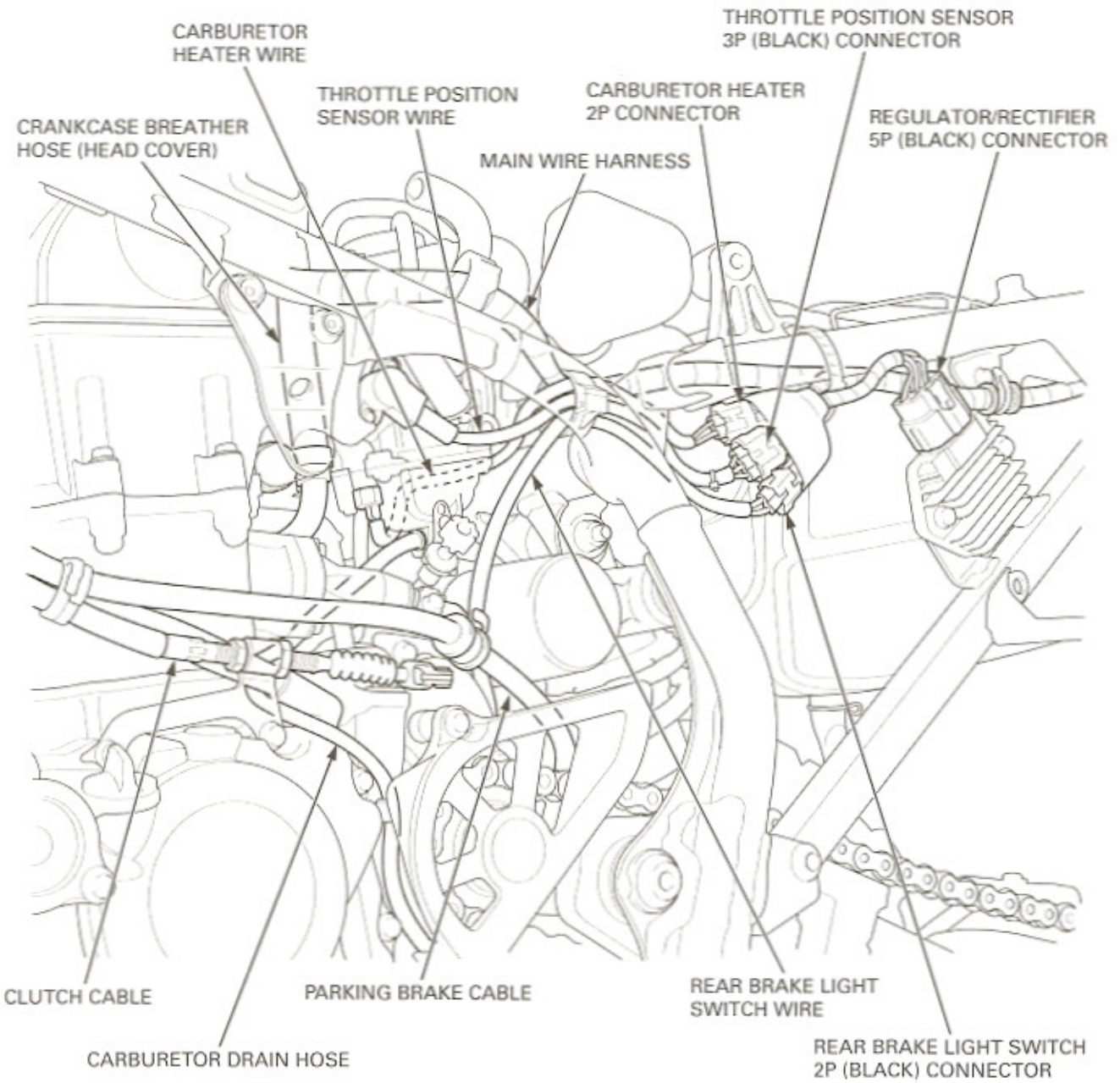

THROTTLE CABLE
HOT START CABLE
PARKING BRAKE CABLE
CLUTCH CABLE
FRONT BRAKE HOSE
CONDENSER 2P CONNECTOR
RESERVE TANK
BREATHER HOSE
CONDENSER
ALTERNATOR
3P CONNECTOR
ALTERNATOR WIRE
ALTERNATOR 3P (GRAY)
CONNECTOR
ALTERNATOR 2P (BLACK)
CONNECTOR

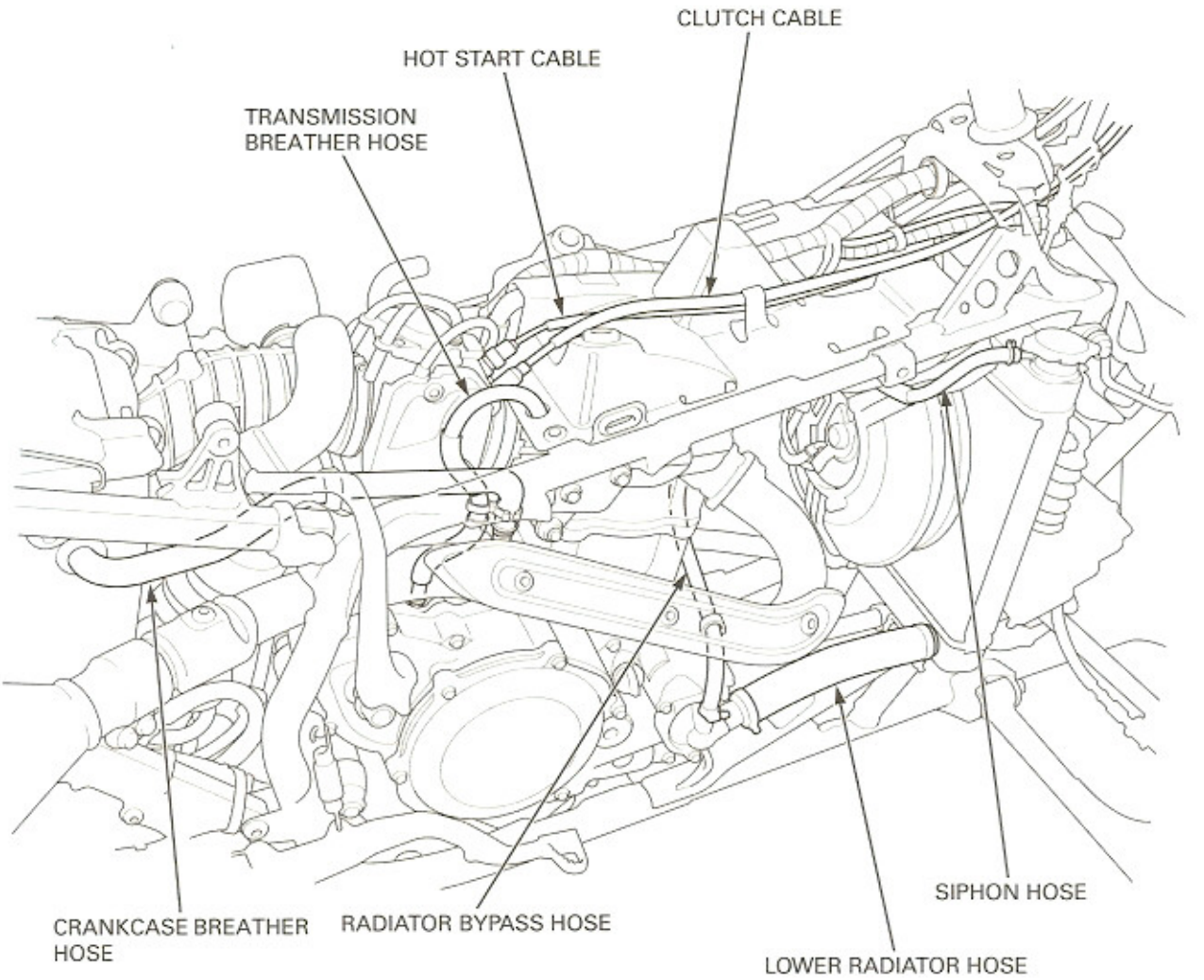

FRONT BRAKE HOSE
3-WAY JOINT
IDENTIFICATION MARK
LEFT FRONT BRAKE HOSE
IDENTIFICATION MARK
RIGHT FRONT BRAKE HOSE
IDENTIFICATION MARK

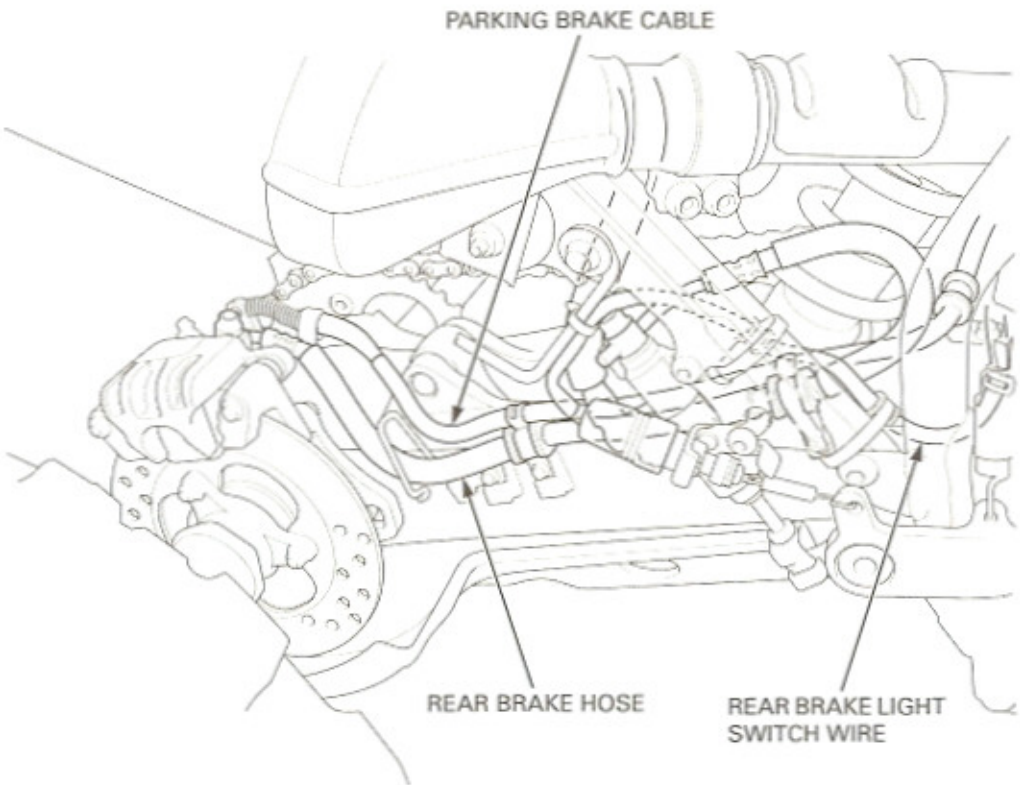

ALTERNATOR WIRE
MAIN WIRE HARNESS
THROTTLE CABLE
HOT START CABLE
CRANKCASE BREATHER HOSE (HEAD COVER)
TRANSMISSION BREATHER HOSE
FUEL HOSE
CARBURETOR HEATER WIRE
CRANKCASE BREATHER HOSE
THROTTLE POSITION SENSOR WIRE

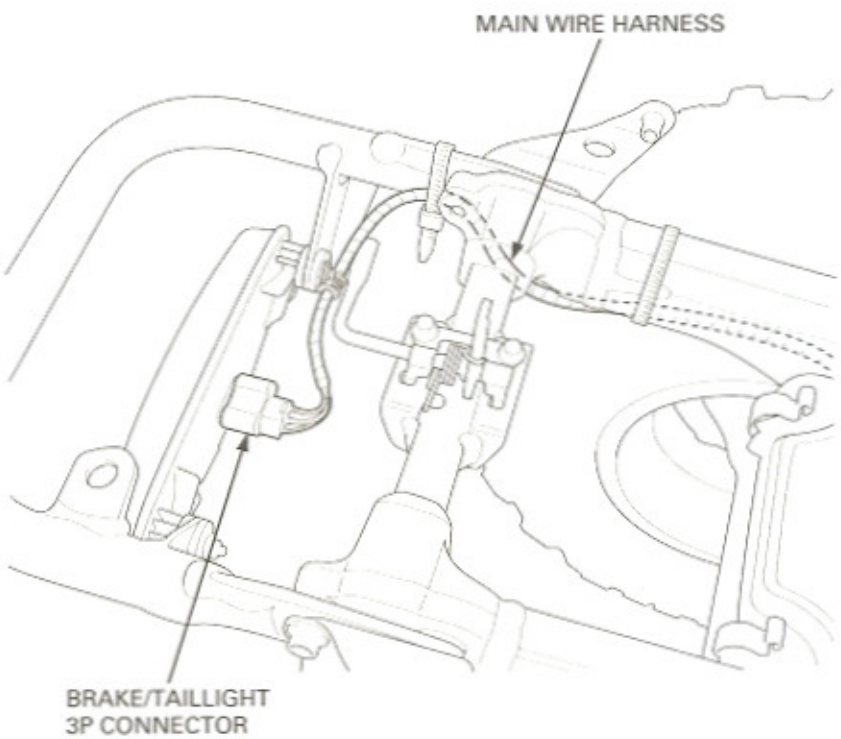

ALTERNATOR WIRE
PARKING BRAKE CABLE
CLUTCH CABLE
FAN MOTOR BREATHER HOSE
UPPER RADIATOR HOSE
GROUND WIRE
IGNITION COIL WIRE
SPARK PLUG WIRE
MAIN WIRE HARNESS
CRANKCASE BREATHER HOSE (HEAD COVER)
SIPHON HOSE
FAN MOTOR WIRE
FAN MOTOR BREATHER HOSE
ENGINE COOLANT TEMPERATURE SENSOR WIRE
THROTTLE CABLE
HOT START CABLE


MAIN WIRE HARNESS
UPPER RADIATOR HOSE
CRANKCASE BREATHER HOSE (HEAD COVER)
ALTERNATOR WIRE
MAIN WIRE HARNESS
OIL COOLER HOSE (OUTLET)
OIL COOLER HOSE (INLET)
CLUTCH CABLE
PARKING BRAKE CABLE
CARBURETOR DRAIN HOSE


CARBURETOR HEATER WIRE
THROTTLE POSITION SENSOR 3P (BLACK) CONNECTOR
THROTTLE POSITION SENSOR WIRE
CARBURETOR HEATER 2P CONNECTOR
CRANKCASE BREATHER HOSE (HEAD COVER)
REGULATOR/RECTIFIER 5P (BLACK) CONNECTOR
MAIN WIRE HARNESS
CLUTCH CABLE
PARKING BRAKE CABLE
REAR BRAKE LIGHT SWITCH WIRE
CARBURETOR DRAIN HOSE
REAR BRAKE LIGHT SWITCH 2P (BLACK) CONNECTOR


CLUTCH CABLE
HOT START CABLE
TRANSMISSION BREATHER HOSE
SIPHON HOSE
CRANKCASE BREATHER HOSE
RADIATOR BYPASS HOSE
LOWER RADIATOR HOSE


PARKING BRAKE CABLE
REAR BRAKE HOSE
REAR BRAKE LIGHT
SWITCH WIRE


MAIN WIRE HARNESS
BRAKE/TAILLIGHT
3P CONNECTOR

EMISSION CONTROL SYSTEMS

The California Air Resources Board (CARB) requires manufacturers to certify that their ATVs comply with applicable exhaust emissions standards during their useful life, when operated and maintained according to the instructions provided.

SOURCE OF EMISSIONS

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

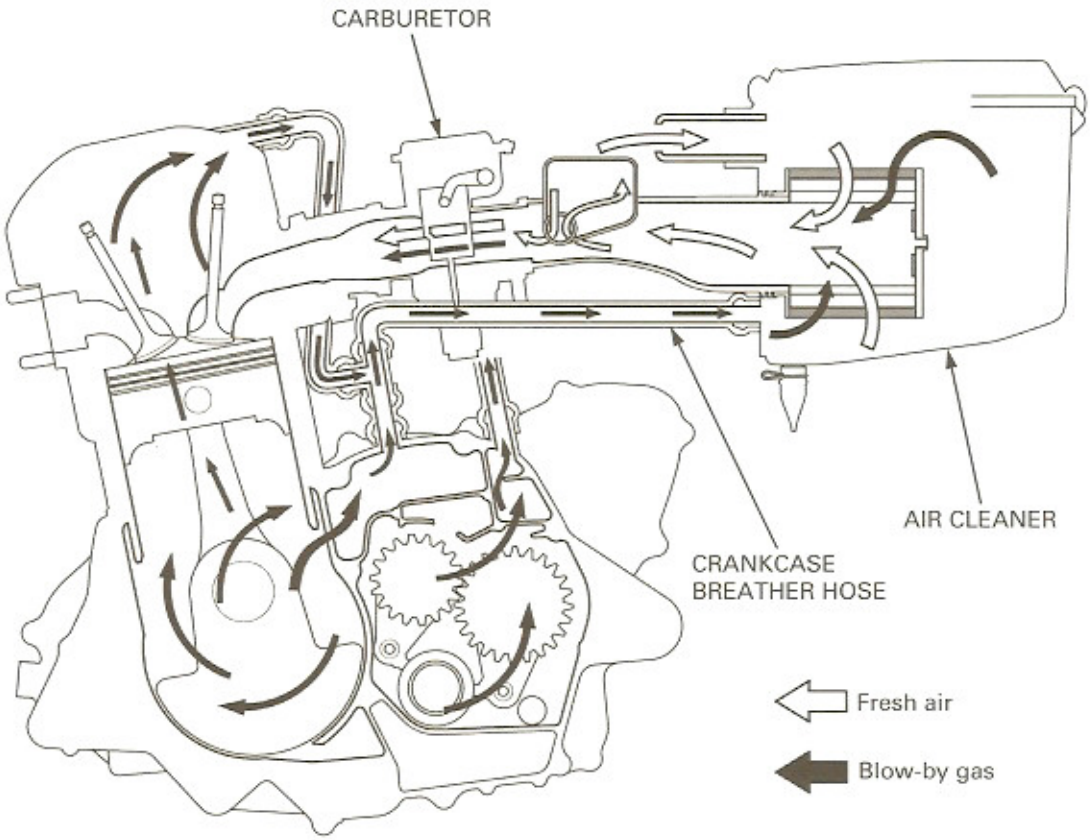
Honda Motor Co., Ltd. utilizes lean carburetor settings as well as other systems, to reduce carbon monoxide and hydrocarbons.

EXHAUST EMISSION CONTROL SYSTEM

The exhaust emission control system is composed of a lean carburetor setting, and no adjustments should be made except idle speed adjustment with the throttle stop screw. The exhaust emission control system is separate from the crankcase emission control systems.

CRANKCASE EMISSION CONTROL SYSTEM

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



NOISE EMISSION CONTROL SYSTEM

TAMPERING WITH THE NOISE CONTROL SYSTEM IS PROHIBITED: State lows prohibit, or Canadian provincial laws may prohibit the following acts or the causing thereof: (1) The removal or rendering inoperative by any person, other than for purposes of maintenance, repair or replacement, of any device or element of design incorporated into any new vehicle for the purpose of noise control prior to its sale or delivery to the ultimate purchaser or while it is in use; or (2) the use of the vehicle after such device or element of design has been removed or rendered inoperative by any person.

AMONG THOSE ACTS PRESUMED TO CONSTITUTE TAMPERING ARE THE FOLLOWING ACTS:

1. Removal of, or puncturing the muffler, baffles, header pipes or any other component which conducts exhaust gases.
2. Removal of, or puncturing of any part of the intake system.
3. Lack of proper maintenance.
4. Replacing any moving parts of the vehicle, or parts of the exhaust or intake system, with parts other then those specified by the manufacturer.

EMISSION CONTROL INFORMATION

LABEL (U.S.A. only)

The Vehicle Emission Control Information Label is attached on the right front frame pipe.

EMISSION CONTROL INFORMATION LABEL

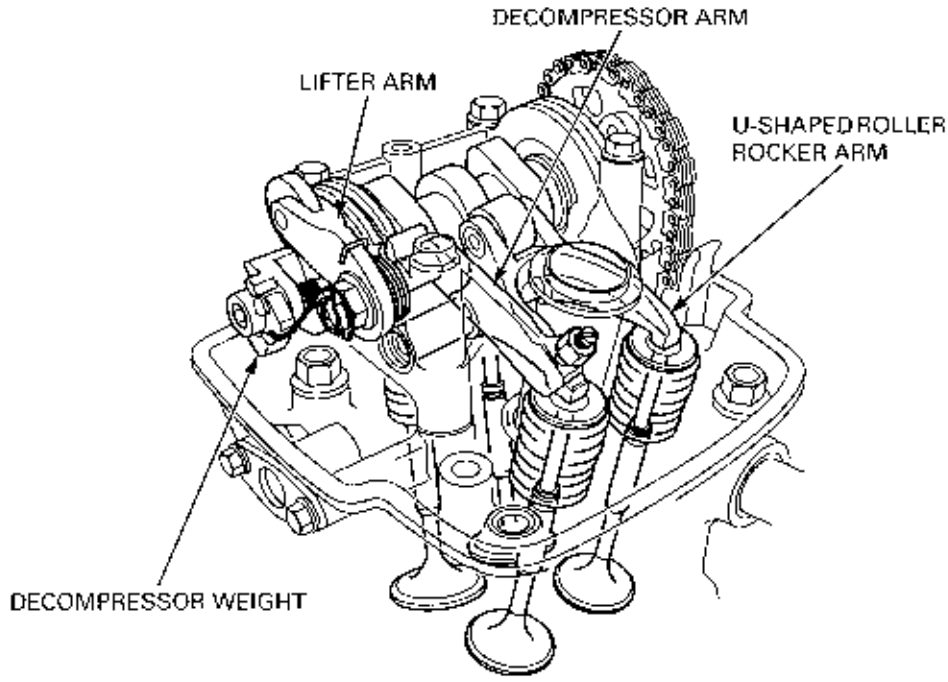
2. TECHNICAL FEATURES

UNICAM SYSTEM

OUTLINE

The Honda Unicam has a single overhead camshaft (SOHC) and one-piece camshaft holder. The camshaft acts directly on the intake valves while the exhaust valves are activated by a U-shaped roller rocker arm.

This Unicam design is lighter and more compact than a dual overhead camshaft (DOHC) cylinder head design. The Unicam cylinder head incorporates a narrow and 22 degree valve angle.



U-SHAPED ROLLER ROCKER ARM

The exhaust roller rocker arm is U-shaped to fit around the centrally located spark plug.

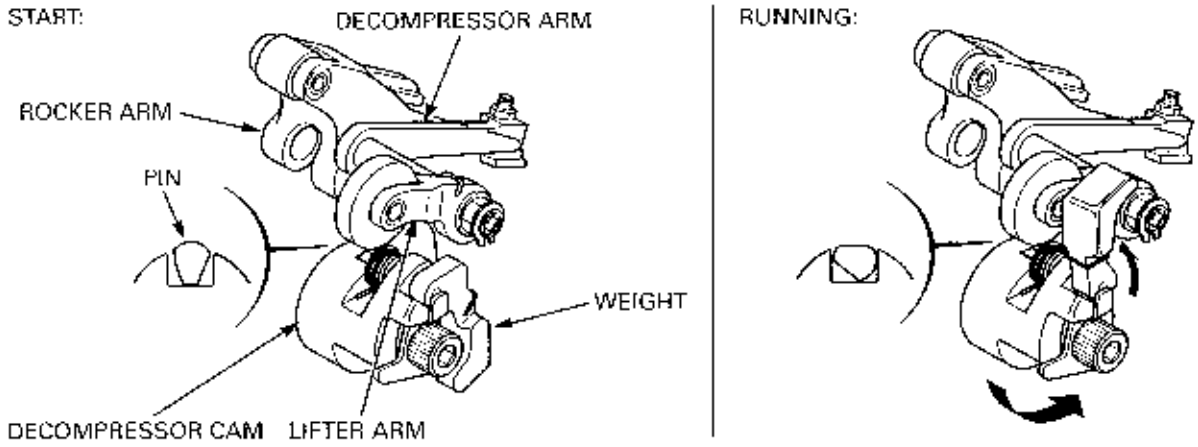
AUTO-DECOMPRESSION SYSTEM

DURING START-UP (OR WHEN ENGINE IS OFF)

The lifter arm is raised slightly by the rounded side of the decompressor weight's pin. The raised lifter arm causes the decompressor arm to push against the rocker arm, opening the exhaust valve slightly.

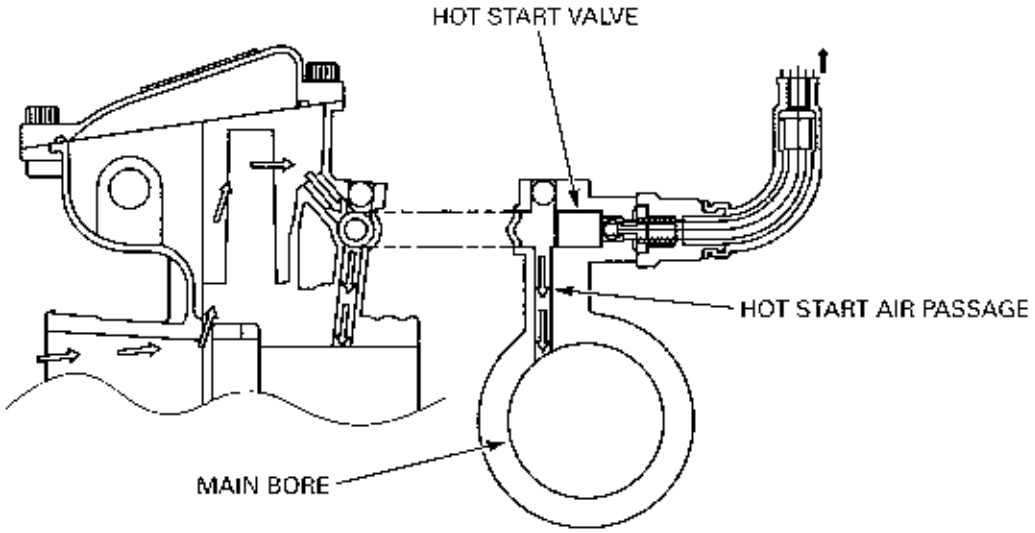
AFTER START-UP

Centrifugal force of the spinning camshaft causes the decompressor weight to swing out. As the weight swings out, its pin rotates so the flat side is facing up. This allows the decompressor cam to be flush with the camshaft surface, releasing pressure on the rocker arm and closing the exhaust valve.



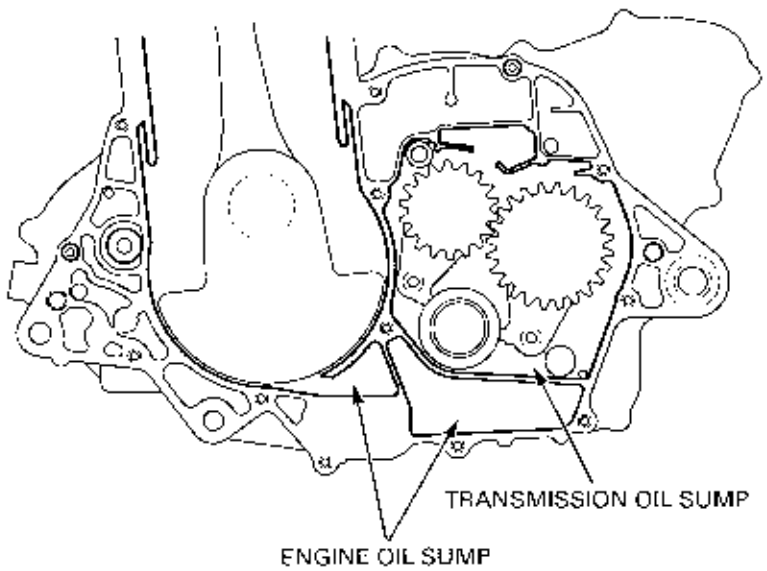
HOT START SYSTEM

The hot start system creates a lean air/fuel mixture that enables a hot engine to be started easily. When the hot-start lever (located on the left side of the handlebar) is pushed away from the rider, the hot start valve in the carburetor opens, supplying air to the main bore through the hot start air passage. This extra air blends with the air/fuel mixture from the slow circuit resulting in a lean condition.



TWIN SUMP LUBRICATION SYSTEM

The Honda twin-sump lubrication system separates the oil supply for the crankshaft, piston and valve train from the clutch and transmission. This ensures a cool supply of oil to the clutch, eliminates clutch and transmission material contamination of the engine oil, and reduces the amount of circulating oil and required size of the oil pump. This design allows for an oil cooler and no external oil tank is needed. Because there are separate oil supplies the crankcase oil level and transmission oil level are checked independently. Make sure to review both oil level check procedures in section 3, "Maintenance".



3. FRAME/BODY PANELS/EXHAUST SYSTEM