1998-2003

HONDA

SERVICE MANUAL

1998-2003

VTR1000F

SUPER HAWK®

61MBB05

HOW TO USE THIS MANUAL

This service manual describes the service procedures for the VTR1000F.

Follow the Maintenance Schedule (Section 3) recommendations to ensure that the vehicle is in peak operating condition and the emission levels are within the standards set by the U.S. Environmental Protection Agency and California Air Resources Board.

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 19 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 have 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 21, Troubleshooting.

CONTENTS

1. GENERAL INFORMATION

GENERAL SAFETY

CARBON MONOXIDE

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

⚠WARNING

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

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

GASOLINE

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

⚠WARNING

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

HOT COMPONENTS

⚠WARNING

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

USED ENGINE OIL

⚠WARNING

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

BRAKE DUST

Never use an air hose or dry brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner or alternate method approved by OSHA, designed to minimize the hazard caused by airborne asbestos fibers.

⚠WARNING

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

BRAKE FLUID

CAUTION:

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

COOLANT

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

⚠WARNING

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

CAUTION:

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

BATTERY HYDROGEN GAS & ELECTROLYTE

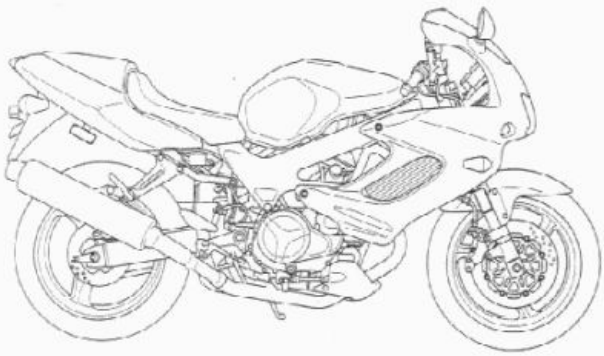
⚠WARNING

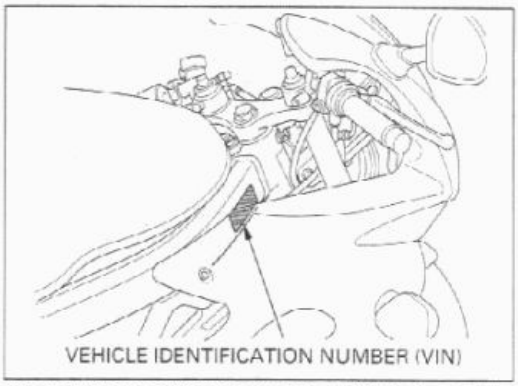
- *The battery gives off explosive gases; keep sparks, flames and cigarettes away. Provide adequate ventilation when charging.*
- *The battery contains sulfuric acid (electrolyte). Contact with skin or eyes may cause severe burns. Wear protective clothing and a face shield.*
  - *If electrolyte gets on your skin, flush with water.*
  - *If electrolyte gets in your eyes, flush with water for at least 15 minutes and call a physician immediately.*
- *Electrolyte is poisonous.*
  - *If swallowed, drink large quantities of water or milk and follow with milk of magnesia or vegetable oil and call a physician. KEEP OUT OF REACH OF CHILDREN.*

SERVICE RULES

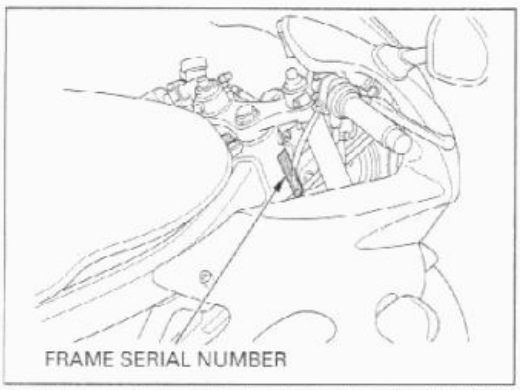
1. Use genuine HONDA or HONDA-recommended parts and lubricants or their equivalents. Parts that do not meet HONDA's design specifications may cause damage to the motorcycle.
2. Use the special tools designed for this product to avoid damage and incorrect assembly.
3. Use only metric tools when servicing 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 pages 1-18 through 1-29, Cable & Harness routing.

MODEL IDENTIFICATION

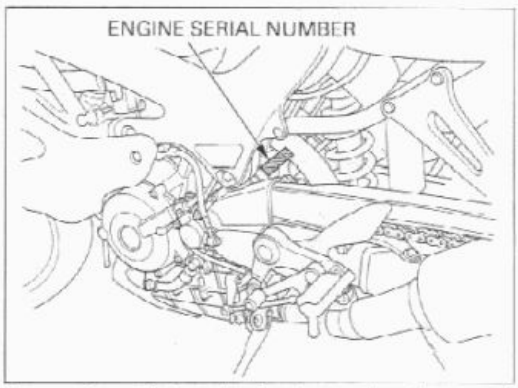




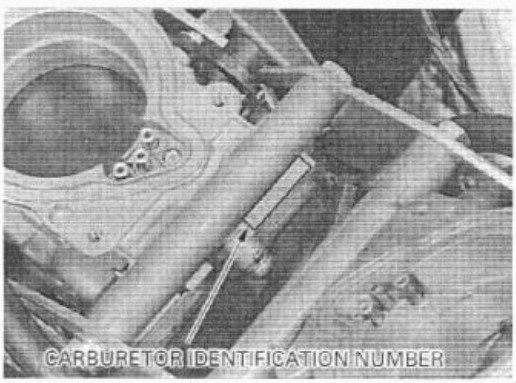
The Vehicle Identification Number (VIN) is located on right side of the frame near the steering head.



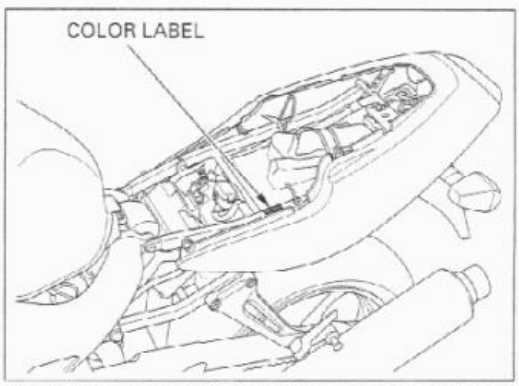
The frame serial number is stamped on the right side of the steering head.



The engine serial number is stamped on the rear of the upper crankcase.



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



The color label is attached on the seat rail under the seat. When ordering color-coded parts, always specify the designated color code.

SPECIFICATIONS

GENERAL

ITEM		SPECIFICATIONS
DIMENSIONS	Overall length	2,050 mm (80.7 in)
	Overall width	710 mm (28.0 in)
	Overall height	1,155 mm (45.5 in)
	Wheelbase	1,430 mm (56.3 in)
	Seat height	810 mm (31.9 in)
	Footpeg height	377 mm (14.8 in)
	Ground clearance	135 mm (5.3 in)
	Dry weight 49 states/Canada type	193 kg (425 lbs)
	Dry weight California type	194 kg (428 lbs)
	Curb weight 49 states/Canada type	215 kg (474 lbs)
	Curb weight California type	216 kg (476 lbs)
	Maximum weight capacity	178 kg (392 lbs)
FRAME	Frame type	Diamond
	Front suspension	Telescopic fork
	Front axle travel	109 mm (4.3 in)
	Front fork stroke	120 mm (4.7 in)
	Rear suspension	Swingarm
	Rear axle travel	124 mm (4.9 in)
	Front tire size	120/70ZR17 (58W)
	Rear tire size	180/55ZR17 (73W)
	Front tire brand	D204FK (DUNLOP), MACADAM 90X G (MICHELIN)
	Rear tire brand	D204K (DUNLOP), MACADAM 90X G (MICHELIN)
	Front brake	Hydraulic double disc
	Rear brake	Hydraulic single disc
	Caster angle	24°50'
	Trail length	97 mm (3.8 in)
	Fuel tank capacity	16.0 ℓ (4.23 US gal, 3.52 Imp gal)
ENGINE	Cylinder arrangement	2 cylinders 90° V transverse
	Bore and stroke	98.0 × 66.0 mm (3.90 × 2.60 in)
	Displacement	995.7 cm³ (60.74 cu-in)
	Compression ratio	9.4 : 1
	Valve train	Chain driven, DOHC
	Intake valve opens	20° BTDC (At 1 mm lift)
	Intake valve closes	45° ABDC (At 1 mm lift)
	Exhaust valve opens	50° BBDC (At 1 mm lift)
	Exhaust valve closes	15° ATDC (At 1 mm lift)
	Lubrication system	Forced pressure and wet sump
	Oil pump type	Trochoid
	Cooling system	Liquid cooled
	Air filtration	Viscous paper element
	Engine dry weight	74.2 kg (163.6 lbs)
	Firing order	Front — 270° — Rear — 450° — Front

GENERAL (Cont'd)

ITEM		SPECIFICATIONS
CARBURETOR	Carburetor type	CV semi-downdraft
	Throttle bore	48 mm (1.9 in)
DRIVE TRAIN	Clutch system	Multi-plate, wet
	Clutch operation system	Hydraulic operating
	Transmission	Constant mesh, 6-speeds
	Primary reduction	1.681 (74/44)
	Final reduction	2.562 (41/16)
	Gear ratio 1st	2.733 (41/15)
	2nd	1.812 (29/16)
	3rd	1.428 (30/21)
	4th	1.206 (35/29)
	5th	1.080 (27/25)
	6th	0.961 (25/26)
	Gearshift pattern	Left foot operated return system, 1−N−2−3−4−5−6
ELECTRICAL	Ignition system	DC-CDI
	Starting system	Electric starter motor
	Charging system	Triple phase output alternator
	Regulator/rectifier	SCR shorted, triple phase full wave rectification
	Lighting system	Battery

Unit: mm (in)

LUBRICATION SYSTEM

ITEM		STANDARD	SERVICE LIMIT
Engine oil capacity	After draining	3.7 ℓ (3.9 US qt , 3.3 Imp qt)	———
	After draining/filter change	3.9 ℓ (4.1 US qt , 3.4 Imp qt)	———
	After disassembly	4.5 ℓ (4.8 US qt , 4.0 Imp qt)	———
Recommended engine oil		Honda GN4 4-stroke oil or equivalent motor oil API service classification SF or SG Viscosity: SAE 10W-40	
Oil pressure (at oil pressure switch)		588 kPa (6.0 kgf/cm², 85 psi) at 5,000 rpm/80 °C (176 °F)	———
Oil pump	Tip clearance	0.15 (0.006)	0.20 (0.008)
	Body clearance	0.15–0.21 (0.006–0.008)	0.35 (0.014)
	Side clearance	0.02–0.09 (0.001–0.004)	0.12 (0.005)

FUEL SYSTEM

ITEM		SPECIFICATIONS
Carburetor identification number	49 state/Canada type	'98–'00: VPT2A, After '00: VPT3B
	California type	'98–'00: VPT1A, After '00: VPT3C
Main jet		Front: #175 , Rear: #178
Slow jet		#45
Jet needle number		Front: A1UF , Rear: A1UE
Pilot screw opening		See page 5-21
Float level		16.6 ± 0.5 mm (0.65 ± 0.02 in)
Idle speed		1,200 ± 100 rpm

COOLING SYSTEM

ITEM		SPECIFICATIONS
Coolant capacity	Radiator and engine	2.9 ℓ (3.1 US qt , 2.6 Imp qt)
	Reserve tank	0.71 ℓ (0.188 US gal , 0.156 Imp gal)
Radiator cap relief pressure		108–137 kPa (1.1–1.4 kgf/cm², 16–20 psi)
Thermostat	Begins to open	73–77 °C (163–171 °F)
	Fully open	90 °C (194 °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

CYLINDER HEAD/VALVE

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Cylinder compression at 350 rpm			1,128 kPa (11.5 kgf/cm², 164 psi)	———
Valve clearance		IN	0.16 ± 0.03 (0.006 ± 0.001)	———
		EX	0.31 ± 0.03 (0.012 ± 0.001)	———
Camshaft	Cam lobe height	IN	40.080 – 40.240 (1.5779 – 1.5842)	39.780 (1.5661)
		EX	40.230 – 40.390 (1.5839 – 1.5902)	39.930 (1.5720)
	Runout		———	0.05 (0.002)
	Oil clearance		0.020 – 0.062 (0.0008 – 0.0024)	0.088 (0.0035)
Valve lifter	Valve lifter O.D.		33.978 – 33.993 (1.3377 – 1.3383)	33.97 (1.337)
	Valve lifter bore I.D.		34.010 – 34.026 (1.3390 – 1.3396)	34.04 (1.340)
Valve, valve guide	Valve stem O.D.	IN	5.975 – 5.990 (0.2352 – 0.2358)	5.965 (0.2348)
		EX	5.965 – 5.980 (0.2348 – 0.2354)	5.955 (0.2344)
	Valve guide I.D.	IN/EX	6.000 – 6.012 (0.2362 – 0.2367)	6.040 (0.2378)
	Stem-to-guide clearance	IN	0.010 – 0.037 (0.0004 – 0.0015)	0.075 (0.0030)
		EX	0.020 – 0.047 (0.0008 – 0.0019)	0.085 (0.0033)
	Valve guide projection above cylinder head		14.0 – 14.2 (0.55 – 0.56)	———
	Valve seat width	IN	1.1 – 1.3 (0.04 – 0.05)	1.7 (0.07)
		EX	1.3 – 1.5 (0.05 – 0.06)	1.9 (0.07)
Valve spring	Free length	Inner	37.0 (1.46)	36.0 (1.42)
		Outer	41.9 (1.65)	40.9 (1.61)
Cylinder head warpage			———	0.10 (0.004)

CLUTCH/GEARSHIFT LINKAGE

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Specified clutch fluid		DOT 4 brake fluid	———
Clutch master cylinder	Cylinder I.D.	14.000 – 14.043 (0.5512 – 0.5529)	14.055 (0.5533)
	Piston O.D.	13.957 – 13.984 (0.5495 – 0.5506)	13.945 (0.5490)
Clutch	Spring free length	49.6 (1.95)	46.6 (1.83)
	Disc thickness	3.72 – 3.88 (0.146 – 0.153)	3.5 (0.14)
	Plate warpage	———	0.30 (0.012)
Clutch outer guide	I.D.	28.000 – 28.021 (1.1024 – 1.1032)	28.031 (1.1036)
	O.D.	34.975 – 34.991 (1.3770 – 1.3776)	34.965 (1.3766)
Mainshaft O.D. at clutch outer guide		27.980 – 27.993 (1.1016 – 1.1021)	27.970 (1.1012)

ALTERNATOR/STARTER CLUTCH

Unit: mm (in)

ITEM	STANDARD	SERVICE LIMIT
Starter driven gear boss O.D.	57.749 – 57.768 (2.2736 – 2.2743)	57.639 (2.2692)

CRANKCASE/TRANSMISSION

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Shift fork	I.D.		12.000 – 12.021 (0.4724 – 0.4733)	12.03 (0.474)
	Claw thickness		5.93 – 6.00 (0.233 – 0.236)	5.9 (0.23)
Shift fork shaft	O.D.		11.957 – 11.968 (0.4707 – 0.4712)	11.95 (0.470)
Transmission	Gear I.D.	M5, M6	31.000 – 31.016 (1.2205 – 1.2211)	31.04 (1.222)
		C2, C3, C4	33.000 – 33.025 (1.2992 – 1.3002)	33.05 (1.301)
	Gear bushing O.D.	M5, M6	30.955 – 30.980 (1.2187 – 1.2197)	30.93 (1.218)
		C2	32.955 – 32.980 (1.2974 – 1.2984)	32.93 (1.296)
		C3, C4	32.950 – 32.975 (1.2972 – 1.2982)	32.93 (1.296)
	Gear-to-bushing clearance	M5, M6	0.020 – 0.061 (0.0008 – 0.0024)	0.10 (0.004)
		C2	0.020 – 0.070 (0.0008 – 0.0028)	0.11 (0.004)
		C3, C4	0.025 – 0.075 (0.0010 – 0.0030)	0.11 (0.004)
	Gear bushing I.D.	M5	27.985 – 28.006 (1.1018 – 1.1026)	28.02 (1.103)
		C2	29.985 – 30.006 (1.1805 – 1.1813)	30.02 (1.182)
	Mainshaft O.D.	at M5	27.967 – 27.980 (1.1011 – 1.1016)	27.94 (1.100)
	Countershaft O.D.	at C2	29.950 – 29.975 (1.1791 – 1.1801)	29.92 (1.178)
	Bushing-to-shaft clearance	M5	0.005 – 0.039 (0.0002 – 0.0015)	0.06 (0.002)
		C2	0.010 – 0.056 (0.0004 – 0.0022)	0.06 (0.002)

CRANKSHAFT/PISTON/CYLINDER

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Crankshaft	Connecting rod side clearance		0.10 – 0.30 (0.004 – 0.012)	0.40 (0.016)
	Crankpin bearing oil clearance		0.032 – 0.050 (0.0013 – 0.0020)	0.060 (0.0024)
	Main journal bearing oil clearance		0.020 – 0.038 (0.0008 – 0.0015)	0.048 (0.0019)
	Runout		—	0.10 (0.004)
Piston, piston pin, piston ring	Piston O.D. at 20 (0.8) from bottom		97.965 – 97.985 (3.8569 – 3.8577)	97.900 (3.8543)
	Piston pin hole I.D.		24.002 – 24.008 (0.9450 – 0.9452)	24.03 (0.946)
	Piston pin O.D.		23.994 – 24.000 (0.9446 – 0.9449)	23.984 (0.9443)
	Piston-to-piston pin clearance		0.002 – 0.014 (0.0001 – 0.0006)	0.046 (0.0018)
	Piston ring end gap	Top	0.25 – 0.40 (0.010 – 0.016)	0.55 (0.022)
		Second	0.40 – 0.55 (0.016 – 0.022)	0.70 (0.028)
		Oil (side rail)	0.20 – 0.70 (0.008 – 0.028)	0.90 (0.035)
	Piston ring-to-ring groove clearance	Top	0.065 – 0.100 (0.0026 – 0.0039)	0.115 (0.0045)
		Second	0.035 – 0.070 (0.0014 – 0.0028)	0.085 (0.0033)
Cylinder	I.D.		98.005 – 98.025 (3.8585 – 3.8592)	98.100 (3.8622)
	Out of round		—	0.10 (0.004)
	Taper		—	0.10 (0.004)
	Warpage		—	0.05 (0.002)
Cylinder-to-piston clearance			0.020 – 0.060 (0.0008 – 0.0024)	0.200 (0.0079)
Connecting rod small end I.D.			24.020 – 24.041 (0.9457 – 0.9465)	24.051 (0.9469)
Connecting rod-to-piston pin clearance			0.020 – 0.047 (0.0008 – 0.0019)	0.067 (0.0026)

FRONT WHEEL/SUSPENSION/STEERING

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Minimum tire tread depth		———	1.5 (0.06)
Cold tire pressure	Up to 90 kg (200 lbs) load	250 kPa (2.50 kgf/cm², 36 psi)	———
	Up to maximum weight capacity	250 kPa (2.50 kgf/cm², 36 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	309.9 (12.20)	303.7 (11.96)
	Tube runout	———	0.20 (0.008)
	Recommended fluid	Pro-Honda Suspension Fluid SS-8	———
	Fluid level	130 (5.1)	———
	Fluid capacity	448 ± 2.5 cm³ (15.2 ± 0.08 US oz, 15.8 ± 0.09 Imp oz)	———
Steering head bearing preload		1.0–1.6 kgf (2.2–3.3 lbf)	———

REAR WHEEL/SUSPENSION

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Minimum tire tread depth		———	2.0 (0.08)
Cold tire pressure	Up to 90 kg (200 lbs) load	290 kPa (2.90 kgf/cm², 42 psi)	———
	Up to maximum weight capacity	290 kPa (2.90 kgf/cm², 42 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.

HYDRAULIC BRAKE

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Front	Specified brake fluid		DOT 4	———
	Brake disc thickness		4.4–4.6 (0.17–0.18)	3.5 (0.14)
	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.	A	30.23–30.28 (1.190–1.192)	30.29 (1.193)
		B	27.000–27.050 (1.0630–1.0650)	27.060 (1.0654)
	Caliper piston O. D.	A	30.148–30.198 (1.1869–1.1889)	30.14 (1.187)
		B	26.918–26.968 (1.0598–1.0617)	26.91 (1.059)
Rear	Specified brake fluid		DOT 4	———
	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.		38.18–38.23 (1.503–1.505)	38.24 (1.506)
	Caliper piston O. D.		38.098–38.148 (1.4999–1.5019)	38.09 (1.500)

BATTERY/CHARGING SYSTEM

ITEM			SPECIFICATIONS
Battery	Capacity		12 V – 10 Ah
	Current leakage		0.1 mA max.
	Voltage (20 °C/68 °F)	Fully charged	13.0 – 13.2 V
		Needs charging	Below 12.3 V
	Charging current	Normal	1.2 A × 5 – 10 h
		Quick	5.0 A × 1.0 h
Alternator	Capacity		0.280 kW/5,000 rpm
	Charging coil resistance (20 °C/68 °F)		0.2 – 0.5 Ω

IGNITION SYSTEM

ITEM		SPECIFICATIONS
Spark plug		DPR9EVX-9 (NGK)
Spark plug gap		0.80 – 0.90 mm (0.031 – 0.035 in)
Ignition coil primary peak voltage		100 V minimum
Ignition pulse generator peak voltage		0.7 V minimum
Ignition timing ("F" mark)		15° BTDC at idle
Engine coolant temperature (ECT) sensor resistance	At 20 °C (68 °F)	2 – 3 kΩ
	At 80 °C (176 °F)	200 – 400 Ω
Throttle sensor	Resistance (20 °C/68 °F)	4 – 6 kΩ
	Input voltage	4.7 – 5.3 V

ELECTRIC STARTER

Unit: mm (in)

ITEM	STANDARD	SERVICE LIMIT
Starter motor brush length	12.0 – 13.0 (0.47 – 0.51)	6.5 (0.26)

LIGHTS/METERS/SWITCHES

ITEM		SPECIFICATIONS
Bulbs	Headlight (high/low beam)	12 V – 60/55 W
	Position light	12 V – 5 W
	Brake/taillight	12 V – 21/5 W × 2
	License light	12 V – 4 CP
	Front turn signal/running light	12 V – 32/3 CP × 2
	Rear turn signal light	12 V – 32 CP × 2
	Instrument light	'98 – '00: 12 V – 1.7 W × 3, After '98: 14 V – 1.4 W × 3
	Turn signal indicator	'98 – '00: 12 V – 1.7 W × 2, After '98: 14 V – 1.4 W × 2
	High beam indicator	'98 – '00: 12 V – 1.7 W, After '98: 14 V – 1.4 W
	Neutral indicator	'98 – '00: 12 V – 1.7 W, After '98: 14 V – 1.4 W
	Oil pressure indicator	'98 '00: 12 V – 1.7 W, After '98: 14 V – 1.4 W
	Side stand indicator ('98 '00 only)	12 V – 1.7 W
Fuse	Main fuse	30 A
	Sub-fuse	10 A, 20 A
Thermosensor resistance	At 80 °C (176 °F)	47 – 57 Ω
	At 120 °C (248 °F)	14 – 18 Ω
Fan motor switch	Starts to close (ON)	98 – 102 °C (208 – 216 °F)
	Stops to open (OFF)	93 – 97 °C (199 – 207 °F)

TORQUE VALUES

STANDARD

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	10 (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)	10 (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 Engine	23 (2.3 , 17)
		Frame	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 locking agent to the threads.
3. Replace with a new one.
4. Stake.
5. Apply oil to the threads and seating surface.
6. Apply engine oil to the O-ring.
7. U-nut.
8. ALOC bolt/screw: replace with a new one.
9. Apply grease to the threads.

ENGINE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
MAINTENANCE:				
Spark plug	2	12	14 (1.4 , 10)	
Crankshaft hole cap	1	30	15 (1.5 , 11)	NOTE 9
Timing hole cap	1	14	10 (1.0 , 7)	NOTE 9
Engine oil filter cartridge	1	20	10 (1.0 , 7)	NOTE 5, 6
Engine oil drain bolt	1	12	29 (3.0 , 22)	
LUBRICATION SYSTEM:				
Oil pressure switch	1	PT 1/8	12 (1.2 , 9)	NOTE 1
Oil pressure switch terminal screw	1	4	2 (0.2 , 1.4)	
Oil pump bolt	2	6	13 (1.3 , 9)	
Oil filter boss	1	20	18 (1.8 , 13)	NOTE 2
FUEL SYSTEM:				
Carburetor insulator band bolt	4	5	1 (0.1 , 0.7)	
Vacuum joint	1	5	3 (0.3 , 2.2)	
Reed valve cover bolt	4	5	5 (0.5 , 3.6)	NOTE 2
ENGINE MOUNTING:				
Drive sprocket bolt	1	10	54 (5.5 , 40)	
CYLINDER HEAD/VALVE:				
Cylinder head cover bolt	8	6	10 (1.0 , 7)	
Breather plate bolt	4	6	12 (1.2 , 9)	NOTE 2
Cam sprocket bolt	4	7	20 (2.0 , 14)	NOTE 2
Camshaft holder bolt	16	7	21 (2.1 , 15)	NOTE 5
Cylinder head bolt	12	10	53 (5.4 , 39)	NOTE 5
Cylinder head sealing bolt	2	12	32 (3.3 , 24)	NOTE 2
Intake manifold vacuum port socket bolt	1	5	3 (0.3 , 2.2)	

ENGINE (Cont'd)

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
CLUTCH/GEARSHIFT LINKAGE:				
Clutch slave cylinder bleed valve	1	8	9 (0.9, 6.5)	
Clutch bolt	5	6	12 (1.2, 9)	
Clutch center lock nut	1	25	127 (13.0, 94)	NOTE 4, 5
Oil pump driven sprocket bolt	1	6	15 (1.5, 11)	NOTE 2
Gearshift cam bolt	1	8	23 (2.3, 17)	NOTE 2
Gearshift spindle return spring pin	1	8	23 (2.3, 17)	
Primary drive gear bolt	1	12	88 (9.0, 65)	NOTE 5
ALTERNATOR/STARTER CLUTCH:				
Flywheel bolt	1	12	157 (16.0, 116)	NOTE 5
Starter clutch bolt	6	8	23 (2.3, 17)	NOTE 2
Alternator stator bolt	3	6	12 (1.2, 9)	
CRANKCASE/TRANSMISSION:				
Cam chain tensioner bolt	2	8	23 (2.3, 17)	NOTE 2
Cam chain guide bolt	2	8	23 (2.3, 17)	NOTE 2
Crankcase flange bolt	1	10	39 (4.0, 29)	
Crankcase special bolt	8	10	42 (4.3, 31)	NOTE 5
Crankcase sealing bolt	1	18	29 (3.0, 22)	NOTE 2
Crankcase sealing bolt	1	22	29 (3.0, 22)	NOTE 2
Crankcase sealing bolt	1	24	49 (5.0, 36)	NOTE 2
CRANKSHAFT/PISTON/CYLINDER:				
Connecting rod bolt	4	9	29 (3.0, 22) + 120°	NOTE 3, 5
IGNITION SYSTEM:				
Ignition pulse generator bolt	2	6	12 (1.2, 9)	
Engine coolant temperature (ECT) sensor	1	12	23 (2.3, 17)	
ELECTRIC STARTER:				
Starter motor terminal nut	1	6	10 (1.0, 7)	
LIGHTS/METERS/SWITCHES:				
Thermosensor	1	PT 1/8	10 (1.0, 7)	NOTE 1
Neutral switch	1	10	12 (1.2, 9)	

FRAME

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
FRAME/BODY PANELS/EXHAUST SYSTEM:				
Front fairing setting bolt	4	6	7 (0.7, 5.1)	
Exhaust pipe joint nut	4	7	12 (1.2, 9)	
Muffler band bolt	2	8	26 (2.7, 20)	
Seat rail 10 mm flange bolt	2	10	39 (4.0, 29)	
Seat rail 10 mm socket bolt	2	10	44 (4.5, 33)	
ENGINE MOUNTING:				
Front engine hanger nut	1	12	64 (6.5, 47)	Page 7-7
Front engine hanger adjusting bolt	1	20	3 (0.3, 2.2)	
Front engine hanger lock nut	1	20	54 (5.5, 40)	
Center engine hanger bolt	2	10	39 (4.0, 29)	
Left center engine hanger adjusting bolt	1	20	3 (0.3, 2.2)	
Left center engine hanger lock nut	1	20	54 (5.5, 40)	
Rear engine hanger nut	1	12	64 (6.5, 47)	
Rear engine hanger adjusting bolt	1	22	3 (0.3, 2.2)	
Rear engine hanger lock nut	1	22	54 (5.5, 40)	
Shock link bracket nut	2	10	44 (4.5, 33)	
CLUTCH/GEARSHIFT LINKAGE:				
Clutch reservoir mounting screw	1	4	2 (0.2, 1.4)	NOTE 2
Clutch reservoir cap stopper plate screw	1	4	1 (0.1, 0.7)	
Clutch lever pivot nut	1	6	6 (0.6, 4.3)	
Clutch hose oil bolt	2	10	34 (3.5, 25)	

FRAME

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
FRONT WHEEL/SUSPENSION/STEERING:				
Handlebar weight mounting screw	2	6	10 (1.0, 7)	NOTE 8
Front master cylinder holder bolt	2	6	12 (1.2, 9)	
Front axle bolt	1	14	59 (6.0, 43)	
Front axle holder bolt	4	8	22 (2.2, 16)	
Front brake disc bolt	12	6	20 (2.0, 14)	NOTE 8
Fork cap	2	37	23 (2.3, 17)	
Fork socket bolt	2	8	20 (2.0, 14)	NOTE 2
Fork top bridge pinch bolt	2	8	23 (2.3, 17)	
Fork bottom bridge pinch bolt	2	10	49 (5.0, 36)	
Front brake hose clamp bolt (fork side)	2	6	10 (1.0, 7)	
Steering stem nut	1	24	103 (10.5, 76)	Page 13-27
Steering bearing adjustment nut	1	26	25 (2.5, 18)	
Steering bearing adjustment nut lock nut	1	26		
Front brake hose clamp bolt (stem side)	1	6	10 (1.0, 7)	
Front brake hose 3-way joint bolt	1	6	10 (1.0, 7)	
REAR WHEEL/SUSPENSION:				
Rear axle nut	1	18	93 (9.5, 69)	
Rear brake disc bolt	4	8	42 (4.3, 31)	NOTE 8
Final driven sprocket nut	5	12	108 (11.0, 80)	
Shock absorber upper mounting bolt	1	10	44 (4.5, 33)	NOTE 8
Shock absorber lower mounting nut	1	10	44 (4.5, 33)	NOTE 7
Shock arm-to-swingarm nut	1	10	44 (4.5, 33)	NOTE 7
Shock arm-to-shock link nut	1	10	44 (4.5, 33)	NOTE 7
Shock link to bracket nut	1	10	44 (4.5, 33)	NOTE 7
Swingarm pivot nut	1	18	93 (9.5, 69)	NOTE 7
Drive chain slider bolt	2	6	9 (0.9, 6.5)	NOTE 8
Rear brake hose clamp screw	2	5	4 (0.4, 2.9)	NOTE 8
HYDRAULIC BRAKE:				
Brake caliper bleed valve	3	8	6 (0.6, 4.3)	
Brake pad pin plug	3	10	3 (0.3, 2.2)	
Brake pad pin	3	10	18 (1.8, 13)	
Brake hose oil bolt	5	10	34 (3.5, 25)	
Front brake lever pivot nut	1	6	6 (0.6, 4.3)	
Front brake fluid reservoir mounting nut	1	6	6 (0.6, 4.3)	NOTE 7
Rear brake fluid reservoir mounting bolt	1	6	9 (0.9, 6.5)	
Rear master cylinder mounting bolt	2	6	10 (1.0, 7)	
Rear master cylinder joint nut	1	8	18 (1.8, 13)	
Front brake caliper mounting bolt	4	8	30 (3.1, 22)	NOTE 8
Front brake caliper assembly bolt	8	8	32 (3.3, 24)	NOTE 2
Rear brake caliper bolt	1	8	23 (2.3, 17)	
Rear brake caliper pin bolt	1	12	27 (2.8, 20)	NOTE 2
IGNITION SYSTEM:				
Ignition coil mounting bolt	4	6	10 (1.0, 7)	
LIGHTS/METERS/SWITCHES:				
Side stand switch bolt	1	6	10 (1.0, 7)	
Ignition switch mounting bolt	2	8	25 (2.5, 18)	
Fan motor switch	1	16	18 (1.8, 13)	
OTHERS:				
Side stand pivot bolt	1	10	10 (1.0, 7)	
Side stand pivot lock nut	1	10	29 (3.0, 22)	
Side stand bracket bolt	1	10	44 (4.5, 33)	NOTE 8
Passenger footpeg bracket bolt	4	8	26 (2.7, 20)	
Bank sensor bolt	2	8	22 (2.2, 16)	
Gearshift pedal pivot bolt	1	8	26 (2.7, 20)	

TOOLS

DESCRIPTION	TOOL NUMBER	ALTERNATIVE TOOL	TOOL NUMBER
Float level gauge	07401-0010000		
Oil pressure gauge	07506-3000000	Equivalent commercially available in U.S.A.	
Oil pressure gauge attachment	07510-4220100		
Gear holder	07724-0010100		
Flywheel holder	07725-0040000	Equivalent commercially available in U.S.A.	
Rotor puller	07733-0020001	Rotor puller	07933-3290001
Bearing remover weight	07741-0010201	Bearing remover weight	07936-3710200 (U.S.A. only)
Valve guide driver, 5.5 mm	07742-0010100		
Clutch center holder	07742-0050002	Equivalent commercially available in U.S.A.	
Valve guide driver	07743-0020000	Valve guide driver, 5.5 mm	07742-0010100
Attachment, 32 × 35 mm	07746-0010100		
Attachment, 37 × 40 mm	07746-0010200		
Attachment, 42 × 47 mm	07746-0010300		
Attachment, 52 × 55 mm	07746-0010400		
Attachment, 24 × 26 mm	07746-0010700		
Driver, 40 mm I.D.	07746-0030100		
Attachment, 35 mm I.D.	07746-0030400		
Pilot, 10 mm	07746-0040100		
Pilot, 17 mm	07746-0040400		
Pilot, 20 mm	07746-0040500		
Pilot, 22 mm	07746-0041000		
Pilot, 28 mm	07746-0041100		
Bearing remover shaft	07746-0050100	Equivalent commercially available in U.S.A.	
Bearing remover head, 20 mm	07746-0050600		
Driver	07749-0010000		
Valve spring compressor	07757-0010000		
Valve seat cutter, 40 mm (IN/EX 45°)	07780-0010500	Equivalent commercially available in U.S.A.	
Flat cutter, 35 mm (EX 32°)	07780-0012300		
Flat cutter, 38.5 mm (IN 32°)	07780-0012400		
Interior cutter, 37.5 mm (IN/EX 60°)	07780-0014100		
Snap ring pliers	07914-3230001		
Steering stem socket	07916-3710101	Steering stem socket	07916-3710100
Bearing remover handle	07936-3710100	Equivalent commercially available in U.S.A.	
Bearing remover, 17 mm	07936-3710300		
Bearing remover set	07936-GE00000		
– Bearing remover shaft	07936-GE00100		
Bearing remover, 10 mm	07936-GE00200		
Mechanical seal driver attachment	07945-4150400	Mechanical seal installer	07965-415000A (U.S.A. only)
Attachment, 28 × 30 mm	07946-1870100		
Main bearing driver attachment	07946-ME90200		
Ball race remover set	07946-KM90001	Not available in U.S.A. (See page 13-25)	
Driver attachment A	07946-KM90100		
– Driver attachment B	07946-KM90200		
– Driver shaft assembly	07946-KM90300		
– Bearing remover A	07946-KM90401		
– Bearing remover B	07946-KM90500		
– Assembly base	07946-KM90600		
Steering stem driver	07946-MB00000		
Fork seal driver weight	07947-KA50100		
Fork seal driver	07947-KF00100		

DESCRIPTION	TOOL NUMBER	ALTERNATIVE TOOL	TOOL NUMBER
Pin driver	07GMD-KT80100	Not available in U.S.A.	
Oil filter wrench	07HAA-PJ70100		
Peak voltage adaptor	07HGJ-0020100	Peak voltage tester	(U.S.A.only)
Lock nut wrench	07HMA-MR70200		
Drive chain tool set	07HMH-MR10103	Drive chain tool set	07HMH-MR1010B (U.S.A.only)
Pilot screw wrench	07KMA-MN90100	Pilot screw wrench	07MMA-MV9010A (U.S.A.only)
Lock nut wrench	07VMA-MBB0100		
Installer shaft	07VMF-KZ30200		
Cutter holder, 6 mm	07VMH-MBB0100	Equivalent commercially available in U.S.A.	
Valve guide reamer	07VMH-MBB0200	Valve guide reamer	07VMH-MBB020A (U.S.A.only)
Inspection adaptor	07VMJ-0020100	Equivalent commercially available in U.S.A.	

LUBRICATION & SEAL POINTS

ENGINE

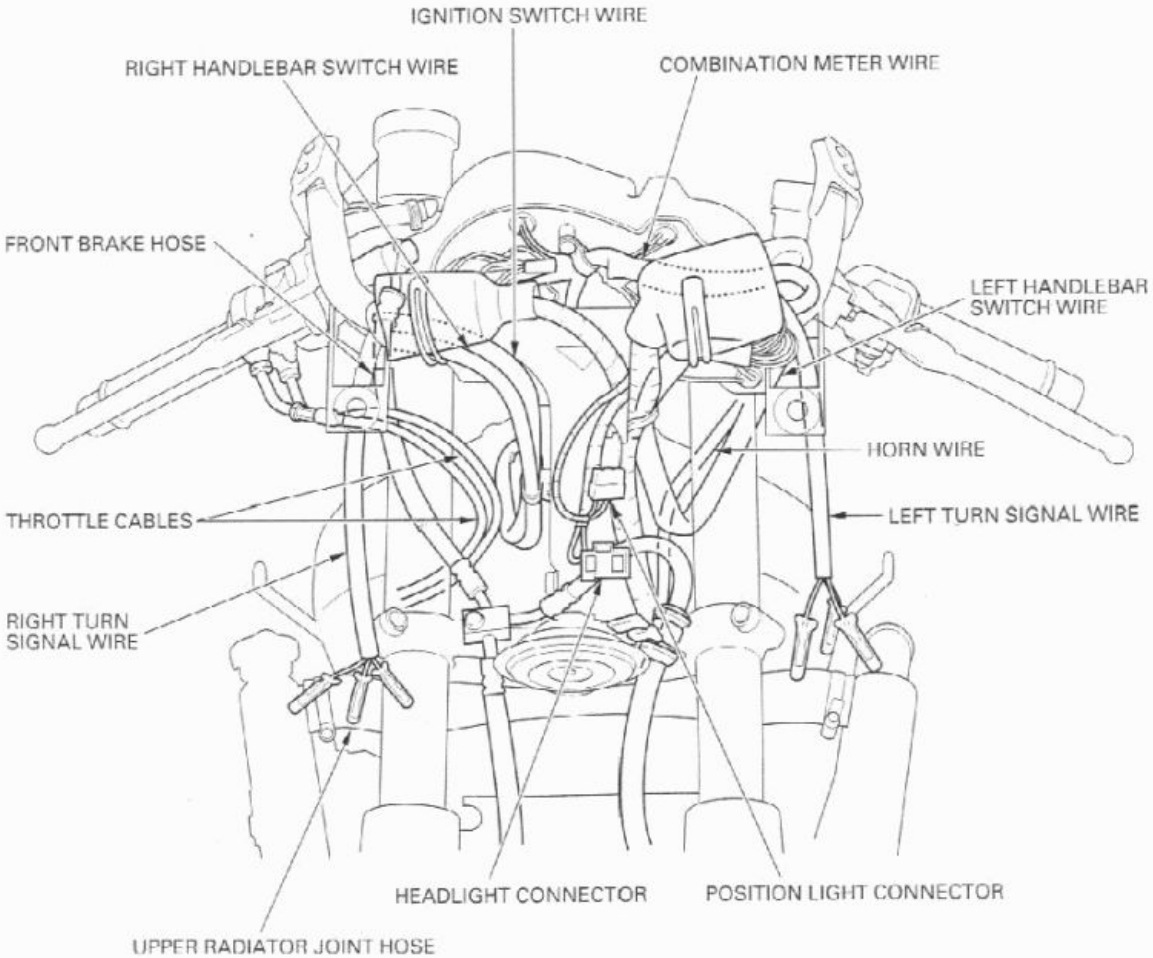
LOCATION	MATERIAL	REMARKS
Crankcase mating surfaces	Sealant	See page 11-10
Crankcase mating surfaces (right side)		See page 6-14
Crankcase mating surfaces (left side)		See page 10-3
Oil pan mating surface		
Cylinder head semi circular area		
Cylinder head cover gasket mating surface (cover side)		
Oil pressure switch threads		
Thermosensor threads		Do not apply to the sensor head.
Alternator stator wire grommet seating surface		
Crankshaft main journal bearing sliding surface	Molybdenum oil solution (a mixture of 1/2 engine oil and 1/2 molybdenum disulfide grease)	
Crankpin bearing sliding surface		
Connecting rod small end inner surface		
Valve stem sliding surface		
Valve lifter outer surface		
Camshaft journals and cam lobes		
Clutch outer sliding surface		
M3/4, C5, C6 gear shift fork grooves		
Gear teeth and sliding surfaces		
Other rotating and sliding area		
Primary drive gear and sub gear sliding surface	Molybdenum disulfide grease	
Engine oil filter cartridge threads and seating surface	Engine oil	
Camshaft holder bolt threads and seating surface		
Cylinder head bolt threads and seating surface		
Clutch disc lining surface		
Clutch center lock nut threads and seating surface		
Primary drive gear bolt threads and seating surface		
Flywheel bolt threads and seating surface		
Piston outer surface and piston pin hole		
Piston ring whole surface		
Connecting rod bolt threads and seating surface		
10 mm crankcase special bolt threads and seating surface		
Each bearing rotating area		
Each O-ring whole surface		
Timing hole cap threads	Multi-purpose grease	
Crankshaft hole cap threads		
Each oil seal lips		
Oil pump driven sprocket bolt threads	Locking agent	
Oil filter boss threads		
Reed valve cover bolt threads		
Breather plate bolt threads		
Cam sprocket bolt threads		
Cylinder head 12 mm sealing bolt threads		
Gearshift cam bolt threads		
Starter clutch bolt threads		
Cam chain tensioner bolt threads		
Cam chain guide bolt threads		
Crankcase 18 mm sealing bolt threads		
Crankcase 22 mm sealing bolt threads		
Crankcase 24 mm sealing bolt threads		
Mainshaft bearing set plate bolt threads		
Shift drum bearing set plate bolt threads		

FRAME

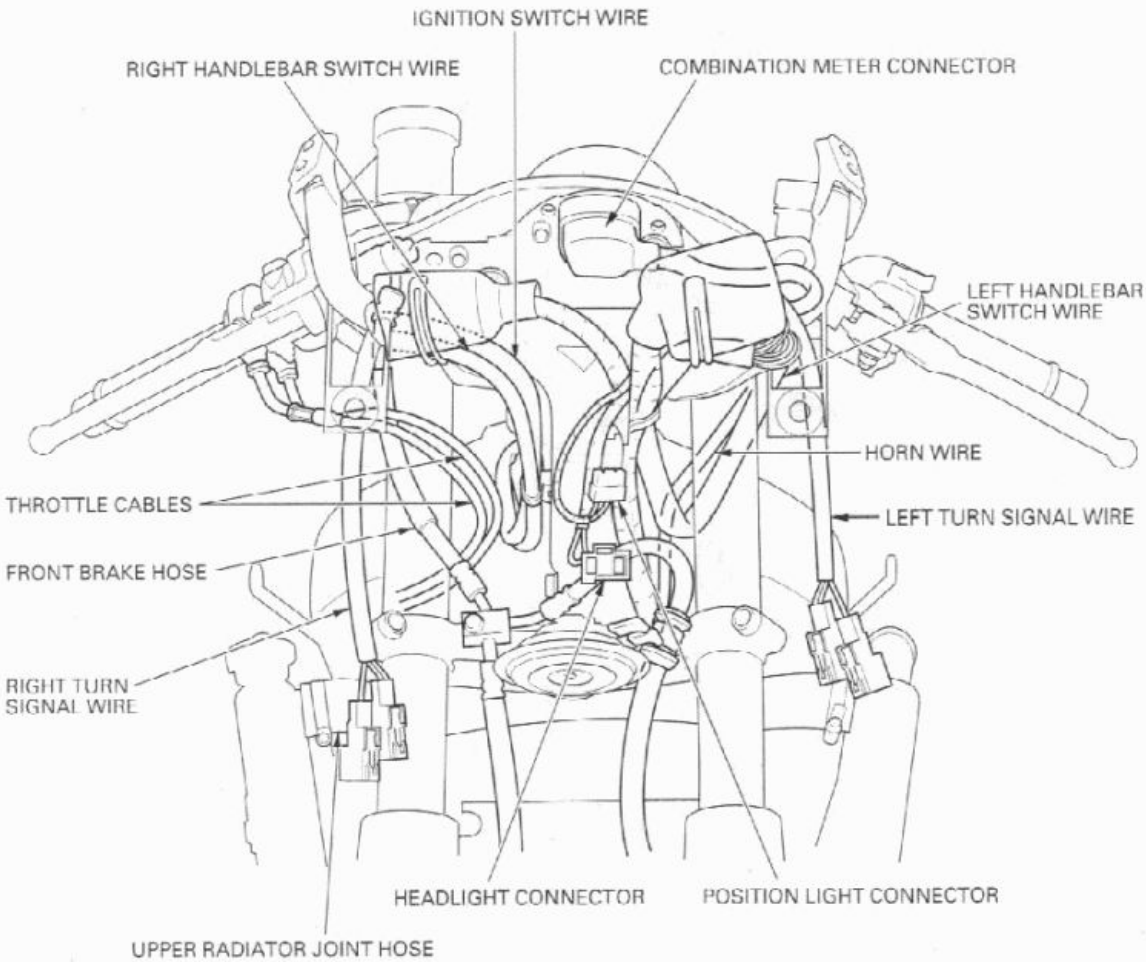
LOCATION	MATERIAL	REMARKS
Front wheel dust seal lips Rear wheel dust seal lips Rear wheel side collar inner surfaces Driver footpeg sliding area Passenger footpeg sliding area Throttle grip pipe flange Seat catch hook sliding area Gearshift pedal link tie-rod ball joints Gearshift pedal pivot Rear brake pedal pivot	Multi-purpose grease	
Side stand pivot Steering head bearings Steering head bearing dust seal lips Shock absorber dust seal lips Shock absorber needle bearing Shock arm and link dust seal lips Shock arm and link needle bearings Swingarm pivot bearings Swingarm pivot dust seal lips	Molybdenum disulfide grease	
Shock absorber spring adjuster cam surface	Molybdenum disulfide past	
Throttle cable outer (inside) Choke cable outer (inside)	Cable lubricant	
Left handlebar grip rubber (inside)	Honda bond A, Honda Hand Grip Cement (U.S.A. only) or equivalent	
Steering bearing adjustment nut threads	Engine oil	
Front brake lever-to-master piston contacting area Front brake lever pivot Rear brake caliper pin bolt sliding surfaces Rear brake master piston-to-push rod contacting area Clutch lever pivot Clutch lever joint piece-to-push rod contacting area Clutch master piston-to-push rod contacting area	Silicone grease	
Brake master piston and cups Brake caliper piston and piston seals Clutch master piston and cups	DOT 4 brake fluid	
Fork dust seal and oil seal lips	Pro-Honda Suspension Fluid SS-8	
Clutch fluid reservoir mounting screw threads Fork socket bolt threads Front brake caliper assembly bolt threads Rear brake caliper pin bolt threads	Locking agent	

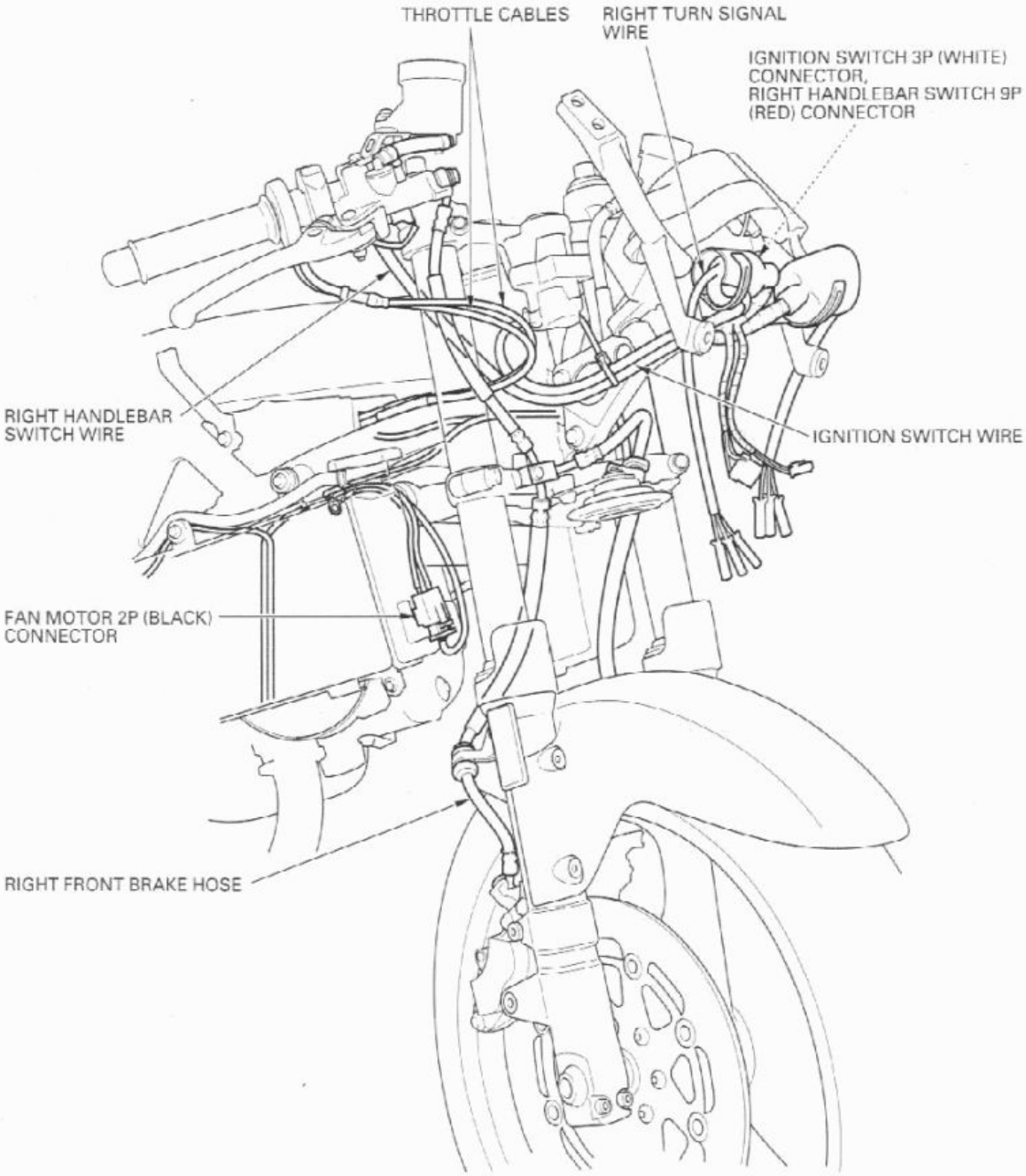
CABLE & HARNESS ROUTING

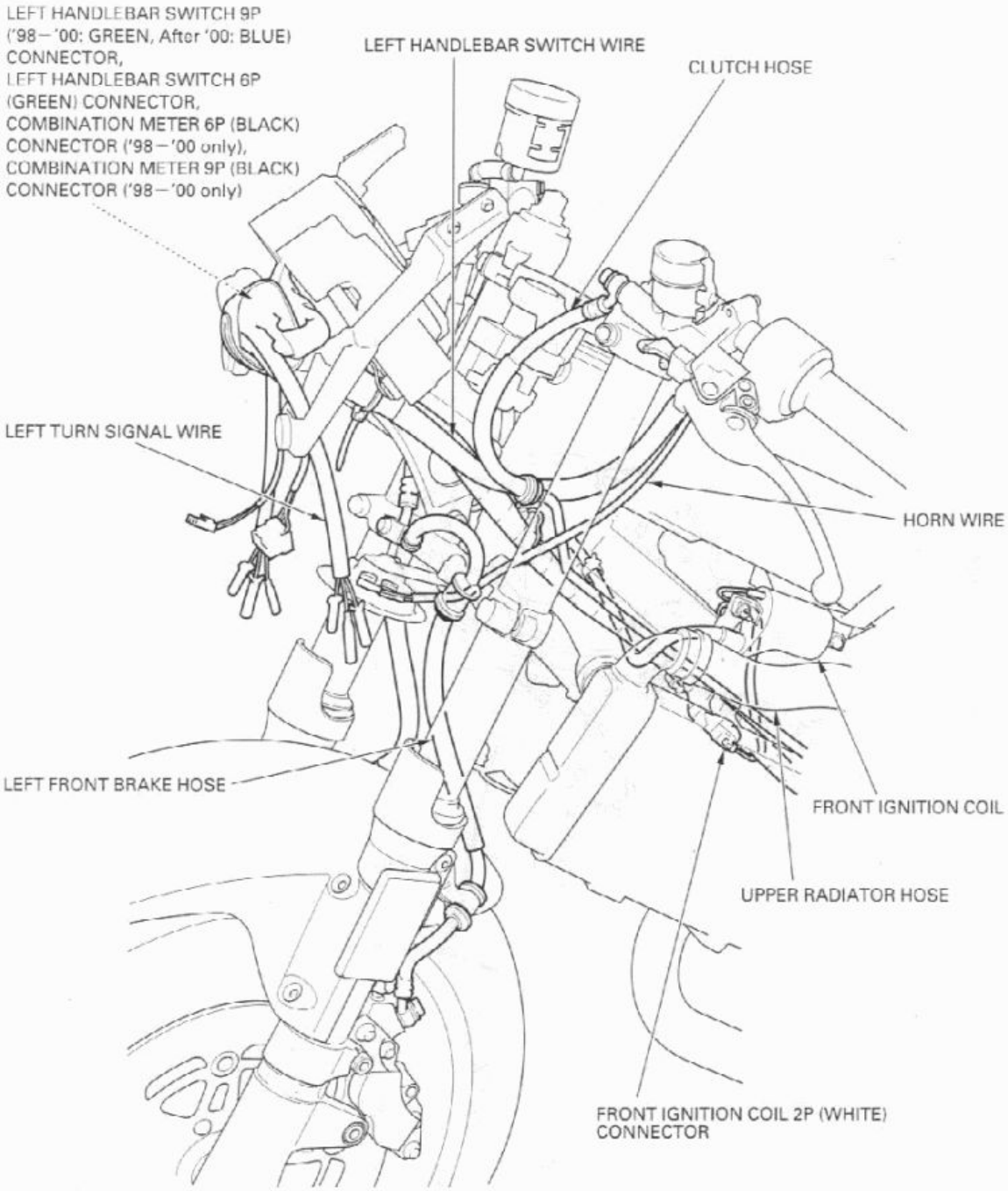
'98 – '00:



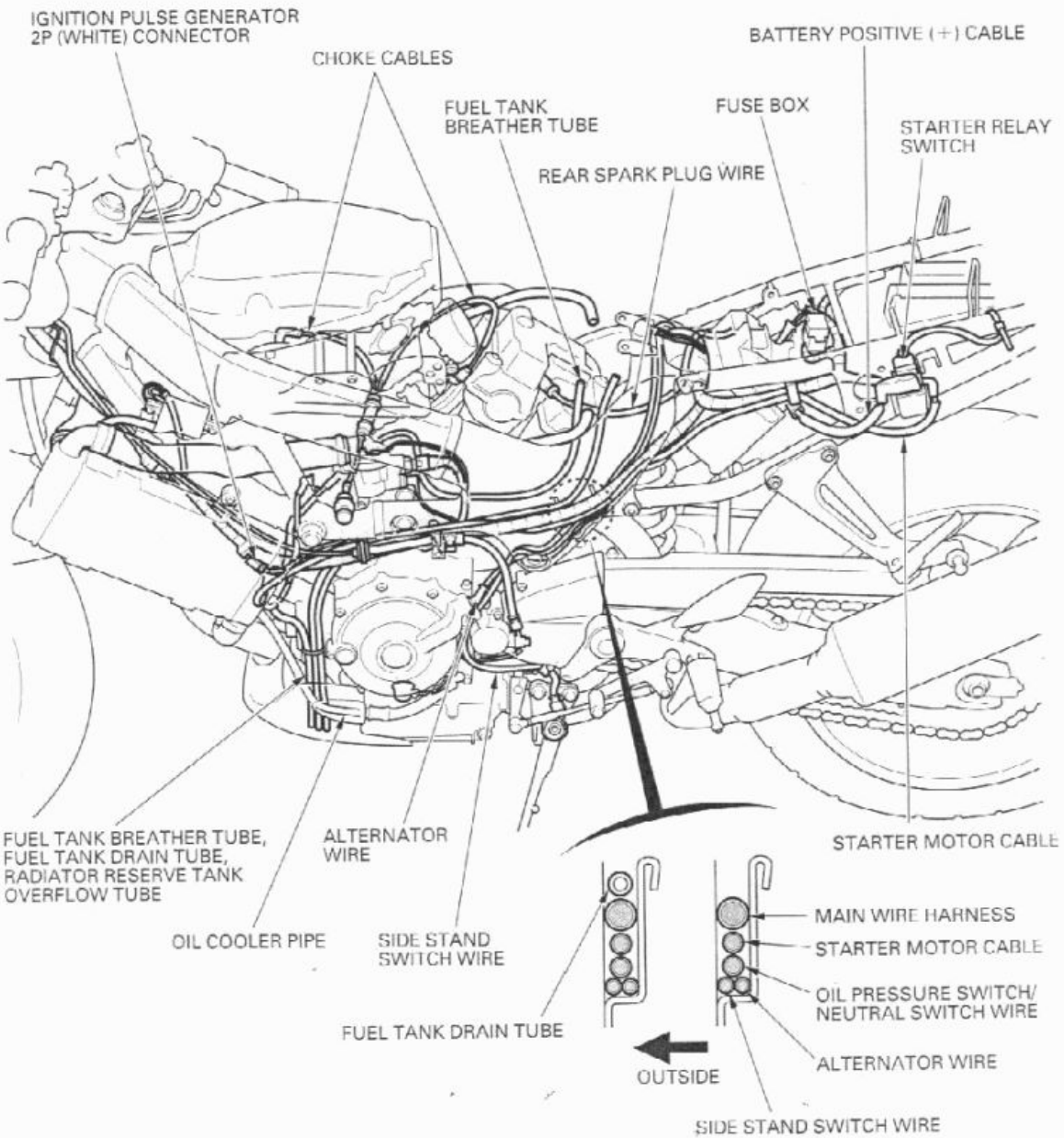
After '00:


IGNITION SWITCH WIRE
RIGHT HANDLEBAR SWITCH WIRE
COMBINATION METER CONNECTOR
LEFT HANDLEBAR SWITCH WIRE
HORN WIRE
THROTTLE CABLES
LEFT TURN SIGNAL WIRE
FRONT BRAKE HOSE
RIGHT TURN SIGNAL WIRE
HEADLIGHT CONNECTOR
POSITION LIGHT CONNECTOR
UPPER RADIATOR JOINT HOSE

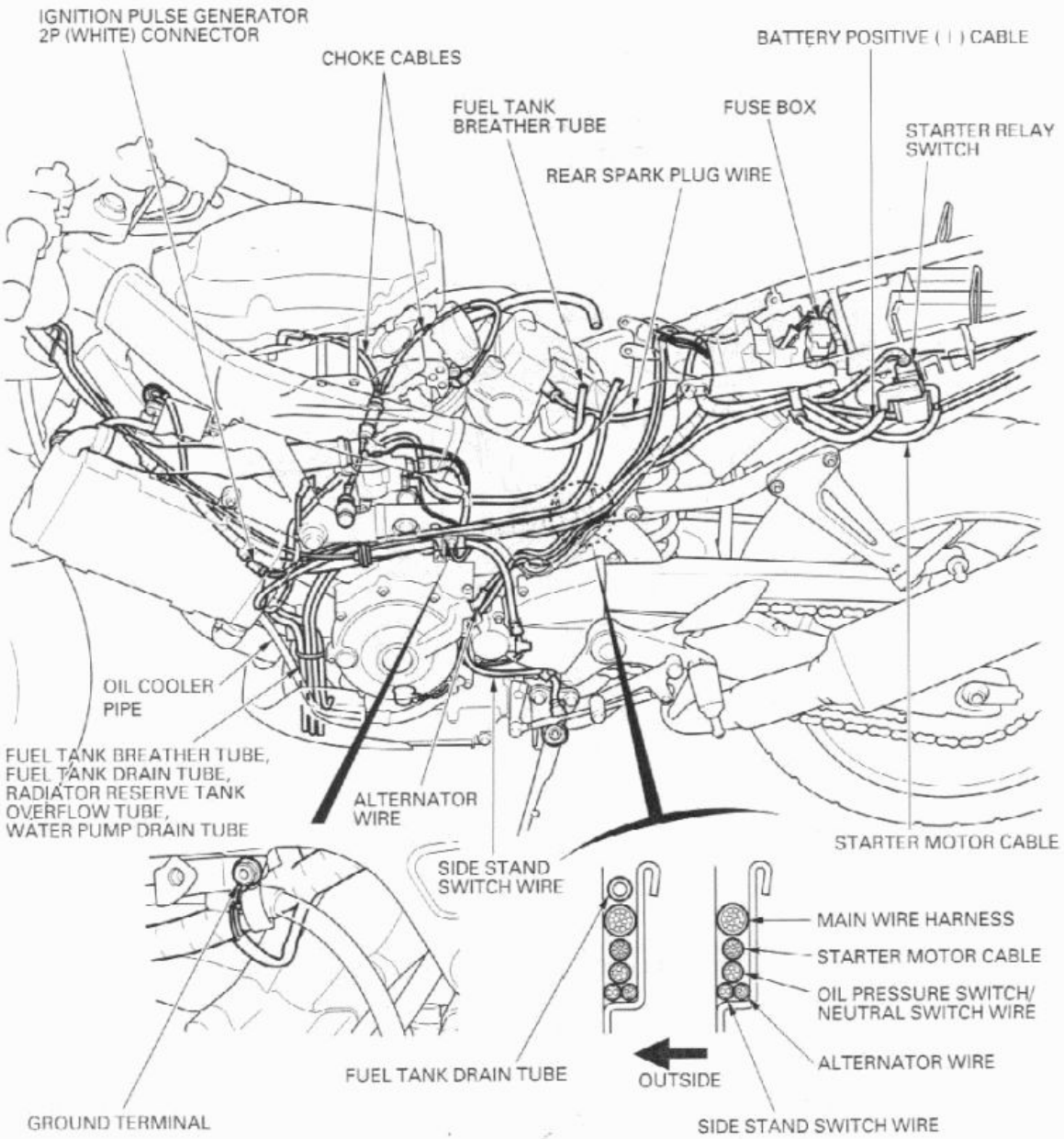

THROTTLE CABLES
RIGHT TURN SIGNAL WIRE
IGNITION SWITCH 3P (WHITE) CONNECTOR,
RIGHT HANDLEBAR SWITCH 9P (RED) CONNECTOR
RIGHT HANDLEBAR SWITCH WIRE
IGNITION SWITCH WIRE
FAN MOTOR 2P (BLACK) CONNECTOR
RIGHT FRONT BRAKE HOSE

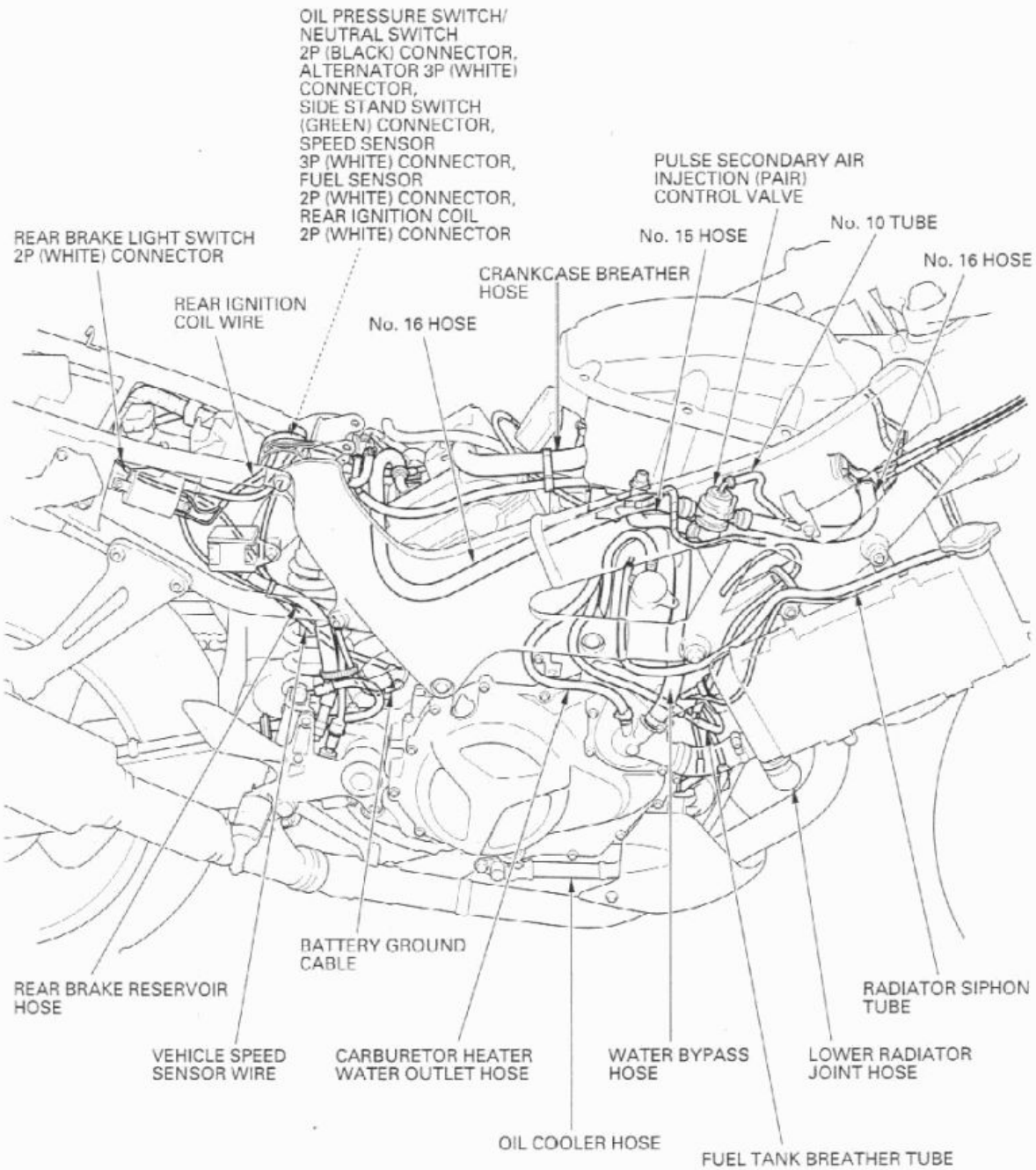

LEFT HANDLEBAR SWITCH 9P ('98–'00: GREEN, After '00: BLUE) CONNECTOR,
LEFT HANDLEBAR SWITCH 6P (GREEN) CONNECTOR,
COMBINATION METER 6P (BLACK) CONNECTOR ('98–'00 only),
COMBINATION METER 9P (BLACK) CONNECTOR ('98–'00 only)
LEFT HANDLEBAR SWITCH WIRE
CLUTCH HOSE
LEFT TURN SIGNAL WIRE
HORN WIRE
LEFT FRONT BRAKE HOSE
FRONT IGNITION COIL
UPPER RADIATOR HOSE
FRONT IGNITION COIL 2P (WHITE) CONNECTOR

'98 – '00:

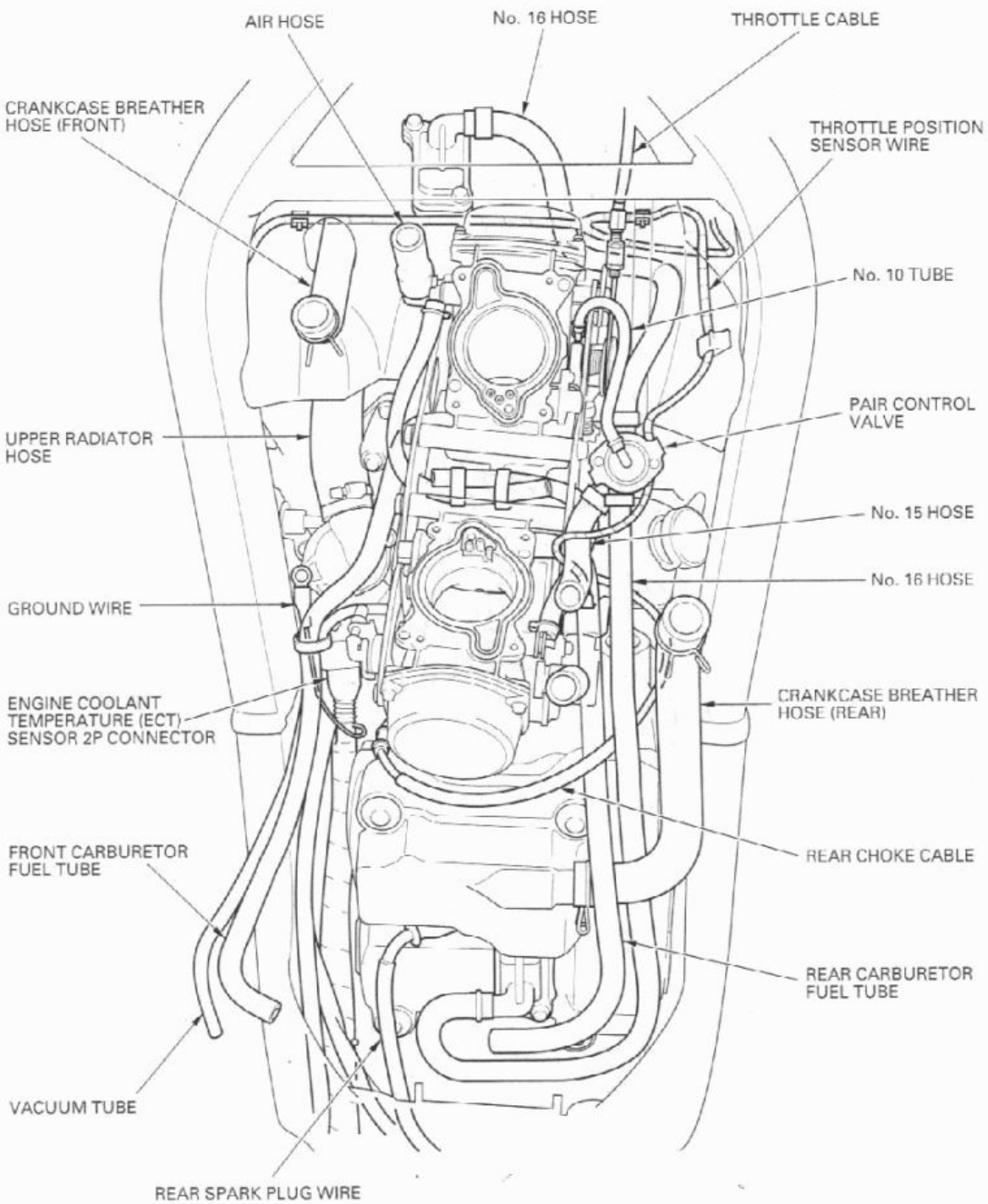

IGNITION PULSE GENERATOR 2P (WHITE) CONNECTOR
CHOKE CABLES
FUEL TANK BREATHER TUBE
REAR SPARK PLUG WIRE
BATTERY POSITIVE (+) CABLE
FUSE BOX
STARTER RELAY SWITCH
FUEL TANK BREATHER TUBE, FUEL TANK DRAIN TUBE, RADIATOR RESERVE TANK OVERFLOW TUBE
ALTERNATOR WIRE
OIL COOLER PIPE
SIDE STAND SWITCH WIRE
STARTER MOTOR CABLE
MAIN WIRE HARNESS
STARTER MOTOR CABLE
OIL PRESSURE SWITCH/ NEUTRAL SWITCH WIRE
FUEL TANK DRAIN TUBE
ALTERNATOR WIRE
OUTSIDE
SIDE STAND SWITCH WIRE

After '00:

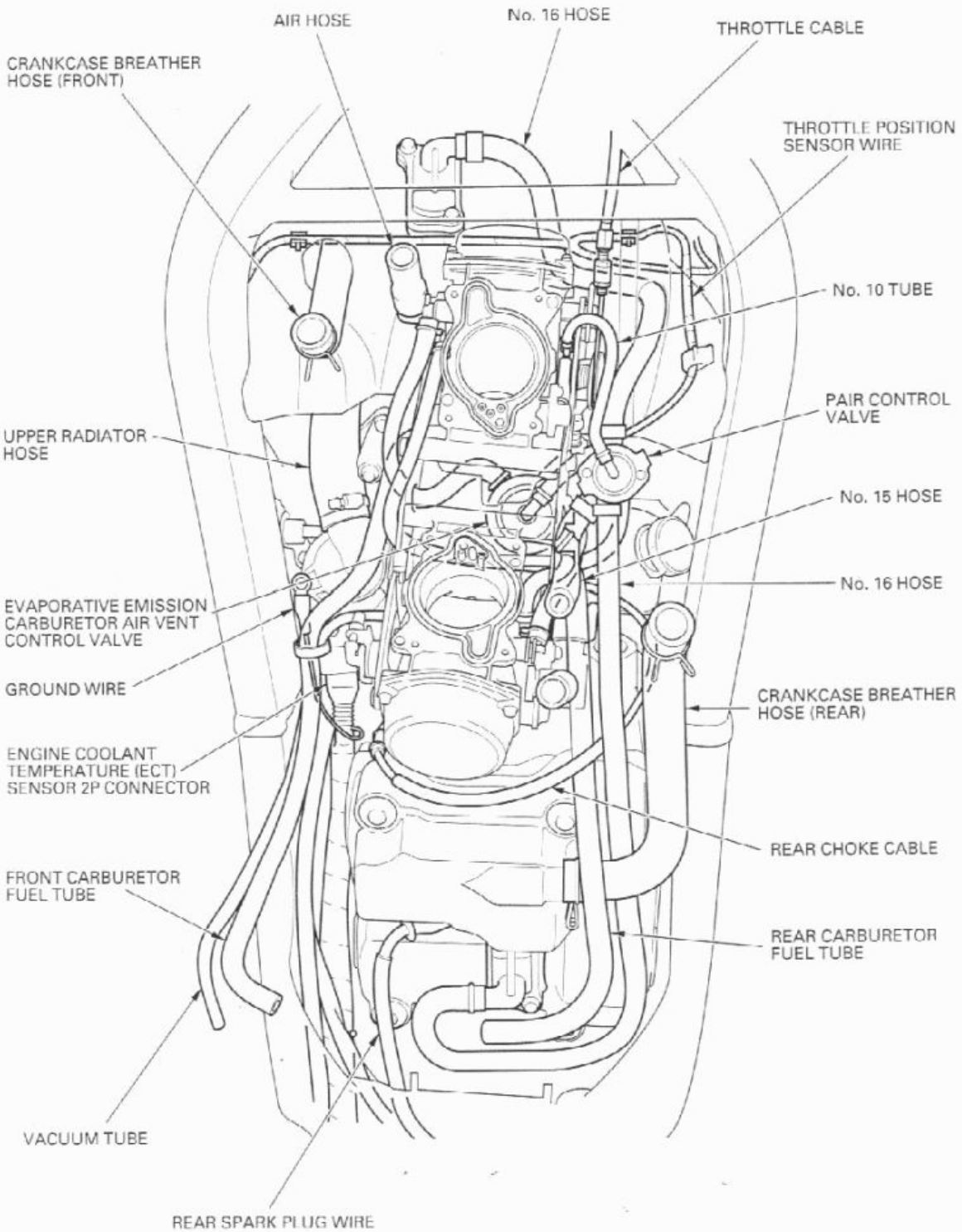

IGNITION PULSE GENERATOR
2P (WHITE) CONNECTOR
CHOKE CABLES
BATTERY POSITIVE (+) CABLE
FUEL TANK
BREATHER TUBE
FUSE BOX
STARTER RELAY
SWITCH
REAR SPARK PLUG WIRE
OIL COOLER
PIPE
FUEL TANK BREATHER TUBE,
FUEL TANK DRAIN TUBE,
RADIATOR RESERVE TANK
OVERFLOW TUBE,
WATER PUMP DRAIN TUBE
ALTERNATOR
WIRE
STARTER MOTOR CABLE
SIDE STAND
SWITCH WIRE
MAIN WIRE HARNESS
STARTER MOTOR CABLE
OIL PRESSURE SWITCH/
NEUTRAL SWITCH WIRE
ALTERNATOR WIRE
FUEL TANK DRAIN TUBE
OUTSIDE
GROUND TERMINAL
SIDE STAND SWITCH WIRE


OIL PRESSURE SWITCH/
NEUTRAL SWITCH
2P (BLACK) CONNECTOR,
ALTERNATOR 3P (WHITE)
CONNECTOR,
SIDE STAND SWITCH
(GREEN) CONNECTOR,
SPEED SENSOR
3P (WHITE) CONNECTOR,
FUEL SENSOR
2P (WHITE) CONNECTOR,
REAR IGNITION COIL
2P (WHITE) CONNECTOR
PULSE SECONDARY AIR
INJECTION (PAIR)
CONTROL VALVE
No. 10 TUBE
No. 15 HOSE
No. 16 HOSE
REAR BRAKE LIGHT SWITCH
2P (WHITE) CONNECTOR
CRANKCASE BREATHER
HOSE
REAR IGNITION
COIL WIRE
No. 16 HOSE
BATTERY GROUND
CABLE
REAR BRAKE RESERVOIR
HOSE
RADIATOR SIPHON
TUBE
VEHICLE SPEED
SENSOR WIRE
CARBURETOR HEATER
WATER OUTLET HOSE
WATER BYPASS
HOSE
LOWER RADIATOR
JOINT HOSE
OIL COOLER HOSE
FUEL TANK BREATHER TUBE

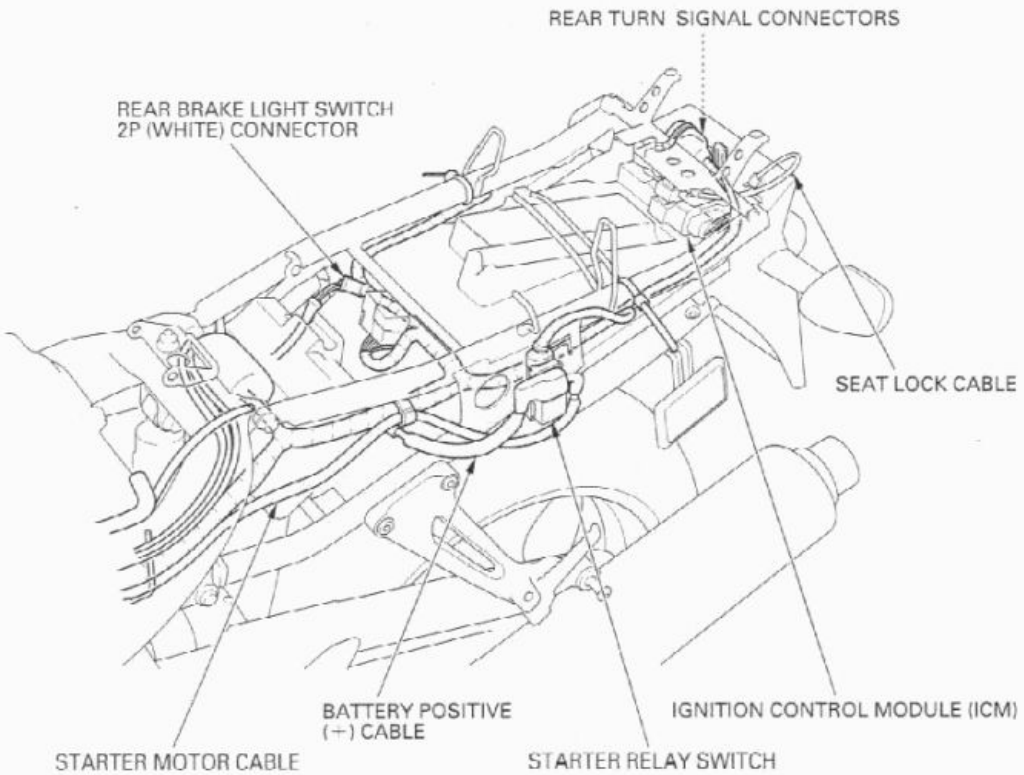
49 state/Canada type

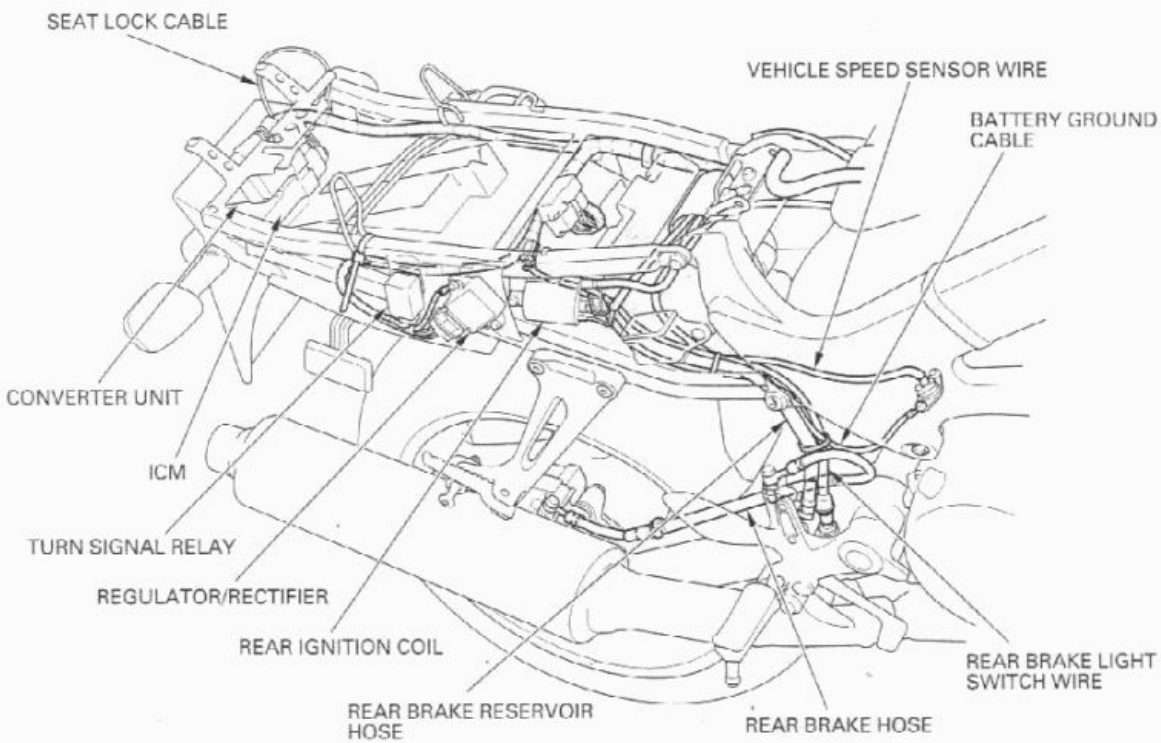


California type



'98 - '00:


REAR TURN SIGNAL CONNECTORS
REAR BRAKE LIGHT SWITCH 2P (WHITE) CONNECTOR
SEAT LOCK CABLE
BATTERY POSITIVE (+) CABLE
IGNITION CONTROL MODULE (ICM)
STARTER MOTOR CABLE
STARTER RELAY SWITCH


SEAT LOCK CABLE
VEHICLE SPEED SENSOR WIRE
BATTERY GROUND CABLE
CONVERTER UNIT
ICM
TURN SIGNAL RELAY
REGULATOR/RECTIFIER
REAR IGNITION COIL
REAR BRAKE LIGHT SWITCH WIRE
REAR BRAKE RESERVOIR HOSE
REAR BRAKE HOSE

After 00J